SERTP – 2015 2nd Quarter Meeting

Preliminary Expansion Plan Meeting

June 25th, 2015

Duke Energy – Little Rock Operating Center

Charlotte, NC

Process Information

- **The SERTP process is a transmission planning process.**

- **Please contact the respective transmission provider for questions related to real-time operations or OATT transmission service.**

Purposes & Goals of Meeting

- **Modeling Assumptions Update**
  - Load Forecast
  - Generation Assumptions
- **Preliminary 10 Year Transmission Expansion Plans**
- **Miscellaneous Updates**
- **Next Meeting Activities**

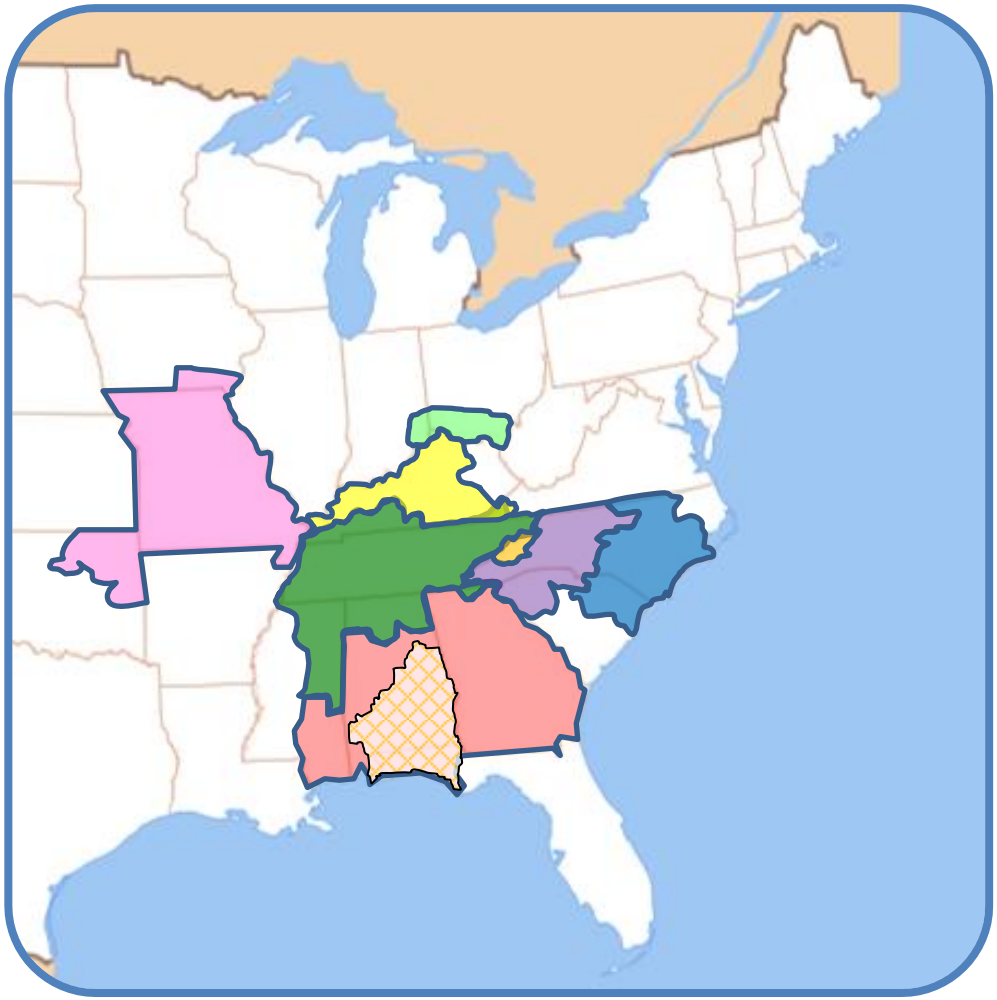
SERTP

Regional Modeling Assumptions

SERTP

Preliminary Transmission Expansion Plans

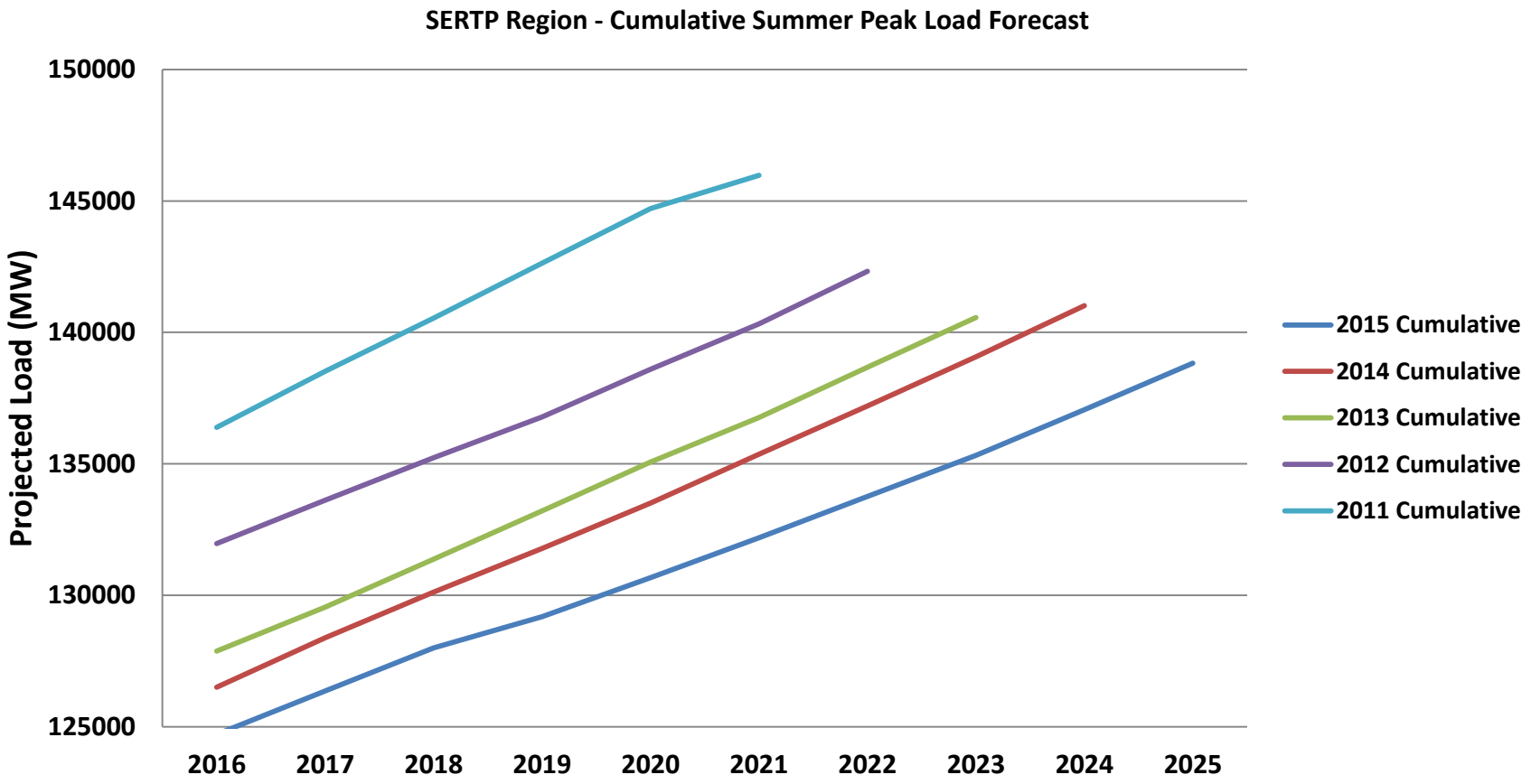
SERTP Regional Modeling Assumptions



Balancing Authority Areas

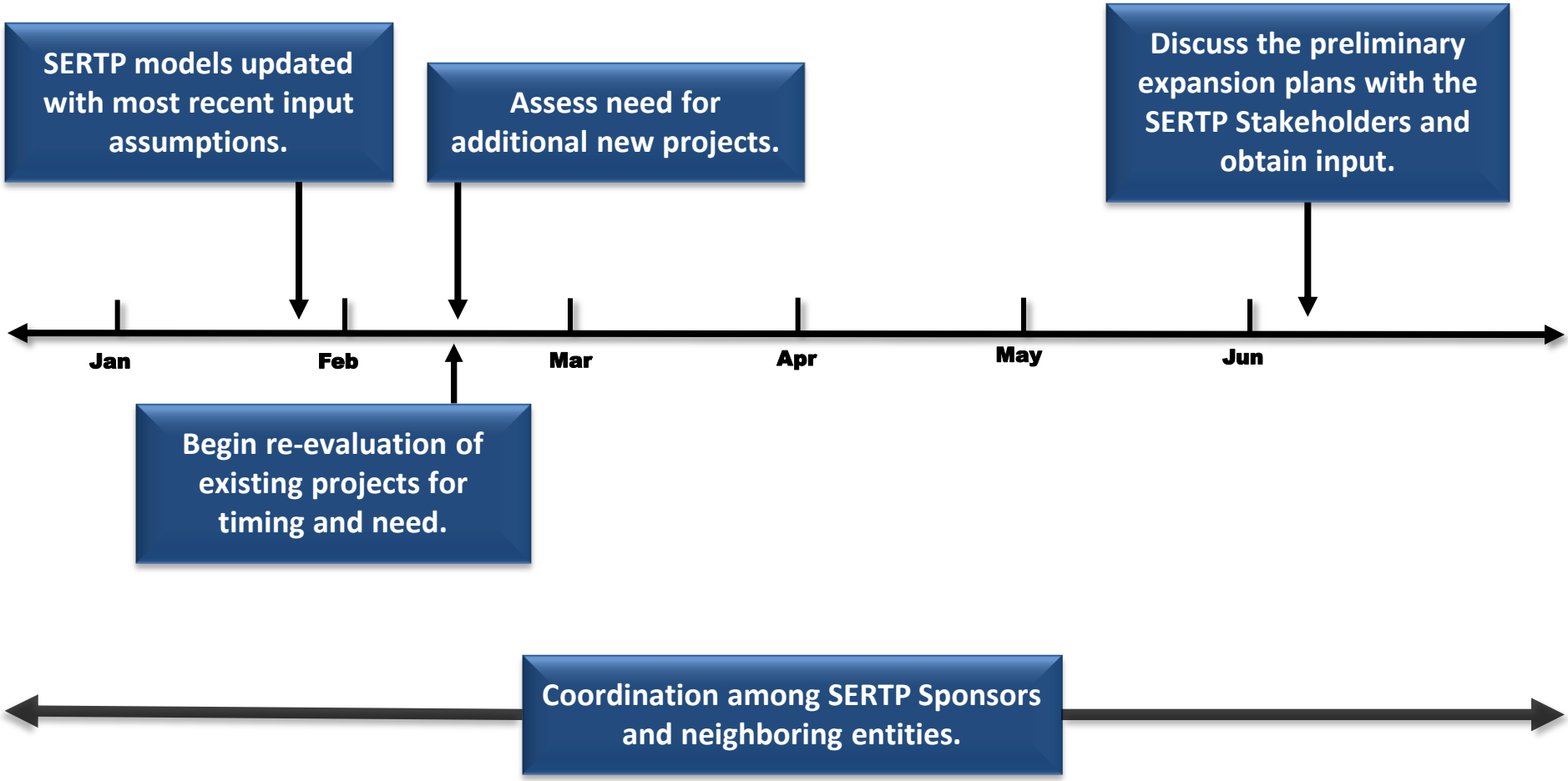
- AECI
- DUKE – Carolinas
- DUKE – Progress East
- DUKE – Progress West
- LG&E/KU
- OVEC
- PowerSouth
- Southern
- TVA

SERTP Cumulative Summer Peak Load Forecast



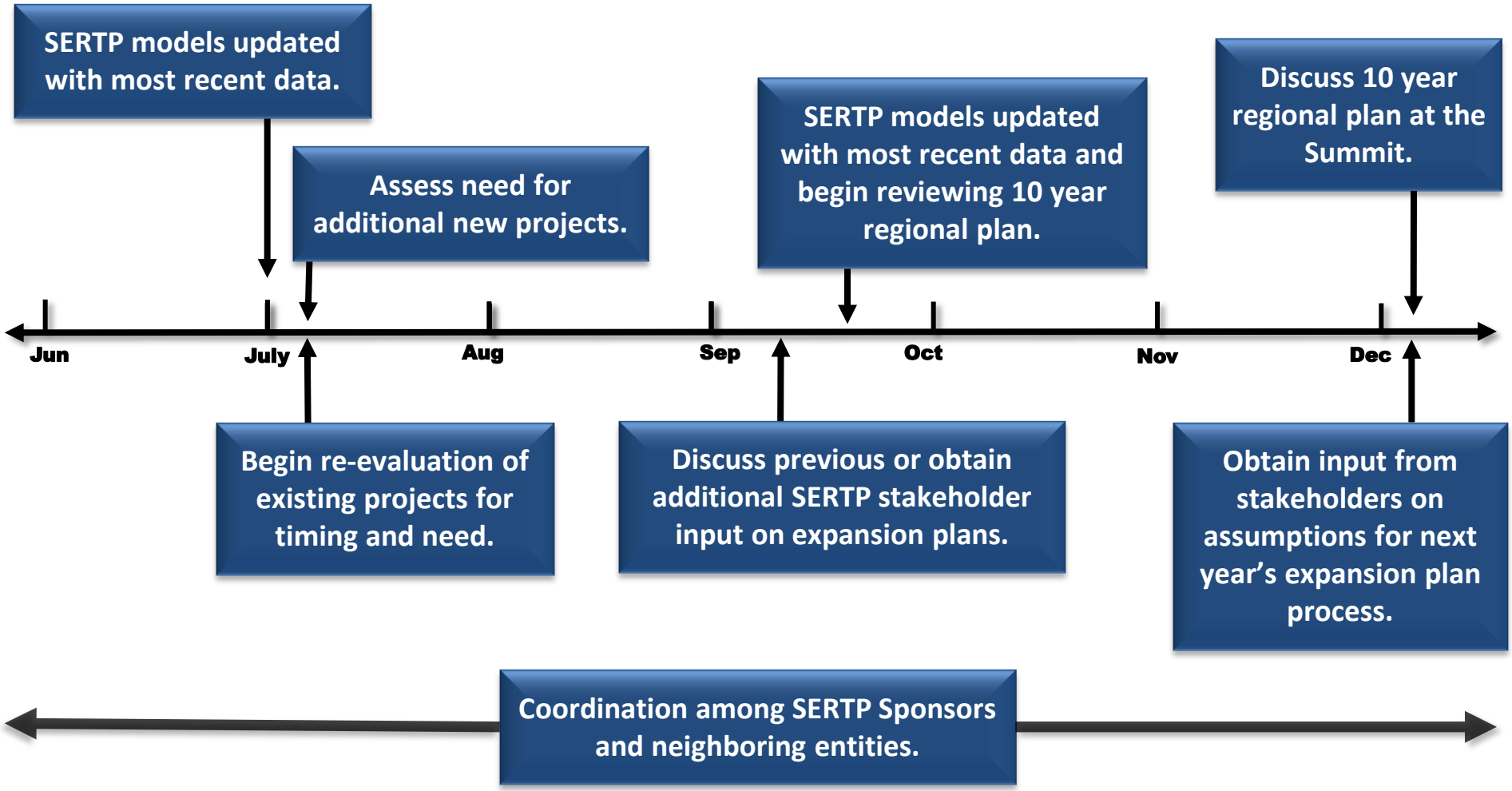
2015 SERTP

Approximate 10 Year Transmission Expansion Plan Timeline



2015 SERTP

Approximate 10 Year Transmission Expansion Plan Timeline



Preliminary Transmission Expansion Plans

The projects described in this presentation represent the preliminary ten (10) year transmission expansion plans. The transmission expansion plans are periodically reviewed and may be revised due to changes in assumptions. This presentation does not represent a commitment to build for projects listed in the future.

AECI Balancing Authority

Preliminary Transmission Expansion Plan & Generation Assumptions

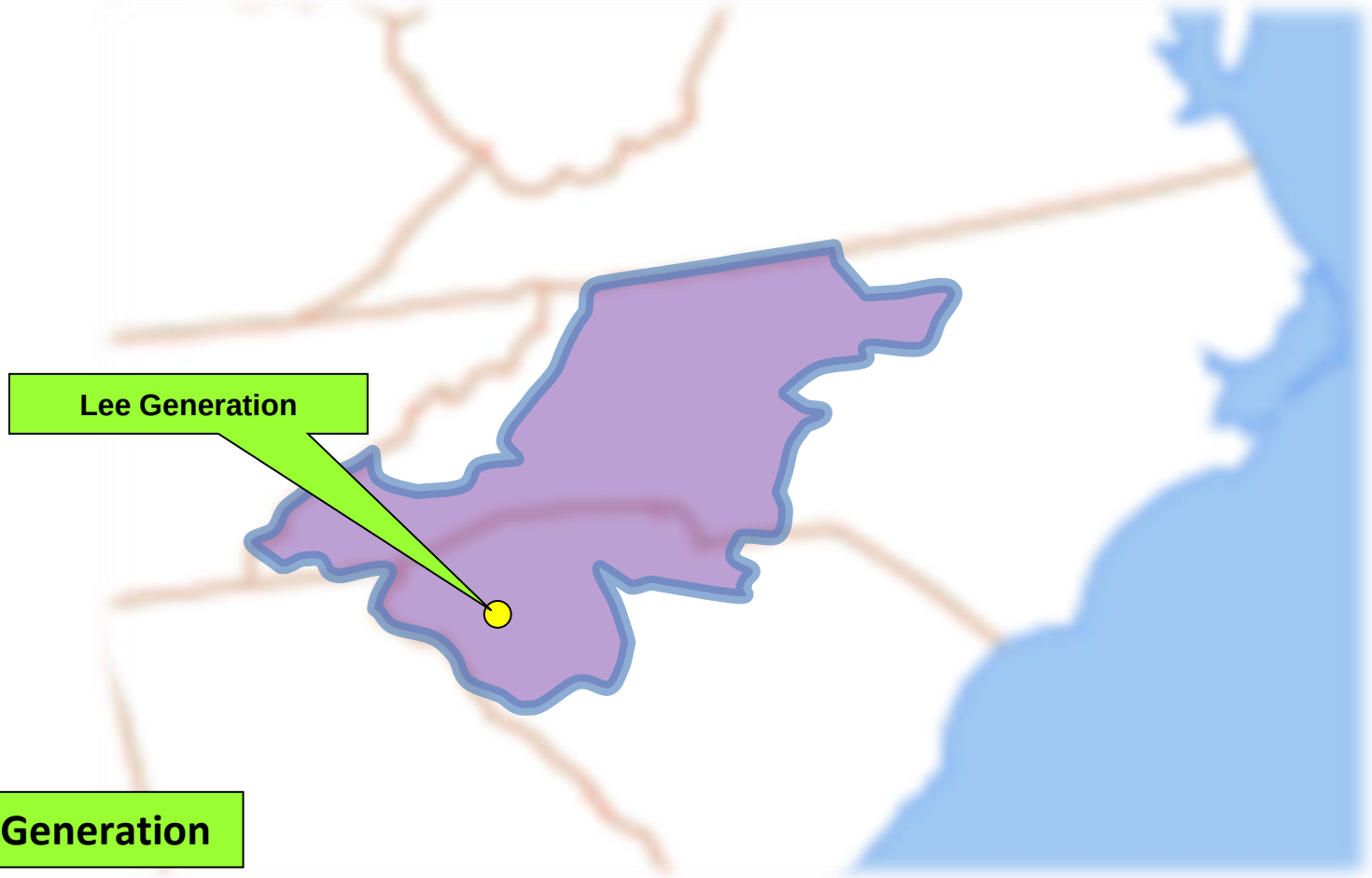
* **AECI has no transmission projects included in the 2015 Preliminary Transmission Expansion Plan. In addition, AECI has no generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process.**

DUKE CAROLINAS Balancing Authority

Generation Assumptions

DUKE CAROLINAS – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process.



DUKE CAROLINAS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
LEE CC	--	--	777	777	777	777	777	777	777	777

DUKE CAROLINAS – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

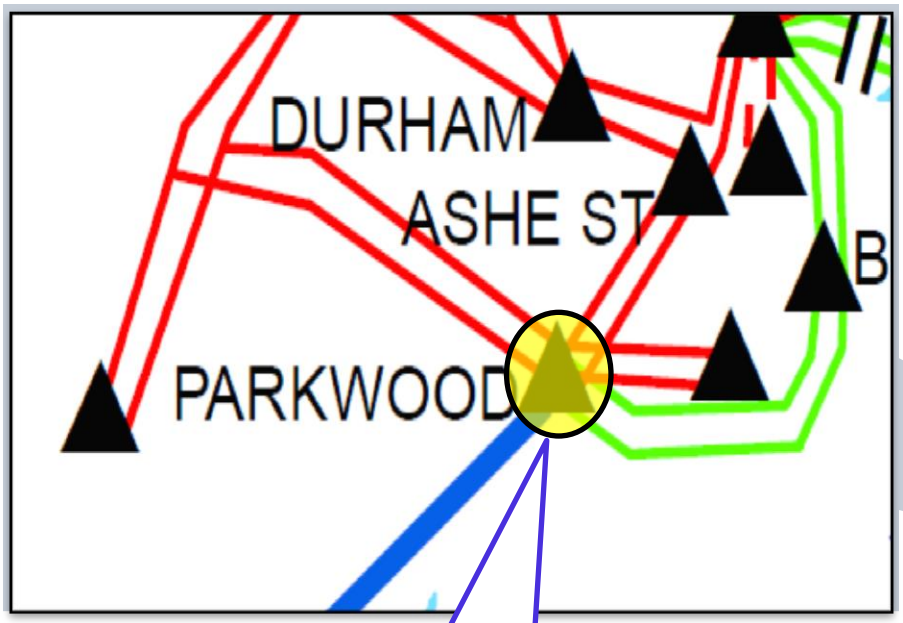
SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
ROWAN	150	150	150	150	150	150	150	150	150	150
BROAD RIVER	850	850	850	850	850	850	850	850	850	850

DUKE CAROLINAS Balancing Authority

Preliminary Transmission Expansion Plan

DUKE CAROLINAS – 1 2016

PARKWOOD 230/100 KV SUBSTATION

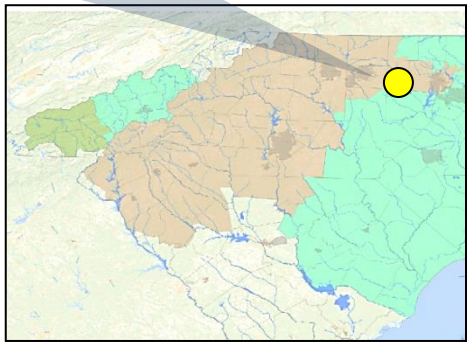


DESCRIPTION:

Add a third 448 MVA 230/100 kV transformer at Parkwood substation.

SUPPORTING STATEMENT:

The Parkwood 230/ 100 kV transformer overloads under contingency.



DUKE CAROLINAS – 2 2017

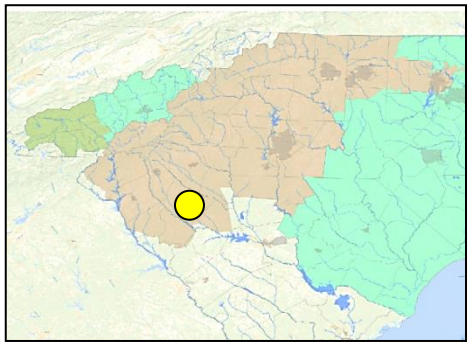
GREENBRIAR AREA IMPROVEMENTS

DESCRIPTION:

- Bundle the Shady Grove – Moonville Retail 100 kV transmission line with 477 ACSR at 120°C. Add 100 kV terminals at Greenbriar Retail making it a 100 kV switching station. Reedy River Tie will also become a breaker swap over station as part of the Greenbriar project.

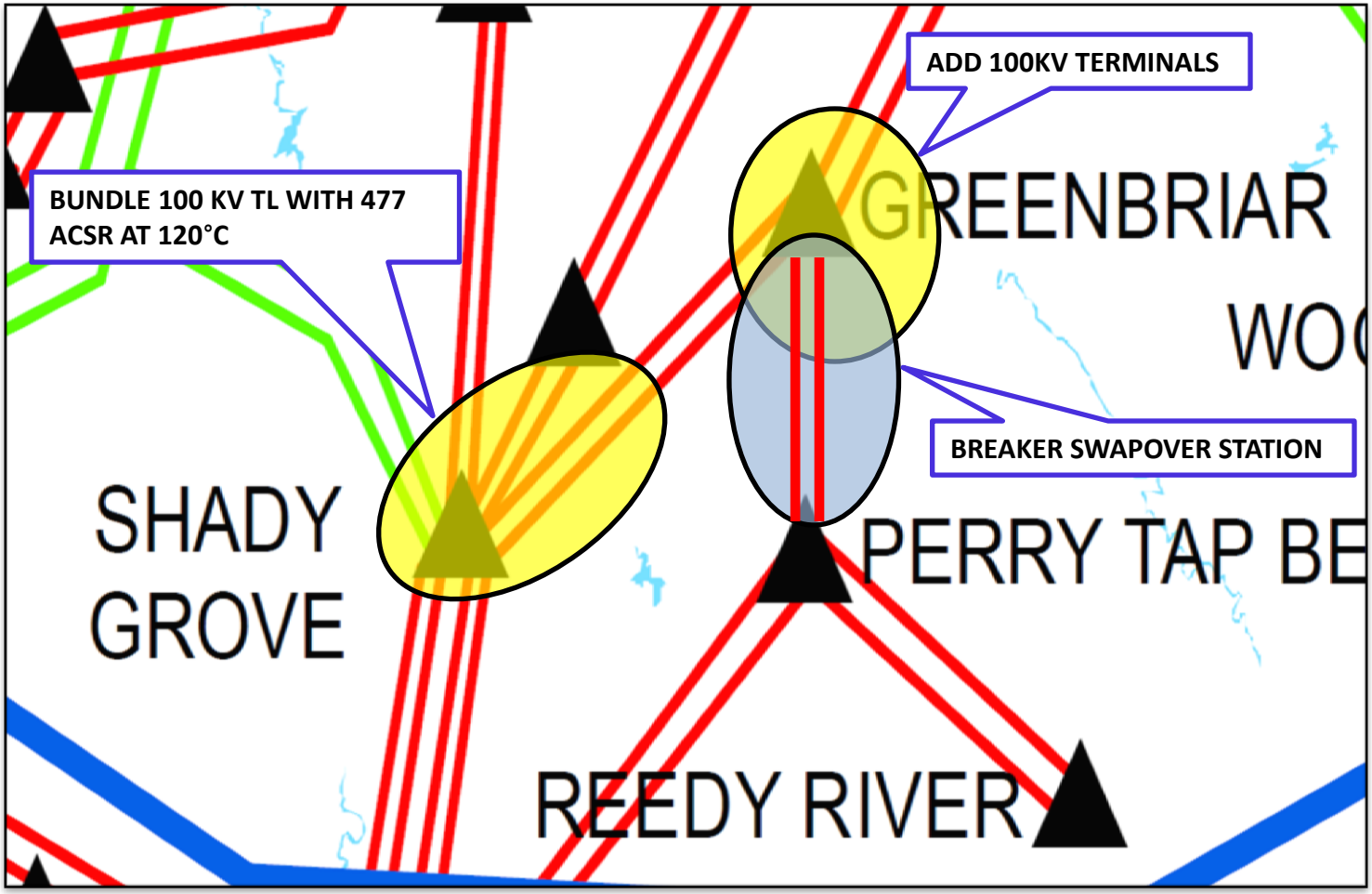
SUPPORTING STATEMENT:

Project required to support new Lee CC project and contingency overloading of 100 kV lines in Lee area.



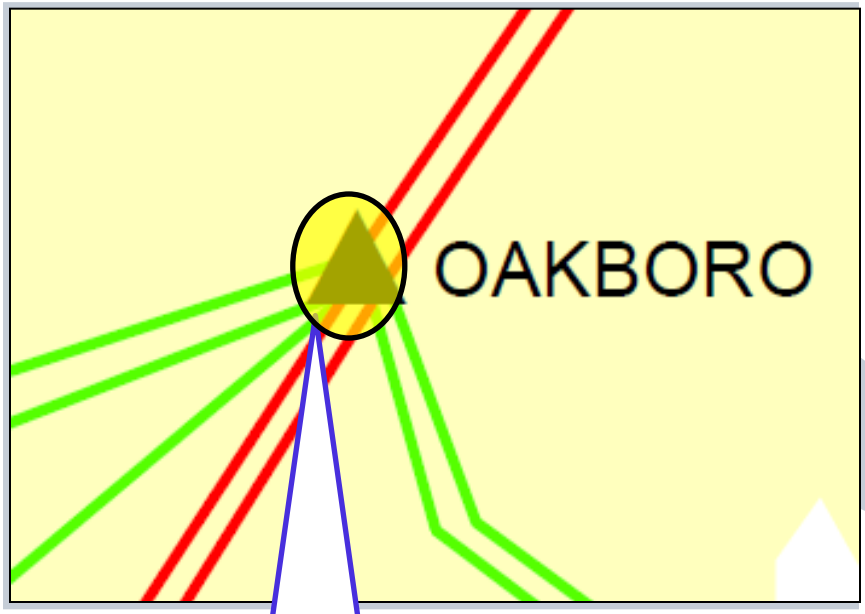
DUKE CAROLINAS – 2 2017

GREENBRIAR AREA IMPROVEMENTS



DUKE CAROLINAS – 3 2017

OAKBORO 230/100 KV TIE

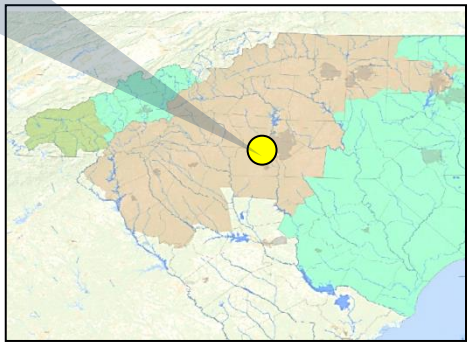


DESCRIPTION:

Add a fourth 448 MVA 230/100 kV transformer at Oakboro Tie.

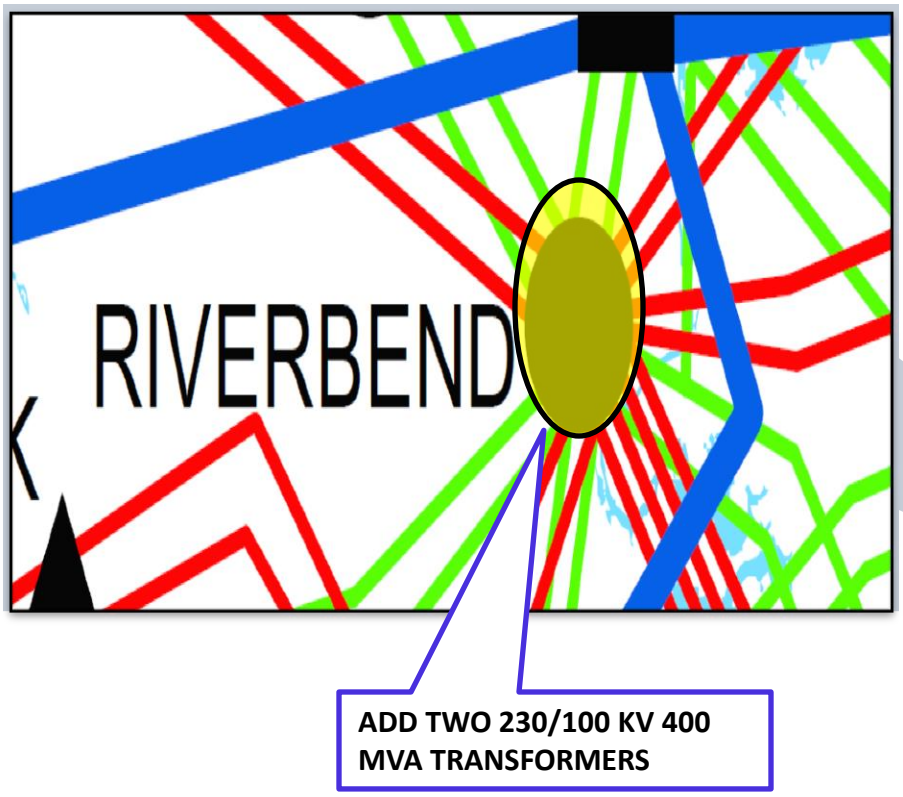
SUPPORTING STATEMENT:

The Oakboro 230/100 kV transformer overloads under contingency.



DUKE CAROLINAS – 4 2017

RIVERBEND STEAM STATION

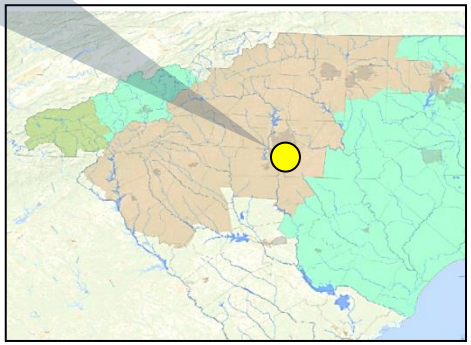


DESCRIPTION:

Add two 230/100 kV 400 MVA transformers at Riverbend Steam Station.

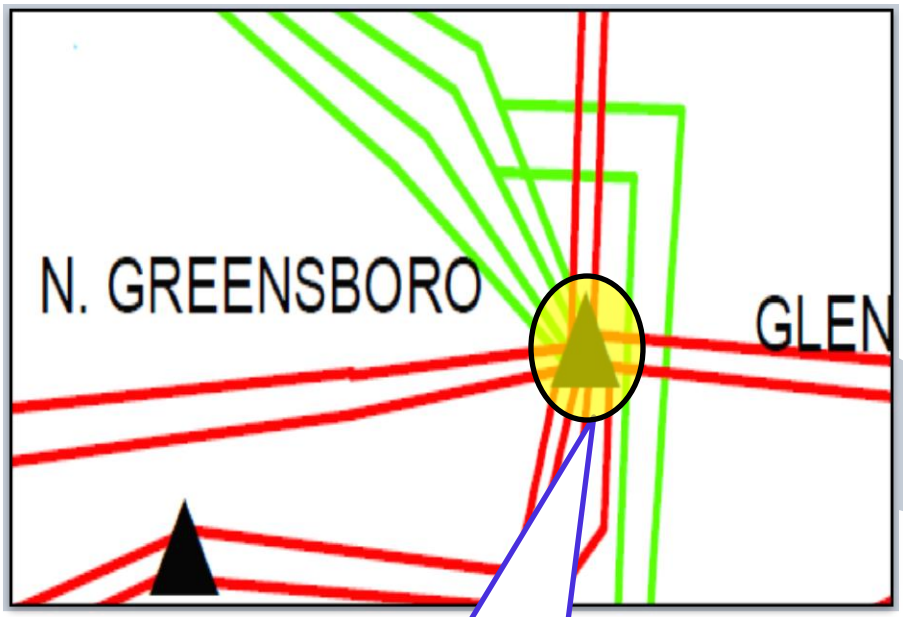
SUPPORTING STATEMENT:

Retirement of Riverbend Steam Station generation causes multiple transmission lines to overload under contingency and causes the need for additional voltage support in the Riverbend area.



DUKE CAROLINAS – 5 2018

NORTH GREENSBORO SUBSTATION

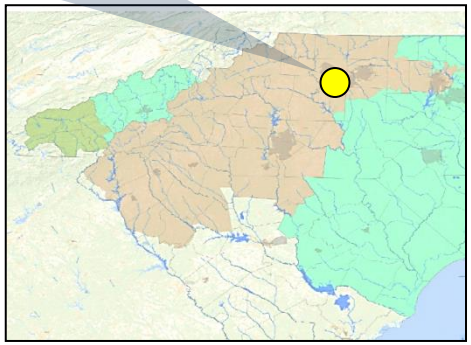


DESCRIPTION:

Add a fourth 448 MVA 230/100 kV transformer at North Greensboro substation.

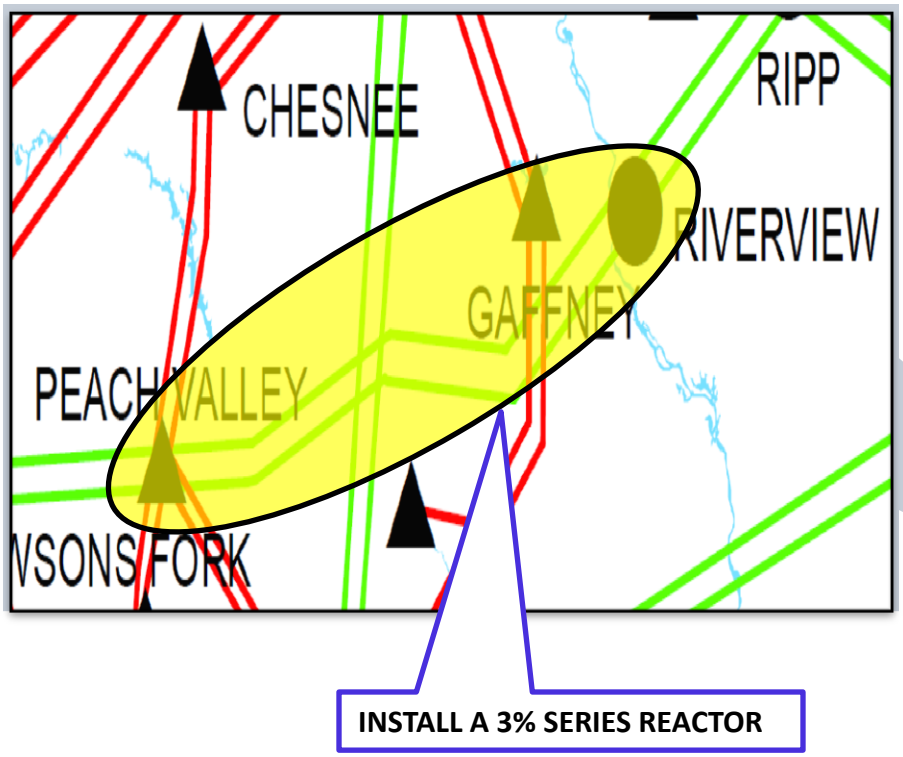
SUPPORTING STATEMENT:

North Greensboro 230/100 kV transformers overload under contingency.



DUKE CAROLINAS – 6 2018

PEACH VALLEY – RIVERVIEW 230 KV T.L.

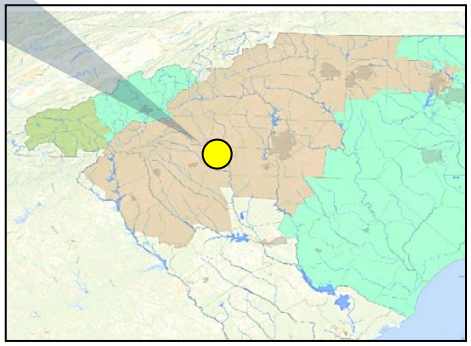


DESCRIPTION:

Install a 3% series reactor on the Peach Valley – Riverview 230 kV transmission line.

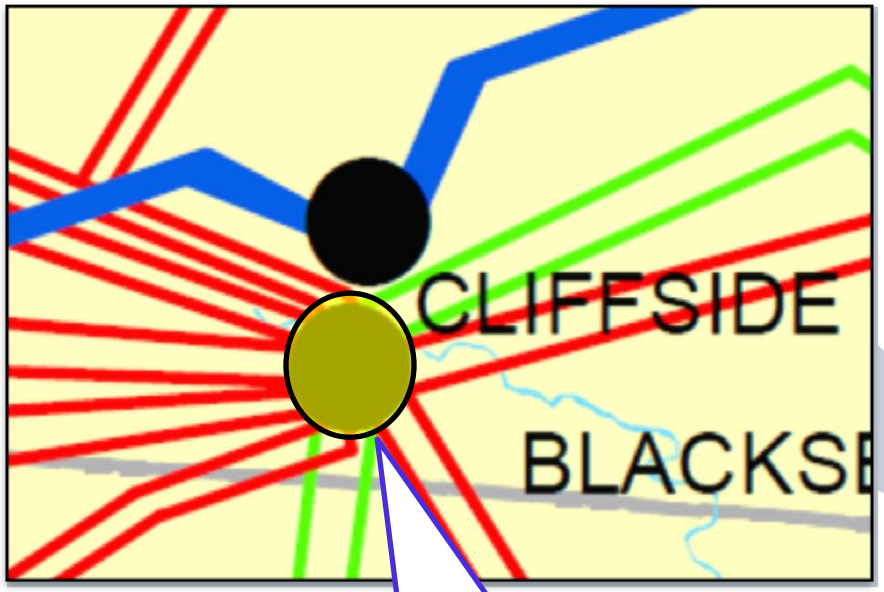
SUPPORTING STATEMENT:

The Peach Valley – Riverview 230 kV transmission line overloads under contingency.



DUKE CAROLINAS – 7 2020

CLIFFSIDE STEAM STATION



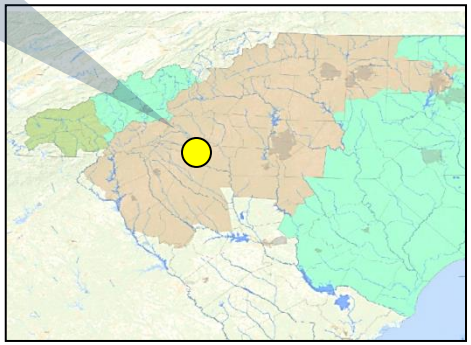
ADD A THIRD 448 MVA 230/100 KV TRANSFORMER AT CLIFFSIDE STEAM STATION

DESCRIPTION:

Add a third 448 MVA 230/100 kV transformer at Cliffside Steam Station.

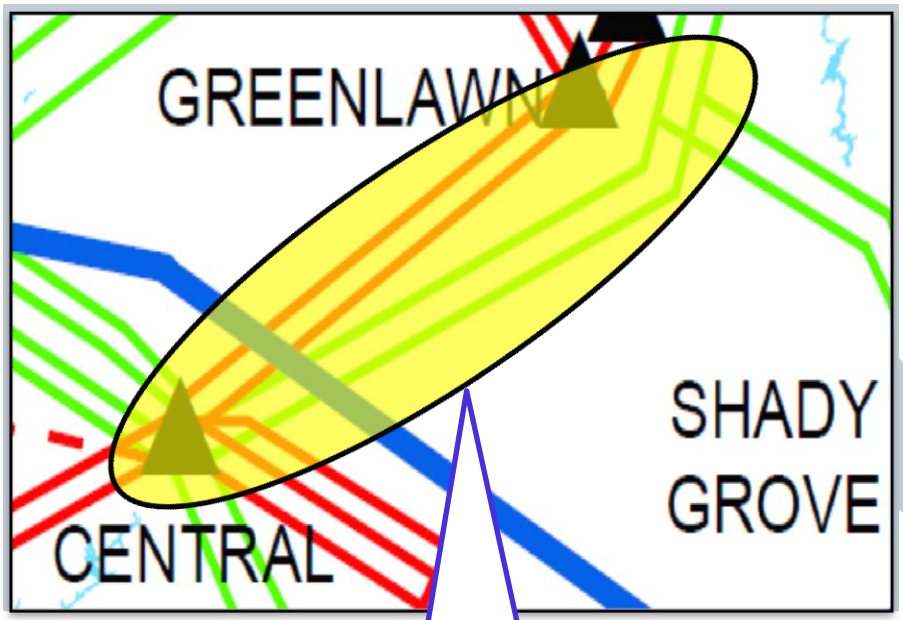
SUPPORTING STATEMENT:

Cliffside Steam Station 230/100 kV transformers overload under contingency.



DUKE CAROLINAS – 8 2022

CENTRAL – SHADY GROVE 230 KV T.L.

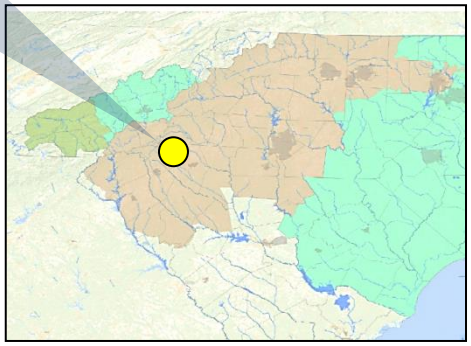


DESCRIPTION:

Reconductor approximately 18 miles of the Central – Shady Grove 230 kV transmission line with bundled 954 ACSR at 120°C.

SUPPORTING STATEMENT:

The Central – Shady Grove 230 kV transmission line overloads under contingency.



DUKE PROGRESS EAST/WEST

Balancing Authorities

Generation Assumptions

DUKE PROGRESS – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

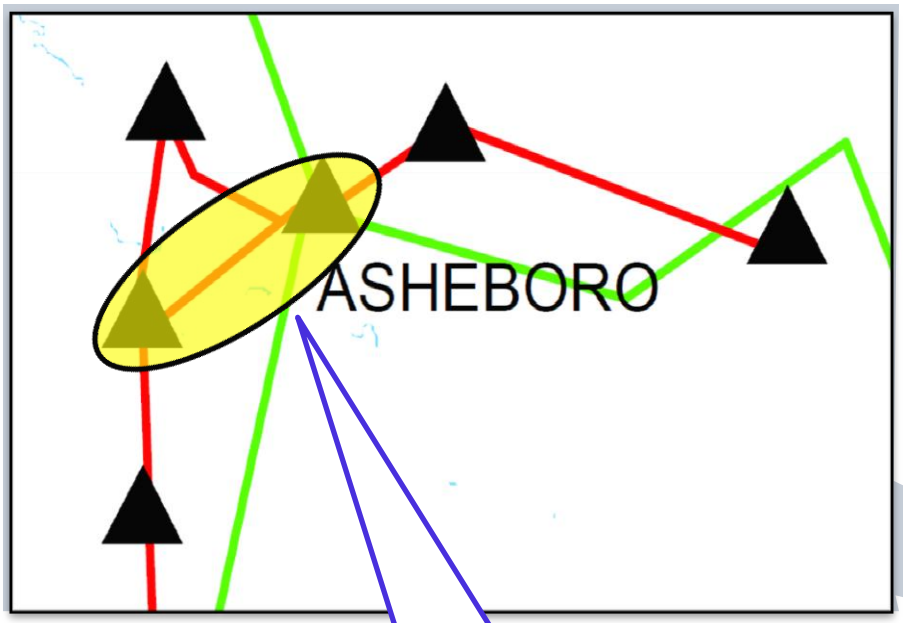
SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
HAMLET #1	55	55	55	55	55	55	55	55	55	55
HAMLET #2	55	55	55	55	55	55	55	55	55	55
HAMLET #3	55	55	55	55	55	55	55	55	55	55
HAMLET #4	0	--	--	--	--	--	--	--	--	--

DUKE PROGRESS EAST Balancing Authority

Preliminary Transmission Expansion Plan

DUKE PROGRESS EAST – 1 2016

ASHEBORO – ASHEBORO EAST (SOUTH) 115 KV T.L.

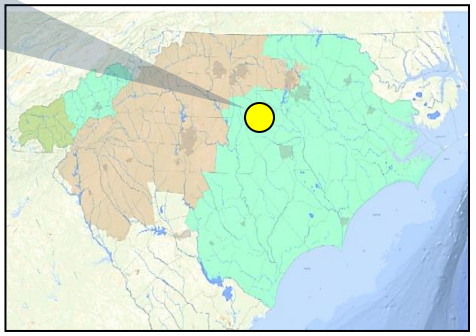


DESCRIPTION:

Reconductor approximately 3 miles of the Asheboro – Asheboro East (South) 115 kV transmission line using 3-1590 ACSR. Replace disconnect switches at Asheboro 230 kV and both the breaker and the disconnect switches at Asheboro East 115 kV with equipment of at least 2000 A capability.

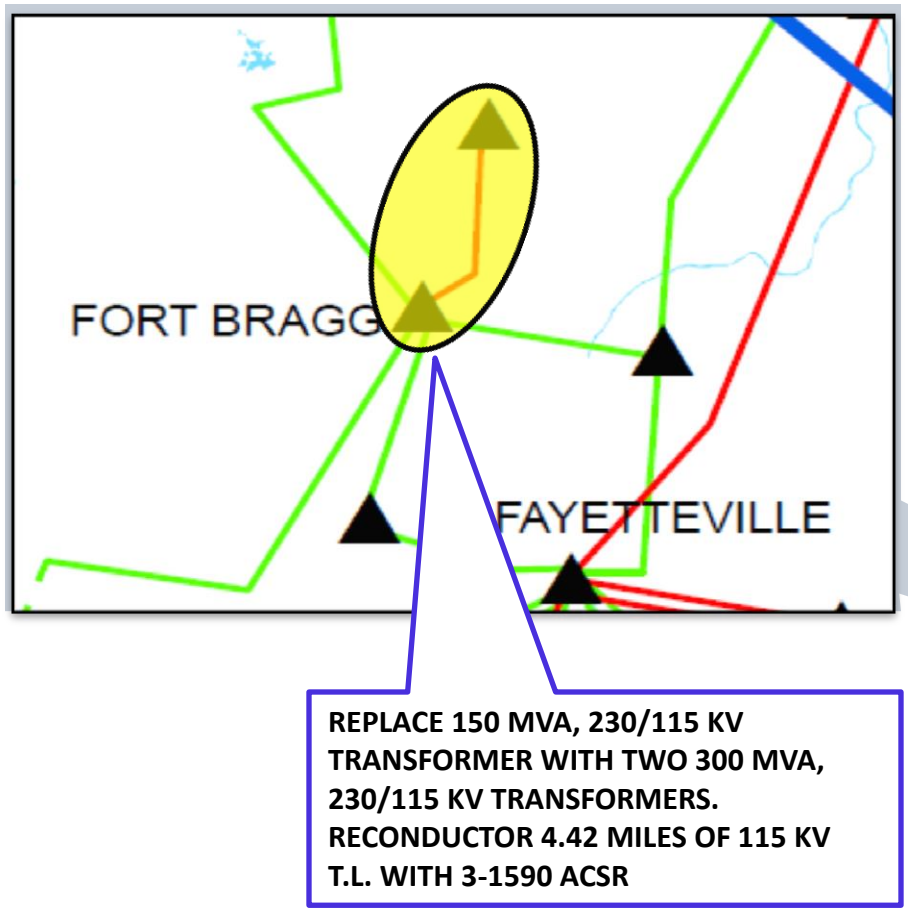
SUPPORTING STATEMENT:

The Asheboro – Asheboro East (South) 115 kV transmission line overloads under contingency.



DUKE PROGRESS EAST – 2 2016

FT. BRAGG WOODRUFF STREET 230 KV SUBSTATION

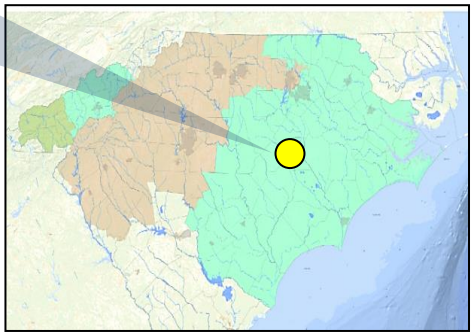


DESCRIPTION:

Replace the existing 150 MVA, 230/115 kV transformer at the Ft. Bragg Woodruff Street 230 kV substation with two 300 MVA, 230/115 kV transformers. Reconductor approximately 4.42 miles along the Ft. Bragg Woodruff Street – Manchester 115 kV transmission line with 3-1590 ACSR.

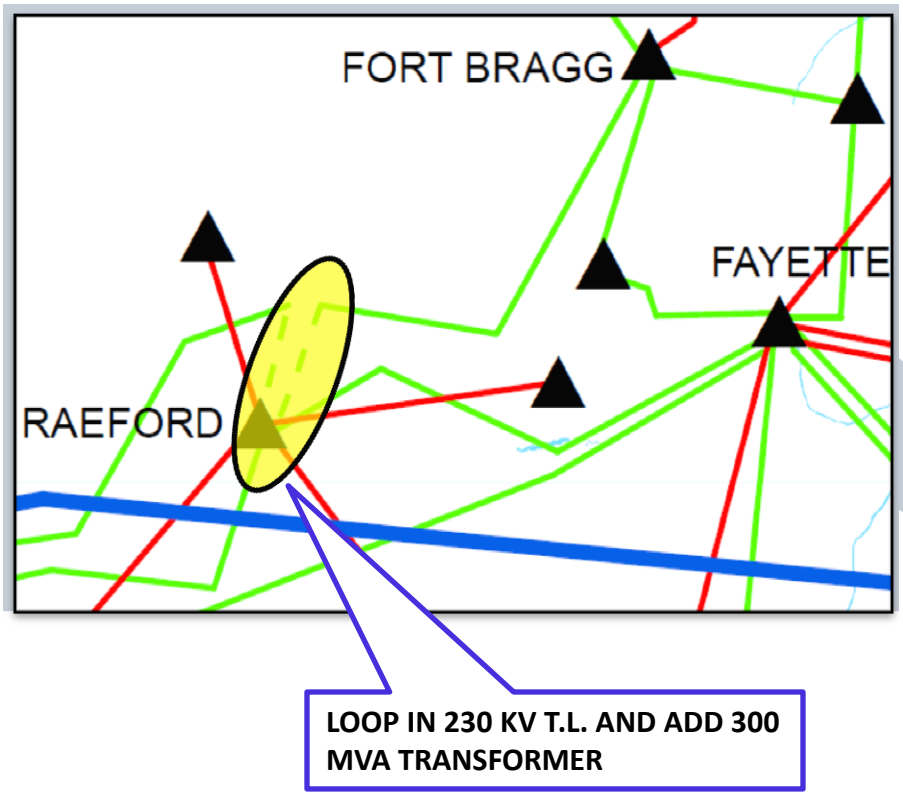
SUPPORTING STATEMENT:

The Manchester 115 kV transmission line and Ft. Bragg Woodruff Street 230/115 kV transformer overloads under contingency.



DUKE PROGRESS EAST – 3 2018

RAEFORD 230 KV SUBSTATION

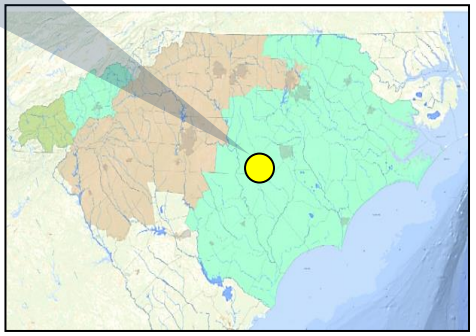


DESCRIPTION:

Loop in the Richmond – Ft. Bragg Woodruff St. 230 kV transmission line at Raeford 230/115 kV substation and add a 300 MVA transformer.

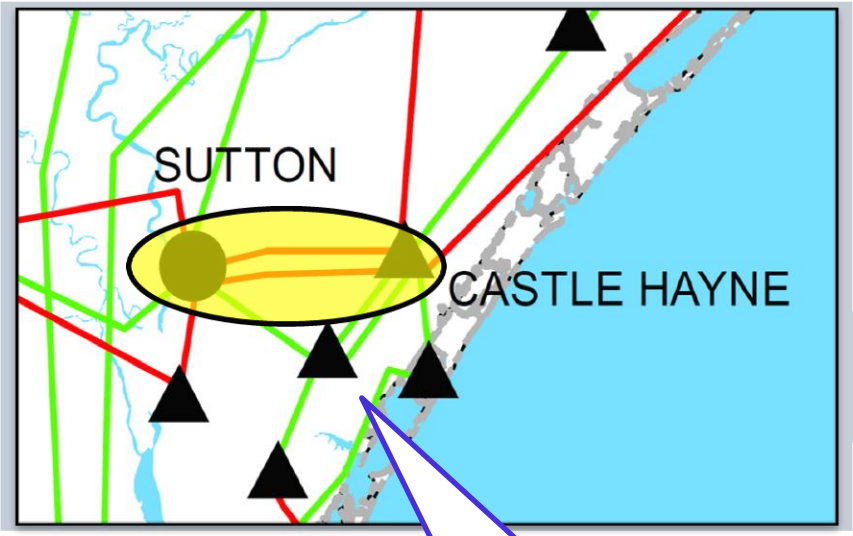
SUPPORTING STATEMENT:

The Raeford 230/115 kV transformers and Weatherspoon – Raeford 115 kV transmission line overload under contingency.



DUKE PROGRESS EAST – 4 2018

SUTTON PLANT – CASTLE HAYNE 115 KV NORTH T.L.

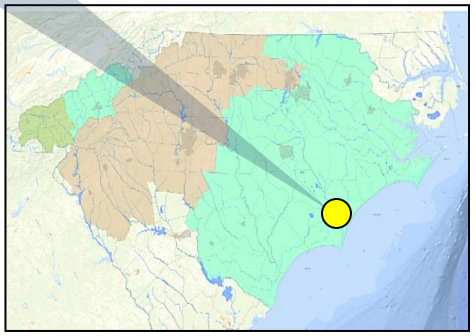


DESCRIPTION:

Rebuild approximately 8 miles of the Sutton Plant – Castle Hayne 115 kV North transmission line using 1272 ACSR rated for 239 MVA.

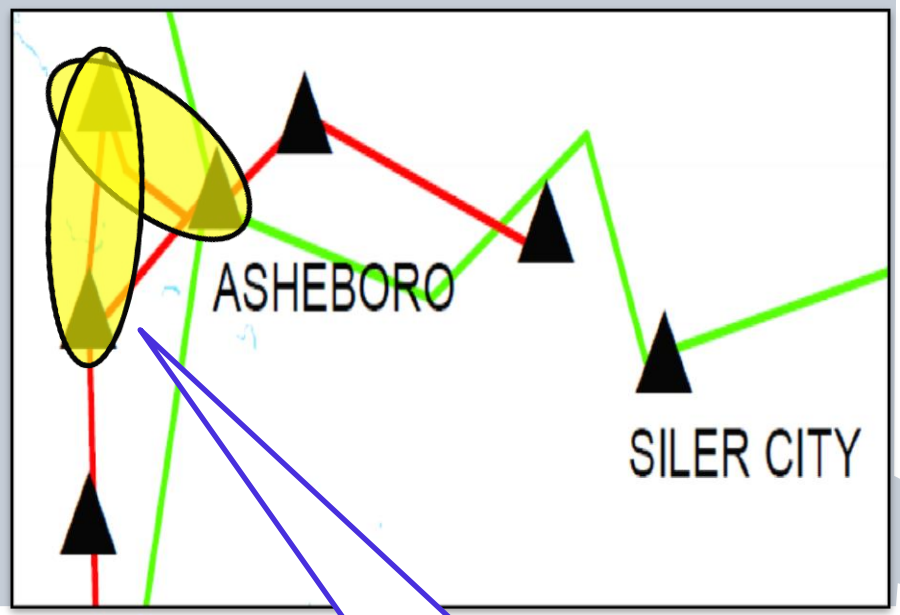
SUPPORTING STATEMENT:

The Sutton Plant – Castle Hayne 115 kV North transmission line overloads under contingency.



DUKE PROGRESS EAST – 5 2019

ASHEBORO – ASHEBORO EAST (NORTH) 115 KV T.L.

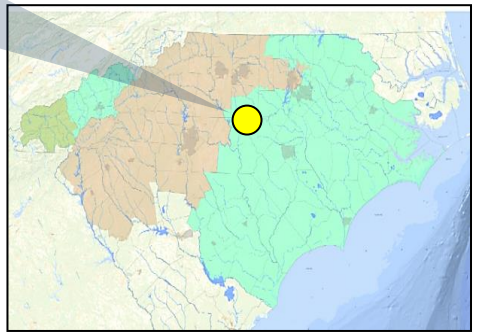


DESCRIPTION:

Rebuild approximately 6.45 miles of the Asheboro – Asheboro East (North) 115 kV transmission line using 3-1590 ACSR rated for 307 MVA. Replace disconnect switches at Asheboro 230 kV and both the breaker and the disconnect switches at Asheboro East 115 kV with equipment of at least 2000 A capability.

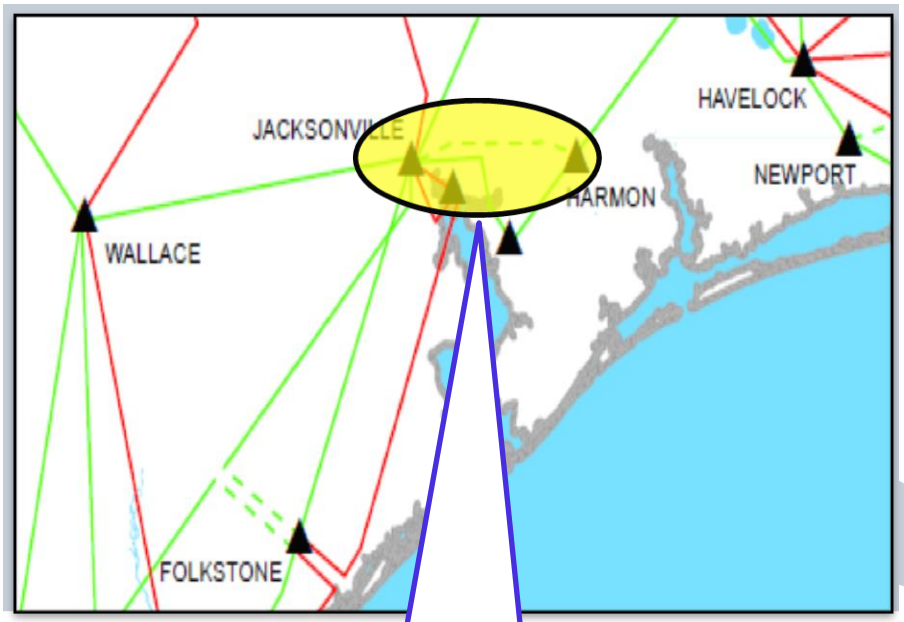
SUPPORTING STATEMENT:

The Asheboro – Asheboro East (North) 115 kV transmission line overloads under contingency.



DUKE PROGRESS EAST – 6 2020

GRANT'S CREEK - JACKSONVILLE 230 KV T.L.



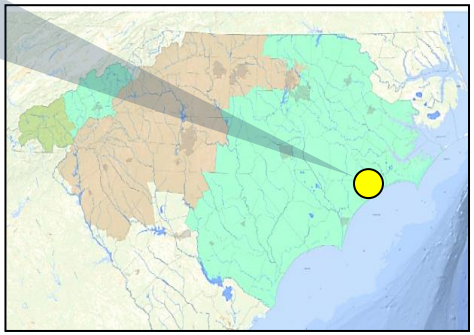
NEW 230 KV TL WITH 6-1590 ACSR OR EQUIVALENT CONDUCTOR. NEW 230 KV SUBSTATION WITH A 200 MVA OR 300 MVA 230/115 KV TRANSFORMER

DESCRIPTION:

Construct approximately 12 miles of new 230 kV transmission line from Jacksonville 230 kV substation to a new 230 kV substation at Grant's Creek with bundled 6-1590 ACSR rated for 1195 MVA. Build the new 230 kV Grant's Creek substation with four 230 kV breakers and a new 300 MVA 230/115 kV transformer.

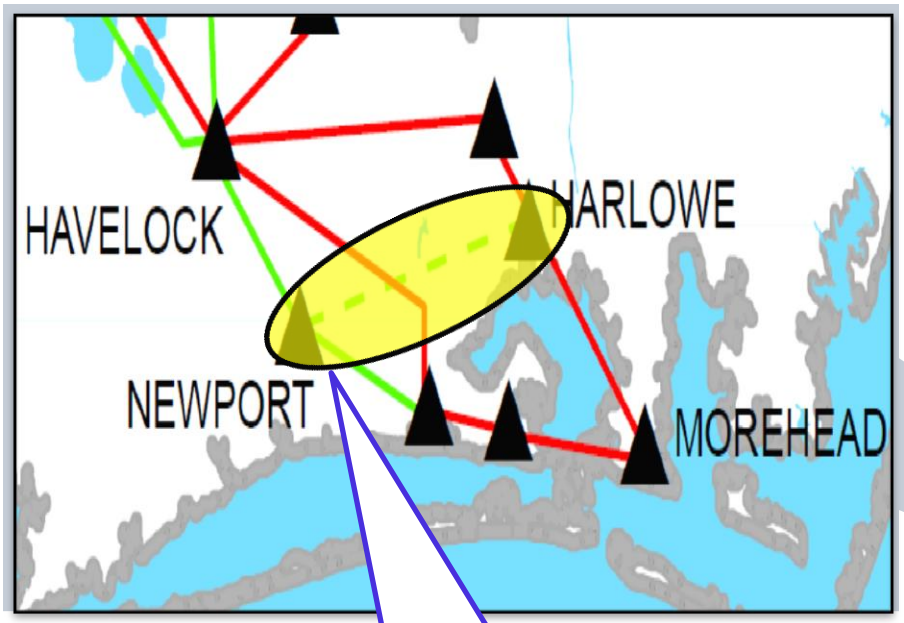
SUPPORTING STATEMENT:

The Havelock – Jacksonville 230 kV transmission line overloads under contingency and voltage support is needed in the Jacksonville area.



DUKE PROGRESS EAST – 7 2020

HARLOWE – NEWPORT 230 KV T.L.

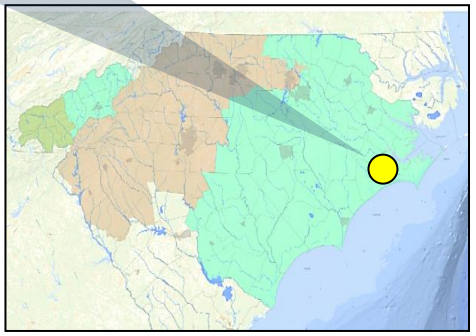


DESCRIPTION:

Construct a new 230 kV switching station at Newport, construct a new 230 kV substation in the Harlowe Area, and construct approximately 10 miles of new 230 kV transmission line from the Harlowe Area – Newport Area with 3-1590 ACSR rated for 680 MVA.

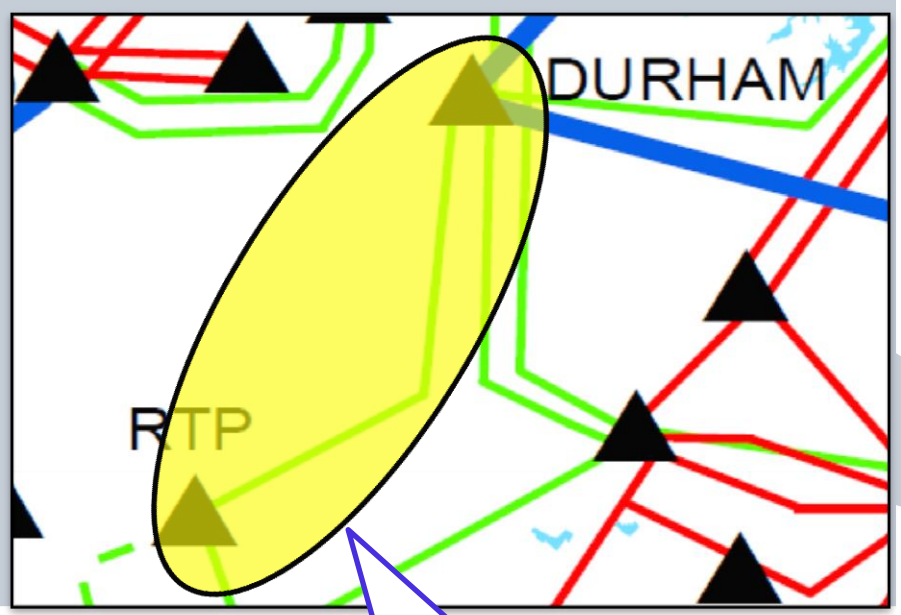
SUPPORTING STATEMENT:

Voltage support is needed in Havelock – Morehead area.



DUKE PROGRESS EAST – 8 2023

DURHAM – RTP 230 KV T.L.

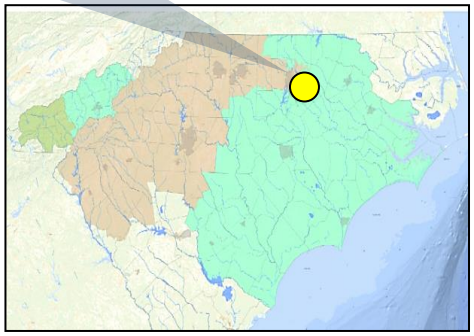


DESCRIPTION:

Reconductor approximately 10 miles of the Durham – RTP 230 kV transmission line with bundled 6-1590 ACSR rated for 1195 MVA.

SUPPORTING STATEMENT:

The Durham – RTP 230 kV transmission line overloads under contingency.

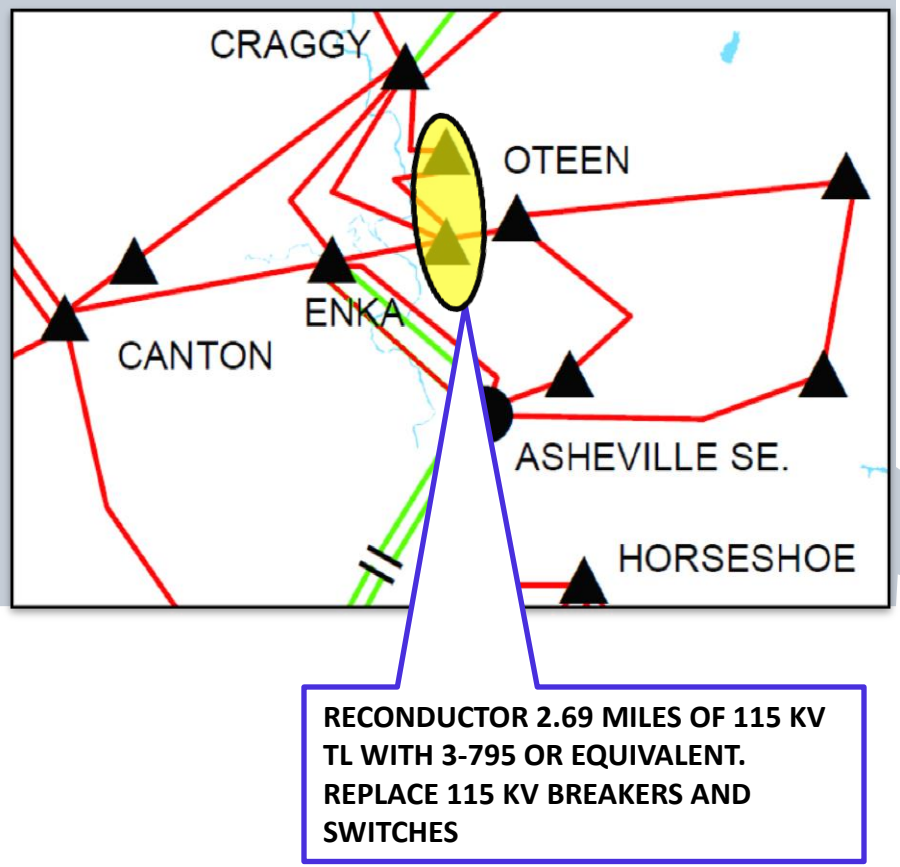


DUKE PROGRESS WEST Balancing Authority

Preliminary Transmission Expansion Plan

DUKE PROGRESS WEST – 1 2018

VANDERBILT – WEST ASHEVILLE 115 KV T.L.

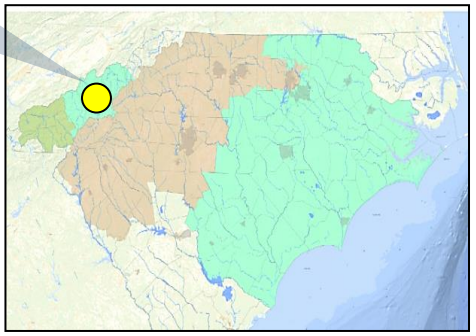


DESCRIPTION:

Reconductor approximately 2.69 miles of the Vanderbilt – West Asheville 115 kV transmission line with 3-795 ACSR rated for 300 MVA. Replace one 115 kV breaker, two 115 kV disconnect switches, and one 115 kV switch at Vanderbilt.

SUPPORTING STATEMENT:

The Vanderbilt – West Asheville 115 kV transmission line overloads under contingency.



LG&E/KU Balancing Authority

Generation Assumptions

LG&E/KU – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

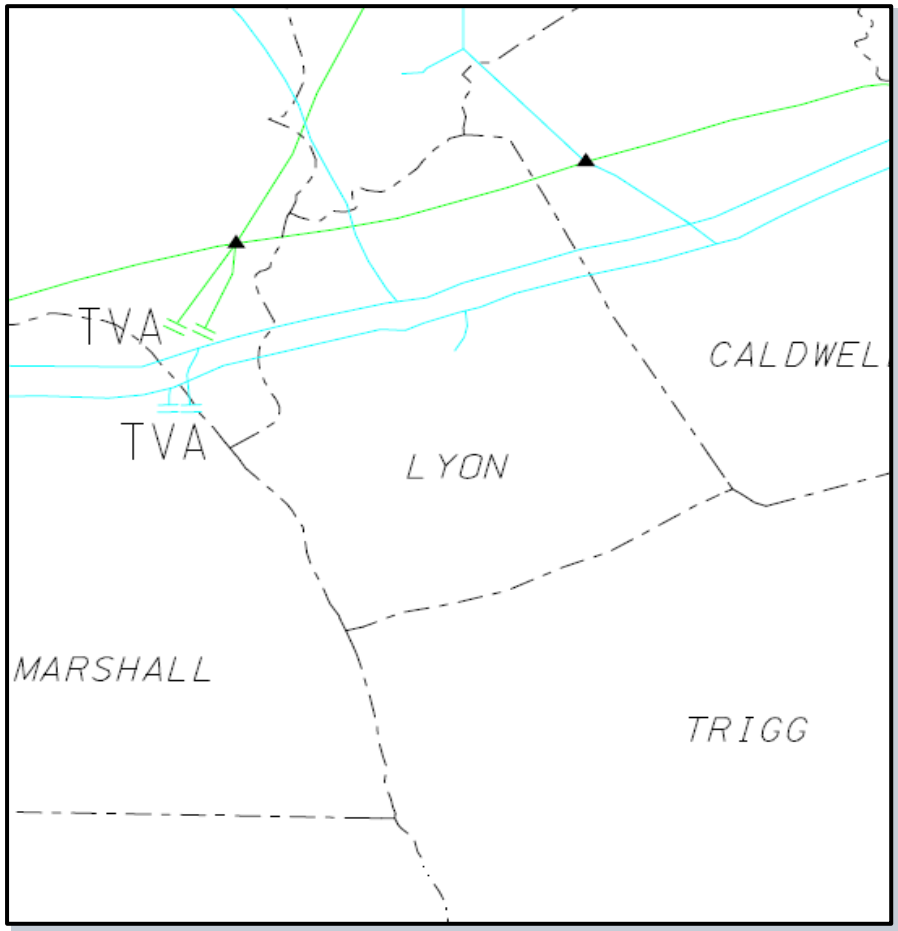
SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

LG&E/KU Balancing Authority

Preliminary Transmission Expansion Plan

LG&E/KU – 1 2016

LIVINGSTON – NORTH PRINCETON 161 KV T.L.

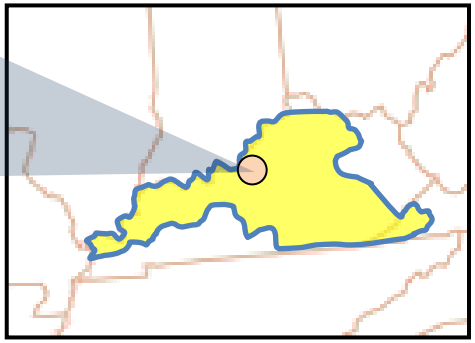


DESCRIPTION:

Install a 2.5% reactor at Livingston on the Livingston County – North Princeton 161 kV transmission line.

SUPPORTING STATEMENT:

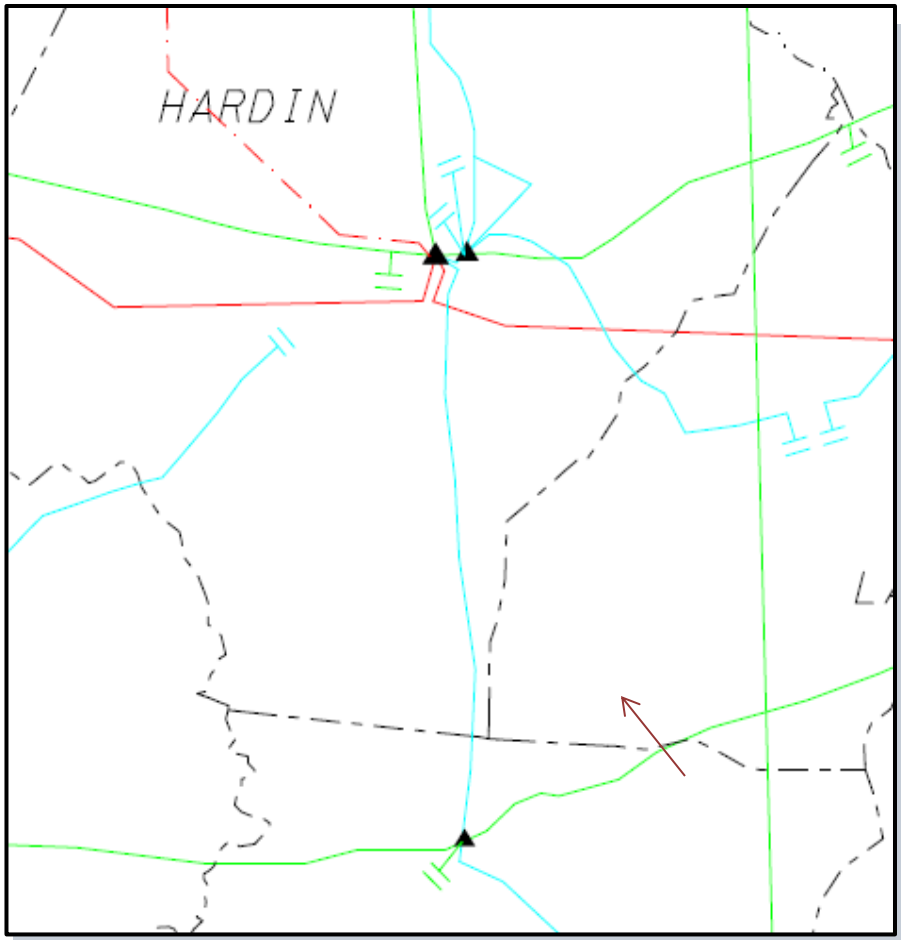
The Livingston – North Princeton 161 kV transmission line overloads under contingency.



LG&E/KU – 2

2017

ELIZABETHTOWN – HARDIN COUNTY 138 KV T.L.

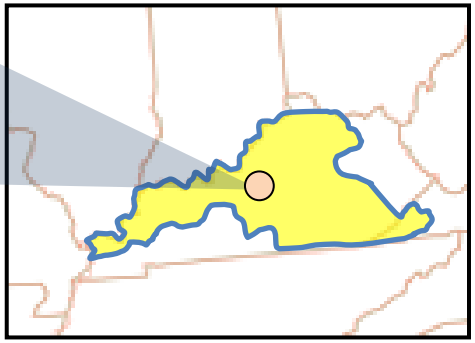


DESCRIPTION:

Construct a second Elizabethtown – Hardin Co 138 kV transmission line by overbuilding the existing Elizabethtown – Hardin Co 69 kV transmission line and install a 138 kV breaker on the Elizabethtown 138/69 kV transformer.

SUPPORTING STATEMENT:

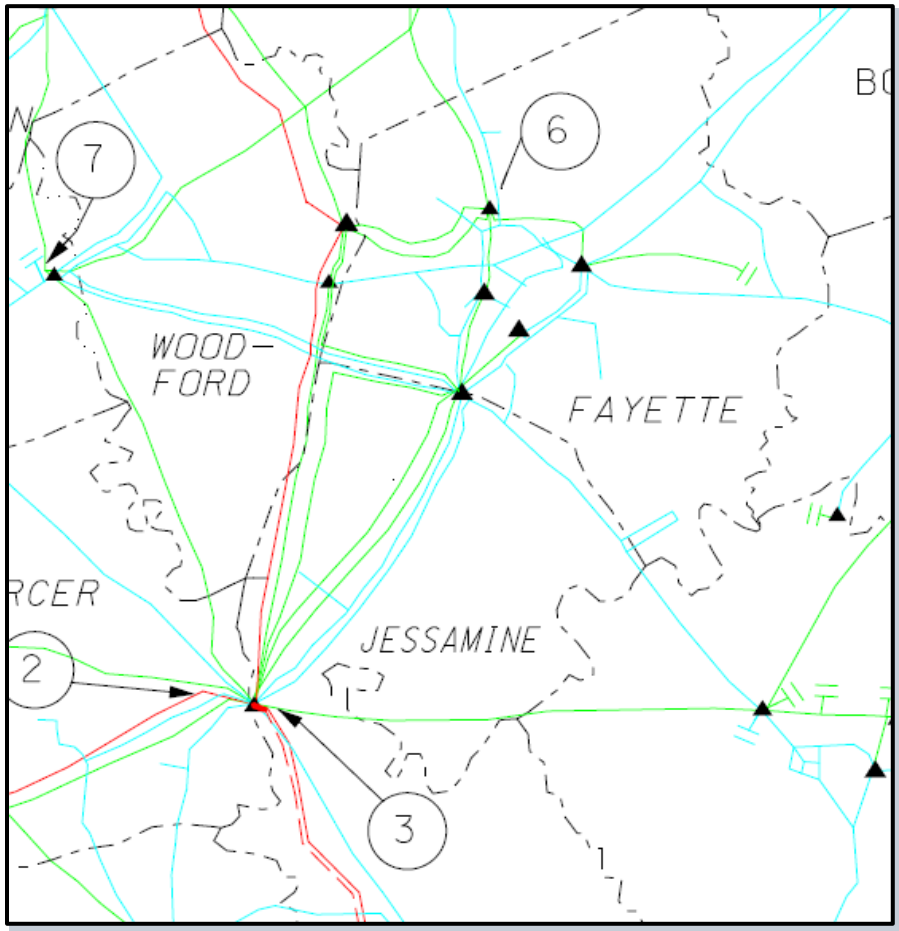
The Hardin County 138/69 kV transformer overloads under contingency.



LG&E/KU – 3

2017

WEST LEXINGTON – VILEY ROAD 138 KV T.L.

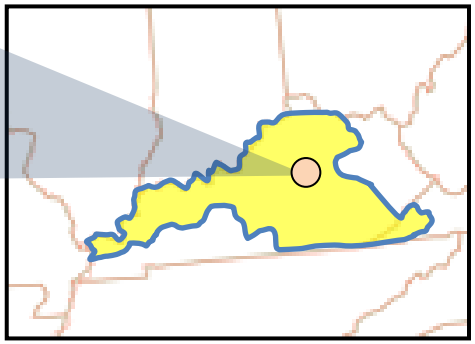


DESCRIPTION:

Reconductor approximately 5.19 miles of 795 ACSR conductor in the West Lexington – Viley Road section of the West Lexington – Viley Road – Haefling 138 kV transmission line, using high temperature conductor capable of at least 358 MVA.

SUPPORTING STATEMENT:

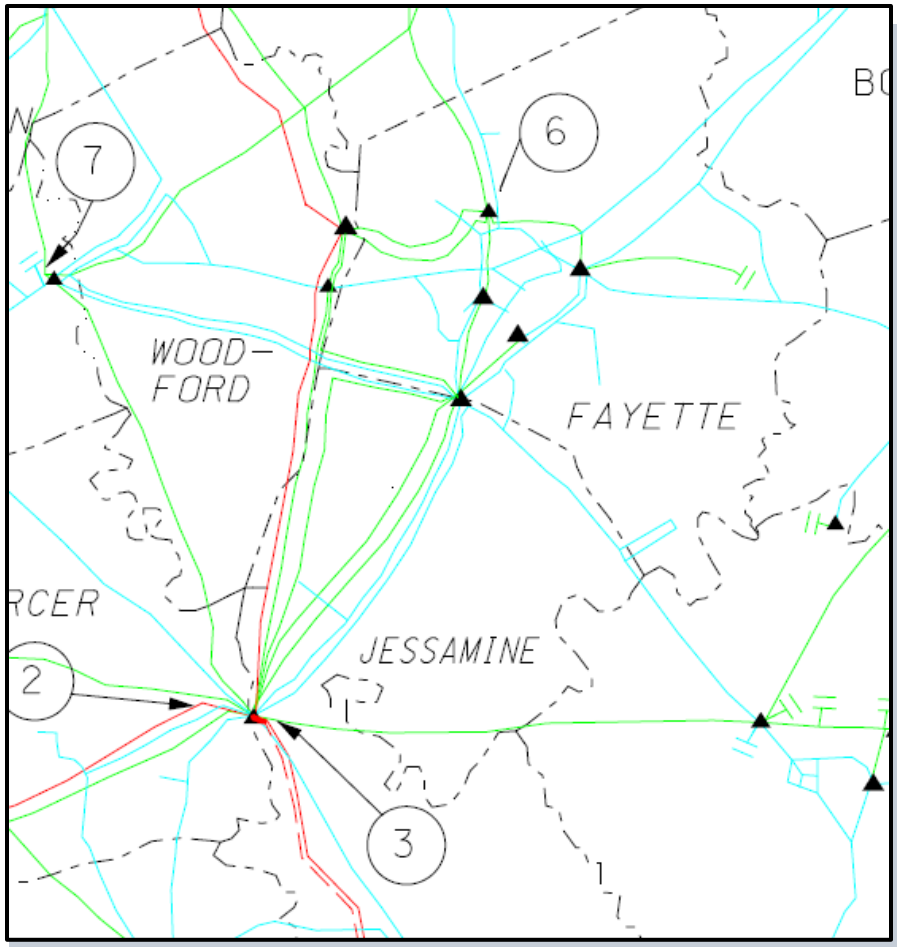
The West Lexington – Viley Road 138 kV transmission line overloads under contingency.



LG&E/KU – 4

2019

WEST LEXINGTON – HAEFLING 138 KV T.L.

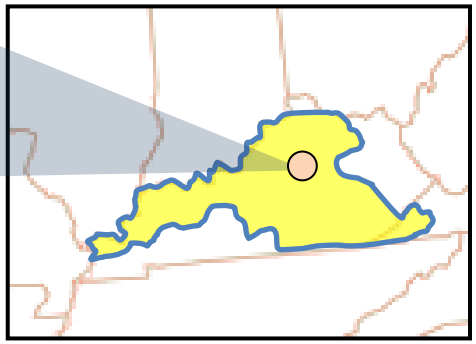


DESCRIPTION:

Reconductor 7.34 miles of 795 ACSR conductor on the West Lexington – Haefling 138 kV line, using high temperature conductor capable of at least 358 MVA.

SUPPORTING STATEMENT:

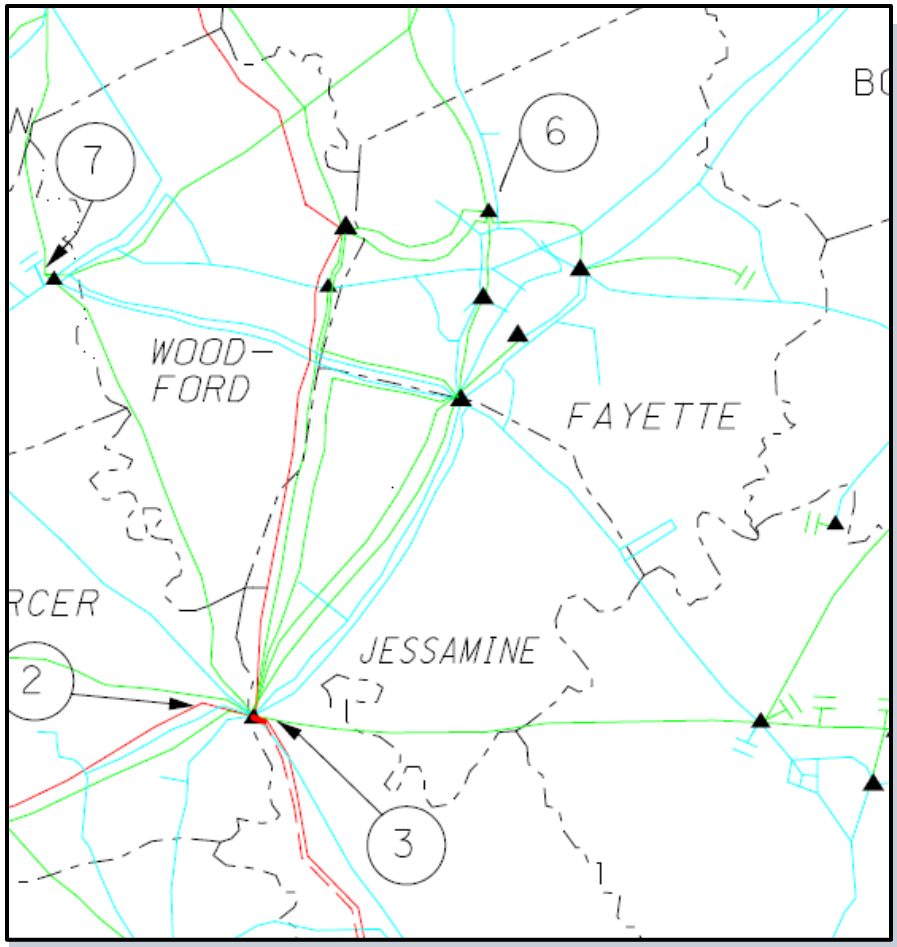
The West Lexington – Haefling 138 kV transmission line overloads under contingency.



LG&E/KU – 5

2021

HIGBY MILL – REYNOLDS 138 KV T.L.

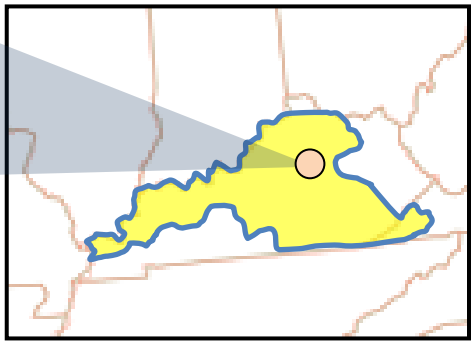


DESCRIPTION:

Upgrade approximately 1.67 miles of 795 ACSR conductor on the Higby Mill – Reynolds 138 kV transmission line to 100°C operation.

SUPPORTING STATEMENT:

The Higby Mill – Reynolds 138 kV transmission line overloads under contingency.



OVEC Balancing Authority

Preliminary Transmission Expansion Plan & Generation Assumptions

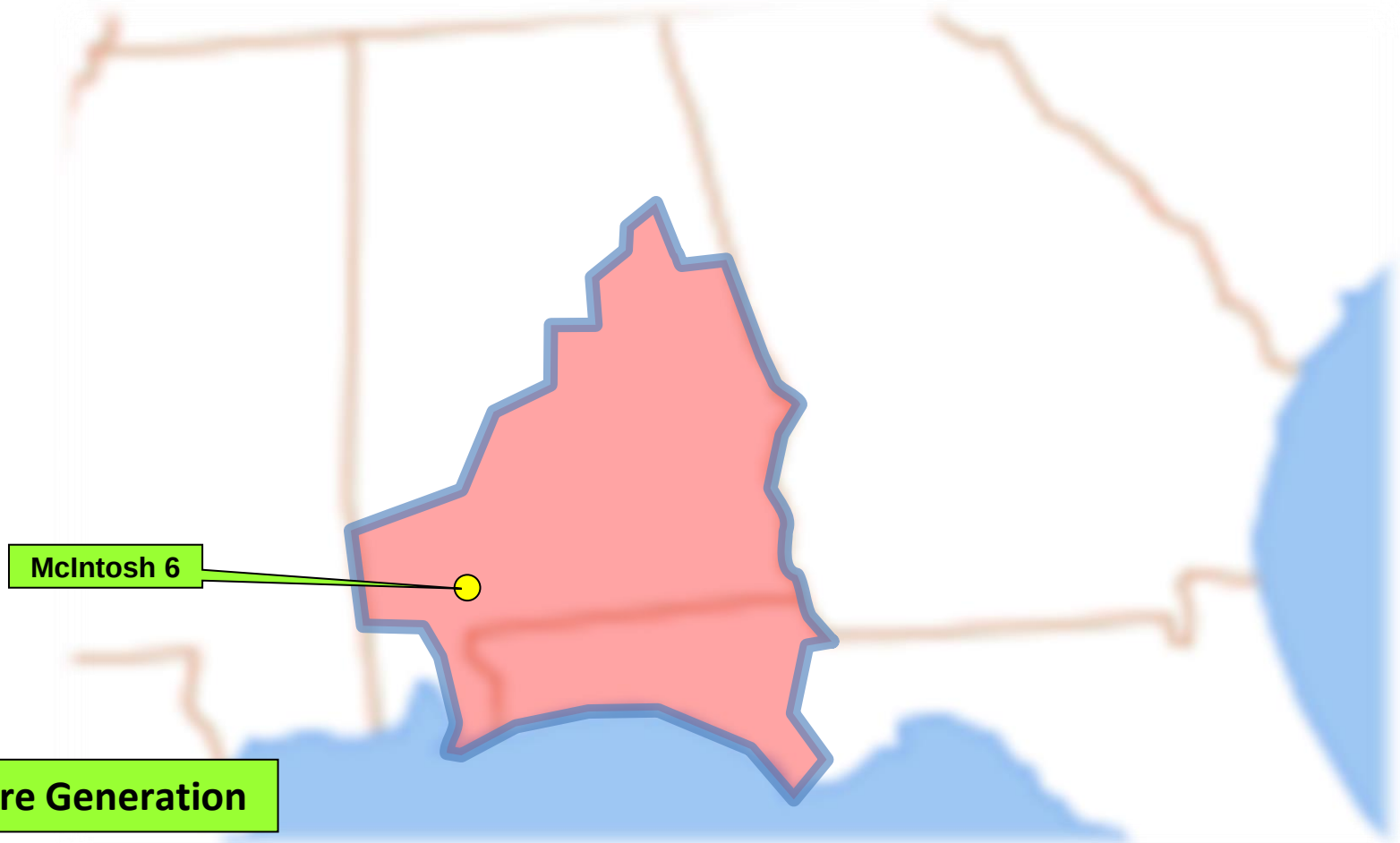
* **OVEC has no transmission projects included in the 2015 Preliminary Transmission Expansion Plan. In addition, OVEC has no generation assumptions expected to change throughout the ten year planning horizon for the 2015 SERTP Process.**

POWERSOUTH Balancing Authority

Generation Assumptions

POWERSOUTH – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process.



POWERSOUTH – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process. The years shown represent Summer Peak conditions.

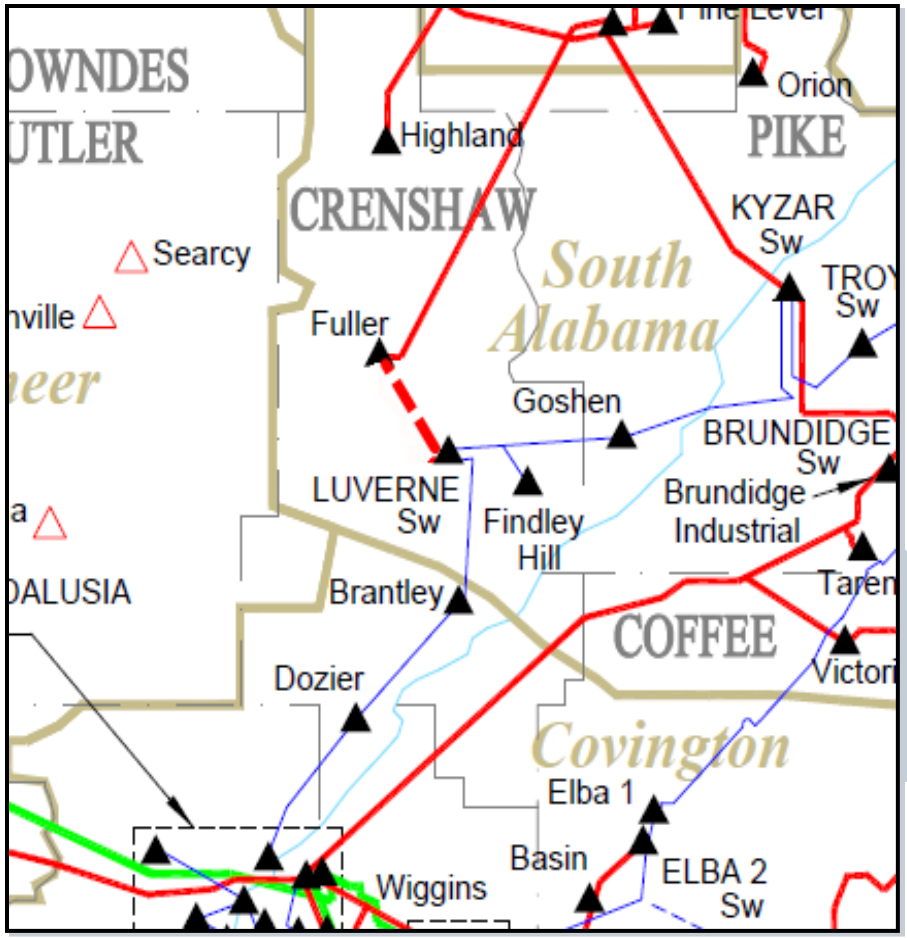
SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MCINTOSH	688	688	688	688	688	688	882	882	882	882

POWERSOUTH Balancing Authority

Preliminary Transmission Expansion Plan

POWERSOUTH – 1 2016

LUVERNE – FULLER 115 KV T.L.

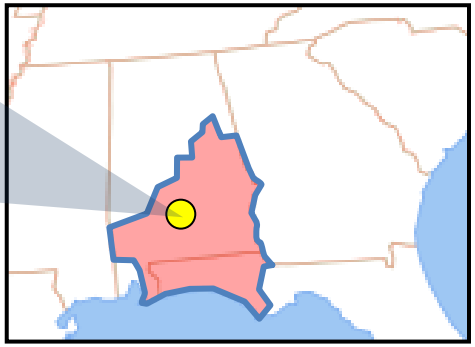


DESCRIPTION:

Reconductor 8.5 miles of transmission line from Luverne to Fullers substation with 795 ACSR at 100°C.

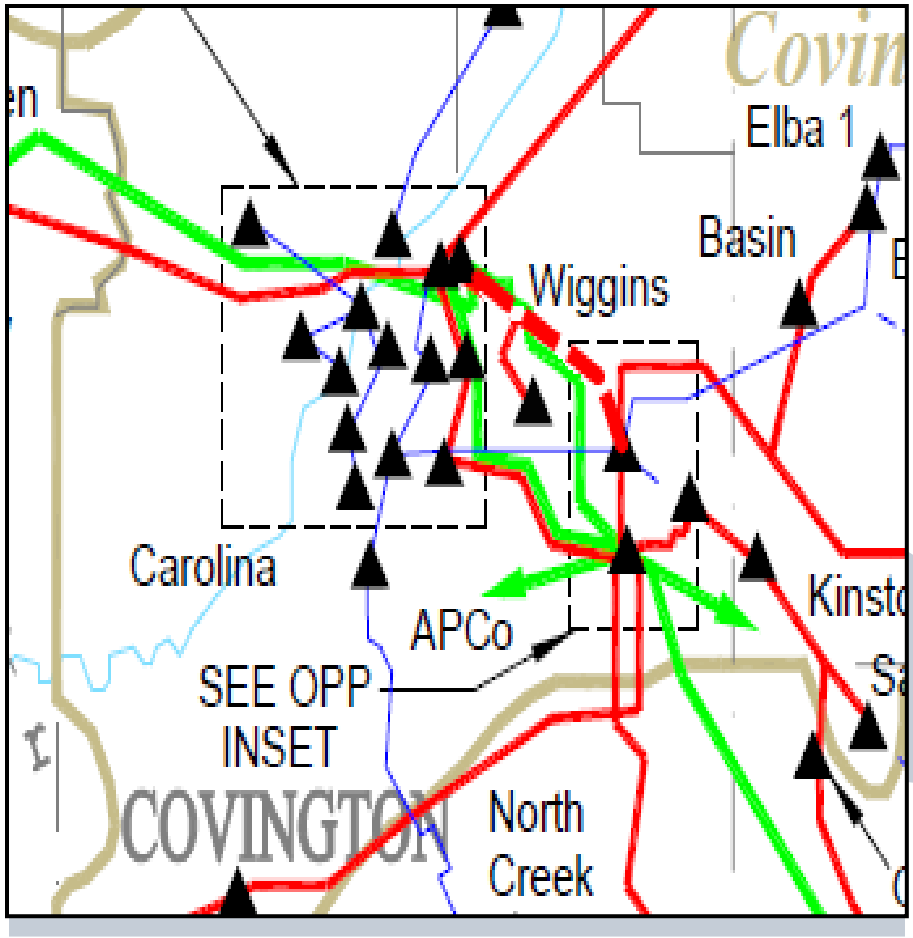
SUPPORTING STATEMENT:

Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 2 2016

MCWILLIAMS – OPP 115 KV T.L.

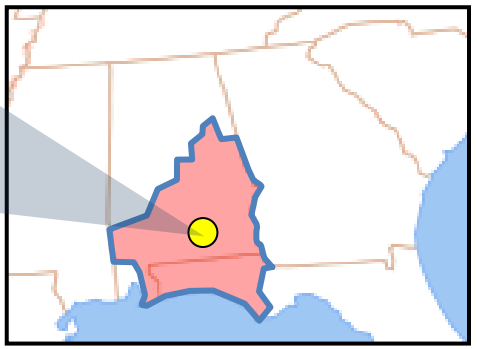


DESCRIPTION:

Reconductor 15 miles of the McWilliams – Opp Switching 115 kV transmission line with 795 ACSR at 110°C.

SUPPORTING STATEMENT:

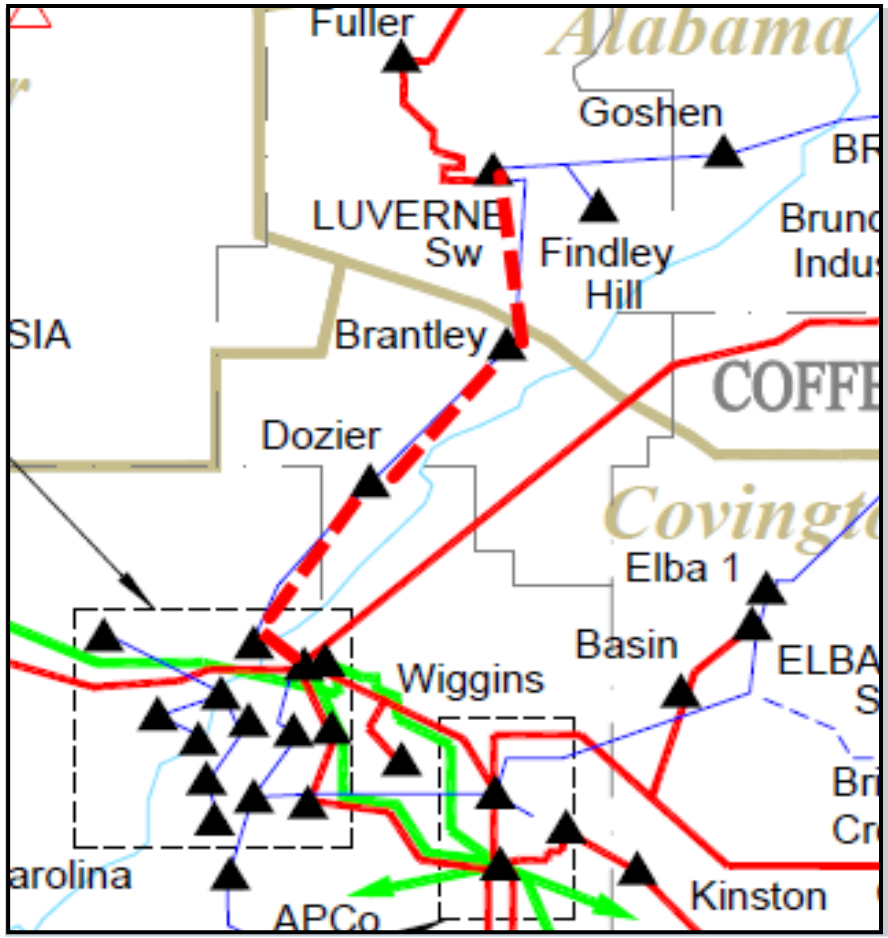
The McWilliams – Opp Switching 115 kV transmission line overloads under contingency.



POWERSOUTH – 3

2017

MCWILLIAMS – LUVERNE 115 KV T.L.

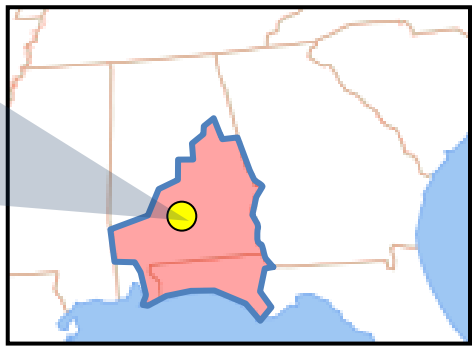


DESCRIPTION:

Upgrade 28 miles of the existing McWilliams – Luverne 46 kV transmission line to 115 kV with 795 ACSR at 100°C.

SUPPORTING STATEMENT:

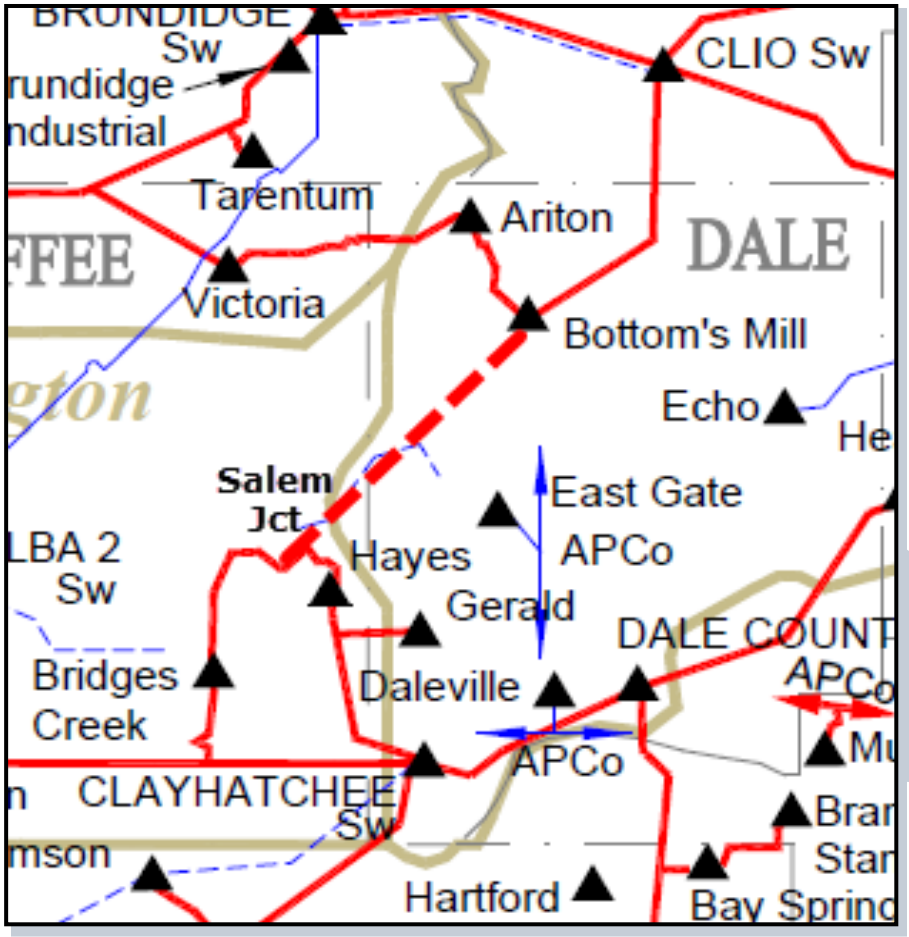
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 4

2018

SALEM JUNCTION – BOTTOMS MILL 115 KV T.L.

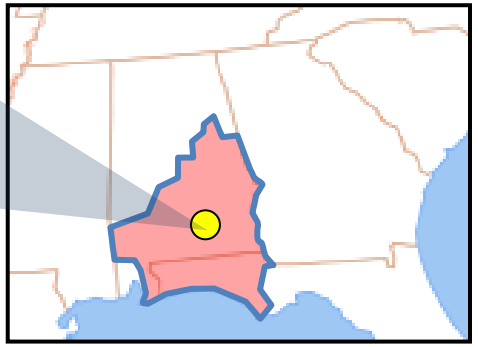


DESCRIPTION:

Construct 16 miles of new 115 kV transmission line from Bottom's Mill to Salem Junction with 795 ACSR at 100°C.

SUPPORTING STATEMENT:

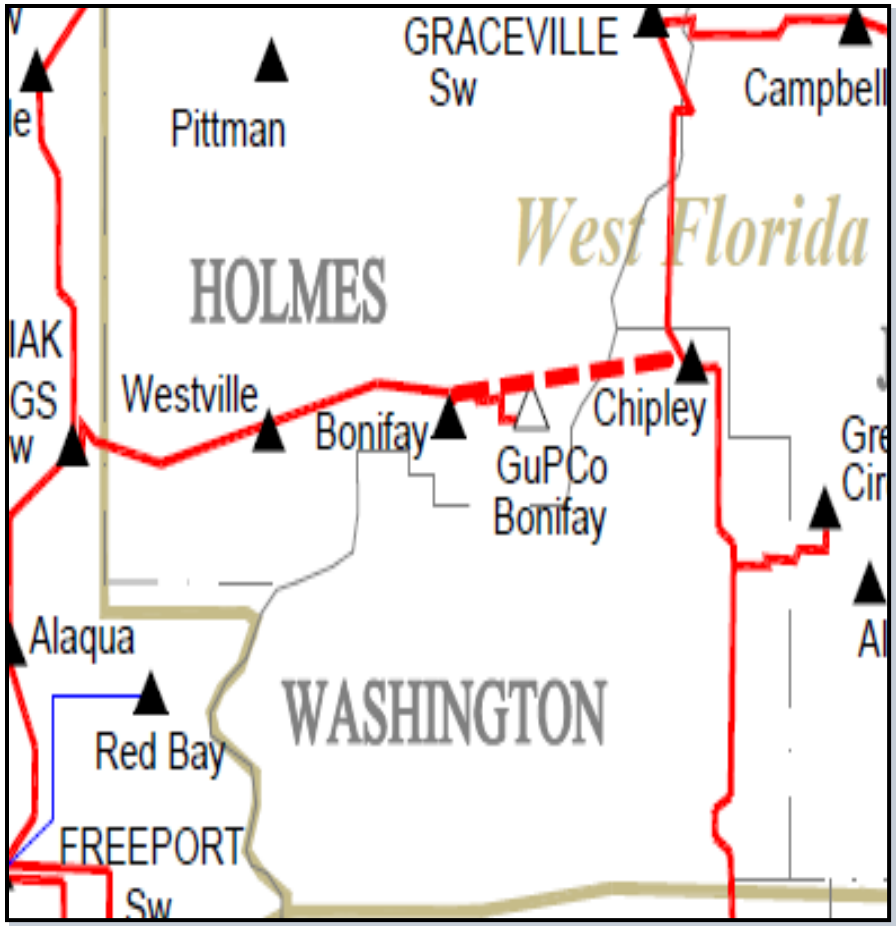
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 5

2018

BONIFAY – CHIPLEY 115 KV T.L.

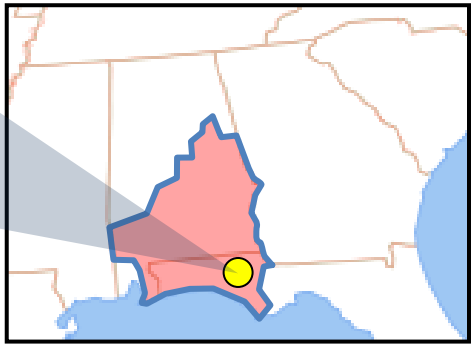


DESCRIPTION:

Construct 14 miles of new 115 kV transmission line from Bonifay substation to a new Chipley switching station with 795 ACSR at 100°C.

SUPPORTING STATEMENT:

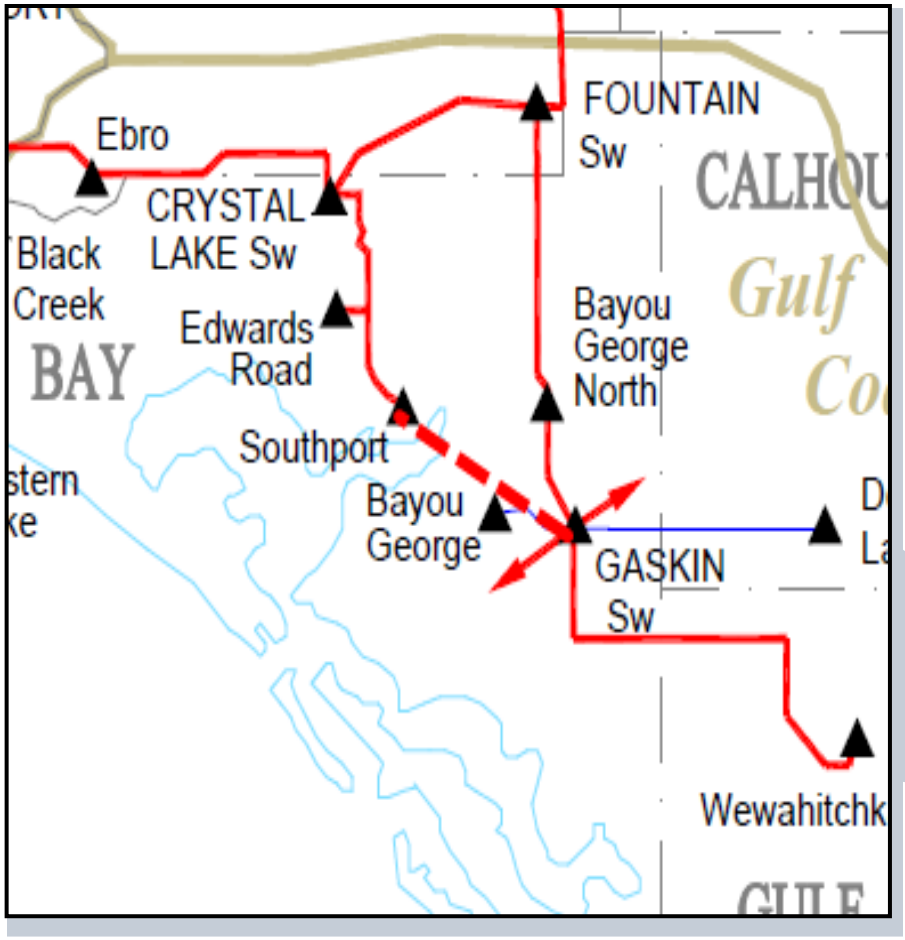
Additional voltage support is needed at Graceville and Fountain under contingency.



POWERSOUTH – 6

2018

GASKIN – SOUTHPORT 115 KV T.L.

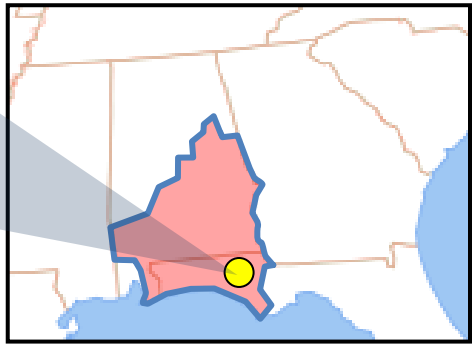


DESCRIPTION:

Construct 9 miles of new 115 kV transmission line from Gaskin Switching Station – Southport substation with 795 ACSR at 100°C.

SUPPORTING STATEMENT:

Improve the reliability of Gulf Coast Electric's substations by providing a looped service feed.



SOUTHERN Balancing Authority

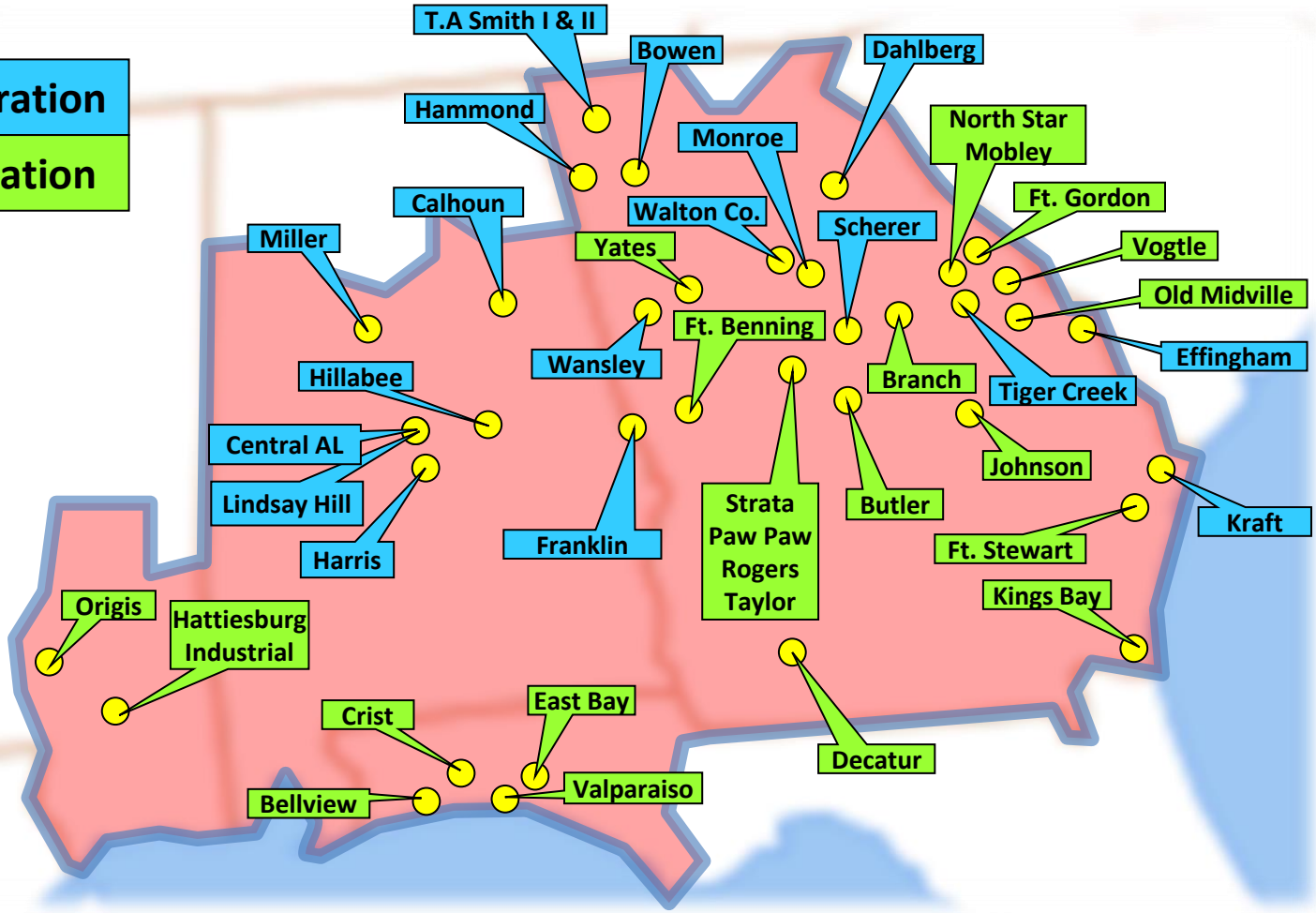
Generation Assumptions

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2015 SERTP Process.

Existing Generation

Future Generation



Southern Company – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
FRANKLIN 2	0	--	--	--	--	--	--	--	--	--
KRAFT	0	--	--	--	--	--	--	--	--	--
HARRIS 1	625	625	625	625	625	625	625	625	625	625
OLD MIDVILLE SOLAR	20	20	20	20	20	20	20	20	20	20
STRATA SOLAR	20	20	20	20	20	20	20	20	20	20
NORTH STAR BIOMASS	21	21	21	21	21	21	21	21	21	21
FORT BENNING	30	30	30	30	30	30	30	30	30	30
FORT GORDON	30	30	30	30	30	30	30	30	30	30
FORT STEWART	30	30	30	30	30	30	30	30	30	30
PAWPAW SOLAR	30	30	30	30	30	30	30	30	30	30

Southern Company – Generation Assumptions

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
DECATUR SOLAR	82	82	82	82	82	82	82	82	82	82
BUTLER SOLAR	100	100	100	100	100	100	100	100	100	100
TIGER CREEK	310	310	310	310	310	310	310	310	0	--
WALTON COUNTY	447	447	447	465	465	465	465	465	0	--
VALPARAISO SOLAR	--	30	30	30	30	30	30	30	30	30
KINGS BAY SOLAR	--	30	30	30	30	30	30	30	30	30
EAST BAY SOLAR	--	40	40	40	40	40	40	40	40	40
BELLVIEW SOLAR	--	50	50	50	50	50	50	50	50	50
JOHNSON SOLAR	--	51	51	51	51	51	51	51	51	51

Southern Company – Generation Assumptions

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
MOBLEY SOLAR	--	77	77	77	77	77	77	77	77	77
ROGERS SOLAR	--	102	102	102	102	102	102	102	102	102
HATTIESBURG INDUSTRIAL SOLAR	--	50	50	50	50	50	50	50	50	50
ORIGIS SOLAR	--	52	52	52	52	52	52	52	52	52
WANSLEY 6	561	0	--	--	--	--	--	--	--	--
HARRIS 2	628	628	628	0	--	--	--	--	--	--
VOGTLE 3	--	--	--	504	504	504	504	504	504	504
VOGTLE 4	--	--	--	--	504	504	504	504	504	504
CALHOUN 1-4	632	632	632	632	632	632	632	0	--	--
CENTRAL ALABAMA	885	885	885	885	885	885	885	0	--	--

Southern Company – Generation Assumptions

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
YATES[1]	--	--	--	--	--	--	--	940	940	940
MONROE	310	310	310	310	310	310	310	310	0	--
BRANCH[1]	--	--	--	--	--	--	--	--	940	940
CRIST [1]	--	--	--	--	--	--	--	--	300	300

(1) This assumption may be modified as resource decisions are made by the corresponding LSEs pursuant to applicable regulatory processes.

Southern Company – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon expected long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
VOGTLE	206	206	206	206	206	206	206	206	206	206
LINDSAY HILL	365	300	300	300	300	300	300	300	300	300
HAMMOND	10	10	10	10	10	10	10	10	10	10
MILLER	100	0	--	--	--	--	--	--	--	--
HILLABEE	350	350	350	350	350	350	350	350	350	350
FRANKLIN	424	424	424	424	424	424	424	424	424	424
SCHERER	911	911	911	911	911	911	911	911	911	911
DAHLBERG	176	176	176	176	176	176	176	176	176	176
BOWEN	159	159	159	159	159	159	159	159	159	159

GTC – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2015 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
EFFINGHAM CC	0	--	--	--	--	--	--	--	--	--
FRANKLIN CC 2	625	625	625	625	625	625	625	625	625	625
HILLABEE CC	149	149	149	149	149	149	149	149	149	149
T.A. SMITH I CC	617	617	617	617	617	617	617	617	617	617
T.A. SMITH II CC	619	619	619	619	619	619	619	619	619	619
LINDSAY HILL CC	273	300	300	300	300	300	300	300	300	300
DAHLBERG CT	262	375	375	375	375	375	375	375	375	375
TAYLOR SOLAR	--	131	131	131	131	131	131	131	131	131
VOGTLE 3	--	--	--	330	330	330	330	330	330	330
VOGTLE 4	--	--	--	--	330	330	330	330	330	330

MEAG – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2015 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
VOGTLE 3	--	--	--	250	250	250	250	250	250	250
VOGTLE 4	--	--	--	--	250	250	250	250	250	250

DALTON – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process. The years shown represent Summer Peak conditions.

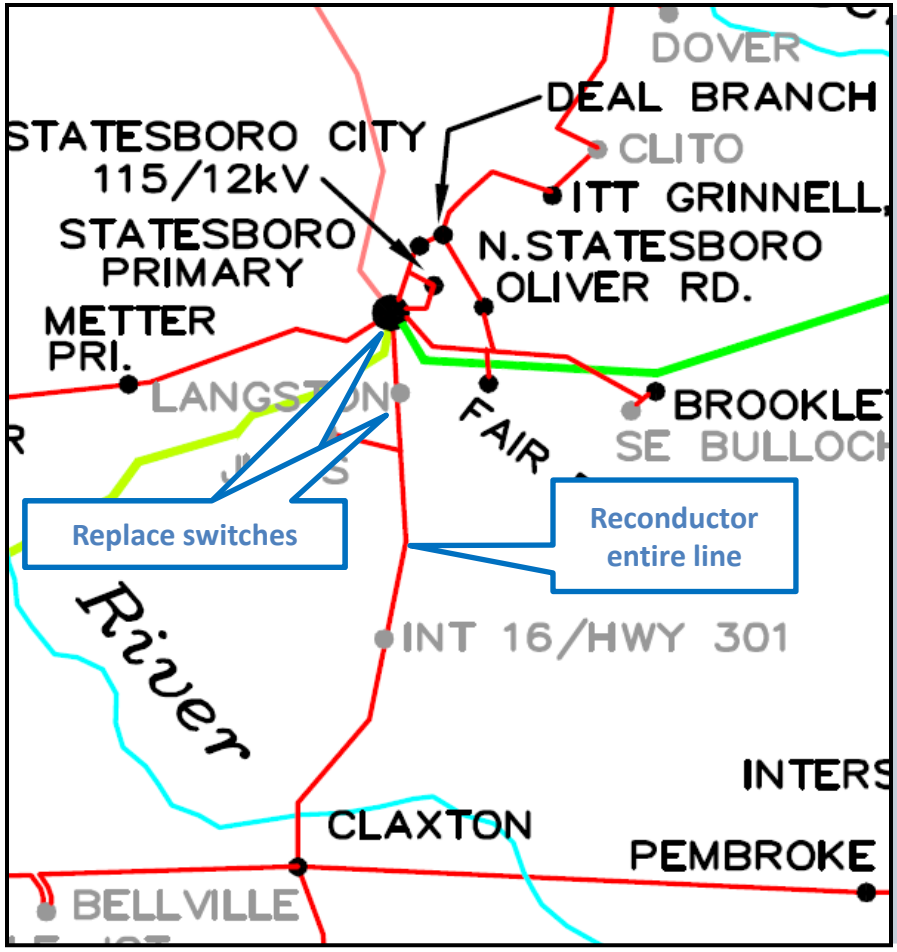
SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
VOGTLE 3	--	--	--	16	16	16	16	16	16	16
VOGTLE 4	--	--	--	--	16	16	16	16	16	16

SOUTHERN Balancing Authority

Preliminary Transmission Expansion Plan

SOUTHERN – 1E 2017

CLAXTON – STATESBORO PRIMARY 115 KV T.L.

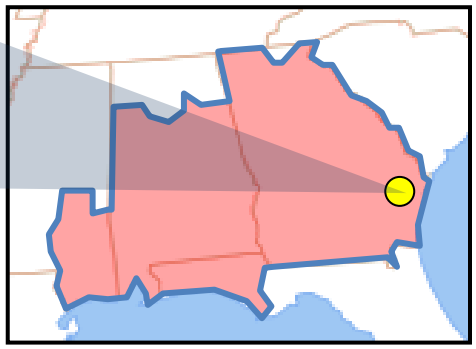


DESCRIPTION:

Reconductor approximately 17.8 miles along the Claxton – Statesboro Primary 115 kV transmission line with 795 ACSR at 100°C. Replace 600 A switches at Langston and Statesboro with 2000 A switches.

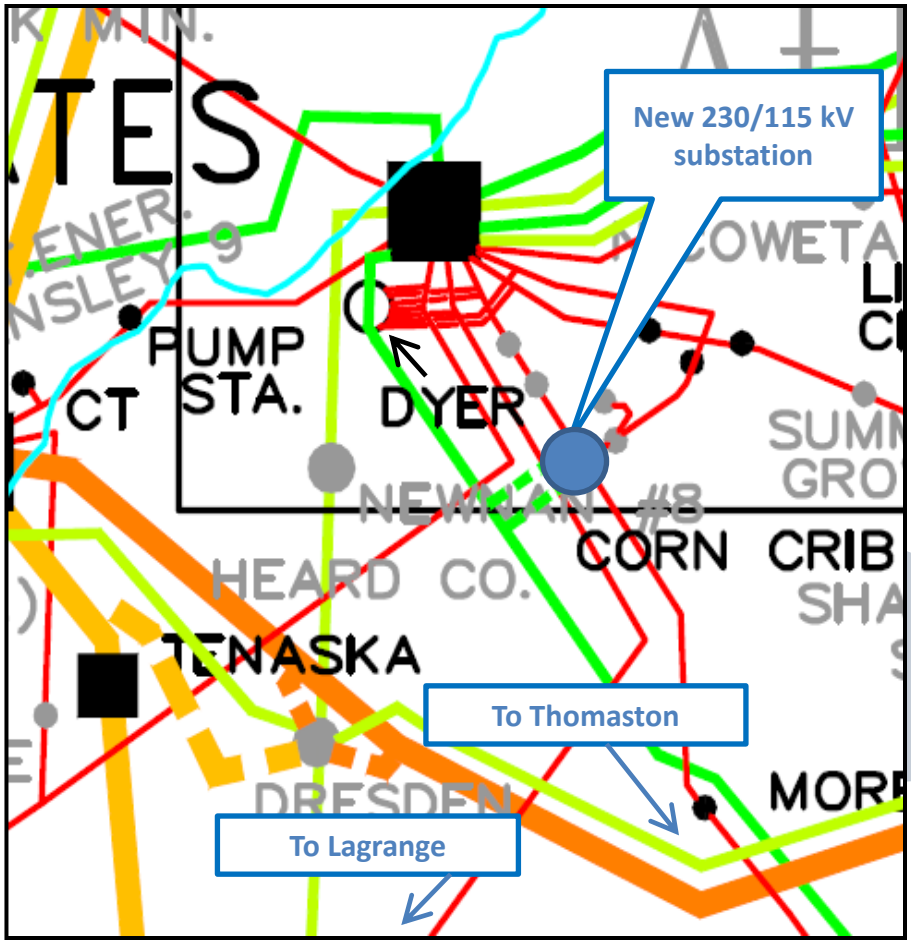
SUPPORTING STATEMENT:

The Claxton – Statesboro 115 kV transmission line overloads under contingency.



SOUTHERN – 2E 2017

CORN CRIB 230/115 KV SUBSTATION

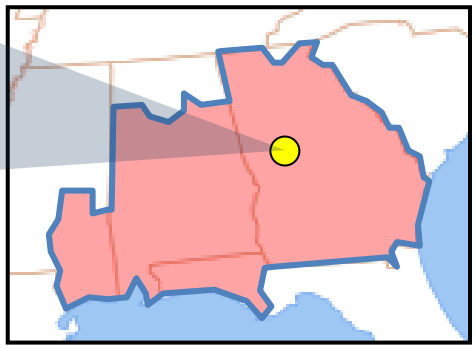


DESCRIPTION:

Construct a new 230/115 kV substation with a 400 MVA transformer. Loop in the Dyer Road – Thomaston 230 kV and 115 kV T.L.s and the Dyer Road – Lagrange 115 kV T.L. and connect the Dyer Road – Newnan #3 115 kV T.L.

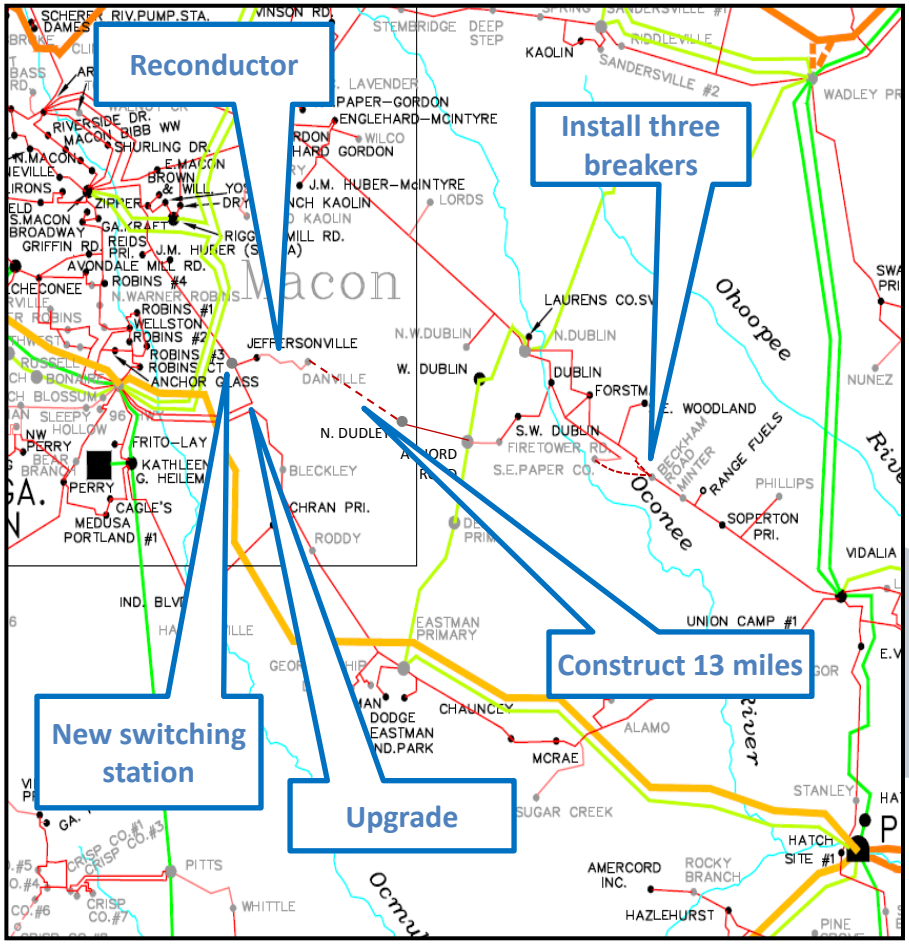
SUPPORTING STATEMENT:

The Lagrange Primary – Yates 115 kV transmission line overloads under contingency. This project also provides voltage support along the Dyer Road – Thomaston 115 kV transmission line.



SOUTHERN – 3E 2017

DUBLIN AREA IMPROVEMENTS

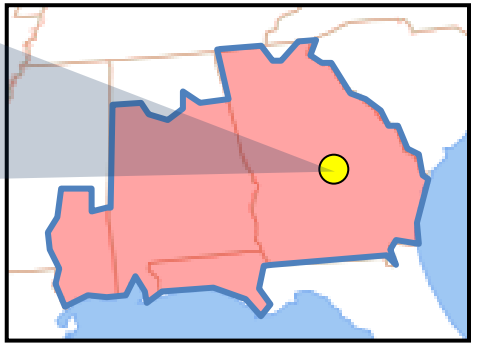


DESCRIPTION:

Construct 13 miles of 115 kV T.L. from Danville to North Dudley with 795 ACSR at 100°C. Reconductor 8.5 miles along the Jeffersonville to Danville tap 115 kV T.L. with 336 ACSS at 200°C. Construct a 115 kV switching station at the Jeffersonville tap point and upgrade 15.2 miles of 115 kV T.L. from the switching station to Bonaire Primary to 100°C operation. Install 3 breakers at Beckham Road for Vidalia, SE Paper, and Dublin 115 kV T.L.s.

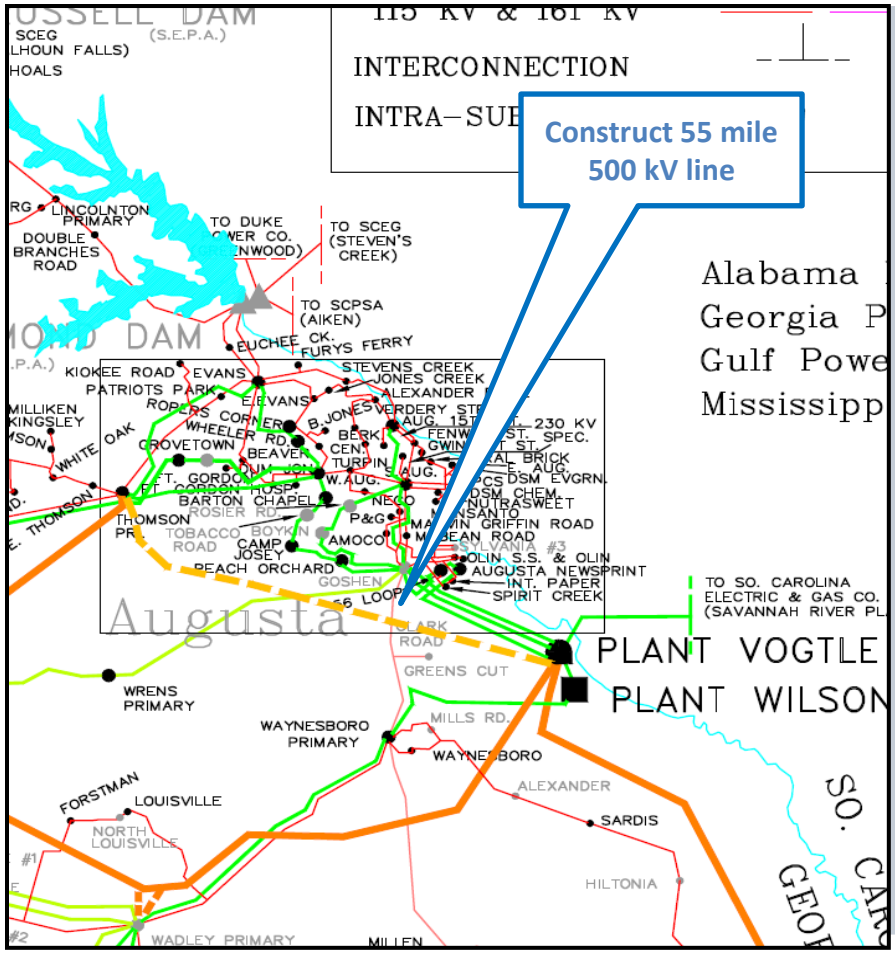
SUPPORTING STATEMENT:

Additional voltage support needed in the Dublin area under contingency.



SOUTHERN – 4E 2017

THOMSON PRIMARY – VOGTLE 500 KV T.L.

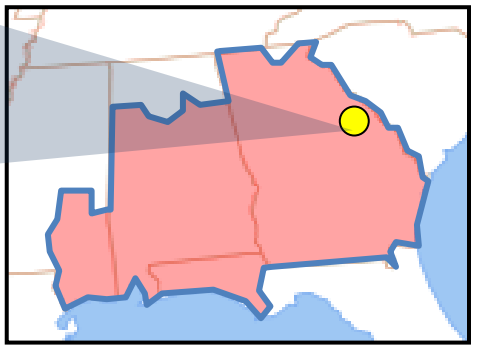


DESCRIPTION:

Construct approximately 55.0 miles of new 500 kV transmission line from Plant Vogtle to the Thomson Primary 500/230 kV substation.

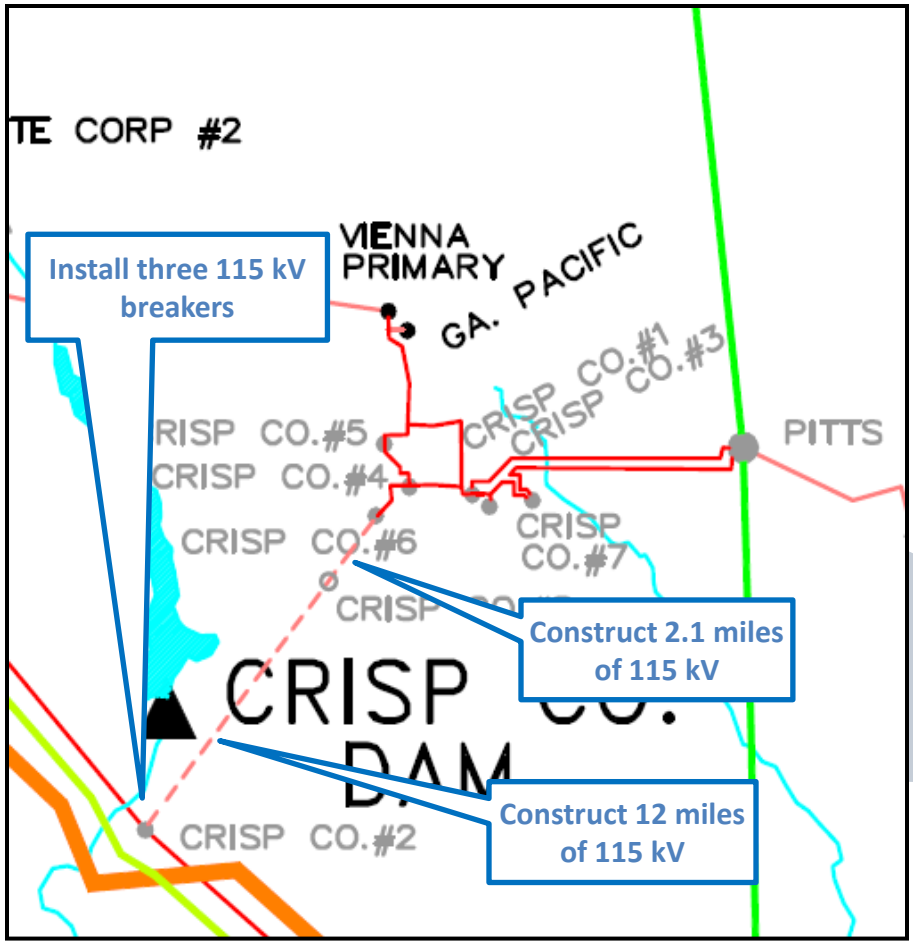
SUPPORTING STATEMENT:

Needed to support the expansion of Plant Vogtle.



SOUTHERN – 5E 2018

CRISP COUNTY AREA IMPROVEMENTS

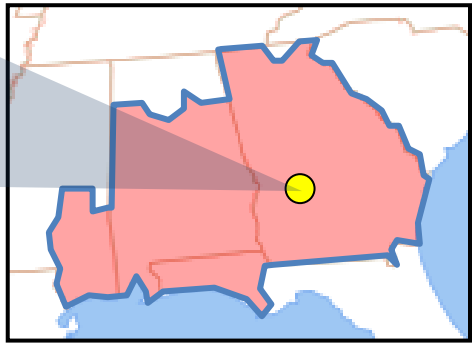


DESCRIPTION:

Construct approximately 12 miles of new 636 ACSR, 115 kV transmission line from Crisp #2 (Warwick) – Crisp #8. Add three 115 kV breakers at Warwick to create the North Americus – Crisp #2 and North Tifton – Crisp #2 115 kV circuits. Also, construct a 2.1 mile, 636 ACSR 115 kV transmission line section from Crisp County #8 – Crisp County #6 to create the Crisp #2 – Pitts 115 kV circuit.

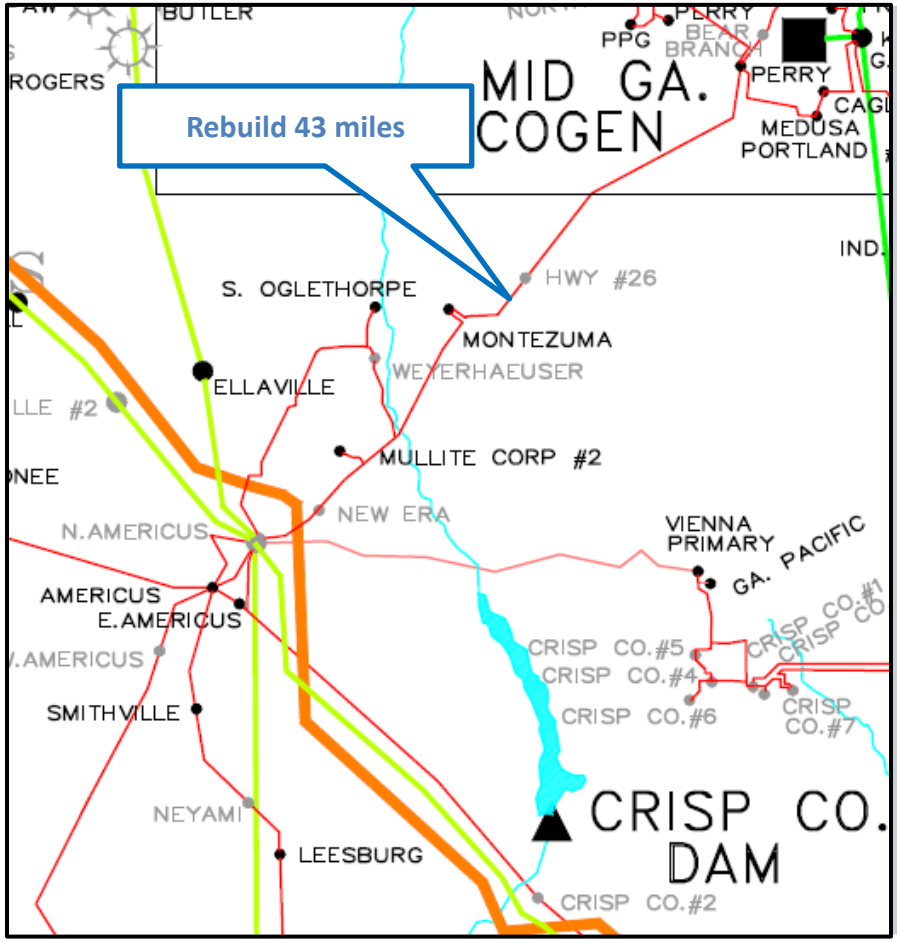
SUPPORTING STATEMENT:

Additional voltage support needed in the Crisp County area under contingency.



SOUTHERN – 6E 2018

NORTH AMERICUS – PERRY 115 KV T.L.

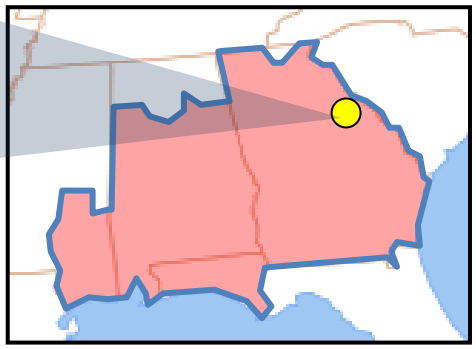


DESCRIPTION:

Rebuild approximately 43 miles of the existing 115 kV transmission line from North Americus to Perry substation with 795 ACSR at 100°C.

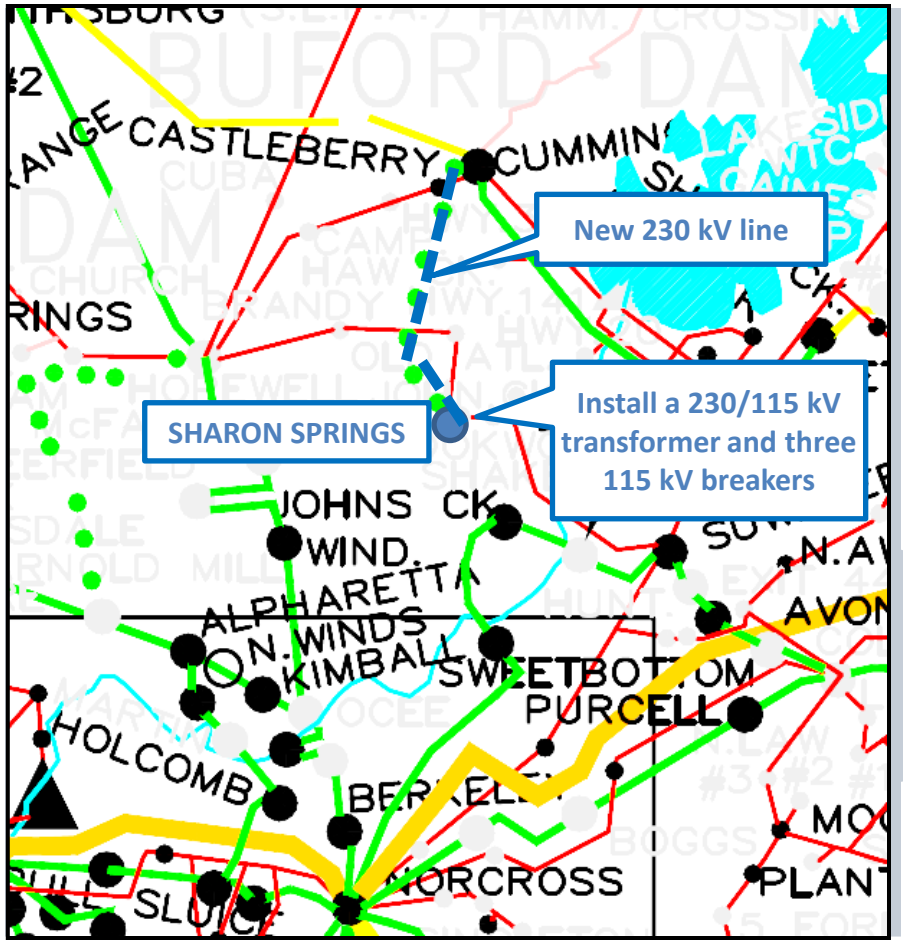
SUPPORTING STATEMENT:

The North Americus – Perry 115 kV transmission line overloads under contingency.



SOUTHERN – 7E 2018

SHARON SPRINGS 230/115 KV PROJECT

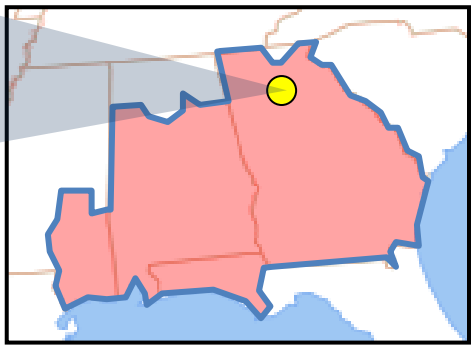


DESCRIPTION:

Construct a new 6.6 mile, 230 kV T.L. from Cumming to Sharon Springs with 1351 ACSR at 100°C. Install a 300 MVA, 230/115 kV transformer with two 115 kV breakers at Sharon Springs distribution substation. Terminate 115 kV T.L.s from Hopewell and Suwanee. Install a 230 kV breaker in the Cumming Substation and terminate 230 kV T.L. to Sharon Springs.

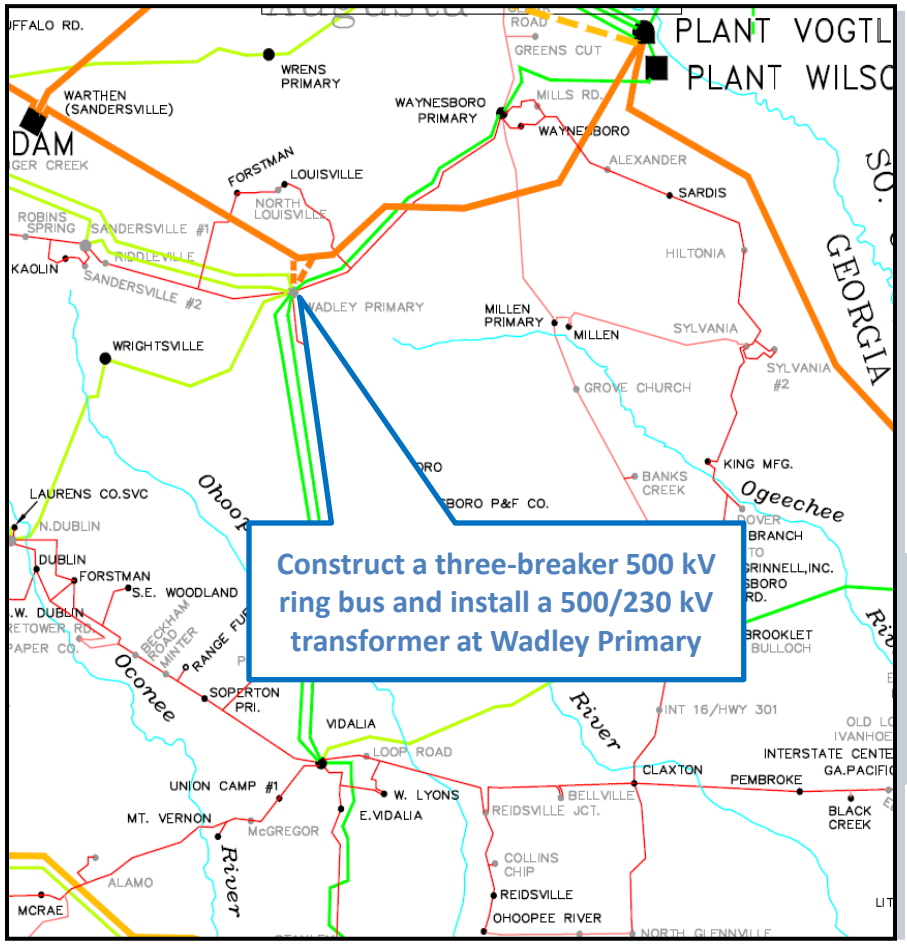
SUPPORTING STATEMENT:

The Suwanee – Old Atlanta Road and Hopewell – Brandywine sections of the T.L. overload under contingency.



SOUTHERN – 8E 2019

WADLEY PRIMARY 500/230 KV SUBSTATION

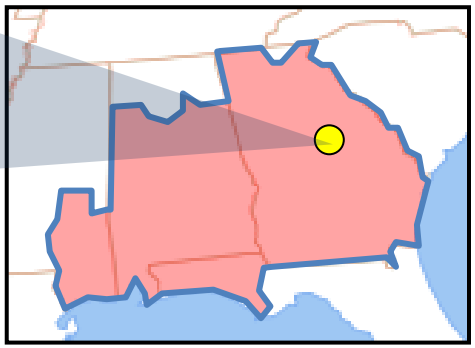


DESCRIPTION:

Construct a new 500 kV substation on the Vogtle – Warthen 500 kV transmission line. Install a 2016 MVA, 500/230 kV transformer that ties to the Wadley Primary 230 kV bus. Upgrade the 230 kV bus at Wadley Primary with 2 – 1590 AAC.

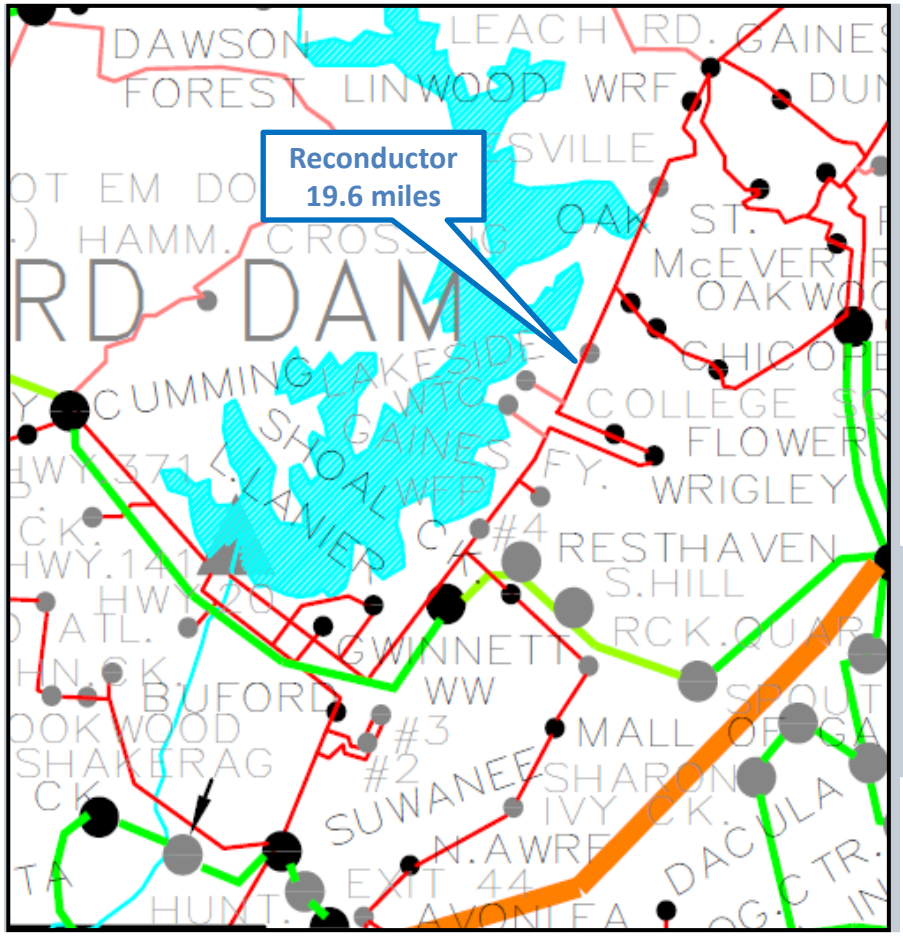
SUPPORTING STATEMENT:

Project to enhance reliability in the Augusta area and to support the expansion of Plant Vogtle.



SOUTHERN – 9E 2021

MCEVER ROAD – SHOAL CREEK 115 KV T.L.

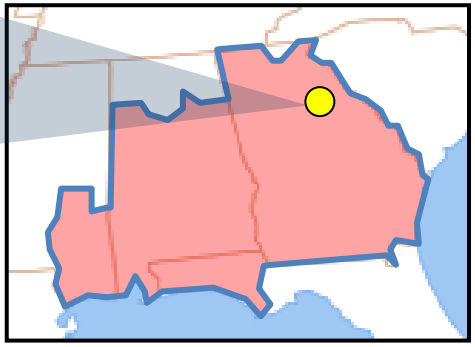


DESCRIPTION:

Reconductor approximately 19.6 miles of 115 kV transmission line along the McEver Road – Shoal Creek 115 kV transmission line with 1351 ACSR at 100°C.

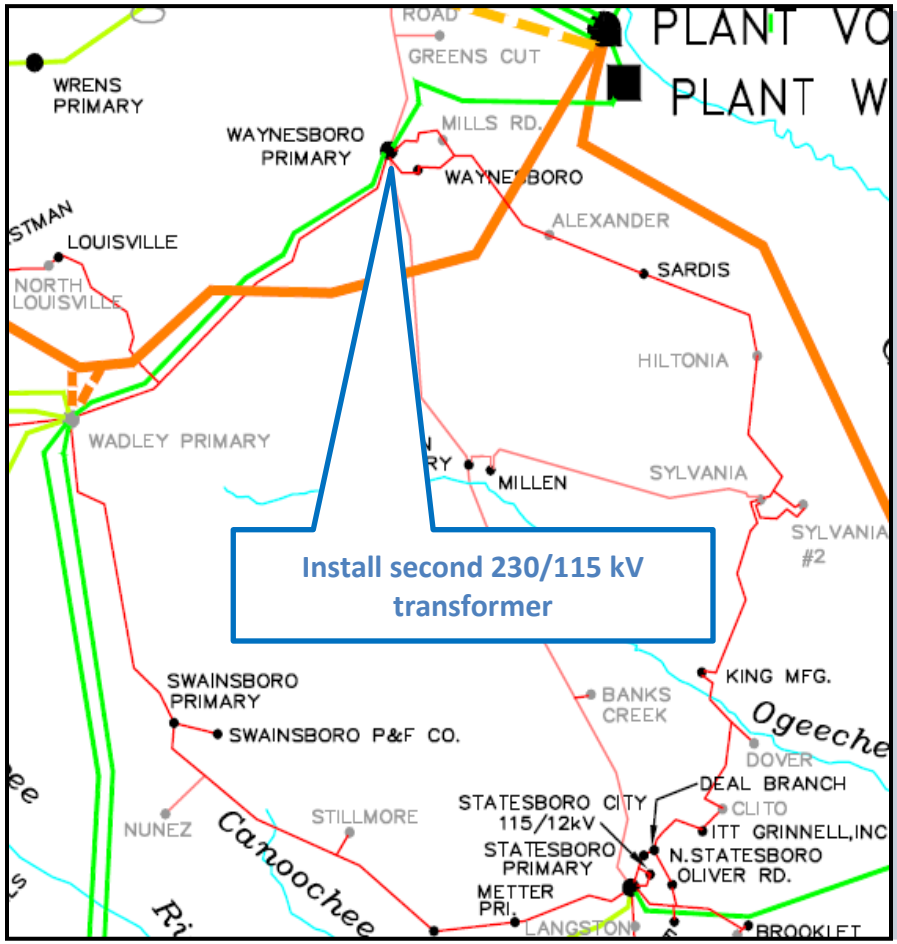
SUPPORTING STATEMENT:

The McEver Road – Shoal Creek 115 kV transmission line overloads under contingency.



SOUTHERN – 10E 2021

WAYNESBORO 230/115 KV SUBSTATION

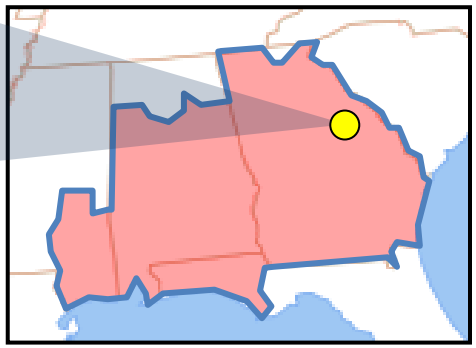


DESCRIPTION:

Install a second 300 MVA, 230/115 kV transformer, 230 kV series bus tie breakers, and a 115 kV bus tie breaker at Waynesboro Primary substation.

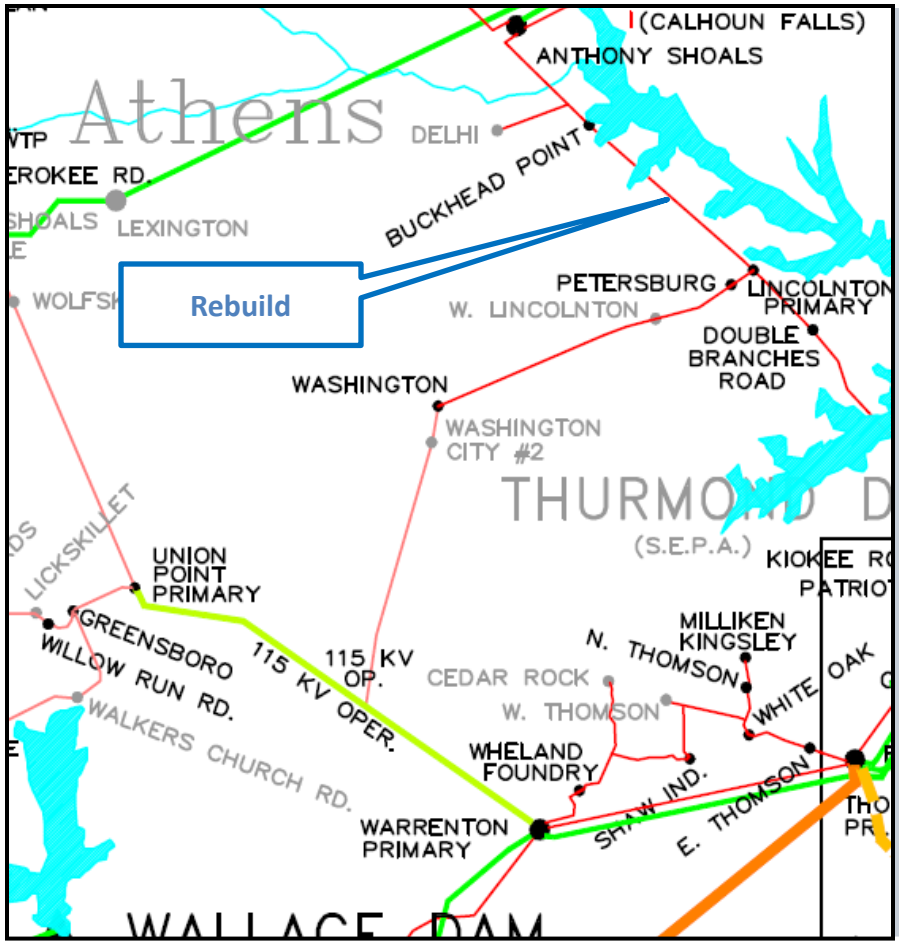
SUPPORTING STATEMENT:

The Waynesboro 230/115 kV transformer overloads under contingency. The Wadley Primary – Waynesboro Primary 115 kV transmission line overloads under contingency.



SOUTHERN – 11E 2023

ANTHONY SHOALS – WASHINGTON 115 KV T.L.

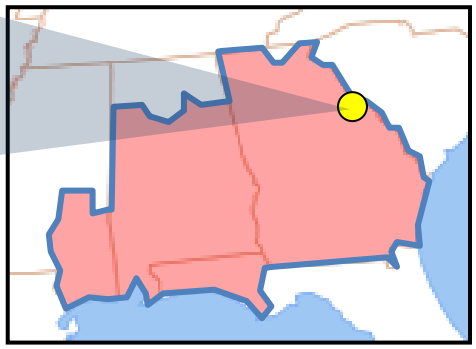


DESCRIPTION:

Rebuild approximately 15.1 miles along the Anthony Shoals – Buckhead Point – Double Branches Tap 115 kV transmission line sections with 795 ACSR at 100°C operation. Replace the line switch at Delhi Tap with a 2000 A switch.

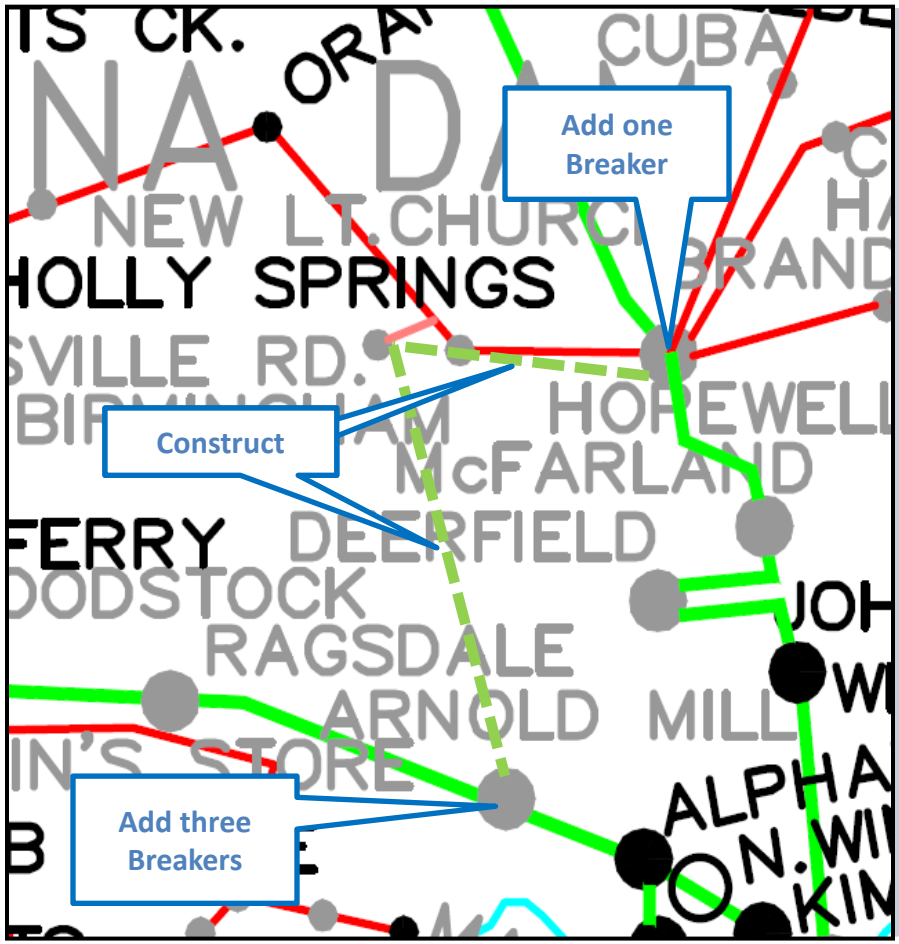
SUPPORTING STATEMENT:

The Anthony Shoals – Buckhead Point – Double Branches Tap 115 kV sections overload under contingency.



SOUTHERN – 12E 2023

ARNOLD MILL – HOPEWELL 230 KV T.L.

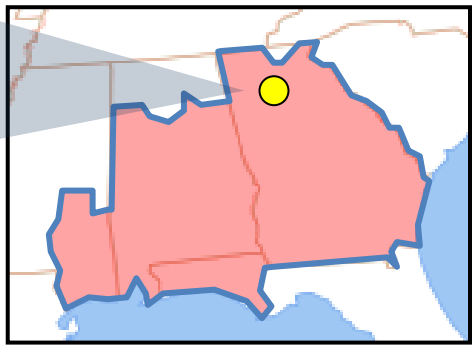


DESCRIPTION:

Construct approximately 14.7 miles of 230 kV transmission line from Arnold Mill to Hopewell. Convert Batesville Road and Birmingham substations from 115 kV to 230 kV. Install one new 230 kV breaker at Hopewell and three new 230 kV breakers at Arnold Mill.

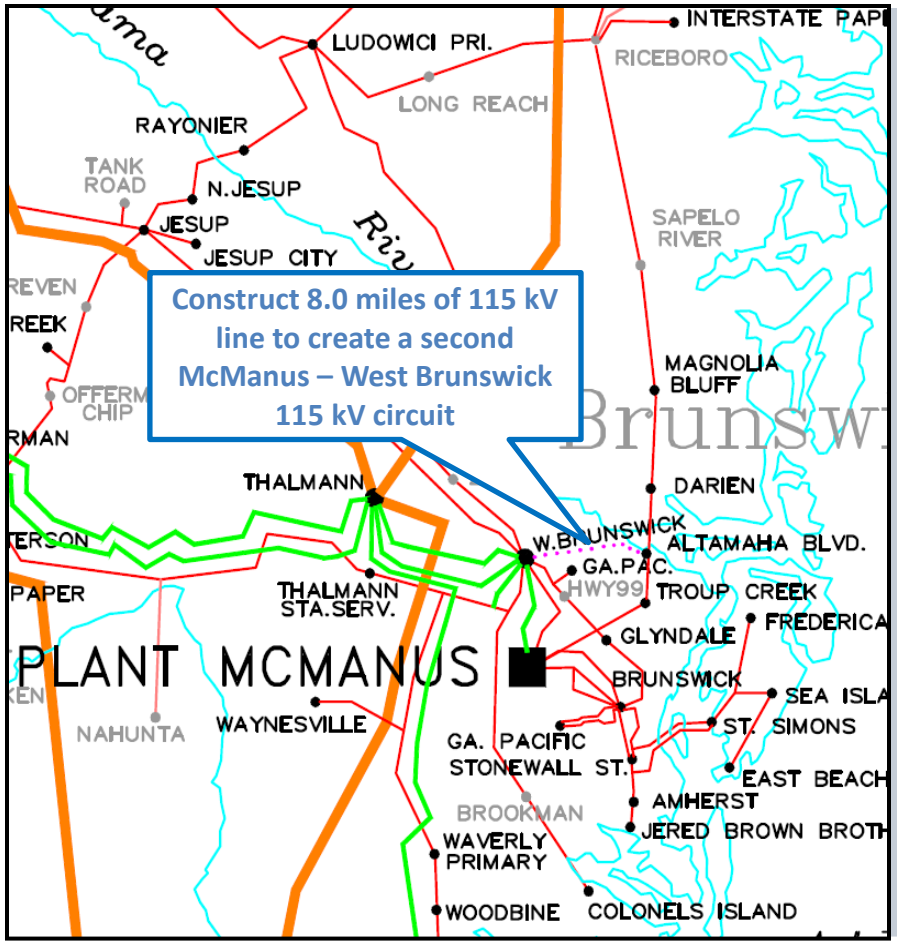
SUPPORTING STATEMENT:

The Holly Springs – Hopewell 115 kV transmission line overloads under contingency. Also, additional voltage support is needed at Windward under contingency.



SOUTHERN – 13E 2023

MCMANUS – WEST BRUNSWICK 115 KV (BLACK) T.L.

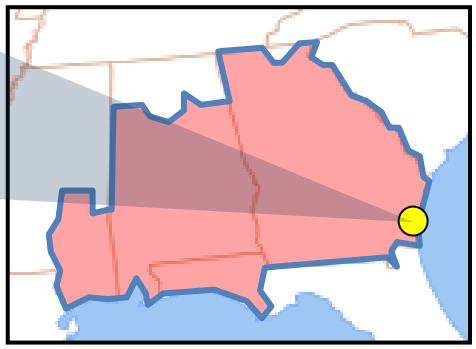


DESCRIPTION:

Construct approximately 8.0 miles of new 795 ACSR 115 kV transmission line from West Brunswick to a new point that taps the McManus – Darien 115 kV transmission line.

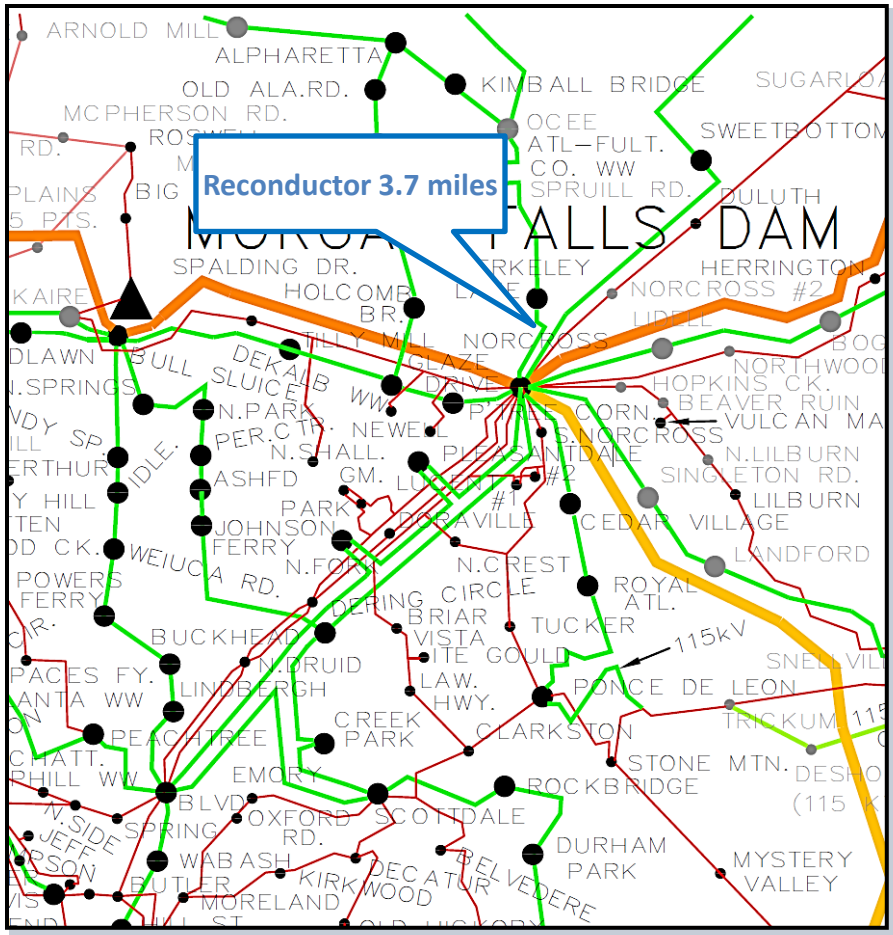
SUPPORTING STATEMENT:

Additional voltage support is needed in the Riceboro area under contingency.



SOUTHERN – 14E 2023

NORCROSS – OCEE 230 KV T.L.

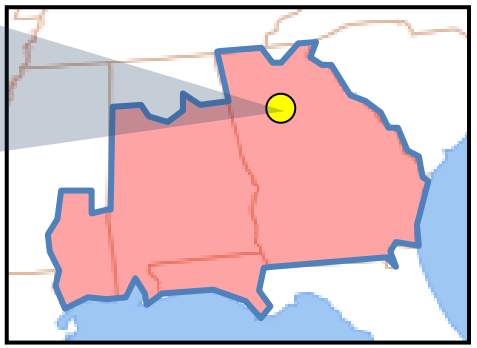


DESCRIPTION:

Reconductor approximately 3.7 miles along the Norcross – Ocee 230 kV line with 1033 ACSS 160°C.

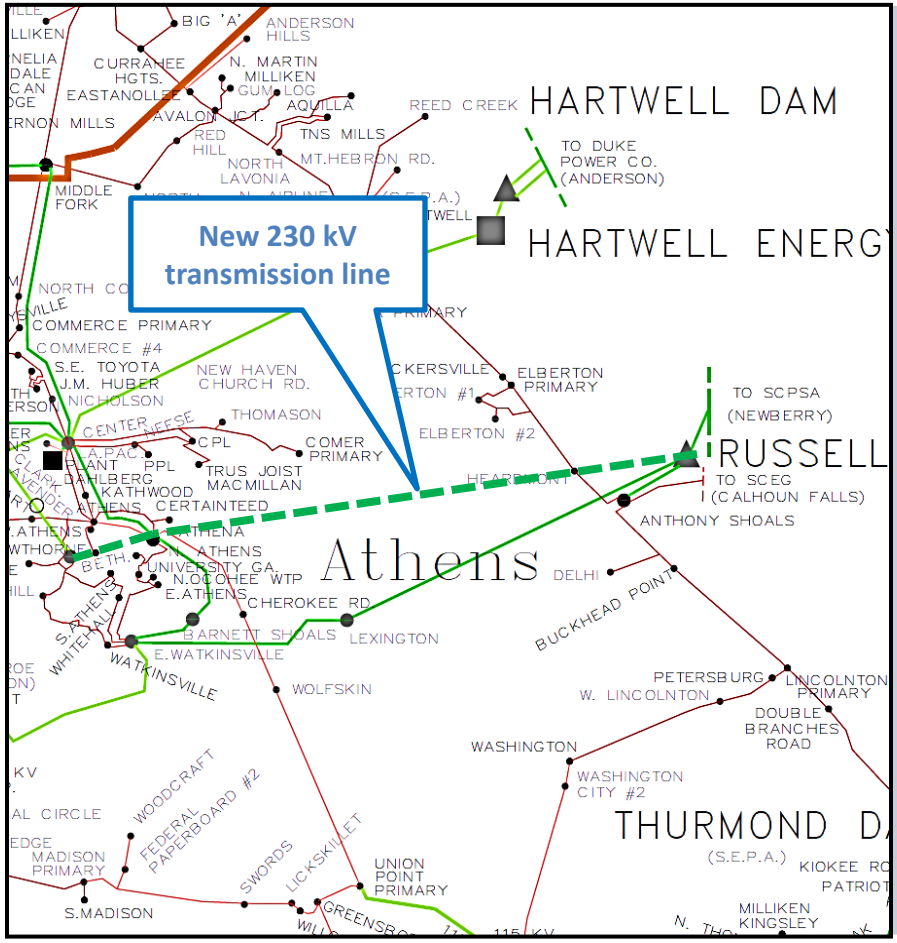
SUPPORTING STATEMENT:

The Norcross – Ocee 230 kV transmission line overloads under contingency.



SOUTHERN – 15E 2024

RUSSELL – ATHENA – BETHABARA 230 KV T.L.

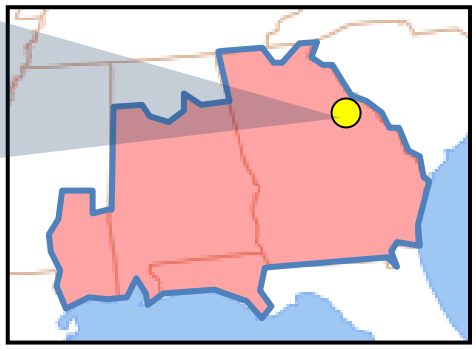


DESCRIPTION:

Construct approximately 65 miles of 230 kV transmission line from Russell Dam to Athena with bundled (2) 1351 ACSR at 100°C and from Athena to Bethabara with 1351 ACSR at 100°C.

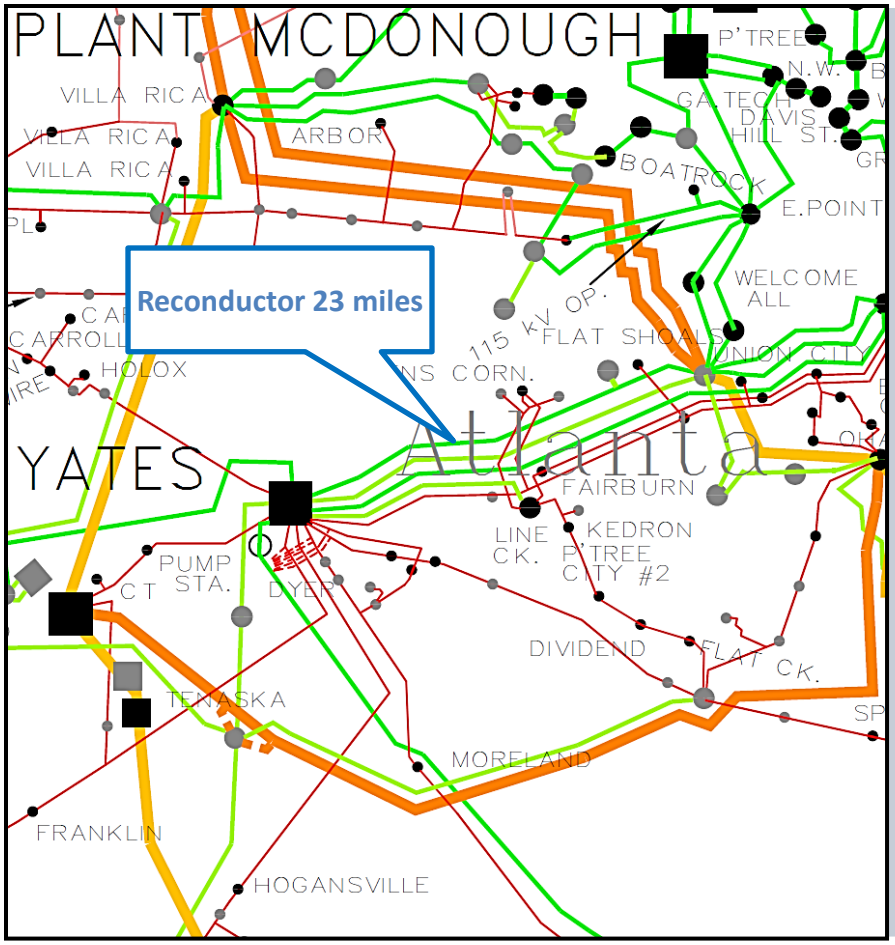
SUPPORTING STATEMENT:

The Russell – East Watkinsville 230 KV transmission line overloads under contingency.



SOUTHERN – 16E 2024

UNION CITY – YATES 230 KV (WHITE) T.L.

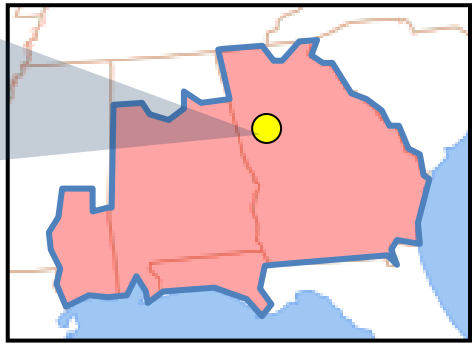


DESCRIPTION:

Reconductor approximately 23 miles along the Union City – Yates White 230 kV transmission line with 1351 ACSR at 100°C.

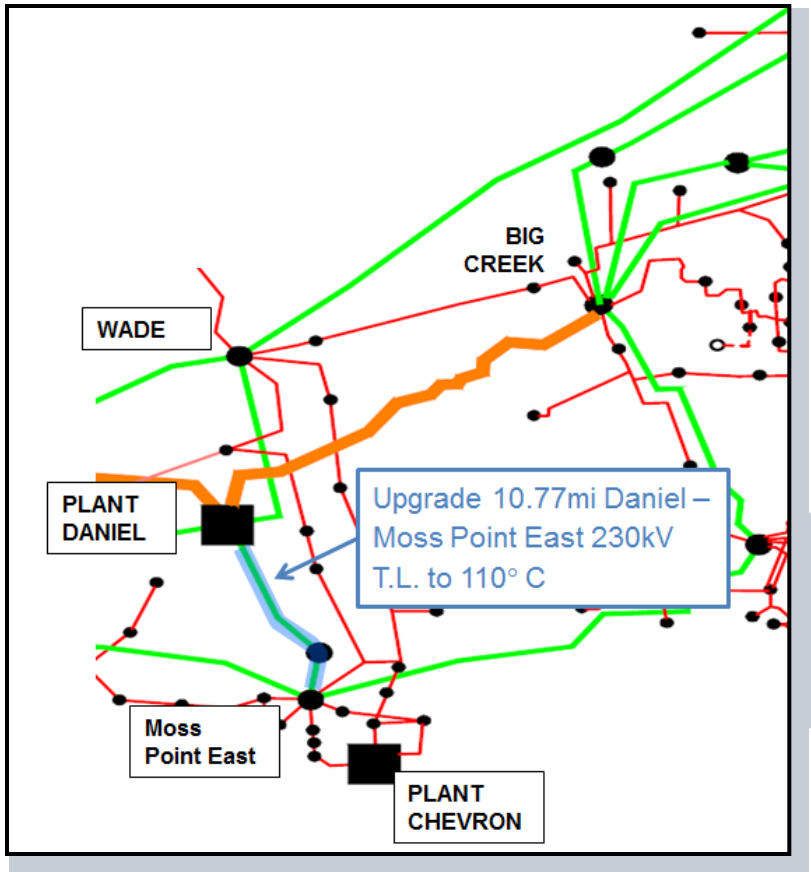
SUPPORTING STATEMENT:

The Union City – Yates 230 kV transmission line overloads under contingency.



SOUTHERN – 1W 2016

DANIEL – MOSS POINT EAST 230KV T.L.

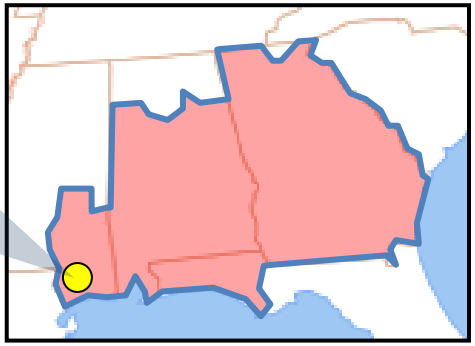


DESCRIPTION:

Upgrade approximately 10.7 miles along the Daniel – Moss Point East 230 kV line to 110°C operation and replace 2000 A switches at Daniel, Moss Point Elder Ferry Road, and Moss Point East substations with 3000 A switches.

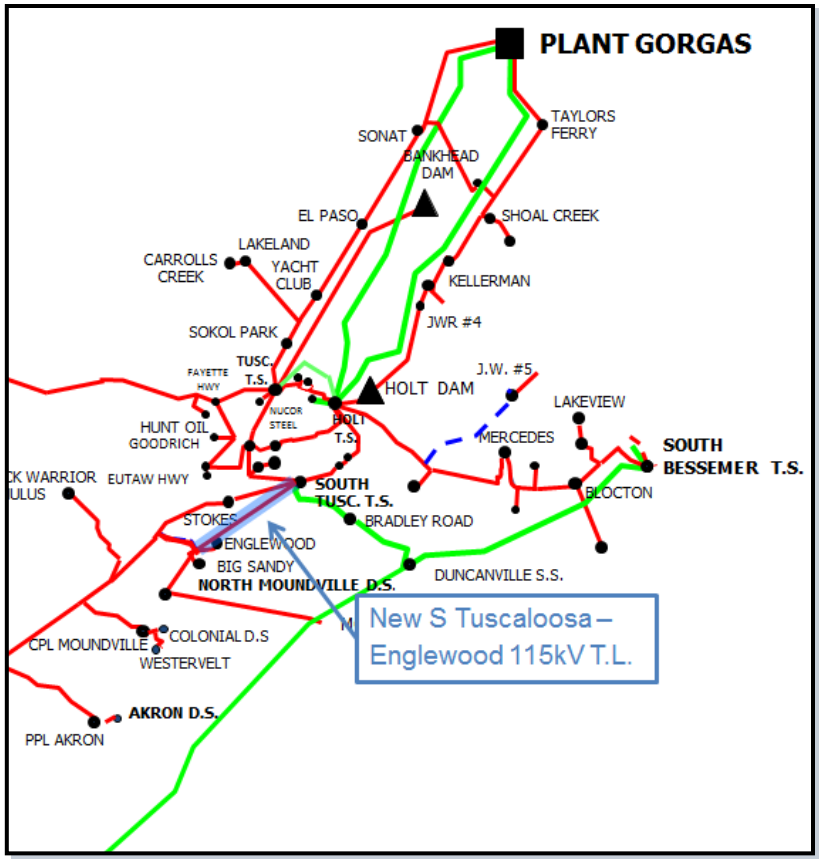
SUPPORTING STATEMENT:

The Daniel – Moss Point East 230kV transmission line overloads under contingency.



SOUTHERN – 2W 2016

ENGLEWOOD – SOUTH TUSCALOOSA 115 KV T.L.

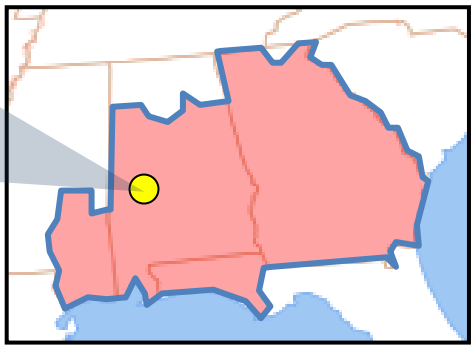


DESCRIPTION:

Construct approximately 9.0 miles of 1033 ACSS 115 kV transmission line at 200°C from Englewood to South Tuscaloosa.

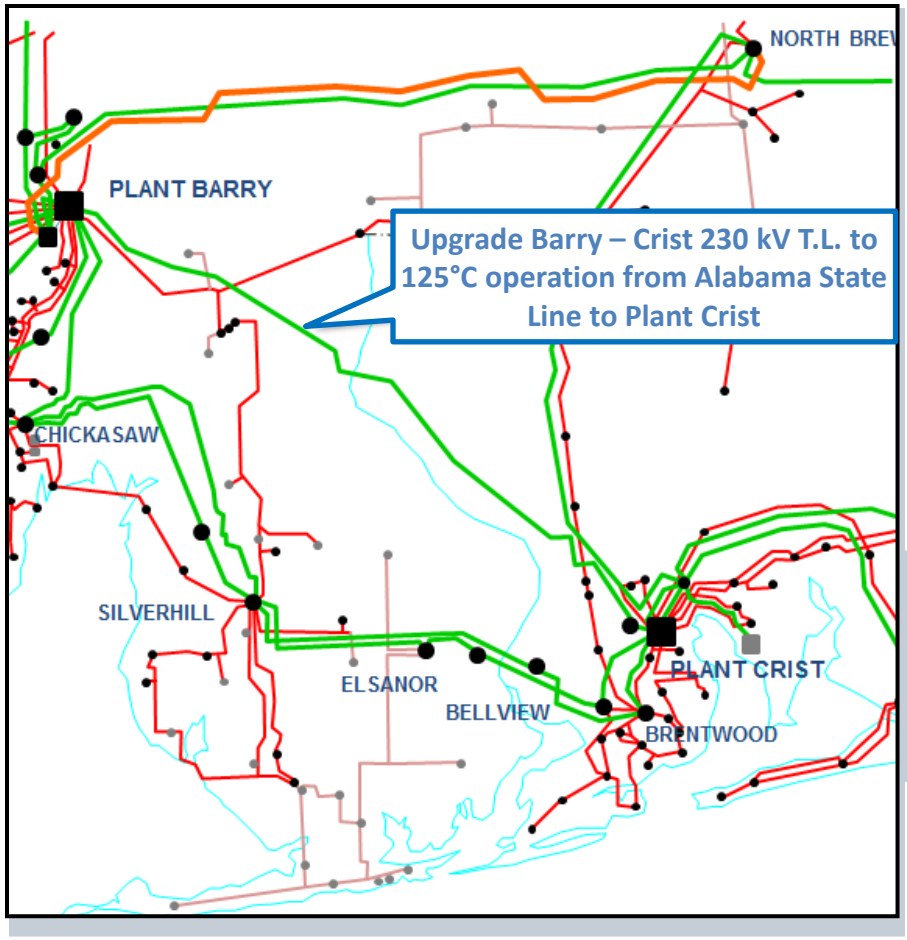
SUPPORTING STATEMENT:

The Eutaw – Moundville Tap 115 kV transmission line overloads under contingency.



SOUTHERN – 3W 2017

BARRY – CRIST 230 KV T.L.

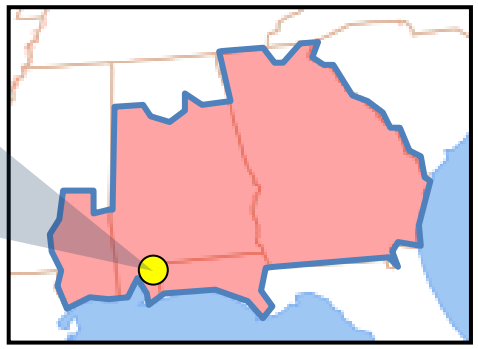


DESCRIPTION:

Upgrade approximately 31.6 miles along the Barry SP – Crist SP 230 kV transmission line to 125°C operation.

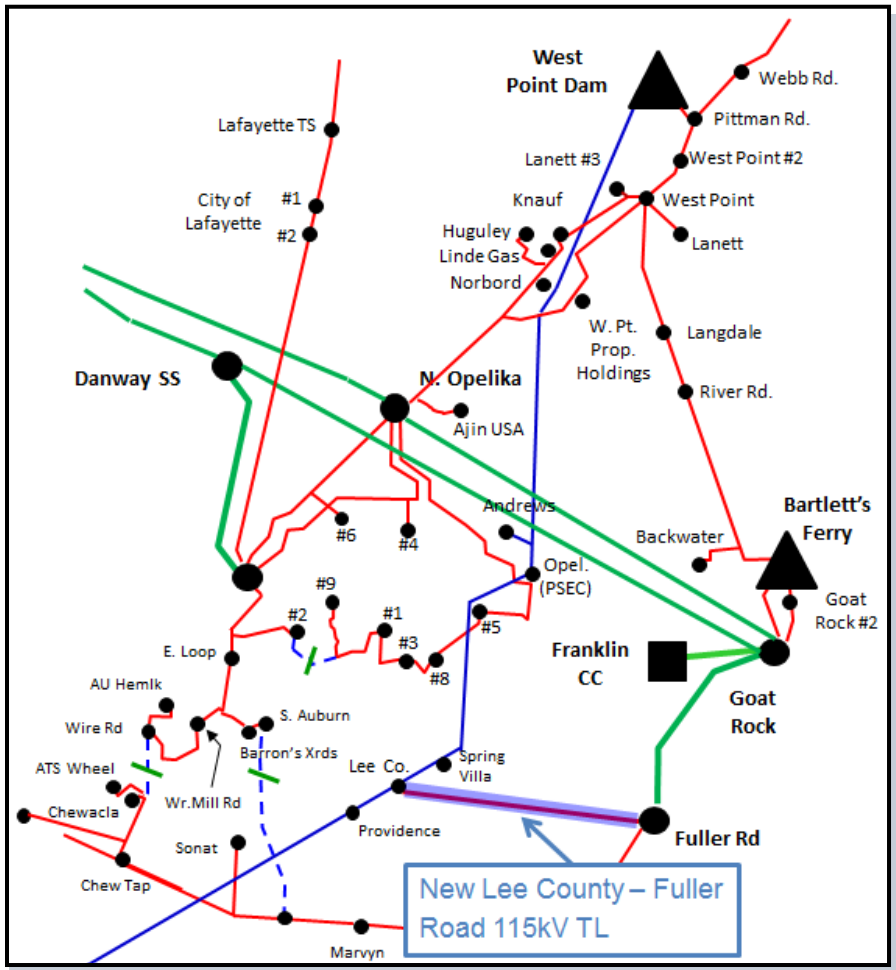
SUPPORTING STATEMENT:

The Barry – Crist 230 kV transmission line overloads under contingency.



SOUTHERN – 4W 2018

FULLER ROAD – LEE COUNTY 115KV T.L.

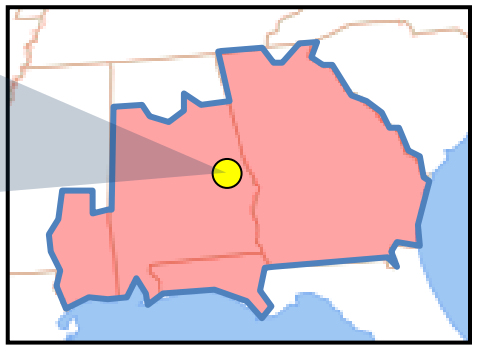


DESCRIPTION:

Construct approximately 13 miles of new 795 ACSR at 100°C 115kV transmission line from Fuller Rd (APC) to Lee County (PS).

SUPPORTING STATEMENT:

The new Fuller Rd – Lee County 115kV transmission line will decrease thermal loadings on the Knauff Fiberglass – N. Opelika 115kV transmission line and provide greater maintenance flexibility on the N. Opelika TS – Lanett DS 115kV corridor.



SOUTHERN – 5W 2019

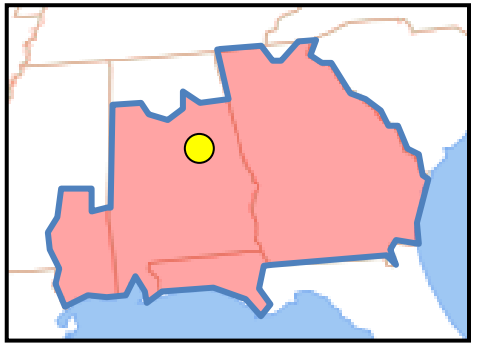
EASTERN AL AREA 115KV PROJECT

DESCRIPTION:

- Reconductor approximately 5.3 miles of 115 kV transmission line between Gulf States Steel and Rainbow City SS with 795 ACSS at 200°C.
- Install new 115 kV switching station around Rainbow City.
- Upgrade the existing 230/115 kV transformer at Clay TS to 477 MVA.
- Construct approximately 34 miles of 115 kV transmission line between Clay TS and the new Rainbow City SS with 795 ACSS at 200°C

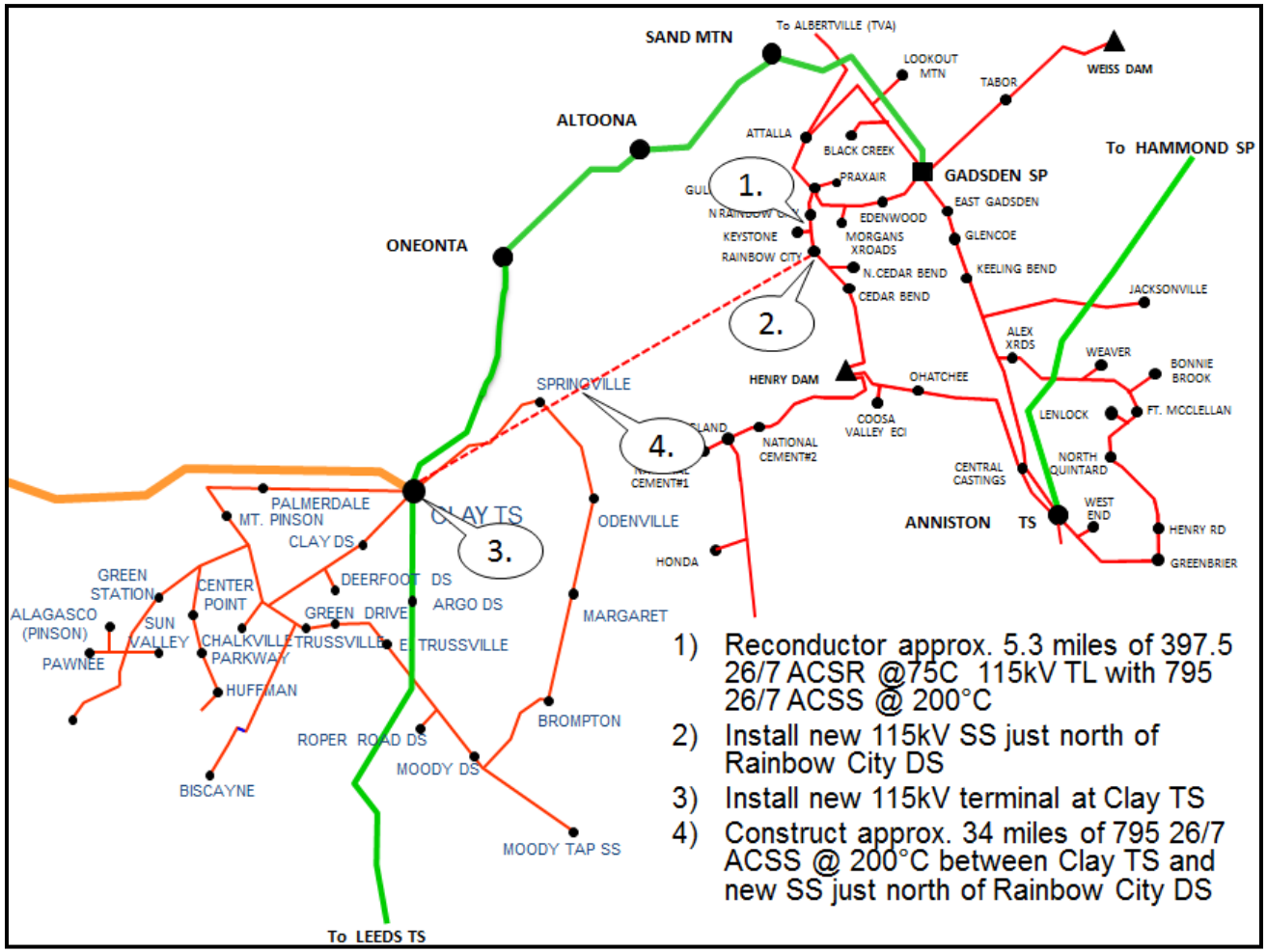
SUPPORTING STATEMENT:

A contingency causes high loadings and hinders maintenance abilities on several 115 kV transmission lines in the Gadsden area.



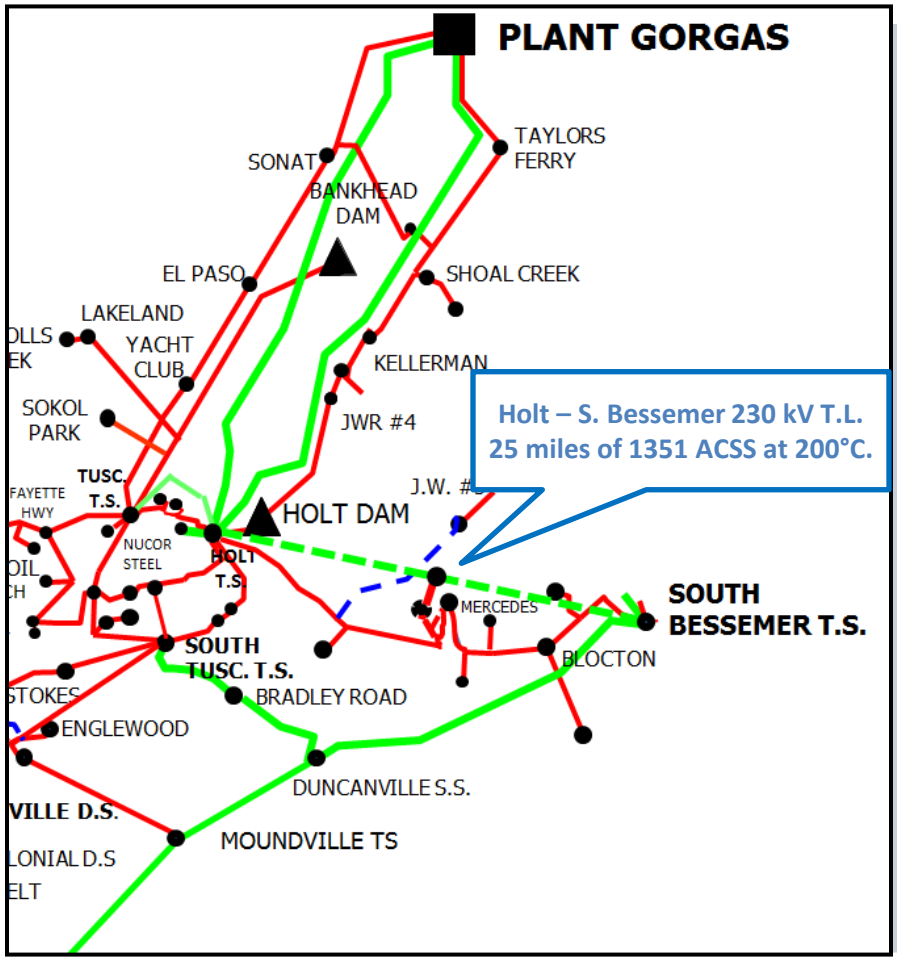
SOUTHERN – 5W 2019

EASTERN AL AREA 115KV PROJECT



SOUTHERN – 6W 2019

HOLT – SOUTH BESSEMER 230 KV T.L.

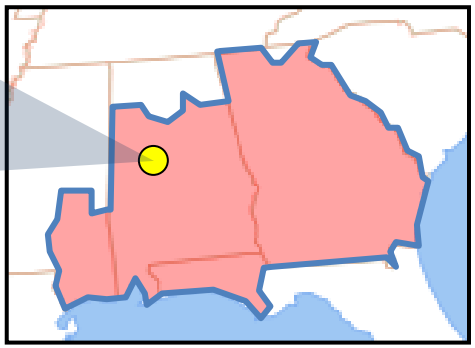


DESCRIPTION:

- Construct approximately 25 miles of 1351 ACSS 230 kV transmission line at 200°C from Holt to South Bessemer.
- Install a 400 MVA, 230/115 kV transformer and connect to existing Daimler DS.

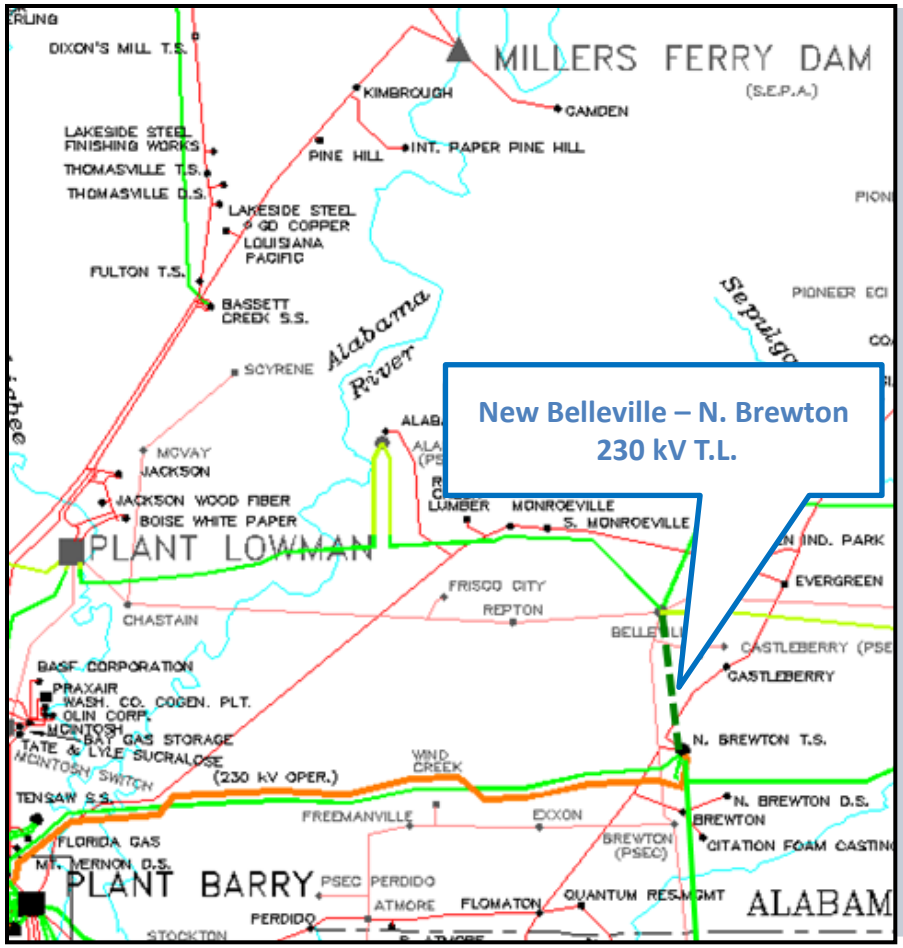
SUPPORTING STATEMENT:

The South Tuscaloosa – 31st Avenue 115 kV transmission line overloads under contingency. This project also provides increased reliability, operational, and maintenance flexibility for the Tuscaloosa Area.



SOUTHERN – 7W 2023

BELLEVILLE – NORTH BREWTON 230 KV T.L.

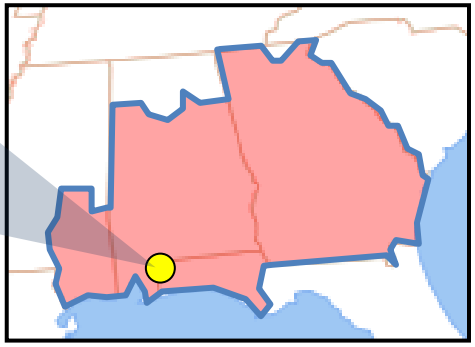


DESCRIPTION:

Construct approximately 15 miles of 230 kV transmission line from Belleville to North Brewton TS with 1351 ACSS at 200°C.

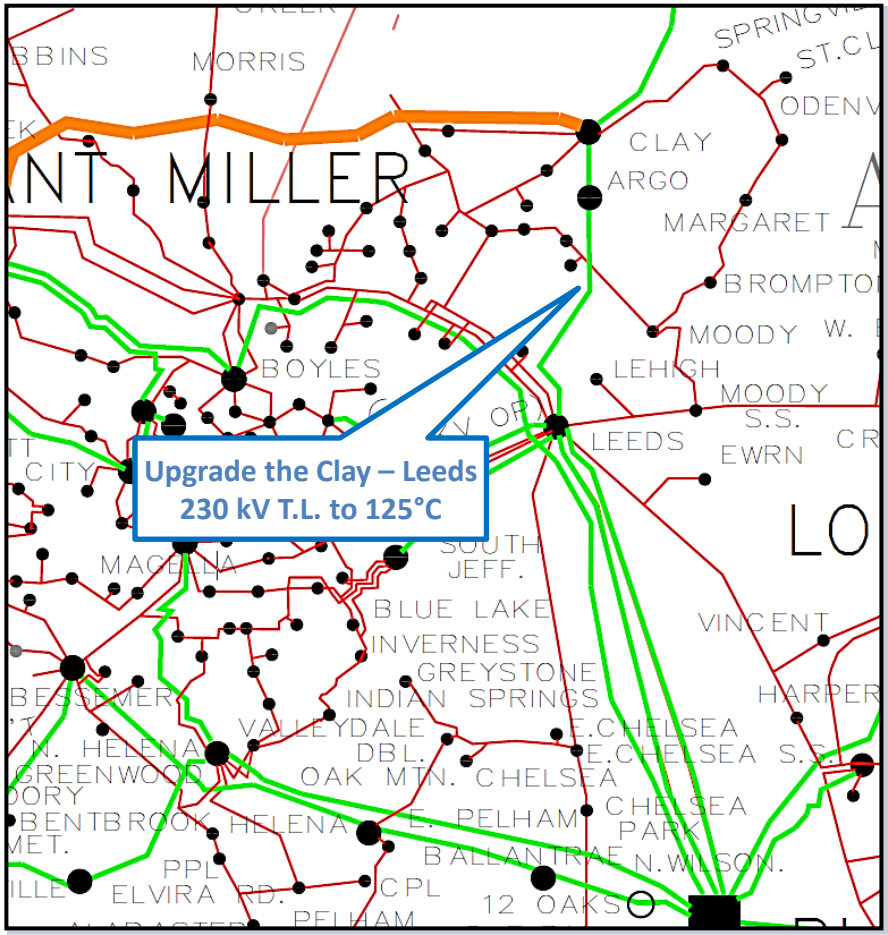
SUPPORTING STATEMENT:

The Barry – McIntosh 115 kV transmission line overloads under contingency.



SOUTHERN – 8W 2023

CLAY – LEEDS 230 KV T.L.

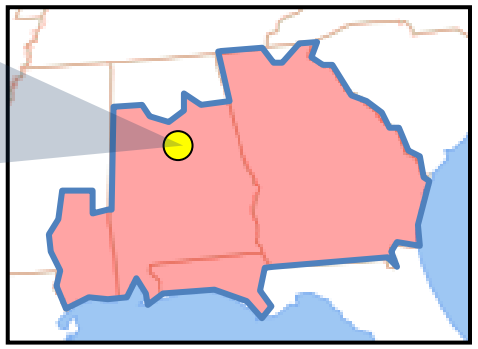


DESCRIPTION:

Upgrade approximately 17.3 miles along the Clay – Leeds 230 kV transmission line to 125°C operation.

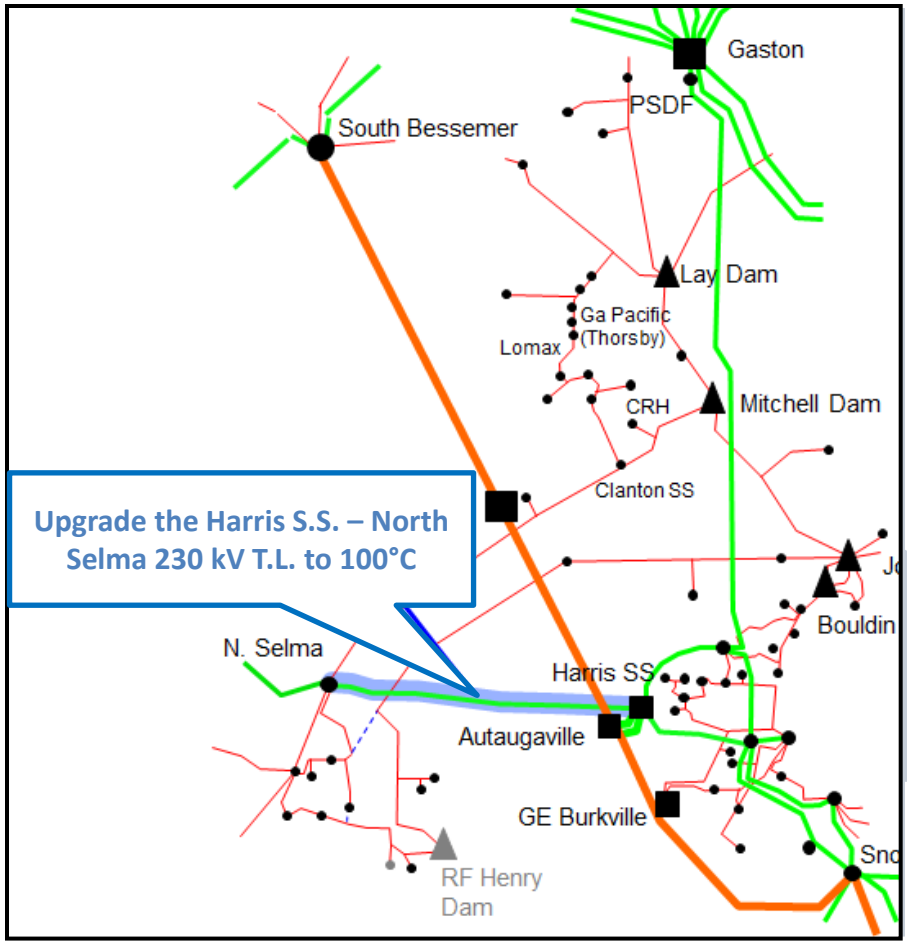
SUPPORTING STATEMENT:

The Clay – Leeds 230 kV transmission line overloads under contingency.



SOUTHERN – 9W 2023

HARRIS – NORTH SELMA 230 KV T.L.

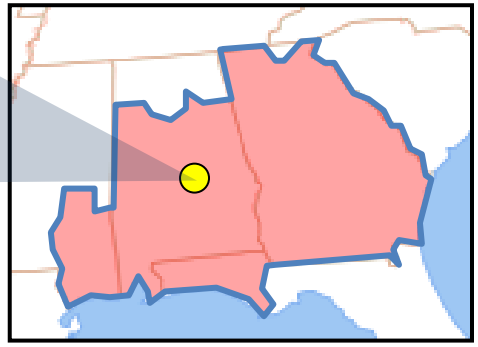


DESCRIPTION:

Upgrade approximately 26 miles of the Autaugaville (Harris SS) – North Selma 230 kV transmission line from 75°C to 100°C operation.

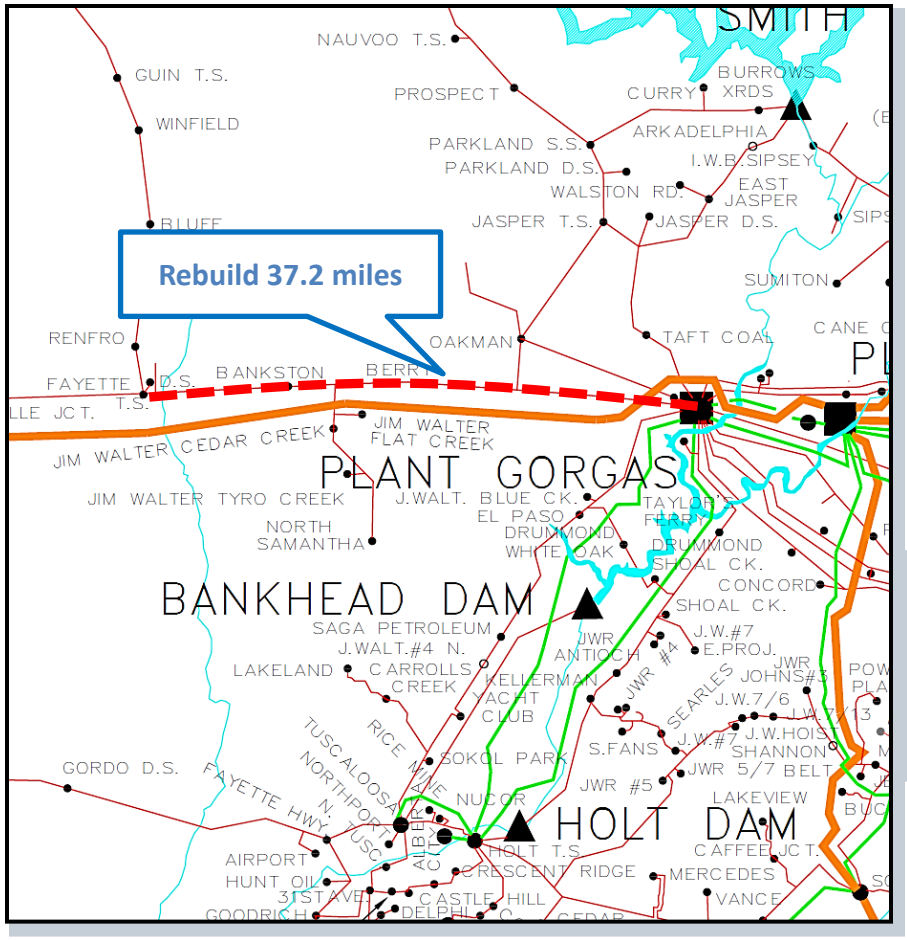
SUPPORTING STATEMENT:

The Harris – North Selma 230 kV transmission line overloads under contingency.



SOUTHERN – 10W 2025

FAYETTE – GORGAS 161 KV T.L.

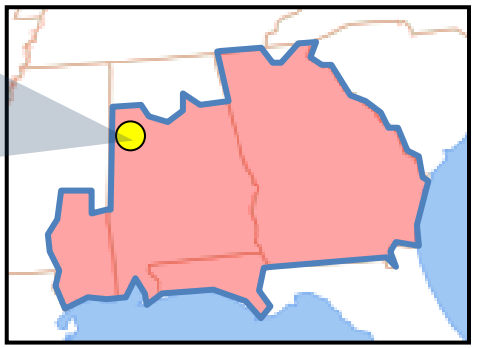


DESCRIPTION:

Rebuild approximately 36.7 miles along the Fayette – Gorgas 161 kV transmission line with 795 ACSS at 160°C.

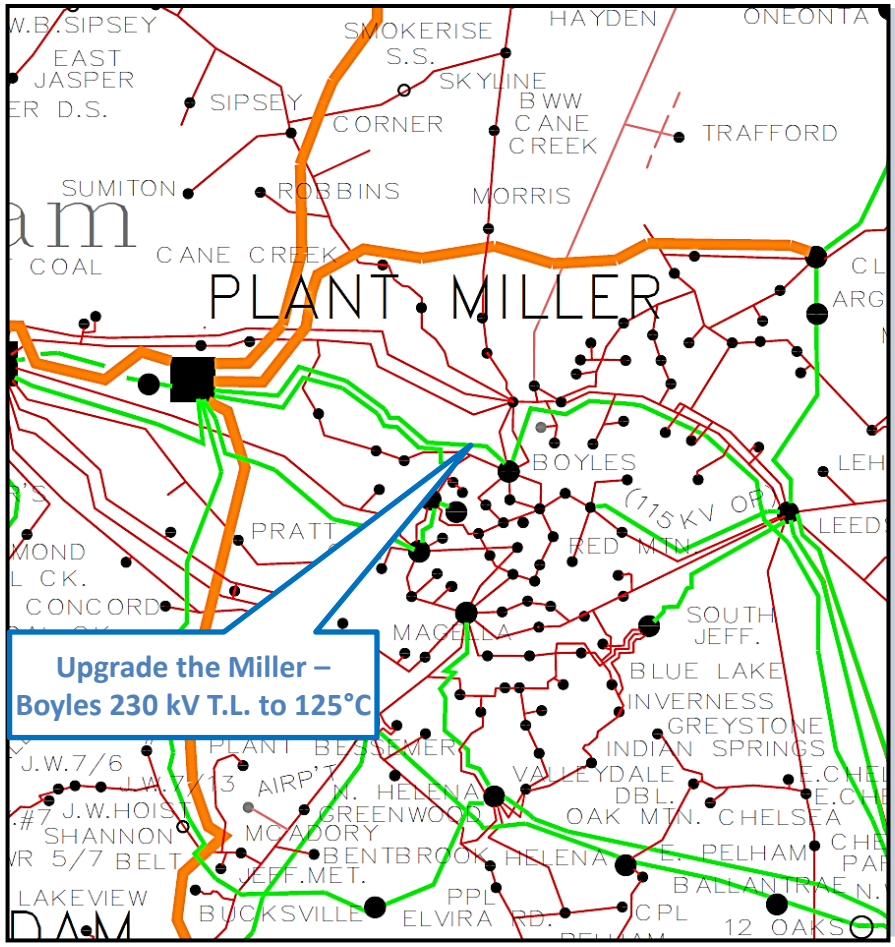
SUPPORTING STATEMENT:

The Fayette – Gorgas 161 kV transmission line overloads under contingency.



SOUTHERN – 11W 2025

MILLER – BOYLES 230 KV T.L.

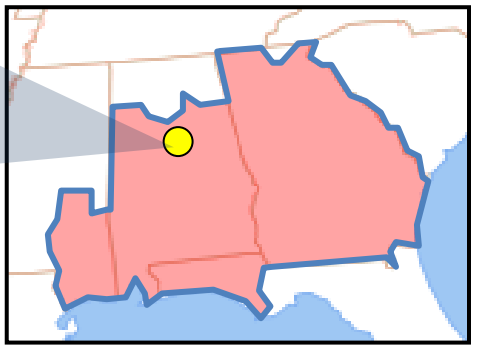


DESCRIPTION:

Upgrade approximately 17.9 miles along the Miller – Boyles 230 kV transmission line to 125°C operation.

SUPPORTING STATEMENT:

The Miller – Boyles 230 kV transmission line overloads under contingency.

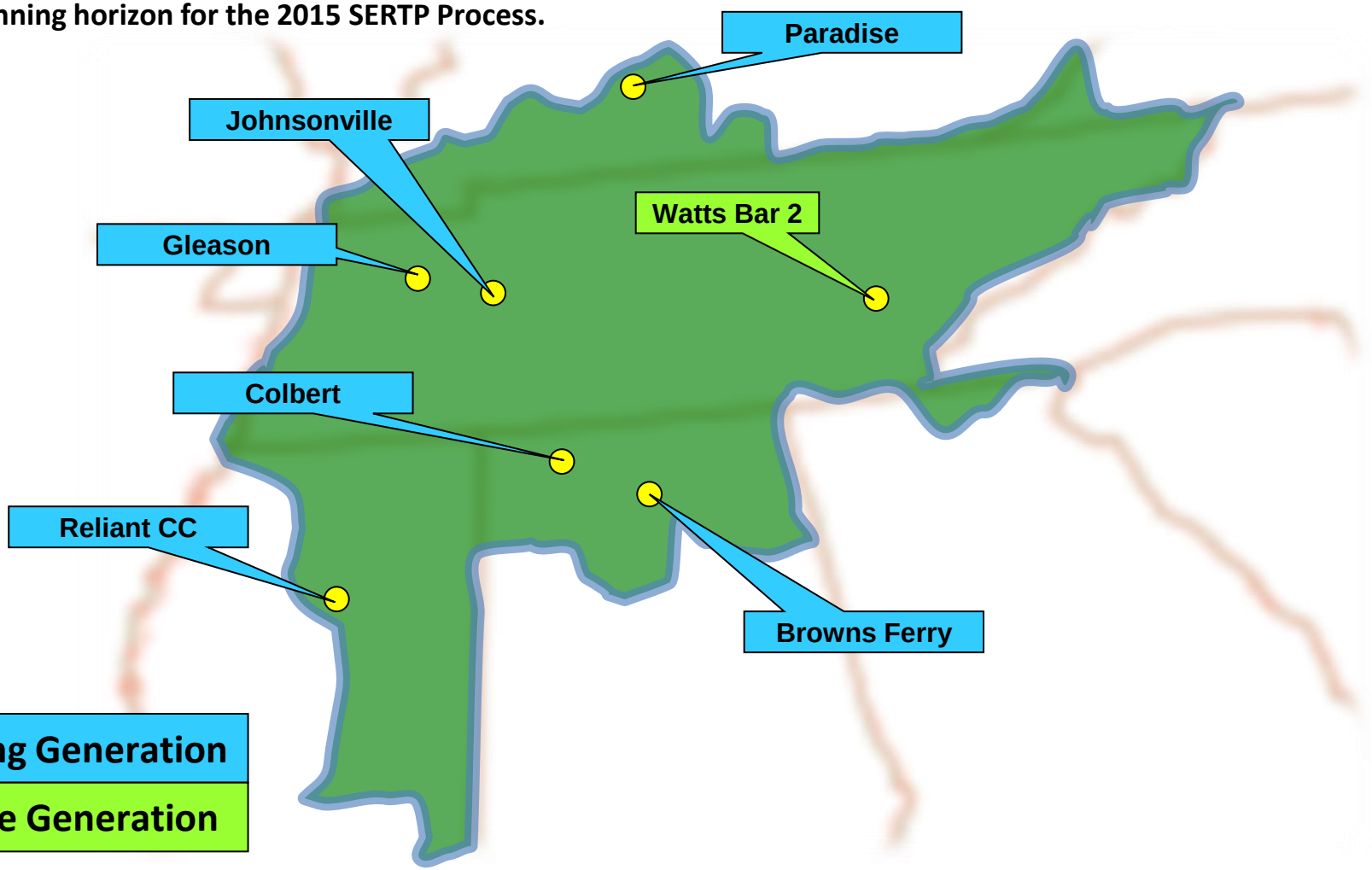


TVA Balancing Authority

Generation Assumptions

TVA – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process.



TVA – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2015 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
COLBERT 1 - 4	0	--	--	--	--	--	--	--	--	--
JOHNSONVILLE 1-4	0	--	--	--	--	--	--	--	--	--
WATTS BAR UNIT 2	1155	1155	1155	1155	1155	1155	1155	1155	1155	1155
GLEASON 1	173	173	173	173	173	173	173	173	173	173
GLEASON 2	173	173	173	173	173	173	173	173	173	173
GLEASON 3	174	174	174	174	174	174	174	174	174	174
PARADISE UNITS 1 & 2	1340	1340	0	--	--	--	--	--	--	--
PARADISE CC	--	--	1015	1015	1015	1015	1015	1015	1015	1015

TVA – Generation Assumptions

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
BROWNS FERRY UNIT 3	1108	1108	1242	1242	1242	1242	1242	1242	1242	1242
BROWNS FERRY UNIT 1	1103	1103	1103	1237	1237	1237	1237	1237	1237	1237
BROWNS FERRY UNIT 2	1108	1108	1108	1242	1242	1242	1242	1242	1242	1242

TVA – Generation Assumptions (Point-to-Point)

The following table depicts generation assumptions based upon long-term firm point-to-point commitments. The years shown represent Summer Peak conditions.

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
RELIANT CC	525	525	525	525	525	525	525	525	525	525

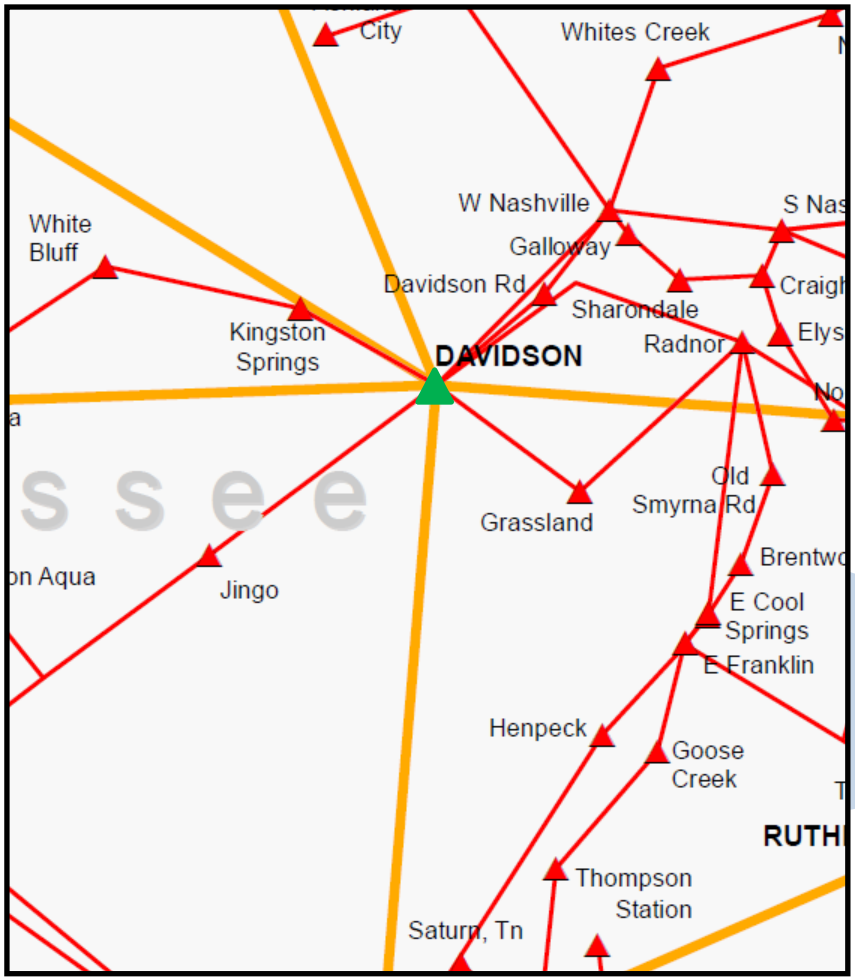
TVA Balancing Authority

Preliminary Transmission Expansion Plan

TVA Balancing Authority

TVA – 1 2016

DAVIDSON 500 KV SUBSTATION

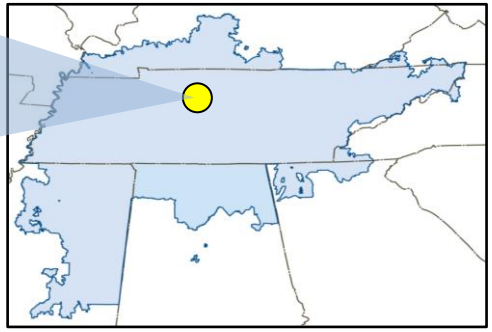


DESCRIPTION:

Install a +300/-150 MVAR SVC at the Davidson, TN 500 kV substation.

SUPPORTING STATEMENT:

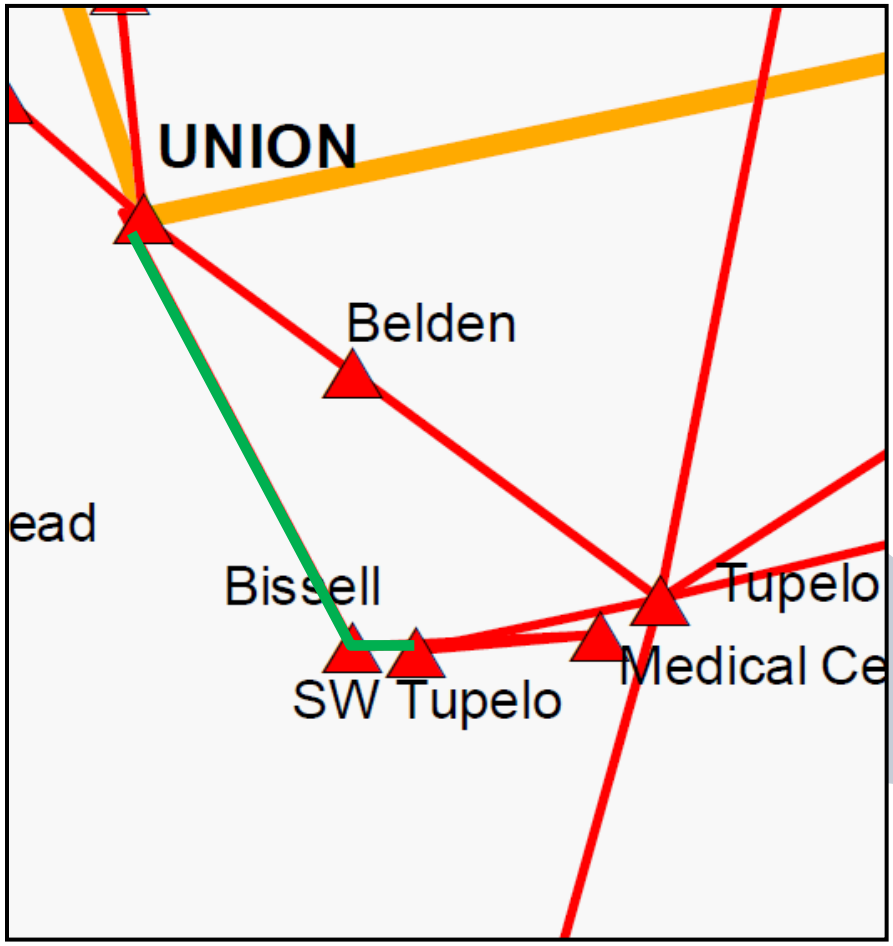
Retirement of Johnsonville FP Units 1-10 results in the need for dynamic reactive support in the Johnsonville area.



TVA – 2

2016

UNION – TUPELO #3 161 KV T.L.

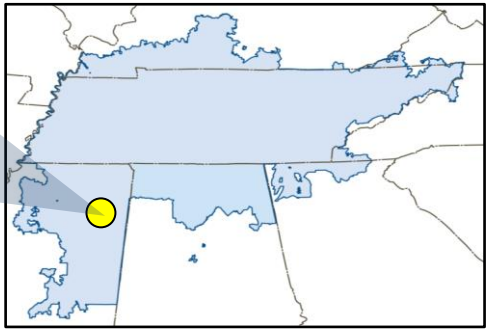


DESCRIPTION:

Construct approximately 15.5 miles of the new Union – Tupelo #3 161 kV transmission line with 954 ACSR at 100°C.

SUPPORTING STATEMENT:

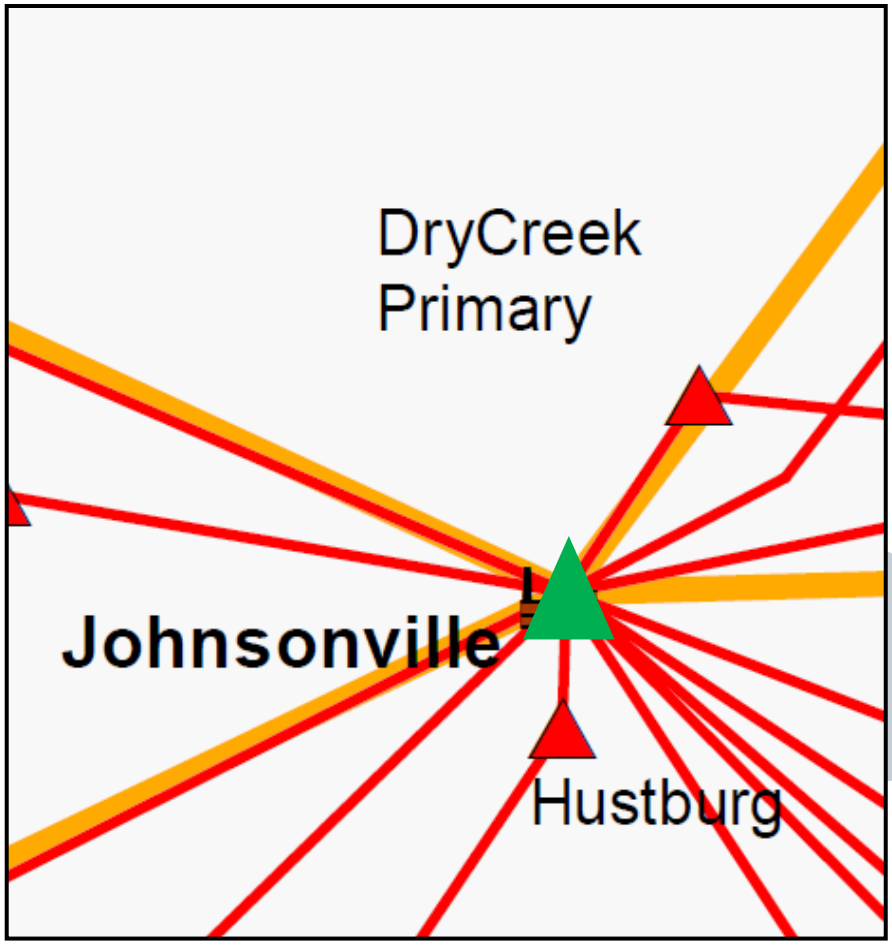
Multiple transmission lines in the Tupelo, MS area overload under contingency.



TVA – 3

2017

JOHNSONVILLE FP SUBSTATION

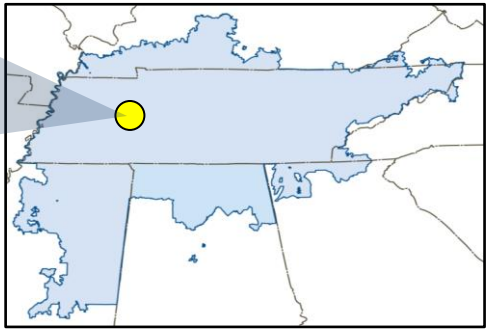


DESCRIPTION:

Install a 500/161 kV inter-tie transformer bank at the Johnsonville Fossil Plant substation.

SUPPORTING STATEMENT:

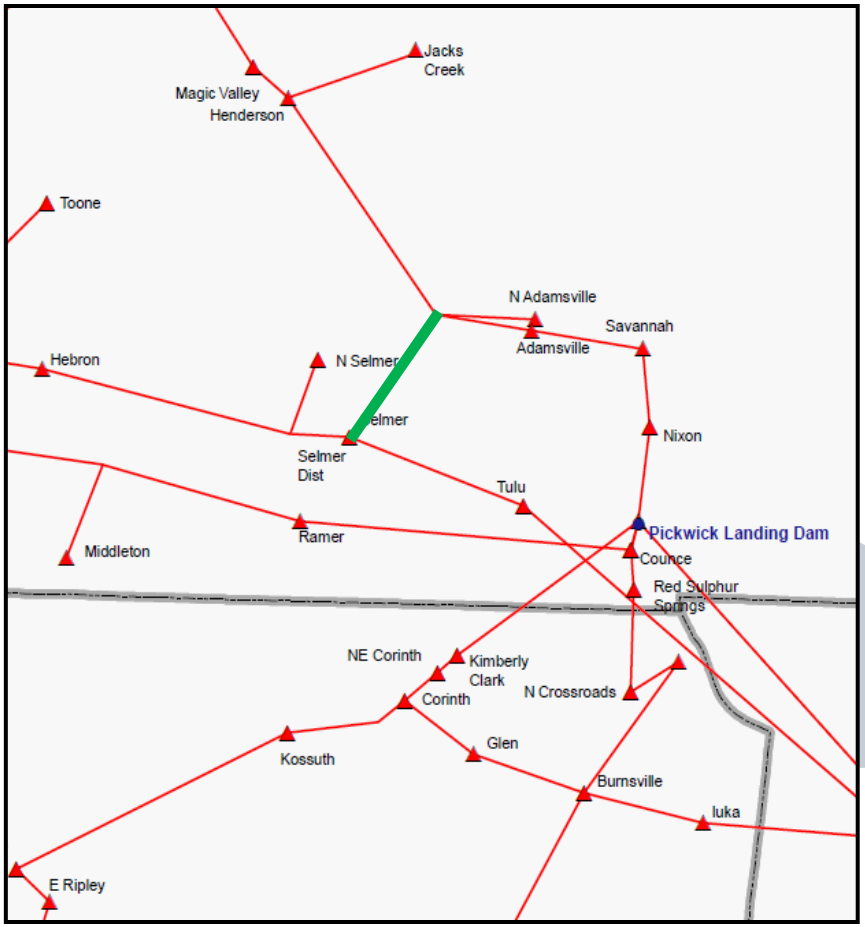
The retirement of Johnsonville units 1-10 requires the replacement of the 500/161 kV inter-tie transformer bank at Johnsonville.



TVA – 4

2017

SELMER – WEST ADAMSVILLE 161 KV T.L.

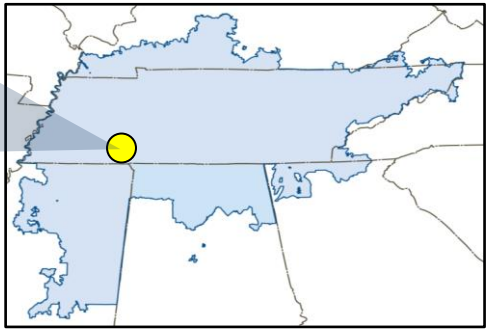


DESCRIPTION:

Construct approximately 15 miles of 161 kV transmission line from Selmer to W. Adamsville with 954 ACSR at 100°C.

SUPPORTING STATEMENT:

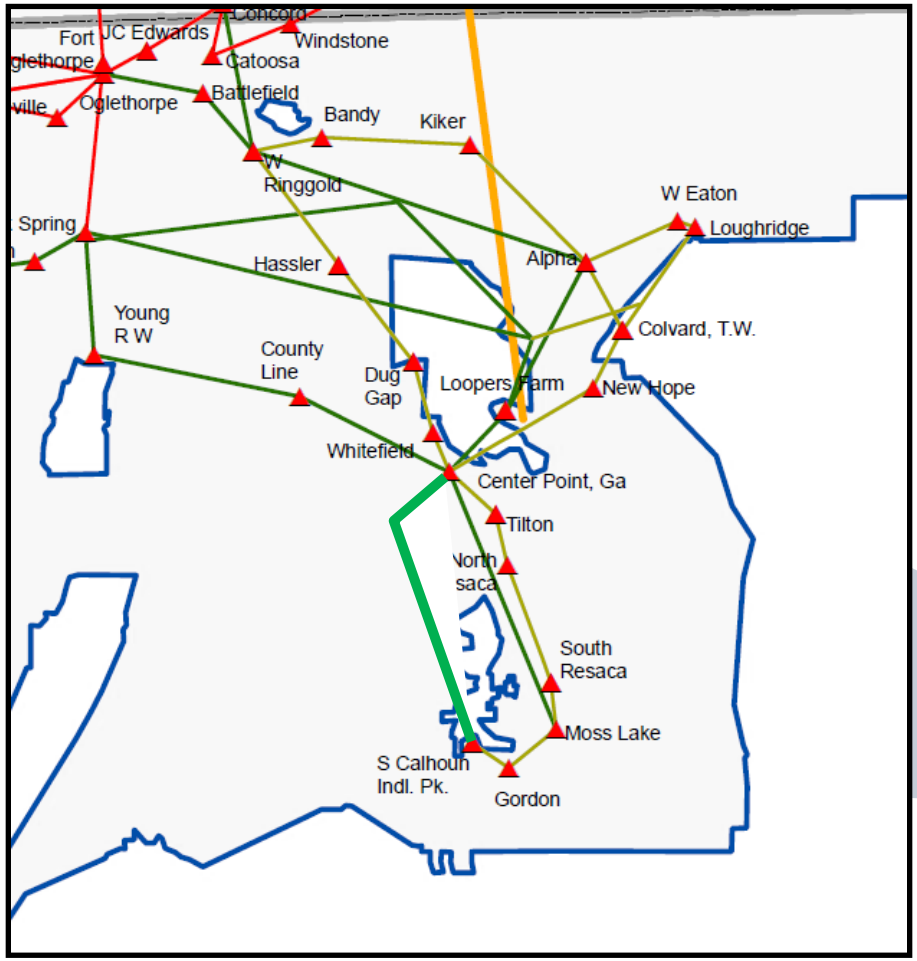
Additional voltage support needed in the Bolivar, TN area under contingency.



TVA – 5

2017

SWAMP CREEK – FULLER 115 KV T.L.

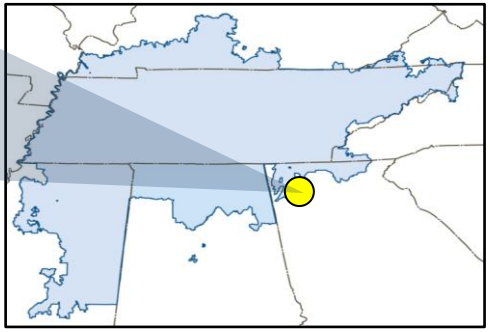


DESCRIPTION:

Construct approximately 19.2 miles of new 115 kV transmission line to create the Swamp Creek – Fuller 115 kV transmission line with 1351.5 ACSR at 100°C.

SUPPORTING STATEMENT:

Additional voltage support needed in the northern GA area under contingency.



TVA – 6

2018

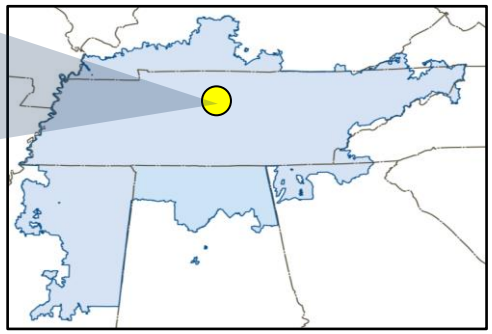
NASHVILLE AREA IMPROVEMENT PLAN

DESCRIPTION:

Install an additional 1254 MVA, 500/161 kV transformer bank at the Pin Hook 500 kV substation. Reconductor the Nolensville Road – Elysian Fields 161 kV T.L. with 636 ACSS at 150°C. Reconductor the Murfreesboro Road – Airport 161 kV T.L. with 636 ACSS at 150°C. Reconductor the Blackman Tap – Smyrna 161 kV T.L. with 636 ACSS at 150°C. Construct the Montgomery – Clarksville #3 161 kV T.L. with 1590 ACSS at 150°C.

SUPPORTING STATEMENT:

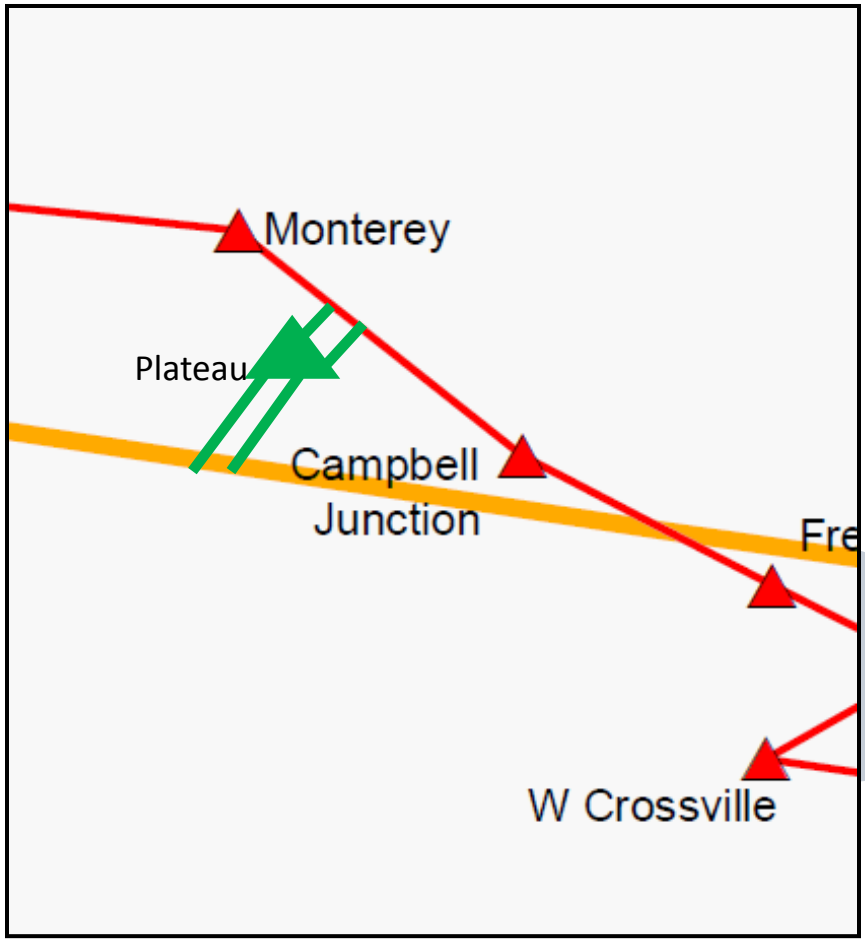
Thermal overloads and additional voltage support needed in the Nashville area under contingency.



TVA – 7

2018

PLATEAU 500 KV SUBSTATION

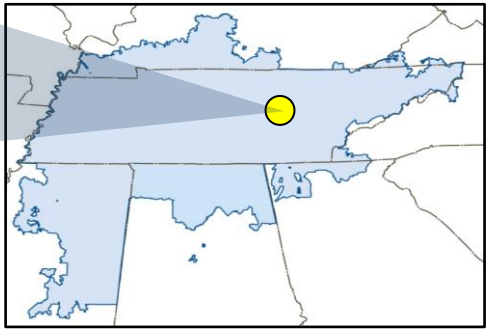


DESCRIPTION:

Construct the Plateau 500 kV substation by looping in the Wilson – Roane 500 kV and West Cookeville – Rockwood 161 kV transmission lines.

SUPPORTING STATEMENT:

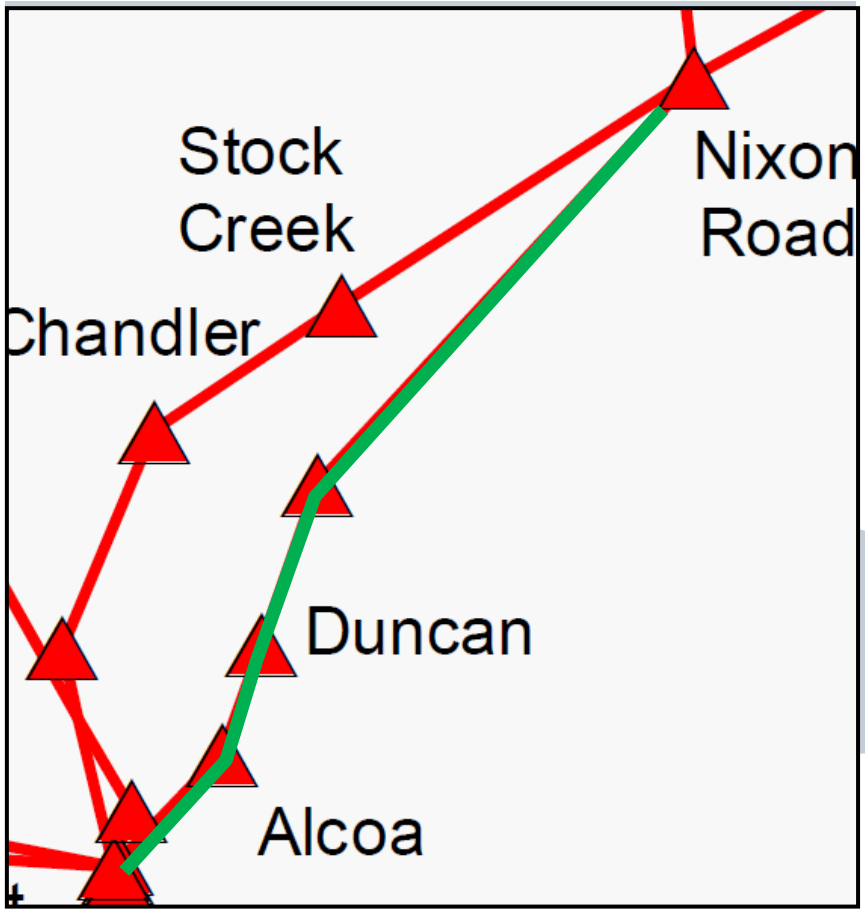
Thermal overload and need for additional voltage support in the Murfreesboro, TN and Knoxville, TN areas under contingency.



TVA – 8

2019

ALCOA SS – NIXON ROAD 161 KV T.L.

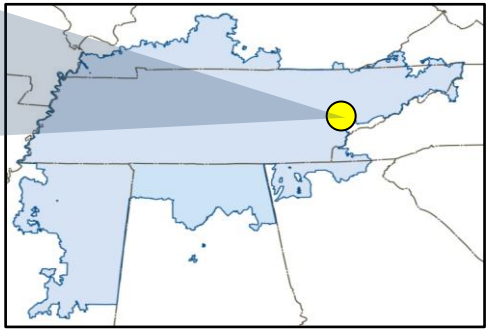


DESCRIPTION:

Rebuild approximately 12 miles of the Alcoa North – Nixon Road 161 kV transmission line with 1590 ACSR at 100°C and construct approximately 2 miles of new transmission line to create the Alcoa SS – Nixon Rd 161 kV #2 transmission line.

SUPPORTING STATEMENT:

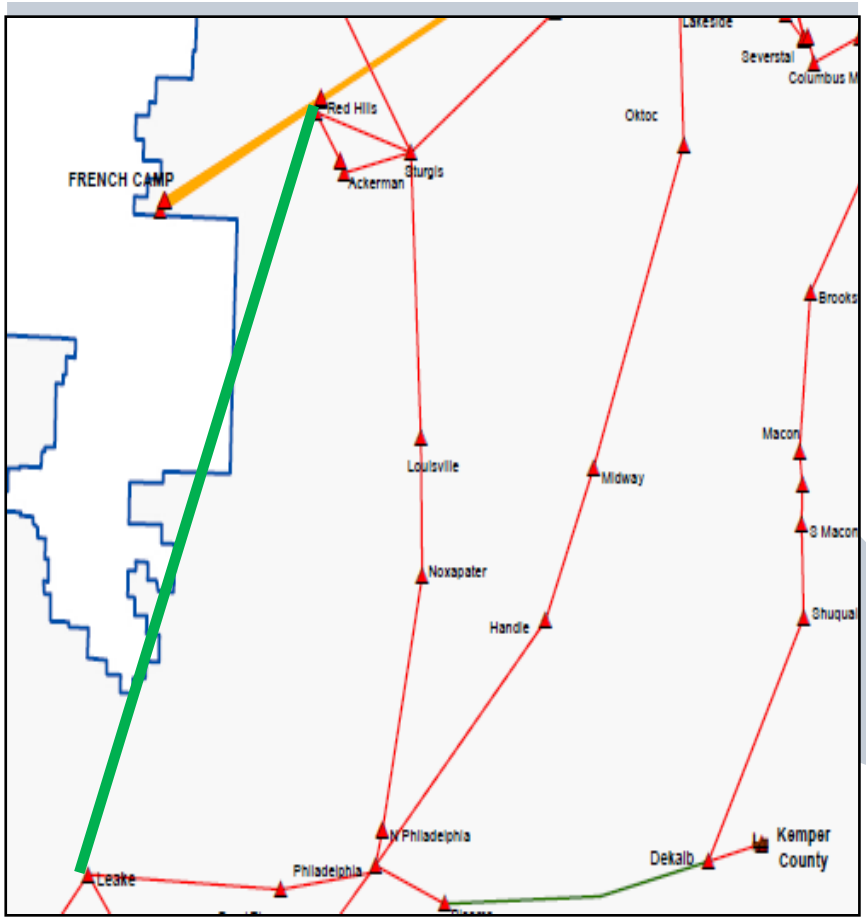
The Alcoa Switching Station – Nixon Road 161 kV transmission line overloads under contingency.



TVA – 9

2019

RED HILLS – LEAKE 161 KV T.L.

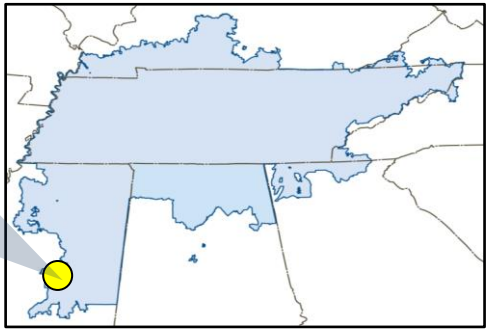


DESCRIPTION:

Construct approximately 60 miles of the new Red Hills – Leake 161 kV transmission line with 954 ACSR at 100°C.

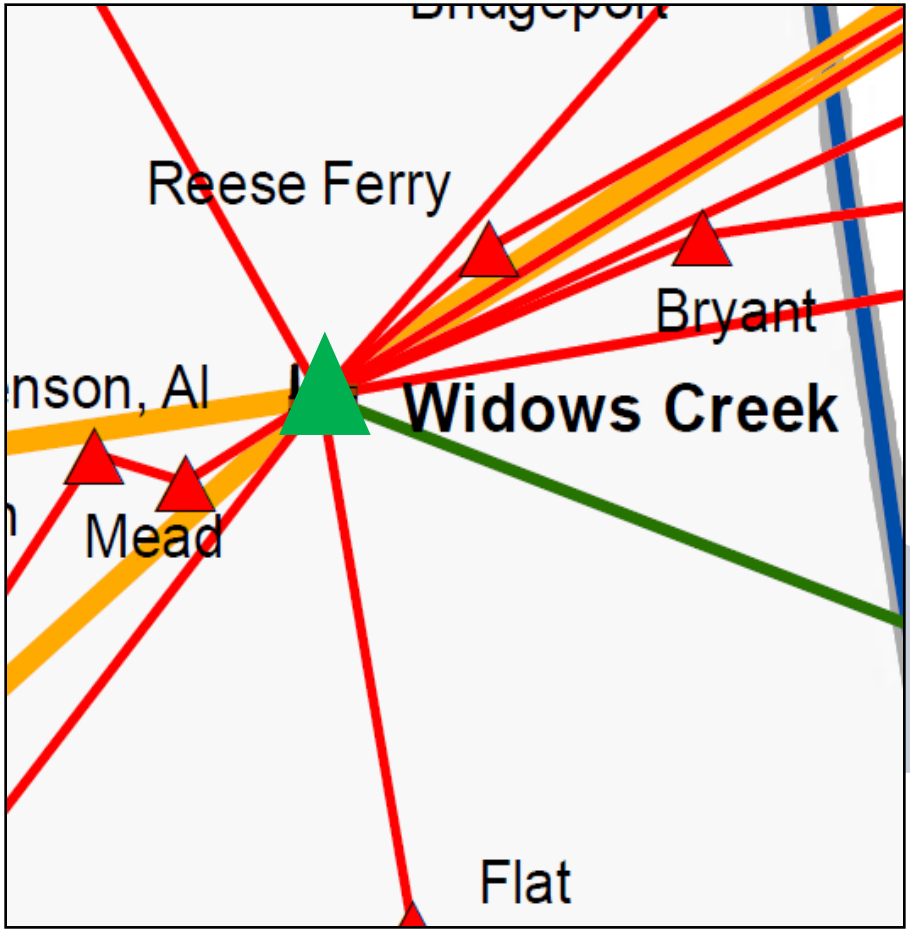
SUPPORTING STATEMENT:

Multiple 161 kV transmission lines in the lower MS area overload under contingency and additional voltage support is needed in the lower MS area under contingency.



TVA – 10 2019

WIDOWS CREEK FP SUBSTATION

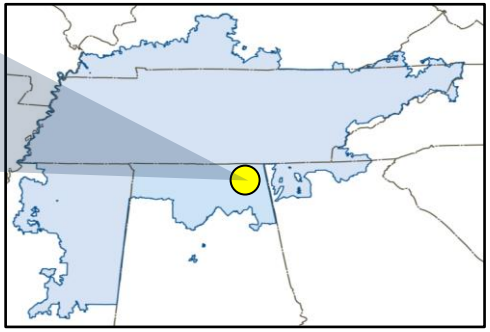


DESCRIPTION:

Install a second 500/161 kV transformer at the Widows Creek Fossil Plant substation.

SUPPORTING STATEMENT:

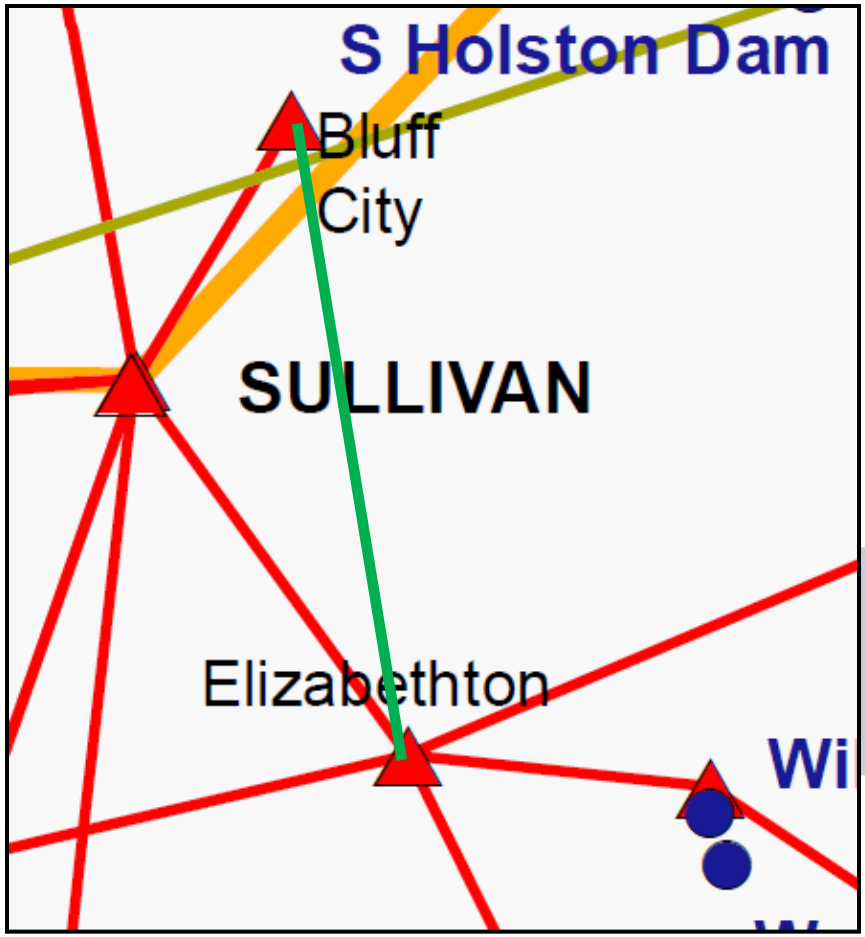
Multiple transmission lines overload and additional voltage support needed in the Huntsville, AL area under contingency.



TVA – 11

2020

BLUFF CITY – ELIZABETHTON 161 KV T.L.

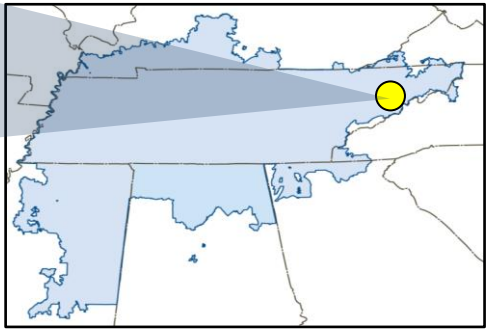


DESCRIPTION:

Construct approximately 12 miles of 161 kV transmission line from Bluff City to Elizabethton with 954 ACSR at 100°C.

SUPPORTING STATEMENT:

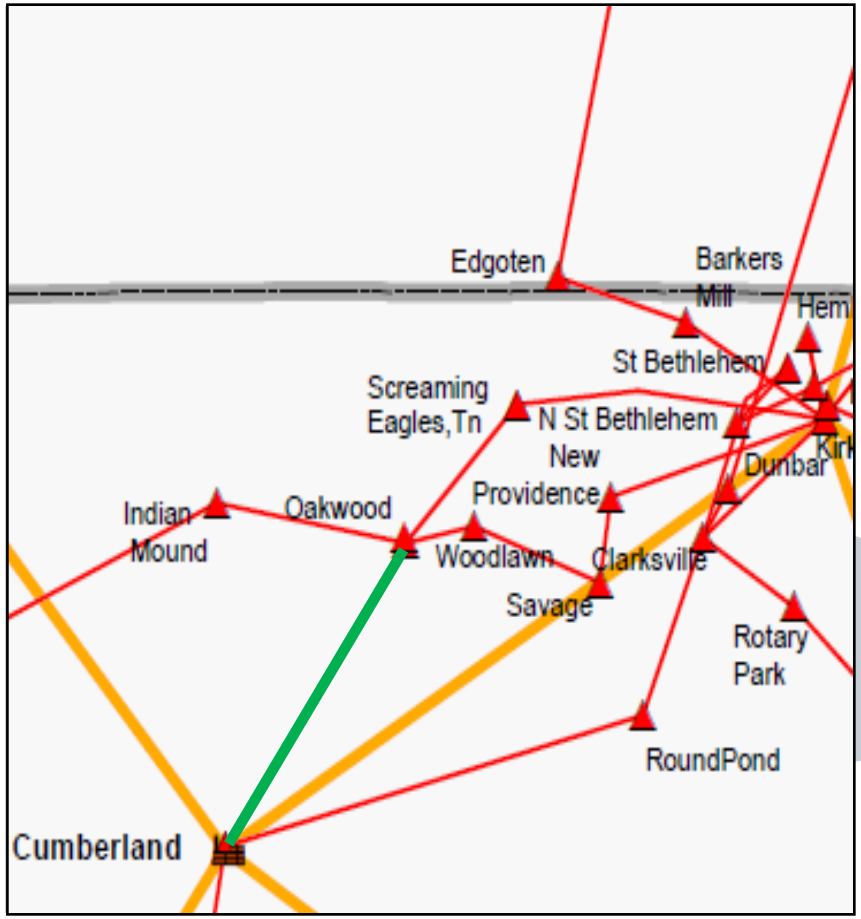
Additional voltage support is needed in the Elizabethton, TN area under contingency.



TVA – 12

2020

OAKWOOD – CUMBERLAND 161 KV T.L.

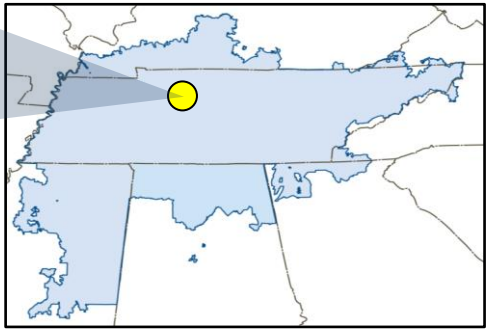


DESCRIPTION:

Construct approximately 16 miles of 161 kV transmission line from Oakwood to Cumberland with 795 ACSR at 100°C.

SUPPORTING STATEMENT:

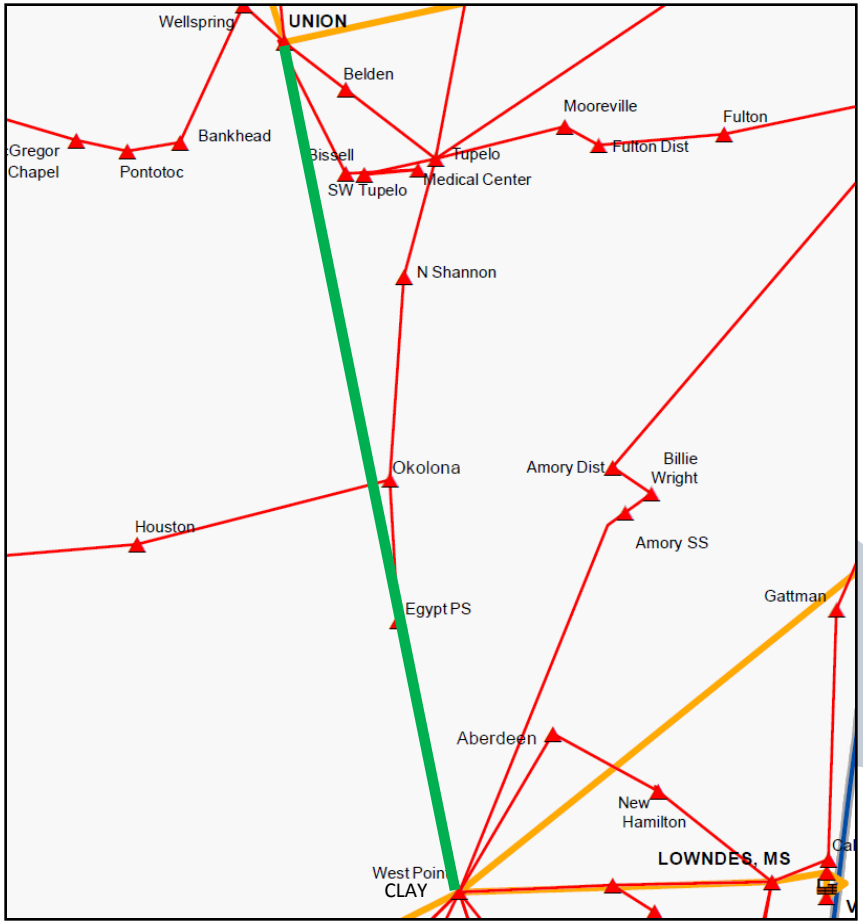
Additional voltage support is needed in the Oakwood, TN area under contingency.



TVA – 13

2023

UNION – CLAY 500 KV T.L.

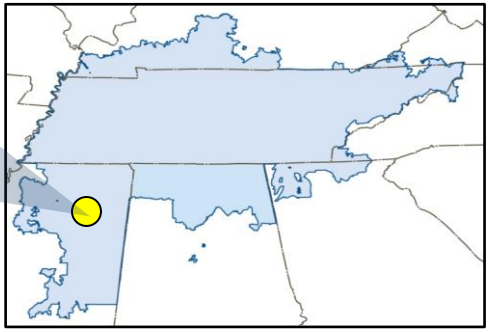


DESCRIPTION:

Construct approximately 50 miles of the Union – Clay 500 kV transmission line using 3-bundled 954 ACSR at 100°C.

SUPPORTING STATEMENT:

Multiple transmission lines overload and additional voltage support is needed in the MS area under contingency.

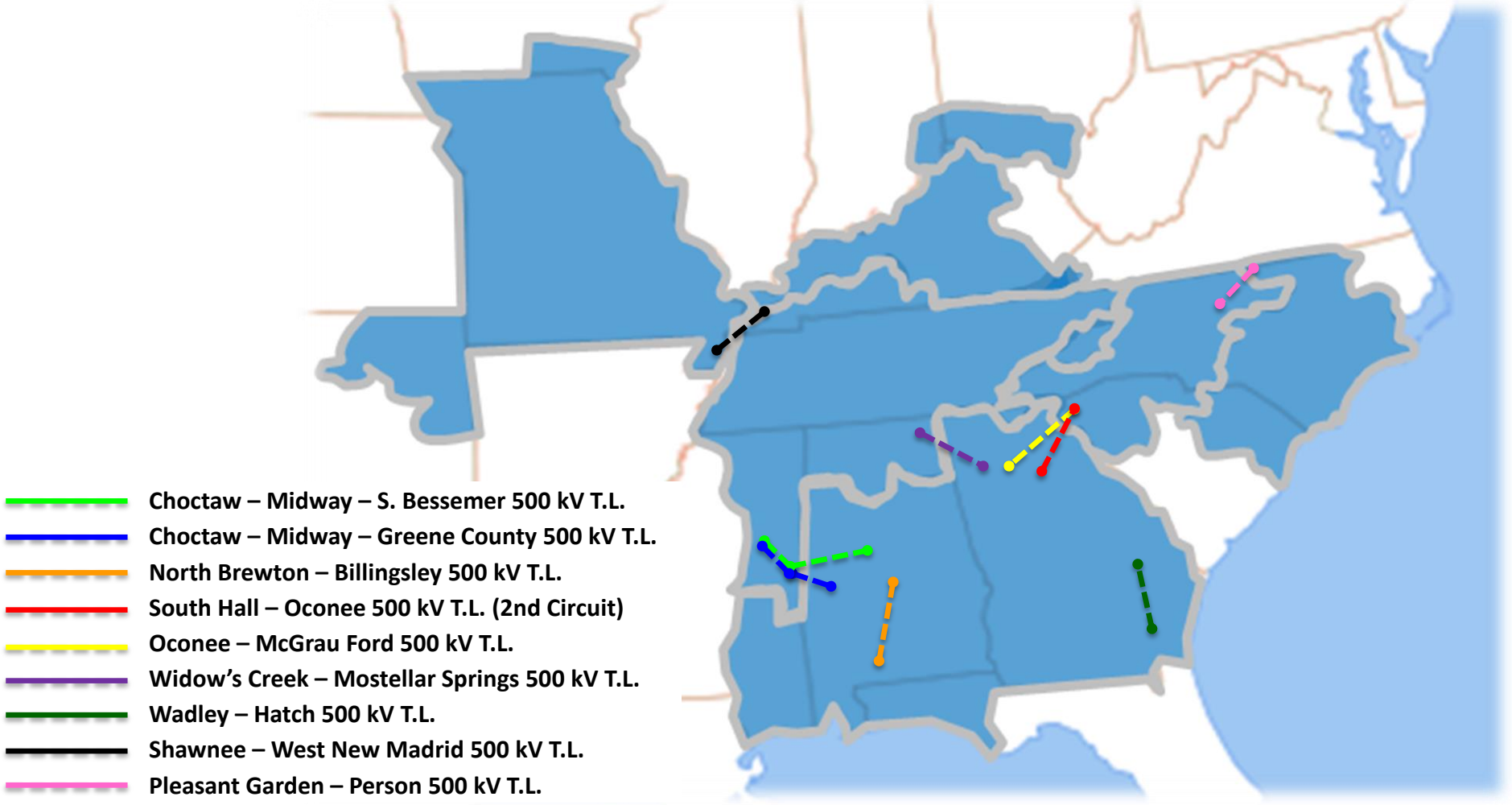


SERTP

Miscellaneous Updates

Regional Transmission Analyses

Preliminary List of Alternative Transmission Projects



Order No.1000 Update

- **SERTP Interregional Orders Issued:**
  - SCRTP, FRCC, PJM, and MISO (1/23/15)
  - SPP (3/19/15)
  - Filings were largely accepted
- **SERTP Interregional Compliance Filings:**
  - SCRTP and FRCC (3/24/15)
  - SPP (5/18/15)
  - PJM (5/26/15)
  - MISO (6/22/15)
- **SERTP Regional Order Issued (4/13/15)**
  - Filing was largely accepted
- **SERTP Regional Compliance Filing (5/12/15)**

Regional Model Update

- **Currently exchanging the latest transmission models for the ten year planning horizon with FRCC.**

- **FRCC models will be incorporated into subsequent base cases.**

Next Meeting Activities

- **2015 SERTP 3rd Quarter Meeting** – *Second RPSG Meeting*
  - **Location: TBD**
  - **Date: September 2015**
  - **Purpose:**
    - Discuss Preliminary Economic Planning Study Results
    - Discuss Previous Stakeholder Input on Transmission Expansion Plans

Questions?

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