SERTP – 2014 4th Quarter Meeting

Annual Transmission Planning Summit

& Assumptions Input Meeting

December 18th, 2014

GPC Headquarters

Atlanta, GA

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

- 2014 SERTP Economic Planning Studies – Final Results
- Ten (10) Year Regional Transmission Plan
- 2015 Preliminary Modeling Input Assumptions
- SERTP Regional Transmission Analyses
- Miscellaneous Updates
- Upcoming 2015 SERTP Process

SERTP

Economic Planning Studies

Study Process

- **SERTP Sponsors identify the transmission requirements needed to move large amounts of power above and beyond existing long-term, firm transmission service commitments**
  - Analysis is consistent with NERC standards and company-specific planning criteria
- **Models used to perform the analysis incorporate the load forecasts and resource decisions as provided by LSEs**
  - Power flow models are made available to stakeholders to perform additional screens or analysis
- **Scoping Meeting held in May**

Five Economic Planning Studies

- **Santee Cooper Border to FRCC Border**
  - 300 MW (2017 Summer Peak and Shoulder)
- **FRCC Border to Santee Cooper Border**
  - 300 MW (2017 Summer Peak and Shoulder)
- **TVA Border to Southern**
  - 500 MW (2019 Summer Peak and Shoulder)
- **TVA Border to Southern**
  - 1500 MW (2019 Summer Peak and Shoulder)
- **TVA Border to Duke Energy Border**
  - 1000 MW (2019 Summer Peak and Shoulder)

Power Flow Cases Utilized

- **Study Years:**
  - 2017 and 2019
- **Load Flow Cases:**
  - 2014 Series Version 2A
  - Summer Peak and Shoulder

Final Report Components

- **Thermal and Voltage Analysis**
  - Contingency analysis to identify constrained elements/contingency pairs
- **Interface Transfer Capability Analysis**
- **Stability Impacts**
- **Potential Solutions**
  - Transmission enhancements and cost estimates

Process Information

- **The following information depicts recommended enhancements for the proposed transfer levels above and beyond existing, firm commitments. Therefore, this information does not represent a commitment to proceed with the recommended enhancements nor implies that the recommended enhancements could be implemented by the study dates (2017 and 2019).**

- **These potential solutions only address constraints identified within the SERTP Sponsors' areas that are associated with the proposed transfers. Other Balancing Areas were not monitored which could result in additional limitations and required system enhancements.**

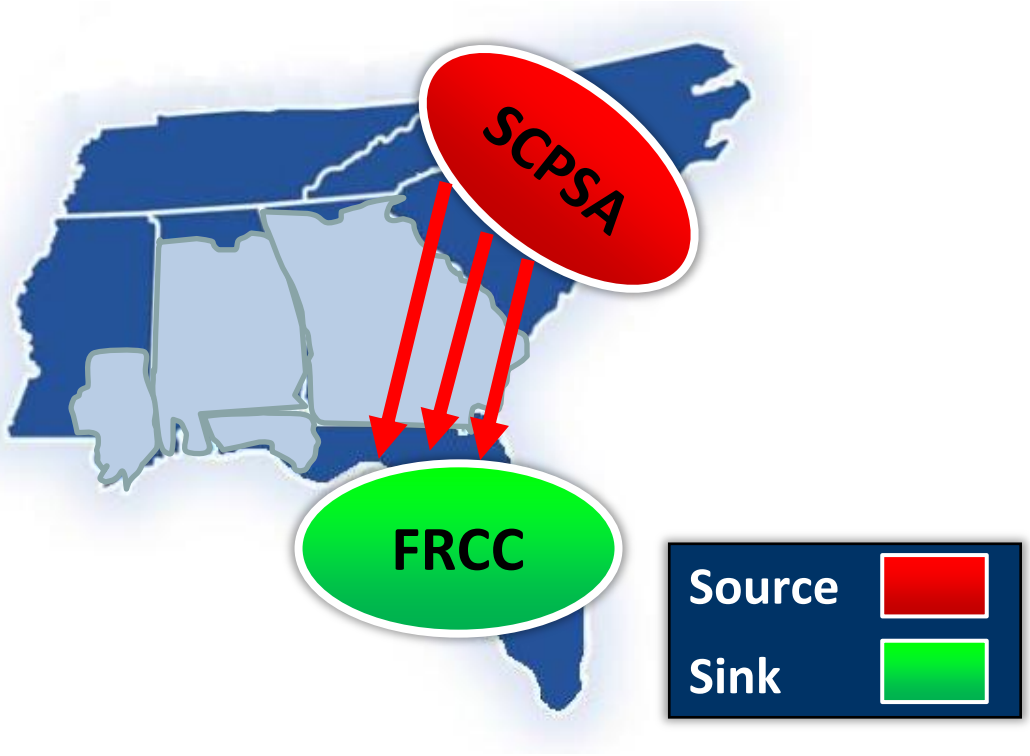
Economic Planning Studies

Santee Cooper Border to FRCC Border 300 MW

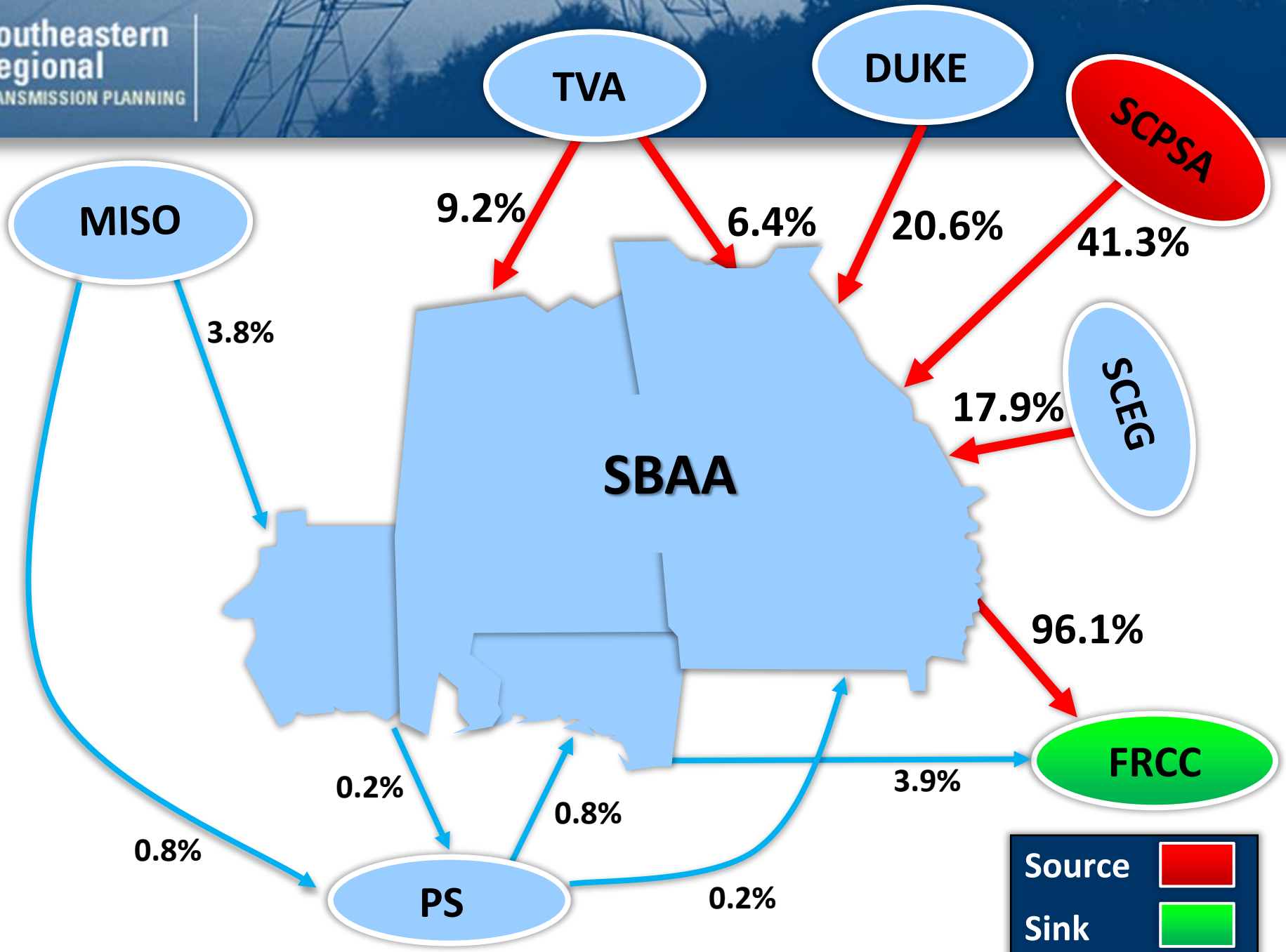
Santee Cooper to FRCC – 300 MW

Study Assumptions

- **Transfer Type:** Load to Load (2017 Summer Peak and Shoulder)
- **Source:** Uniform load scale within Santee Cooper
- **Sink:** Uniform load scale within FRCC



Southeastern Regional
TRANSMISSION PLANNING



Note: Red arrows indicate transfer percentages of greater than 5%.

Santee Cooper to FRCC – 300 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - None

Total ($2014) = $0

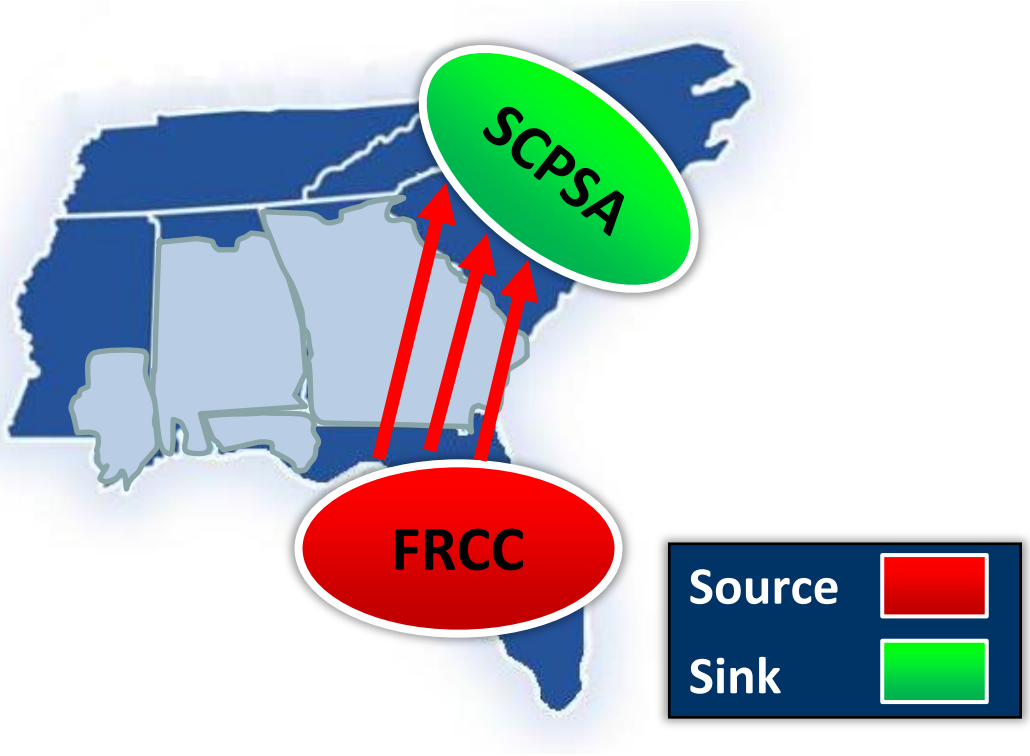
Economic Planning Studies

FRCC Border to Santee Cooper Border 300 MW

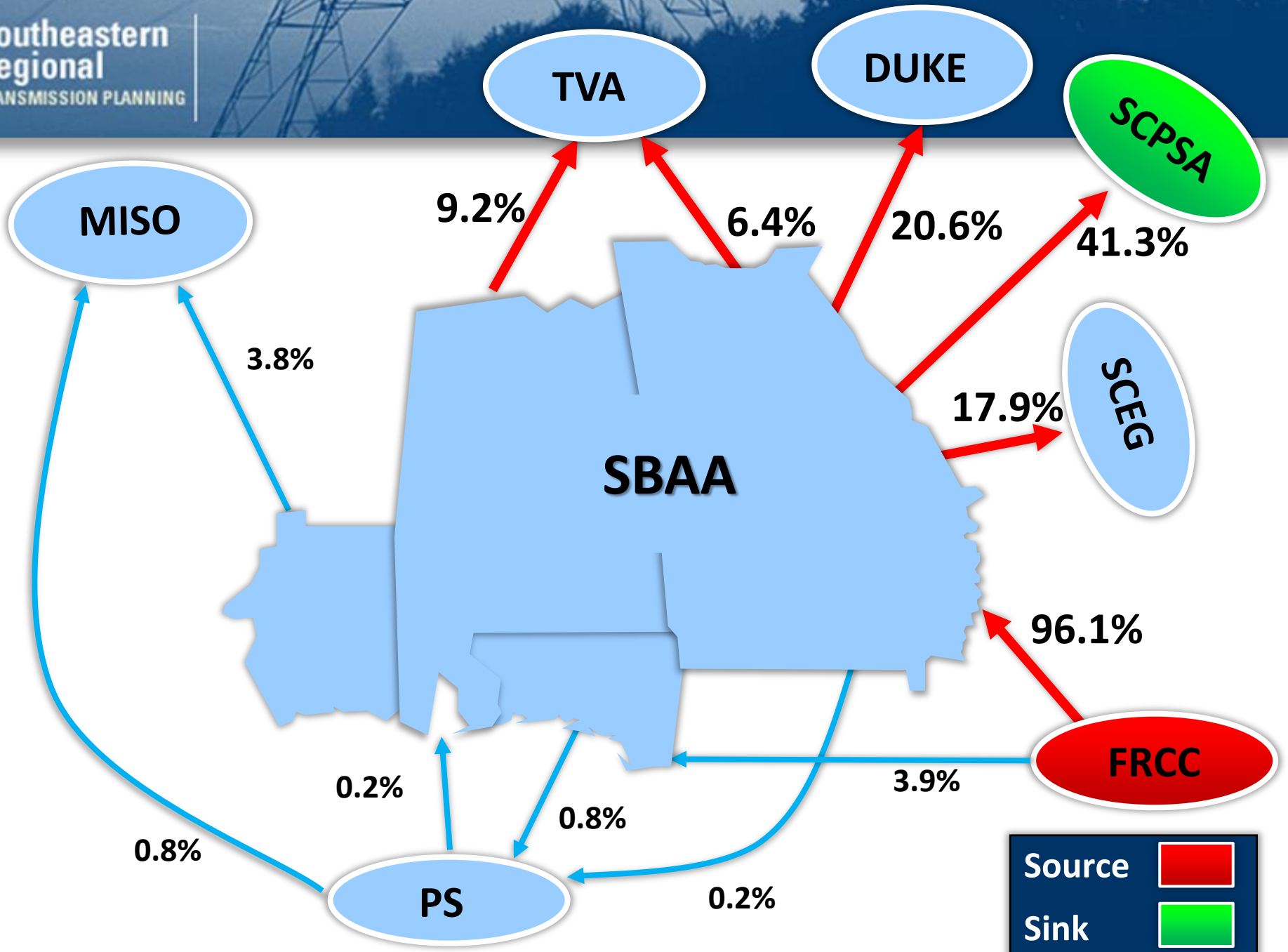
FRCC to Santee Cooper – 300 MW

Study Assumptions

- **Transfer Type:** Load to Load (2017 Summer Peak and Shoulder)
- **Source:** Uniform load scale within FRCC
- **Sink:** Uniform load scale within Santee Cooper



Southeastern Regional
TRANSMISSION PLANNING



Note: Red arrows indicate transfer percentages of greater than 5%.

FRCC to Santee Cooper – 300 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - None

Total ($2014) = $0

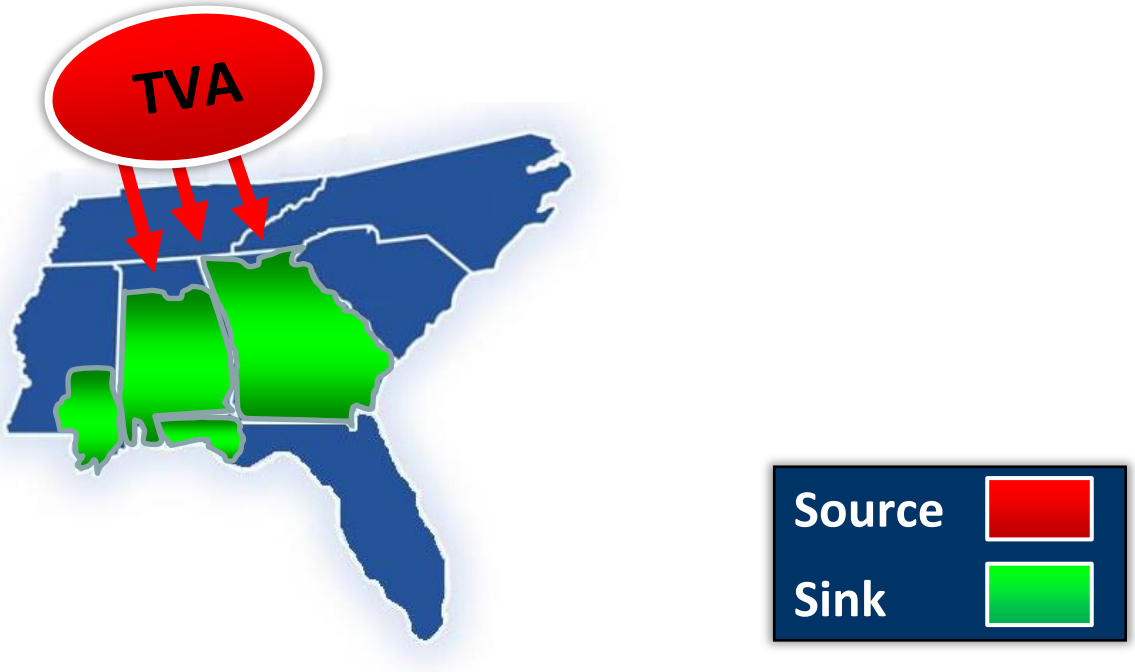
Economic Planning Studies

TVA Border to Southern 500 MW

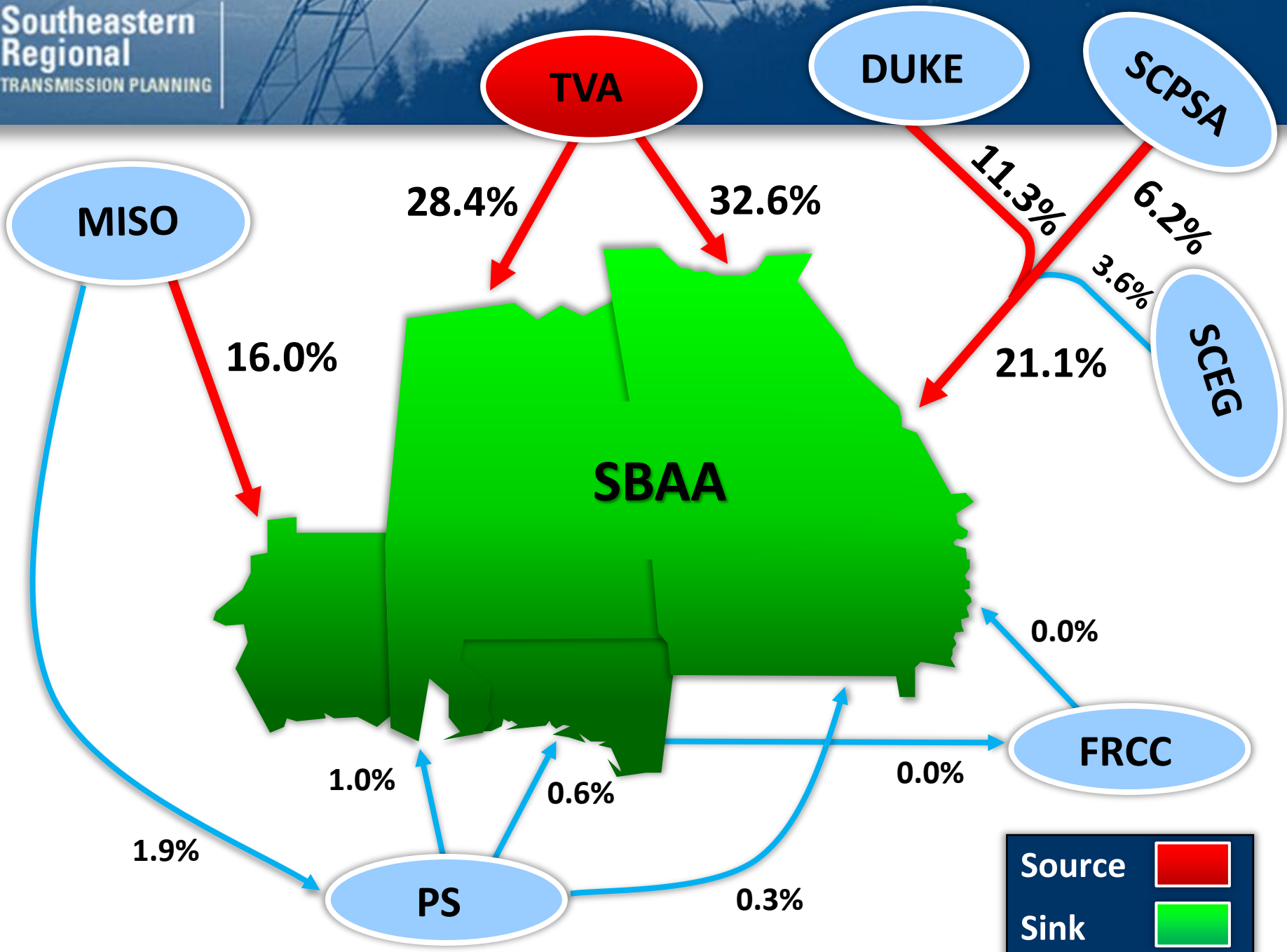
TVA to Southern – 500 MW

Study Assumptions

- **Transfer Type:** Generation to Generation (2019 Summer Peak and Shoulder)
- **Source:** A new generator interconnection to the existing Shelby 500 kV substation (TVA)
- **Sink:** Southern Generation



Southeastern Regional
TRANSMISSION PLANNING



Note: Red arrows indicate transfer percentages of greater than 5%.

TVA to Southern – 500 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - Two (2) 230 kV T.L.
  - One (1) 161 kV T.L.

Total ($2014) = $64,100,000

TVA to Southern – 500 MW

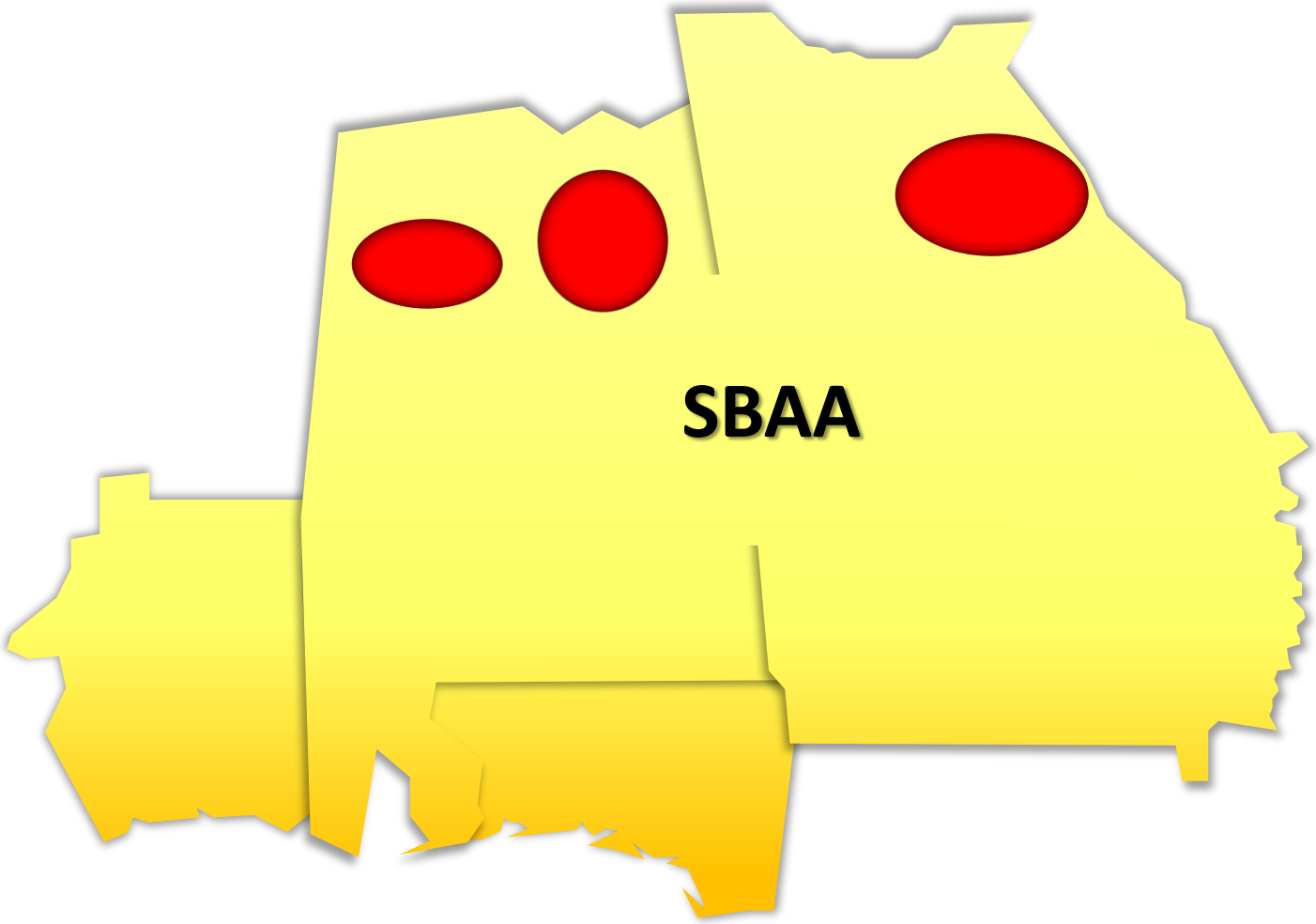
Significant Constraints

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Fayette – Gorgas 161 kV T.L.	193	110.5[(1)]	117.8
Lexington – Russell 230 kV T.L.	596	98.5	102.8
Clay – Leeds 230 kV T.L.	602	97.4	100.6

[(1)] A current operating procedure is sufficient to alleviate this identified constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this transmission facility such that the operating procedure becomes insufficient.

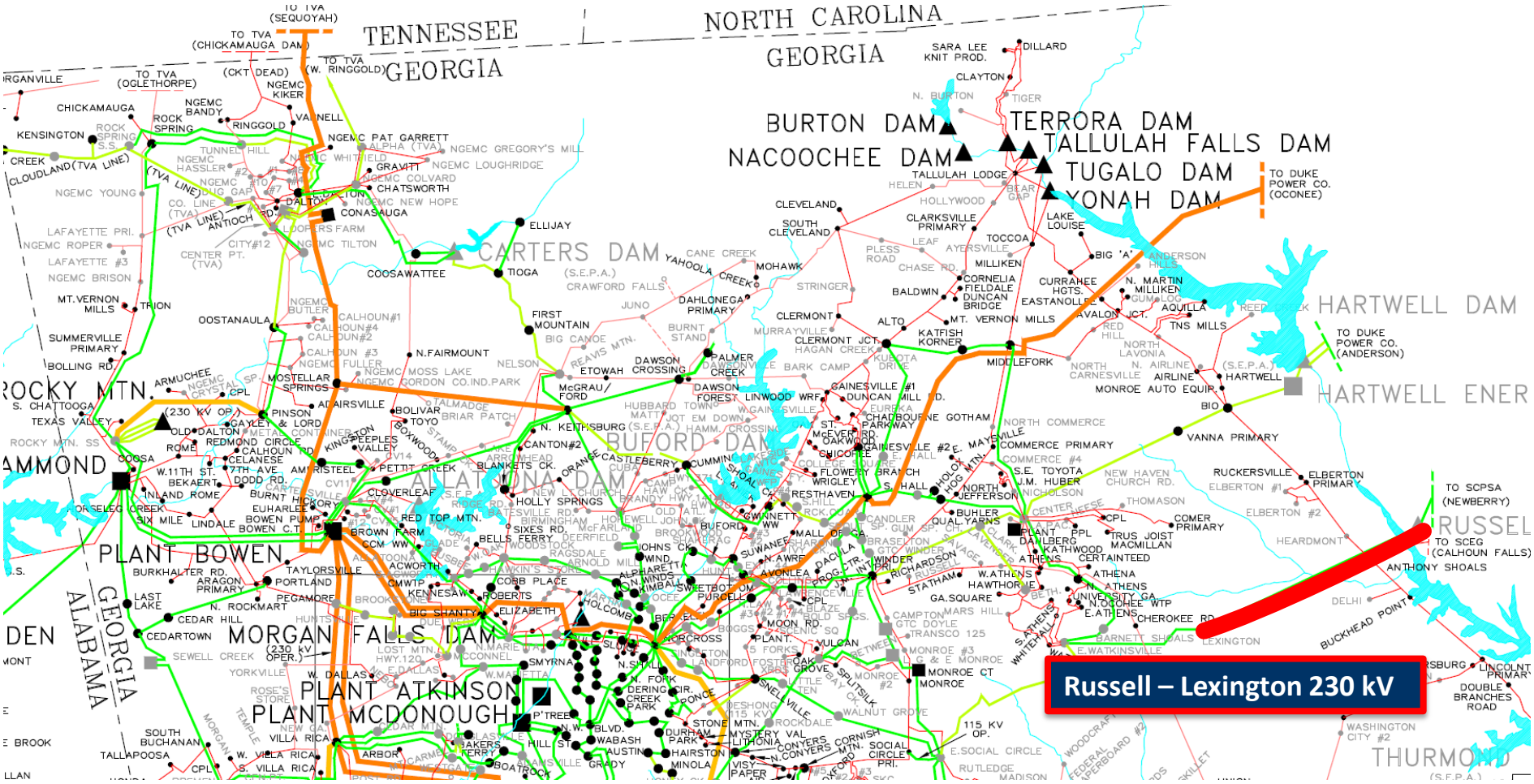
TVA to Southern – 500 MW

Significant Constraints



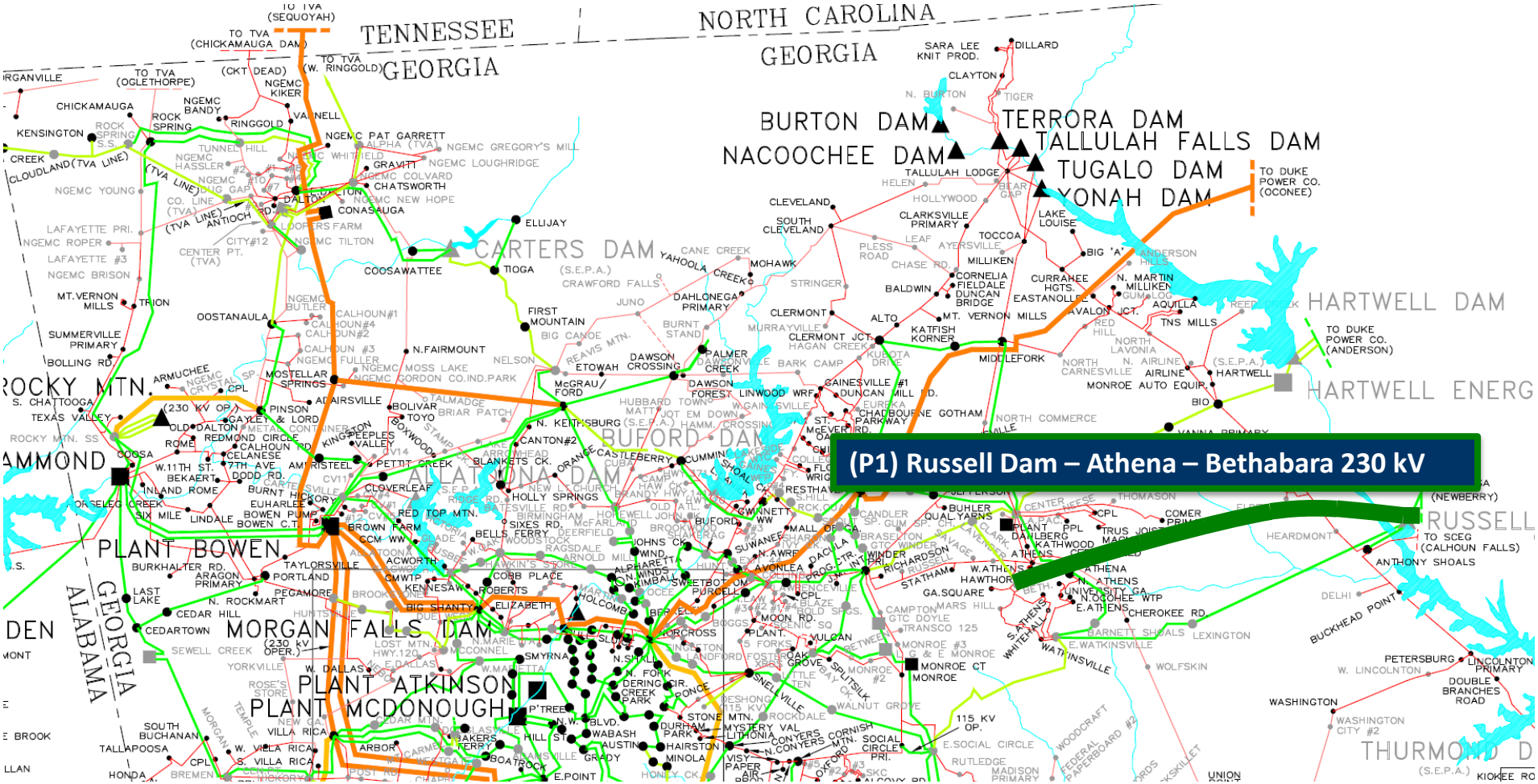
TVA to Southern – 500 MW

Significant Constraints



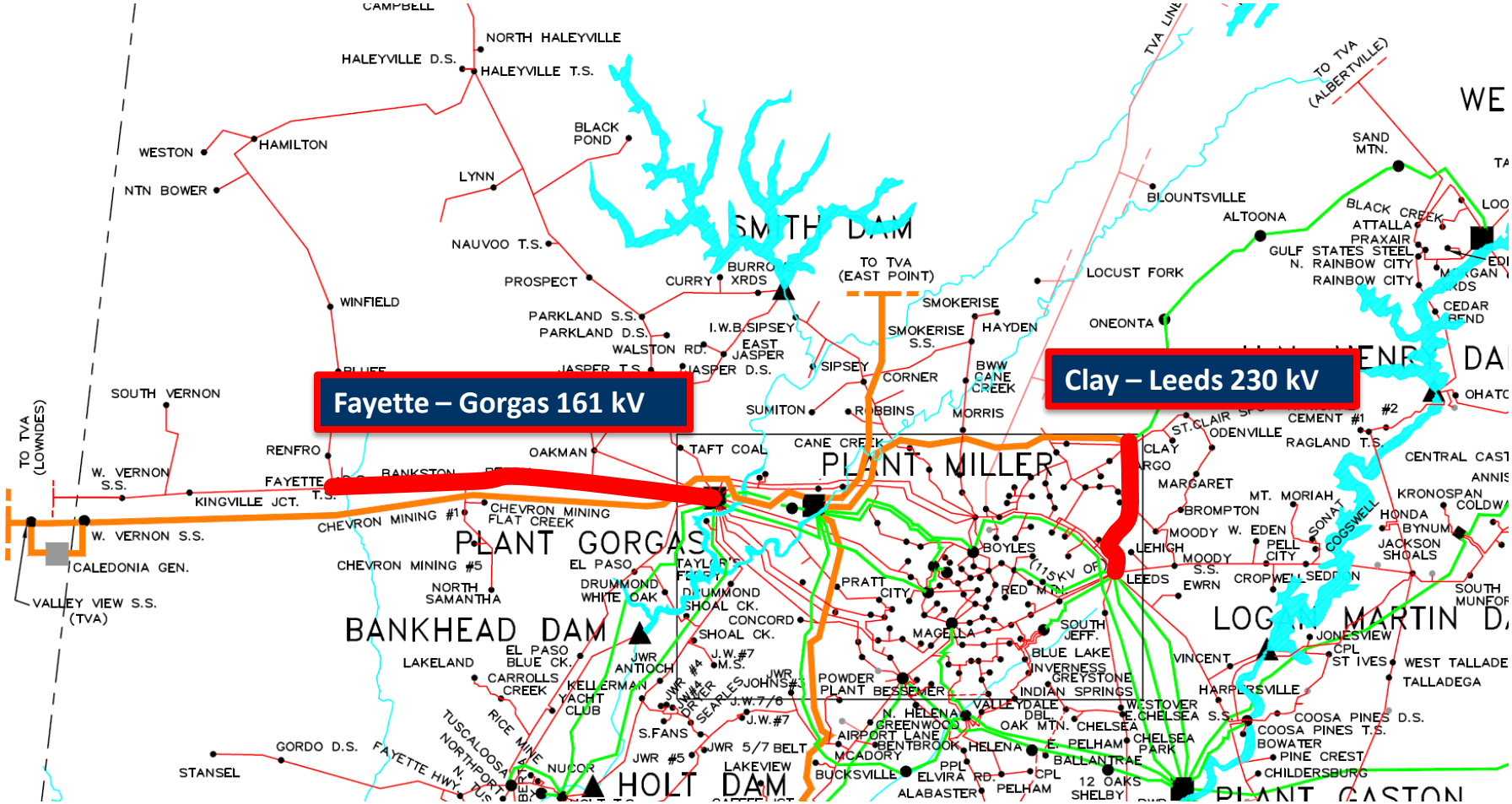
TVA to Southern – 500 MW

Proposed Enhancement



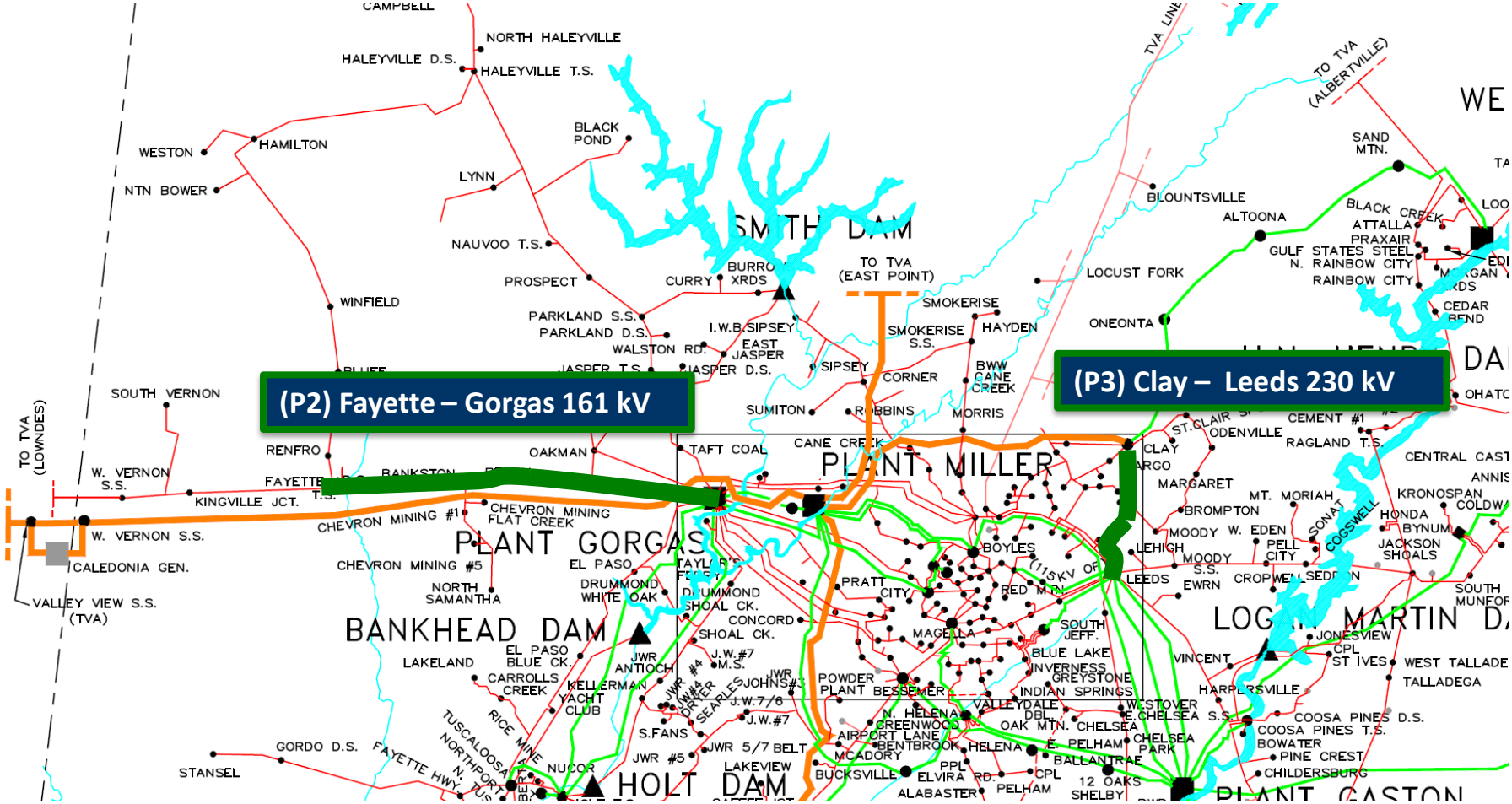
TVA to Southern – 500 MW

Significant Constraints



TVA to Southern – 500 MW

Proposed Enhancements



TVA to Southern – 500 MW

Projects Identified

Item	Proposed Enhancements	Planning Level Cost Estimate($)
P1	**Russell Dam – Athena – Bethabara 230 kV T.L.** - 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 (Advancement of a 2024 project)	**Project Cost** **$95,000,000** **Advancement Cost** **$45,200,000**
P2	**Fayette – Gorgas 161 kV T.L.** - Rebuild approximately 36.7 miles with 795 ACSS at 160°C (Advancement of a 2024 project)	**Project Cost** **$37,000,000** **Advancement Cost** **$17,600,000**
P3	**Clay TS – Leeds TS 230 kV T.L.** - Upgrade approximately 17.3 miles to 125°C operation (Advancement of a 2023 project)	**Project Cost** **$3,400,000** **Advancement Cost** **$1,300,000**

Total ($2014) = $64,100,000

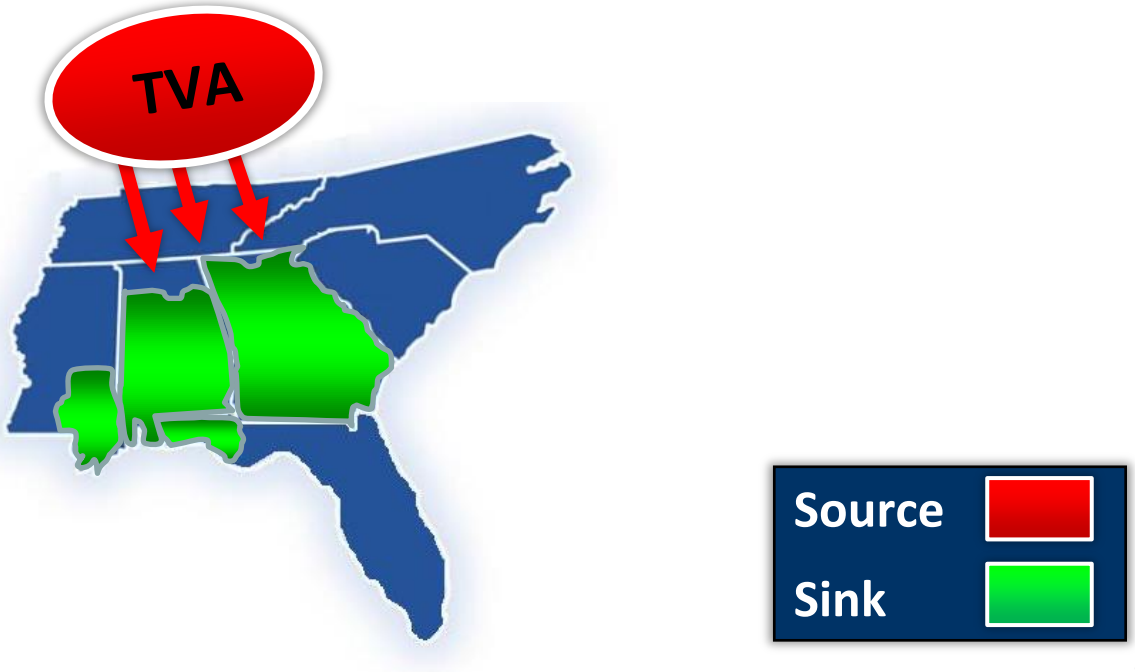
Economic Planning Studies

TVA Border to Southern 1500 MW

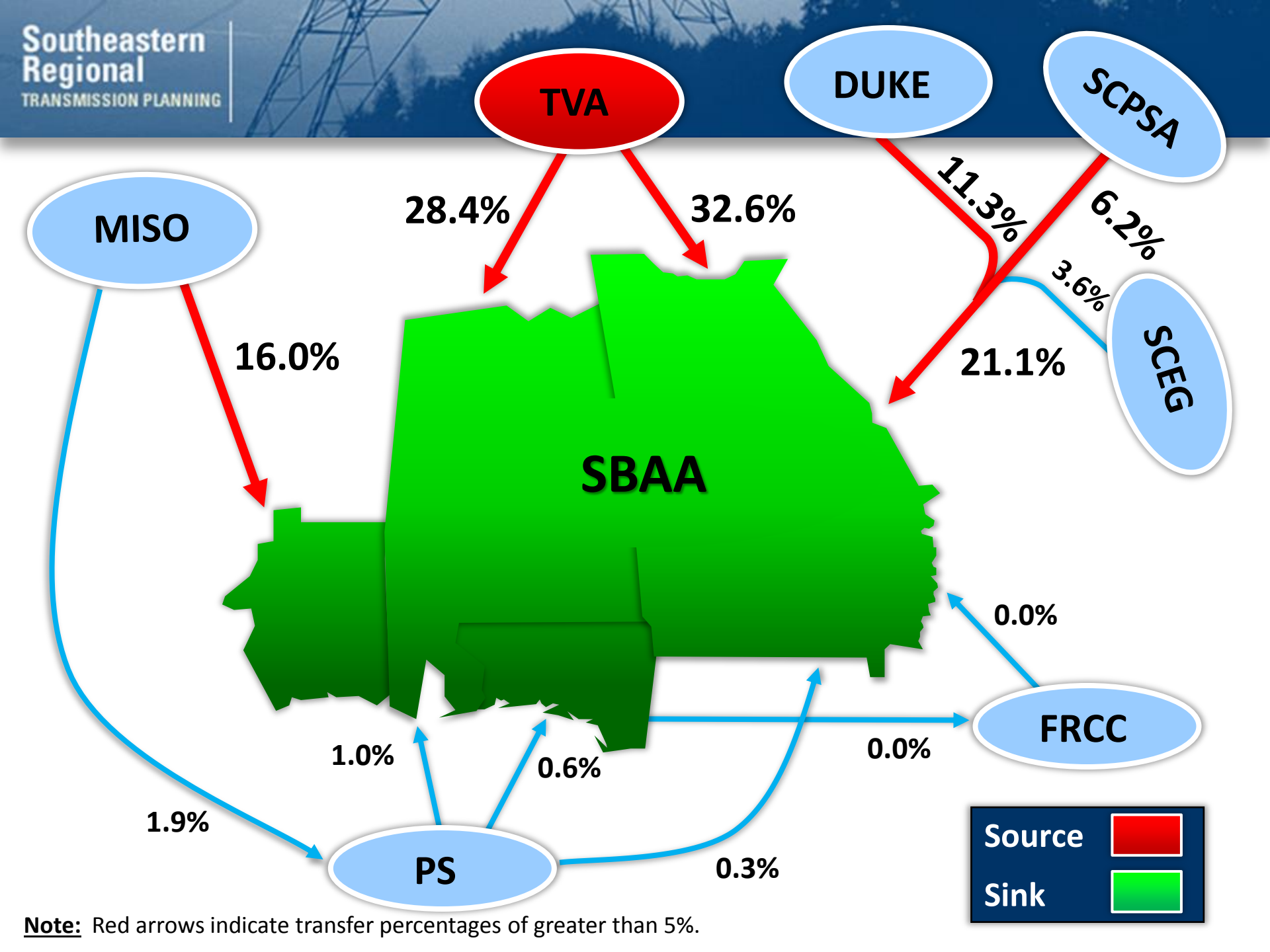
TVA to Southern – 1500 MW

Study Assumptions

- **Transfer Type:** Generation to Generation (2019 Summer Peak and Shoulder)
- **Source:** A new generator interconnection to the existing Shelby 500 kV substation (TVA)
- **Sink:** Southern Generation



Southeastern Regional
TRANSMISSION PLANNING



Note: Red arrows indicate transfer percentages of greater than 5%.

TVA to Southern – 1500 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - One (1) 500 kV T.L.
  - Eight (8) 230 kV T.L.
  - Two (2) 161 kV T.L.
  - One (1) 115 kV T.L.
  - One (1) 500/230 kV transformer
  - One (1) 230/115 kV transformer

Total ($2014) = $227,500,000

TVA to Southern – 1500 MW

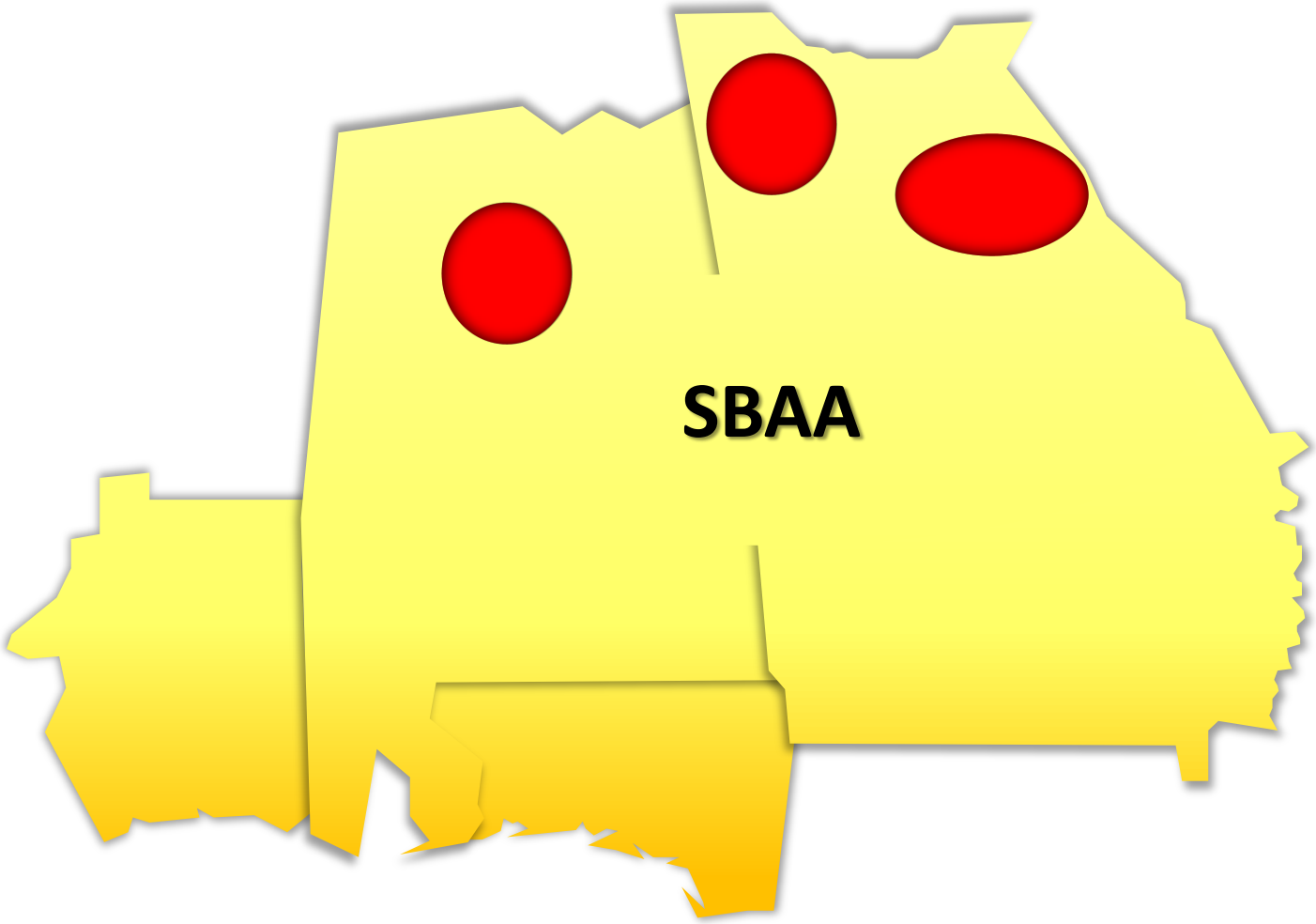
Significant Constraints – Pass 0

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Oostanaula – East Dalton 230 kV T.L.	664	93.8	109.1
Lexington – Russell 230 kV T.L.	596	98.5	106.8
South Hall – Candler 230 kV T.L.	509	95.9	104.3
Conasauga – Bradley 500 kV T.L.(1)	2598	90.2	104.1
Bio – Vanna 230 kV T.L.	433	99.6	103.4
Lexington – East Watkinsville 230 kV T.L.	602	94.7	102.6
Miller 500/230 kV Transformer	1613	90.7	102.0
East Watkinsville 230/115 kV Transformer	332	90.4	100.3
Vanna – New Haven 230 kV T.L.	433	84.2	100.2

(1) The limiting element of this tie-line constraint is located within TVA.

TVA to Southern – 1500 MW

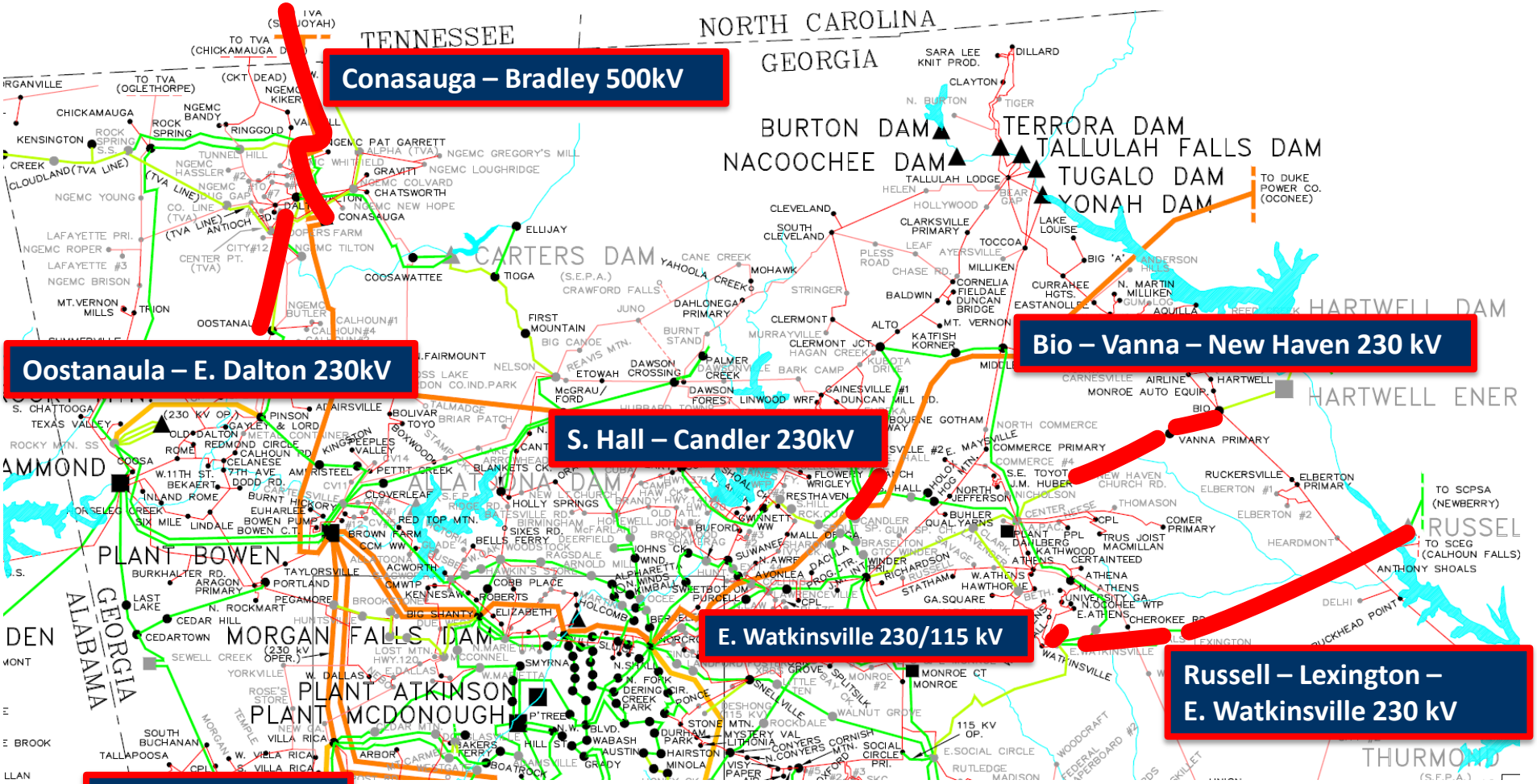
Significant Constraints – Pass 0



Southeastern Regional TRANSMISSION PLANNING

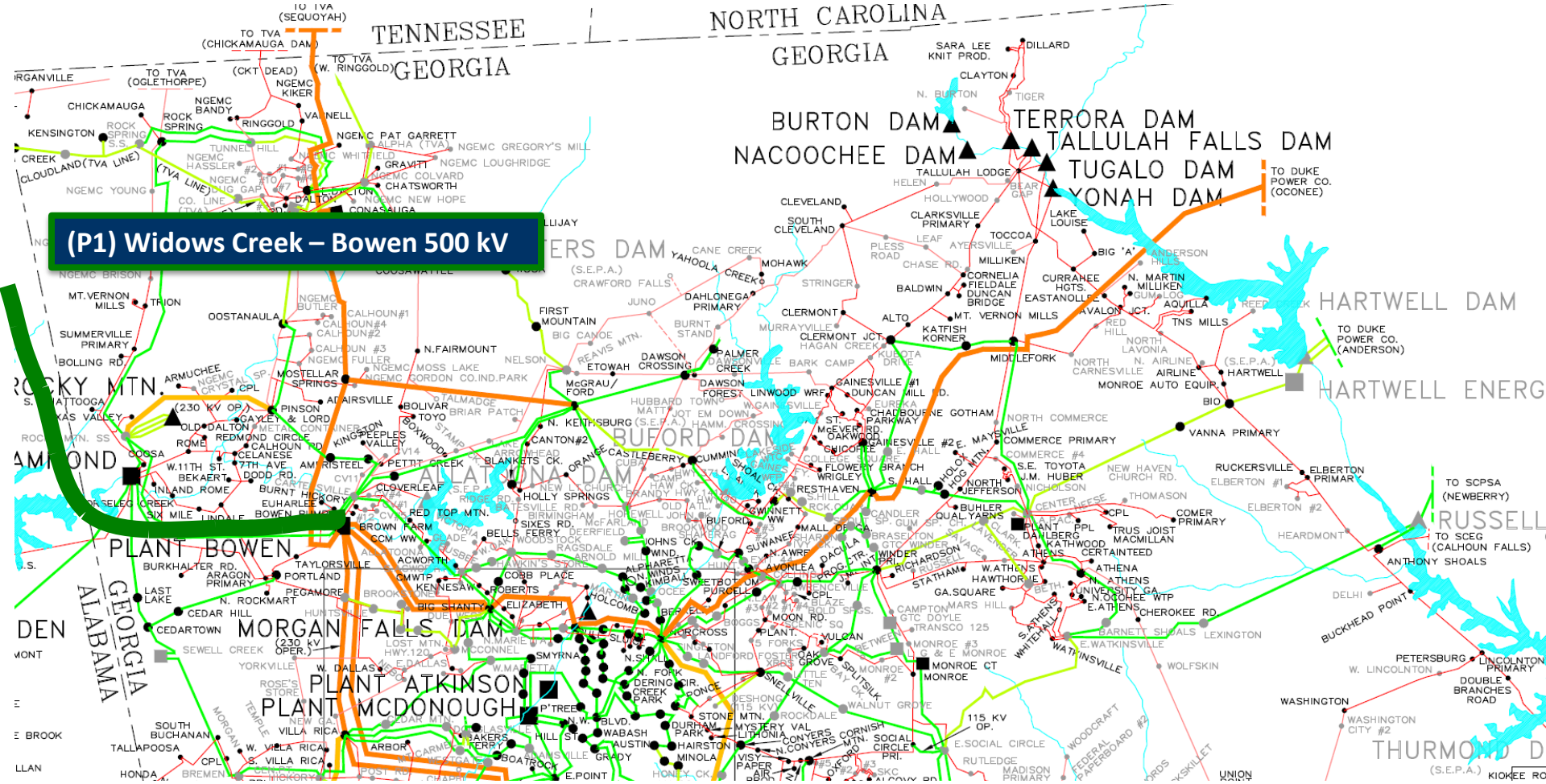
TVA to Southern – 1500 MW

Significant Constraints – Pass 0



TVA to Southern – 1500 MW

Proposed Enhancements – Pass 1



TVA to Southern – 1500 MW

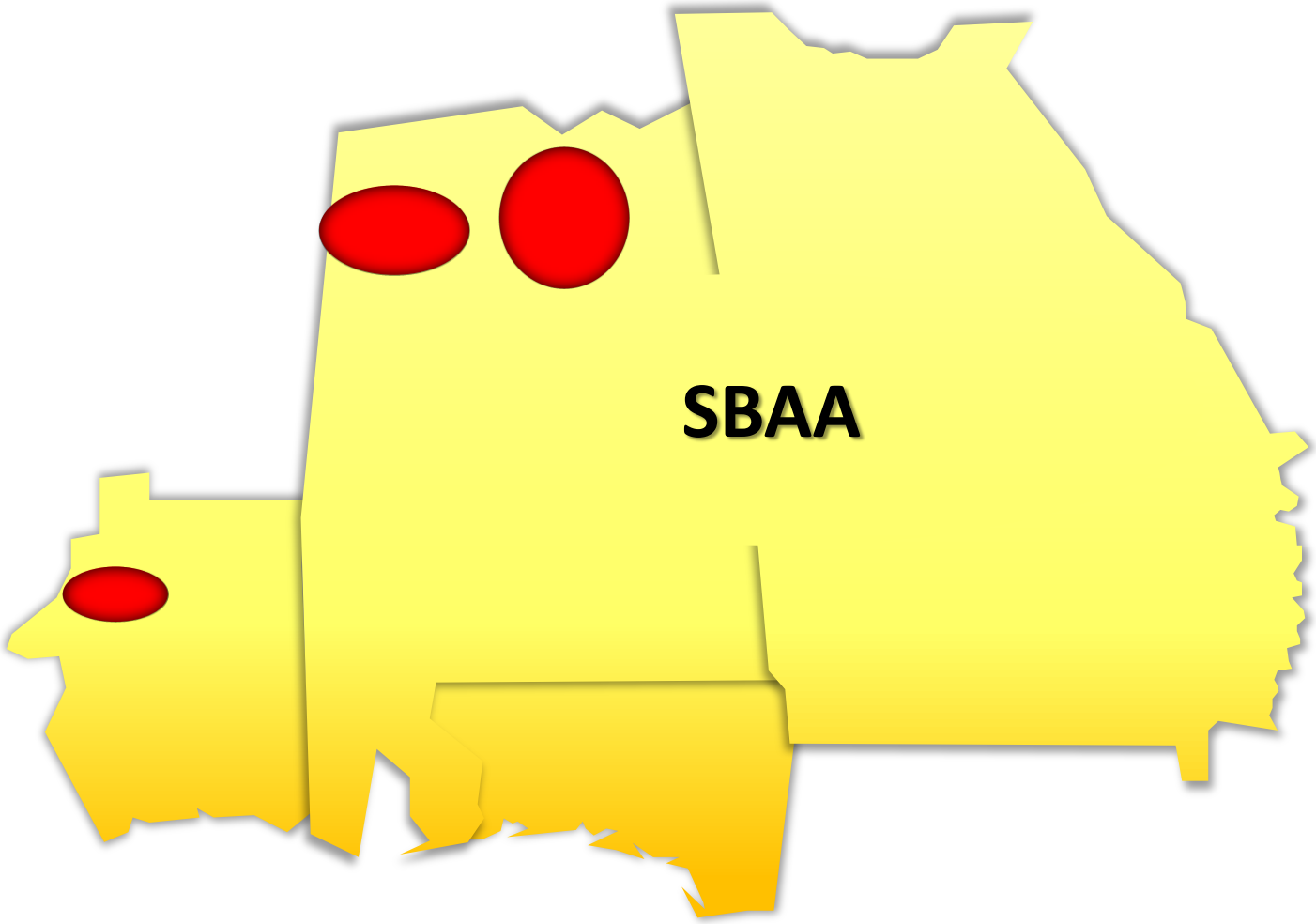
Significant Constraints – Pass 1

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Fayette – Gorgas 161 kV T.L.	193	110.5[(1)]	129.5
Attalla – Albertville 161 kV T.L.	193	94.0	107.5
Collins – Magee 115 kV T.L.	100	88.9	105.7
Miller – Boyles 230 kV T.L.	602	97.8	103.9
Clay – Leeds 230 kV T.L.	602	97.4	103.0

(1) A current operating procedure is sufficient to alleviate this identified constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this transmission facility such that the operating procedure becomes insufficient.

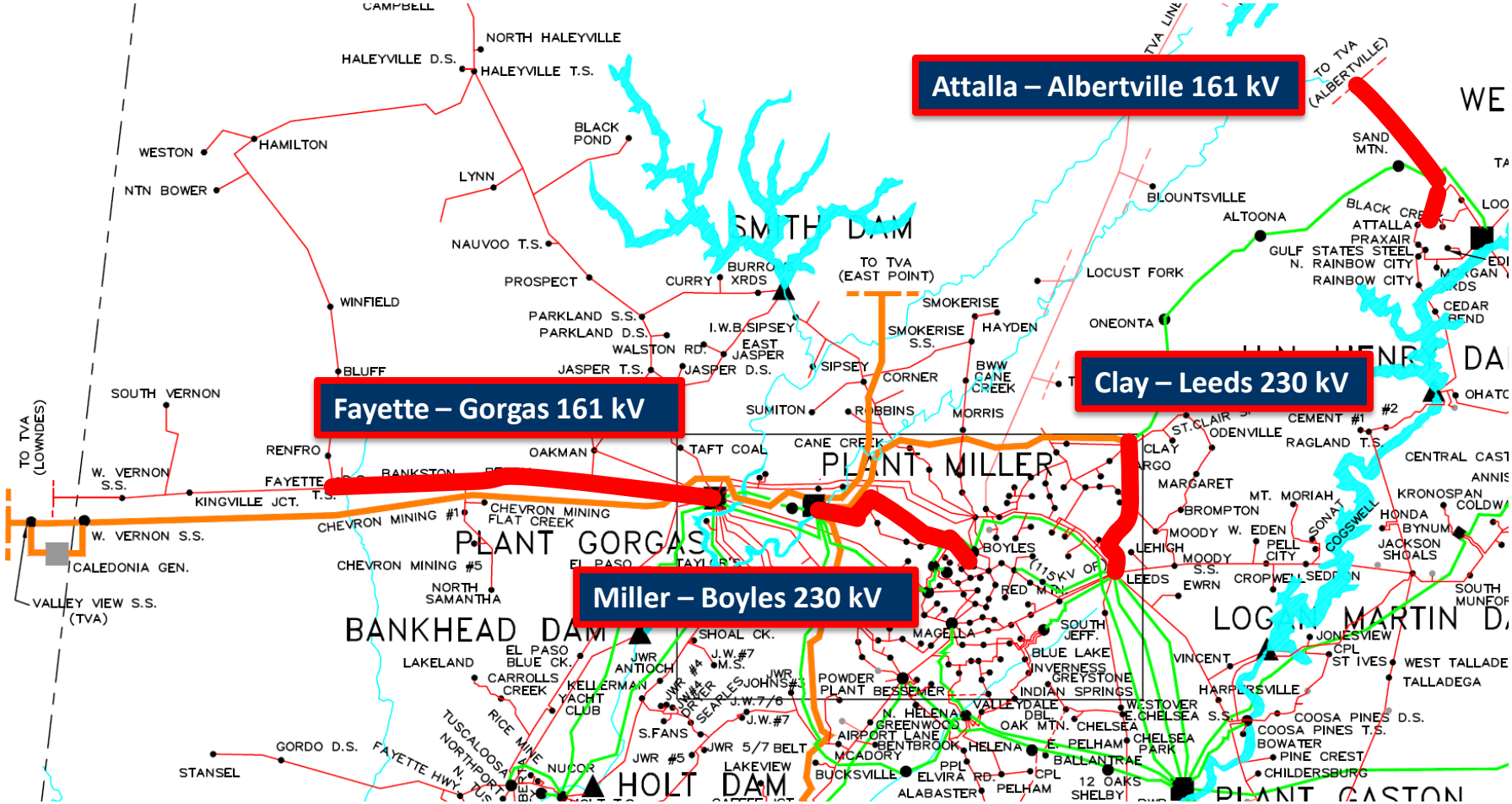
TVA to Southern – 1500 MW

Significant Constraints – Pass 1



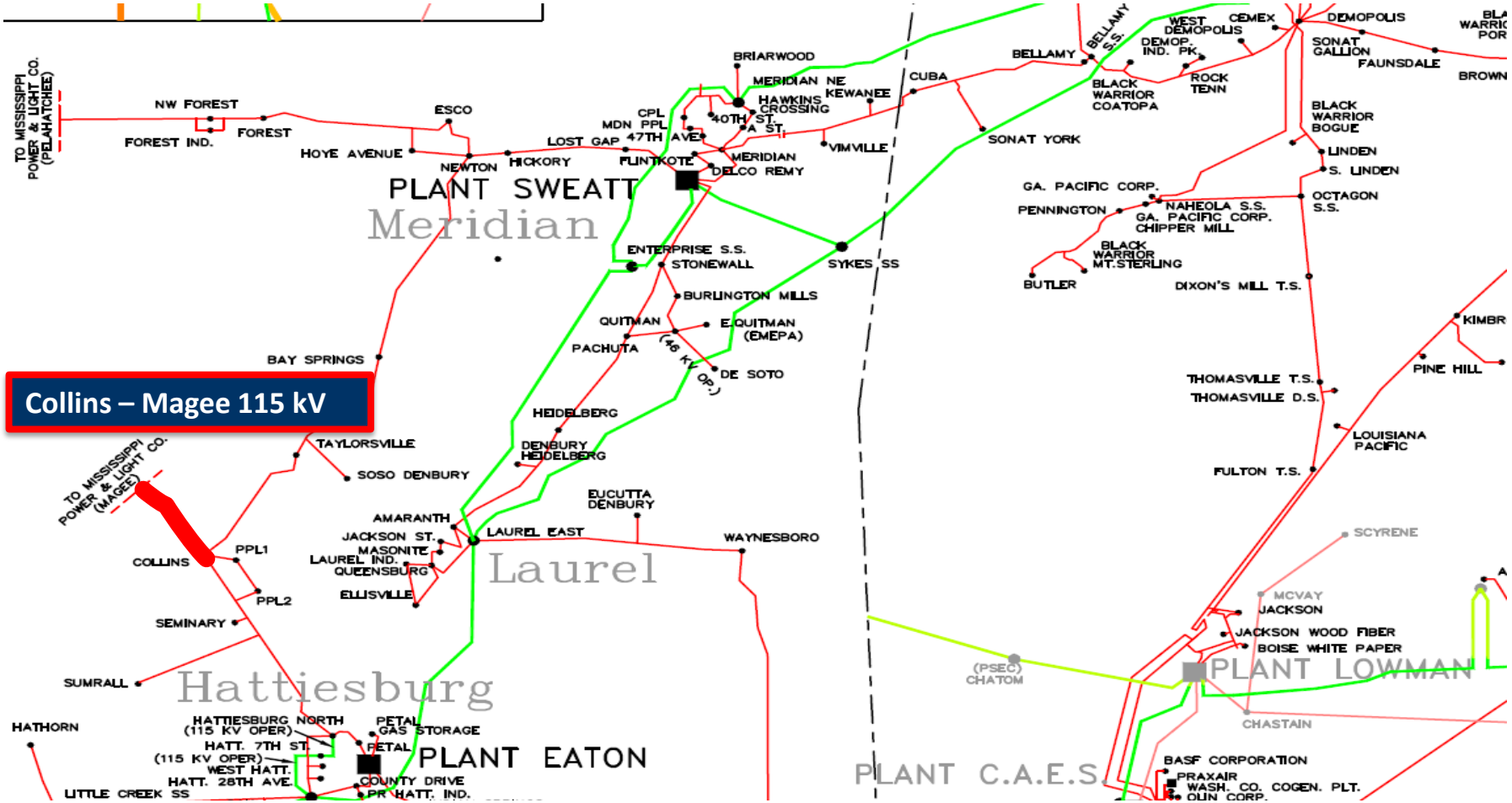
TVA to Southern – 1500 MW

Significant Constraints – Pass 1



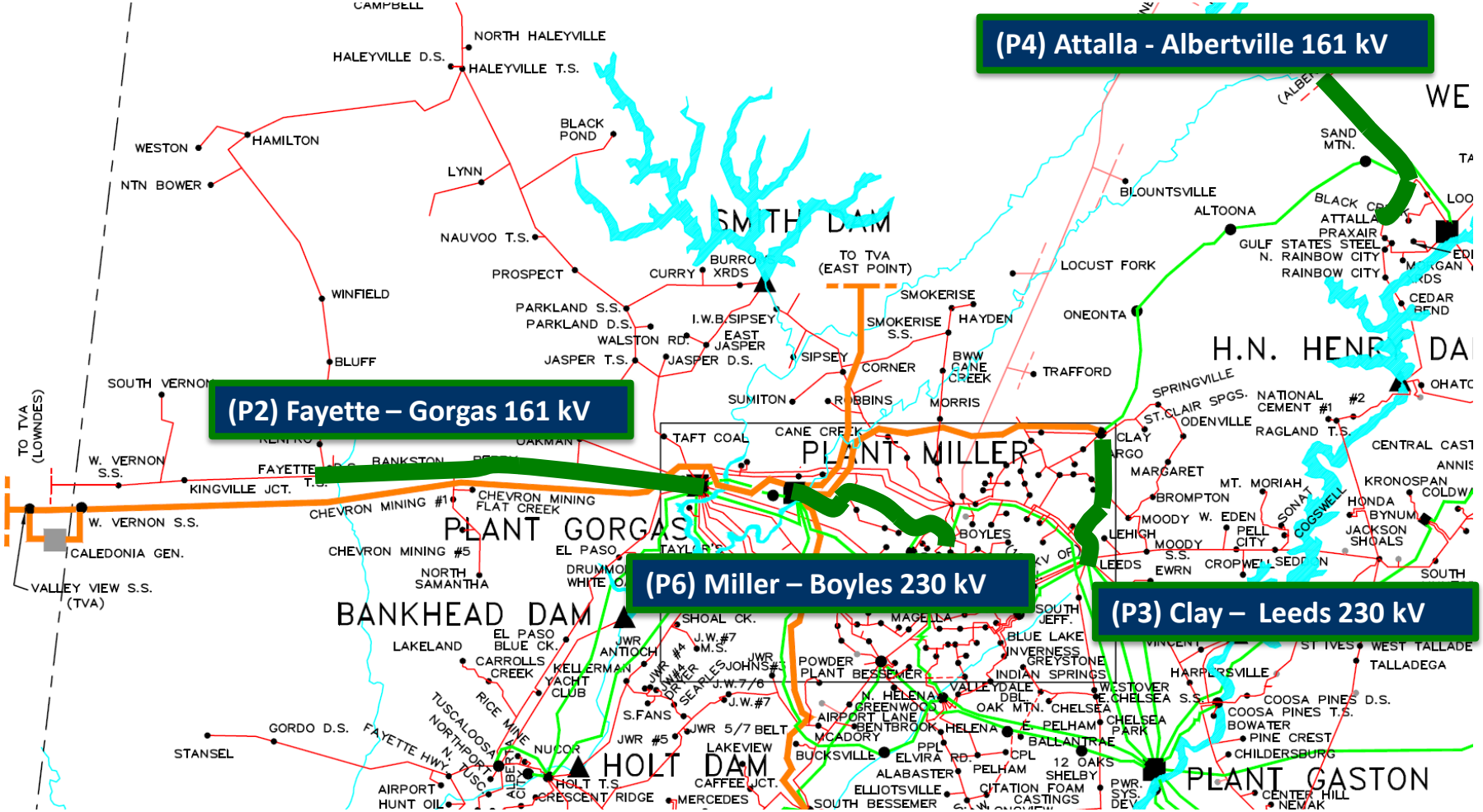
TVA to Southern – 1500 MW

Significant Constraints – Pass 1



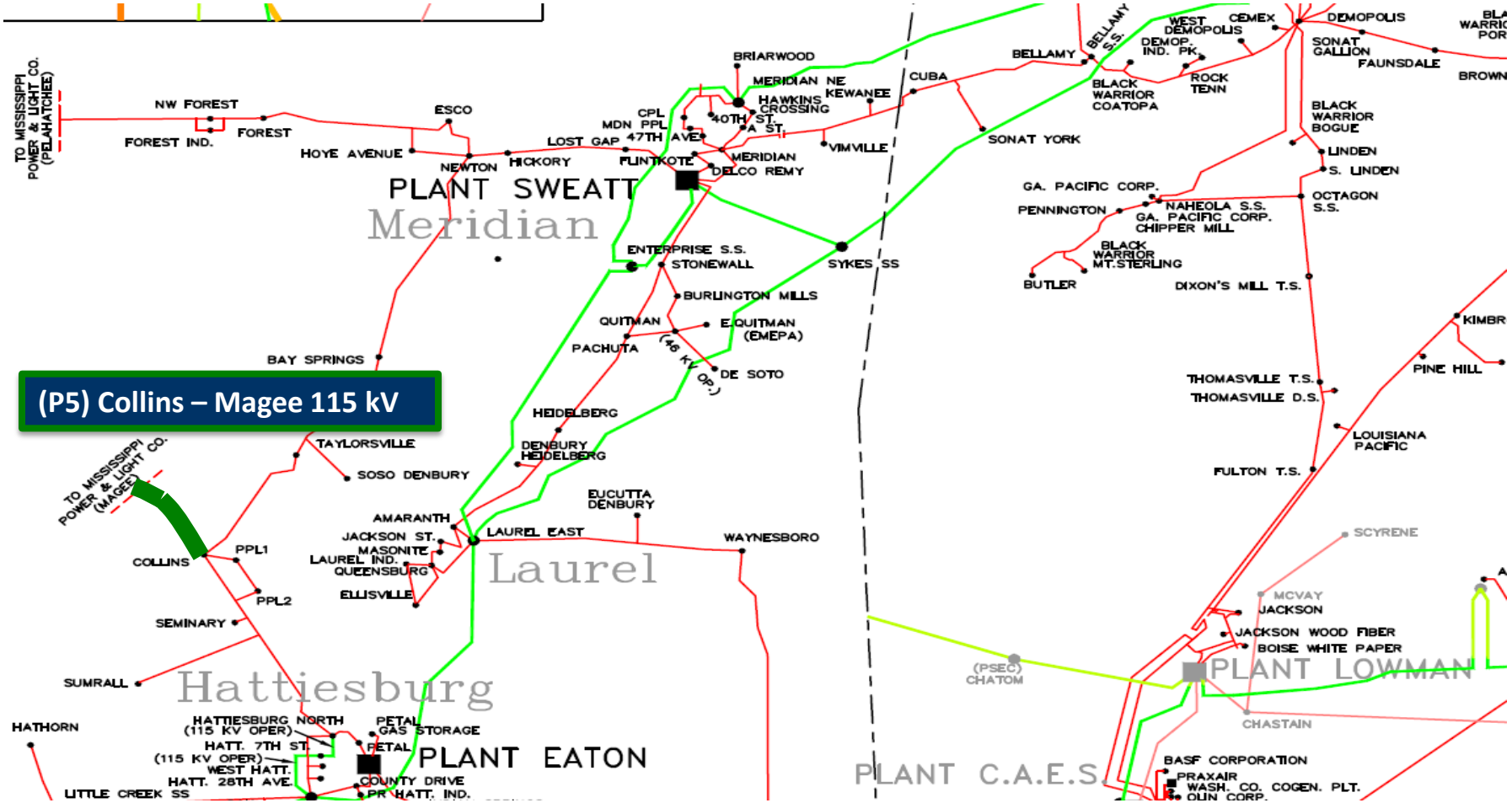
TVA to Southern – 1500 MW

Proposed Enhancements – Pass 2



TVA to Southern – 1500 MW

Proposed Enhancements – Pass 2



TVA to Southern – 1500 MW

Projects Identified

Item	Proposed Enhancements	Planning Level Cost Estimate($)
P1	**Widows Creek (TVA) – Bowen 500 kV T.L.** - 60 miles of new 500 kV Line (Southern's portion) - Bundled (3) 1113 ACSR at 100°C	**$185,000,000**
P2	**Fayette – Gorgas 161 kV T.L.** - Rebuild approximately 36.7 miles with 795 ACSS at 160°C (Advancement of a 2024 project)	**Project Cost** **$37,000,000** **Advancement Cost** **$17,600,000**
P3	**Clay TS – Leeds TS 230 kV T.L.** - Upgrade approximately 17.3 miles to 125°C operation (Advancement of a 2023 project)	**Project Cost** **$3,400,000** **Advancement Cost** **$1,300,000**
P4	**Attalla – Albertville 161 kV Line** - Reconductor 19.6 miles with 1351 ACSR at 100°C	**$19,500,000**

TVA to Southern – 1500 MW

Projects Identified (cont.)

Item	Proposed Enhancements	Planning Level Cost Estimate($)
P5	**Collins – Magee 115 kV T.L.** - Reconductor 8.5 miles with 795 ACSR at 100°C	**$3,000,000**
P6	**Miller – Boyles 230 kV T.L.** - 17.9 miles of new 230 kV line with 1351 ACSS at 125°C (Advancement of a 2022 project)	**Project Cost** **$3,600,000** **Advancement Cost** **$1,100,000**

Total ($2014) = $227,500,000

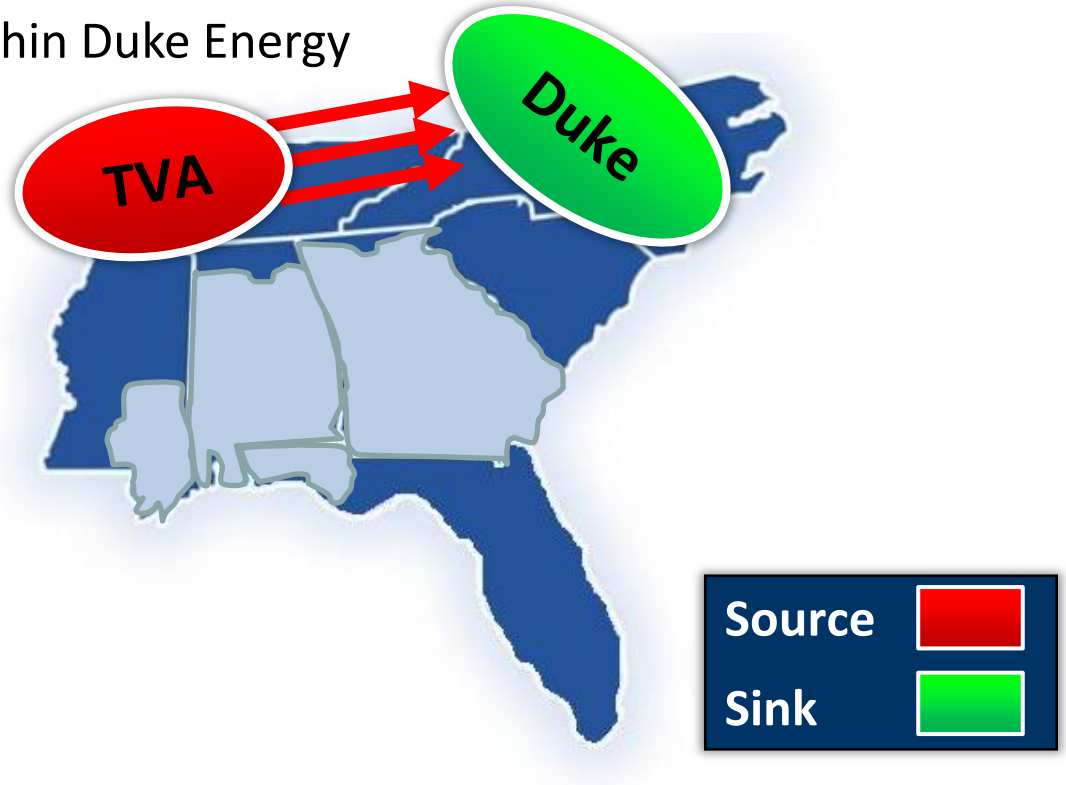
Economic Planning Studies

TVA Border to Duke Energy Border 1000 MW

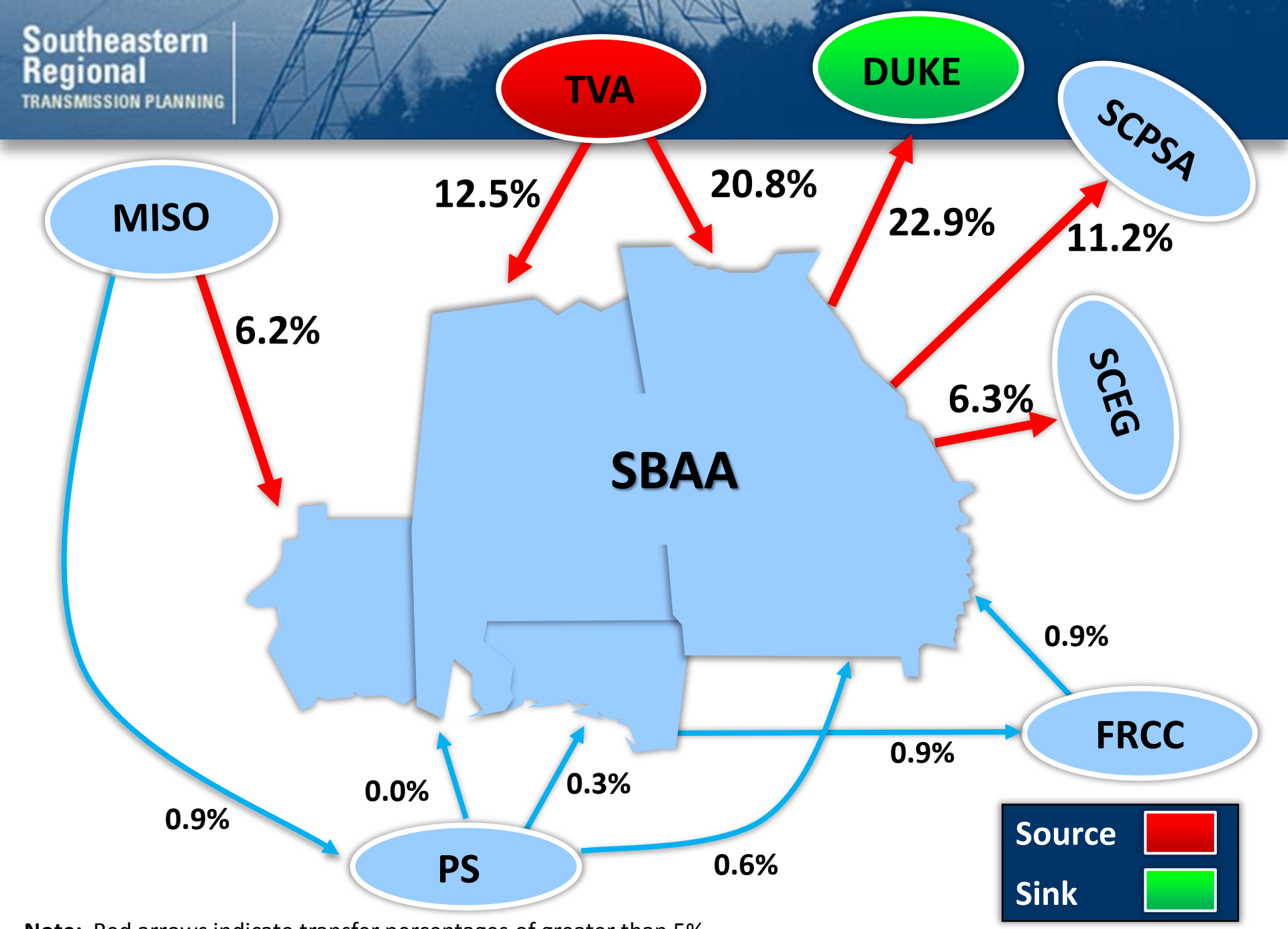
TVA to Duke Energy – 1000 MW

Study Assumptions

- **Transfer Type:** Generation to Load (2019 Summer Peak and Shoulder)
- **Source:** A new generator interconnection to the existing Shelby 500 kV substation (TVA)
- **Sink:** Uniform load scale within Duke Energy



Southeastern Regional
TRANSMISSION PLANNING



Note: Red arrows indicate transfer percentages of greater than 5%.

TVA to Duke Energy – 1000 MW

Transmission System Impacts

- **Thermal Constraints Identified:**
  - One (1) 230 kV T.L.
  - One (1) 161 kV T.L.

Total ($2014) = $18,900,000

TVA to Duke Energy – 1000 MW

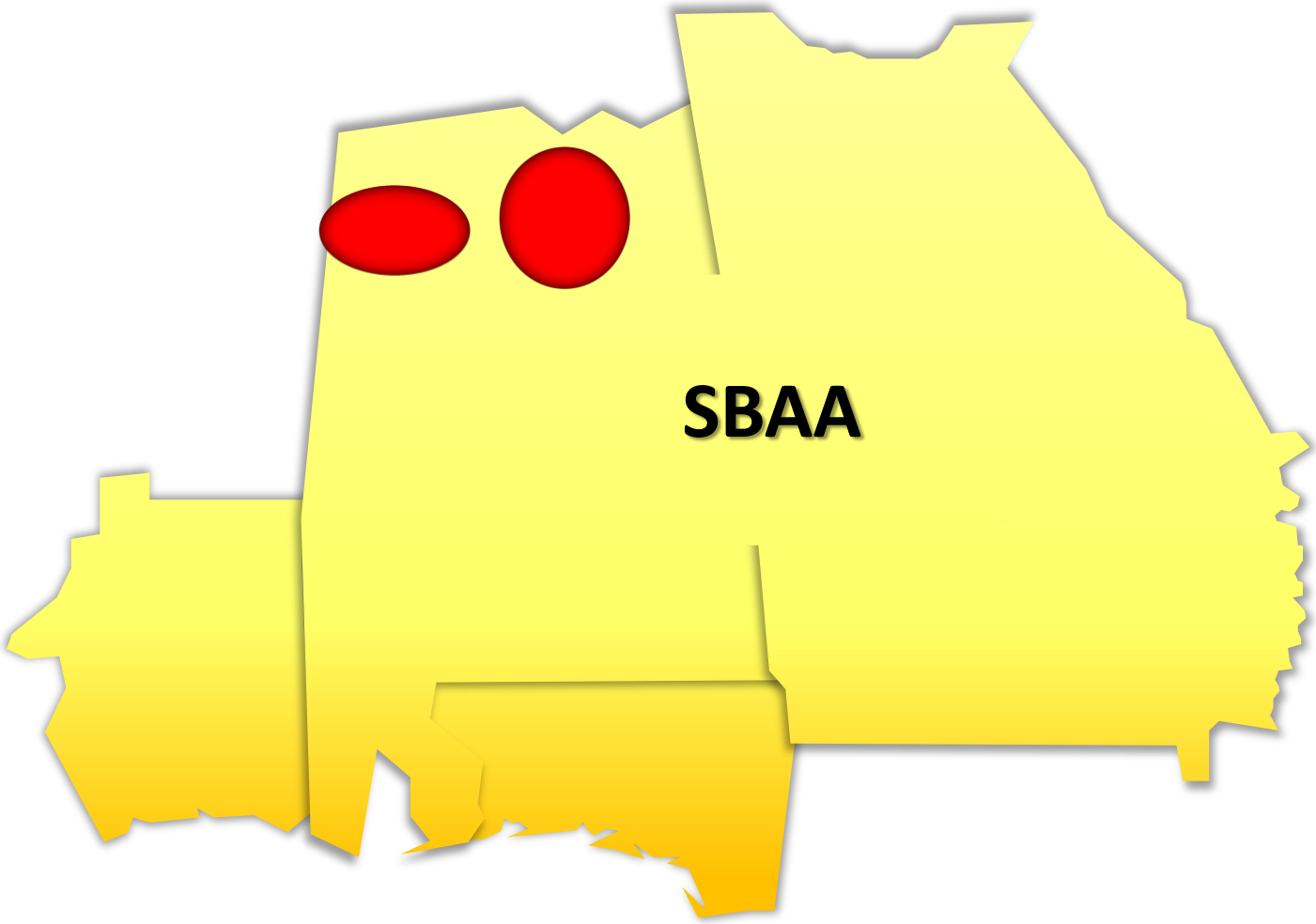
Significant Constraints

Limiting Elements	Rating (MVA)	Thermal Loading (%)	
		Without Request	With Request
Fayette – Gorgas 161 kV T.L.	193	110.5[(1)]	130.8
Clay – Leeds 230 kV T.L.	602	97.4	103.9

[(1)] A current operating procedure is sufficient to alleviate this identified constraint without the addition of the proposed transfer. However, the additional transfer exacerbates the loading on this transmission facility such that the operating procedure becomes insufficient.

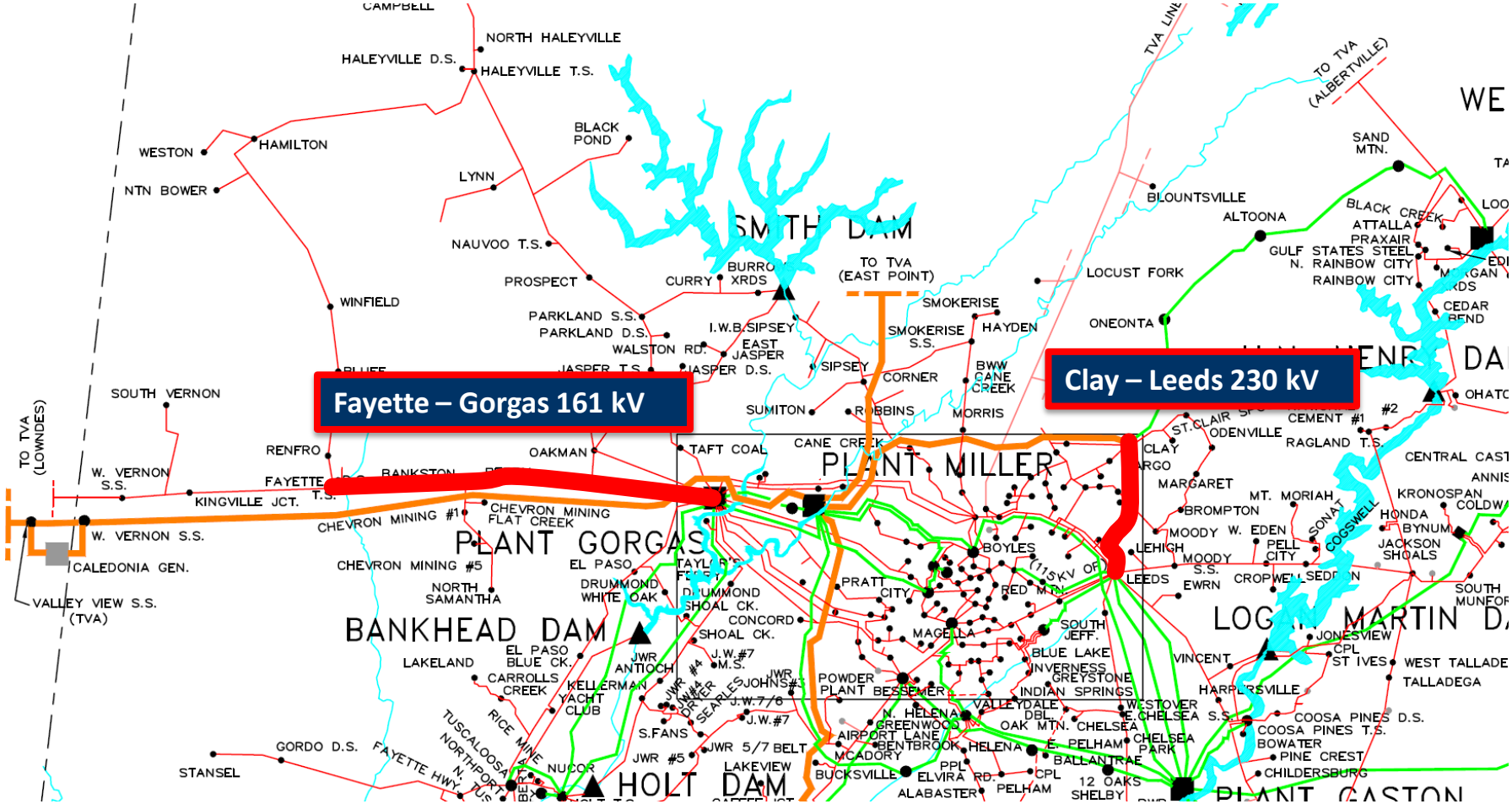
TVA to Duke Energy – 1000 MW

Significant Constraints



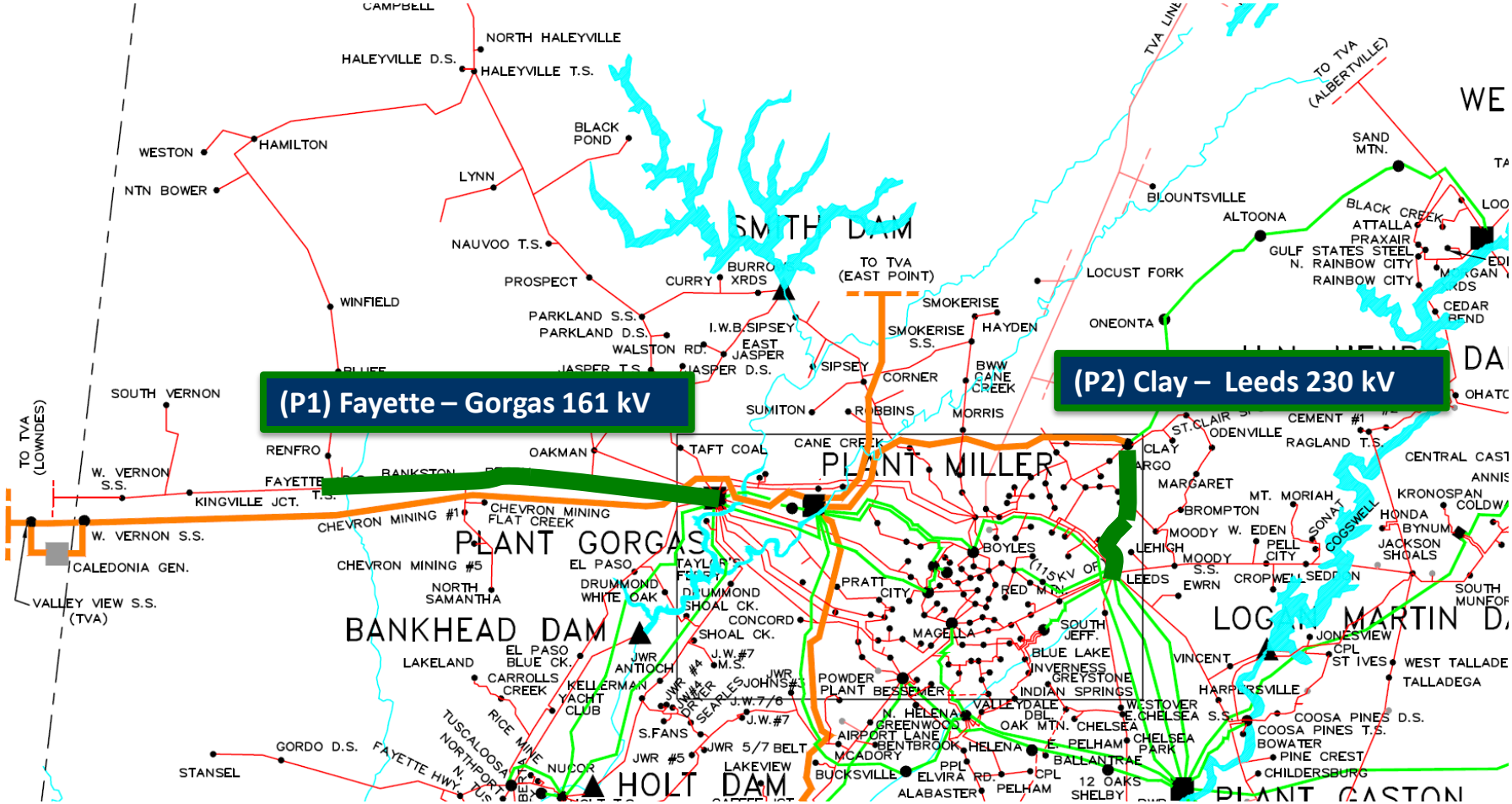
TVA to Duke Energy – 1000 MW

Significant Constraints



TVA to Duke Energy – 1000 MW

Proposed Enhancements



TVA to Duke Energy – 1000 MW

Projects Identified

Item	Proposed Enhancements	Planning Level Cost Estimate($)
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P2	**Clay TS – Leeds TS 230 kV T.L.** - Upgrade approximately 17.3 miles to 125°C operation (Advancement of a 2023 project)	**Project Cost** **$3,400,000** **Advancement Cost** **$1,300,000**

Total ($2014) = $18,900,000

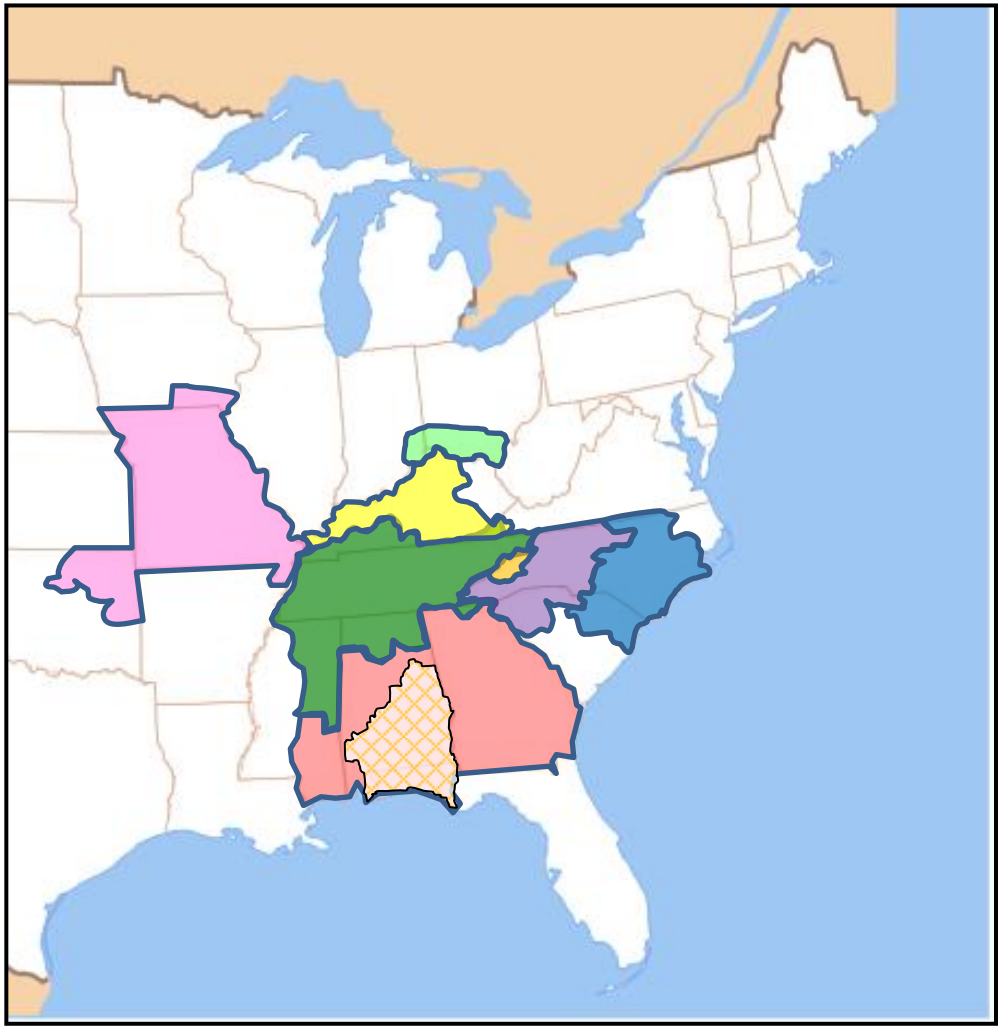
SERTP

Regional Modeling Assumptions

SERTP

Regional Transmission Plan

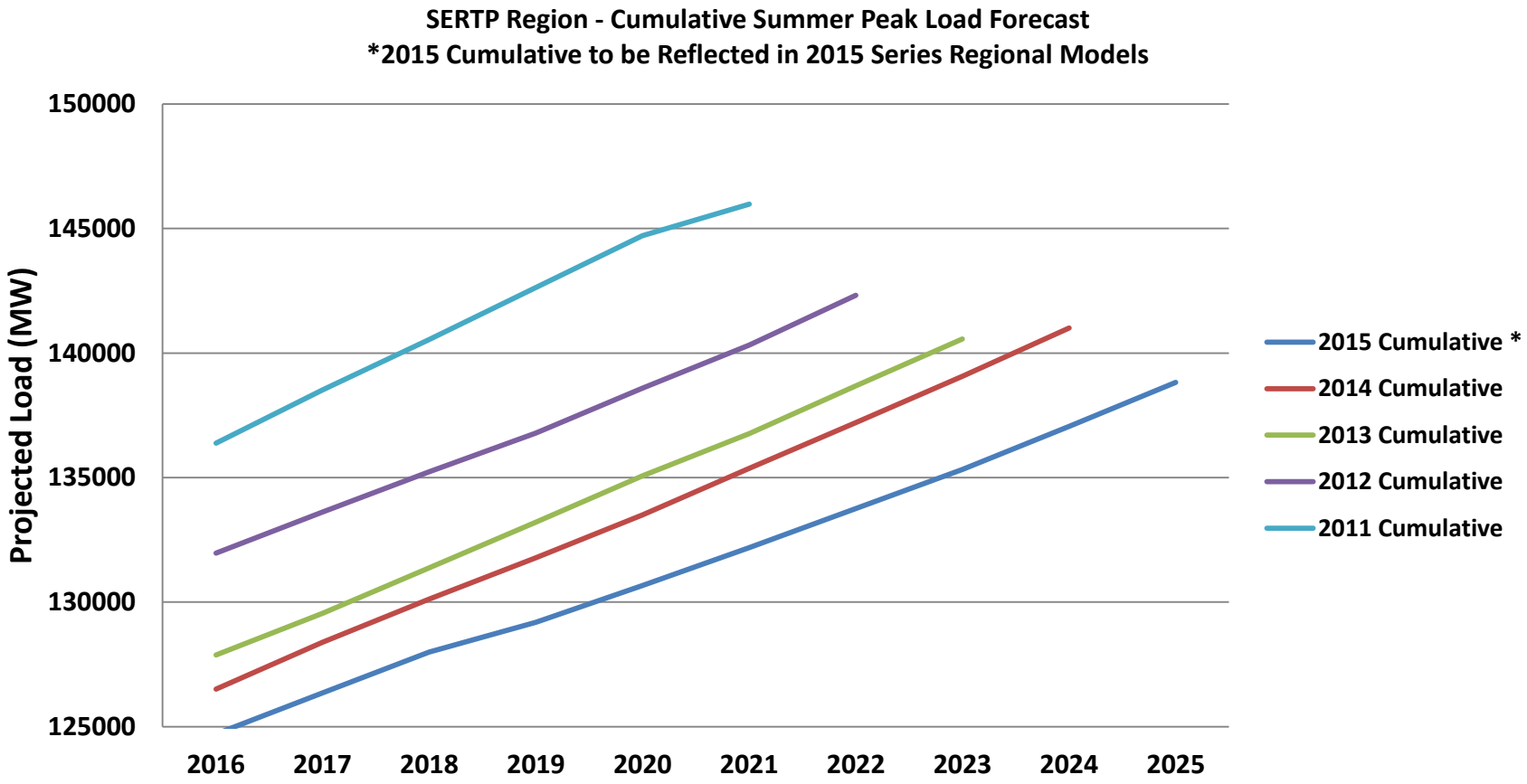
SERTP Regional Modeling Assumptions



Balancing Authority Areas

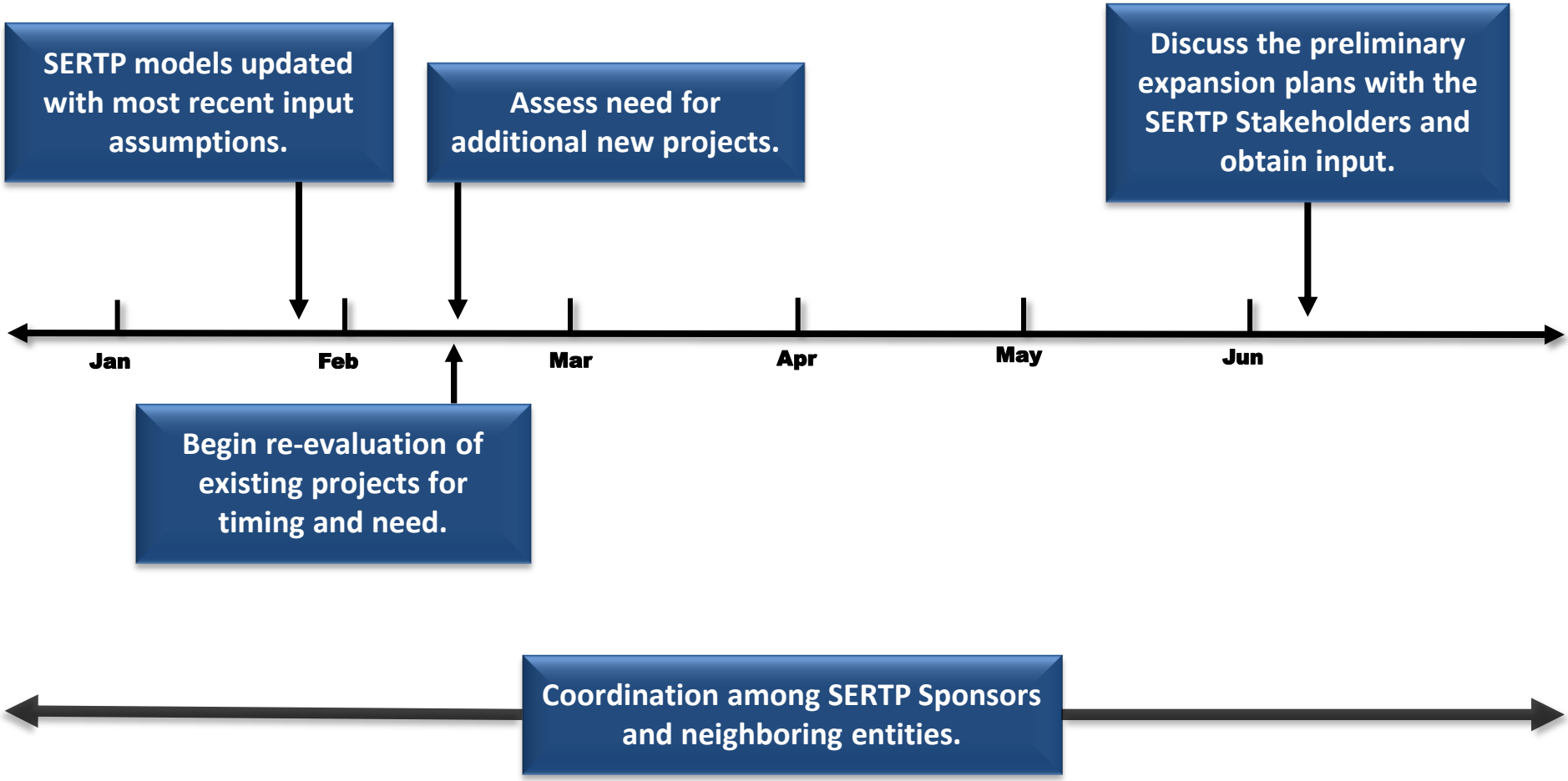
- AECI
- DUKE – Carolinas
- DUKE – Progress East
- DUKE – Progress West
- LG&E/KU
- OVEC
- PowerSouth
- Southern
- TVA

SERTP Cumulative Summer Peak Load Forecast



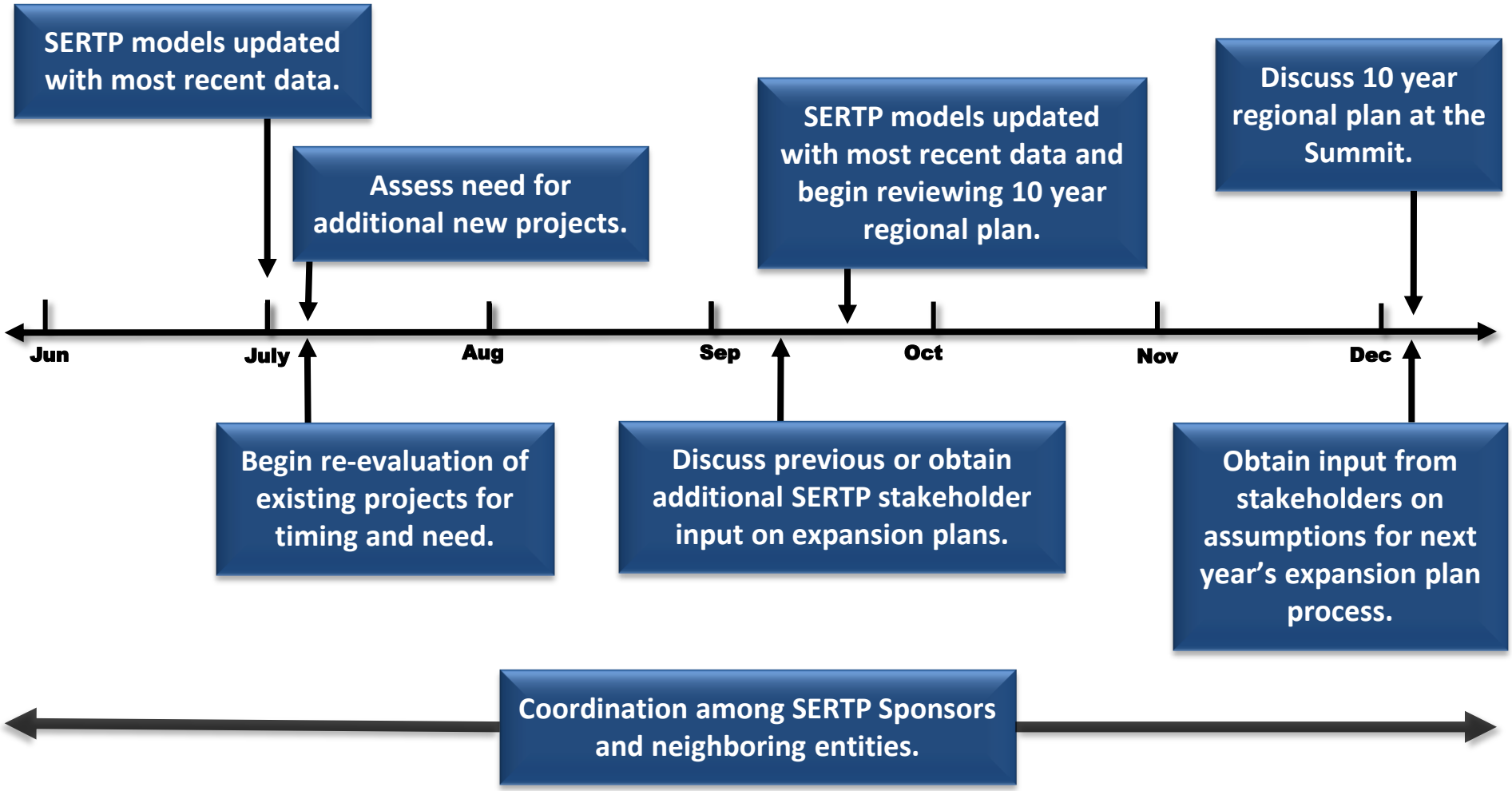
2014 SERTP

Approximate 10 Year Transmission Expansion Plan Timeline



2014 SERTP

Approximate 10 Year Transmission Expansion Plan Timeline



Regional Transmission Plan

The projects described in this presentation represent the current ten (10) year regional transmission plan. The regional transmission plan is 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.

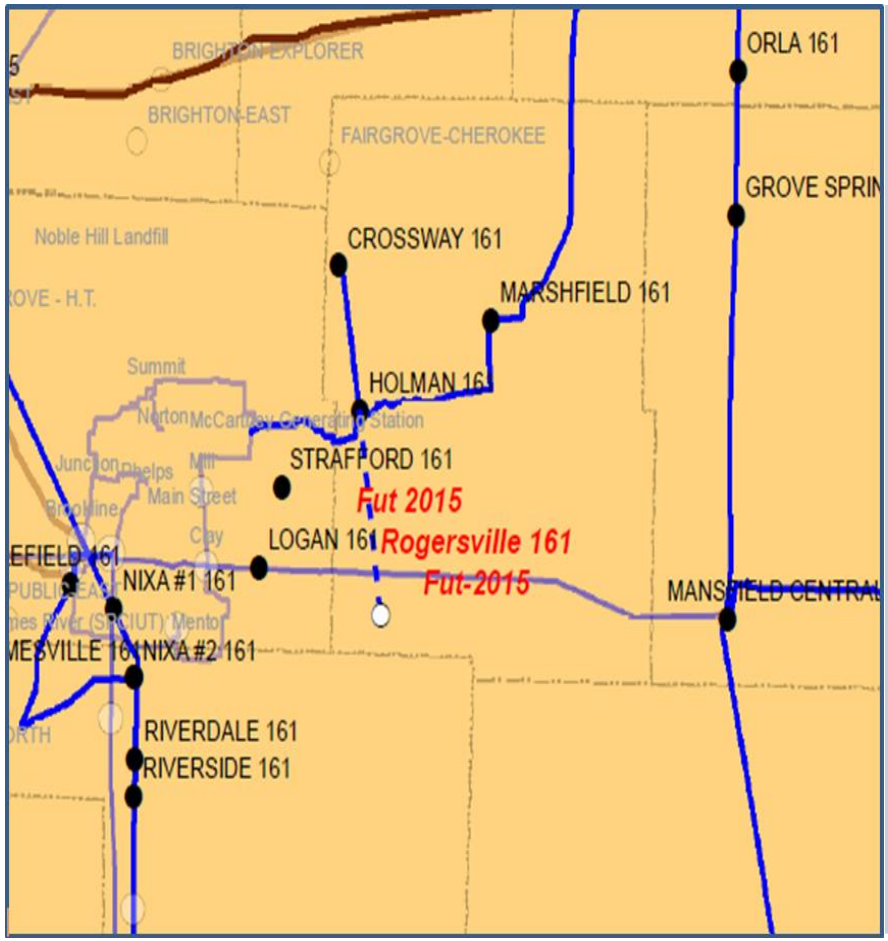
AECI Balancing Authority

SERTP Regional Transmission Plan

AECI Balancing Authority

AECI – 1 2015

ROGERSVILLE 161 KV SUB, HOLMAN – ROGERSVILLE 161 KV T.L.

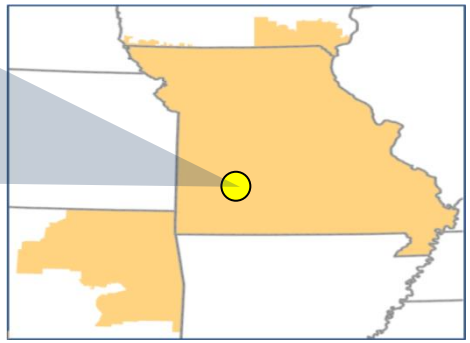


DESCRIPTION:

Construct approximately 7.2 miles of 795 ACSR 161 kV transmission line at 100°C from Holman to Rogersville and install a 56 MVA 161/69 kV transformer at Rogersville.

SUPPORTING STATEMENT:

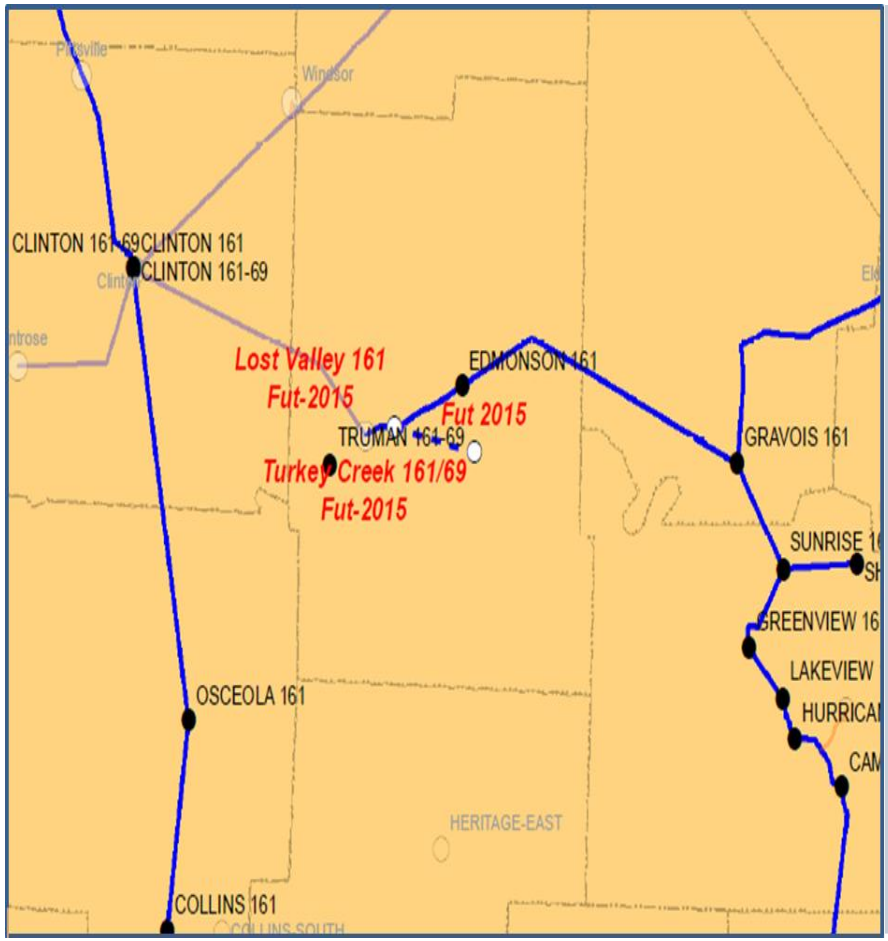
The Cody – Rogersville and Sparta – Rogersville 69 kV transmission lines become overloaded under contingency and voltage support needed at Rogersville under contingency.



AECI Balancing Authority

AECI – 2 2015

LOST VALLEY – TURKEY CREEK 161 KV T.L.

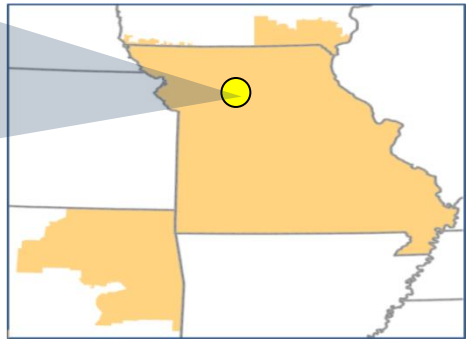


DESCRIPTION:

Construct approximately 7 miles of 161 kV transmission line from Lost Valley to Turkey Creek with 795 ACSR at 100°C and install an 84 MVA 161/69 kV transformer at Turkey Creek on the Warsaw – Knobby 69 kV transmission line.

SUPPORTING STATEMENT:

The Greenview – J-7 69 kV transmission line overloads under contingency. Also, 69 kV voltage support needed in the Iconium area under contingency.



AECI Balancing Authority

Upcoming 2015 Generation Assumptions

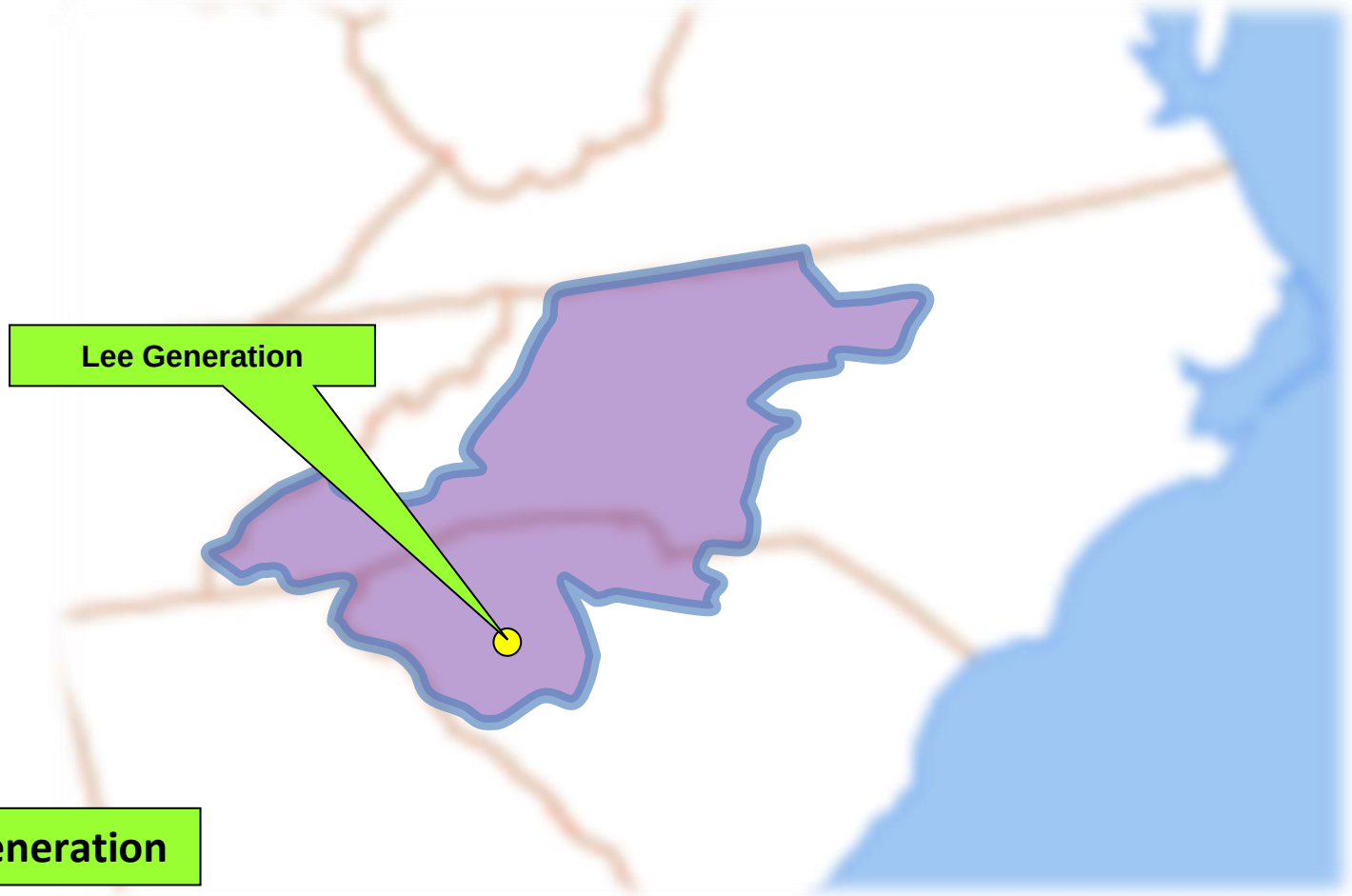
*** AECI has no generation assumptions expected to change throughout the ten year planning horizon for the 2015 SERTP Process.**

DUKE CAROLINAS Balancing Authority

2014 Generation Assumptions

DUKE CAROLINAS – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2014 SERTP Process.



DUKE CAROLINAS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
LEE 1	0	--	--	--	--	--	--	--	--	--
LEE 2	0	--	--	--	--	--	--	--	--	--
LEE CC	--	--	--	776	776	776	776	776	776	776

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.

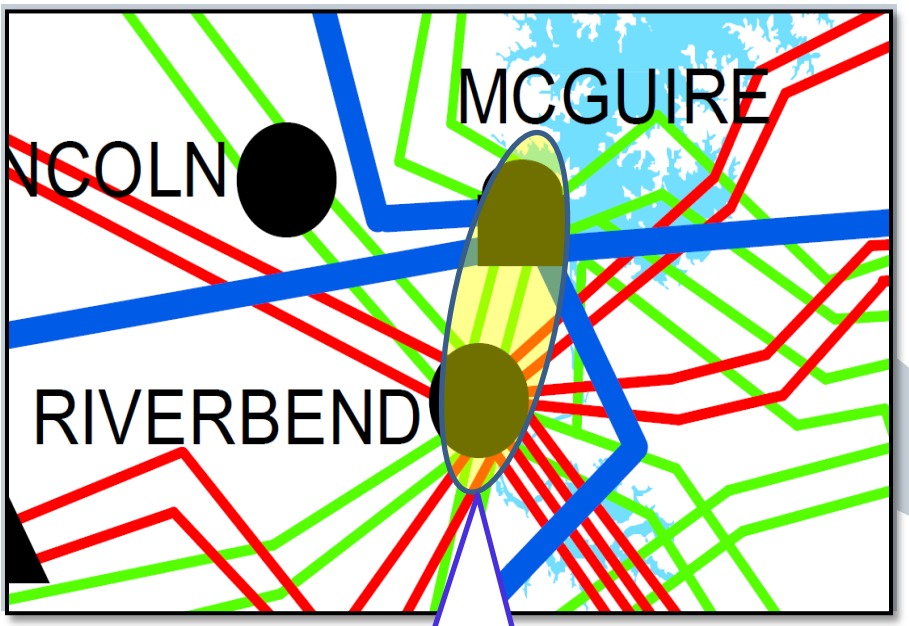
SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ROWAN	150	150	150	150	150	150	150	150	150	150
BROAD RIVER	850	850	850	850	850	850	850	850	850	850

DUKE CAROLINAS Balancing Authority

SERTP Regional Transmission Plan

DUKE CAROLINAS – 1 2015

MCGUIRE – RIVERBEND 230 KV T.L.

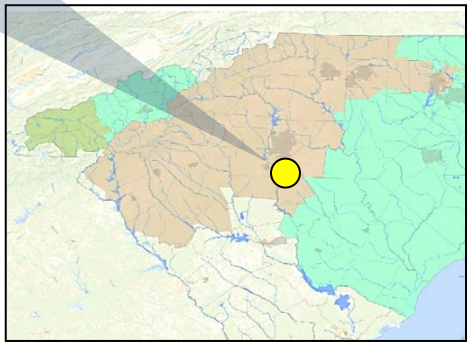


DESCRIPTION:

Reconductor approximately 6 miles of McGuire – Riverbend 230 kV transmission line with 1533 ACSS at 200°C.

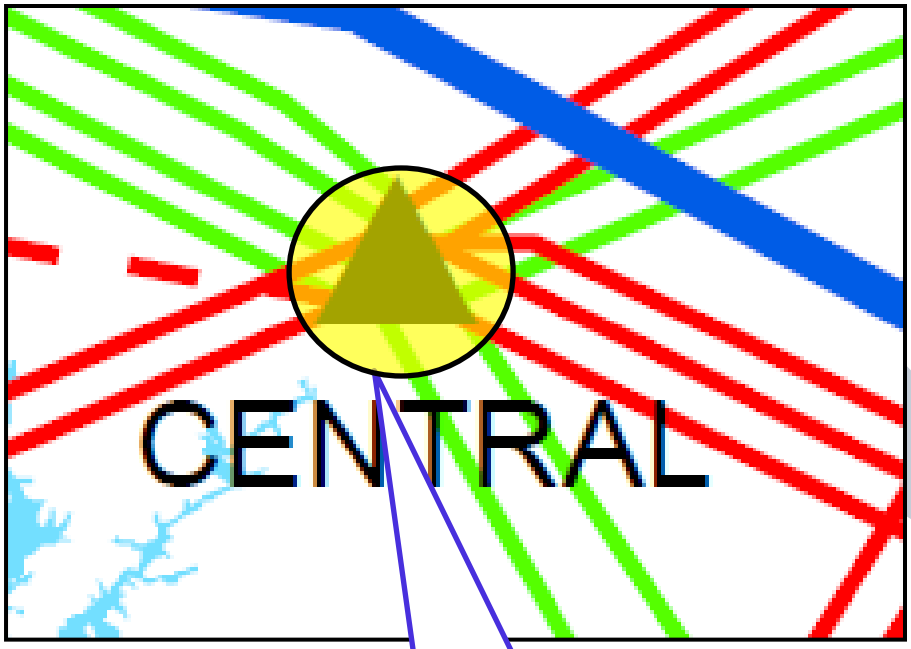
SUPPORTING STATEMENT:

The McGuire – Riverbend 230 kV transmission line overloads under contingency.



DUKE CAROLINAS – 2 2016

CENTRAL 230/100 KV SUBSTATION

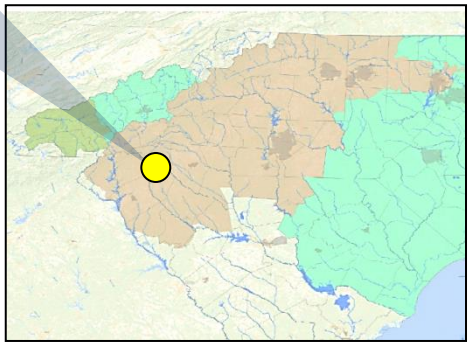


DESCRIPTION:

Replace transformer #1 with 448 MVA 230/100 kV transformer at Central substation.

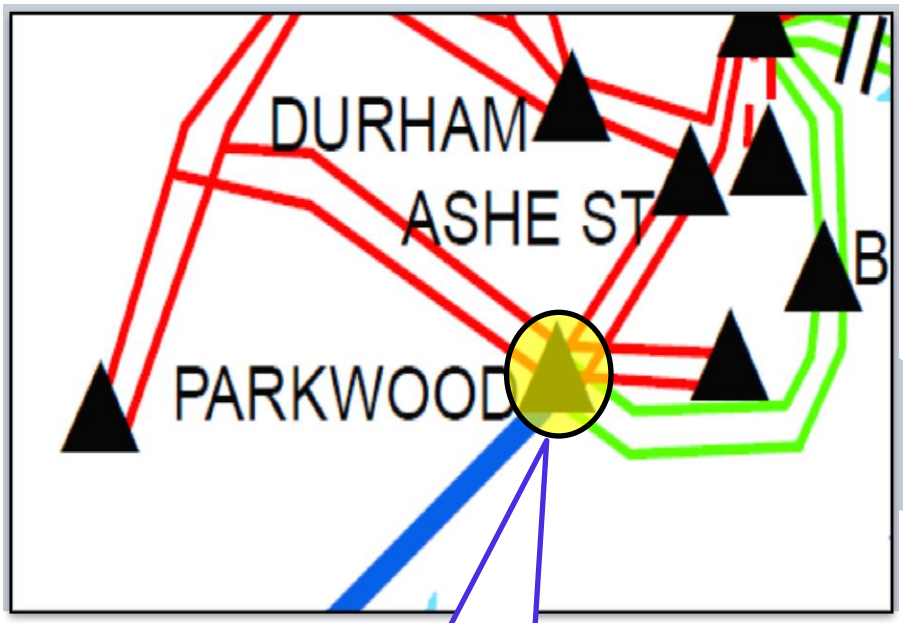
SUPPORTING STATEMENT:

The Central 230/100 kV transformer overloads under contingency.



DUKE CAROLINAS – 3 2016

PARKWOOD 230/100 KV SUBSTATION

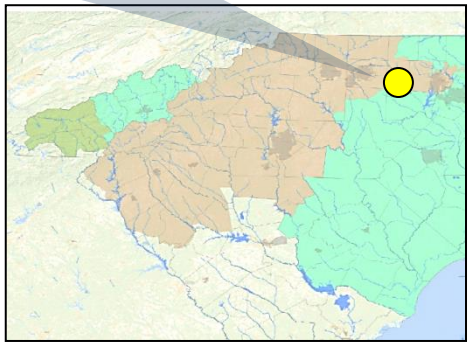


DESCRIPTION:

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 – 4 2017

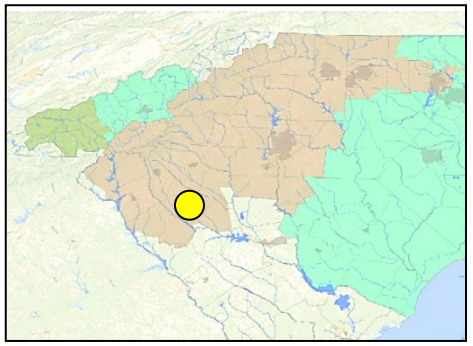
GREENBRIAR AREA IMPROVEMENTS

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.

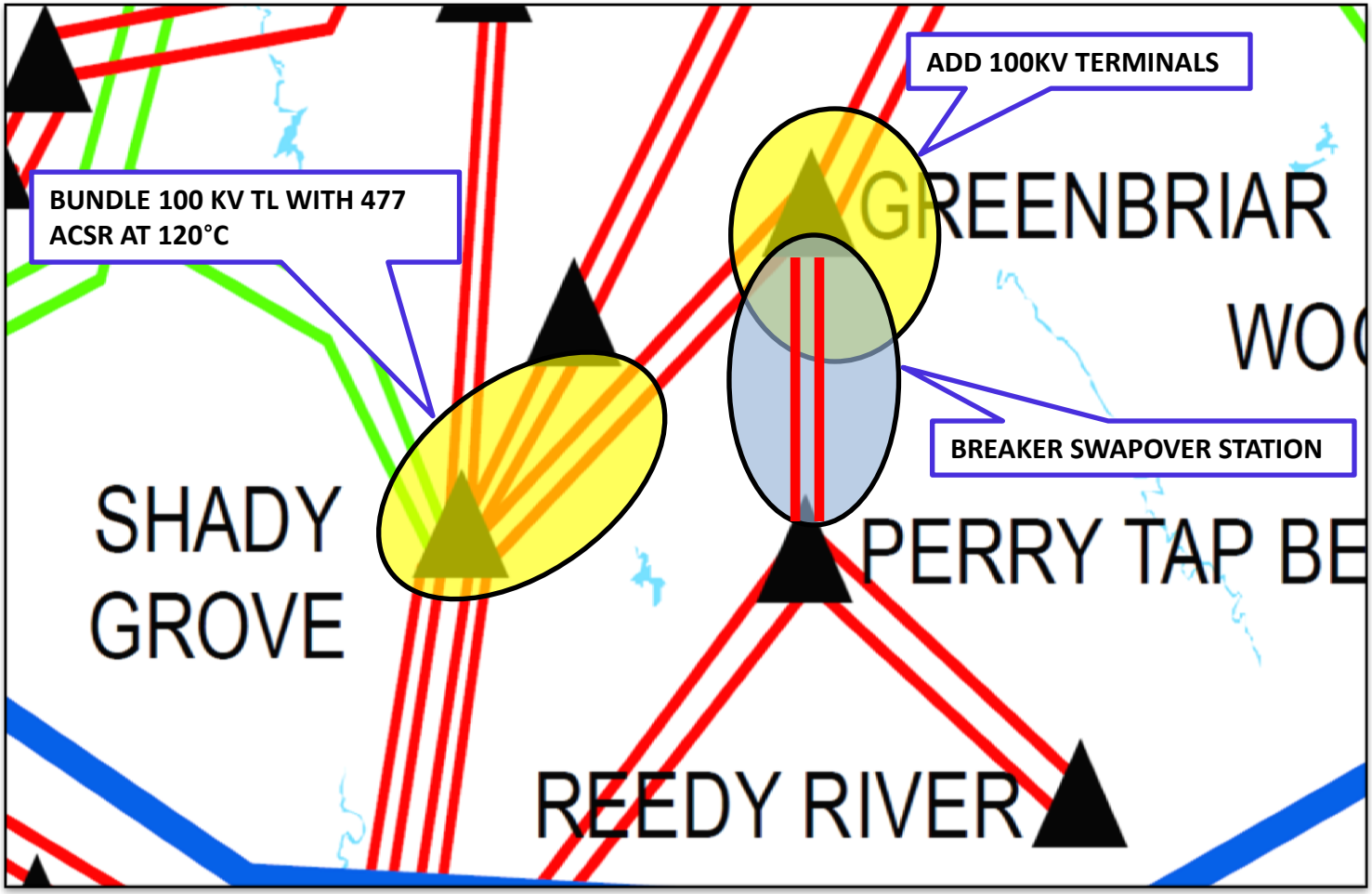
SUPPORTING STATEMENT:

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



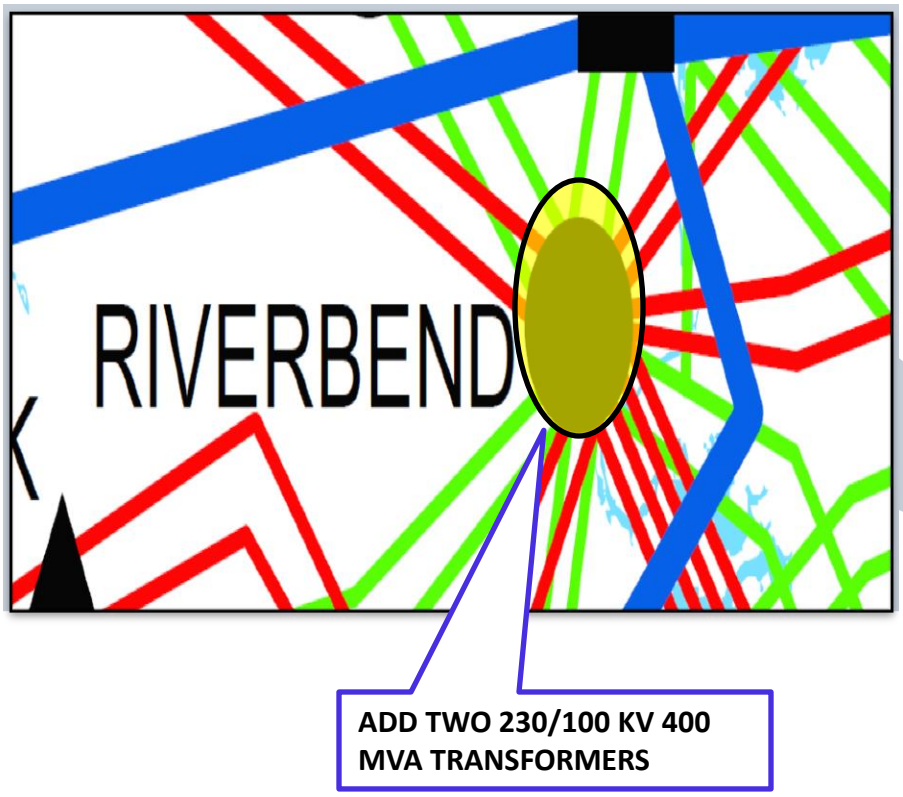
DUKE CAROLINAS – 4 2017

GREENBRIAR AREA IMPROVEMENTS



DUKE CAROLINAS – 5 2017

RIVERBEND STEAM STATION

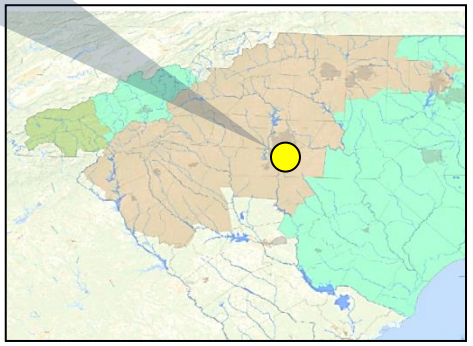


DESCRIPTION:

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

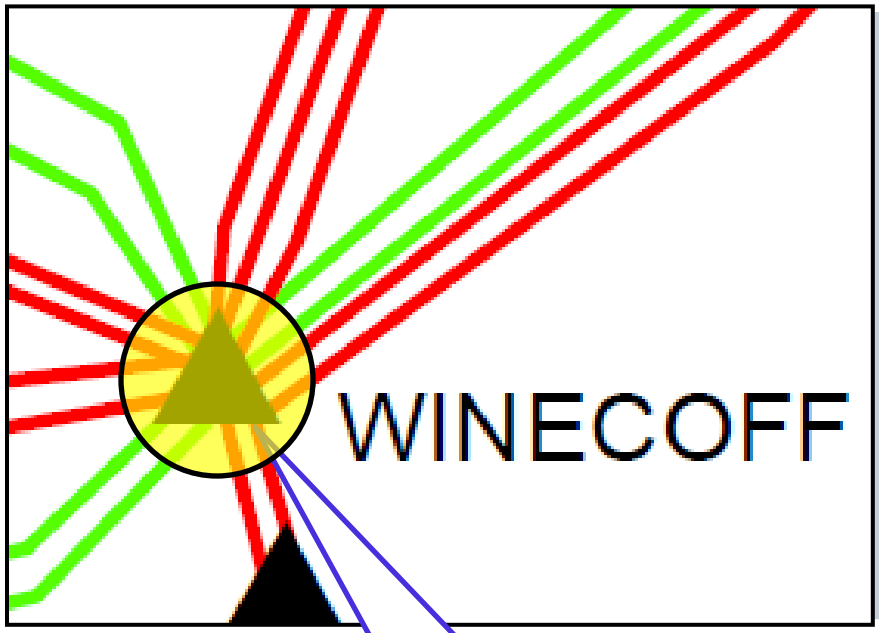
SUPPORTING STATEMENT:

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 – 6 2017

WINECOFF 230/100 KV SUBSTATION



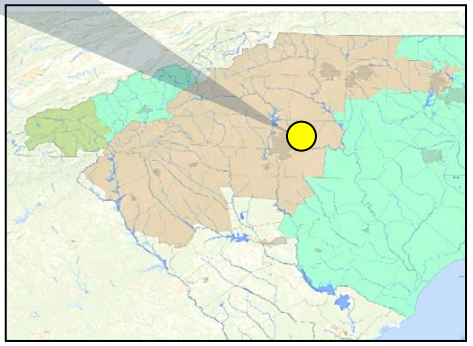
REPLACE BANK 1 WITH A 448 MVA 230/100 KV TRANSFORMER AT WINECOFF TIE SUBSTATION

DESCRIPTION:

Replace transformer #1 with 448 MVA 230/100 kV transformer at Winecoff substation.

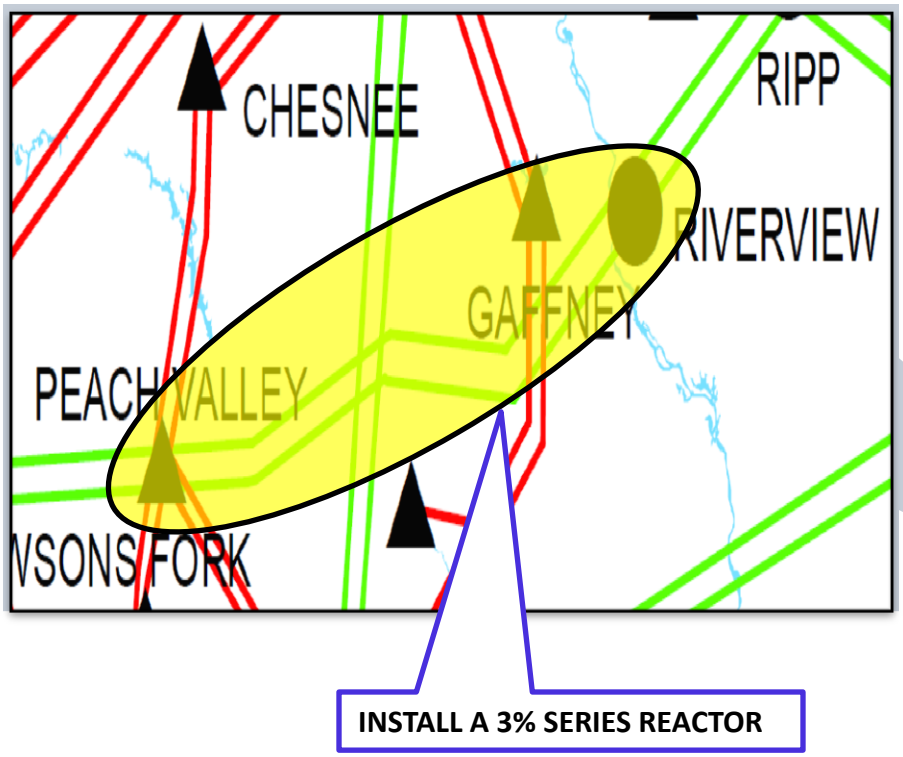
SUPPORTING STATEMENT:

The Winecoff 230/100 kV transformer overloads under contingency.



DUKE CAROLINAS – 7 2018

PEACH VALLEY – RIVERVIEW 230 KV T.L.

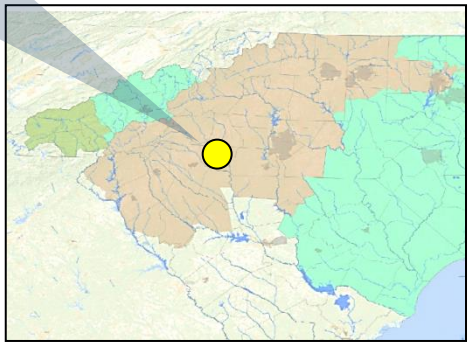


DESCRIPTION:

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

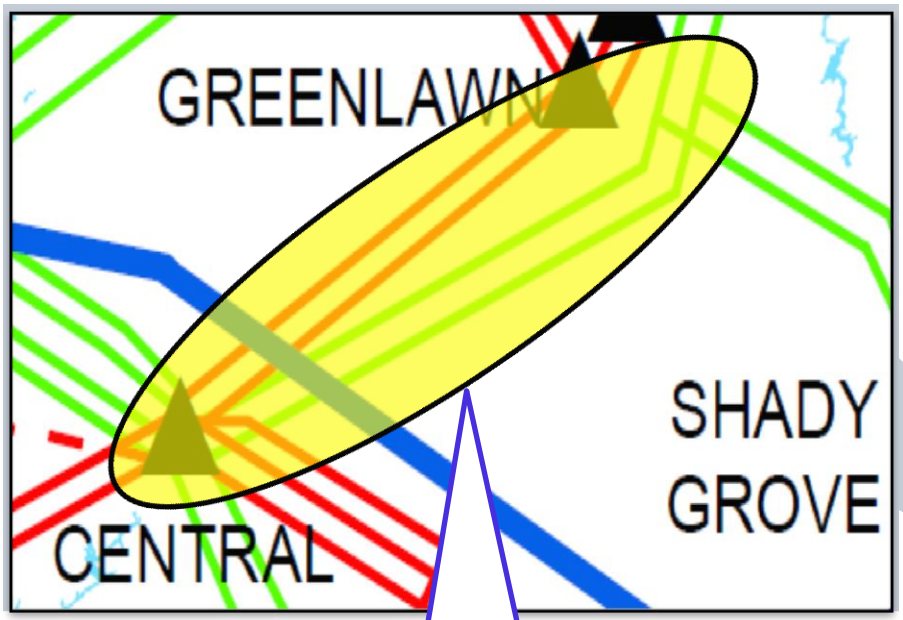
SUPPORTING STATEMENT:

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



DUKE CAROLINAS – 8 2022

CENTRAL – SHADY GROVE 230 KV T.L.

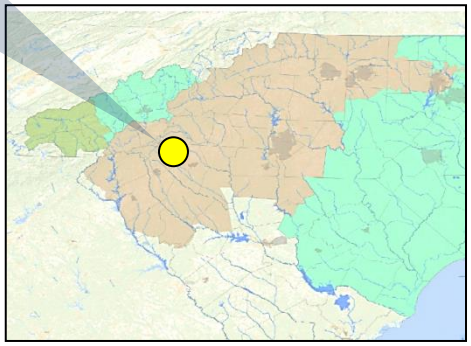


DESCRIPTION:

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.

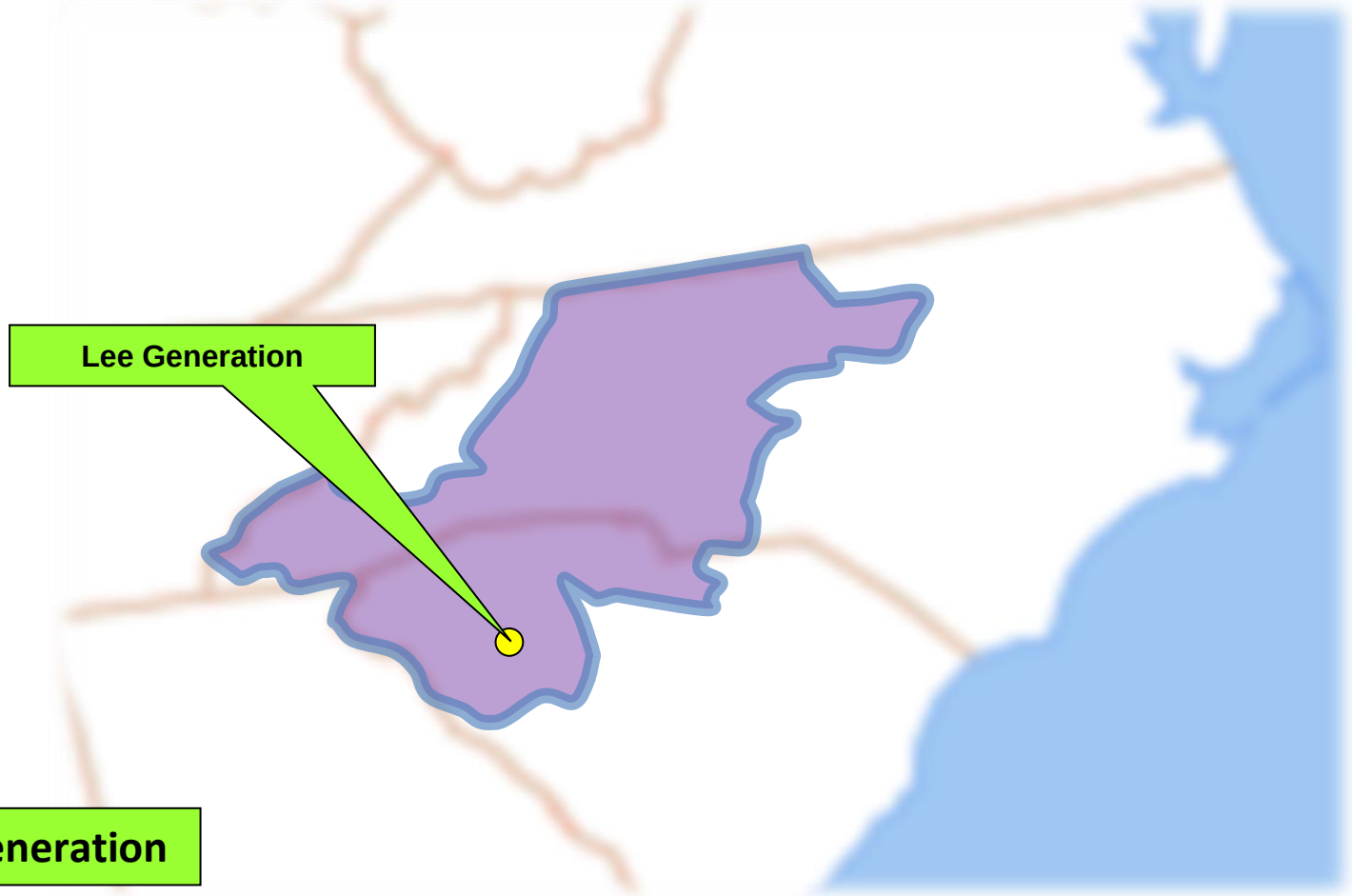


DUKE CAROLINAS Balancing Authority

Upcoming 2015 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	--	--	776	776	776	776	776	776	776	776

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

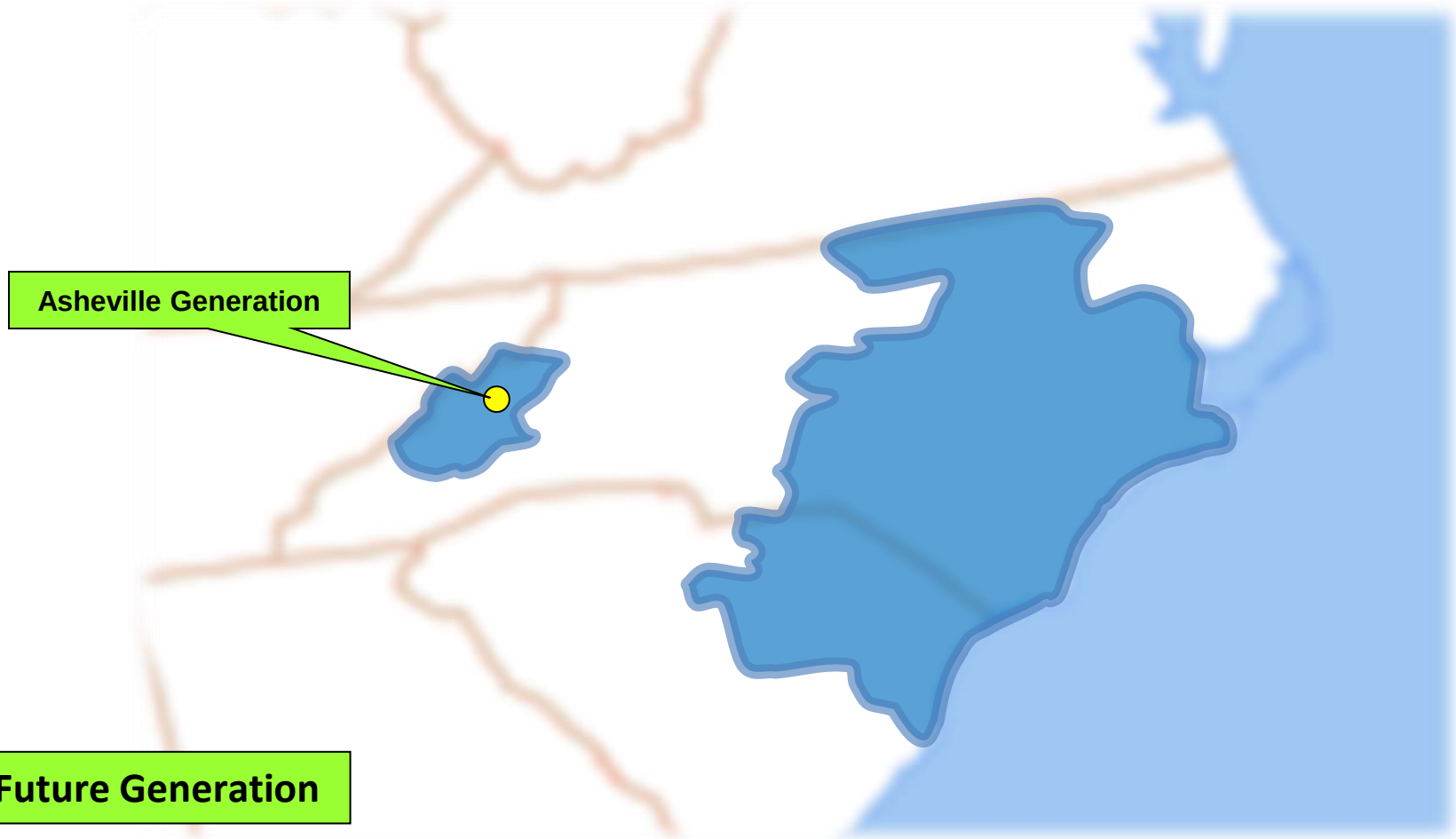
DUKE PROGRESS EAST/WEST

Balancing Authorities

2014 Generation Assumptions

DUKE PROGRESS – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2014 SERTP Process.



DUKE PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
ASHEVILLE FS UNIT	0	0	0	130	130	130	130	130	130	130

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.

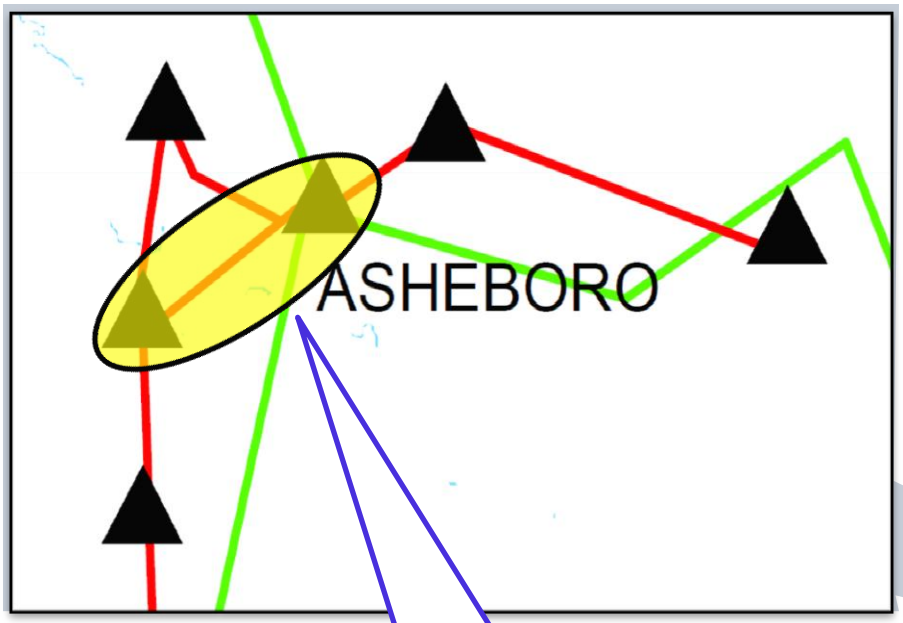
SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
HAMLET #1	55	55	55	55	55	55	55	55	55	55
HAMLET #2	55	55	55	55	55	55	55	55	55	55
HAMLET #3	55	55	55	55	55	55	55	55	55	55
HAMLET #4	55	0	--	--	--	--	--	--	--	--

DUKE PROGRESS EAST Balancing Authority

SERTP Regional Transmission Plan

DUKE PROGRESS EAST – 1 2016

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

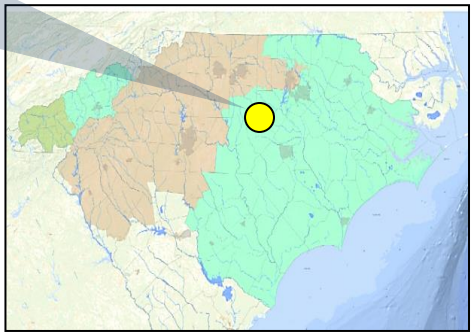


DESCRIPTION:

Reconductor approximately 3 miles of the Asheboro – Asheboro East (South) 115 kV transmission line using 3-1590 or equivalent conductor. 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.

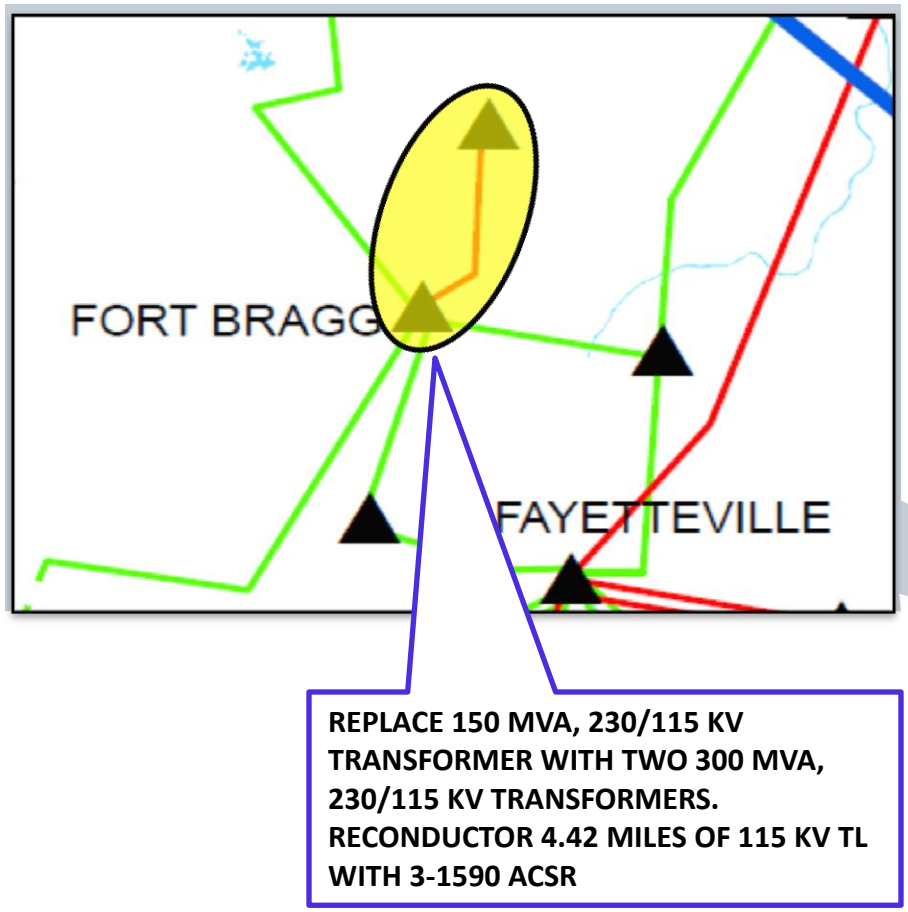
SUPPORTING STATEMENT:

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



DUKE PROGRESS EAST – 2 2016

FT. BRAGG WOODRUFF STREET 230 KV SUBSTATION

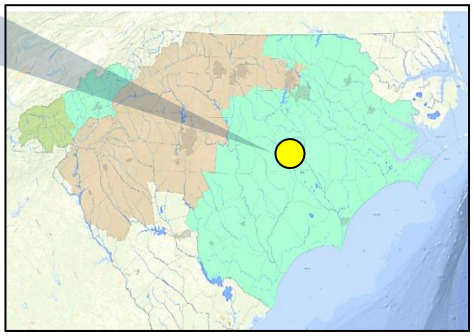


DESCRIPTION:

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.

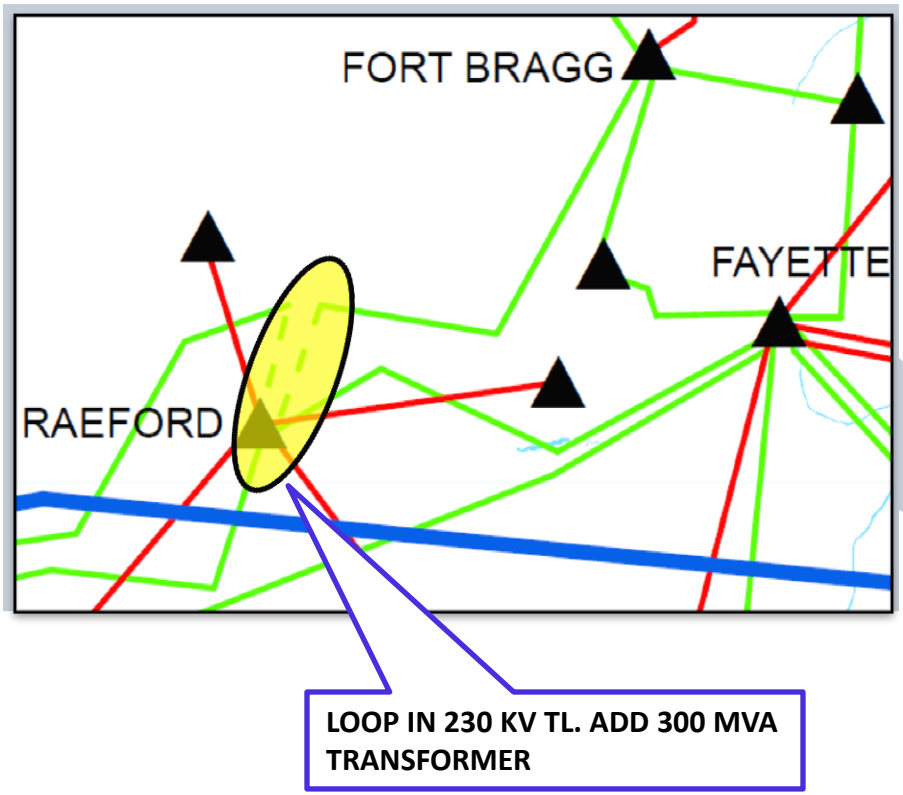
SUPPORTING STATEMENT:

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

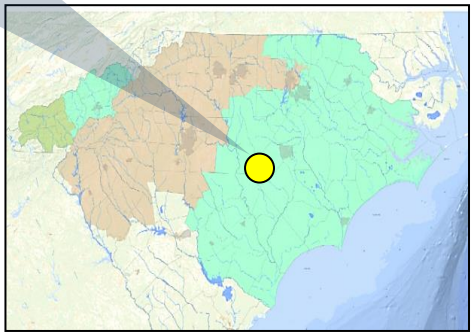


DESCRIPTION:

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

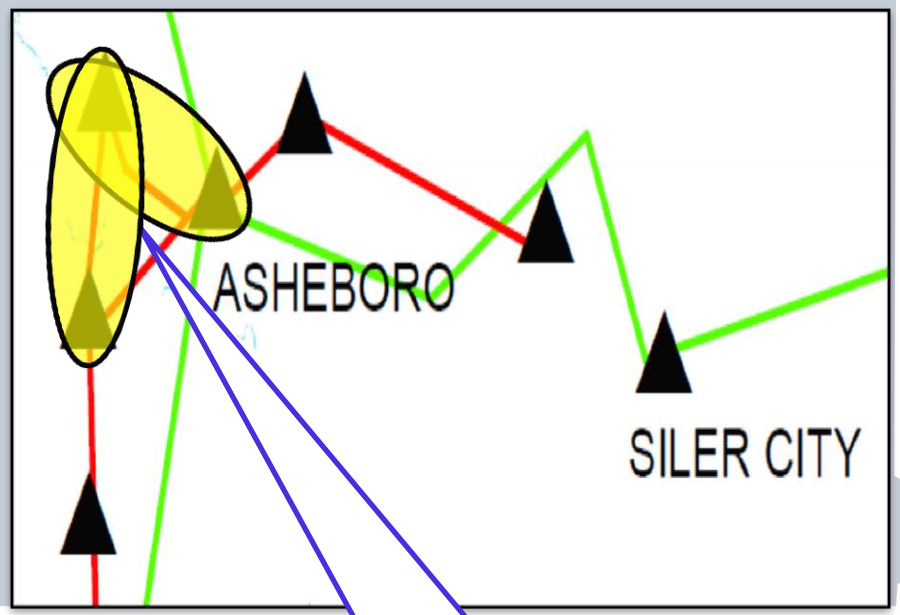
SUPPORTING STATEMENT:

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



DUKE PROGRESS EAST – 4 2019

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

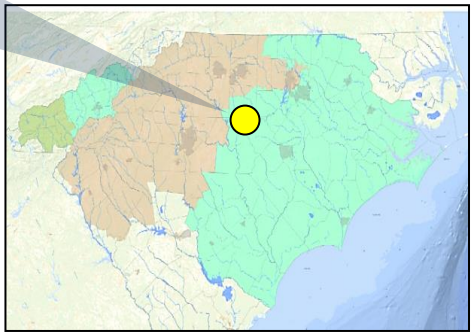


DESCRIPTION:

Rebuild approximately 6.45 miles of the Asheboro – Asheboro East (North) 115 kV transmission line using 3-1590 or equivalent conductor. 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.

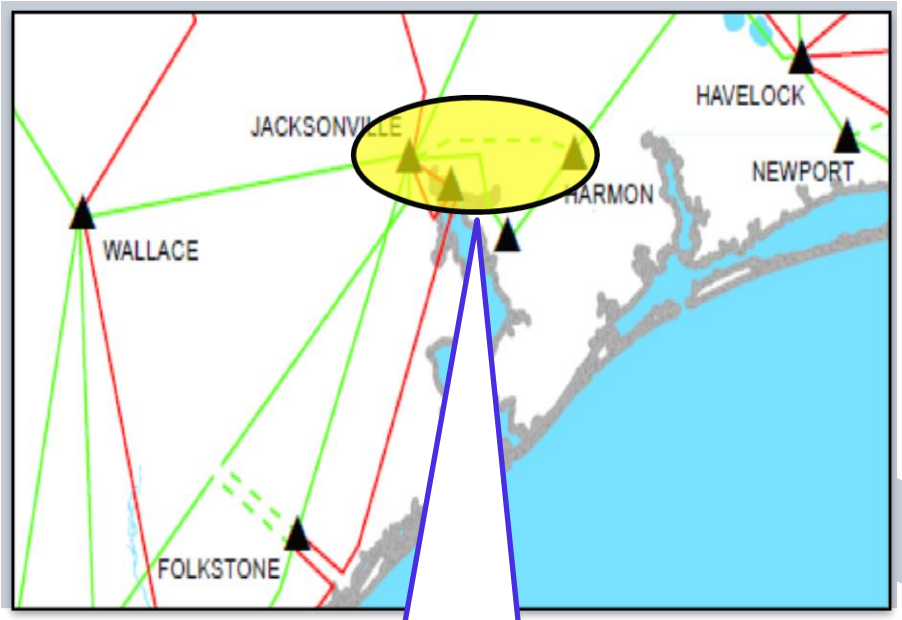
SUPPORTING STATEMENT:

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



DUKE PROGRESS EAST – 5 2020

JACKSONVILLE – HARMON AREA 230 KV T.L.



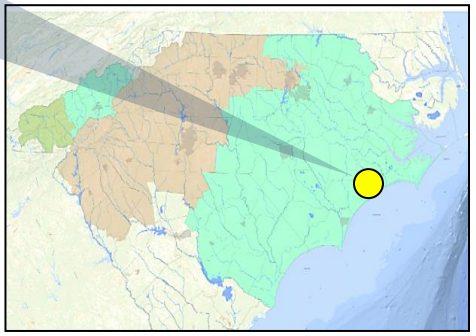
NEW 230 KV TL WITH 6-1590 ACSR OR EQUIVALENT CONDUCTOR. NEW 230 KV SUBSTATION WITH A 200 MVA OR 300 MVA 230/115 KV TRANSFORMER

DESCRIPTION:

Construct approximately 12 miles of new 230 kV transmission line from Jacksonville 230 kV to a new 230 kV substation in the Harmon area with bundled 6-1590 ACSR or equivalent. Build the new 230 kV Harmon substation with four 230 kV breakers and a new 200 (or 300) MVA 230/115 kV transformer.

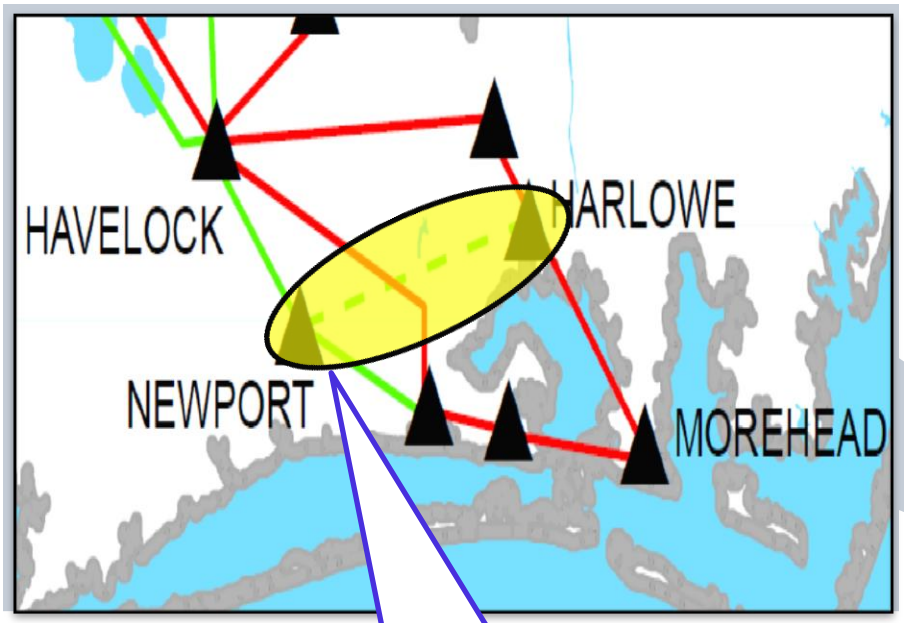
SUPPORTING STATEMENT:

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



DUKE PROGRESS EAST – 6 2020

NEWPORT AREA – HARLOWE 230 KV T.L.

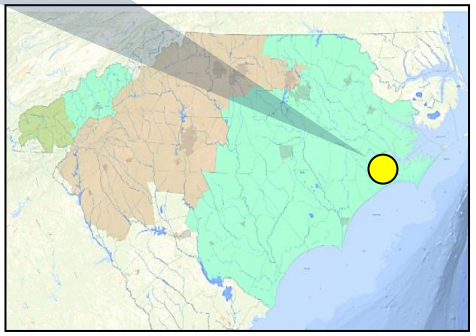


DESCRIPTION:

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

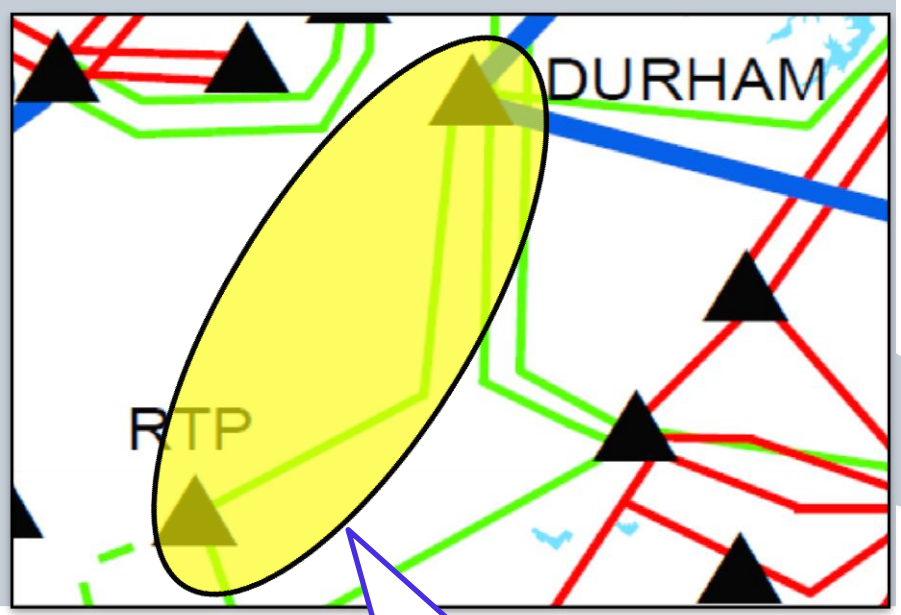
SUPPORTING STATEMENT:

Voltage support is needed in Havelock – Morehead area.



DUKE PROGRESS EAST – 7 2023

DURHAM – RTP 230 KV T.L.

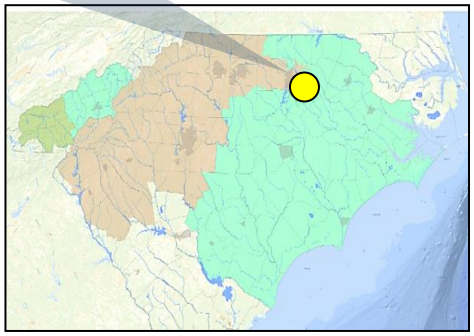


DESCRIPTION:

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

SUPPORTING STATEMENT:

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

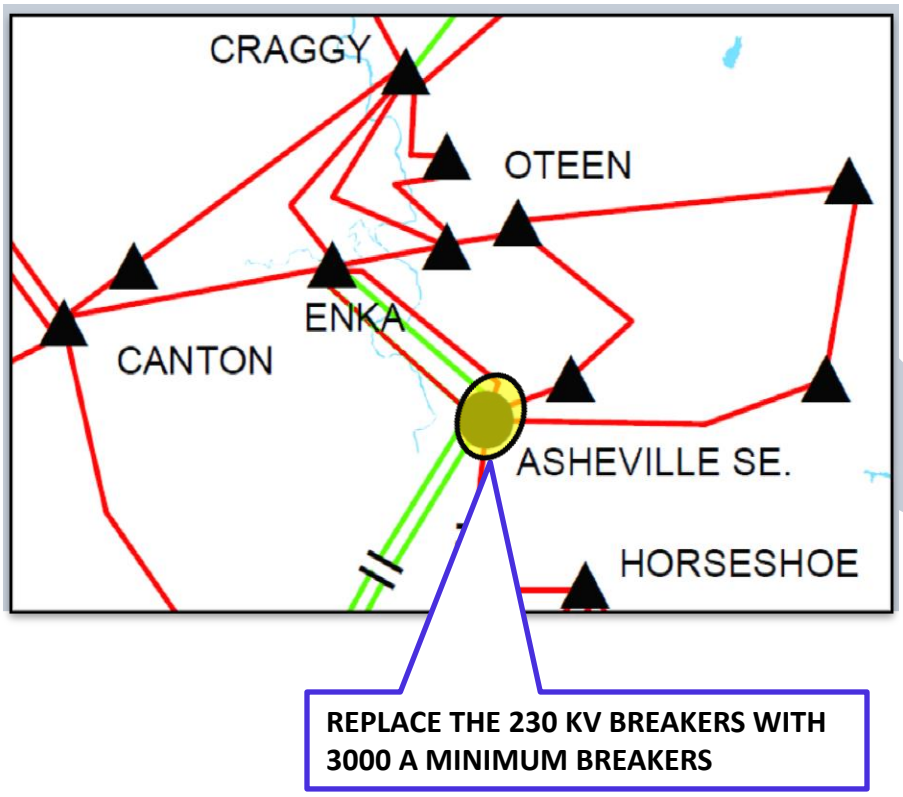


DUKE PROGRESS WEST Balancing Authority

SERTP Regional Transmission Plan

DUKE PROGRESS WEST – 1 2018

ASHEVILLE PLANT SUBSTATION

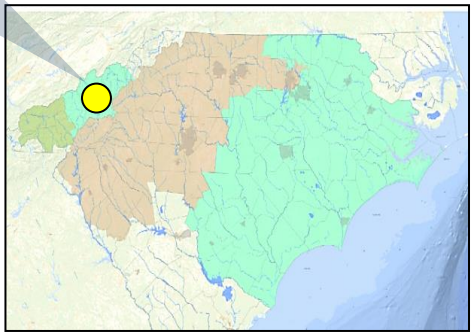


DESCRIPTION:

Replace the 230 kV breakers at Asheville substation with 3000 A minimum breakers to accommodate the installation of combustion turbine units at Asheville S.E. Plant.

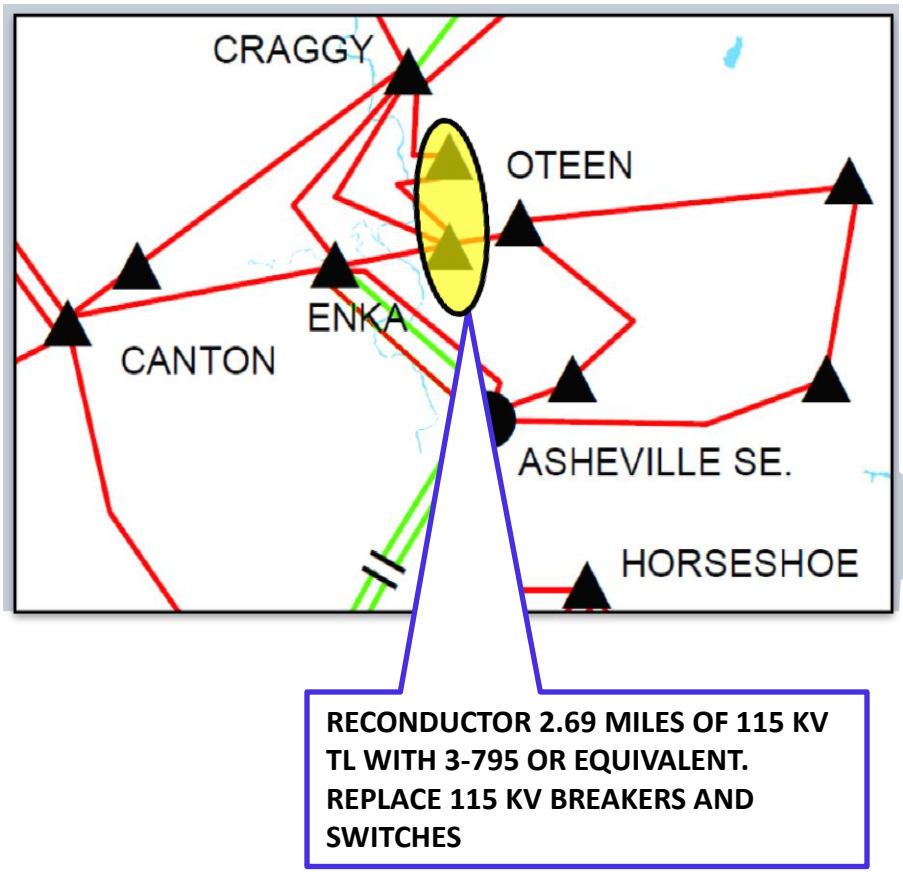
SUPPORTING STATEMENT:

Asheville Plant Switchyard modifications are required to accommodate generation.



DUKE PROGRESS WEST – 2 2018

VANDERBILT – W. ASHEVILLE 115 KV T.L.

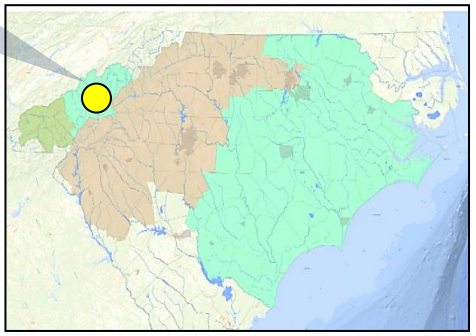


DESCRIPTION:

Reconductor approximately 2.69 miles of the Vanderbilt – W. Asheville 115 kV transmission line with 3-795 or equivalent. Replace one 115 kV breaker, two 115 kV disconnect switches, and one 115 kV switch at Vanderbilt.

SUPPORTING STATEMENT:

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



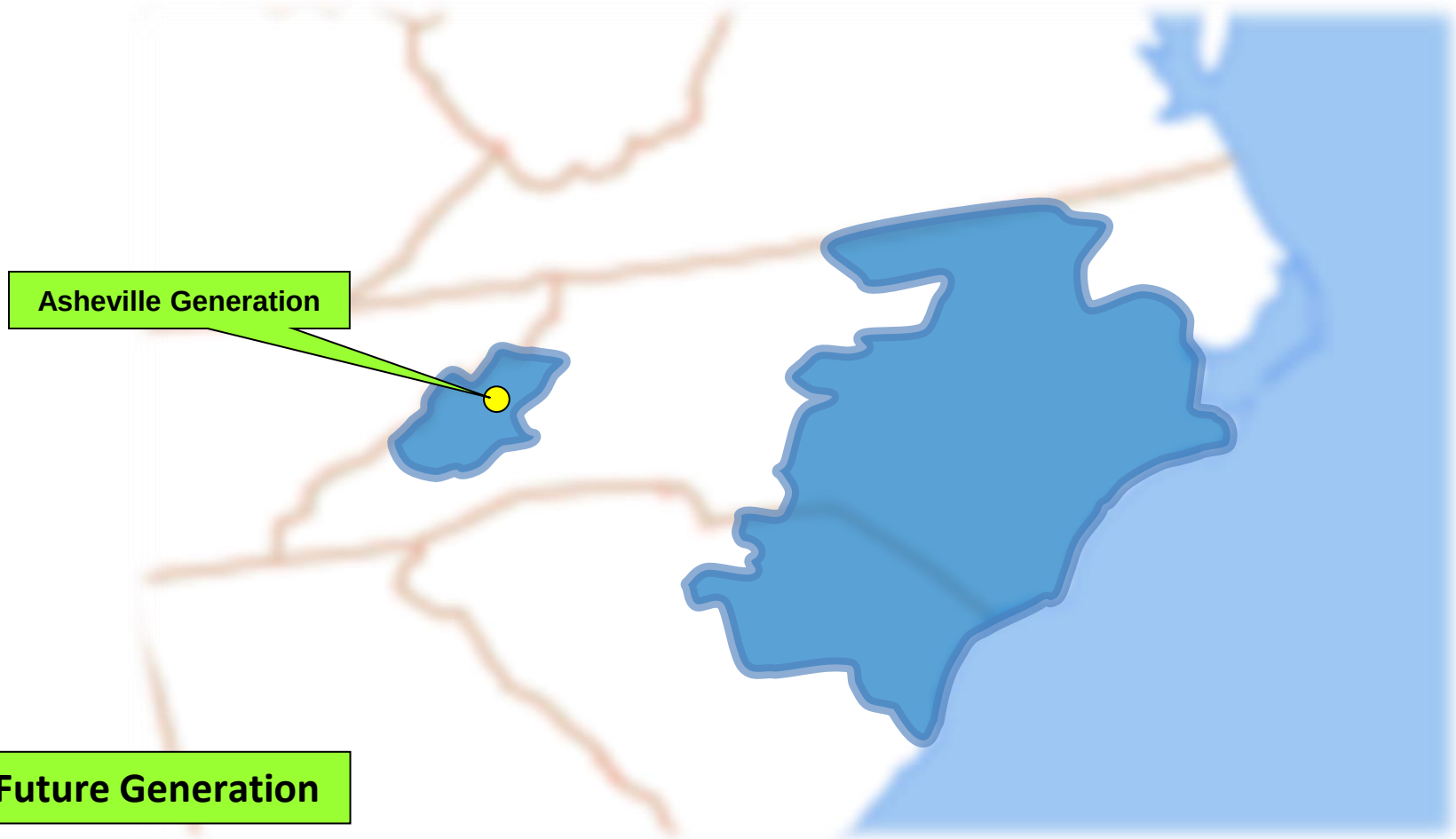
DUKE PROGRESS EAST/WEST

Balancing Authorities

Upcoming 2015 Generation Assumptions

DUKE PROGRESS – 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 PROGRESS – 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
ASHEVILLE FS UNIT	0	0	130	130	130	130	130	130	130	130

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.

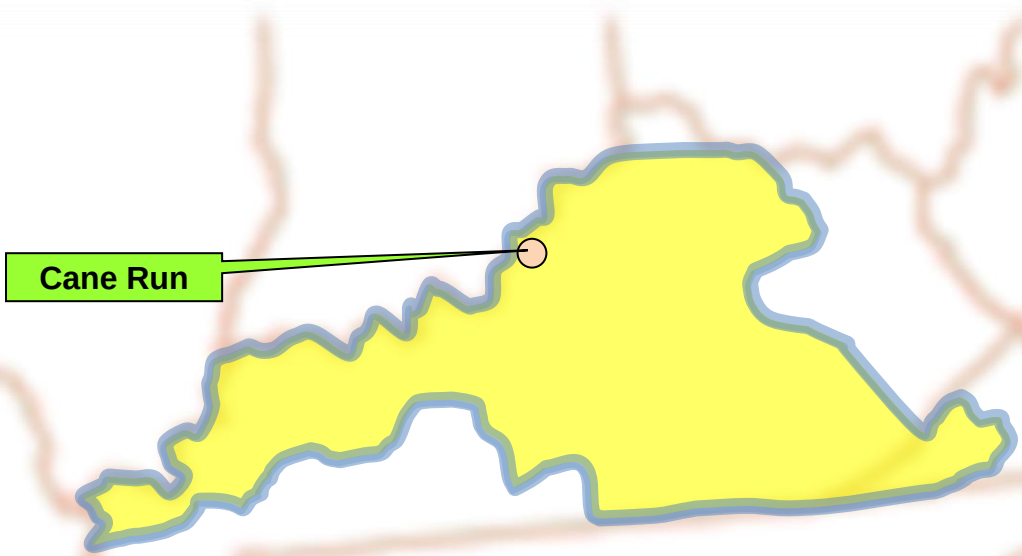
SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
HAMLET #1	55	55	55	55	55	55	55	55	55	55
HAMLET #2	55	55	55	55	55	55	55	55	55	55
HAMLET #3	55	55	55	55	55	55	55	55	55	55
HAMLET #4	0	--	--	--	--	--	--	--	--	--

LG&E/KU Balancing Authority

2014 Generation Assumptions

LG&E/KU – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2014 SERTP Process.



Future Generation

LG&E/KU – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
GREEN RIVER	0	--	--	--	--	--	--	--	--	--
CANE RUN 4-6	0	--	--	--	--	--	--	--	--	--
CANE RUN 7	660	660	660	660	660	660	660	660	660	660
OHIO FALLS	64	64	64	64	64	64	64	64	64	64

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.

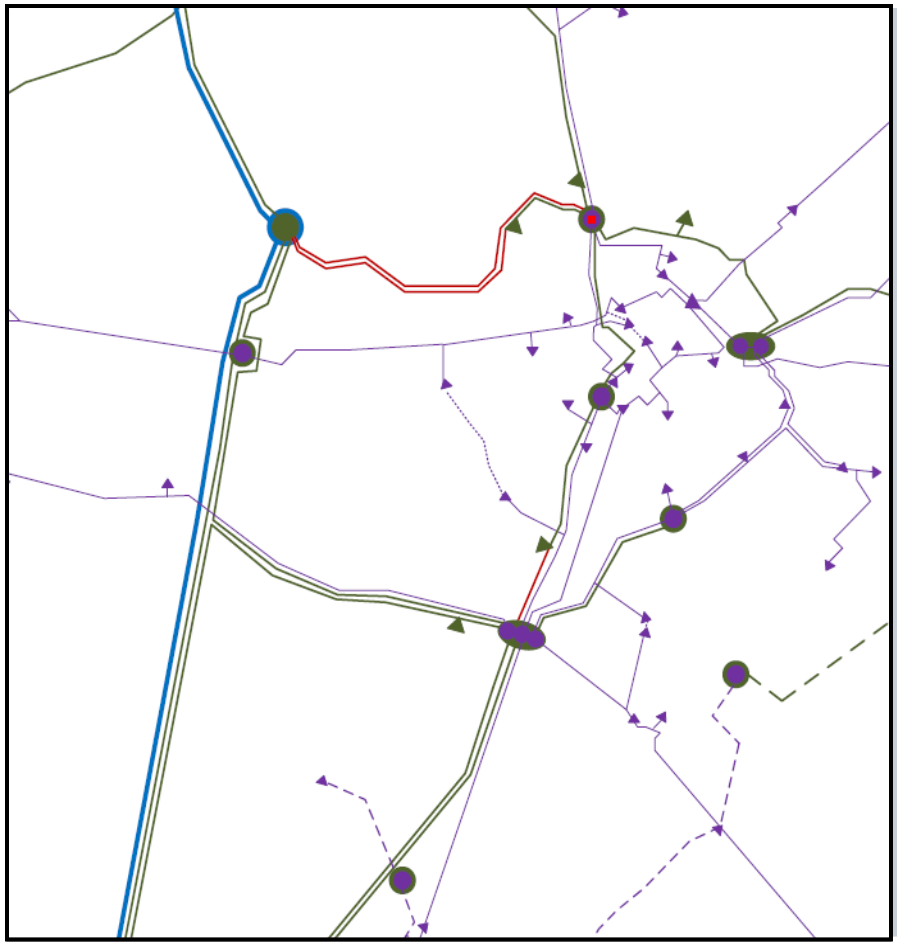
SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

LG&E/KU Balancing Authority

SERTP Regional Transmission Plan

LG&E/KU – 1 2019

WEST LEXINGTON – VILEY ROAD 138 KV T.L.

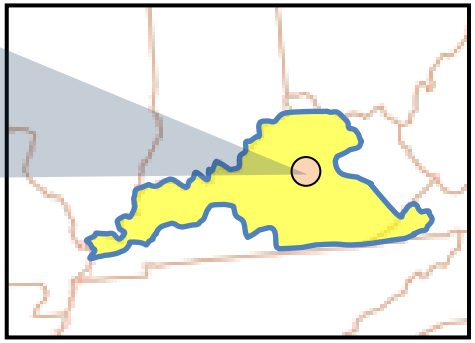


DESCRIPTION:

Reconductor approximately 5.19 miles of 795 MCM 26X7 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 1500 A.

SUPPORTING STATEMENT:

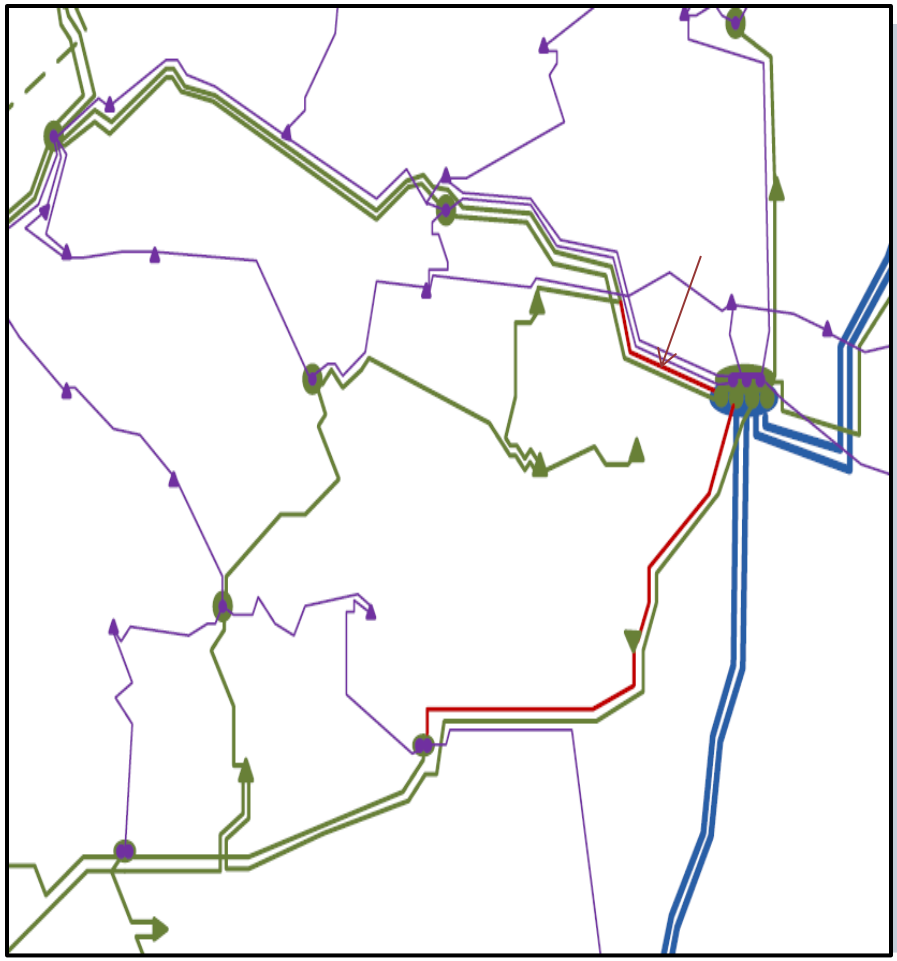
The West Lexington – Viley Road 138 kV transmission line overloads under contingency.



LG&E/KU – 2

2019

PLAINVIEW TAP – PLAINVIEW 138 KV T.L.

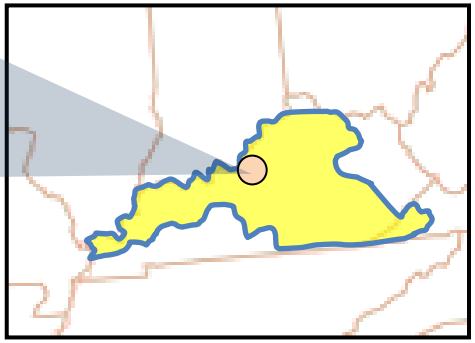


DESCRIPTION:

Upgrade 1.57 miles of 1272 AA conductor on the Plainview tap – Plainview section of the Middletown – Beargrass 138 kV transmission line to 100°C operation.

SUPPORTING STATEMENT:

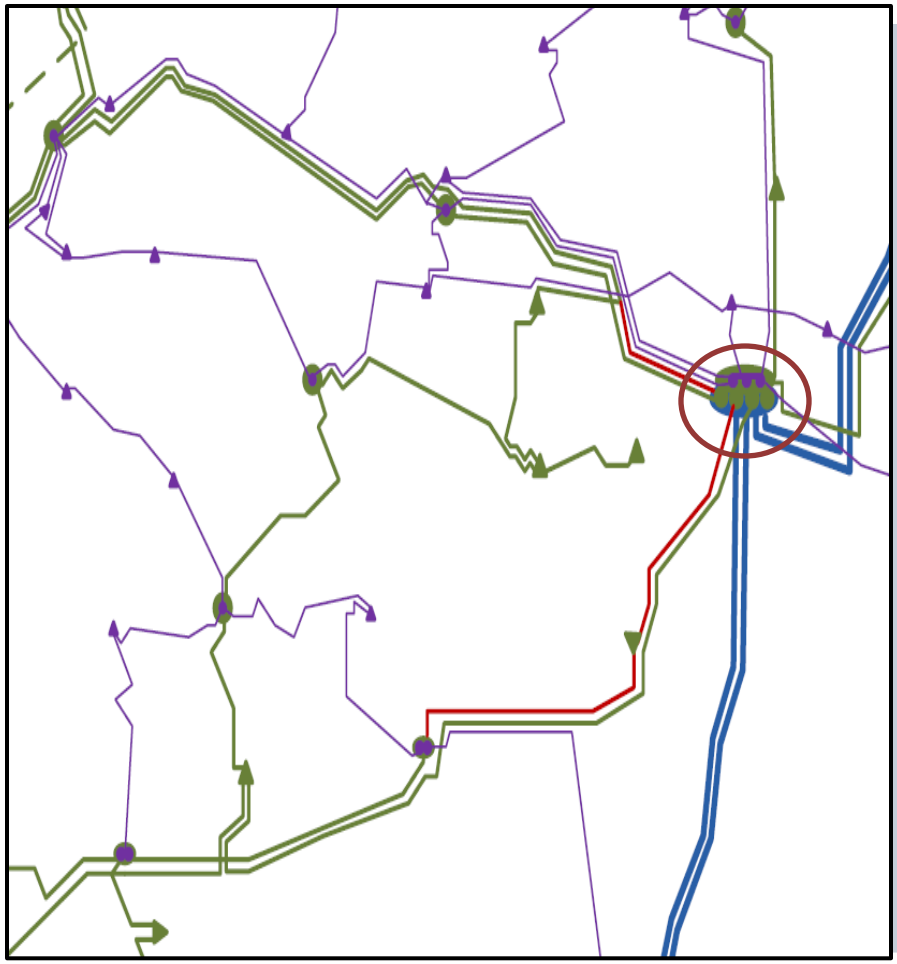
The Plainview Tap – Plainview 138 kV transmission line overloads under contingency.



LG&E/KU – 3

2019

JEFFERSONTOWN TAP – WATTERSON 138 KV T.L.

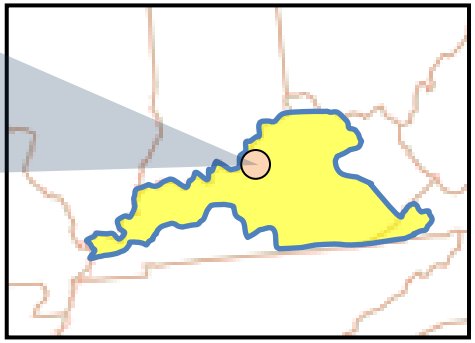


DESCRIPTION:

Replace the 1200 A CTs, the 954 MCM 37X AA bus conductor, and 750 MCM 37X CU jumper conductors at Watterson with equipment and conductor capable of at least 1400A.

SUPPORTING STATEMENT:

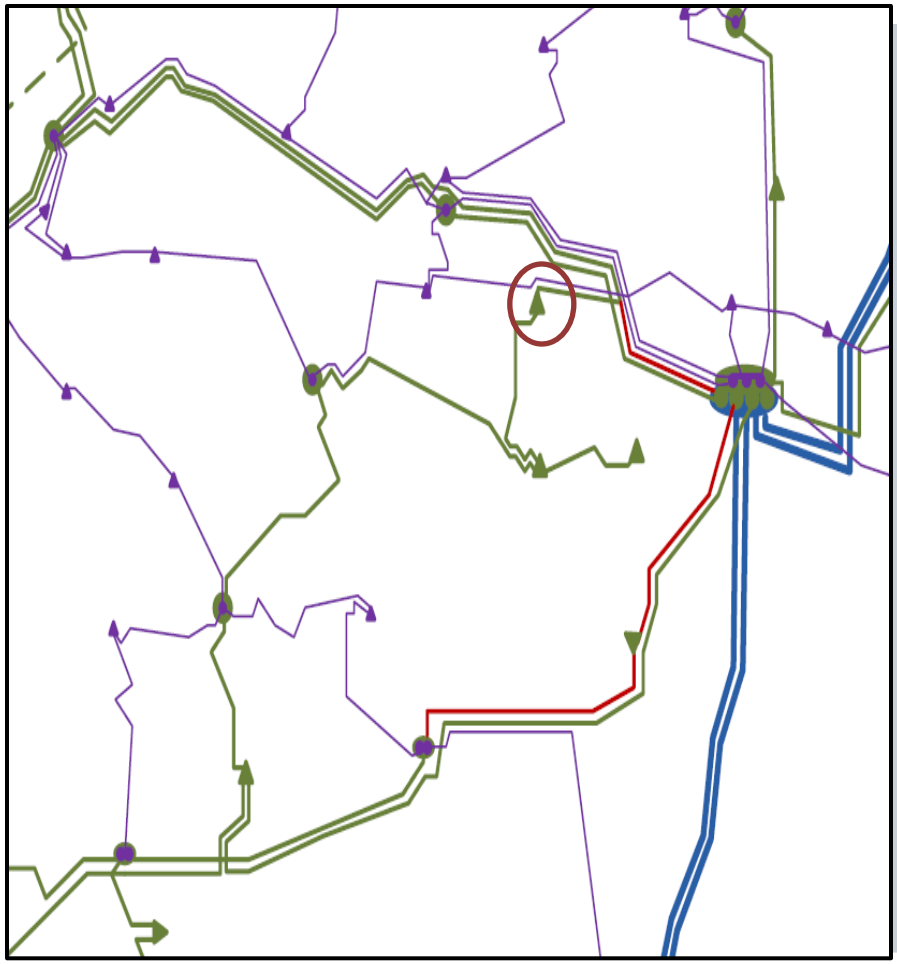
The Jeffersontown Tap – Watterson 138 kV transmission line overloads under contingency.



LG&E/KU – 4

2021

MIDDLETOWN – JEFFERSONTOWN TAP 138 KV T.L.

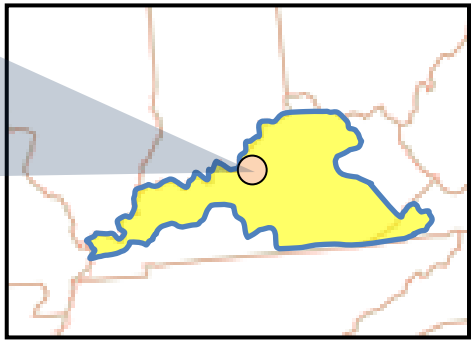


DESCRIPTION:

Replace the 1200 A switches at Middletown, associated with the Middletown – Watterson 138 kV transmission line, with 1600 A or higher equipment.

SUPPORTING STATEMENT:

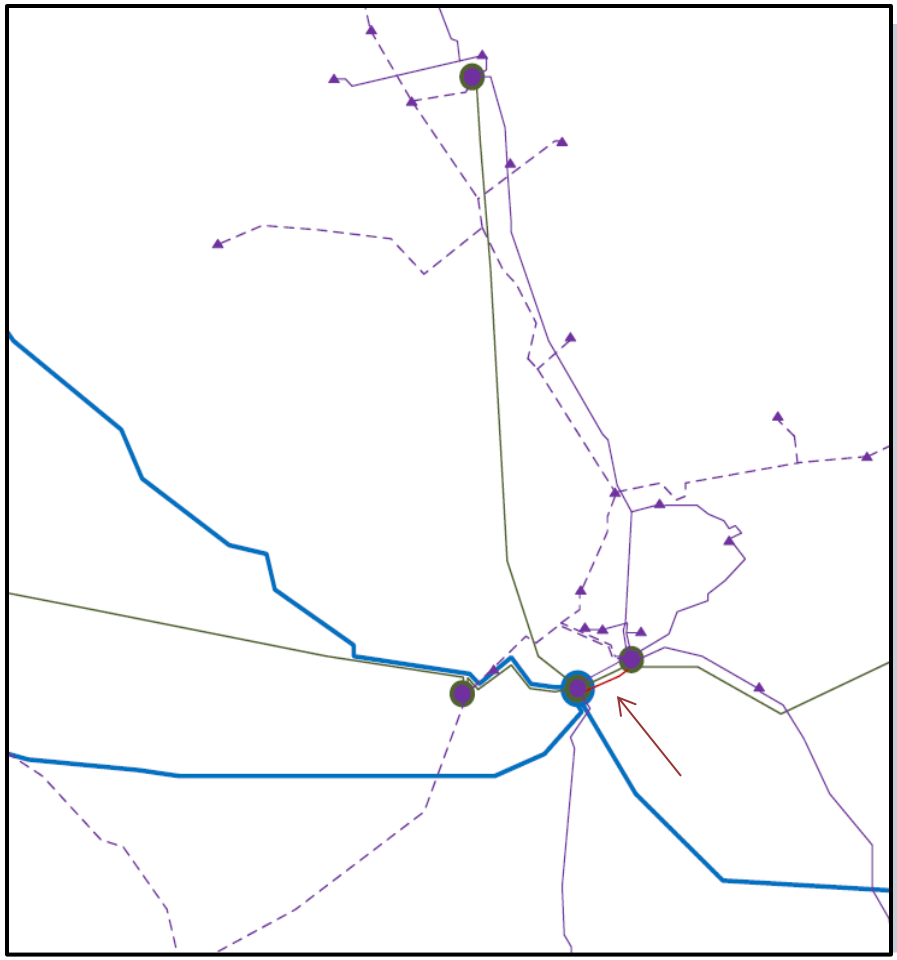
The Middletown – Jeffersontown Tap 138 kV transmission line overloads under contingency.



LG&E/KU – 5

2021

ELIZABETHTOWN – HARDIN COUNTY 138 KV T.L.

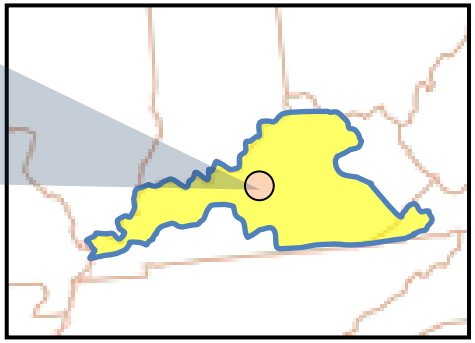


DESCRIPTION:

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:

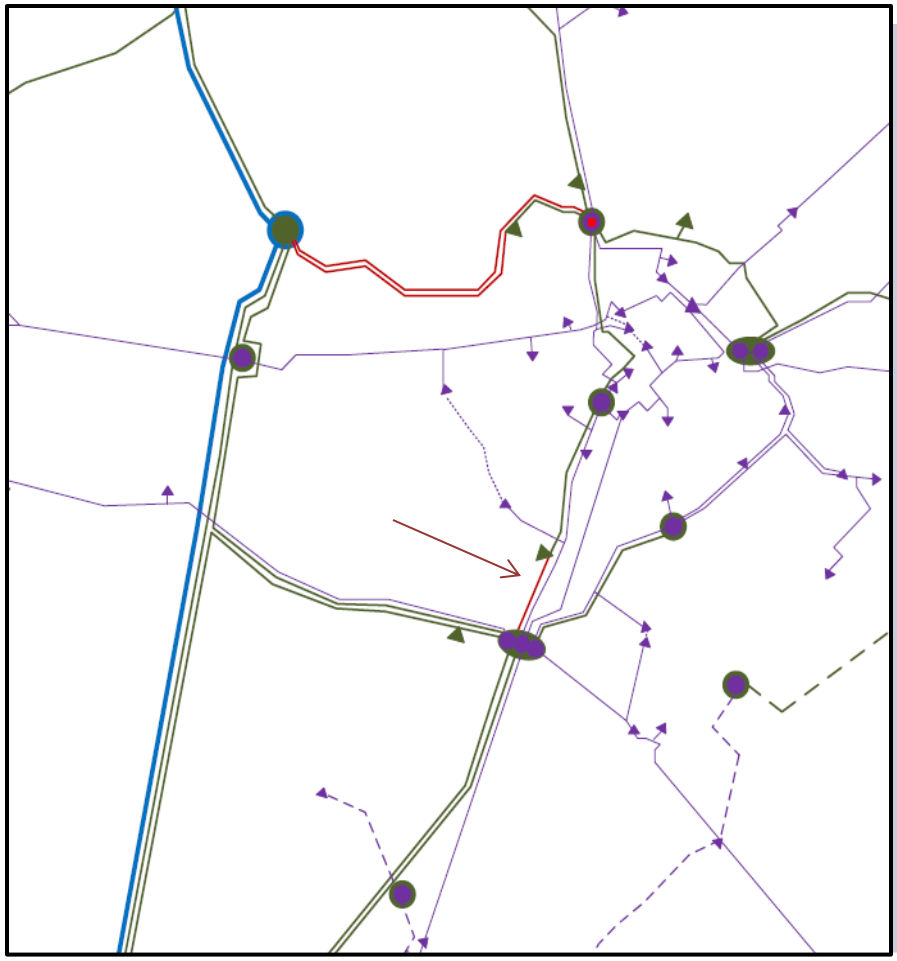
The Hardin County 138/69 kV transformer overloads under contingency.



LG&E/KU – 6

2021

HIGBY MILL – REYNOLDS 138 KV T.L.

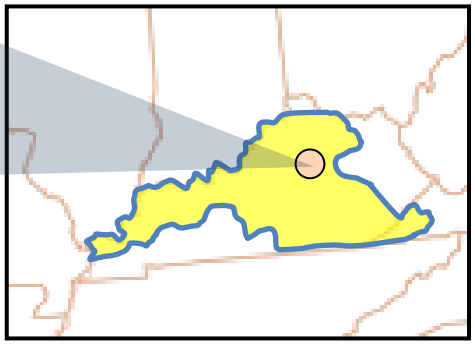


DESCRIPTION:

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

SUPPORTING STATEMENT:

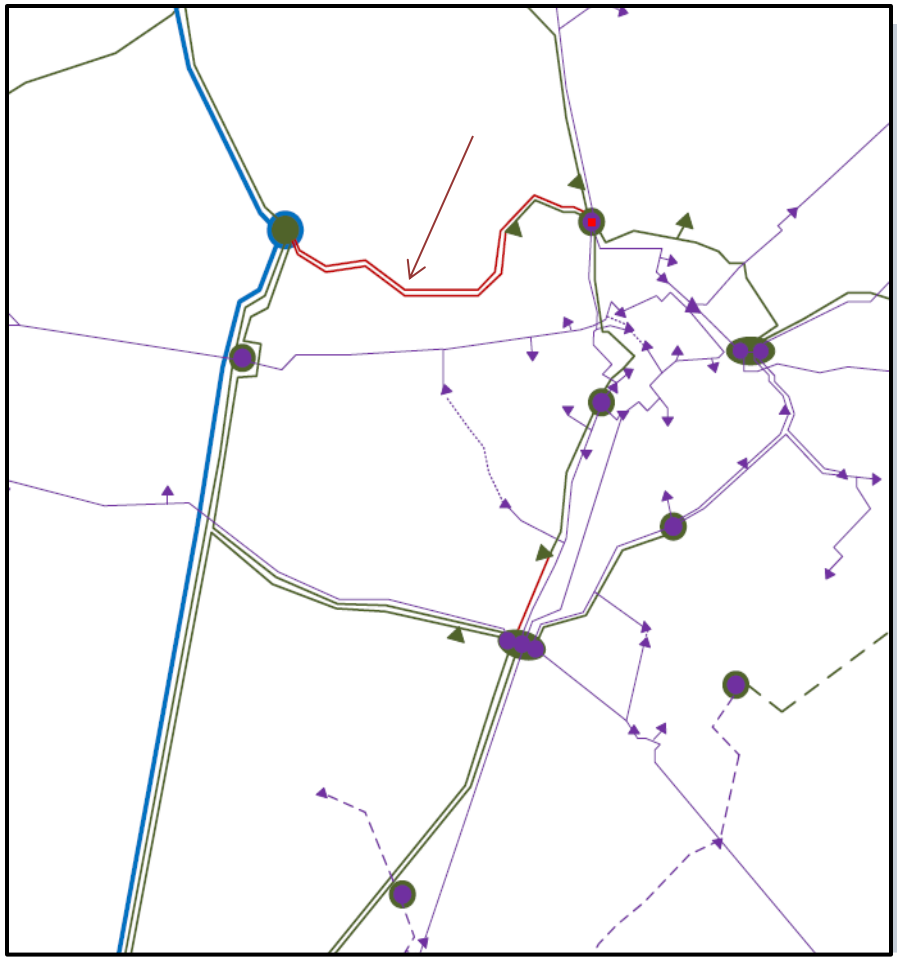
The Higby Mill – Reynolds 138 kV transmission line overloads under contingency.



LG&E/KU – 7

2021

WEST LEXINGTON – HAEFLING 138 KV T.L.

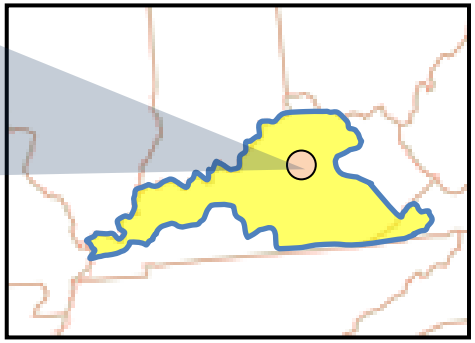


DESCRIPTION:

Reconductor 7.34 miles of 795 MCM 26X7 ACSR conductor on the West Lexington – Haefling 138 kV line, using high temperature conductor capable of at least 1500 A.

SUPPORTING STATEMENT:

The West Lexington to Haefline 138 kV transmission line overloads under contingency.



LG&E/KU Balancing Authority

Upcoming 2015 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

OVEC Balancing Authority

SERTP Regional Transmission Plan & 2015 Generation Assumptions

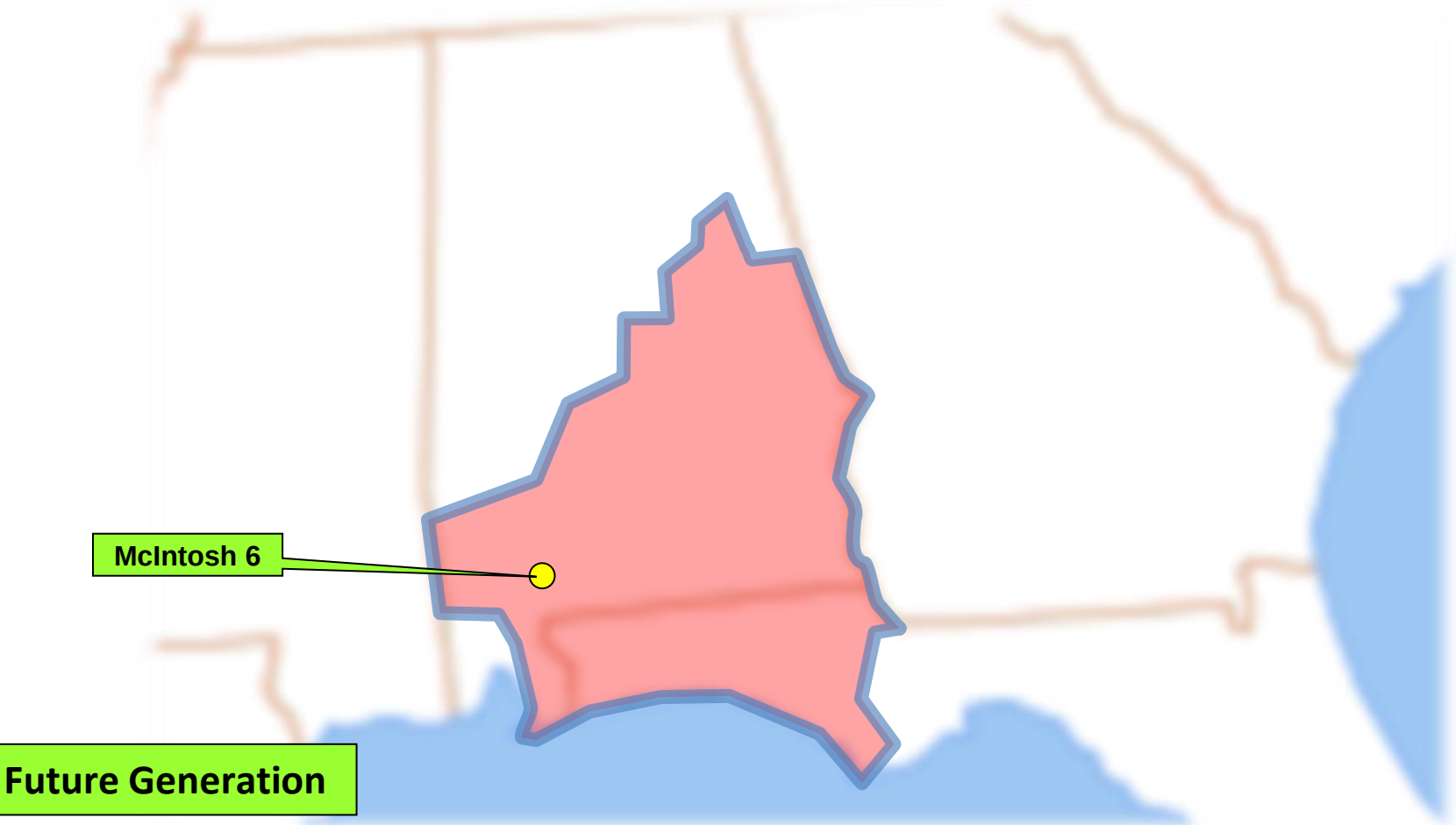
* **OVEC has no transmission projects included in the 2014 SERTP Regional Transmission Plan. In addition, OVEC has no generation assumptions expected to change throughout the ten year planning horizon for the 2015 SERTP Process.**

POWERSOUTH Balancing Authority

2014 Generation Assumptions

POWERSOUTH – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2014 SERTP Process.



POWERSOUTH – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2014 SERTP Process. The years shown represent Summer Peak conditions.

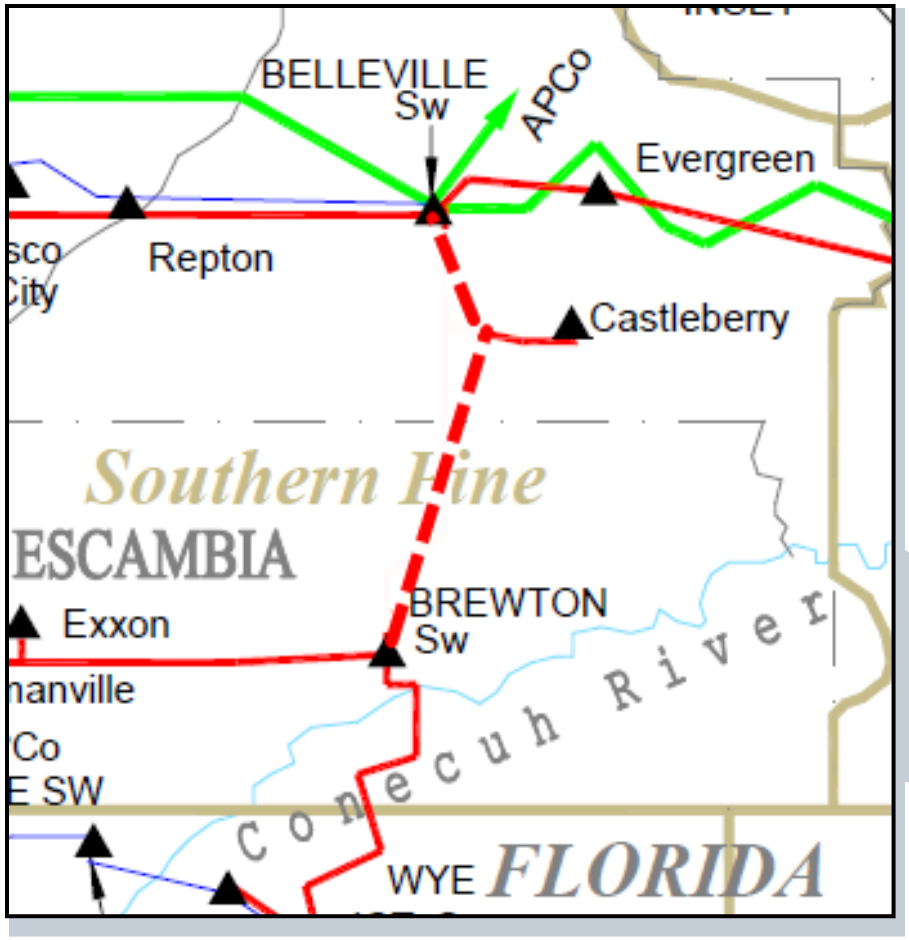
SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
MCINTOSH	688	688	688	688	688	688	688	882	882	882

POWERSOUTH Balancing Authority

SERTP Regional Transmission Plan

POWERSOUTH – 1 2015

BELLEVILLE – BREWTON 115 KV T.L.

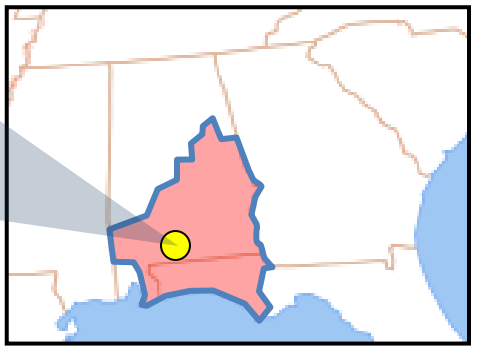


DESCRIPTION:

Upgrade Belleville – Brewton 115 kV transmission line to 100°C operation.

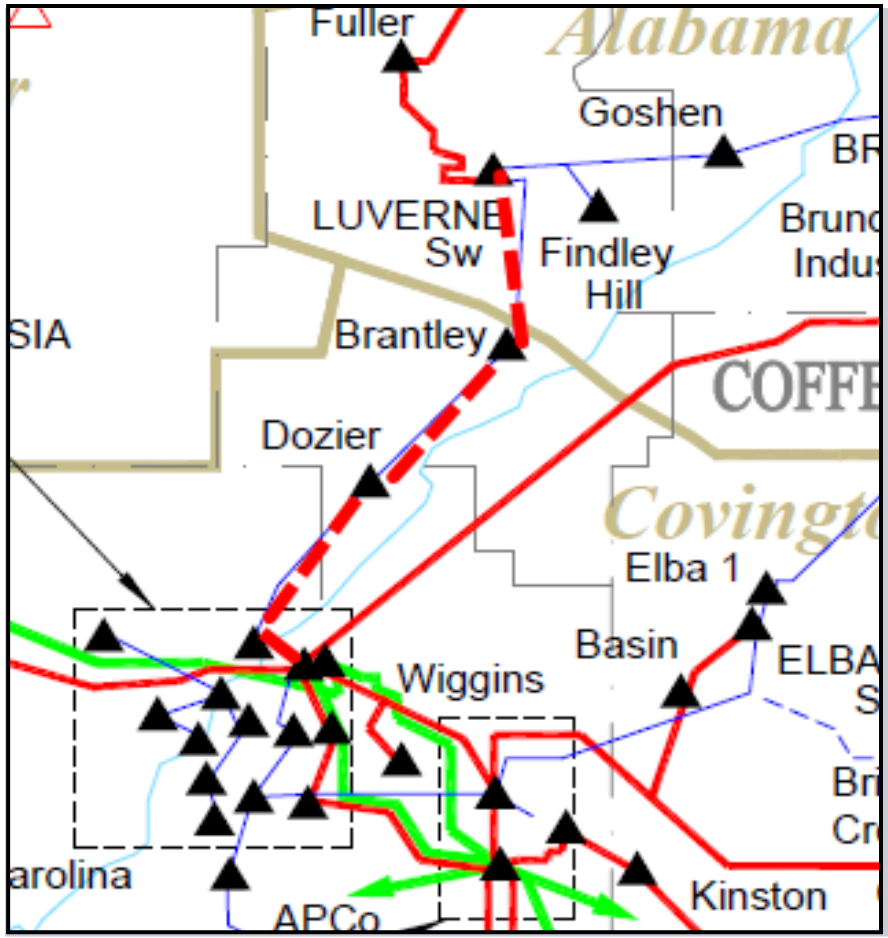
SUPPORTING STATEMENT:

The Belleville – Brewton 115 kV transmission line overloads under contingency.



POWERSOUTH – 2 2016

MCWILLIAMS – LUVERNE 115 KV T.L.

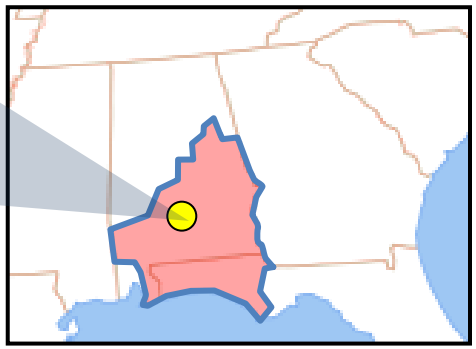


DESCRIPTION:

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

SUPPORTING STATEMENT:

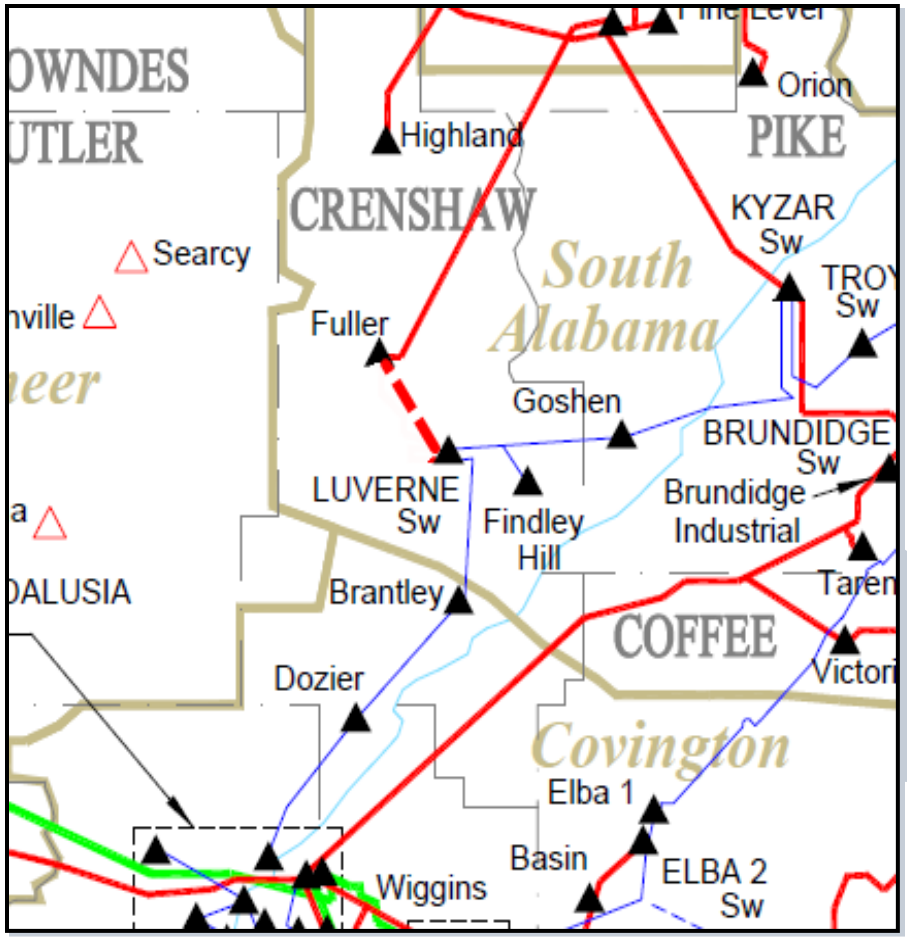
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 3

2016

LUVERNE – FULLER 115 KV T.L.

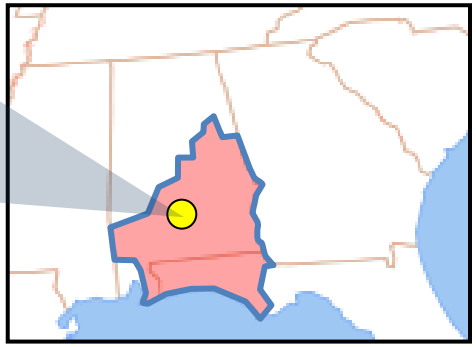


DESCRIPTION:

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

SUPPORTING STATEMENT:

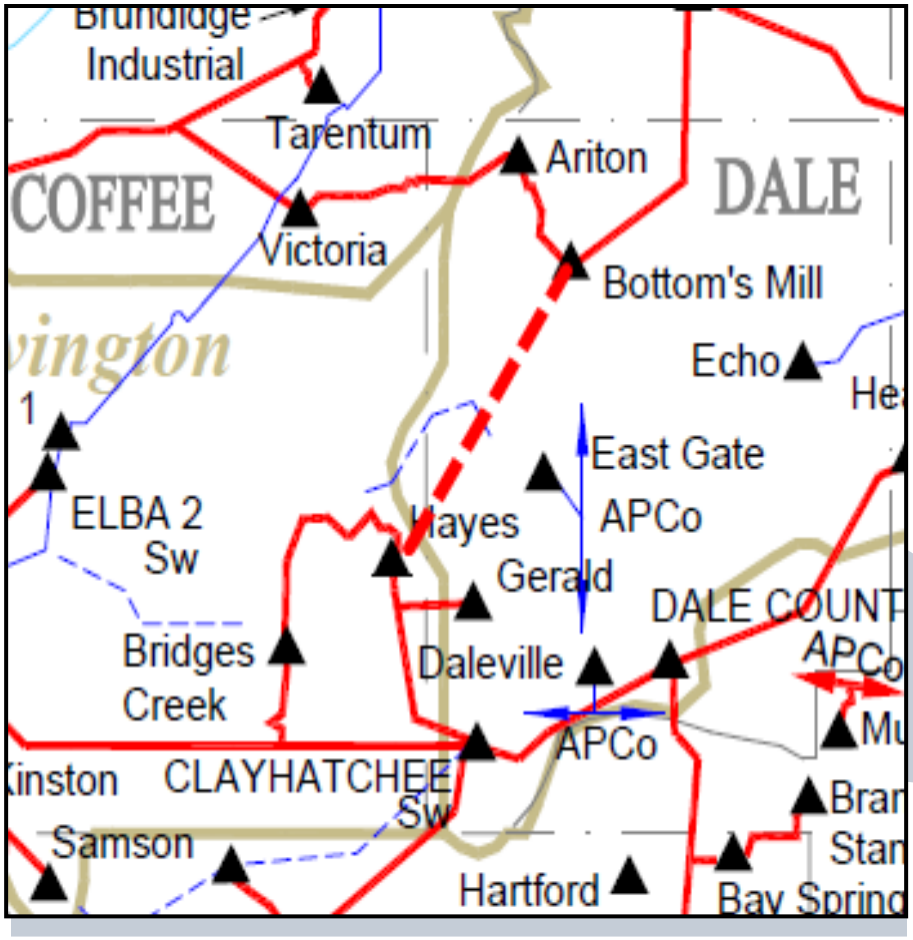
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 4

2016

HAYES – BOTTOMS MILL 115 KV T.L.

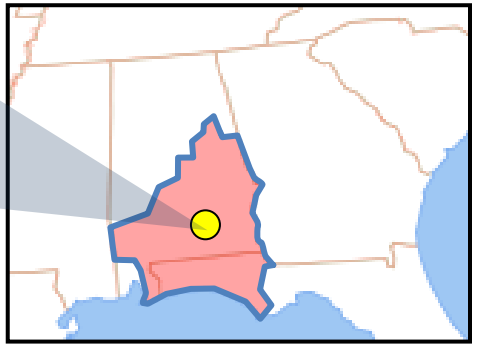


DESCRIPTION:

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

SUPPORTING STATEMENT:

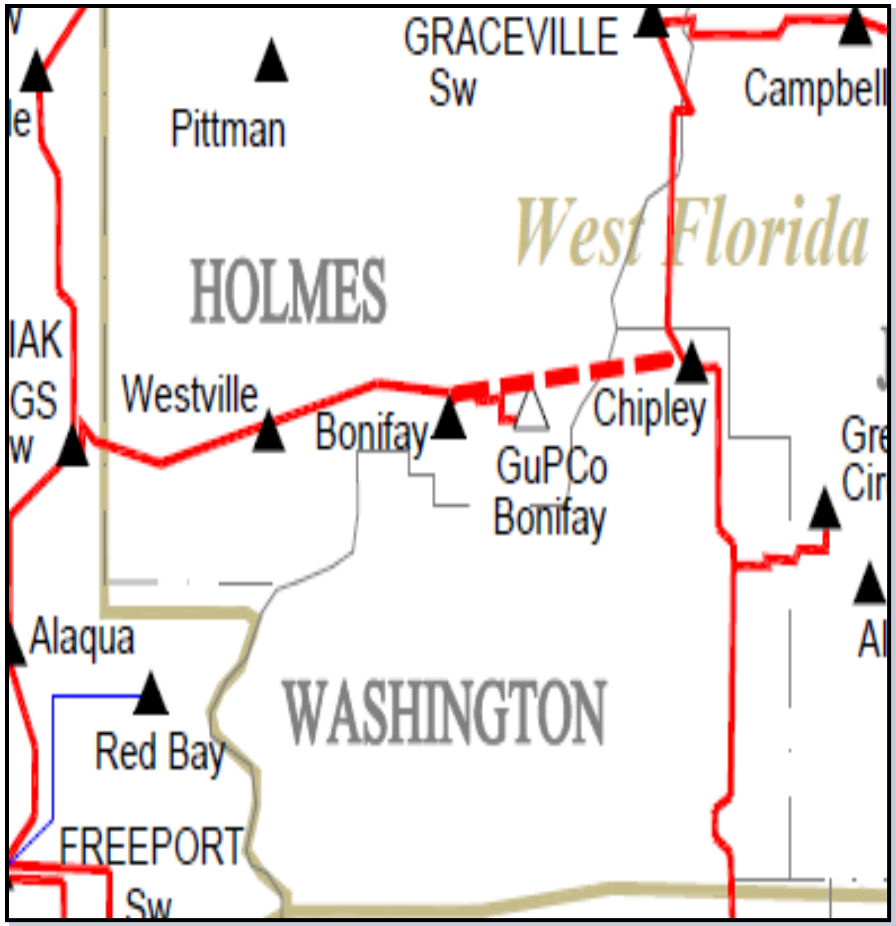
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 5

2017

BONIFAY – CHIPLEY 115 KV T.L.

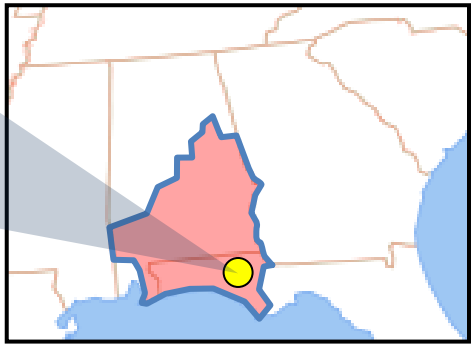


DESCRIPTION:

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

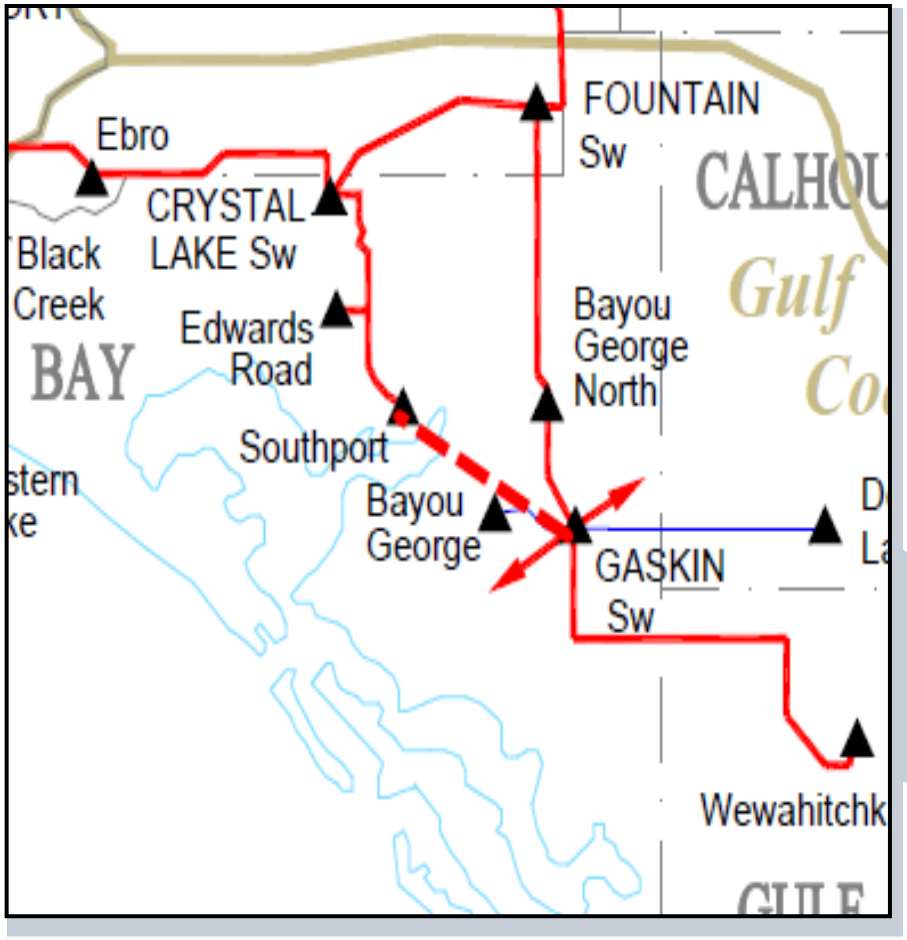
SUPPORTING STATEMENT:

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



POWERSOUTH – 6 2017

GASKIN – SOUTHPORT 115 KV T.L.

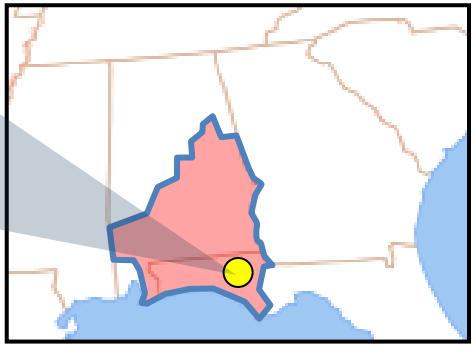


DESCRIPTION:

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

SUPPORTING STATEMENT:

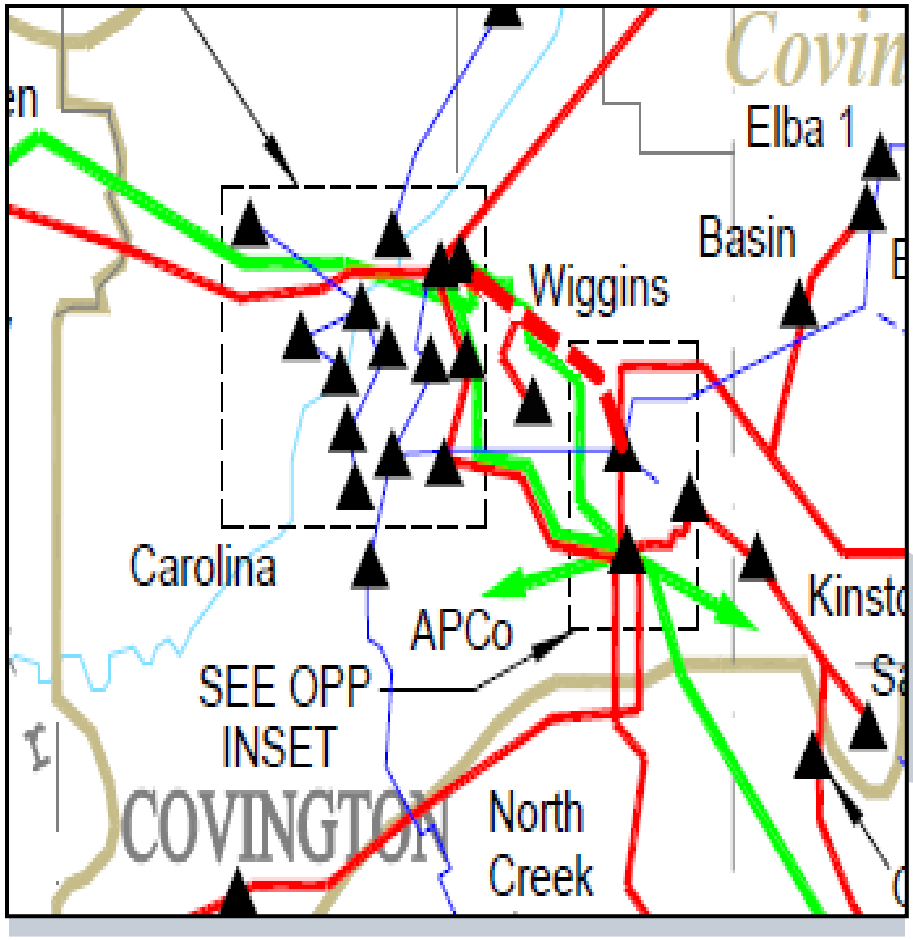
Improve the reliability of Gulf Coast Electric's substations by providing a looped service feed.



POWERSOUTH – 7

2017

MCWILLIAMS – OPP 115 KV T.L.

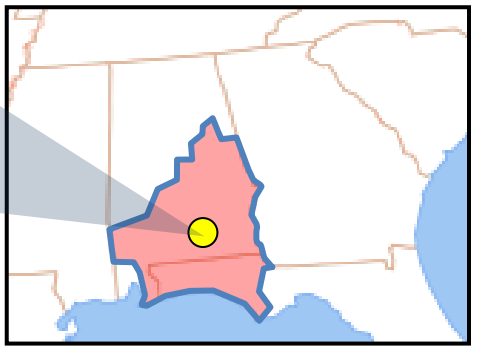


DESCRIPTION:

Reconductor 15 miles of the McWilliams – Opp Switching 115 kV transmission line with 795 ACSR at 100°C.

SUPPORTING STATEMENT:

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

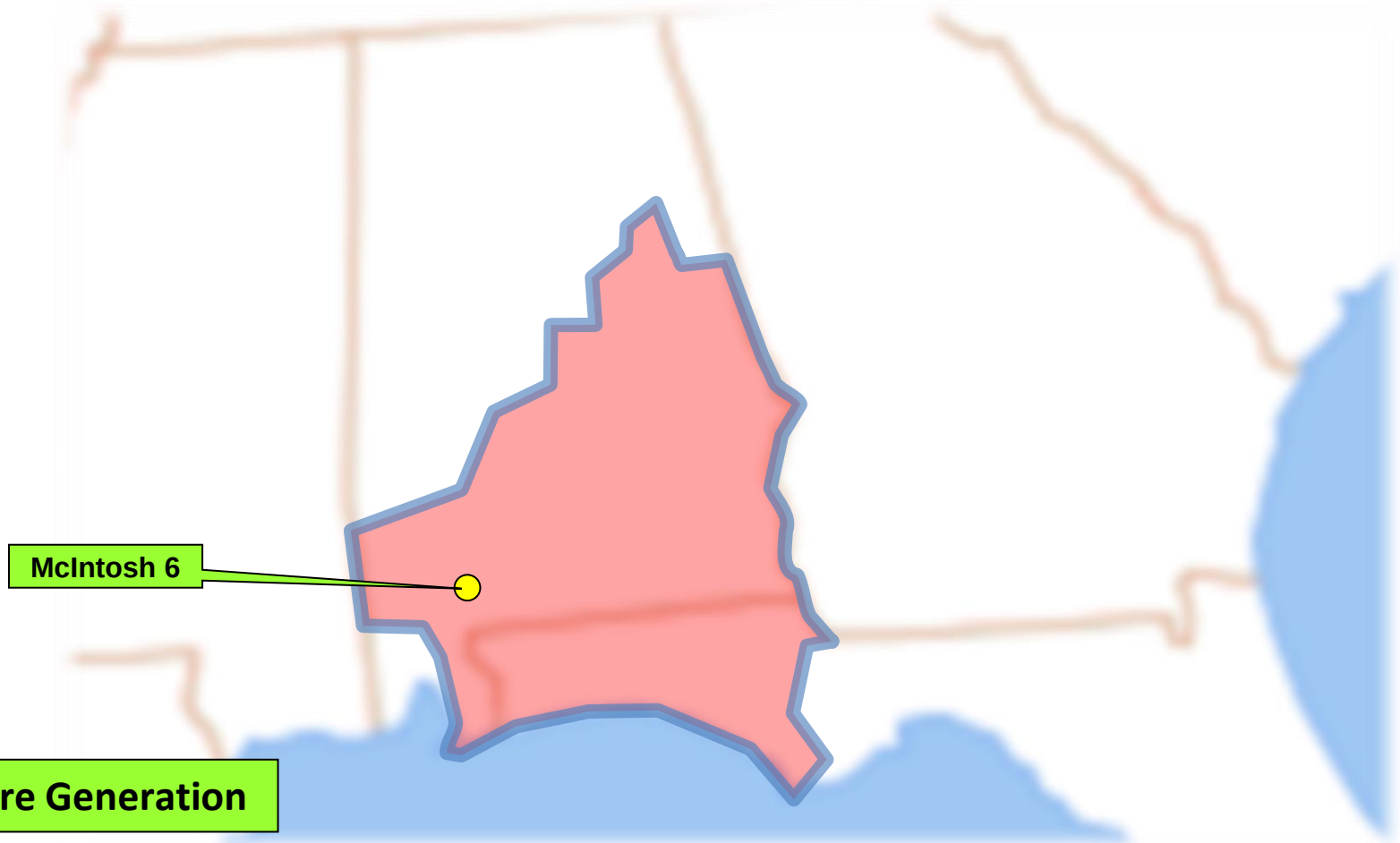


POWERSOUTH Balancing Authority

Upcoming 2015 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

SOUTHERN Balancing Authority

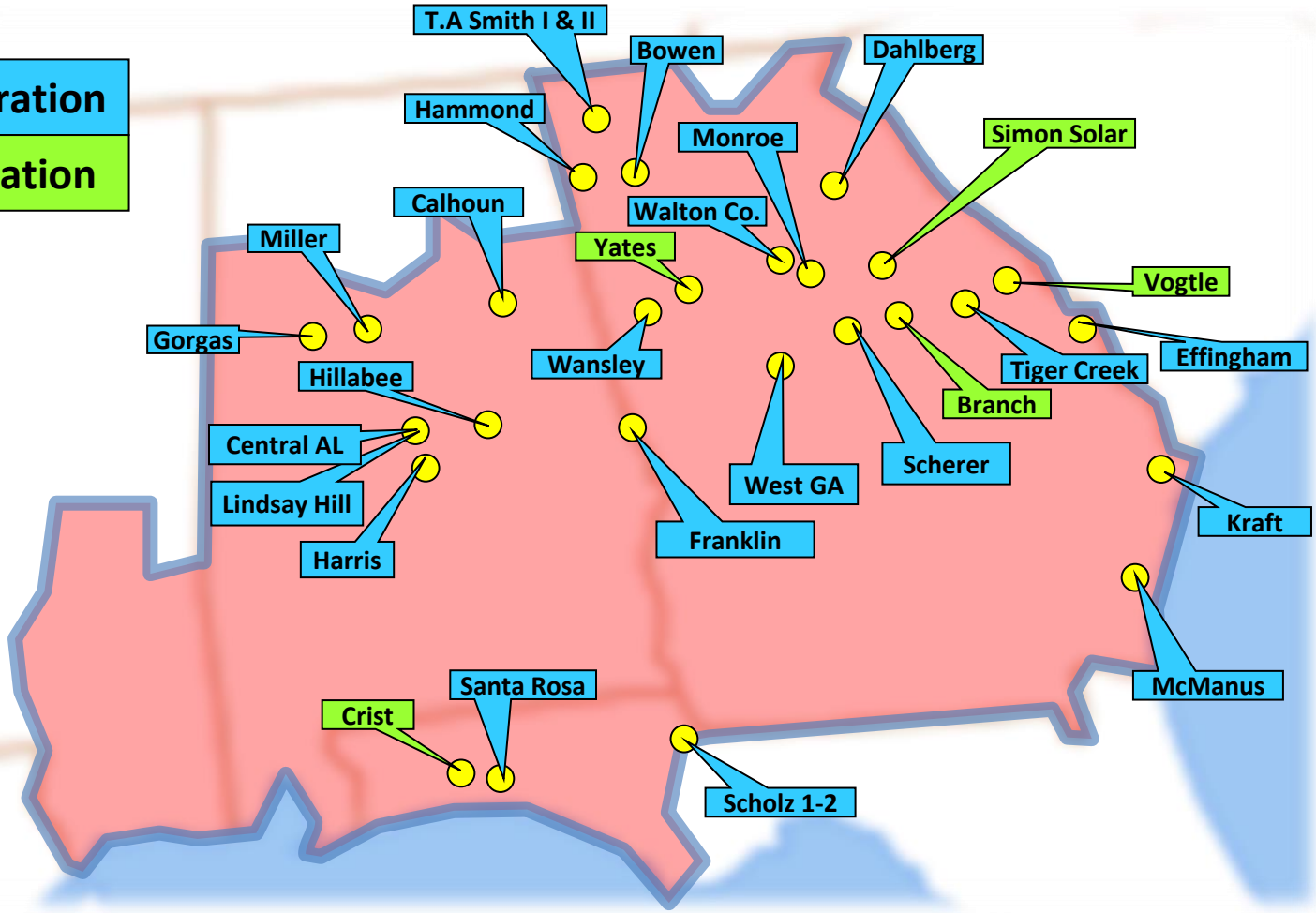
2014 Generation Assumptions

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2014 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 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
DAHLBERG CT	367	367	367	367	367	367	367	367	367	367
BRANCH 1	0	--	--	--	--	--	--	--	--	--
BRANCH 3-4	0	--	--	--	--	--	--	--	--	--
GORGAS 6-7	0	--	--	--	--	--	--	--	--	--
MCMANUS 1-2	0	--	--	--	--	--	--	--	--	--
SCHOLZ 1-2	0	--	--	--	--	--	--	--	--	--
YATES 1-5	0	--	--	--	--	--	--	--	--	--
VOGTLE 2	540	540	540	540	540	540	540	540	540	540
SIMON	27	27	27	27	27	27	27	27	27	27
FRANKLIN 2	625	0	--	--	--	--	--	--	--	--

Southern Company – Generation Assumptions

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
WEST GEORGIA	298	298	298	298	298	298	298	298	298	298
KRAFT	316	0	--	--	--	--	--	--	--	--
HARRIS 1	--	625	625	625	625	625	625	625	625	625
WANSLEY 6	561	561	0	--	--	--	--	--	--	--
VOGTLE 3	--	--	--	504	504	504	504	504	504	504
VOGTLE 4	--	--	--	--	504	504	504	504	504	504
HARRIS 2	628	628	628	628	0	--	--	--	--	--

Southern Company – Generation Assumptions

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
CENTRAL ALABAMA	885	885	885	885	885	885	885	885	0	--
CALHOUN 1-4	632	632	632	632	632	632	632	632	0	--
YATES[1]	--	--	--	--	--	--	--	--	940	940
TIGER CREEK	313	313	313	313	313	313	313	313	313	0
MONROE	310	310	310	310	310	310	310	310	310	0
WALTON COUNTY	465	465	465	465	465	465	465	465	465	0
BRANCH[1]	--	--	--	--	--	--	--	--	--	940
CRIST[1]	--	--	--	--	--	--	--	--	--	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	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
VOGTLE	103	206	206	206	206	206	206	206	206	206
LINDSAY HILL	573	365	300	300	300	300	300	300	300	300
HAMMOND	10	10	10	10	10	10	10	10	10	10
MILLER	100	100	0	--	--	--	--	--	--	--
HARRIS 1	584	0	--	--	--	--	--	--	--	--
HILLABEE	350	350	350	350	350	350	350	350	350	350
FRANKLIN	535	609	609	609	609	609	609	609	609	609
SCHERER	1146	998	998	998	998	998	998	998	998	998
DAHLBERG	176	176	176	176	176	176	176	176	176	176
BOWEN	27	27	27	27	27	27	27	27	27	27

GTC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
EFFINGHAM CC	500	0	--	--	--	--	--	--	--	--
LINDSAY HILL CC	273	0	--	--	--	--	150	150	150	150
FRANKLIN CC 2	0	625	625	625	625	625	375	375	375	375
SANTA ROSA	0	--	--	--	--	--	--	--	--	--
DAHLBERG CT	262	375	375	375	375	375	375	375	375	375
HILLABEE CC	--	149	149	149	149	149	149	149	149	149
T.A. SMITH I CC	0	619	619	619	619	619	619	619	619	619
T.A. SMITH II CC	0	617	617	617	617	617	617	617	617	617
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 that change throughout the ten year planning horizon for the 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
VOGTLE 2	248	248	248	248	248	248	248	248	248	248
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 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
VOGTLE 3	--	--	--	16	16	16	16	16	16	16
VOGTLE 4	--	--	--	--	16	16	16	16	16	16

SOUTHERN Balancing Authority

SERTP Regional Transmission Plan

SOUTHERN – 1E 2015

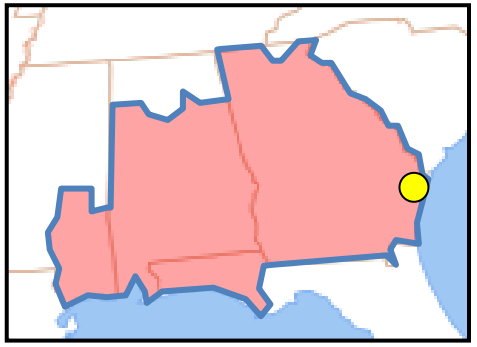
BOULEVARD 230/115 KV PROJECT

DESCRIPTION:

- Expand the Boulevard 115 kV substation to include a 230/115 kV 400 MVA transformer and increase the 115 kV capacitor bank to 60 MVAR.
- Rebuild the Dean Forest – Boulevard 115 kV transmission lines with 1351 ACSS at 170°C and convert one to 230 kV operation.
- Construct a new 230 kV substation, Crossgate, and loop in the Kraft – McIntosh White 230 kV transmission line.
- Construct approximately 5.5 miles of new 230 kV transmission line from Crossgate to Dean Forest with 1351 ACSS at 170 °C.
- At Dean Forest substation, expand the 230 kV ring bus and terminate the Boulevard 230 kV transmission line as well as the Crossgate 230 kV transmission line.

SUPPORTING STATEMENT:

The Kraft 230/115 kV transformer overloads under contingency. The Deptford – Kraft 115 kV transmission line overloads under contingency. Project also provides additional voltage support in the Savannah area.



SOUTHERN – 1E 2015

BOULEVARD 230/115 KV PROJECT

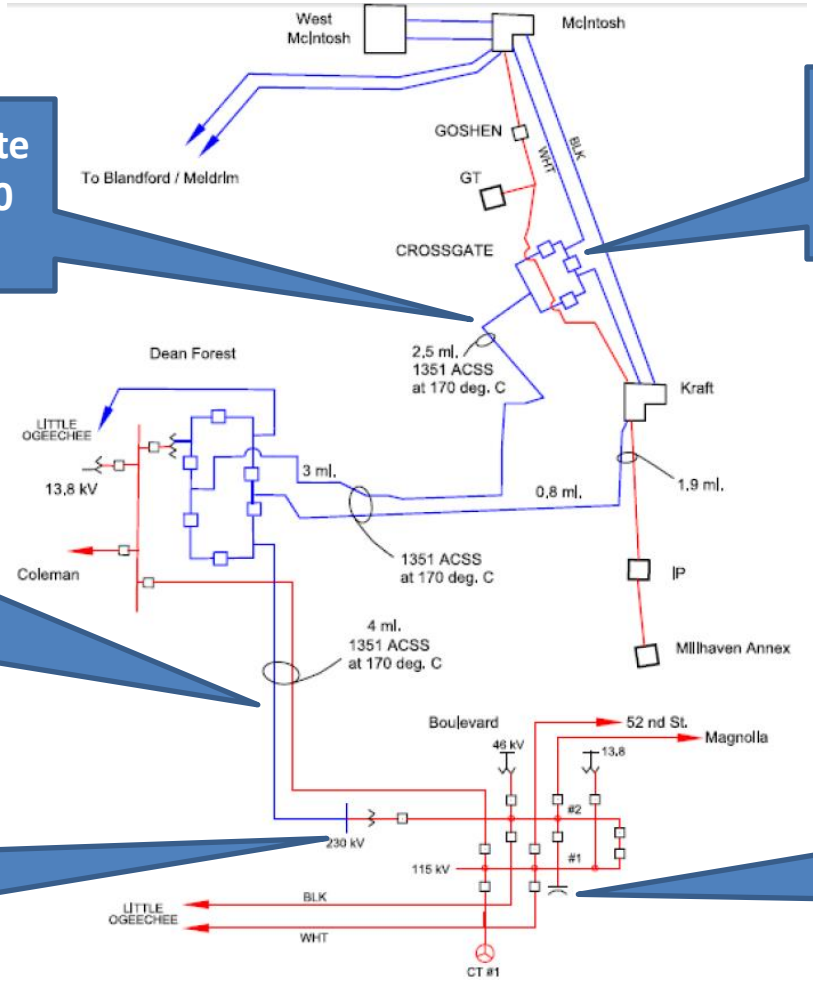
Construct Crossgate – Dean Forest 230 kV line

Construct Crossgate 230 kV Switching Station

Rebuild both Boulevard – Dean Forest 115 kV lines and convert one to 230 kV

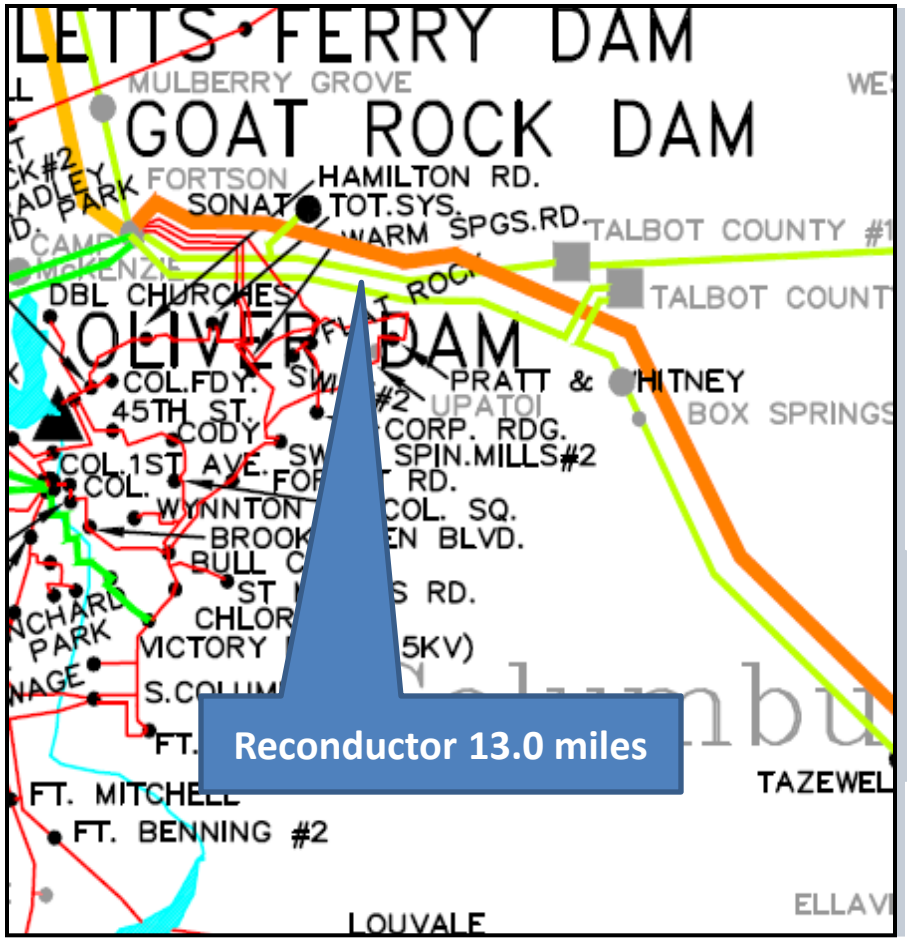
Add Boulevard 230/115 kV autotransformer

Increase capacitor size from 36 MVAR to 60 MVAR



SOUTHERN – 2E 2015

FORTSON – TALBOT COUNTY #1 230 KV T.L.

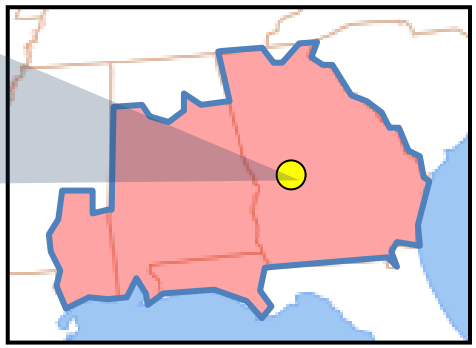


DESCRIPTION:

Reconductor approximately 13.0 miles along the Fortson – Talbot County #1 230 kV transmission line with 1351 ACSS at 160°C.

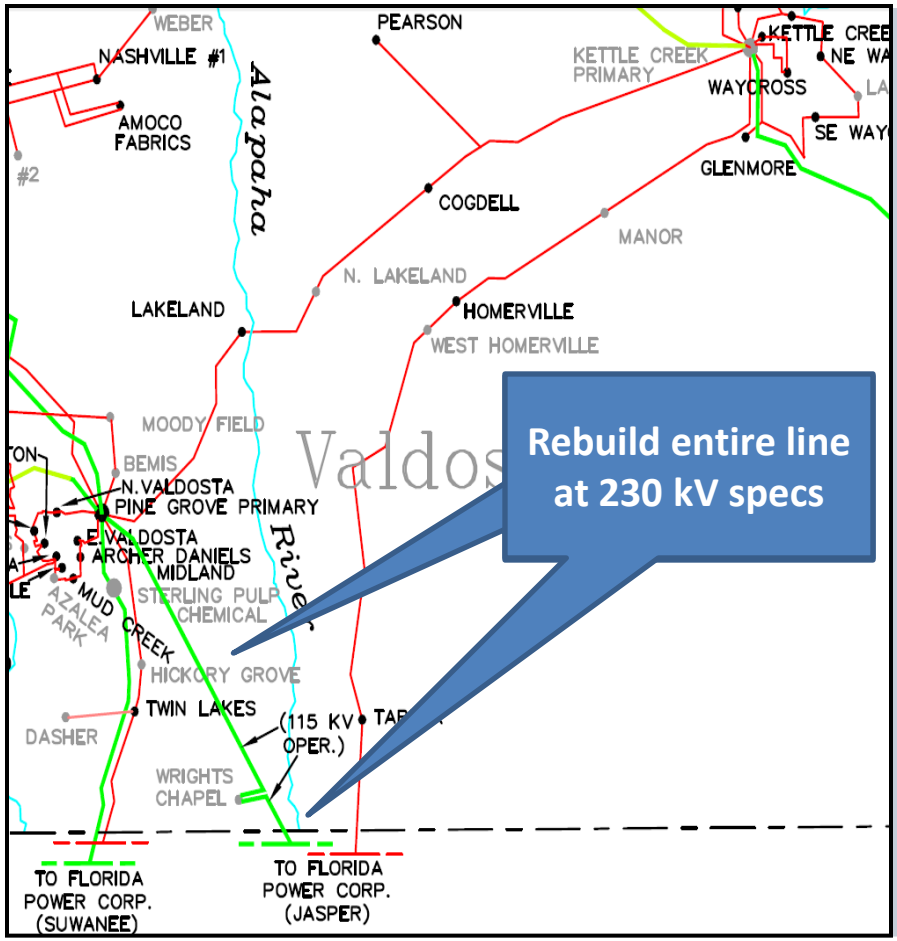
SUPPORTING STATEMENT:

The Fortson – Talbot County #1 230 kV transmission line overloads under contingency.



SOUTHERN – 3E 2015

JASPER – PINE GROVE PRIMARY 115 KV T.L.

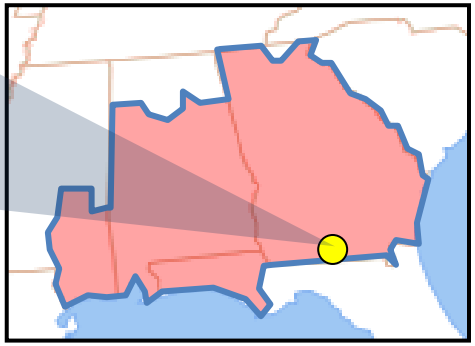


DESCRIPTION:

Rebuild, at 230 kV specifications, the Jasper – Pine Grove Primary 115 kV transmission line, approximately 21.7 miles, with 1351 ACSR at 100°C and network the transmission line.

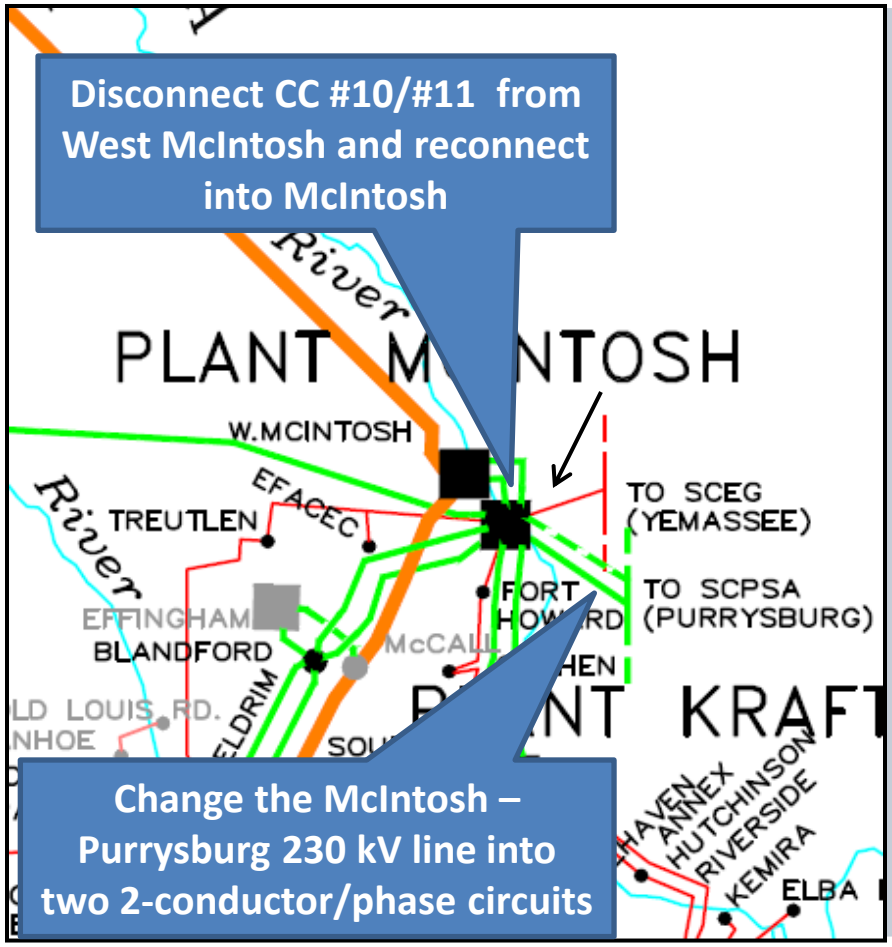
SUPPORTING STATEMENT:

The Jasper – West Homerville – Kettle Creek and Pine Grove Primary – Twin Lakes 115 kV transmission lines overload under contingency.



SOUTHERN – 4E 2015

MCINTOSH – PURRYSBURG #2 230 KV T.L.



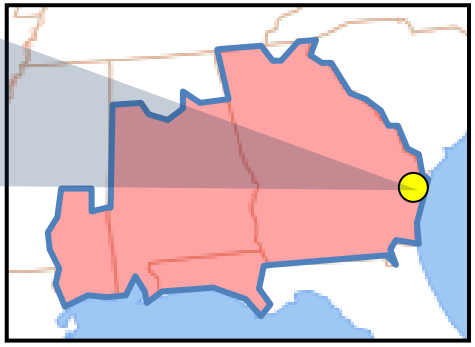
DESCRIPTION:

Connect the second Purrysburg (SCPSA) 230 kV tie line to the McIntosh 230/115 kV substation and terminate the McIntosh CC #11 line from West McIntosh to McIntosh.

Terminate McIntosh CC #10 from West McIntosh to the McIntosh 230/115 kV substation in 2019.

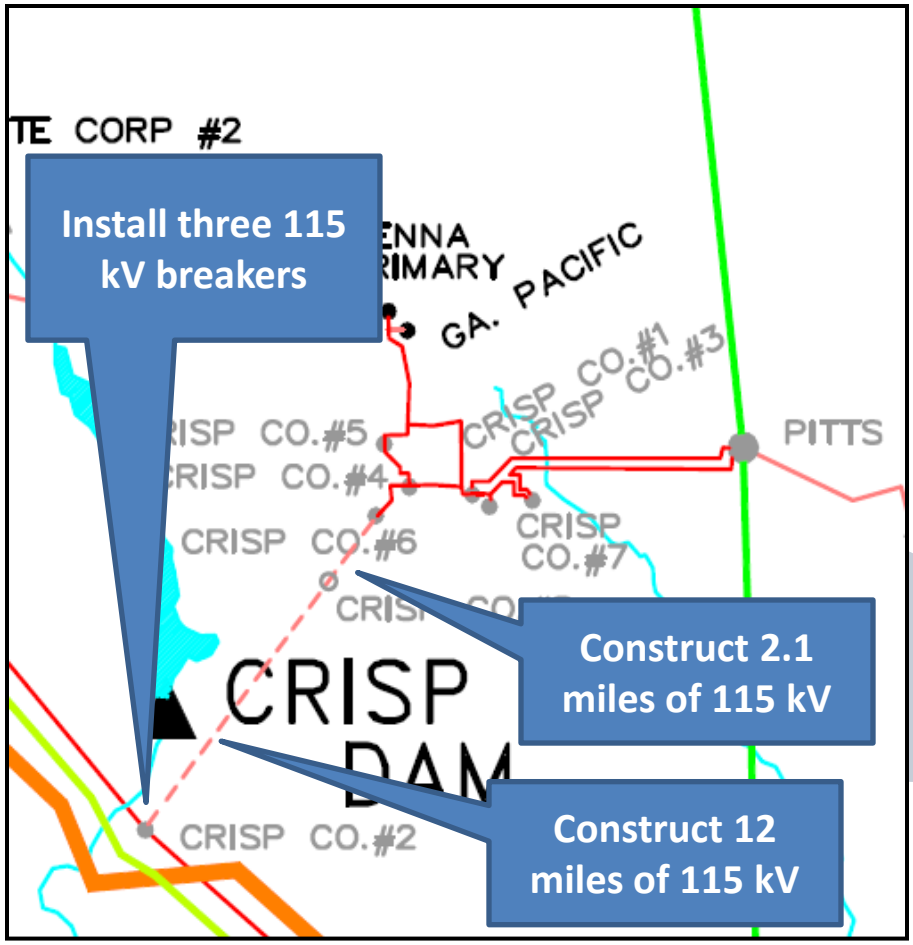
SUPPORTING STATEMENT:

The Mcintosh 230/115 kV transformer and the McIntosh – Yemassee (SCE&G) 115 kV transmission lines overload under contingency.



SOUTHERN – 5E 2016

CRISP COUNTY AREA IMPROVEMENTS

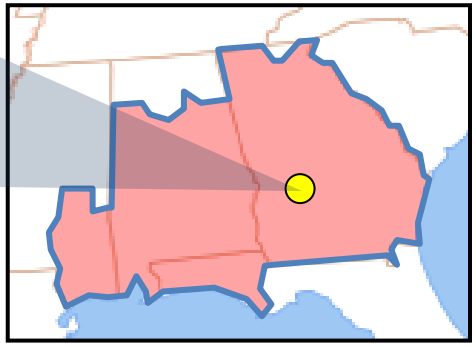


DESCRIPTION:

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.

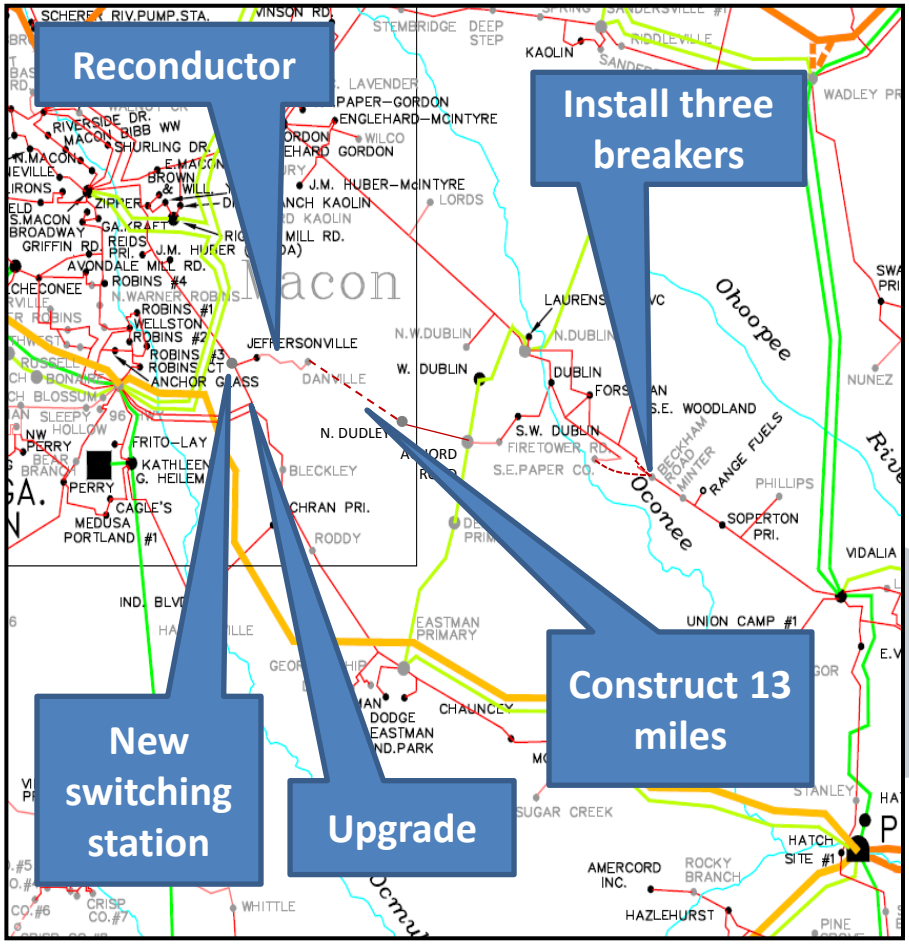
SUPPORTING STATEMENT:

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



SOUTHERN – 6E 2017

DUBLIN AREA IMPROVEMENTS

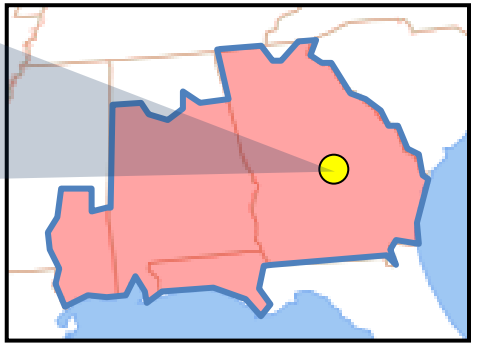


DESCRIPTION:

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. Install 3 breakers at Beckham Road for Vidalia, SE Paper, and Dublin 115 kV T.L.s.

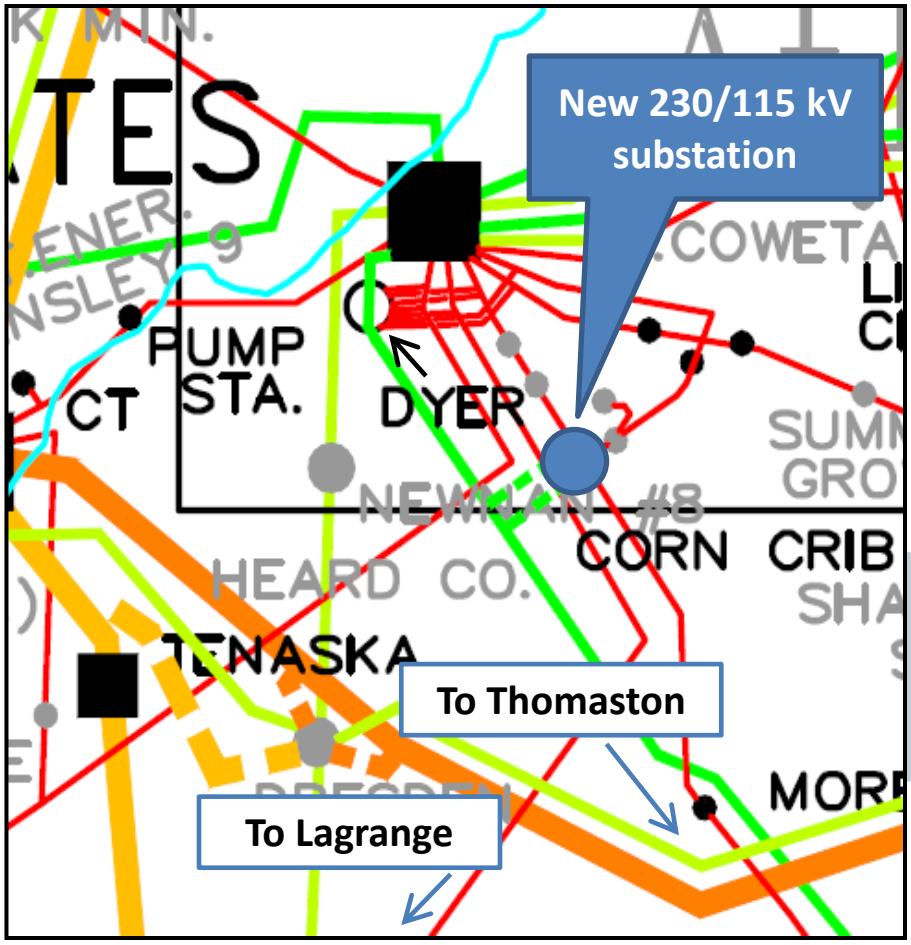
SUPPORTING STATEMENT:

Additional voltage support needed in the Dublin area under contingency.



SOUTHERN – 7E 2017

CORN CRIB 230/115 KV SUBSTATION

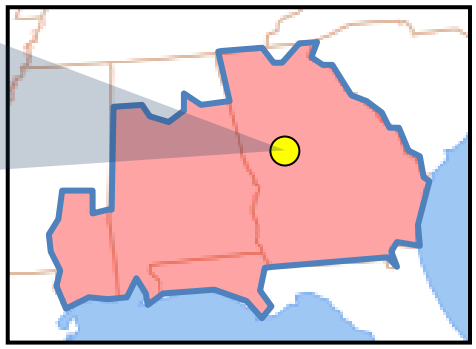


DESCRIPTION:

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.

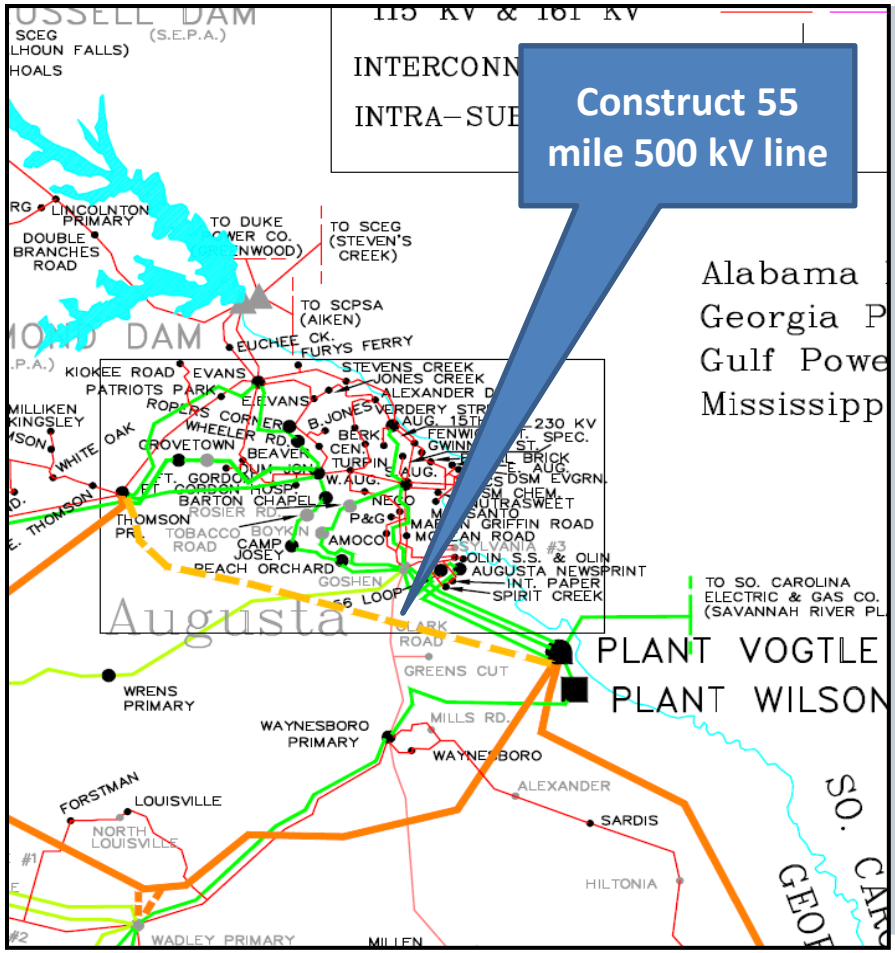
SUPPORTING STATEMENT:

The Lagrange Primary – Lagrange #3 segment of the Lagrange Primary – Yates 115 kV transmission line overloads under contingency. Also, the opposite end of the transmission line overloads under contingency. This project also provides voltage support along the Dyer Road – Thomaston 115 kV transmission line.



SOUTHERN – 8E 2017

THOMSON PRIMARY – VOGTLE 500 KV T.L.

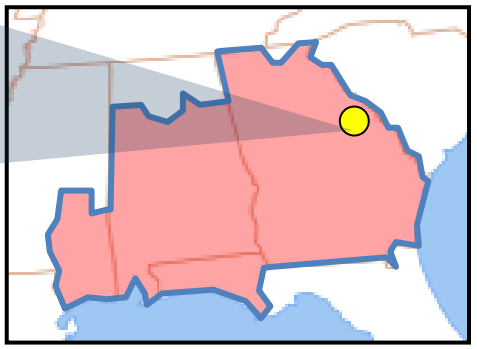


DESCRIPTION:

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

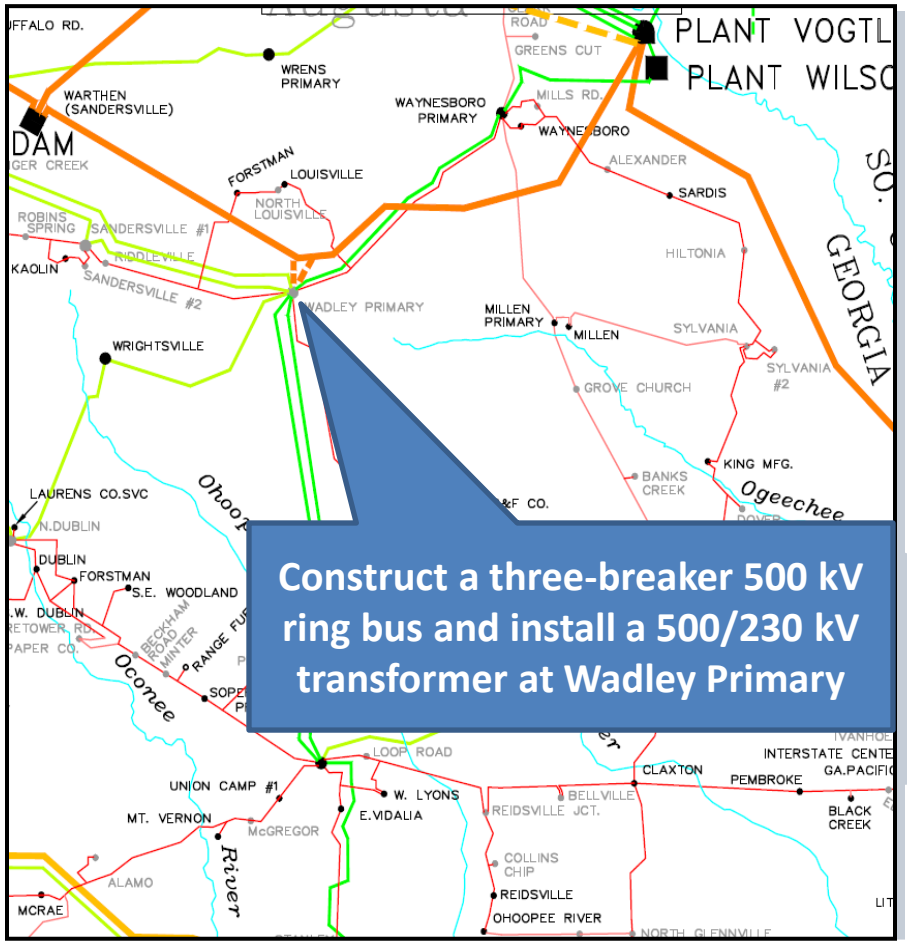
SUPPORTING STATEMENT:

Needed to support the expansion of Plant Vogtle.



SOUTHERN – 9E 2017

WADLEY PRIMARY 500/230 KV SUBSTATION

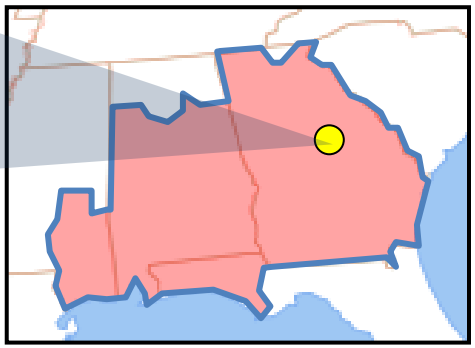


DESCRIPTION:

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.

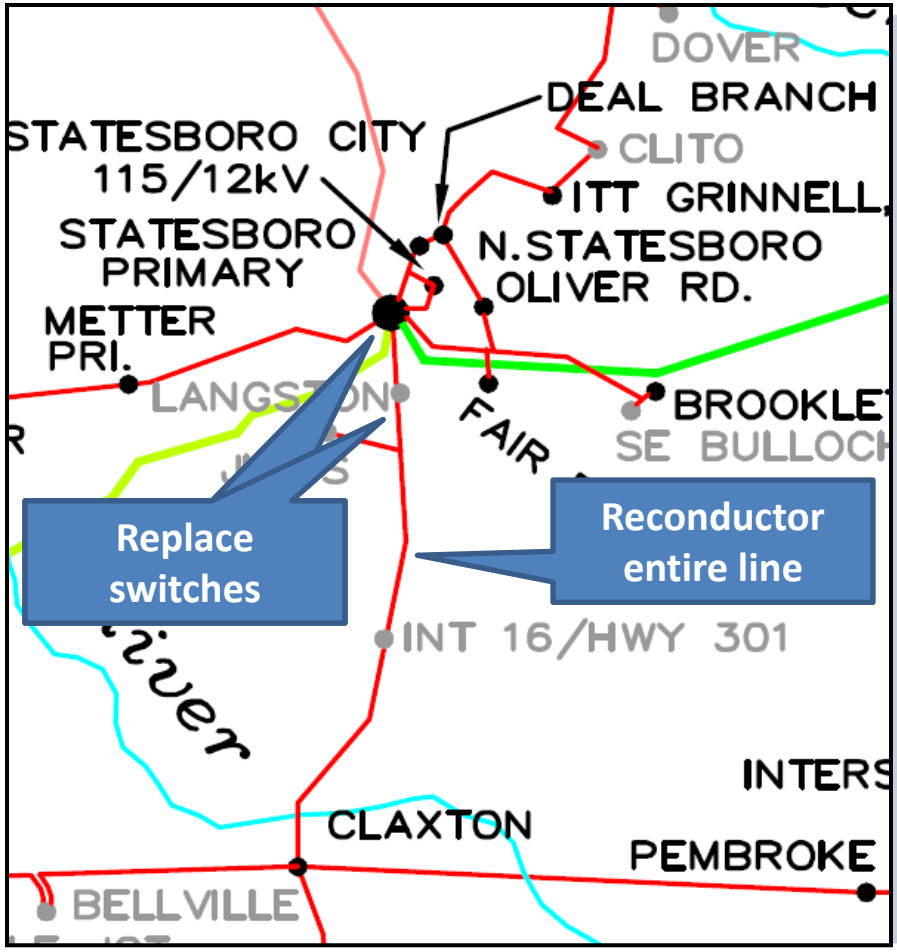
SUPPORTING STATEMENT:

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



SOUTHERN – 10E 2018

CLAXTON – STATESBORO PRIMARY 115 KV T.L.

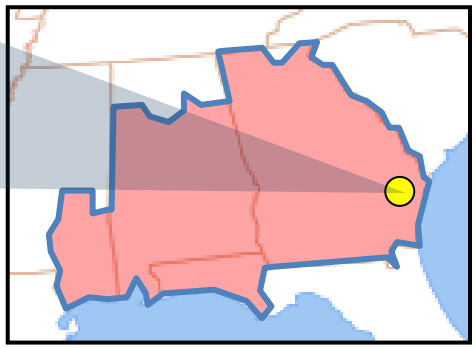


DESCRIPTION:

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.

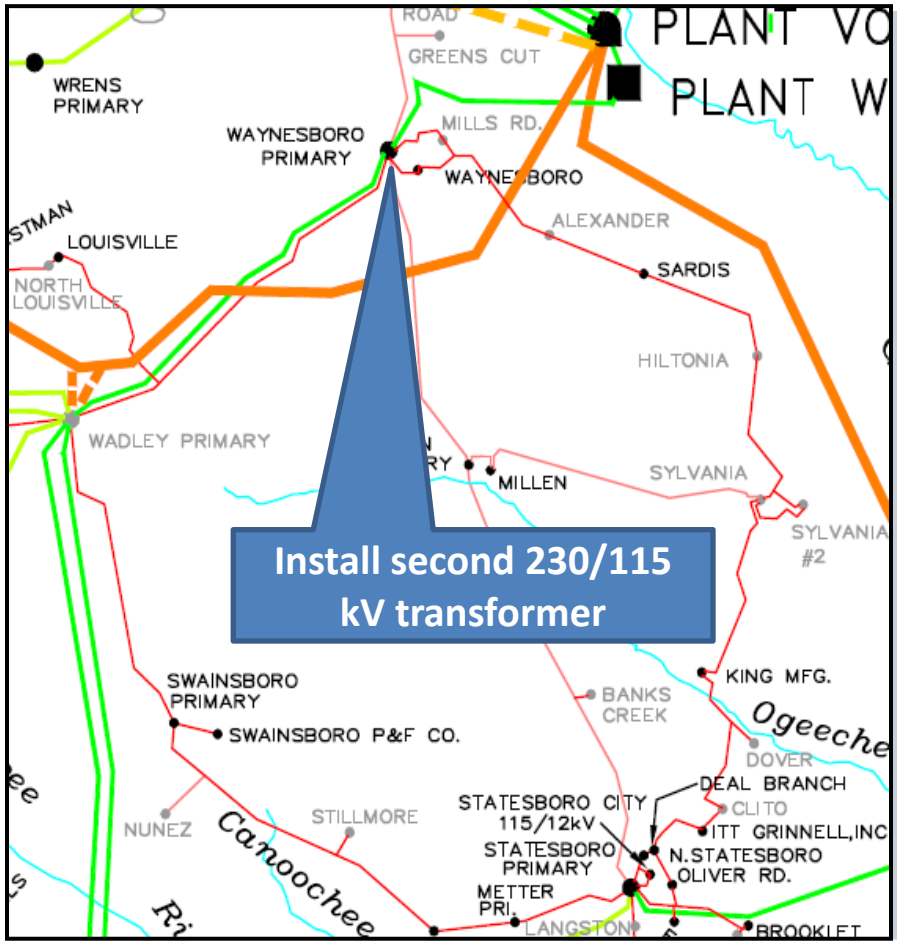
SUPPORTING STATEMENT:

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



SOUTHERN – 11E 2019

WAYNESBORO 230/115 KV SUBSTATION

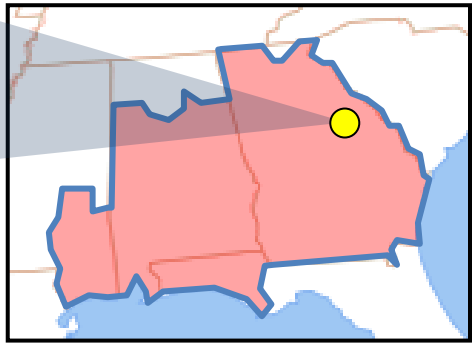


DESCRIPTION:

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

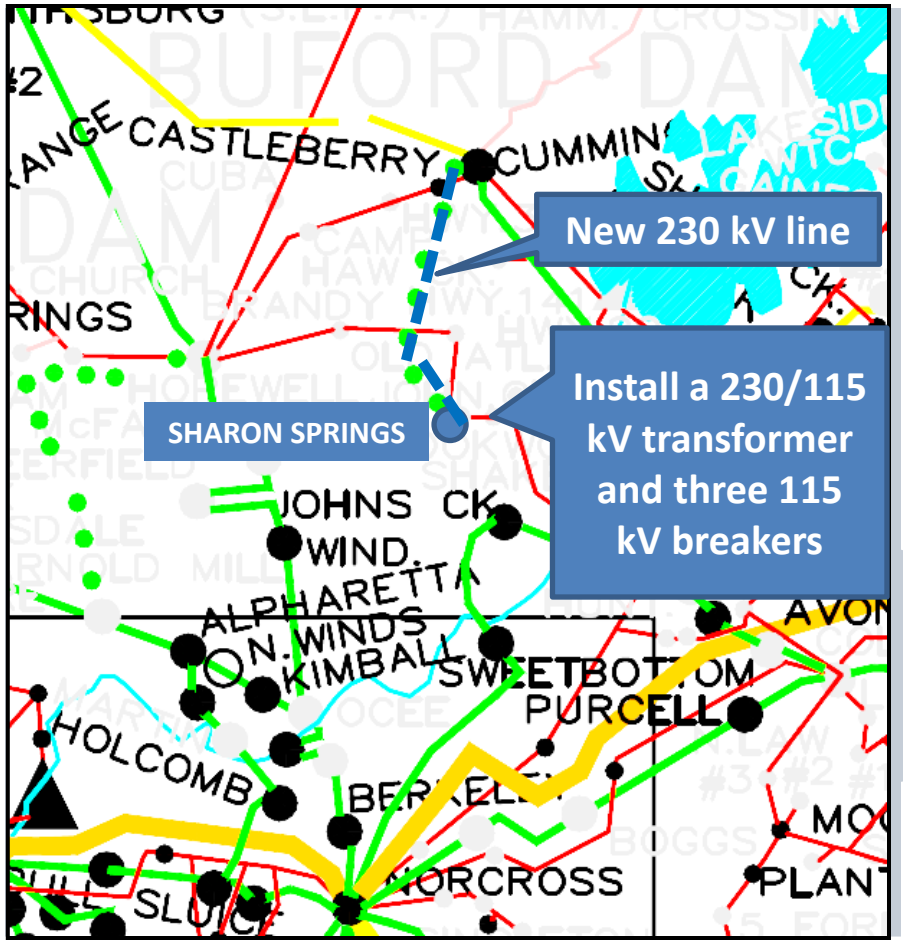
SUPPORTING STATEMENT:

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



SOUTHERN – 12E 2020

SHARON SPRINGS 230/115 KV PROJECT

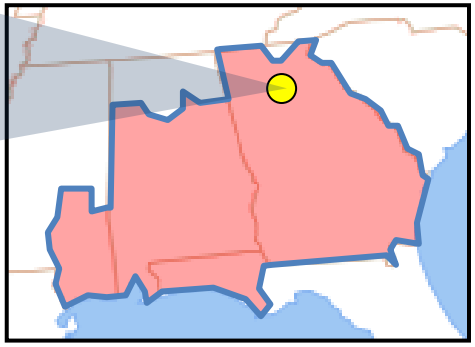


DESCRIPTION:

Construct a new 6.6 mile, 230 kV T.L. from Cumming to Sharon Springs with 1351 ACSR at 100°C. Install a 230/115 kV, 300 MVA 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.

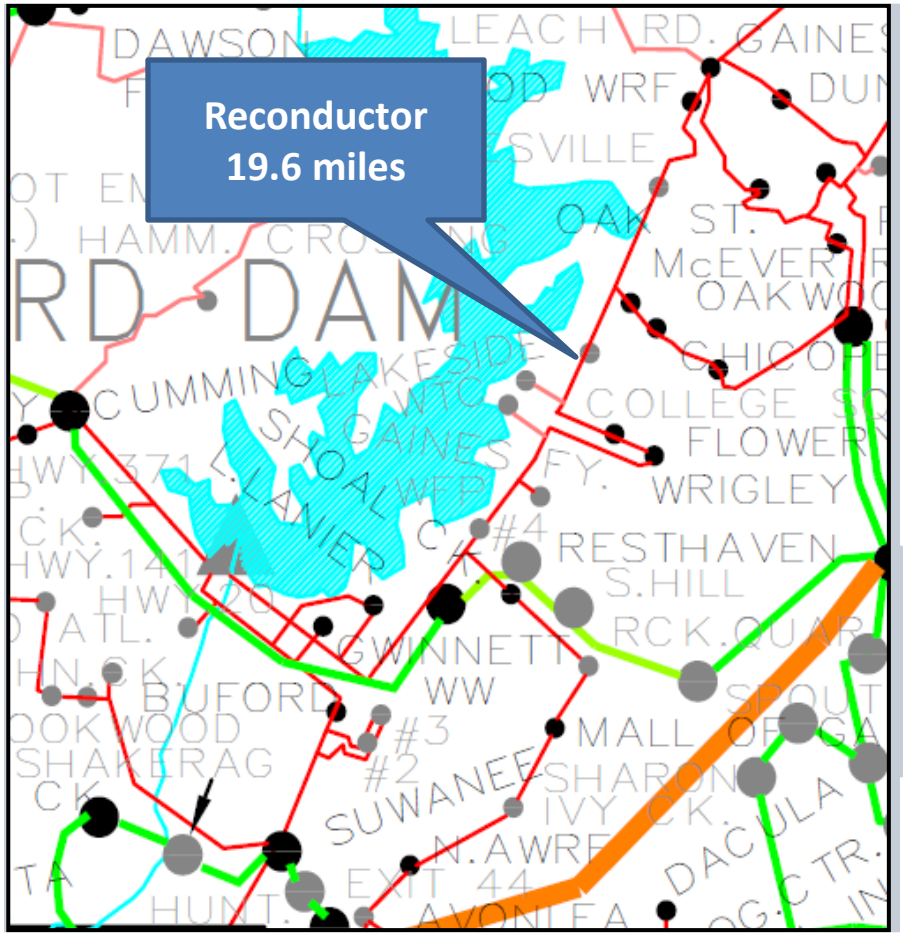
SUPPORTING STATEMENT:

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



SOUTHERN – 13E 2021

MCEVER ROAD– SHOAL CREEK 115 KV T.L.

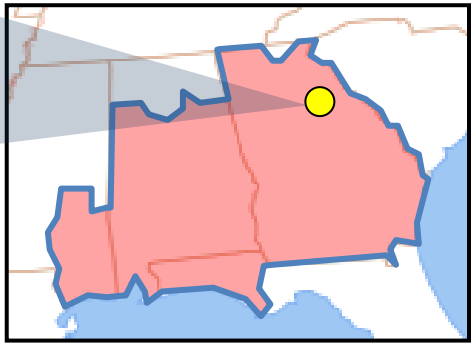


DESCRIPTION:

Reconductor approximately 19.6 miles of 115 kV transmission line along the McEver Road – Shoal Creek 115 kV transmission line with 1033 ACSR at 100°C.

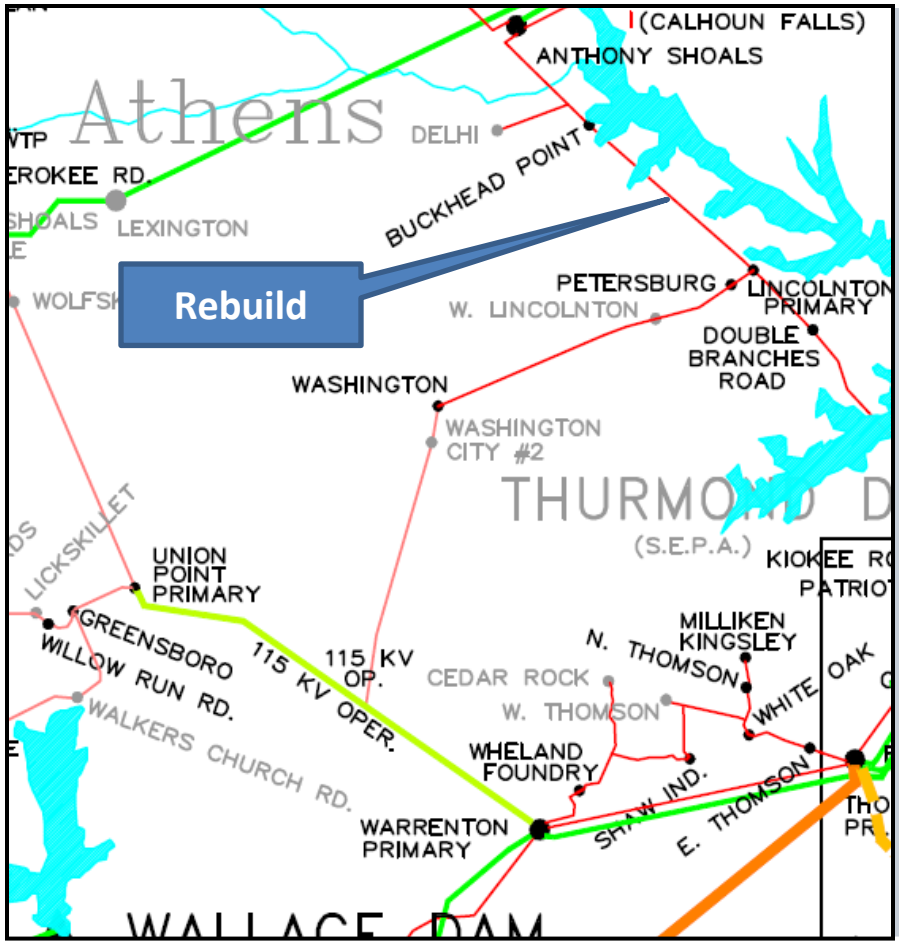
SUPPORTING STATEMENT:

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



SOUTHERN – 14E 2023

ANTHONY SHOALS – WASHINGTON 115 KV T.L.

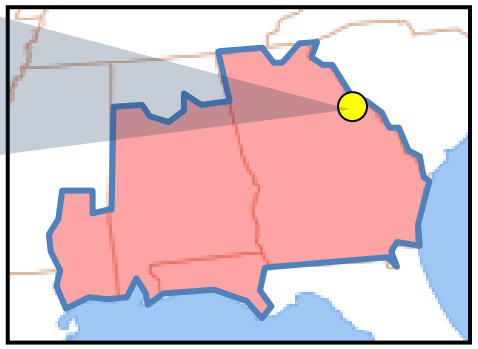


DESCRIPTION:

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

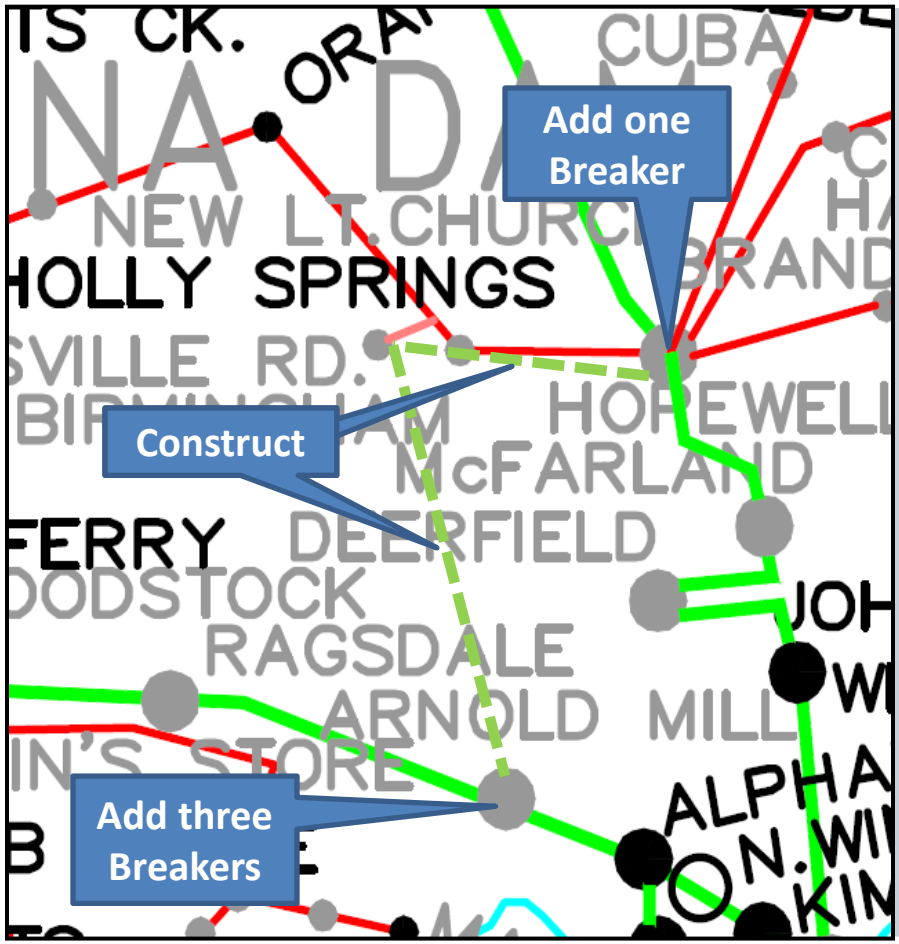
SUPPORTING STATEMENT:

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



SOUTHERN – 15E 2023

ARNOLD MILL – HOPEWELL 230 KV PROJECT

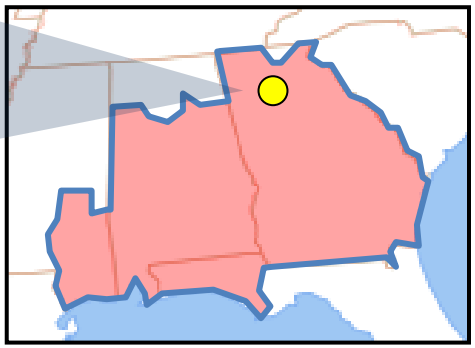


DESCRIPTION:

Construct a 230 kV transmission line from Arnold Mill to Hopewell, a distance of approximately 14.7 miles. Install one new 230 kV breaker at Hopewell and three new 230 kV breakers at Arnold Mill.

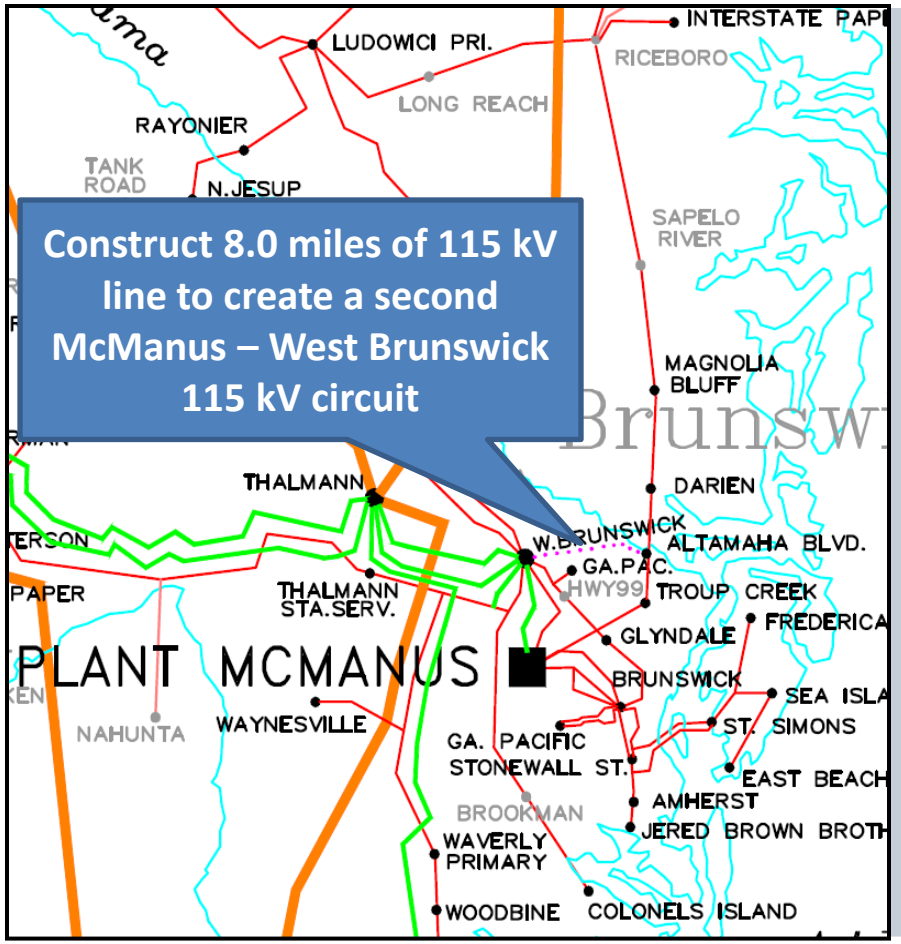
SUPPORTING STATEMENT:

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



SOUTHERN – 16E 2023

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

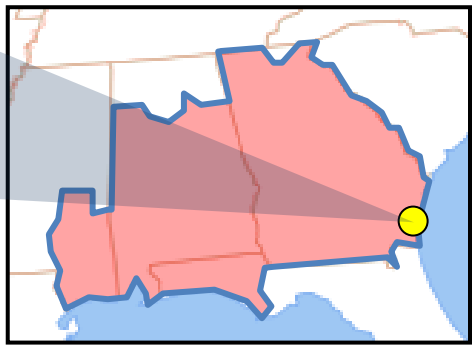


DESCRIPTION:

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.

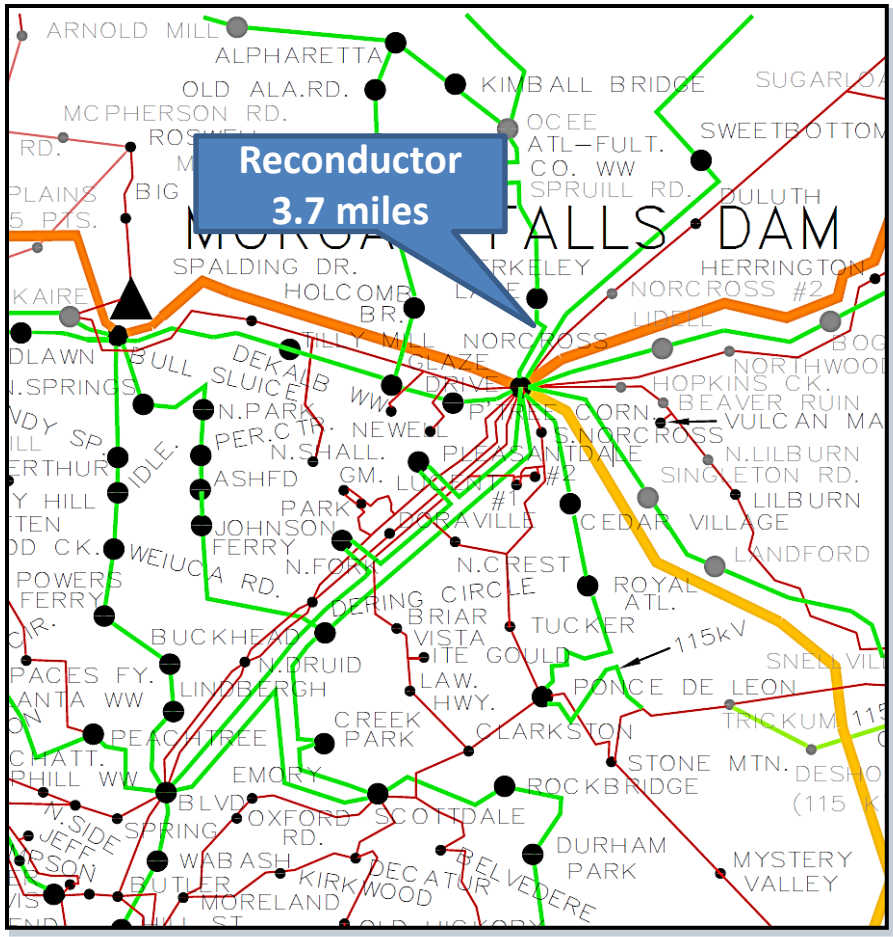
SUPPORTING STATEMENT:

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



SOUTHERN – 17E 2023

NORCROSS – OCEE 230 KV T.L.

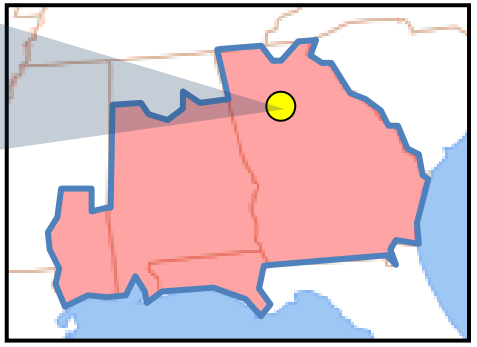


DESCRIPTION:

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

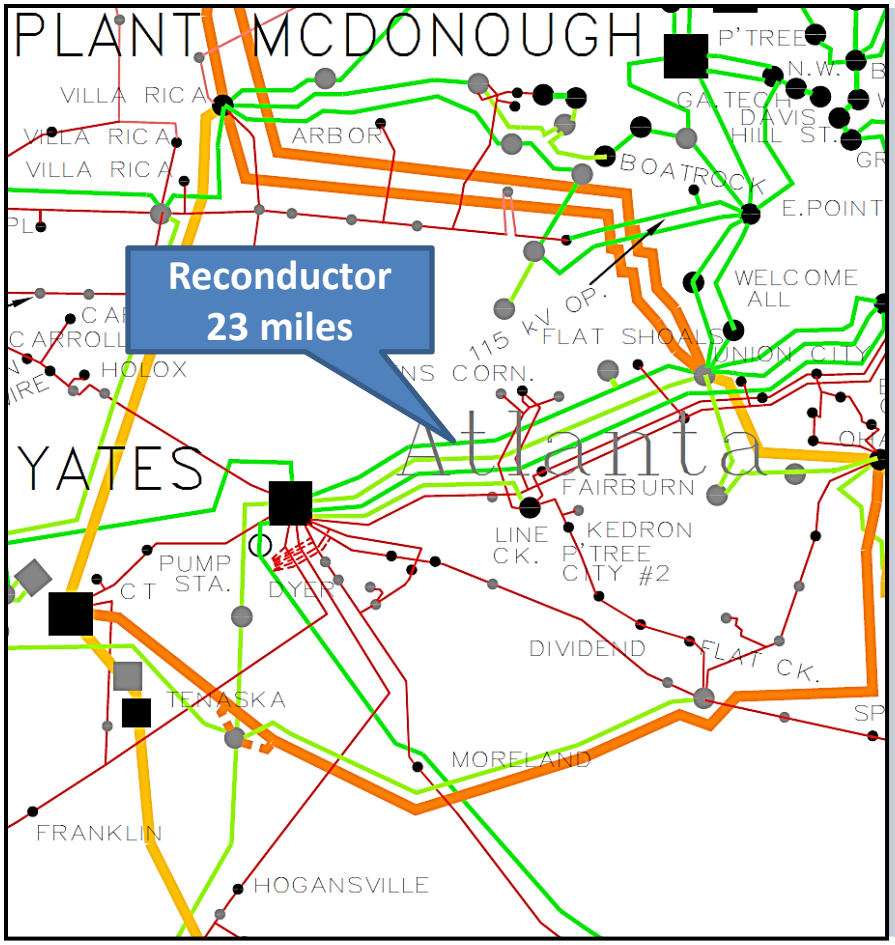
SUPPORTING STATEMENT:

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



SOUTHERN – 18E 2024

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

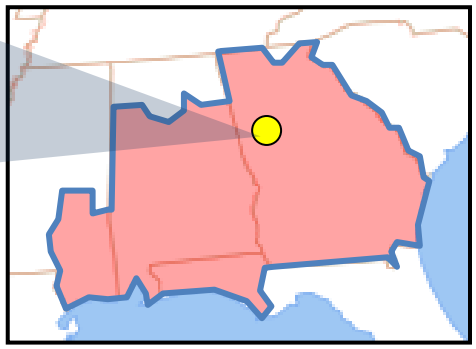


DESCRIPTION:

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

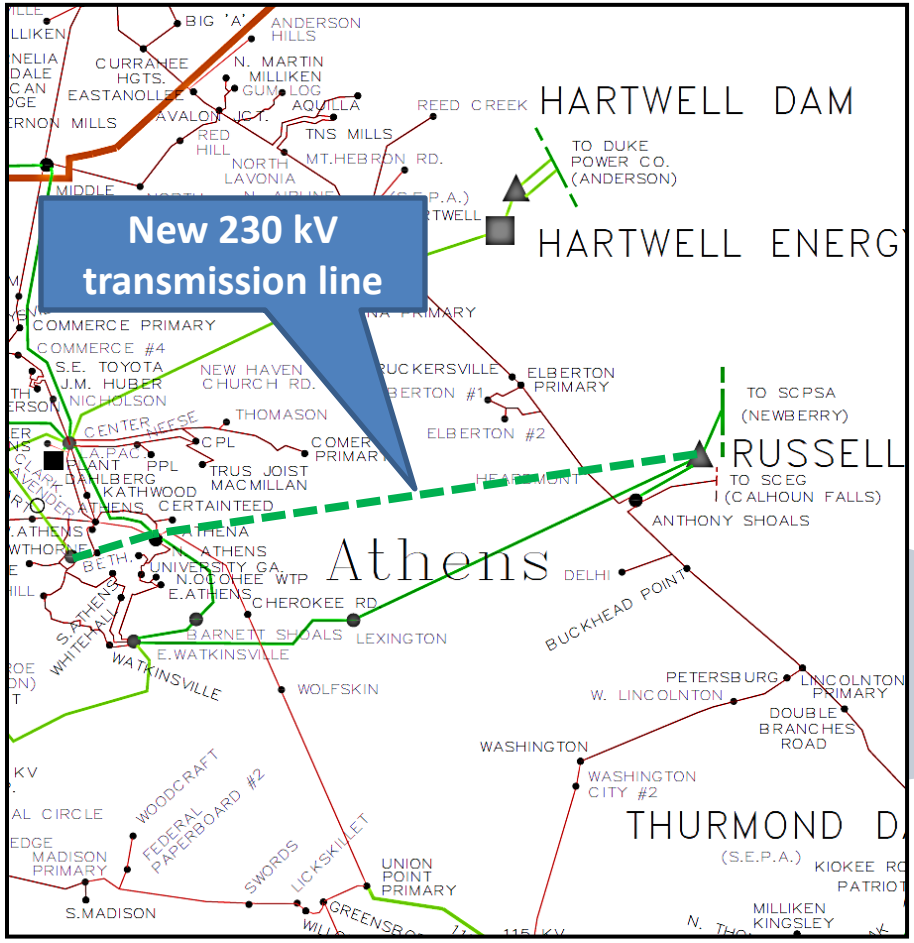
SUPPORTING STATEMENT:

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



SOUTHERN – 19E 2024

RUSSELL – ATHENA – BETHABARA 230 KV T.L.

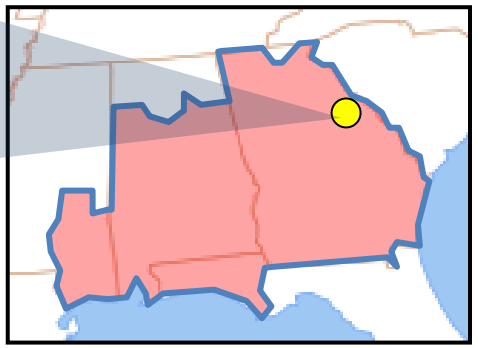


DESCRIPTION:

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

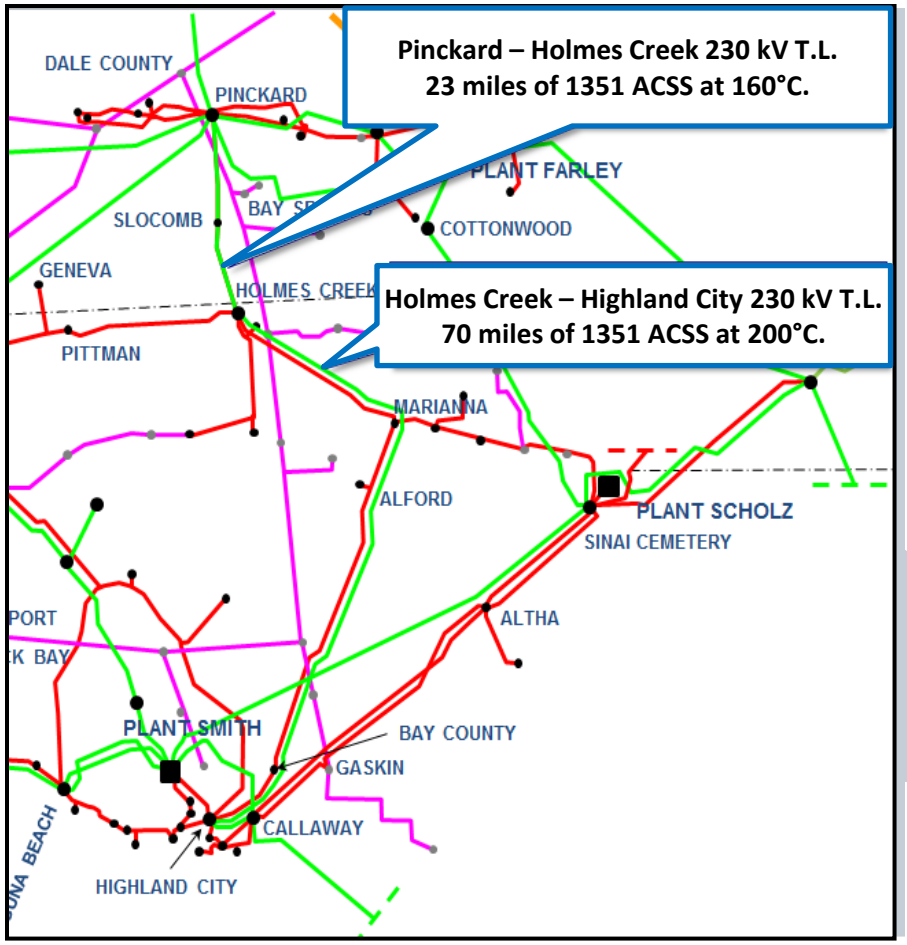
SUPPORTING STATEMENT:

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



SOUTHERN – 1W 2015

PINCKARD – HOLMES CREEK – HIGHLAND CITY 230 KV T.L.

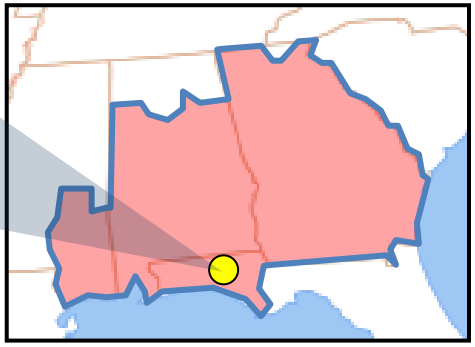


DESCRIPTION:

- Convert the Pinckard – Holmes Creek 115 kV transmission line to 230 kV operation.
- Install a 230/115 kV autobank at Holmes Creek.
- Construct approximately 70 miles of new 230 kV transmission line from Holmes Creek to Highland City with 1351 ACSS at 200°C.

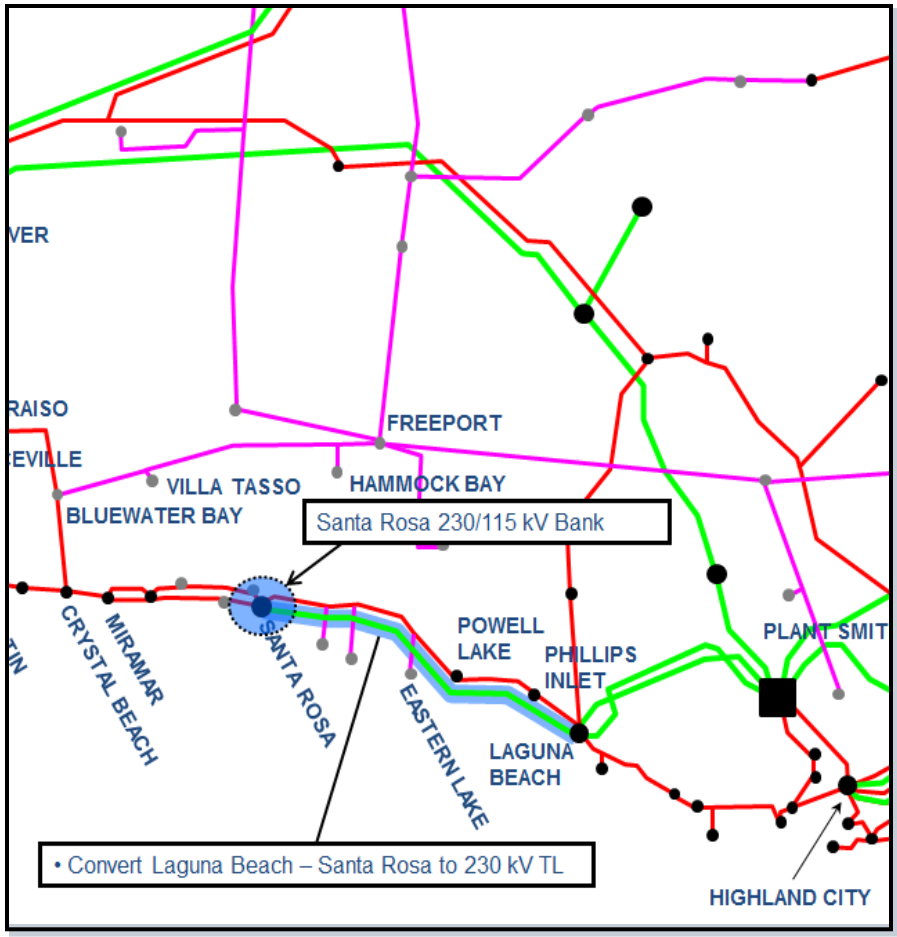
SUPPORTING STATEMENT:

The Callaway – Gaskin 115 kV transmission line and multiple other facilities in the Panama City area overload under contingency. Additional voltage support also needed in the area under contingency.



SOUTHERN – 2W 2015

SANTA ROSA – LAGUNA BEACH 230 KV T.L.

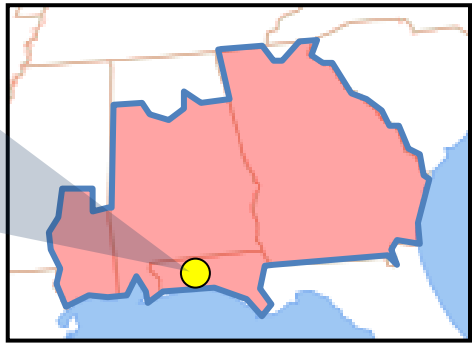


DESCRIPTION:

- Construct a new Santa Rosa 230 kV substation with one 230/115 kV 400 MVA transformer.
- Replace Laguna Beach – Santa Rosa #1 115 kV transmission line with a new 1351 ACSR 230 kV T.L.

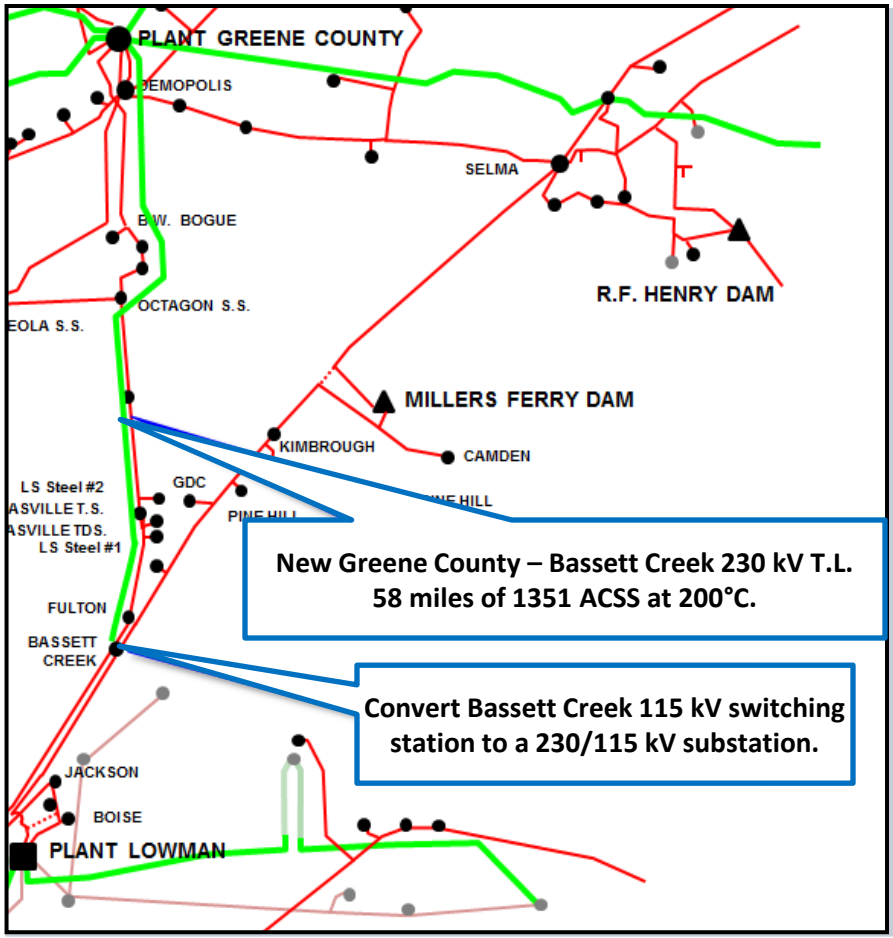
SUPPORTING STATEMENT:

The Bluewater – Crystal Beach submarine cable overloads under contingency. In addition, the Freeport – Villa Tasso 115 kV transmission line overloads under contingency.



SOUTHERN – 3W 2015

GREENE COUNTY – BASSETT CREEK 230 KV T.L.

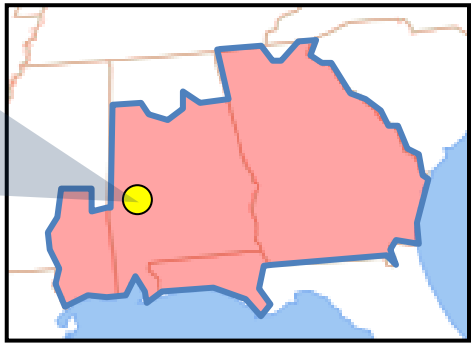


DESCRIPTION:

- Construct 58.0 miles of new 230 kV transmission line from Greene County to Bassett Creek with 1351 ACSS at 200° C.
- Convert Bassett Creek 115 kV switching station to a 230/115 kV substation.

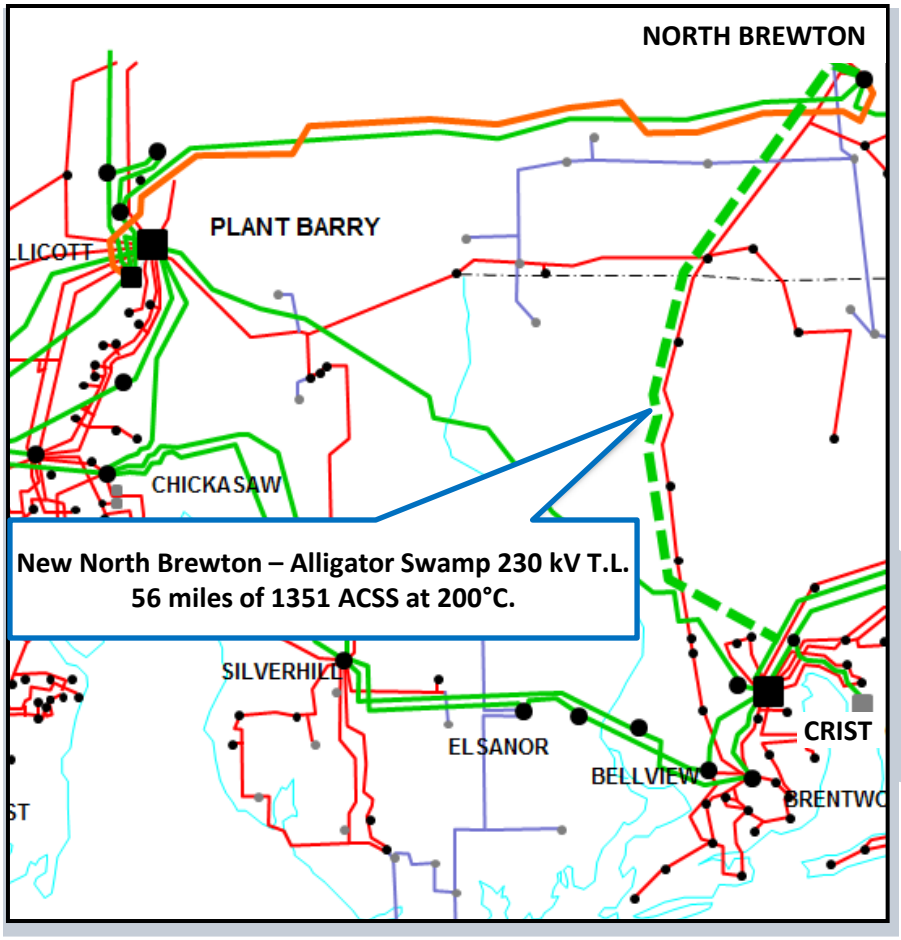
SUPPORTING STATEMENT:

The Octagon SS – Thomasville 115 kV transmission line overloads under contingency.



SOUTHERN – 4W 2015

NORTH BREWTON – ALLIGATOR SWAMP 230 KV T.L.

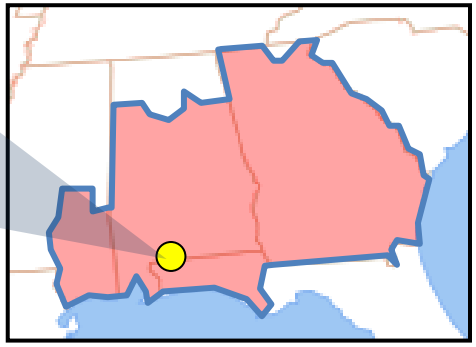


DESCRIPTION:

Construct a new 54.7 mile 230 kV transmission line from North Brewton to Alligator Swamp with 1351 ACSS at 200°C.

SUPPORTING STATEMENT:

The Chickasaw – Silverhill #1 230 kV and Barry – Crist 230 kV transmission lines overload under contingency.



SOUTHERN – 5W 2015

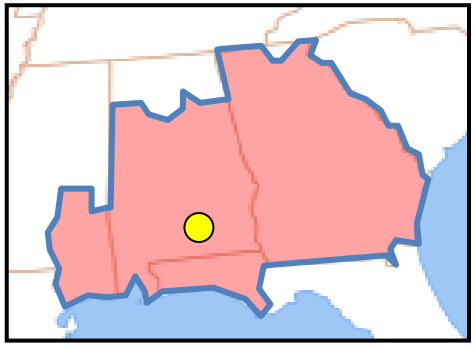
ENTERPRISE AREA PROJECT

DESCRIPTION:

- Install a new 230 / 115 kV substation, called South Enterprise TS, that taps the Pinckard – Opp 230 kV transmission line.
- Construct approximately 5.0 miles 115 kV transmission line from South Enterprise TS to Enterprise TS with 795 ACSS at 160°C.

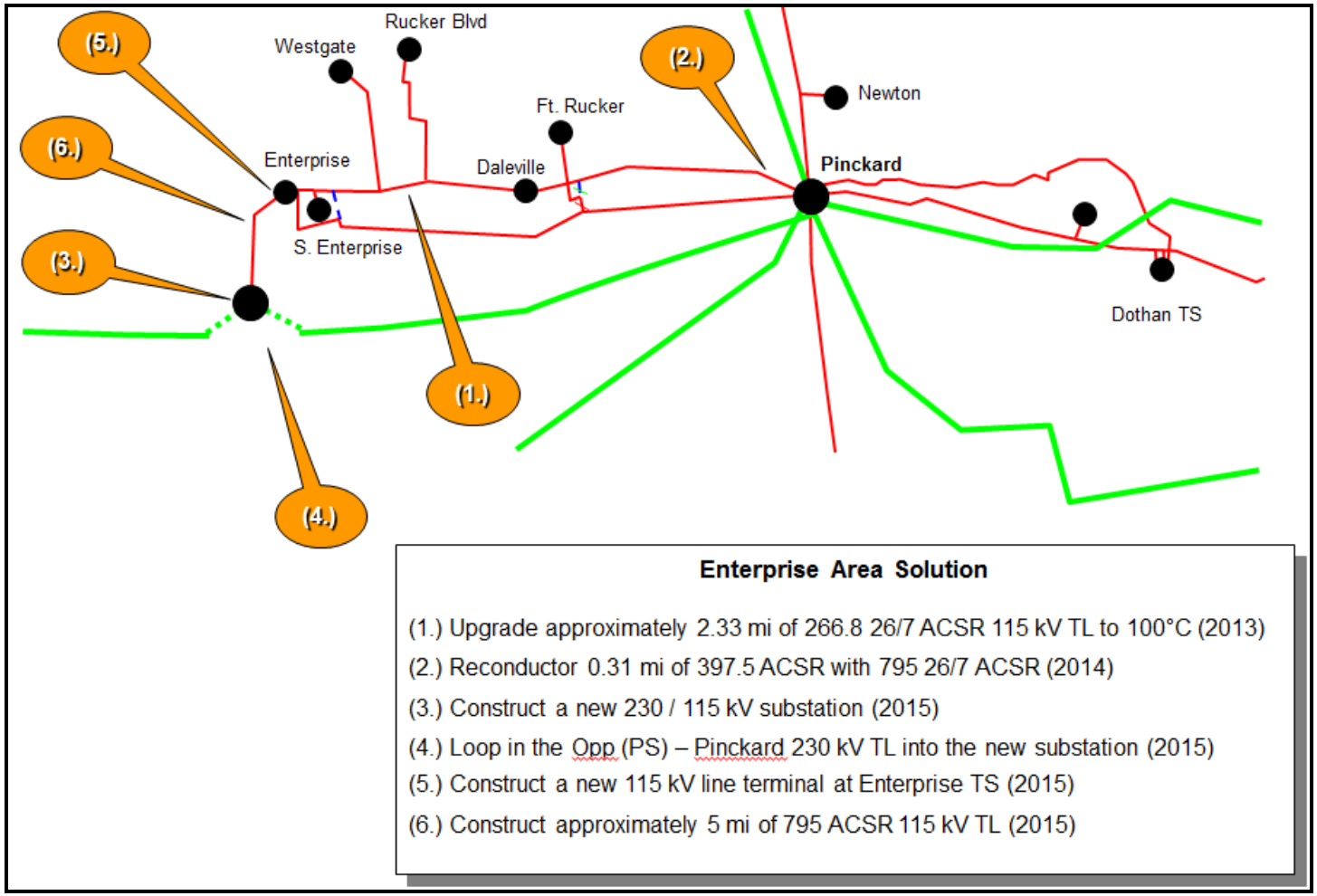
SUPPORTING STATEMENT:

Sections of the Pinckard – Enterprise #2 115 kV transmission line overload under contingency.



SOUTHERN – 5W 2015

ENTERPRISE AREA PROJECT



SOUTHERN – 6W 2015

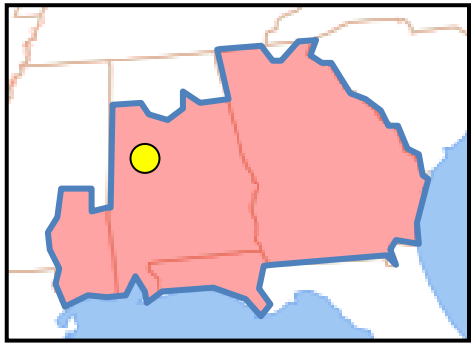
TUSCALOOSA AREA PROJECT

DESCRIPTION:

- Install a 230 / 115 kV transformer at a new substation, Moundville TS.
- Convert Moundville (to be called North Moundville DS) and Akron 44 kV substations to 115 kV.
- Construct approximately 8.5 miles of 1033 ACSS 115 kV transmission line at 200°C from Moundville TS to Big Sandy/Englewood Tap.

SUPPORTING STATEMENT:

- The section of 115 kV transmission line from Eutaw to Big Sandy Tap overloads under contingency.
- Additional voltage support is also needed in the Tuscaloosa area.



SOUTHERN – 7W 2016

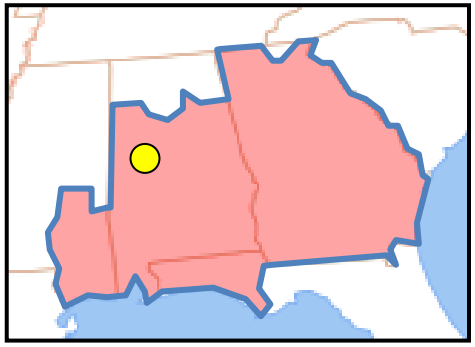
TUSCALOOSA AREA PROJECT

DESCRIPTION:

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

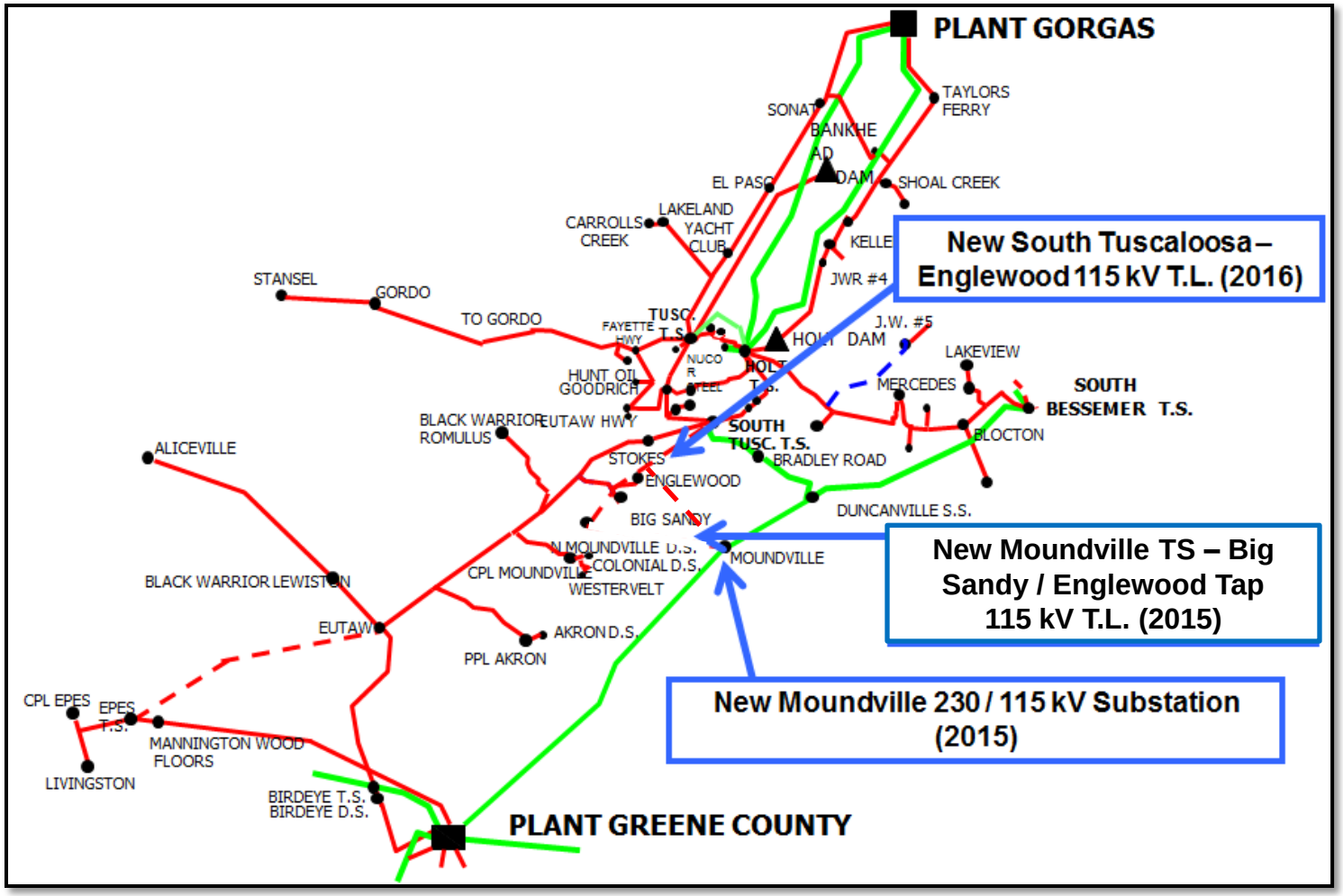
SUPPORTING STATEMENT:

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



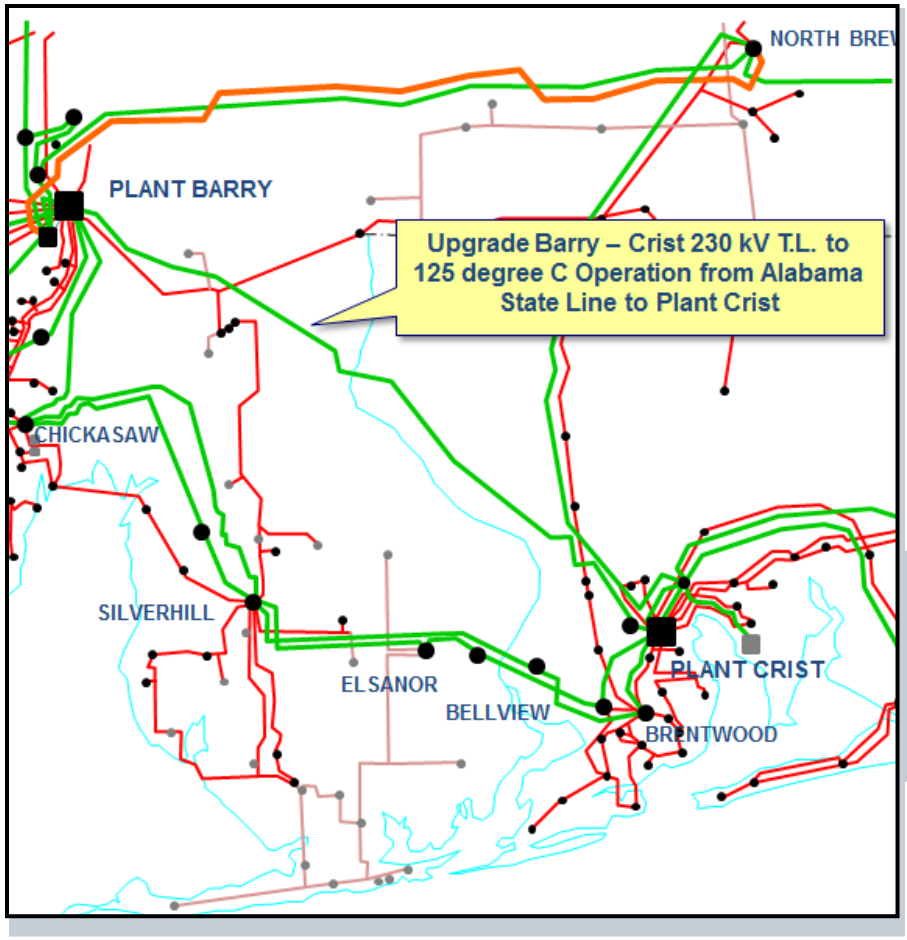
SOUTHERN – 6W & 7W 2015/2016

TUSCALOOSA AREA IMPROVEMENT



SOUTHERN – 8W 2017

BARRY – CRIST 230 KV T.L.

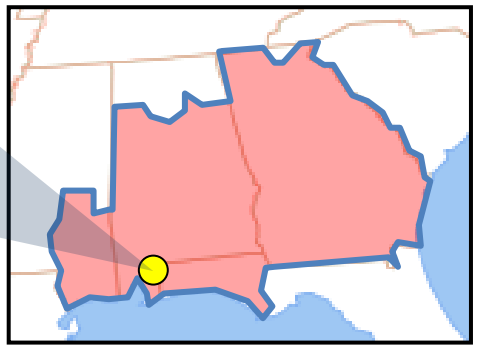


DESCRIPTION:

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

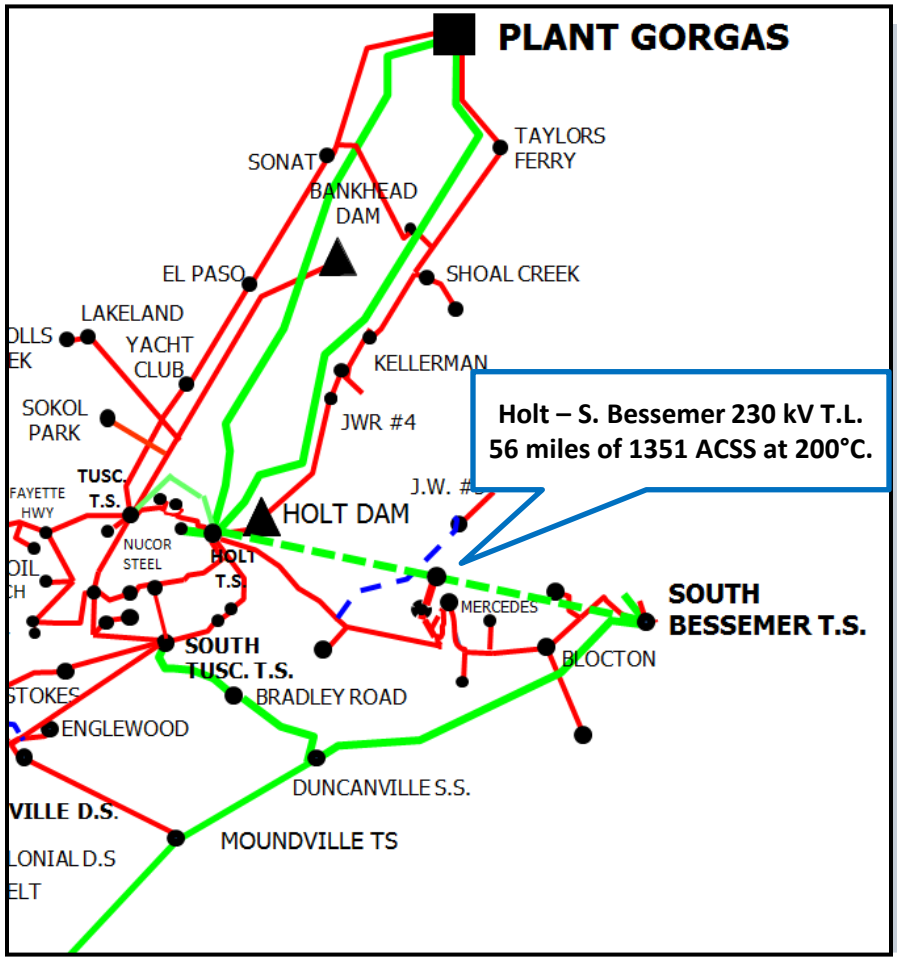
SUPPORTING STATEMENT:

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



SOUTHERN – 9W 2019

HOLT – SOUTH BESSEMER 230 KV T.L.

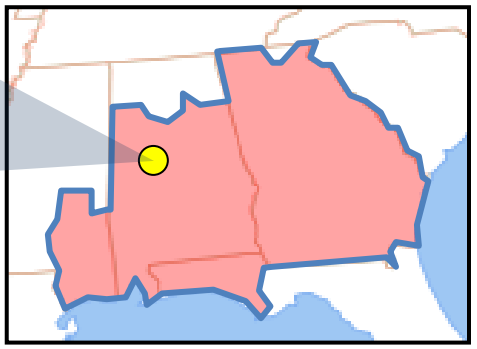


DESCRIPTION:

- Construct approximately 25 miles of 1351 ACSS 230 kV transmission line at 200°C from Holt to South Bessemer.
- Install a 230/115 kV 400 MVA 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 – 10W 2019

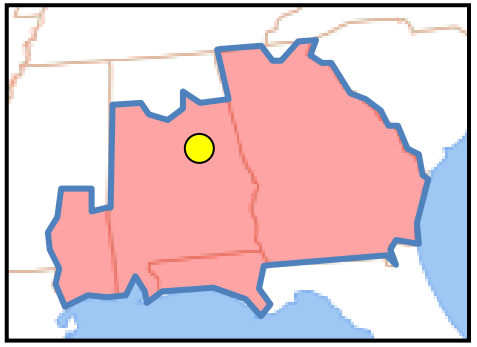
EASTERN AREA 115KV SOLUTION

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

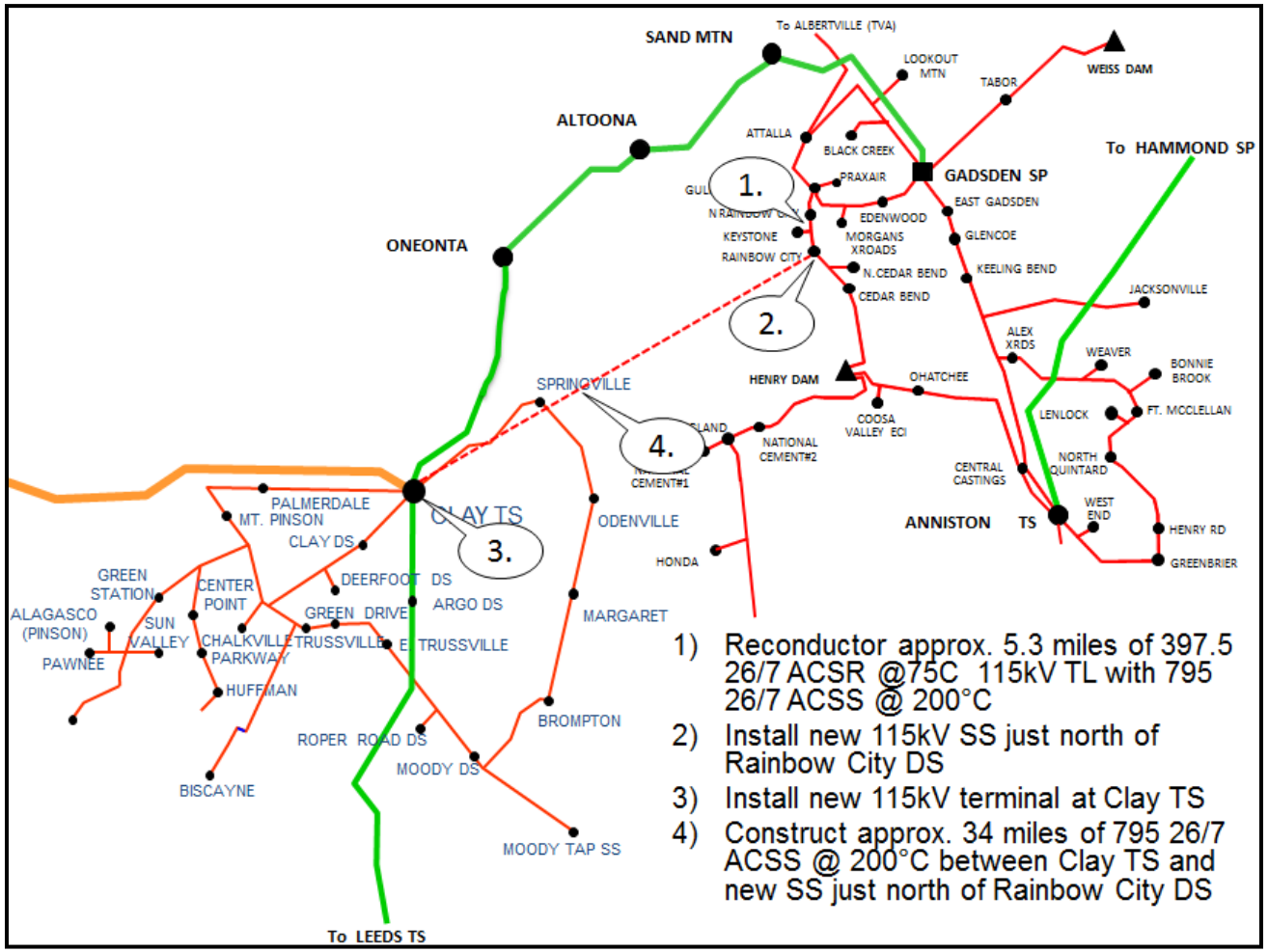
SUPPORTING STATEMENT:

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



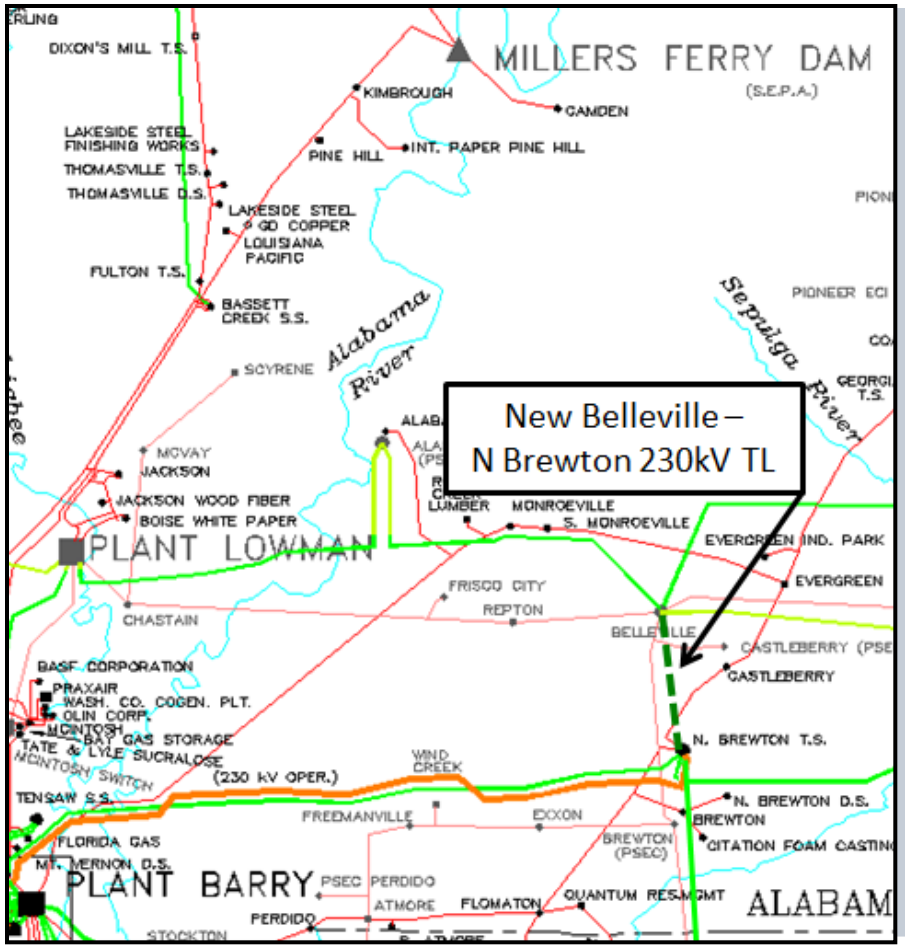
SOUTHERN – 10W 2019

EASTERN AREA 115KV SOLUTION



SOUTHERN – 11W 2020

BELLEVILLE – NORTH BREWTON 230 KV T.L.

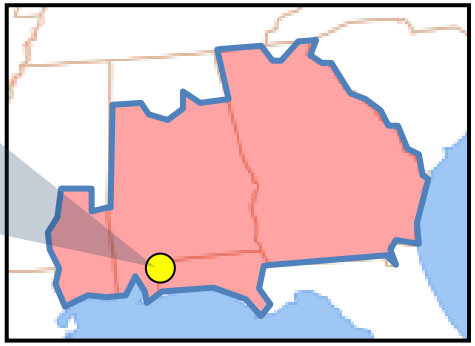


DESCRIPTION:

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

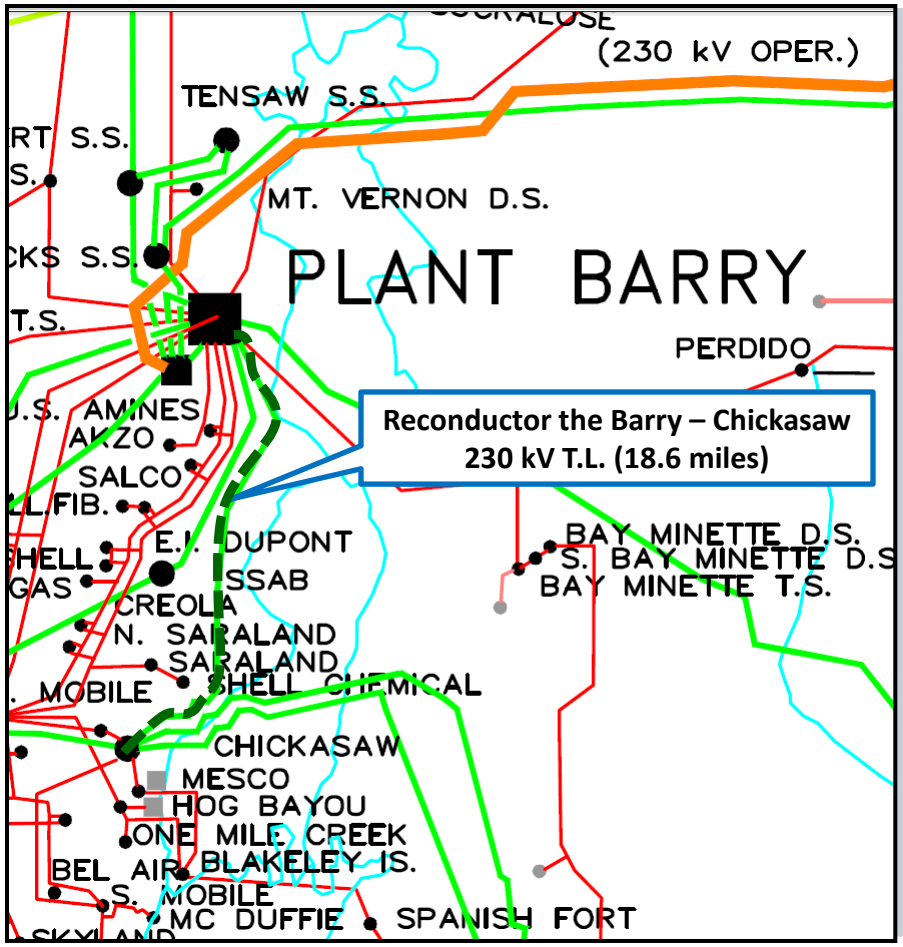
SUPPORTING STATEMENT:

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



SOUTHERN – 12W 2022

BARRY – CHICKASAW 230 KV T.L.

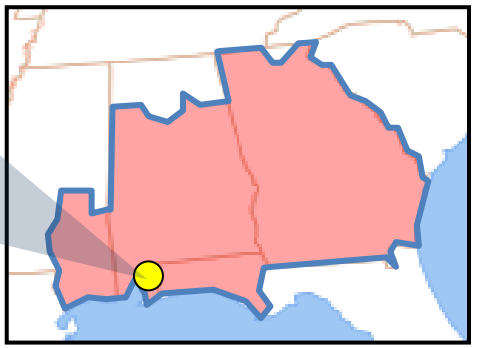


DESCRIPTION:

Reconductor the 18.6 mile Barry – Chickasaw 230 kV transmission line with bundled (2) 795 ACSS at 200°C.

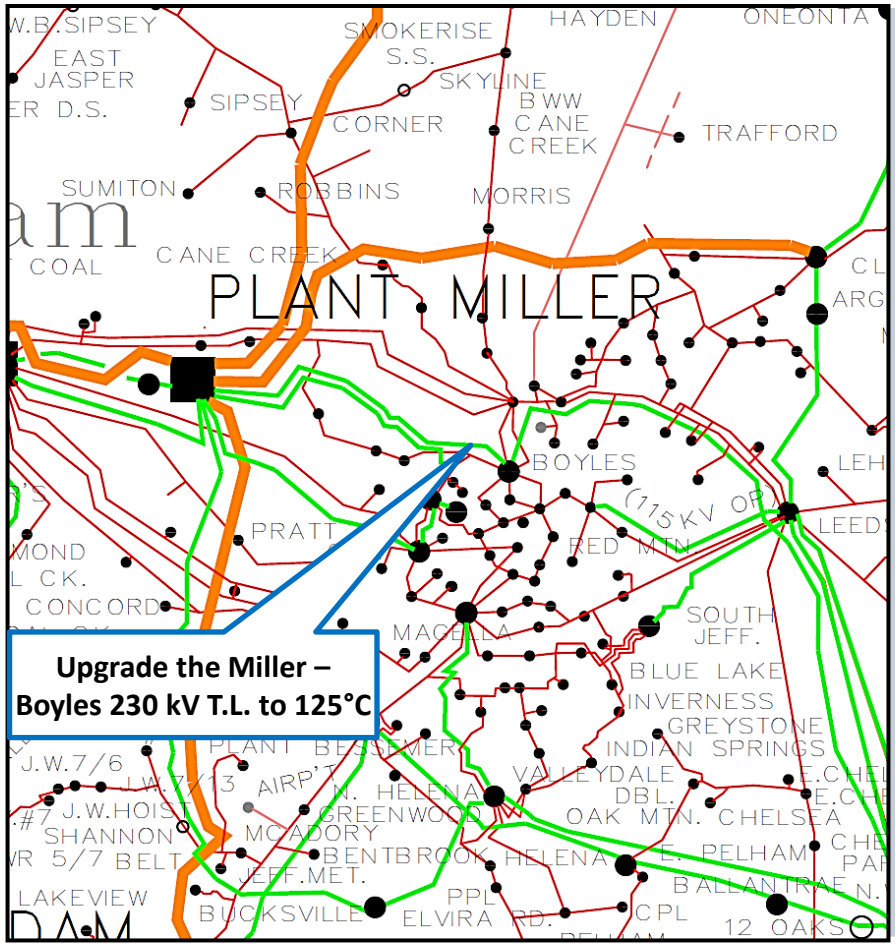
SUPPORTING STATEMENT:

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



SOUTHERN – 13W 2022

MILLER – BOYLES 230 KV T.L.

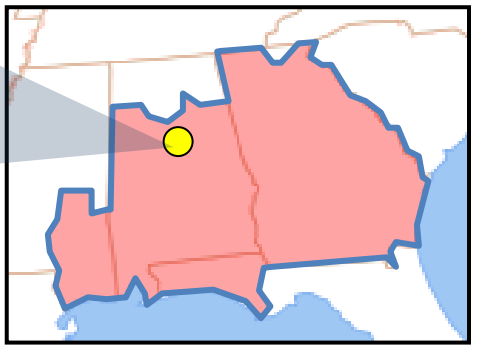


DESCRIPTION:

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

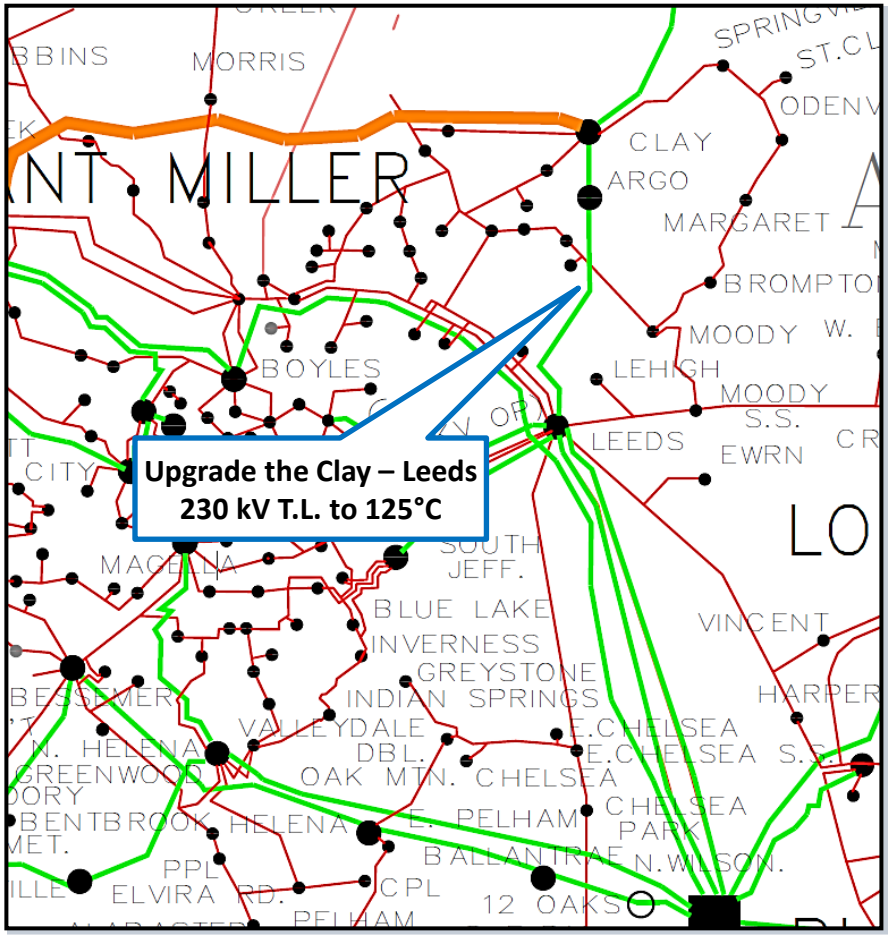
SUPPORTING STATEMENT:

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



SOUTHERN – 14W 2023

CLAY – LEEDS 230 KV T.L.

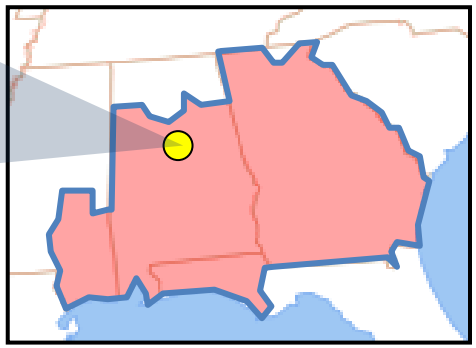


DESCRIPTION:

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

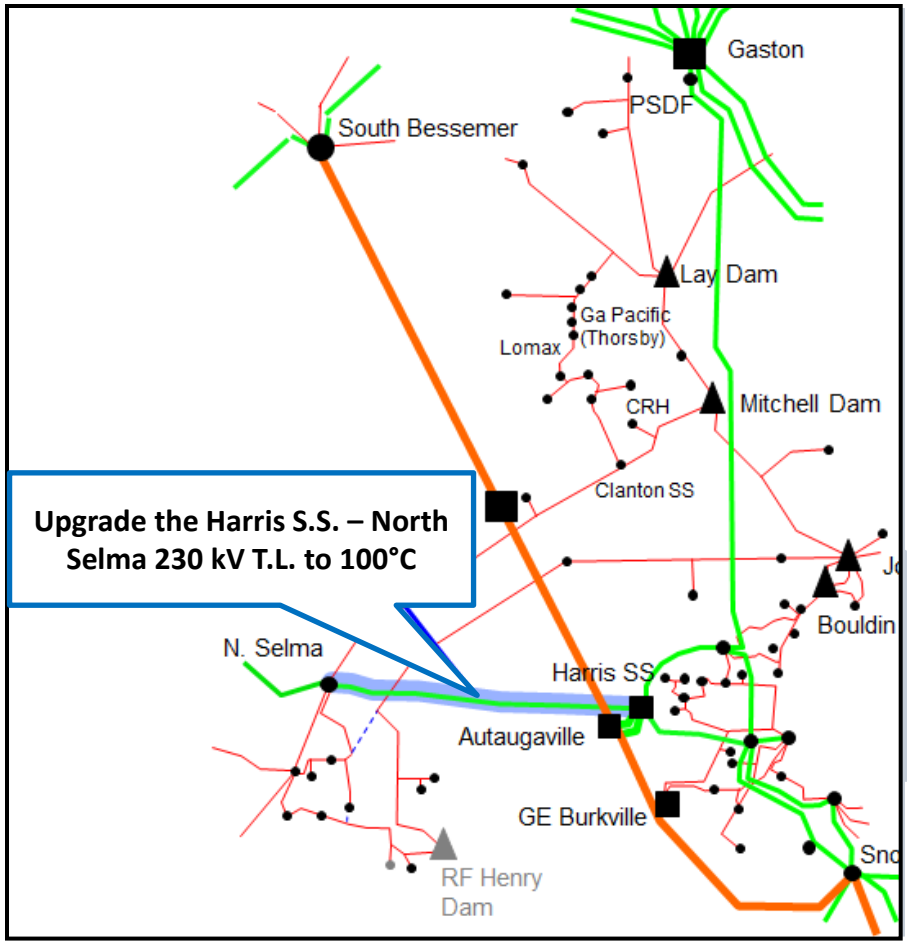
SUPPORTING STATEMENT:

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



SOUTHERN – 15W 2023

HARRIS – NORTH SELMA 230 KV T.L.

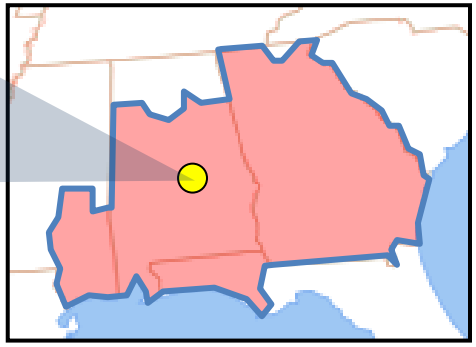


DESCRIPTION:

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

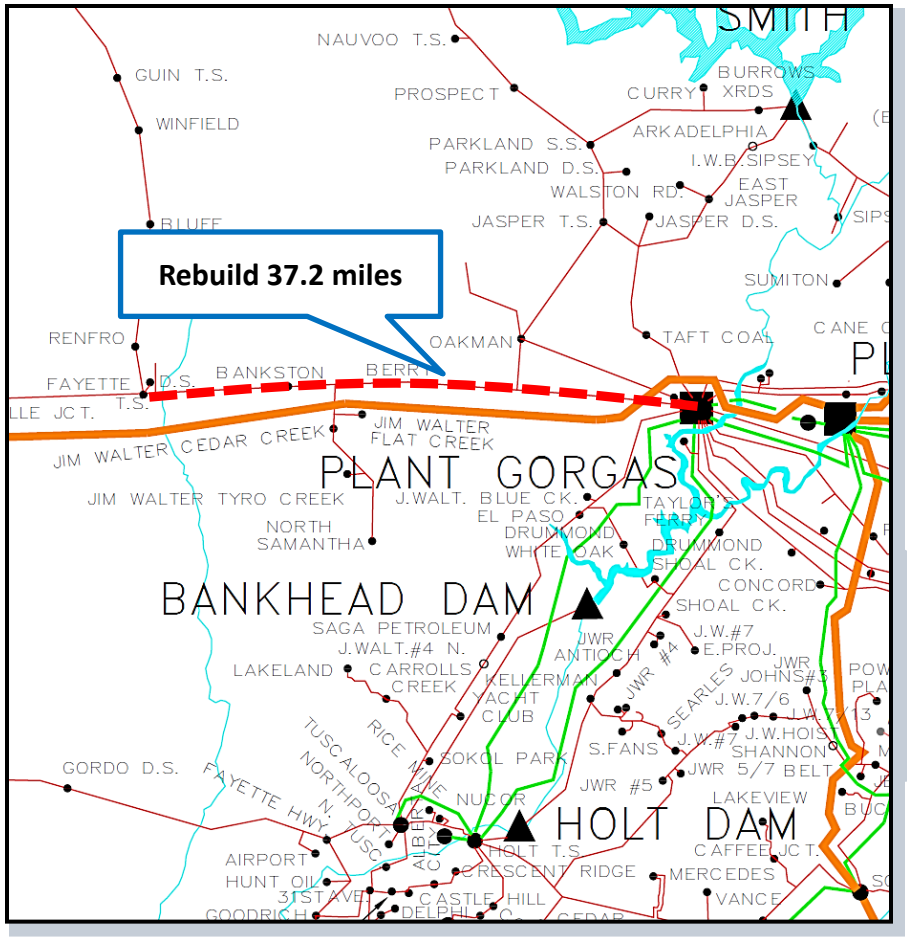
SUPPORTING STATEMENT:

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



SOUTHERN – 16W 2024

FAYETTE – GORGAS 161 KV T.L.

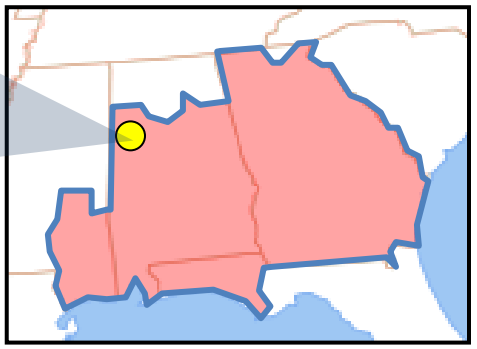


DESCRIPTION:

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 Balancing Authority

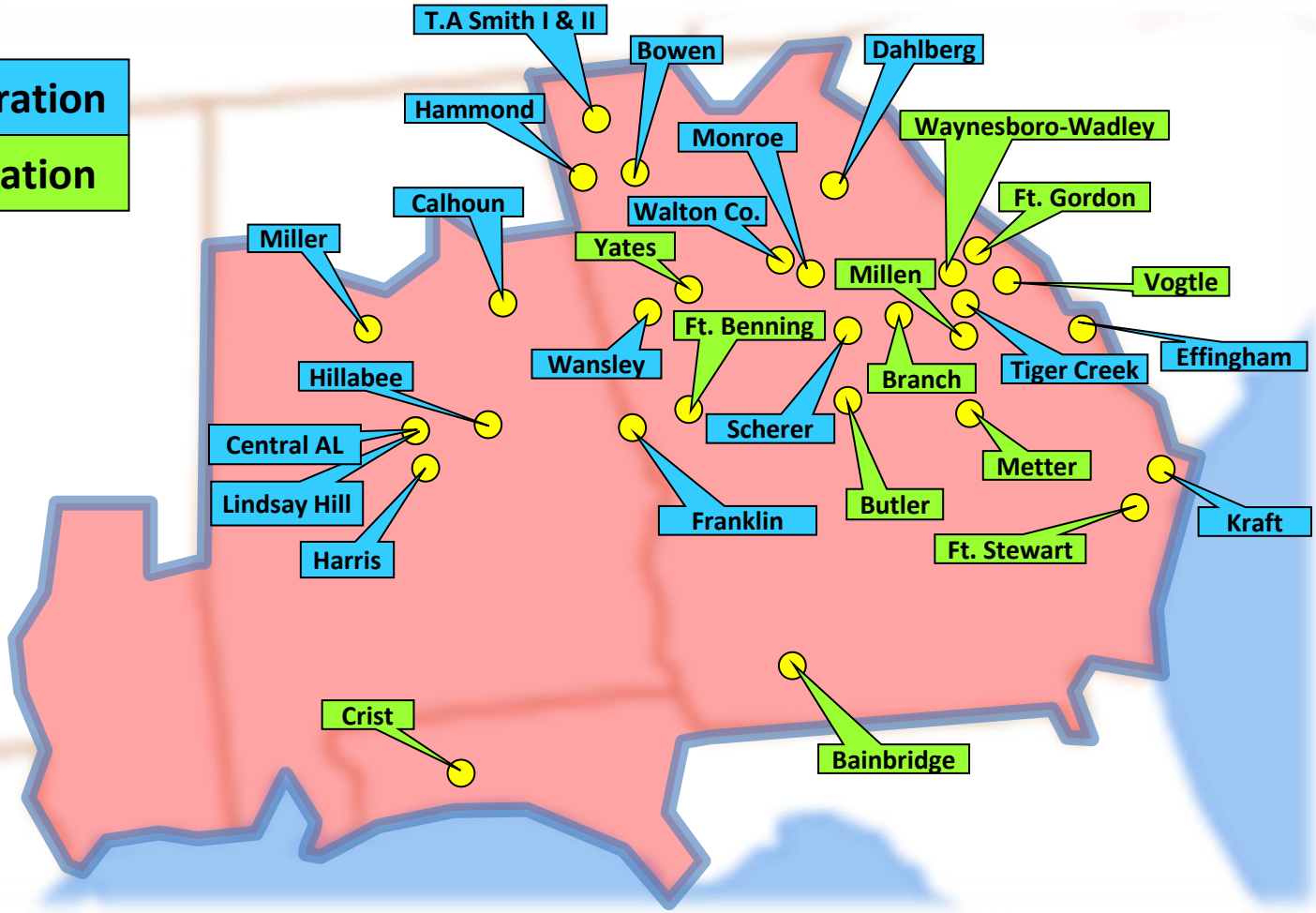
Upcoming 2015 Generation Assumptions

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
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
BUTLER 230 KV	132	232	232	232	232	232	232	232	232	232
BUTLER 115 KV	20	20	20	20	20	20	20	20	20	20

Southern Company – Generation Assumptions

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
BAINBRIDGE	80	80	80	80	80	80	80	80	80	80
MILLEN	20	20	20	20	20	20	20	20	20	20
WAYNESBORO-WADLEY	--	80	80	80	80	80	80	80	80	80
METTER	--	51	51	51	51	51	51	51	51	51
WANSLEY 6	561	0	--	--	--	--	--	--	--	--
VOGTLE 3	--	--	504	504	504	504	504	504	504	504
VOGTLE 4	--	--	--	504	504	504	504	504	504	504
HARRIS 2	628	628	628	0	--	--	--	--	--	--

Southern Company – Generation Assumptions

SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
CENTRAL ALABAMA	885	885	885	885	885	885	885	0	--	--
CALHOUN CT 1-4	632	632	632	632	632	632	632	0	--	--
YATES[1]	--	--	--	--	--	--	--	940	940	940
TIGER CREEK	313	313	313	313	313	313	313	313	0	--
MONROE	310	310	310	310	310	310	310	310	0	--
WALTON COUNTY	465	465	465	465	465	465	465	465	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	609	609	609	609	609	609	609	609	609	609
SCHERER	998	998	998	998	998	998	998	998	998	998
DAHLBERG	176	176	176	176	176	176	176	176	176	176
BOWEN	27	27	27	27	27	27	27	27	27	27

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	--	--	--	--	--	--	--	--	--
LINDSAY HILL CC	0	--	--	--	--	150	150	150	150	150
FRANKLIN CC 2	625	625	625	625	625	375	375	375	375	375
DAHLBERG CT	375	375	375	375	375	375	375	375	375	375
HILLABEE CC	149	149	149	149	149	149	149	149	149	149
T.A. SMITH I CC	619	619	619	619	619	619	619	619	619	619
T.A. SMITH II CC	617	617	617	617	617	617	617	617	617	617
VOGTLE 3	--	--	330	330	330	330	330	330	330	330
VOGTLE 4	--	--	--	330	330	330	330	330	330	330

MEAG – 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	--	--	250	250	250	250	250	250	250	250
VOGTLE 4	--	--	--	250	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.

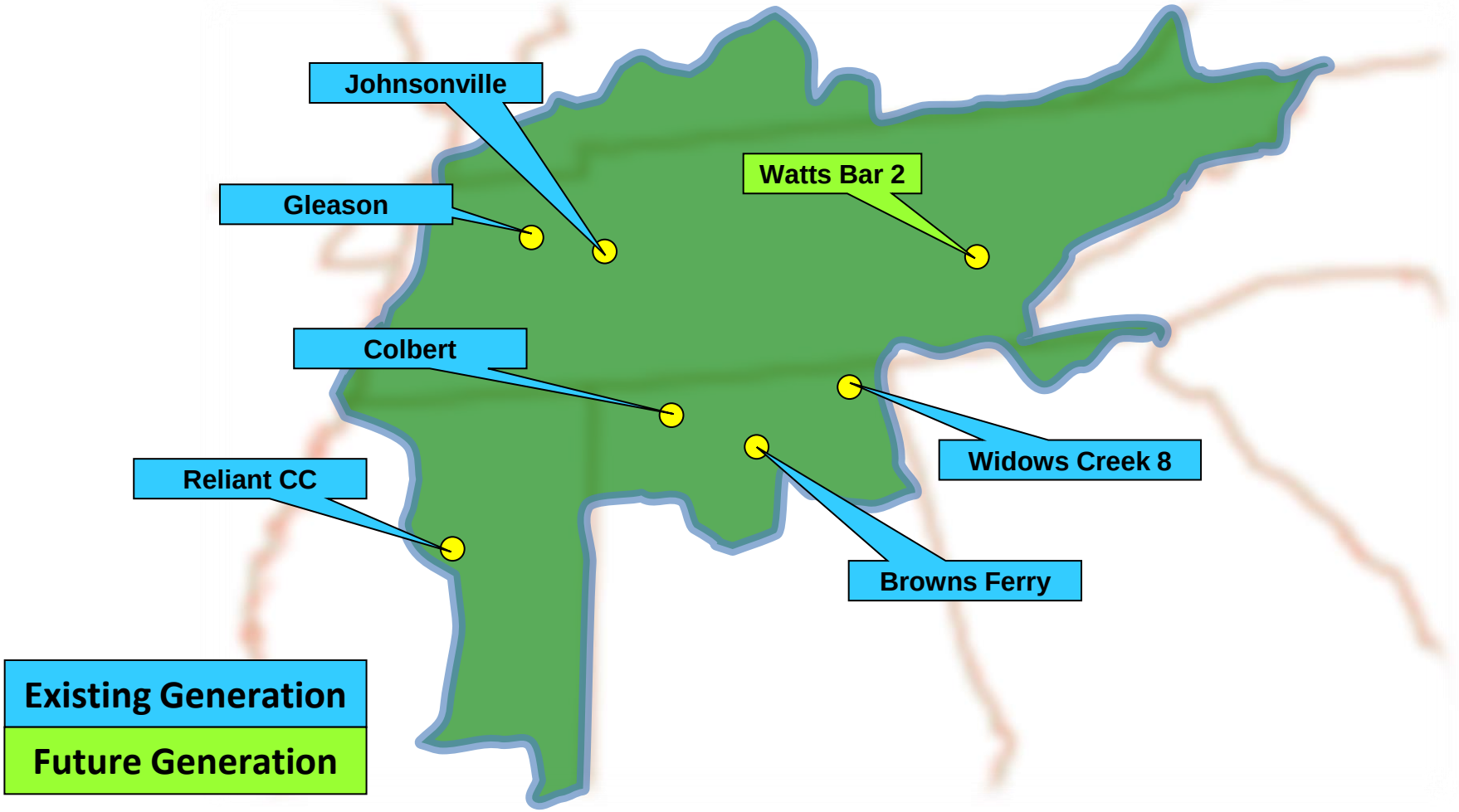
SITE	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025
VOGTLE 3	--	--	16	16	16	16	16	16	16	16
VOGTLE 4	--	--	--	16	16	16	16	16	16	16

TVA Balancing Authority

2014 Generation Assumptions

TVA – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2014 SERTP Process.



TVA – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2014 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
COLBERT 5	0	--	--	--	--	--	--	--	--	--
WIDOWS CREEK 8	0	--	--	--	--	--	--	--	--	--
COLBERT 1 - 4	712	0	--	--	--	--	--	--	--	--
JOHNSONVILLE 1-4	428	0	--	--	--	--	--	--	--	--
WATTS BAR UNIT 2	--	1155	1155	1155	1155	1155	1155	1155	1155	1155
GLEASON 1	120	173	173	173	173	173	173	173	173	173
GLEASON 2	100	173	173	173	173	173	173	173	173	173
GLEASON 3	140	174	174	174	174	174	174	174	174	174
BROWNS FERRY UNIT 3	1108	1108	1108	1242	1242	1242	1242	1242	1242	1242
BROWNS FERRY UNIT 1	1103	1103	1103	1103	1237	1237	1237	1237	1237	1237
BROWNS FERRY UNIT 2	1108	1108	1108	1108	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.

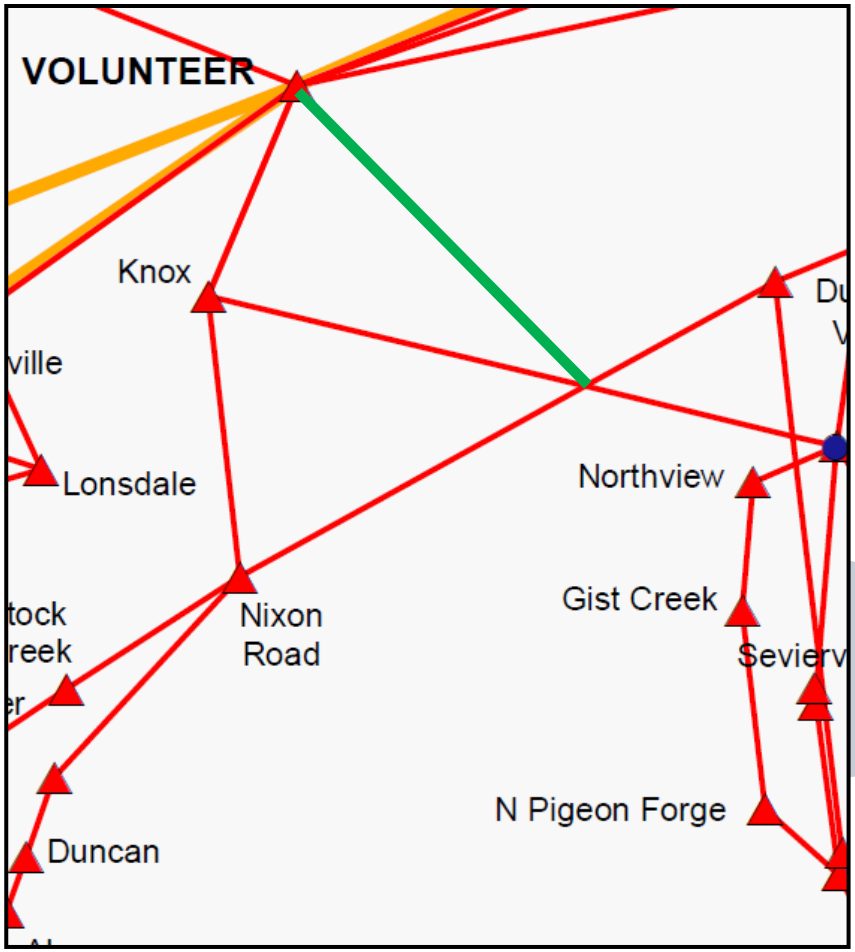
SITE	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024
RELIANT CC	287	525	525	525	525	525	525	525	525	525

TVA Balancing Authority

SERTP Regional Transmission Plan

TVA – 1 2015

VOLUNTEER – E. KNOX 161 KV T.L.

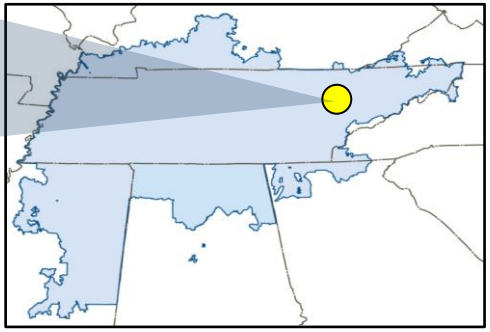


DESCRIPTION:

Construct approximately 13.5 miles of 161 kV transmission line from Volunteer to E. Knox with 954 ACSS at 150°C.

SUPPORTING STATEMENT:

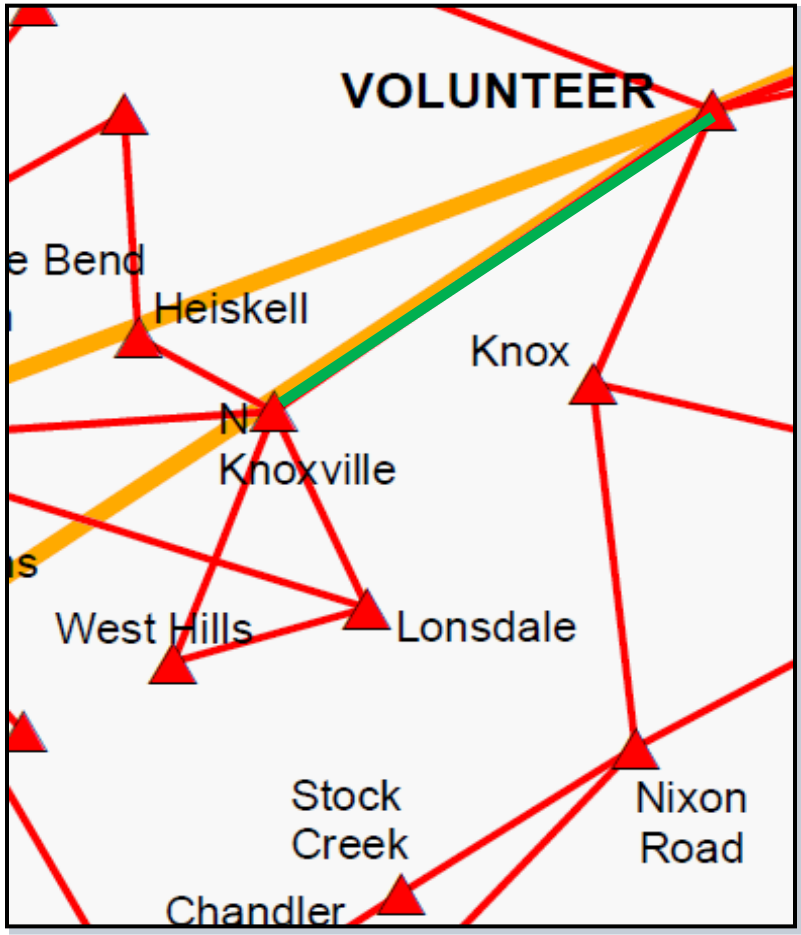
The Volunteer – Knox #2 161 kV transmission line becomes overloaded under contingency and additional voltage support is needed in the E. Knox area under contingency.



TVA – 2

2015

VOLUNTEER – N. KNOX #1 161 KV T.L.

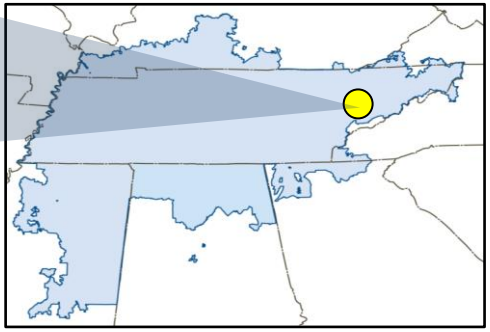


DESCRIPTION:

Reconductor approximately 12.5 miles of 161 kV transmission line between the Volunteer and N. Knox 161 kV substations with 795 ACSS at 123°C.

SUPPORTING STATEMENT:

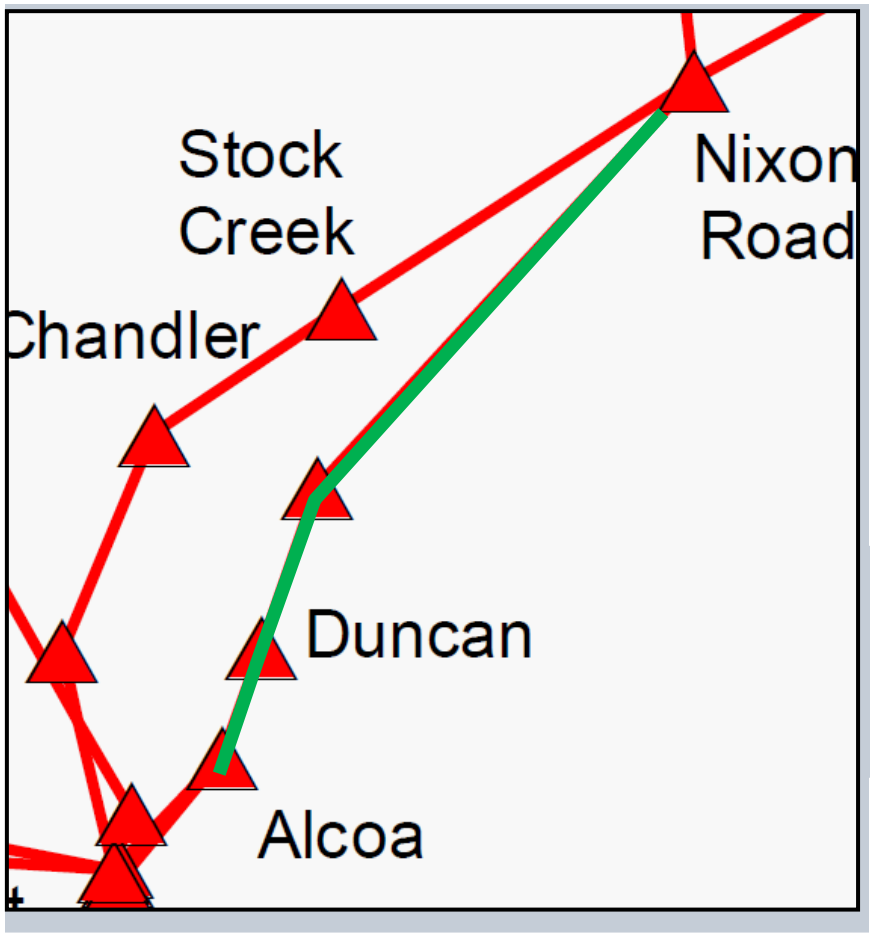
The Volunteer – N. Knox 161 kV transmission line overloads under contingency.



TVA – 3

2017

ALCOA NORTH – NIXON ROAD 161 KV T.L.

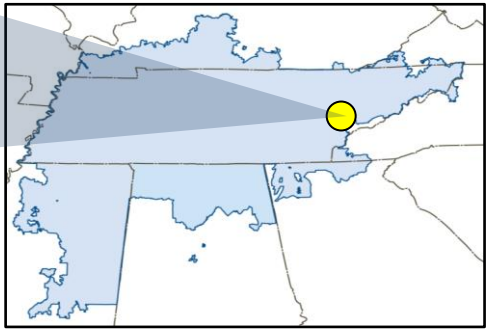


DESCRIPTION:

Rebuild approximately 10.5 miles of the Alcoa North – Nixon Road 161 kV transmission line with 1590 ACSR at 100°C.

SUPPORTING STATEMENT:

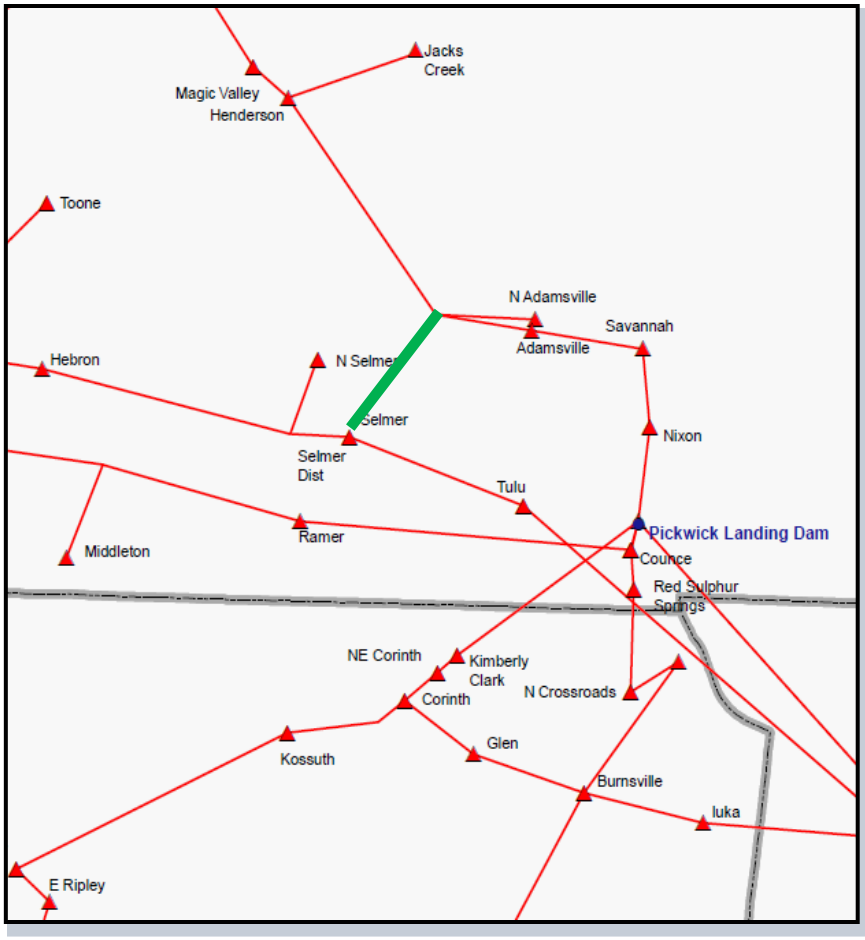
The Alcoa Switching Station – Nixon Road 161 kV transmission line overloads under contingency.



TVA – 4

2017

SELMER – WEST ADAMSVILLE 161 KV T.L.

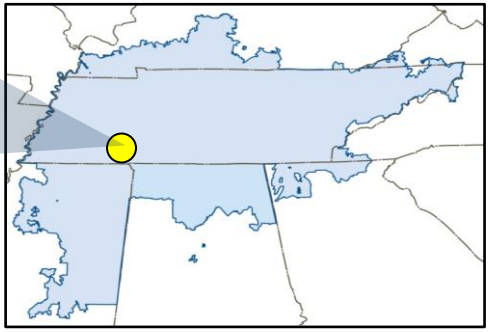


DESCRIPTION:

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

SUPPORTING STATEMENT:

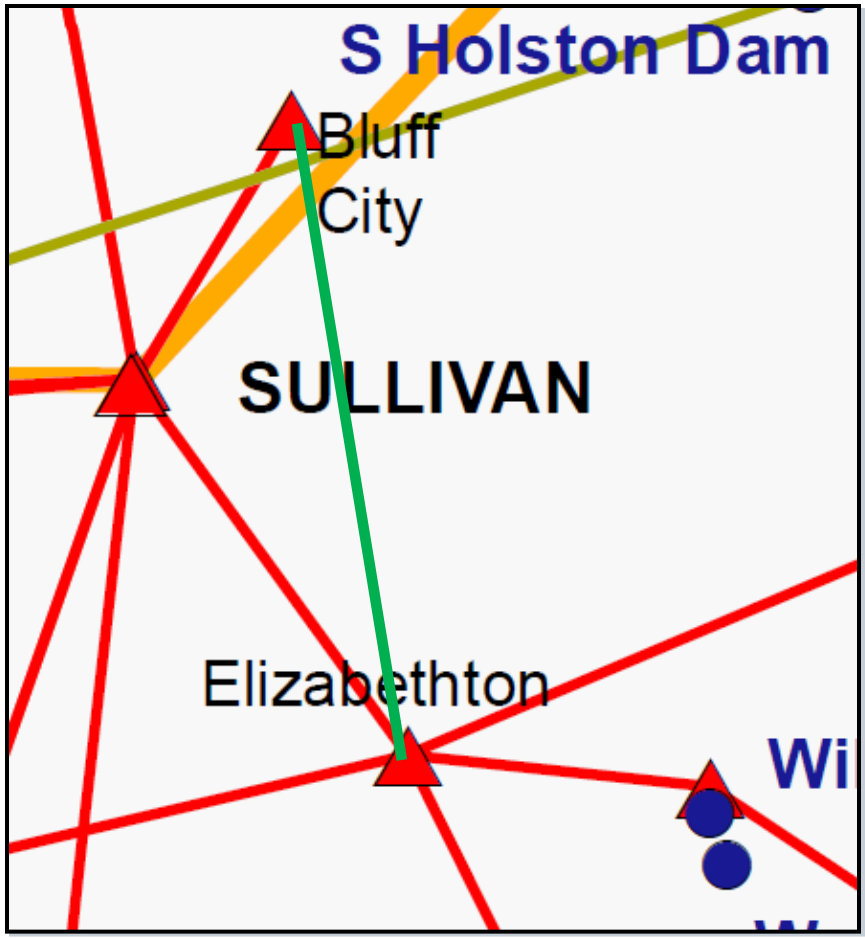
Additional voltage support needed in the Bolivar, TN area under contingency.



TVA – 5

2017

BLUFF CITY – ELIZABETHTON 161 KV T.L.

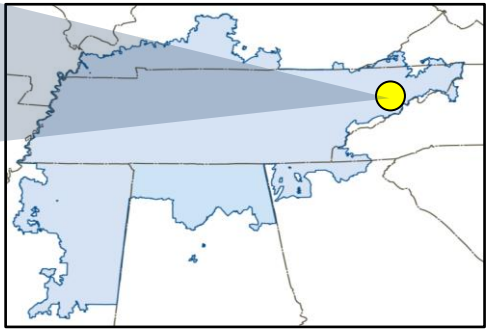


DESCRIPTION:

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

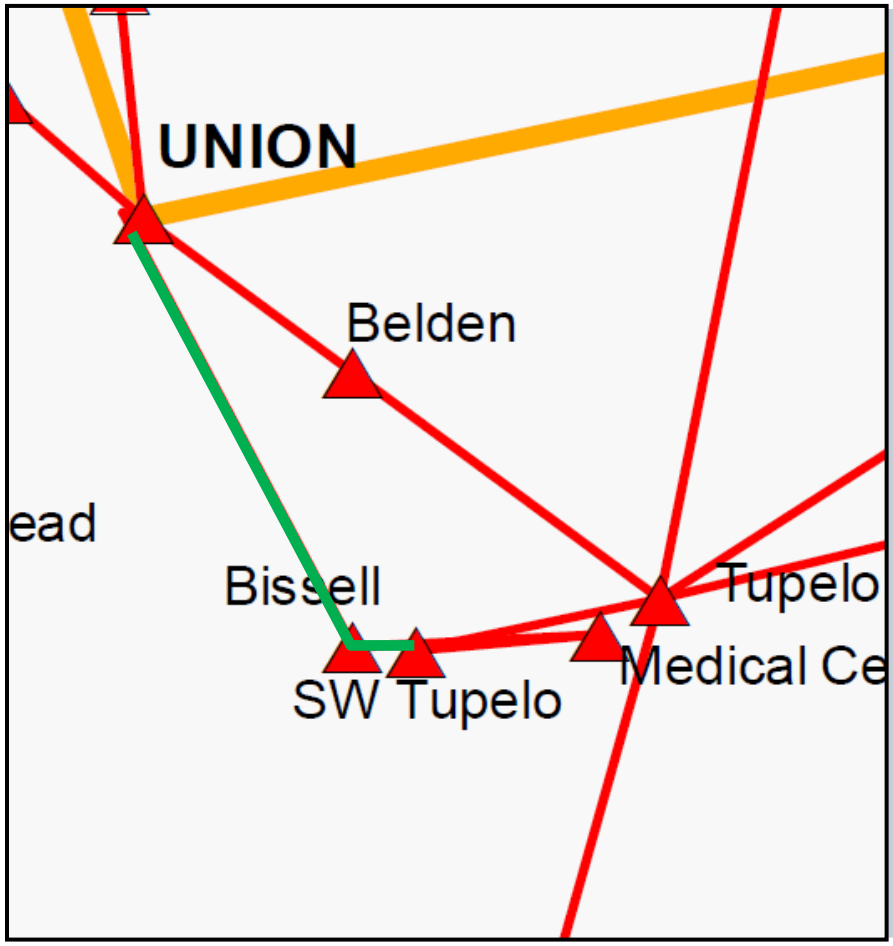
SUPPORTING STATEMENT:

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



TVA – 6 2017

UNION – TUPELO #3 161 KV T.L.

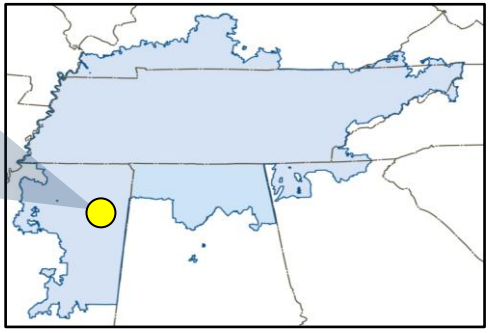


DESCRIPTION:

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

SUPPORTING STATEMENT:

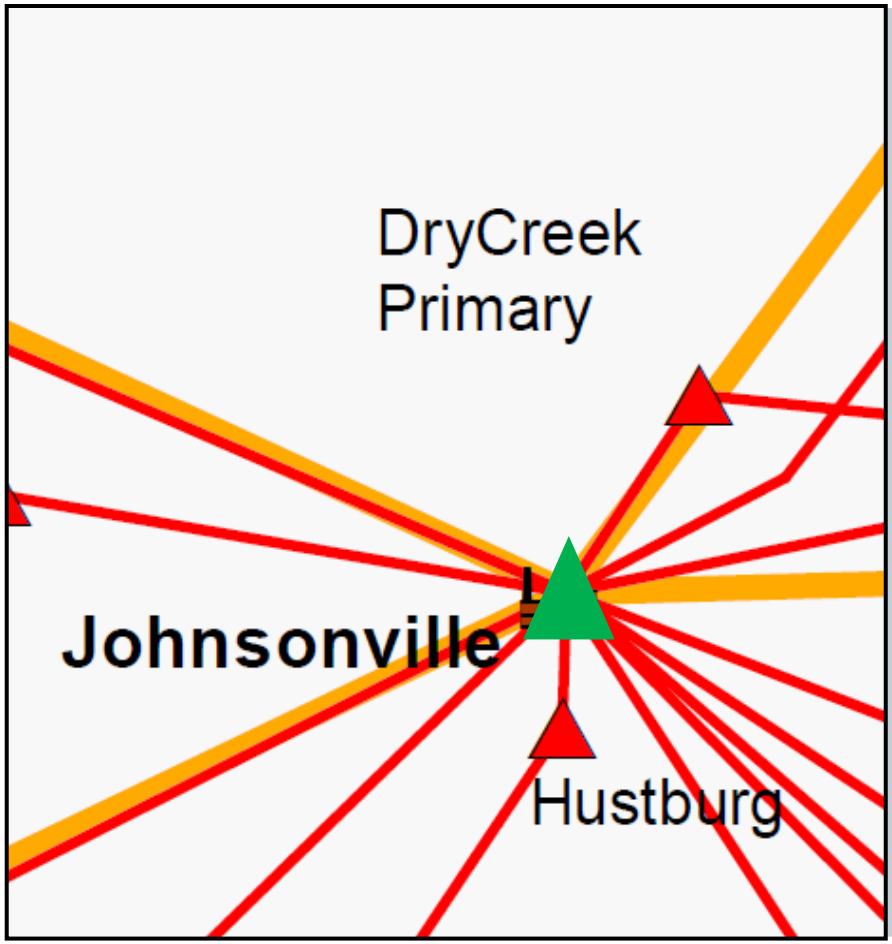
Multiple transmission lines in the Tupelo, MS area overload under contingency.



TVA – 7

2017

JOHNSONVILLE FP SUBSTATION

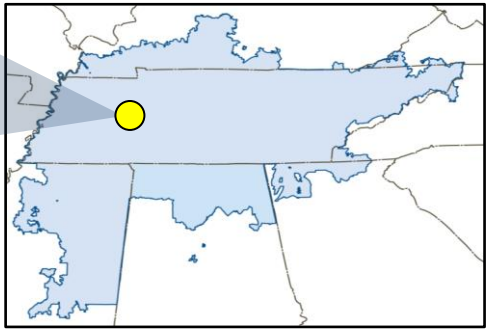


DESCRIPTION:

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

SUPPORTING STATEMENT:

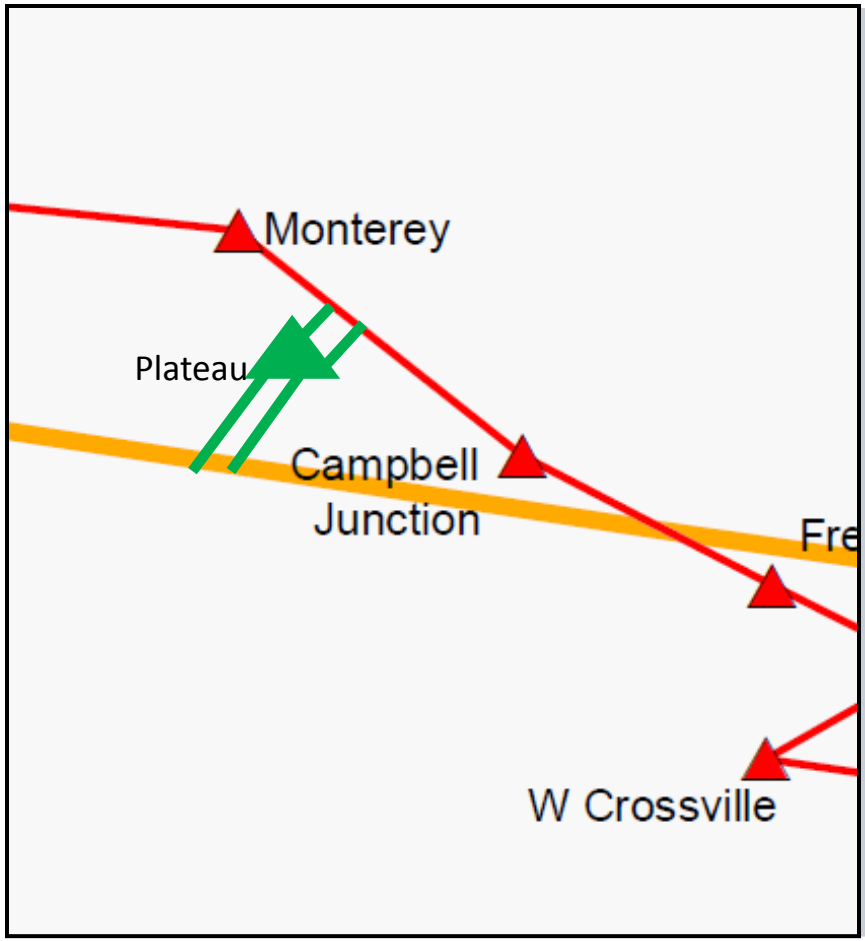
The retirement of Johnsonville units 1-10 requires the replacement of the 500/161 kV inter-tie transformer bank at Johnsonville.



TVA – 8

2018

PLATEAU 500 KV SUBSTATION

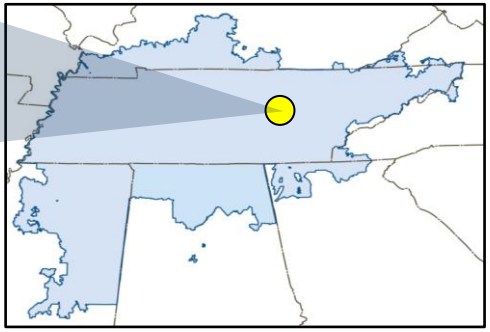


DESCRIPTION:

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

SUPPORTING STATEMENT:

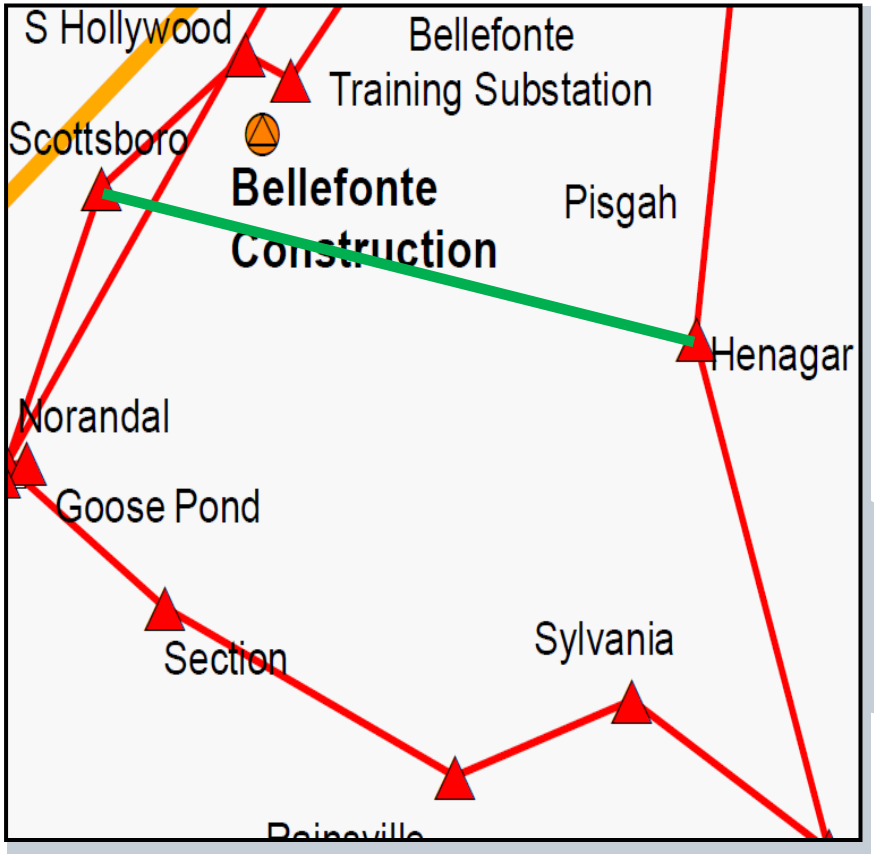
Thermal overload and need for additional voltage support in the Murfreesboro, TN and Knoxville, TN areas under contingency.



TVA – 9

2018

SCOTTSBORO – HENAGAR 161 KV T.L.

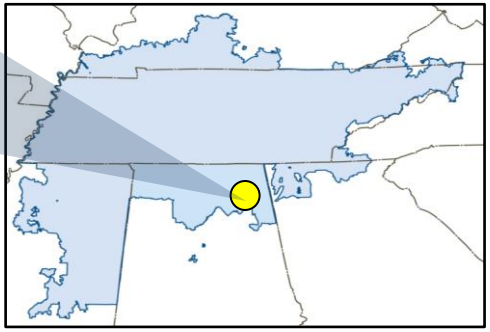


DESCRIPTION:

Construct approximately 17.1 miles of new 161 kV transmission line to create the Scottsboro – Henagar 161 kV transmission line with 954 ACSR at 100°C.

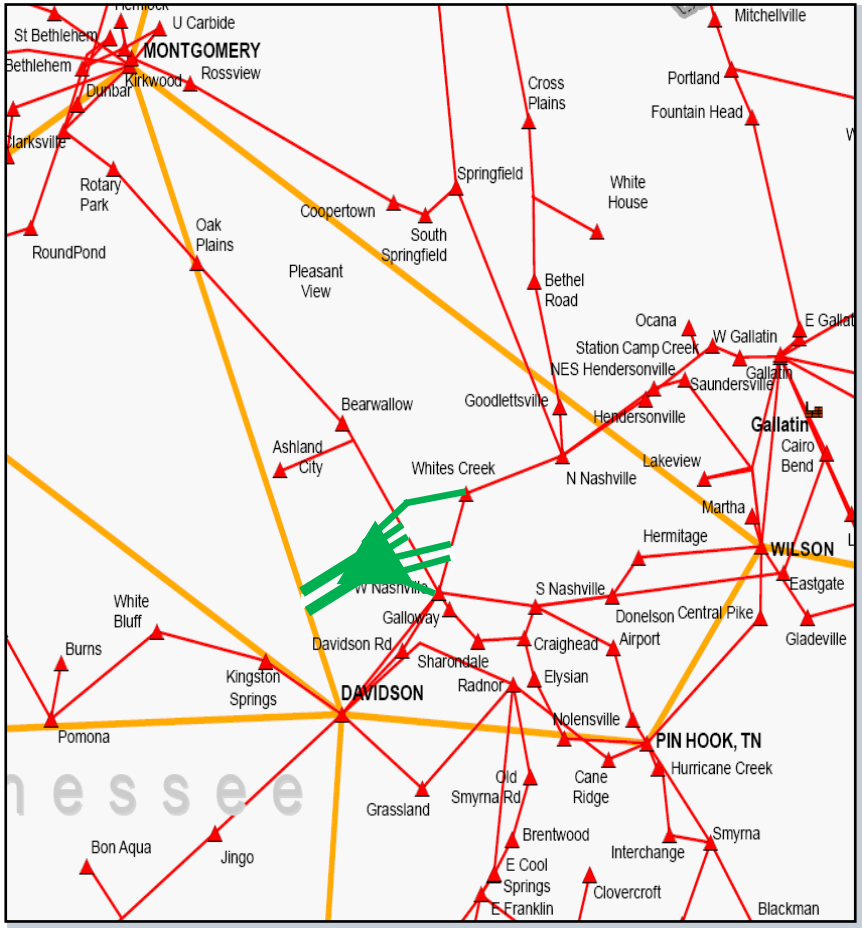
SUPPORTING STATEMENT:

Multiple 161 kV transmission lines in the Ft. Payne, AL area overload under contingency and additional voltage support needed in the Ft. Payne area under contingency.



TVA – 10 2018

NORTH DAVIDSON 500 KV SUBSTATION

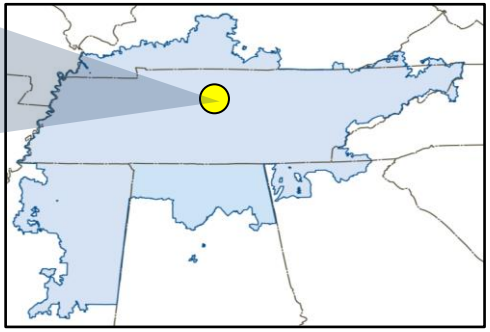


DESCRIPTION:

Construct a 500 kV substation in the North Davidson County, TN area connected to the Montgomery – Davidson 500 kV transmission line and multiple area 161 kV transmission lines.

SUPPORTING STATEMENT:

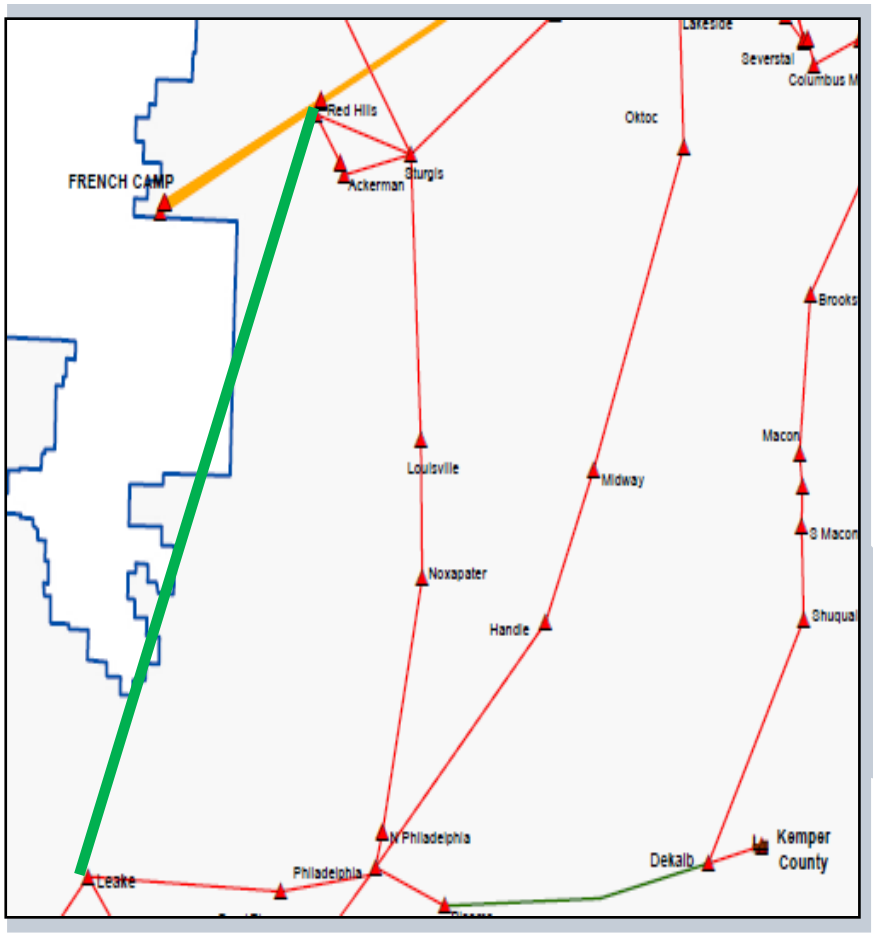
Thermal overloads and additional voltage support needed in the Nashville area under contingency.



TVA – 11

2018

RED HILLS – LEAKE 161 KV T.L.

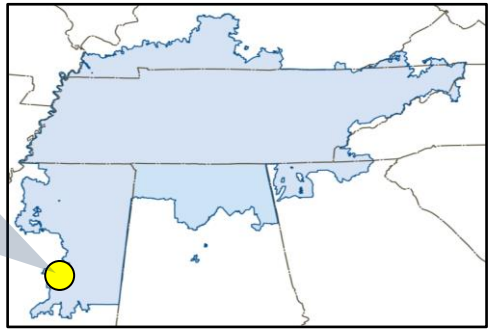


DESCRIPTION:

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

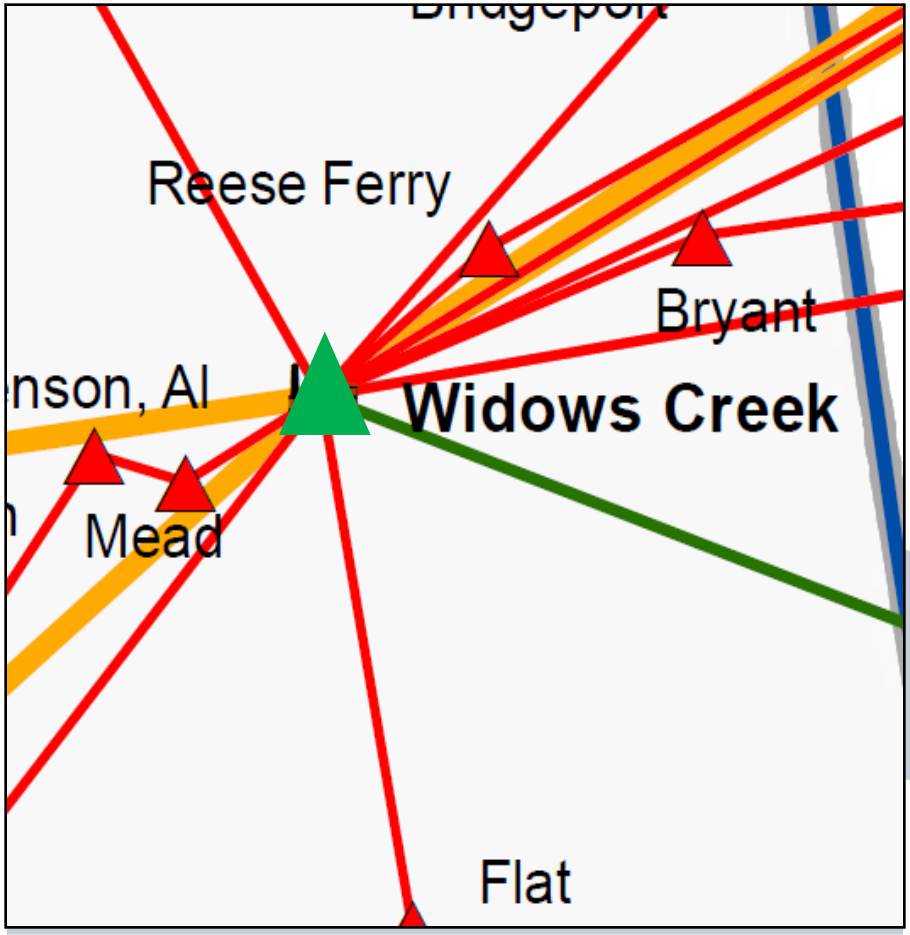
SUPPORTING STATEMENT:

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



TVA – 12 2019

WIDOWS CREEK FP SUBSTATION

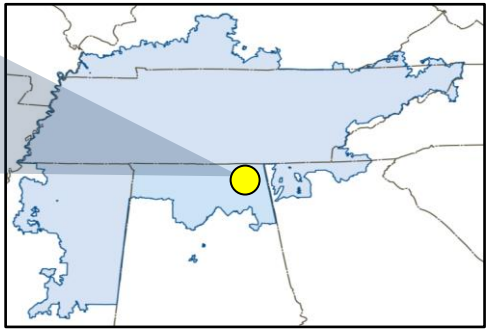


DESCRIPTION:

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

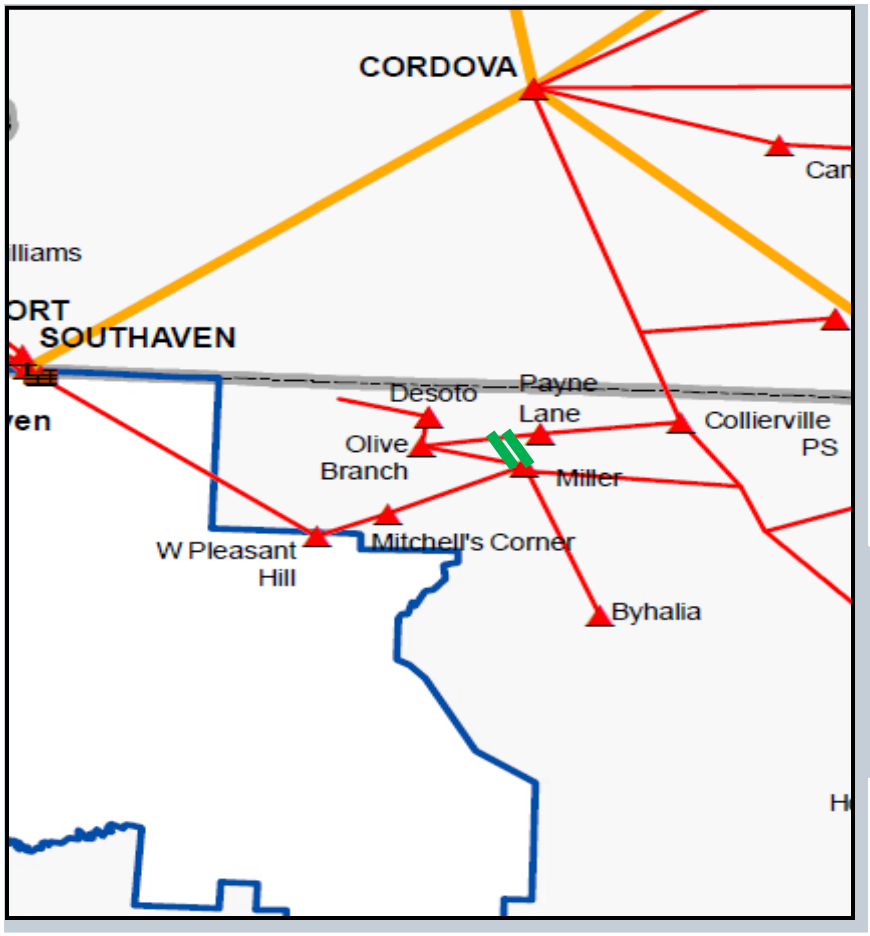
SUPPORTING STATEMENT:

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



TVA – 13 2020

MILLER – OLIVE BRANCH #2 161 KV T.L.

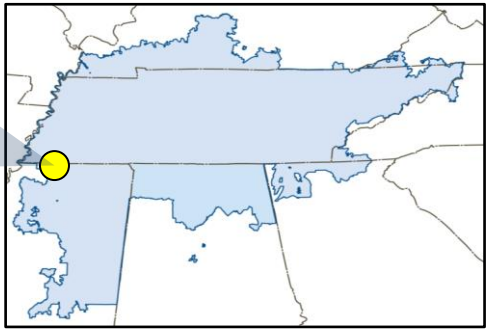


DESCRIPTION:

Loop the Olive Branch – Payne Lane 161 kV transmission line into the Miller, MS 161 kV substation to create the Miller – Olive Branch #2 161 kV transmission line.

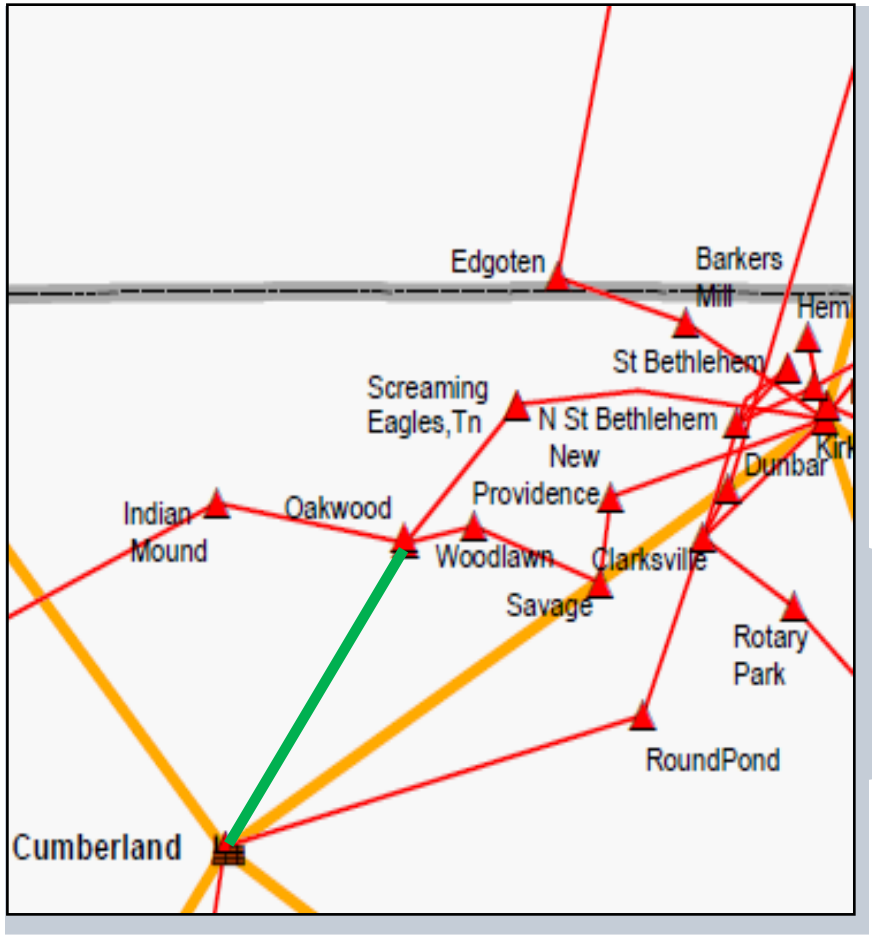
SUPPORTING STATEMENT:

Additional voltage support needed in the Olive Branch, MS area under contingency.



TVA – 14 2020

OAKWOOD – CUMBERLAND 161 KV T.L.

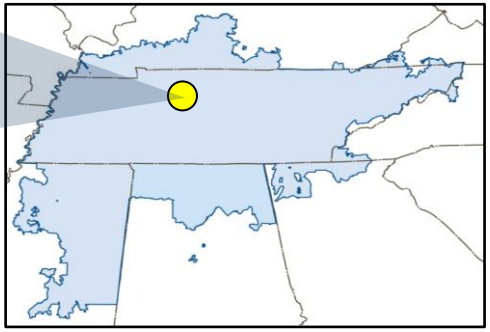


DESCRIPTION:

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

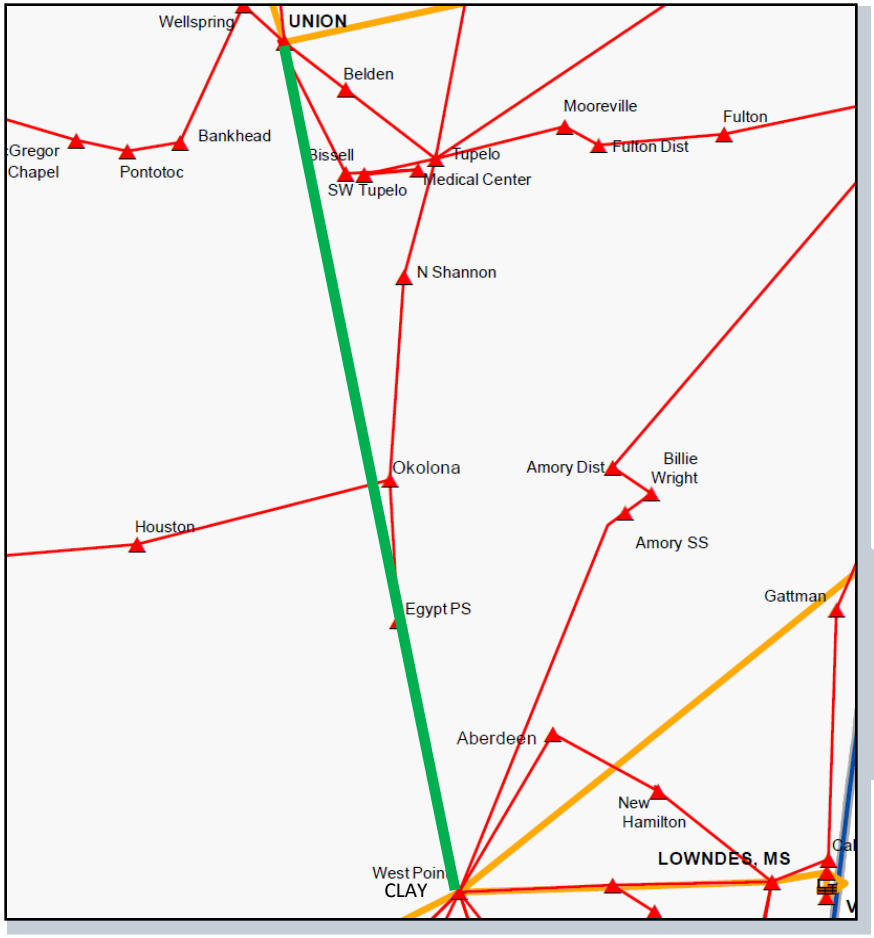
SUPPORTING STATEMENT:

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



TVA – 15 2022

UNION – CLAY 500 KV T.L.

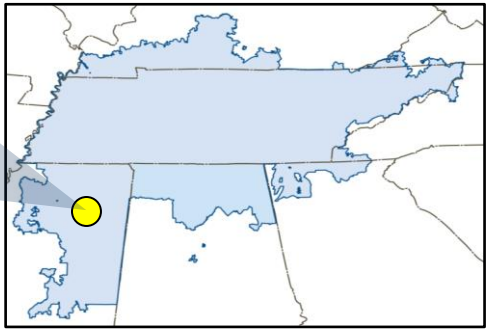


DESCRIPTION:

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 needed in the MS area under contingency.

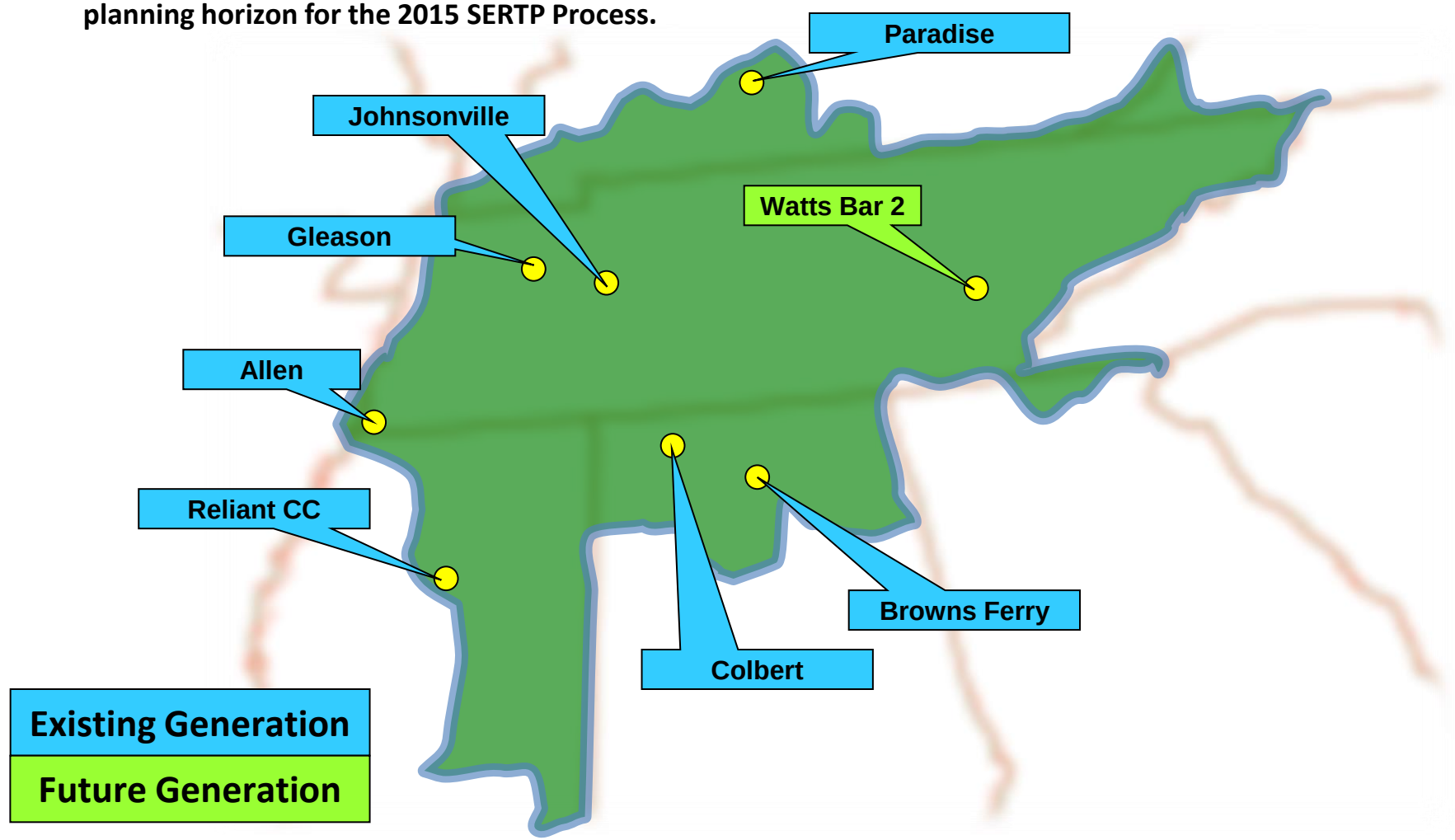


TVA Balancing Authority

Upcoming 2015 Generation Assumptions

TVA – 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.



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 1-2	1230	0	--	--	--	--	--	--	--	--
PARADISE CC	--	1015	1015	1015	1015	1015	1015	1015	1015	1015
BROWNS FERRY UNIT 3	1108	1108	1242	1242	1242	1242	1242	1242	1242	1242
ALLEN 1-3	741	741	0	--	--	--	--	--	--	--
ALLEN CC	--	--	1082	1082	1082	1082	1082	1082	1082	1082

TVA – Generation Assumptions

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

SERTP

Regional Transmission Analyses Overview

Regional Transmission Analyses Overview

- **Assess if the then current regional transmission plan addresses the Transmission Provider's transmission needs**

- **Assess whether there may be more efficient or cost effective transmission projects to address transmission needs**

Regional Transmission Analyses

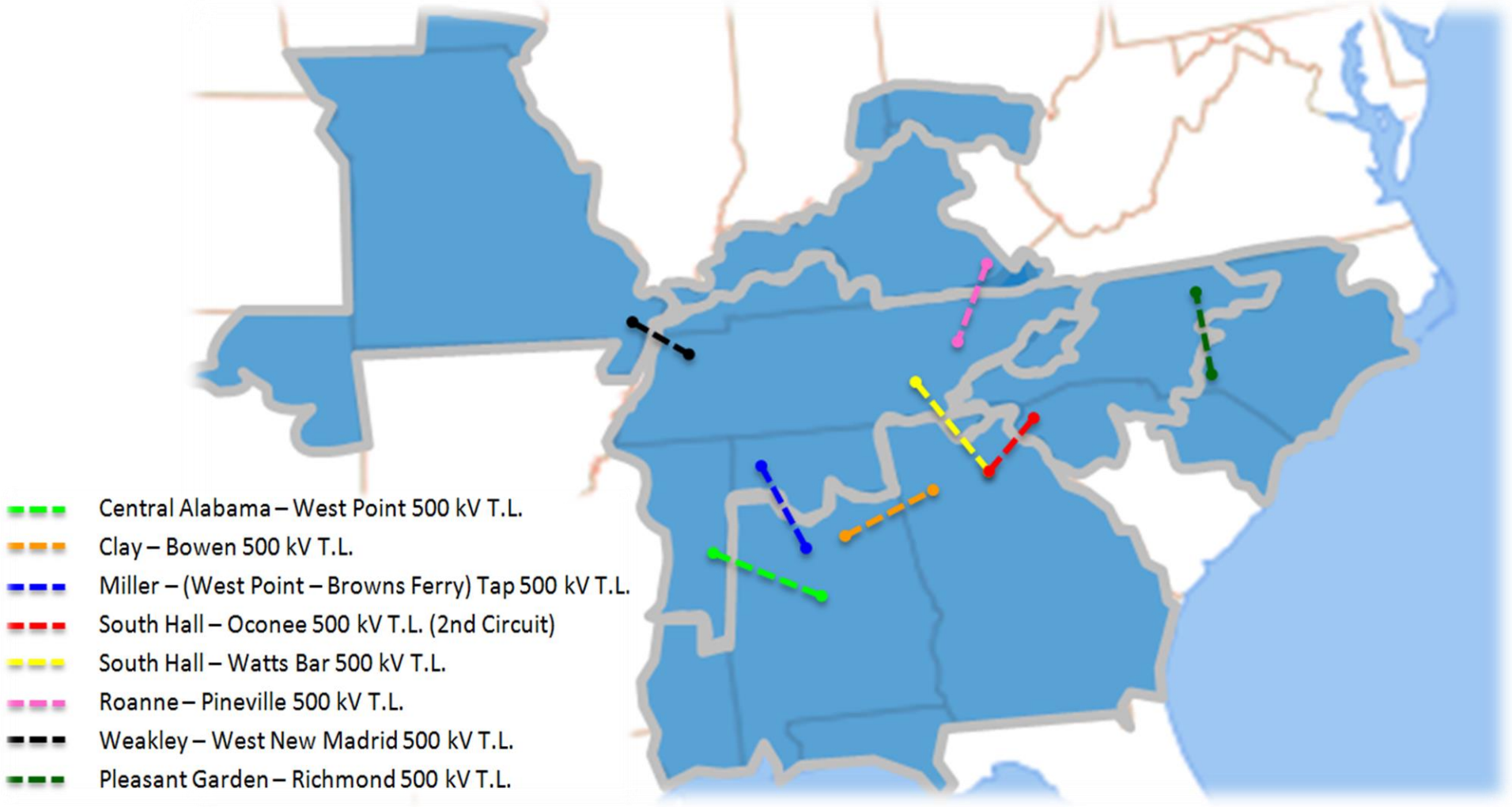
Assessment of Current Regional Plan

- **SERTP Sponsors developed 12 coordinated regional models***
- **Models include latest transmission planning model information within the SERTP region**
- **Contingency analysis was performed to identify potential constraints that may result from the regional coordination of latest input assumptions**

*Available on the secure area of the SERTP website upon satisfying access requirements

No.	Season	Year
1	SUMMER	2015
2		2017
3		2019
4		2020
5		2022
6		2024
7	SHOULDER	2019
8		2022
9		2024
10	WINTER	2019
11		2024
12	LIGHT LOAD	2015

Assessment of Alternative Transmission Projects



Regional Transmission Analyses Overview

- **No constrained transmission facilities were identified in the assessment of the current regional transmission plan.**
- **No evaluated transmission project alternatives were found to be more efficient or cost effective.**
  - Estimated cost of transmission project alternatives significantly outweighed potential benefits.
- **The regional transmission analyses summary is posted on the SERTP website.**

SERTP

Miscellaneous Updates

Order 1000 Implementation Update

Submittal Form for Transmission Project Proposals for RCAP

- **SERTP Website Location**

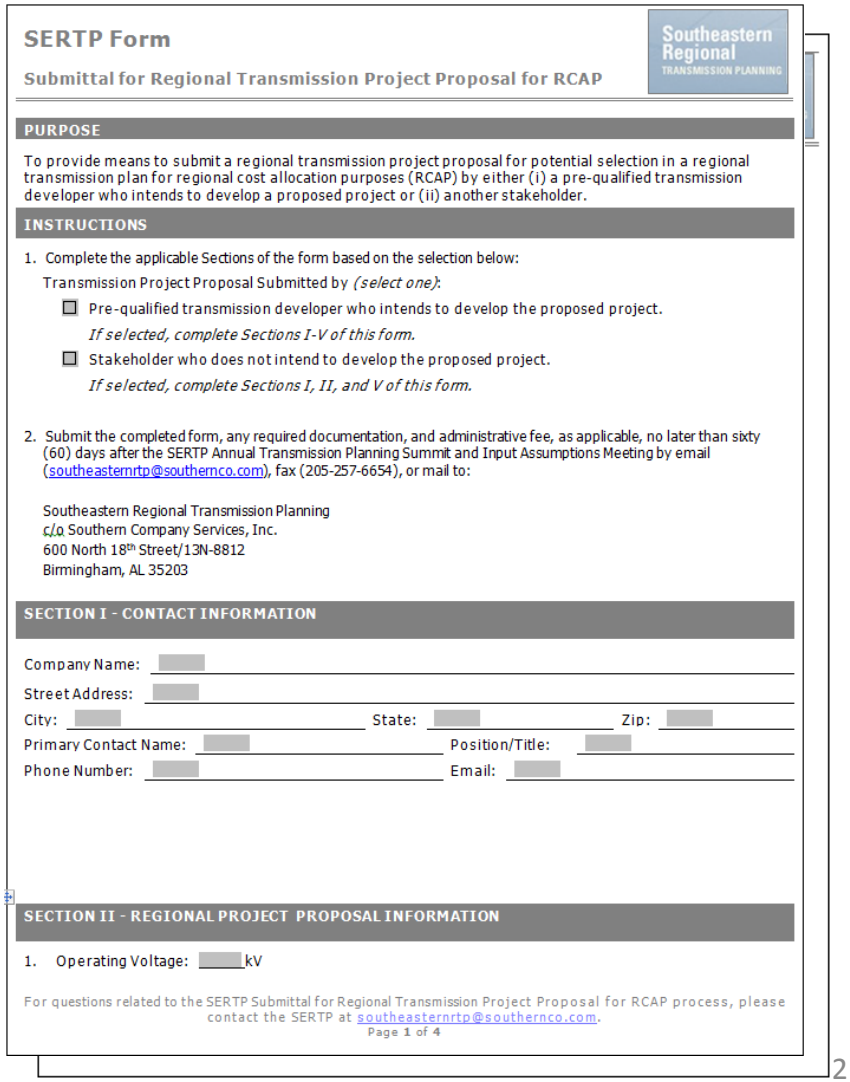
  Reference Library → Forms → RCAP

- **Posting Date**

  December 8th, 2014

- **Instructions**

  Pre-Qualified Transmission Developers can complete the form, including information on the RCAP transmission project proposal, and submit within 60 calendar days after the SERTP Summit



SERTP Form

Submittal for Regional Transmission Project Proposal for RCAP

Southeastern Regional TRANSMISSION PLANNING

PURPOSE

To provide means to submit a regional transmission project proposal for potential selection in a regional transmission plan for regional cost allocation purposes (RCAP) by either (i) a pre-qualified transmission developer who intends to develop a proposed project or (ii) another stakeholder.

INSTRUCTIONS

1. Complete the applicable Sections of the form based on the selection below:

   Transmission Project Proposal Submitted by *(select one)*:

   ☐ Pre-qualified transmission developer who intends to develop the proposed project.

   If selected, complete Sections I-V of this form.

   ☐ Stakeholder who does not intend to develop the proposed project.

   If selected, complete Sections I, II, and V of this form.

2. Submit the completed form, any required documentation, and administrative fee, as applicable, no later than sixty (60) days after the SERTP Annual Transmission Planning Summit and Input Assumptions Meeting by email (southeasternrtp@southernco.com), fax (205-257-6654), or mail to:

   Southeastern Regional Transmission Planning
   c/o Southern Company Services, Inc.
   600 North 18th Street/13N-8812
   Birmingham, AL 35203

SECTION I - CONTACT INFORMATION

Company Name:

Street Address:

City: State: Zip:

Primary Contact Name: Position/Title:

Phone Number: Email:

SECTION II - REGIONAL PROJECT PROPOSAL INFORMATION

1. Operating Voltage: kV

For questions related to the SERTP Submittal for Regional Transmission Project Proposal for RCAP process, please contact the SERTP at southeasternrtp@southernco.com.

Page 1 of 4

Order 1000 Implementation Update

Submittal Form for Transmission Needs Driven by PPRs

- **SERTP Website Location**

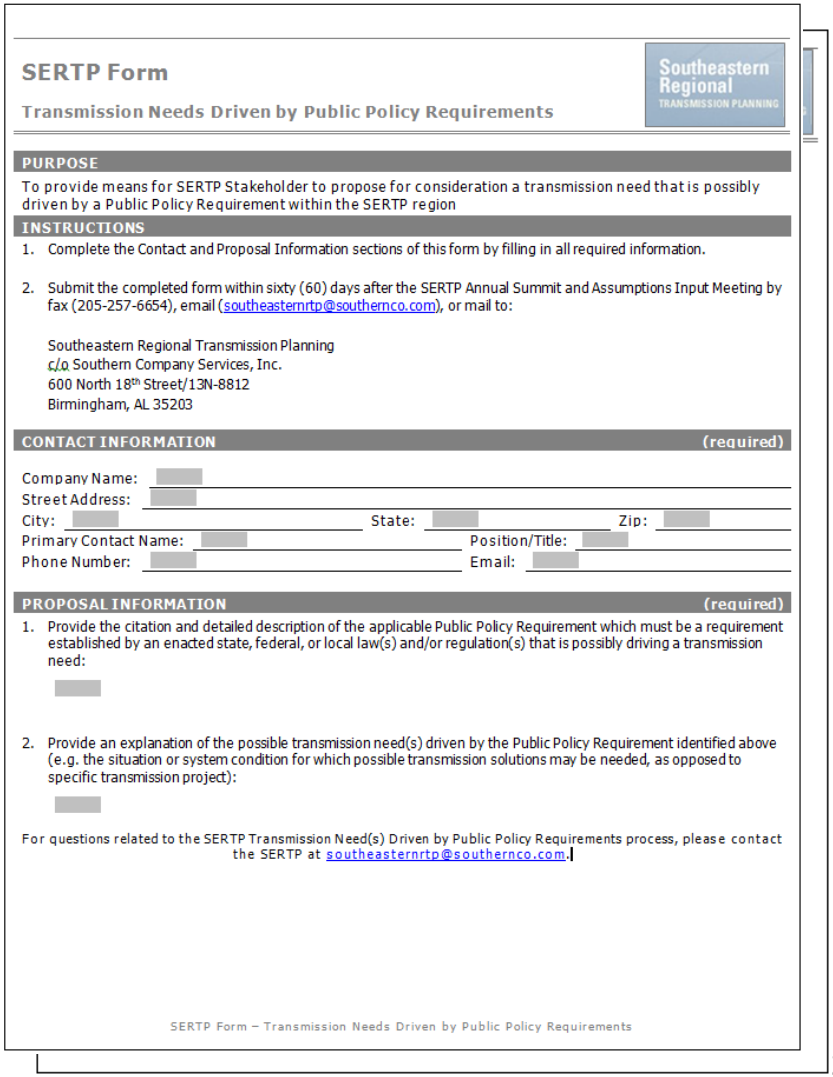
  Reference Library → Forms → Public Policy Requirement

- **Posting Date**

  December 8th, 2014

- **Instructions**

  Stakeholders can complete the form in order to propose possible transmission needs driven by Public Policy Requirements not already being considered within the SERTP region and submit within 60 days after the SERTP Summit



SERTP Form

Transmission Needs Driven by Public Policy Requirements

Southeastern Regional TRANSMISSION PLANNING

PURPOSE

To provide means for SERTP Stakeholder to propose for consideration a transmission need that is possibly driven by a Public Policy Requirement within the SERTP region

INSTRUCTIONS

1. Complete the Contact and Proposal Information sections of this form by filling in all required information.
2. Submit the completed form within sixty (60) days after the SERTP Annual Summit and Assumptions Input Meeting by fax (205-257-6654), email (southeasternrtp@southernco.com), or mail to:

   Southeastern Regional Transmission Planning
   c/o Southern Company Services, Inc.
   600 North 18th Street/13N-8812
   Birmingham, AL 35203

CONTACT INFORMATION (required)

Company Name:
Street Address:
City: State: Zip:
Primary Contact Name: Position/Title:
Phone Number: Email:

PROPOSAL INFORMATION (required)

1. Provide the citation and detailed description of the applicable Public Policy Requirement which must be a requirement established by an enacted state, federal, or local law(s) and/or regulation(s) that is possibly driving a transmission need:
2. Provide an explanation of the possible transmission need(s) driven by the Public Policy Requirement identified above (e.g. the situation or system condition for which possible transmission solutions may be needed, as opposed to specific transmission project):

For questions related to the SERTP Transmission Need(s) Driven by Public Policy Requirements process, please contact the SERTP at southeasternrtp@southernco.com.

SERTP Form – Transmission Needs Driven by Public Policy Requirements

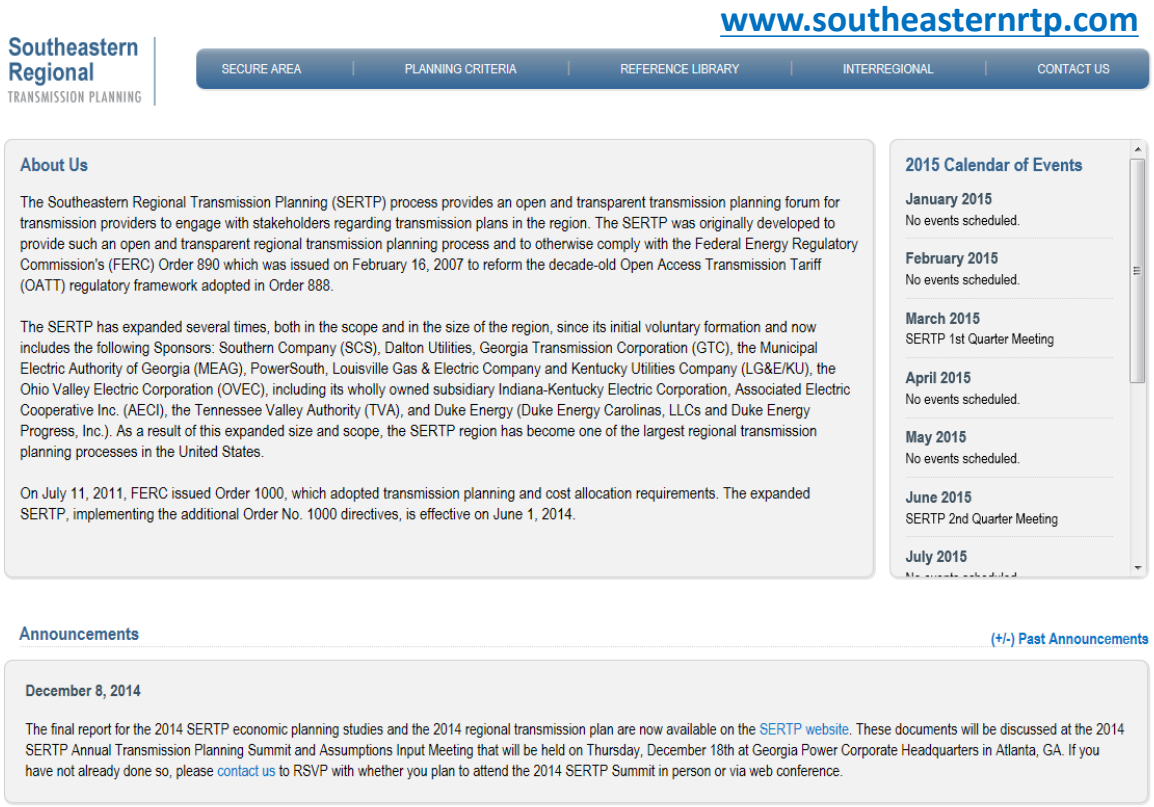
Miscellaneous Updates

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

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

Miscellaneous Updates

- **New SERTP website layout to be released in early January.**
- **Please update any bookmarks.**



Upcoming 2015 SERTP Process

- **SERTP 1st Quarter – *1st RPSG Meeting***

  March 2015

  – Select Five Economic Planning Studies
  – Order No.1000 Interregional Update

- **SERTP 2nd Quarter – *Preliminary Expansion Plan Meeting***

  June 2015

  – Preliminary 10 Year Expansion Plans

- **SERTP 3rd Quarter – *2nd RPSG Meeting***

  September 2015

  – Preliminary Economic Planning Study Results

- **SERTP 4th Quarter – *Annual Transmission Planning Summit & Input Assumptions***

  December 2015

  – Regional Analyses
  – Regional Transmission Plan / 2016 Input Assumptions
  – Final Economic Planning Study Results

Questions?