SERTP – 2016 4th Quarter Meeting

Annual Transmission Planning Summit & Assumptions Input Meeting

December 15th, 2016

GTC Headquarters

Tucker, GA

Original: 12/5/2016 Revised:12/20/2016

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

- **2016 SERTP Economic Planning Studies – Final Results**
- **Ten (10) Year Regional Transmission Plan**
- **2017 Preliminary Modeling Input Assumptions**
- **SERTP Regional Transmission Analyses**
- **Miscellaneous Updates**
- **Upcoming 2017 SERTP Process**

SERTP

Economic Planning Studies

Economic Planning Study Process

- **Economic Planning Studies were chosen by the Regional Planning Stakeholder Group "RPSG" in March 2016**
- **These studies represent analyses of hypothetical scenarios requested by the stakeholders and do not represent an actual transmission need or commitment to build**
- **Scoping meeting held in May**
- **Preliminary results presented in September**

Economic Planning 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

Economic Planning Studies

- **SCPSA to Duke Progress West**
  - 300 MW (2019 Summer Peak)
- **SCPSA to GTC**
  - 300 MW (2019 Summer Peak)
- **Southern to FRCC**
  - 500 MW (2019 Summer Peak)
- **Southern to SCPSA/SCE&G**
  - 500 MW (2019 Summer Peak)
- **Southern/SCE&G to PJM Border**
  - 1500 MW (2021 Summer Peak)

Power Flow Cases Utilized

- **Study Years:**
  - 2019 and 2021
- **Load Flow Cases:**
  - 2016 Series Version 2 SERTP Models
  - Summer Peak (Additional load levels evaluated as appropriate)

Final Report Components

- **Thermal 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 (2019 and 2021).**

- **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.**

- **For economic study requests that involve multiple sources and/or sinks, separate analysis would be required to assess the transmission impacts of a singular source/sink included in these study requests.**

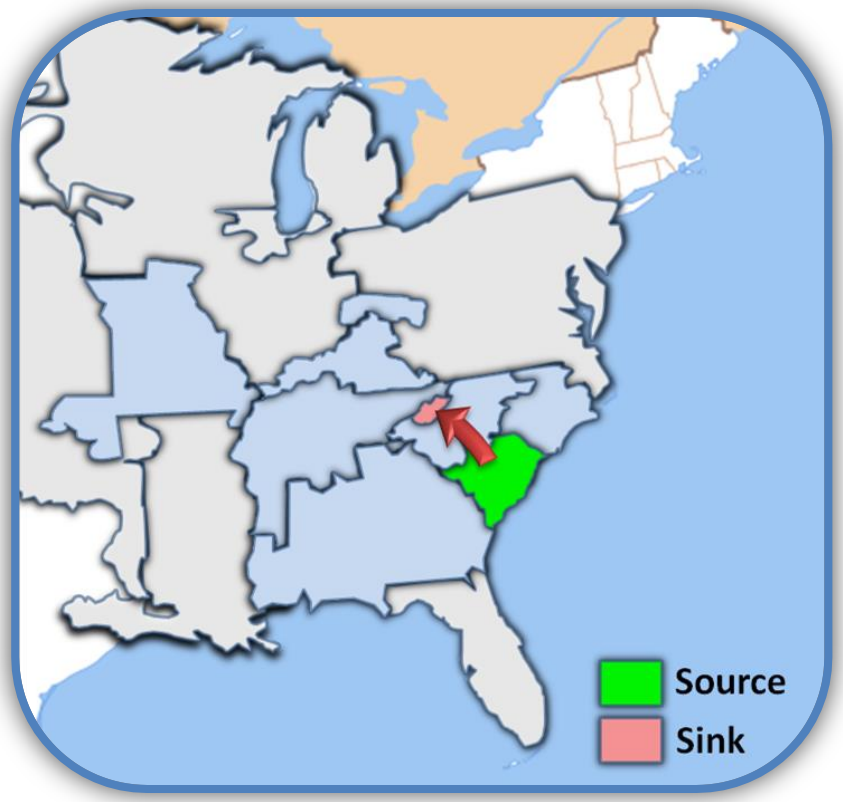
Economic Planning Studies

SCPSA to Duke Progress West 300 MW

SCPSA to Duke Progress West – 300 MW

Study Assumptions

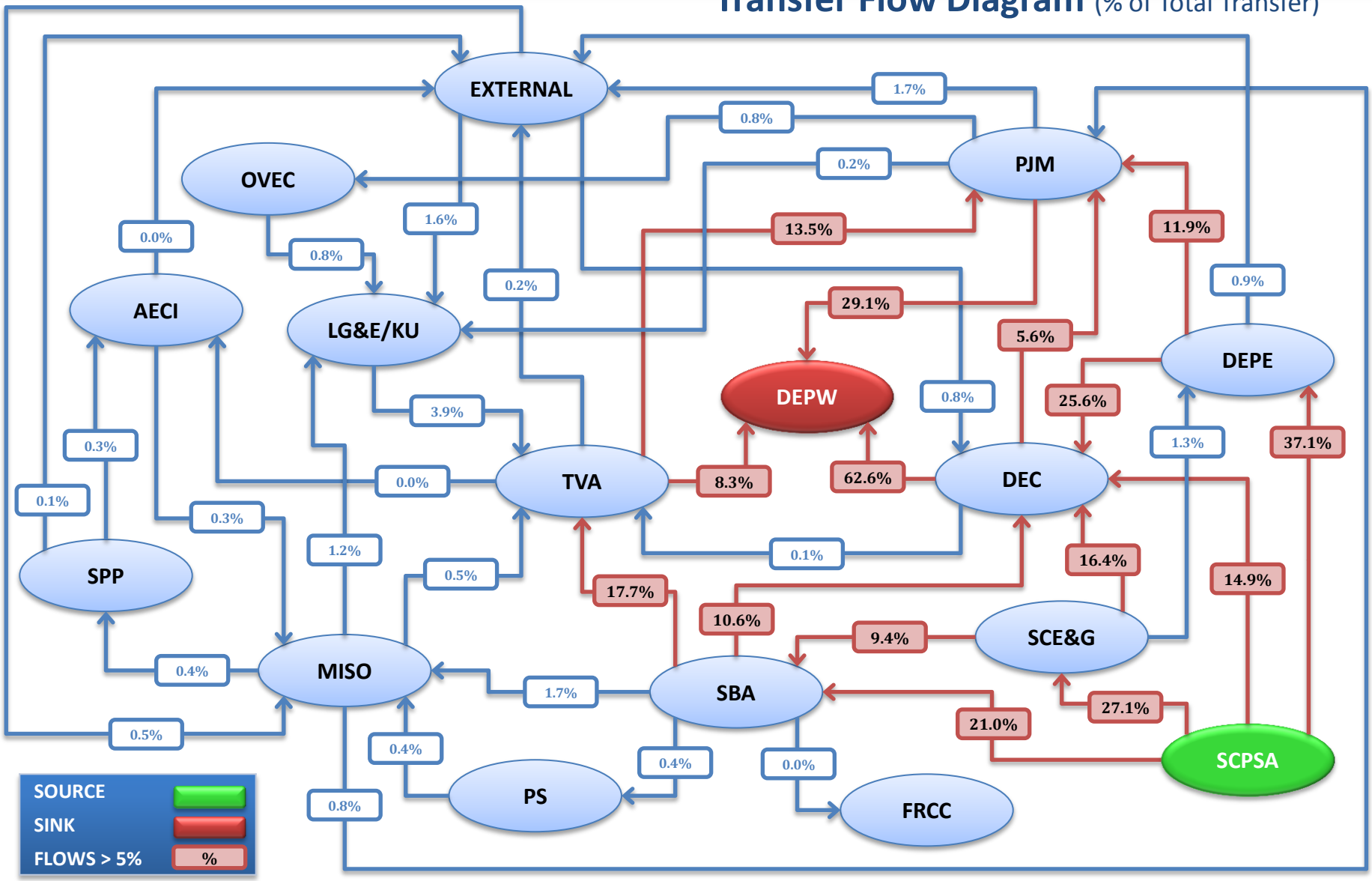
- **Transfer Type:** Load to Generation (2019 Summer Peak)
- **Source:** Uniform load scale within SCPSA
- **Sink:** Generation within Duke Progress West



Southeastern Regional
TRANSMISSION PLANNING

SCPSA to Duke Progress West – 300 MW

Transfer Flow Diagram (% of Total Transfer)



SCPSA to Duke Progress West – 300 MW

Transmission System Impacts – *SERTP*

- **Potential Transmission Solutions Identified:**
  - One (1) 230 kV T.L.
  - One (1) 230 kV Substation

SBA Total ($2016) **= $200,000,000**

SCPSA to Duke Progress West – 300 MW

Transmission System Impacts

- **No constraints were identified in the following SERTP Balancing Authority Areas:**
  - AECI
  - DEC
  - DEPE
  - LG&E/KU
  - OVEC
  - PS
  - SBA
  - TVA

SCPSA to Duke Progress West – 300 MW

Significant Constraints – *DEPW*

Limiting Element (1)	Voltage (P.U.)	
	Without Request	With Request
PISGAH	≥0.95	0.8643
NEWSALEM SU	≥0.95	0.8635
BLACK MOUNT	≥0.95	0.8633
S WANNANOA	≥0.95	0.8623
E8-STH CLYD	≥0.95	0.8562
LAKE JUNALU	≥0.95	0.8511
WAYNSVILE 2	≥0.95	0.8501
WAYNSVILE 1	≥0.95	0.8495
HAZELWOOD	≥0.95	0.8495
MAGGIE V SU	≥0.95	0.8474

(1) Multiple buses with similar voltage results were identified as being negatively impacted by the transfer in addition to those shown above. The posted study report contains a complete listing of constraints.

SCPSA to Duke Progress West – 300 MW

Projects Identified – *DEPW*

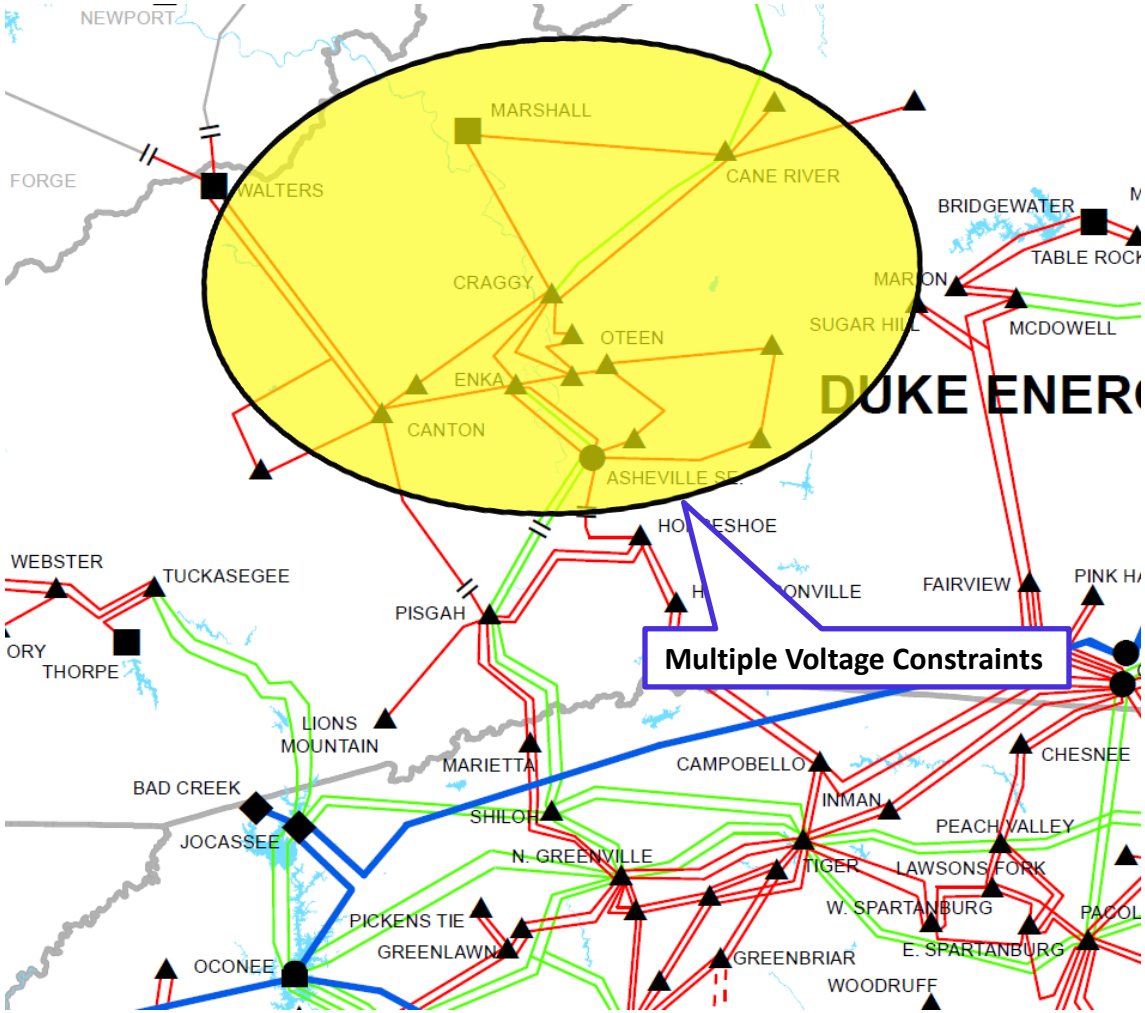
Item	Potential Solution	Planning Level Cost Estimate
P1	**New Asheville 230 kV T.L. and Substation** • Construct approximately 50 miles of new 230 kV transmission line from Asheville to a new 230 kV switching station in the Spartanburg County, SC area with 6-1590 ACSR	**$200,000,000**
SBA TOTAL ($2016)		**$200,000,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

Southeastern Regional TRANSMISSION PLANNING

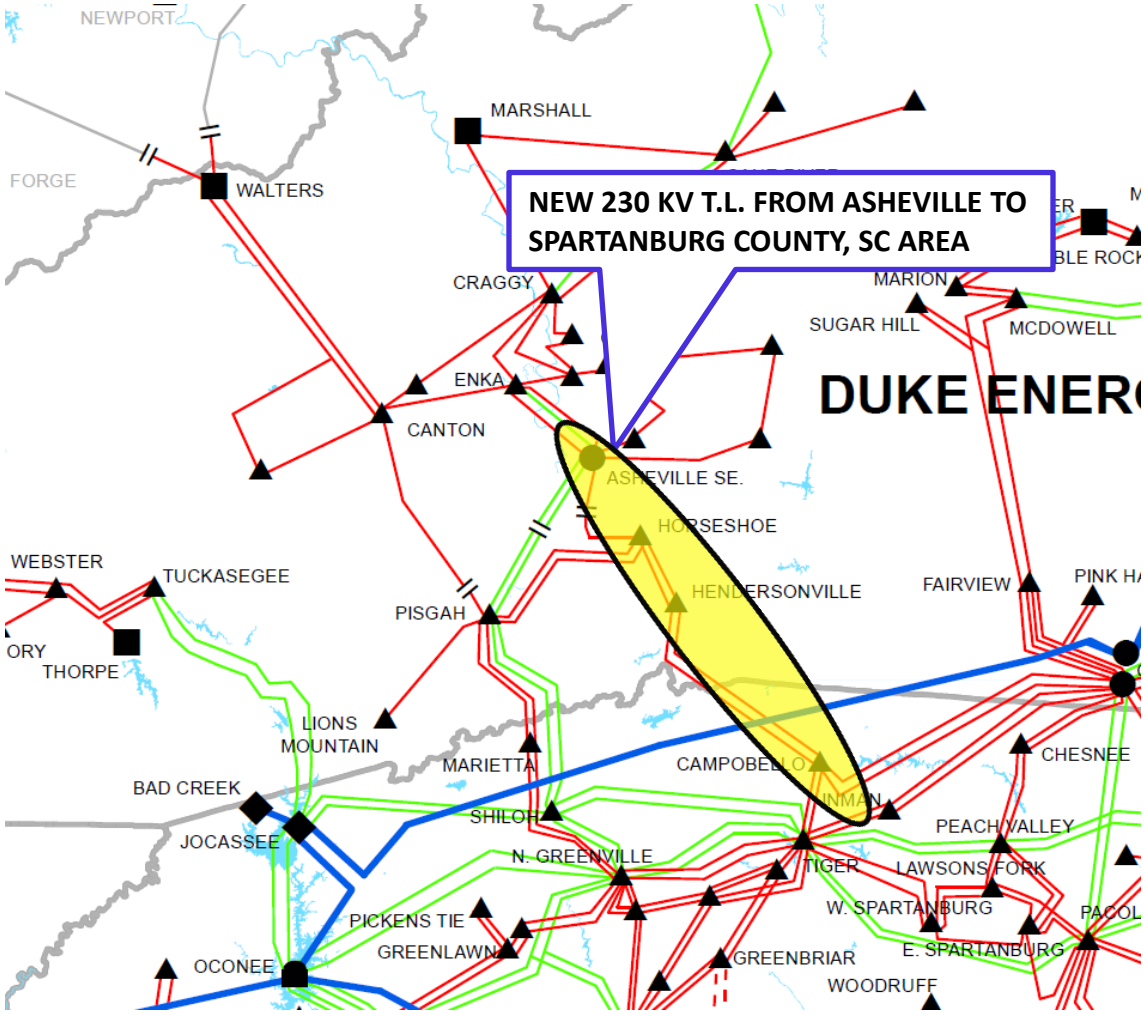
SCPSA to Duke Progress West – 300 MW

Significant Constraints – *DEPW*



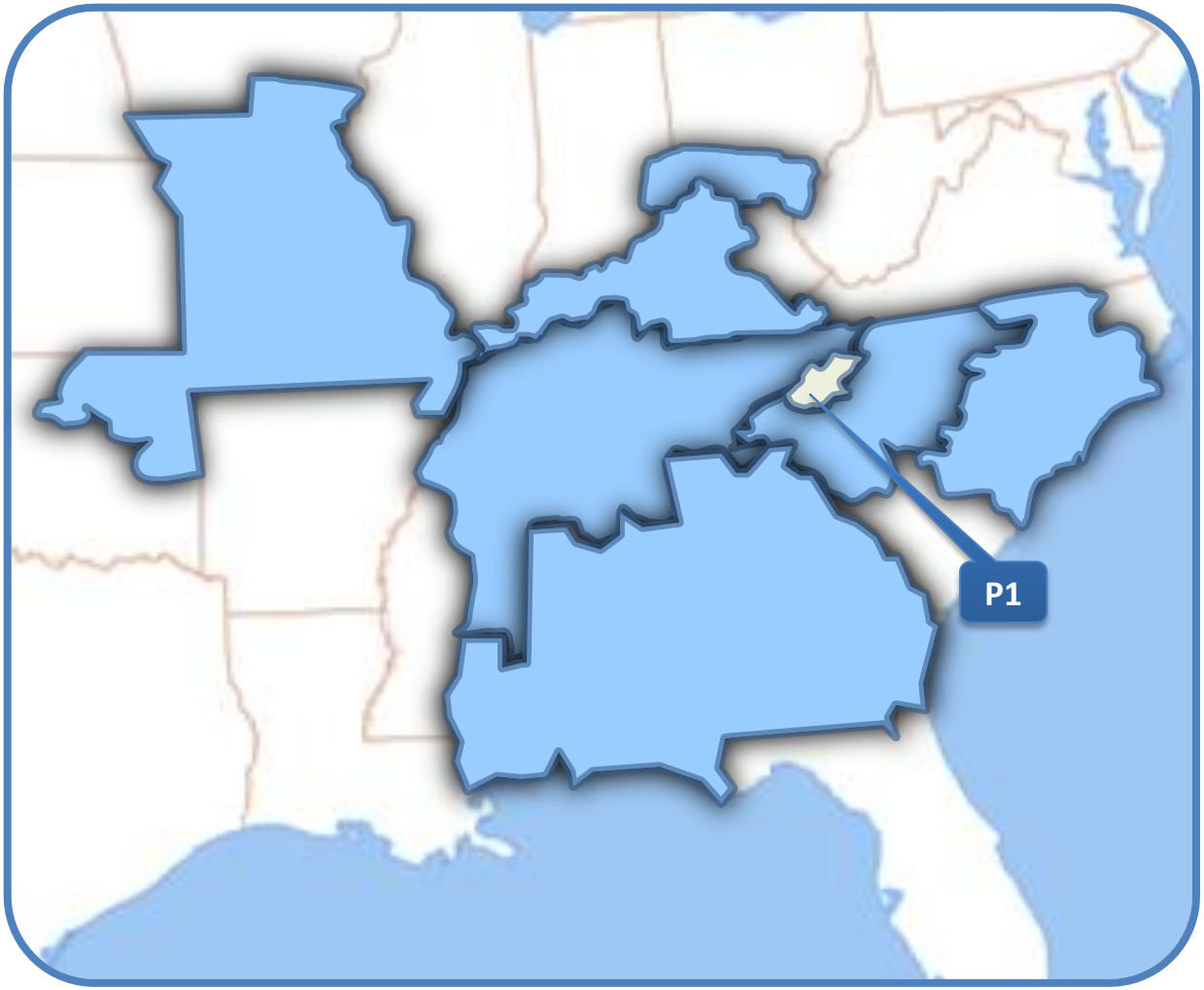
SCPSA to Duke Progress West – 300 MW

Potential Solutions – *DEPW*



SCPSA to Duke Progress West – 300 MW

Project Locations – *DEPW*



Economic Planning Studies

SCPSA to GTC

300 MW

SCPSA to GTC – 300 MW

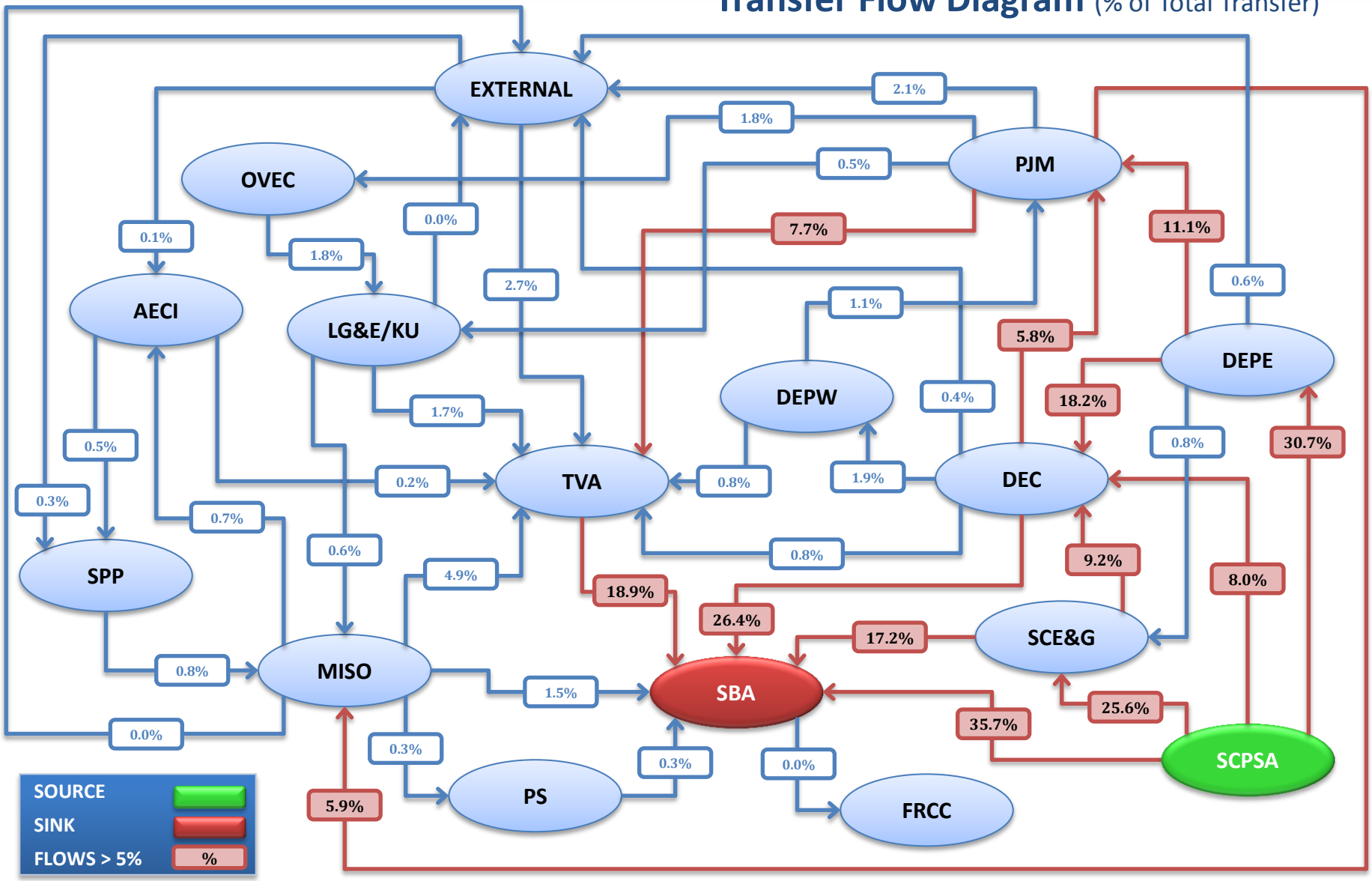
Study Assumptions

- **Transfer Type:** Load to Generation (2019 Summer Peak)
- **Source:** Uniform load scale within SCPSA
- **Sink:** Generation within GTC

Southeastern Regional
TRANSMISSION PLANNING

SCPSA to GTC – 300 MW

Transfer Flow Diagram (% of Total Transfer)



SCPSA to GTC – 300 MW

Transmission System Impacts – *SERTP*

- **Potential Transmission Solutions Identified:**
  - One (1) 115 kV Breaker Replacement

SERTP TOTAL ($2016) **= $25,000**

SCPSA to GTC – 300 MW

Transmission System Impacts

- **No constraints were identified in the following SERTP Balancing Authority Areas:**
  - AECI
  - DEC
  - DEPE
  - DEPW
  - LG&E/KU
  - OVEC
  - PS
  - TVA

SCPSA to GTC – 300 MW

Significant Constraints – *SBA*

Limiting Element	Rating (MVA)	Thermal Loadings (%)	
		Without Request	With Request
Airline – Bio 115 kV T.L.	**249**	**98.4**	**101.0**

SCPSA to GTC – 300 MW

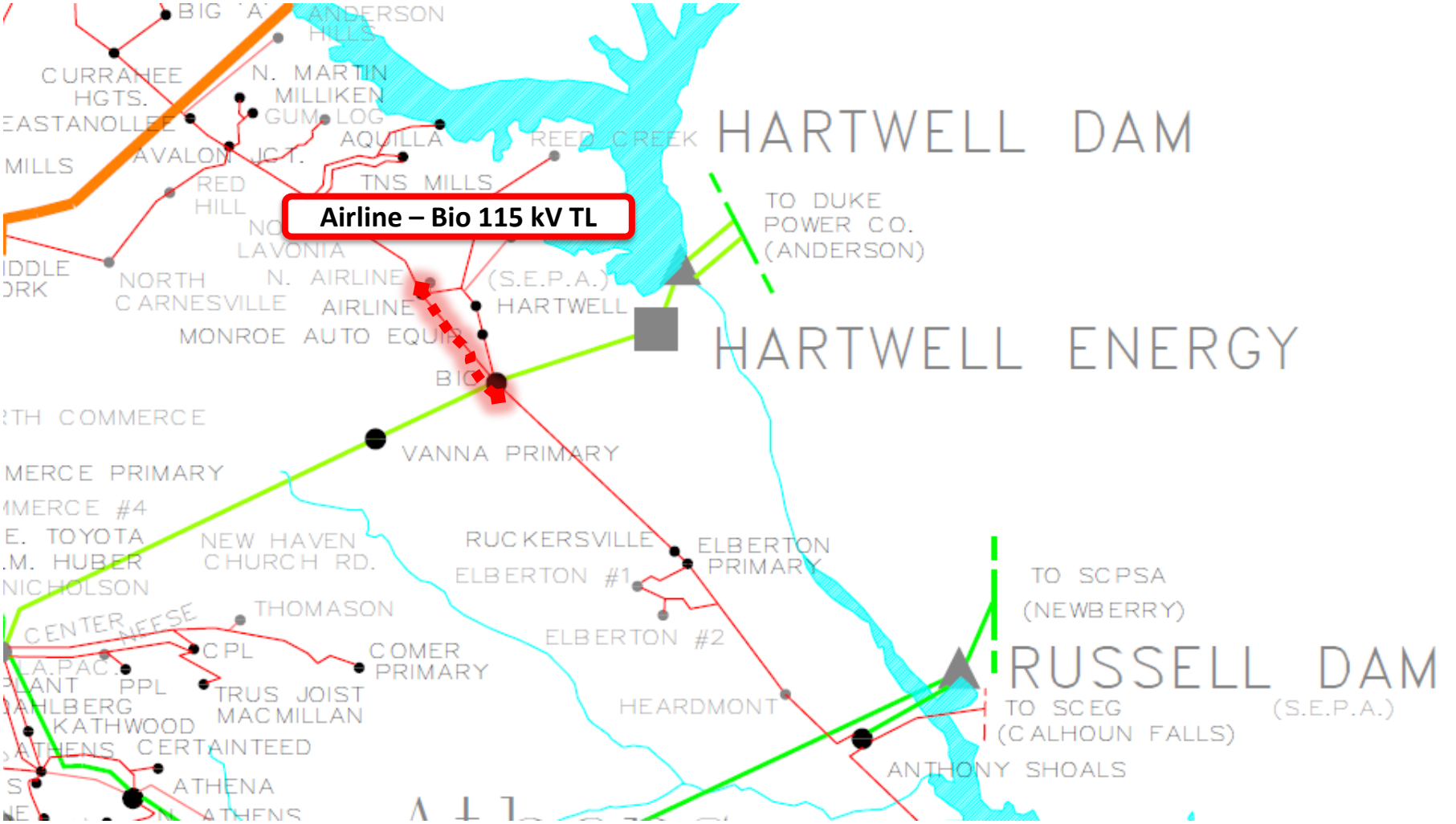
Projects Identified – *SBA*

Item	Potential Solution	Planning Level Cost Estimate
P1	**Bio Breaker Replacement** • Upgrade 1200 A 115 kV breaker at Bio Substation to 2000 A breaker	Project Cost: $300,000 **Advancement Cost:** **$25,000**
SBA TOTAL ($2016)		**$25,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

SCPSA to GTC – 300 MW

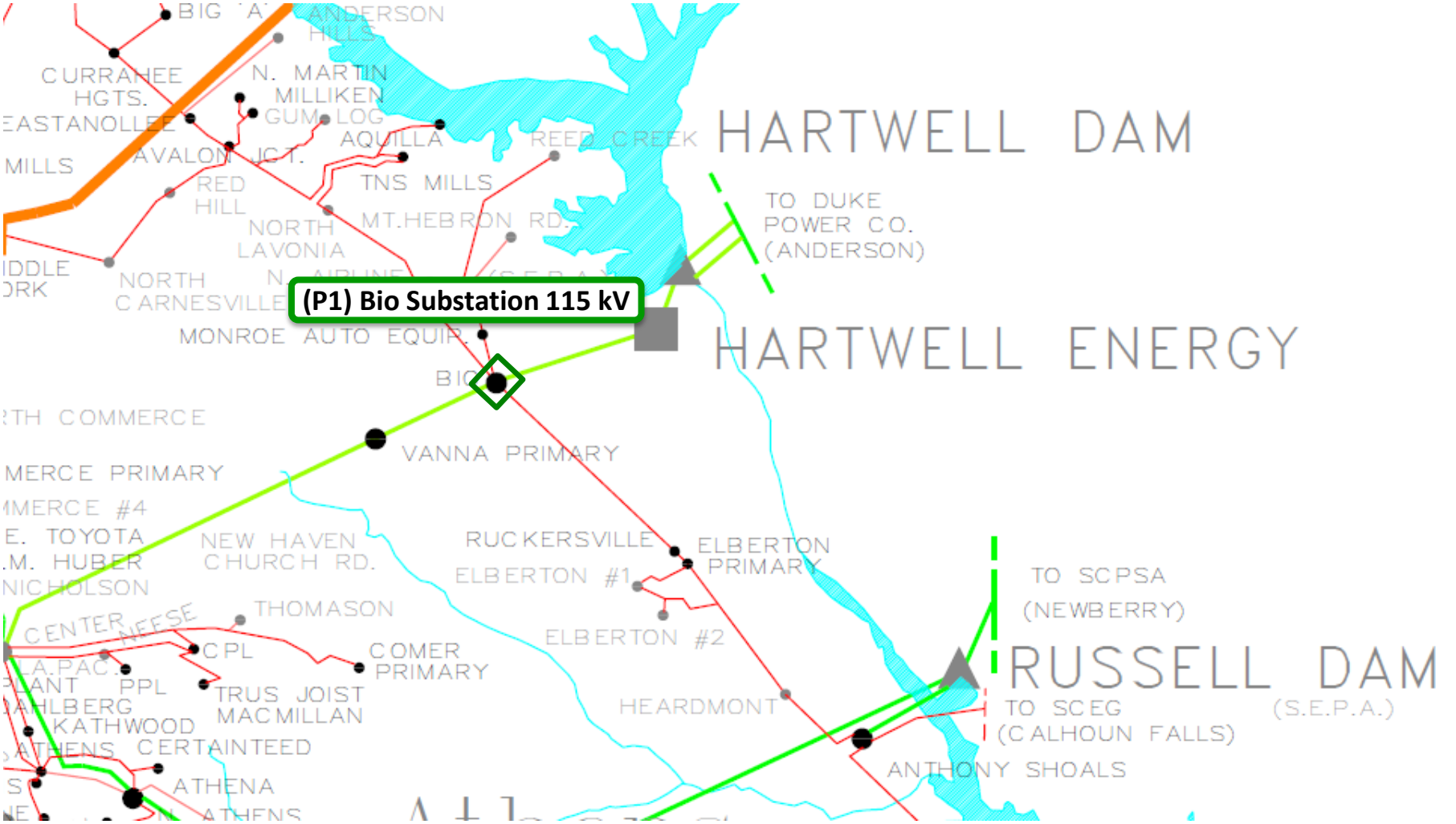
Significant Constraints – *SBA*



Southeastern Regional TRANSMISSION PLANNING

SCPSA to GTC – 300 MW

Significant Constraints – *SBA*



SCPSA to GTC – 300 MW

Project Locations – *SBA*

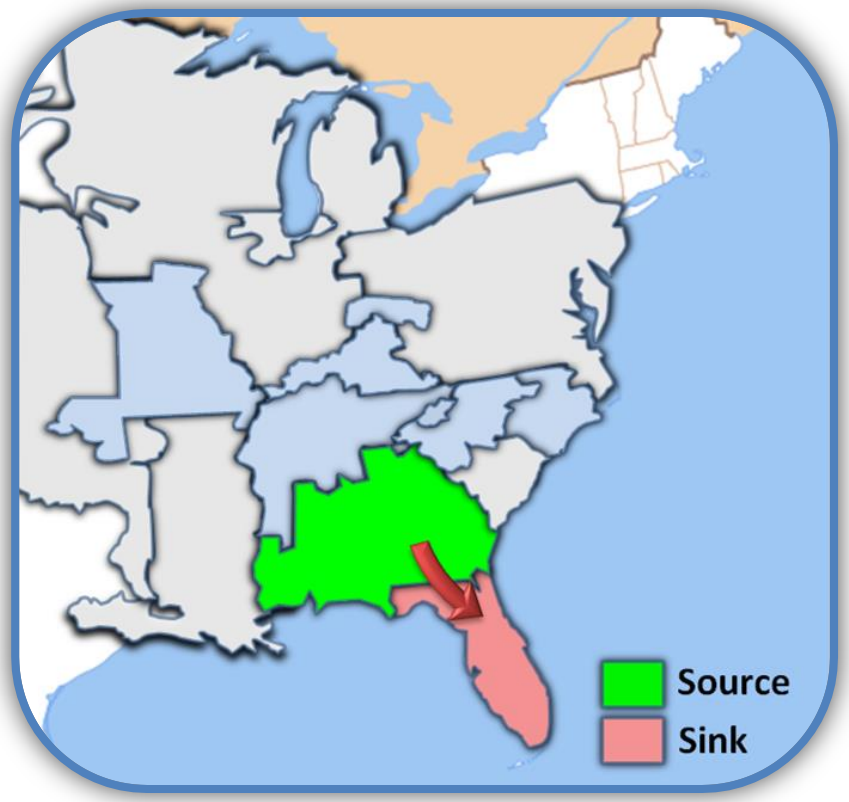
Economic Planning Studies

Southern to FRCC
500 MW

Southern to FRCC – 500 MW

Study Assumptions

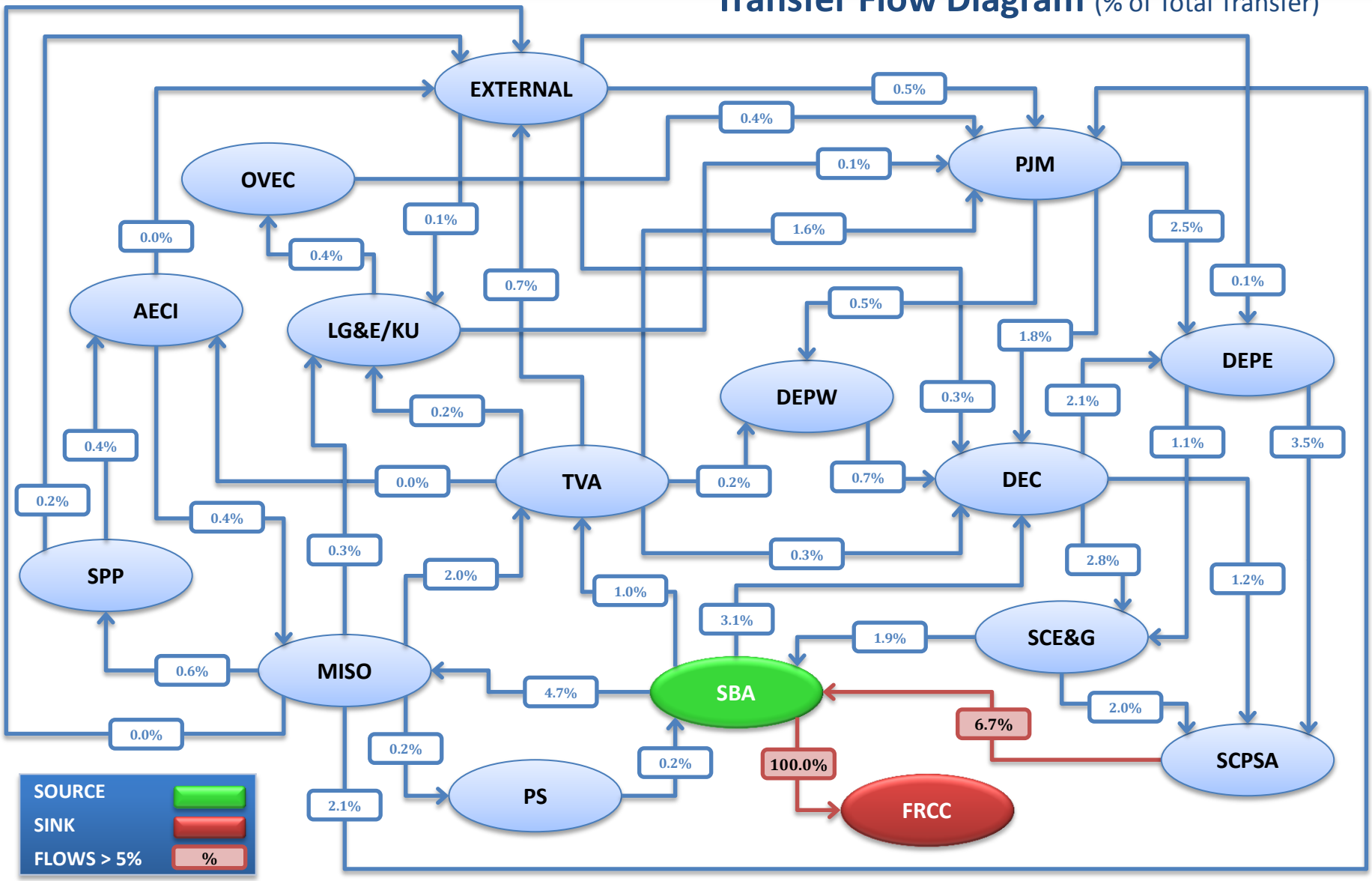
- **Transfer Type:** Generation to Load (2019 Summer Peak)
- **Source:** Generation within Southern
- **Sink:** Load scale within FRCC



Southeastern Regional
TRANSMISSION PLANNING

Southern to FRCC – 500 MW

Transfer Flow Diagram (% of Total Transfer)



Southern to FRCC – 500 MW

Transmission System Impacts – *SERTP*

- **Potential Transmission Solutions Identified:**
  - One (1) 115 kV T.L. Upgrade

SERTP TOTAL ($2016) **= $750,000**

Southern to FRCC – 500 MW

Transmission System Impacts

- **No constraints were identified in the following SERTP Balancing Authority Areas:**
  - AECI
  - DEC
  - DEPE
  - DEPW
  - LG&E/KU
  - OVEC
  - PS
  - TVA

Southern to FRCC – 500 MW

Significant Constraints – *SBA*

Limiting Element	Rating (MVA)	Thermal Loadings (%)	
		Without Request	With Request
Sylvania – King Mfg 115 kV T.L.	63	93.7	100.4

Southern to FRCC – 500 MW

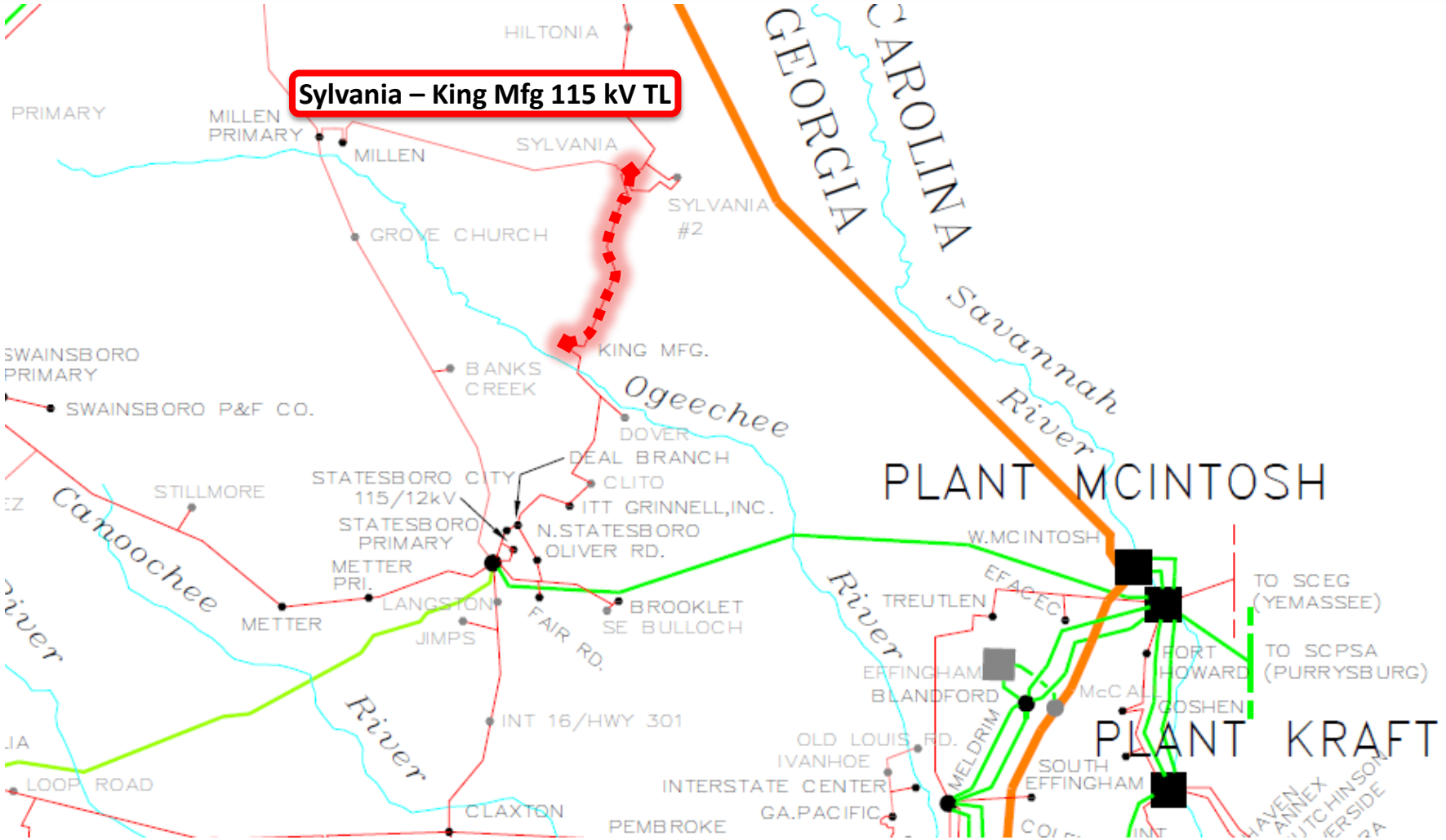
Projects Identified – *SBA*

Item	Potential Solution	Planning Level Cost Estimate
P1	**Deal Branch – Sylvania 115 kV T.L.** • Upgrade 16.4 miles of the Sylvania to Dover Tap section of the Deal Branch – Sylvania 115 kV transmission line to 100°C operation	Project Cost: $9,500,000 **Advancement Cost:** **$750,000**
SBA TOTAL ($2016)		**$750,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

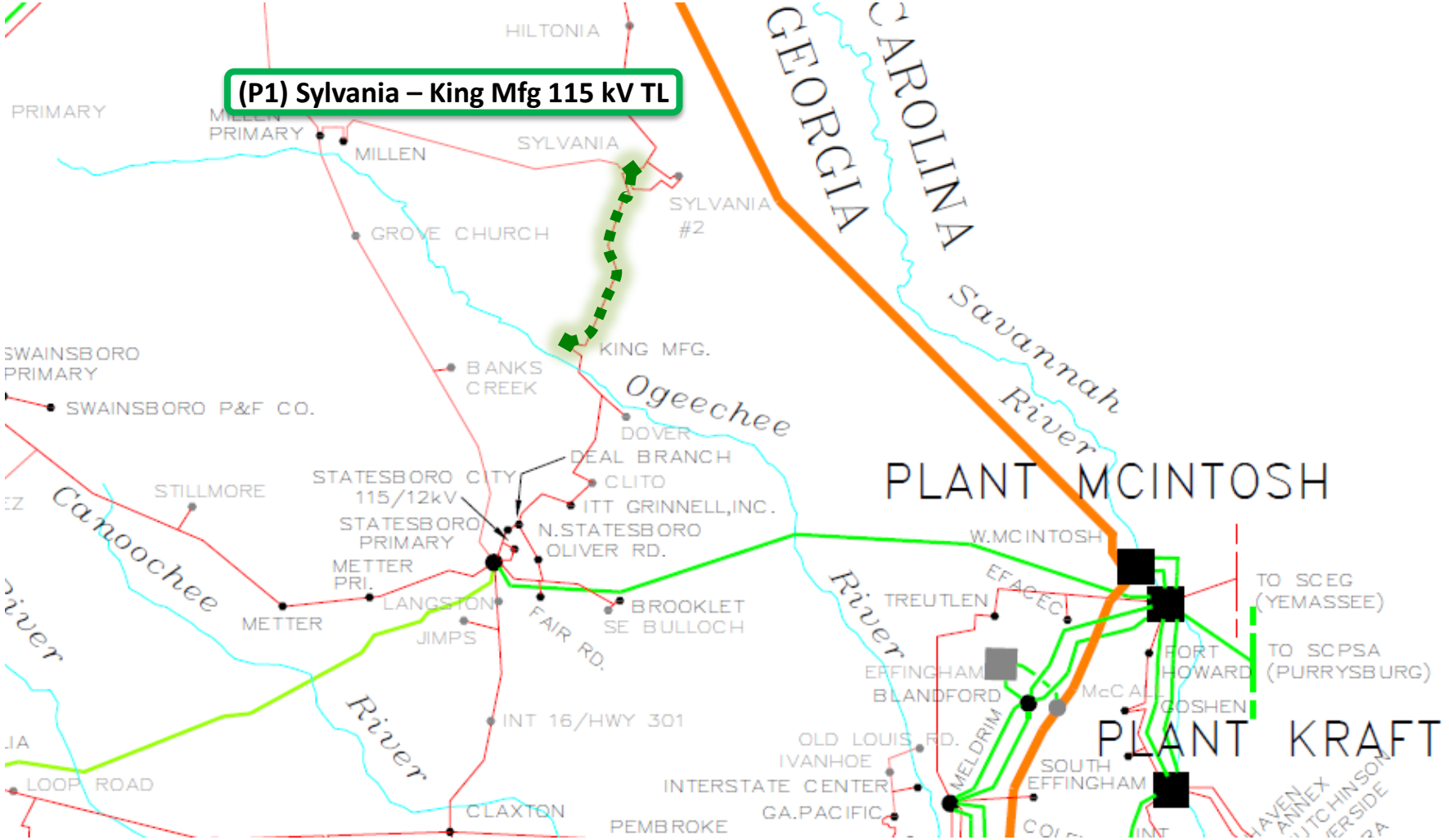
Southern to FRCC – 500 MW

Significant Constraints – *SBA*



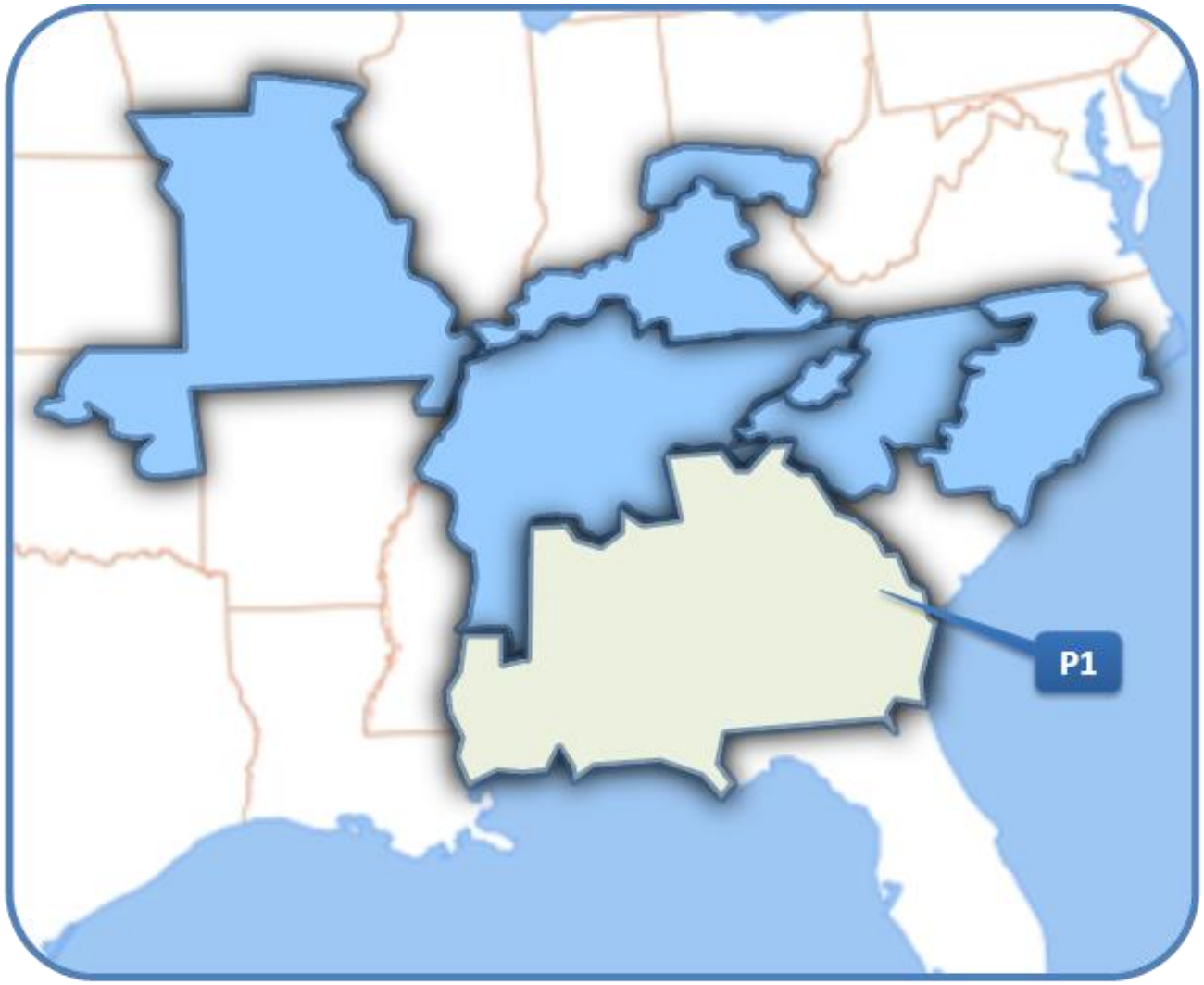
Southern to FRCC – 500 MW

Potential Solutions – *SBA*



Southern to FRCC – 500 MW

Project Locations – *SBA*



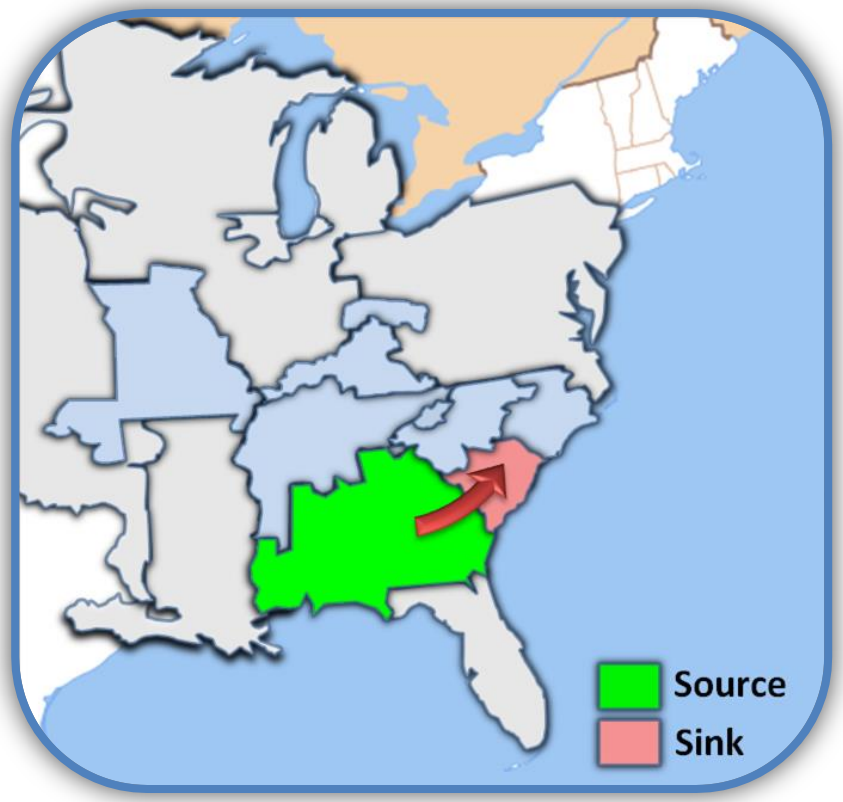
Economic Planning Studies

Southern to SCPSA/SCE&G
500 MW

Southern to SCPSA/SCE&G – 500 MW

Study Assumptions

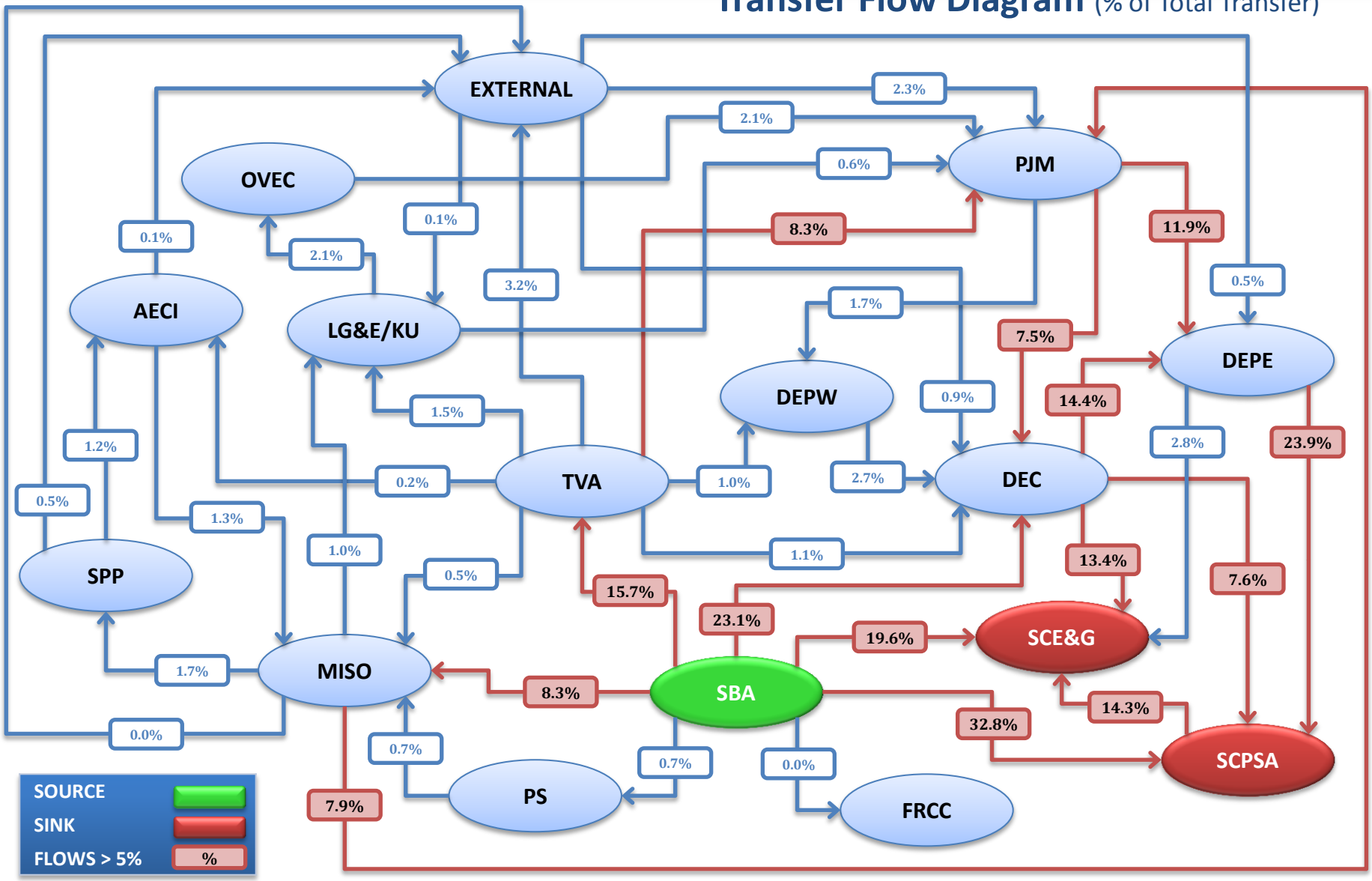
- **Transfer Type:** Generation to Generation (2019 Summer Peak)
- **Source:** Generation within Southern
- **Sink:** Generation within SCPSA/SCE&G



Southeastern Regional TRANSMISSION PLANNING

Southern to SCPSA/SCE&G – 500 MW

Transfer Flow Diagram (% of Total Transfer)



Southern to SCPSA/SCE&G – 500 MW

Transmission System Impacts – *SERTP*

- **Potential Transmission Solutions Identified:**
  - None Identified

SERTP TOTAL ($2016) **= $0**

Southern to SCPSA/SCE&G – 500 MW

Transmission System Impacts

- **No constraints were identified in the following SERTP Balancing Authority Areas:**
  - AECI
  - DEC
  - DEPE
  - DEPW
  - LG&E/KU
  - OVEC
  - PS
  - SBA
  - TVA

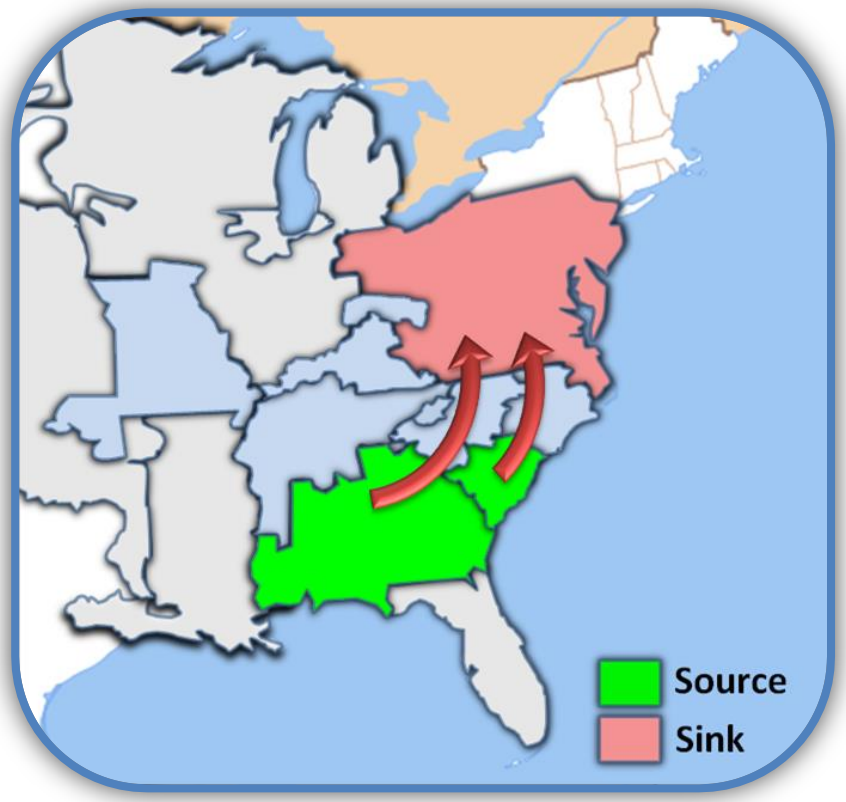
Economic Planning Studies

Southern/SCE&G to PJM 1500 MW

Southern/SCE&G to PJM – 1500 MW

Study Assumptions

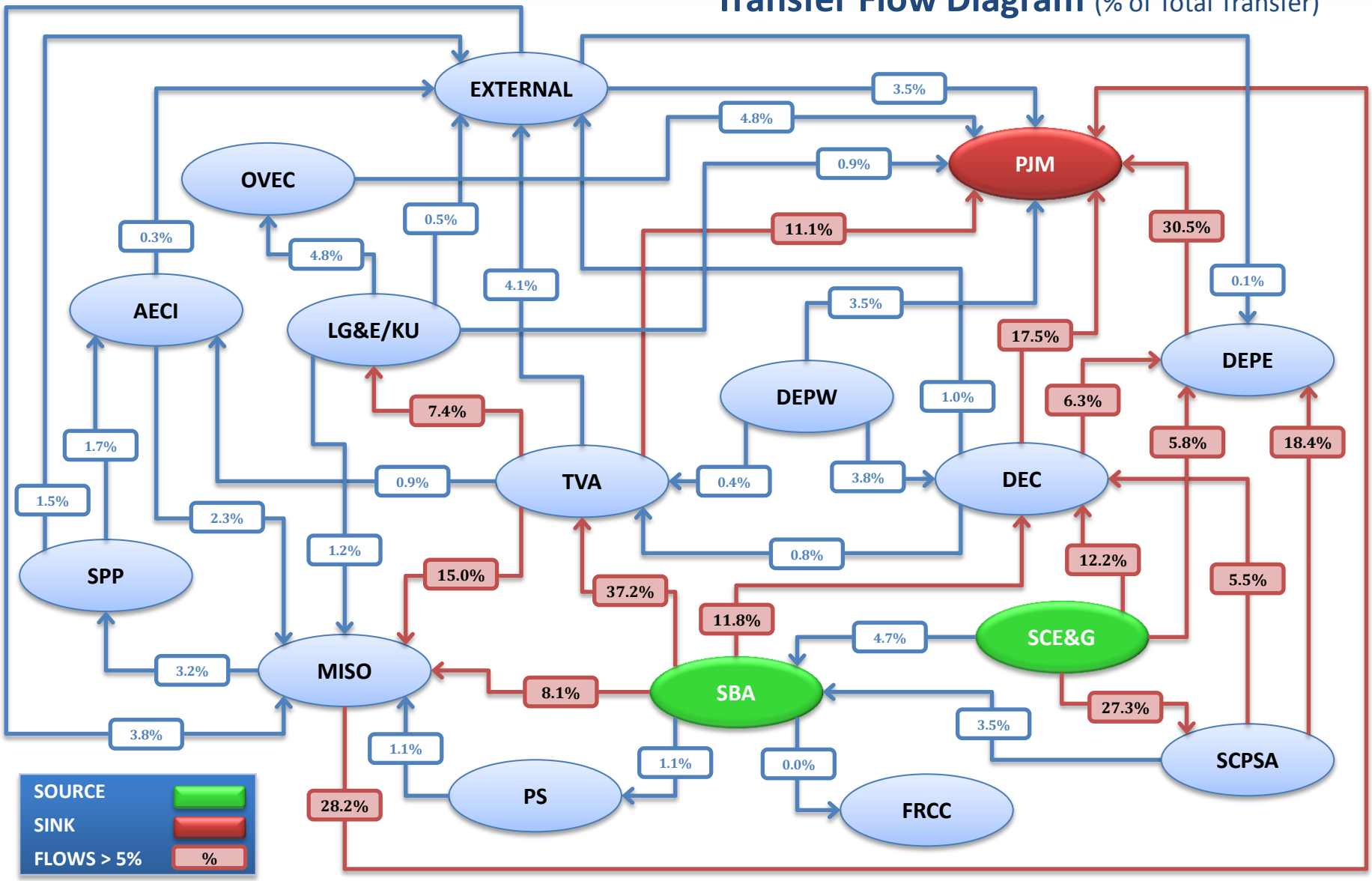
- **Transfer Type:** Generation/Load to Load (2021 Summer Peak)
- **Source:** Generation within Southern/Uniform load scale within SCE&G
- **Sink:** Load scale within PJM



Southeastern Regional TRANSMISSION PLANNING

Southern/SCE&G to PJM – 1500 MW

Transfer Flow Diagram (% of Total Transfer)



Southern/SCE&G to PJM – 1500 MW

Transmission System Impacts – *SERTP*

- **Potential Transmission Solutions Identified:**
  - Two (2) 115 kV T.L. Reconductor
  - One (1) 115 kV T.L. Rebuild
  - One (1) 161 kV T.L. Reconductor

SERTP TOTAL ($2016) **= $34,000,000**

Southern/SCE&G to PJM – 1500 MW

Transmission System Impacts

- **No constraints were identified in the following SERTP Balancing Authority Areas:**
  - AECI
  - DEC
  - DEPW
  - LG&E/KU
  - OVEC
  - PS
  - SBA

Southern/SCE&G to PJM – 1500 MW

Significant Constraints – *DEPE*

Limiting Element	Rating (MVA)	Thermal Loadings (%)	
		Without Request	With Request
Marion – Dillon Tap 115 kV T.L.	97	96.0	116.2
Shaw AFB – Eastover 115 kV T.L.	123	94.1	107.9
Camden – Ind 115 kV T.L.	107	< 90.0	100.7

Southern/SCE&G to PJM – 1500 MW

Projects Identified – *DEPE*

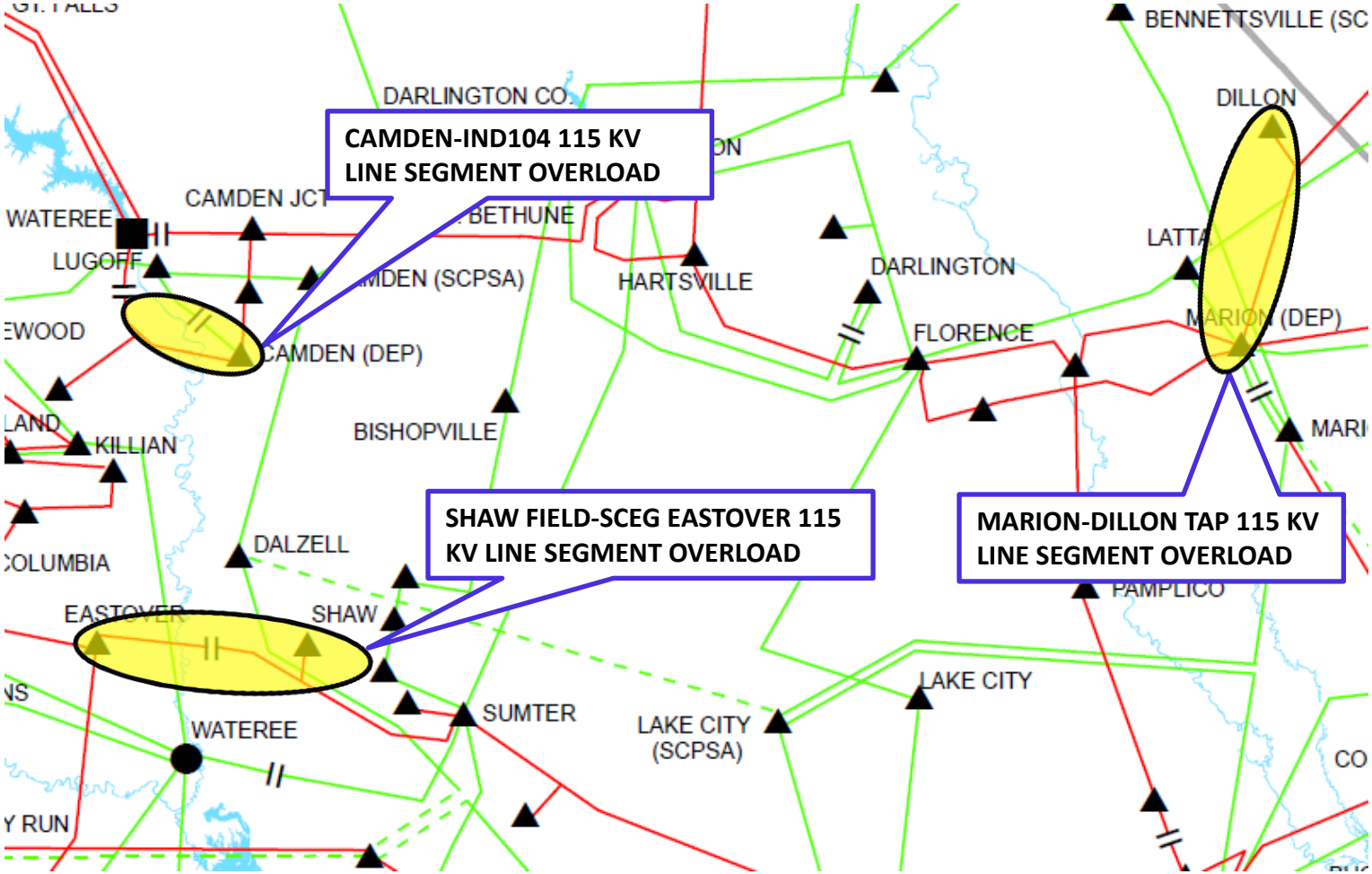
Item	Potential Solution	Planning Level Cost Estimate
P1	**Weatherspoon Plant – Marion 115 kV T.L.** • Rebuild approximately 14.6 miles of the Marion to Dillon segment of the Weatherspoon Plant – Marion 115 kV TL with 3-795 ACSR.	**$15,000,000**
P2	**Sumter – (SCE&G) Eastover 115 kV T.L.** • Reconductor approximately 7.4 miles of the Eastover to Shaw Field Tap segment of the Sumter – Eastover 115 kV TL with 3-795 ACSR.	**$10,000,000** (2)
P3	**Camden – Ind104 115 kV T.L.** • Reconductor approximately 0.73 miles of 115 kV transmission line with 3-795 ACSR	**$1,000,000**
SBA TOTAL ($2016)		**$26,000,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

(2) This transmission solution was proposed to alleviate the loading of a tie-line constraint between DEPE and a non-participating transmission owner. Therefore, the cost associated with the transmission solution is only for the portion of solution that is located within the participating transmission owners' territory. This solution effectively alleviates the identified constraint(s), however, the impacts to adjacent transmission systems that are external to the participating transmission owners were not evaluated.

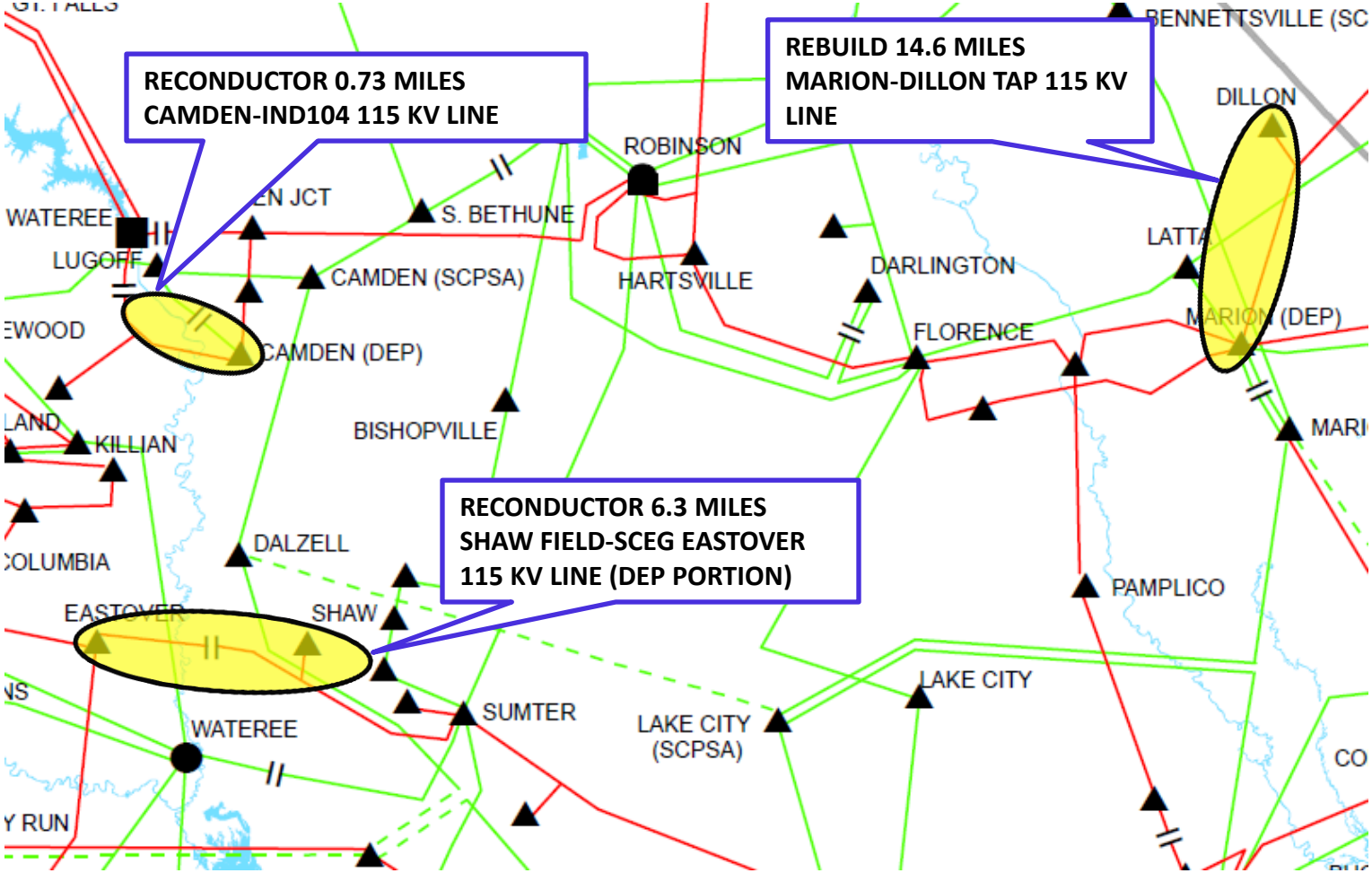
Southern/SCE&G to PJM – 1500 MW

Significant Constraints – *DEPE*



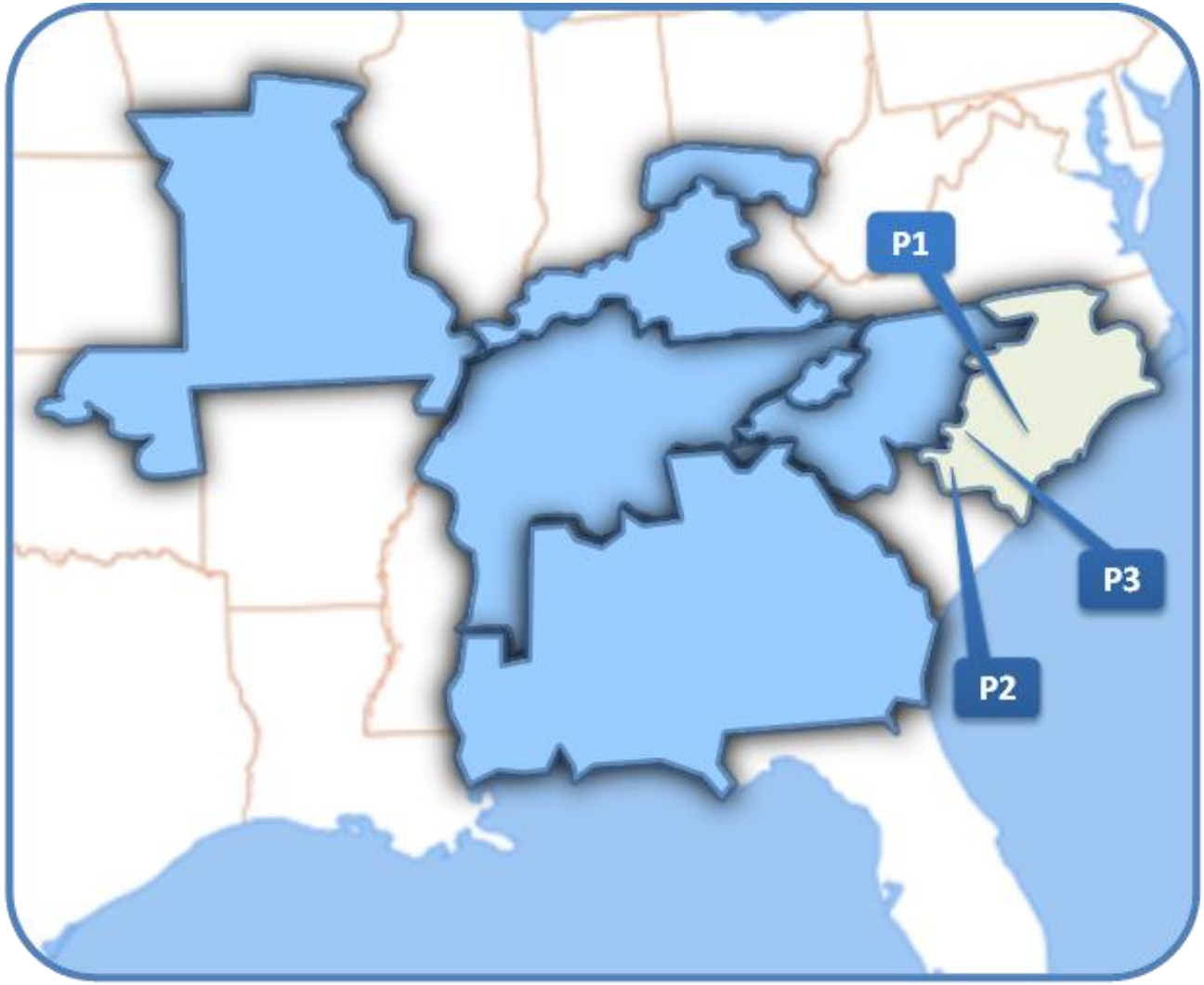
Southern/SCE&G to PJM – 1500 MW

Potential Solutions – *DEPE*



Southern/SCE&G to PJM – 1500 MW

Project Locations – *DEPE*



Southern/SCE&G to PJM – 1500 MW

Significant Constraints – *TVA*

Limiting Element	Rating (MVA)	Thermal Loadings (%)	
		Without Request	With Request
East Knox – Dumplin Valley 161 kV T.L.	363.6	99.0	110.1

Southern/SCE&G to PJM – 1500 MW

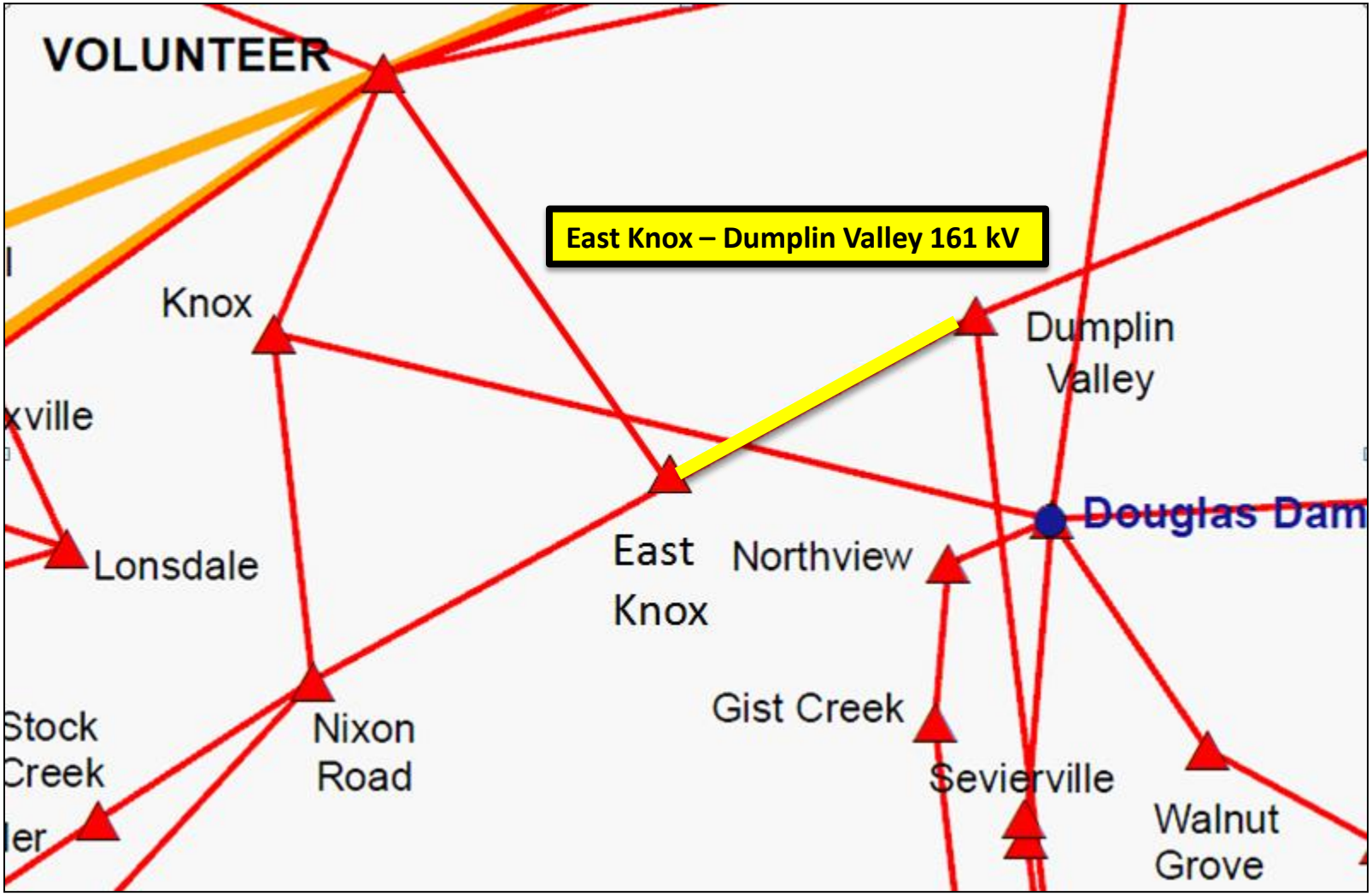
Projects Identified – *TVA*

Item	Potential Solution	Planning Level Cost Estimate
P1	**East Knox – Dumplin Valley 161 kV T.L.** • Reconductor approximately 9.2 miles of the Dumplin Valley – East Knox 161 kV transmission line using double bundled 954 ACSR conductor.	**$8,000,000**
TVA TOTAL ($2016)		**$8,000,000** (1)

(1) Total planning level cost estimate does not include the cost of projects that are included in SERTP Sponsors' expansion plans and are scheduled to be completed by June 1st of the study year. The studied transfer depends on these projects being in-service, and the cost to support the study transfer could be greater than the total shown above if any of these projects are delayed or cancelled.

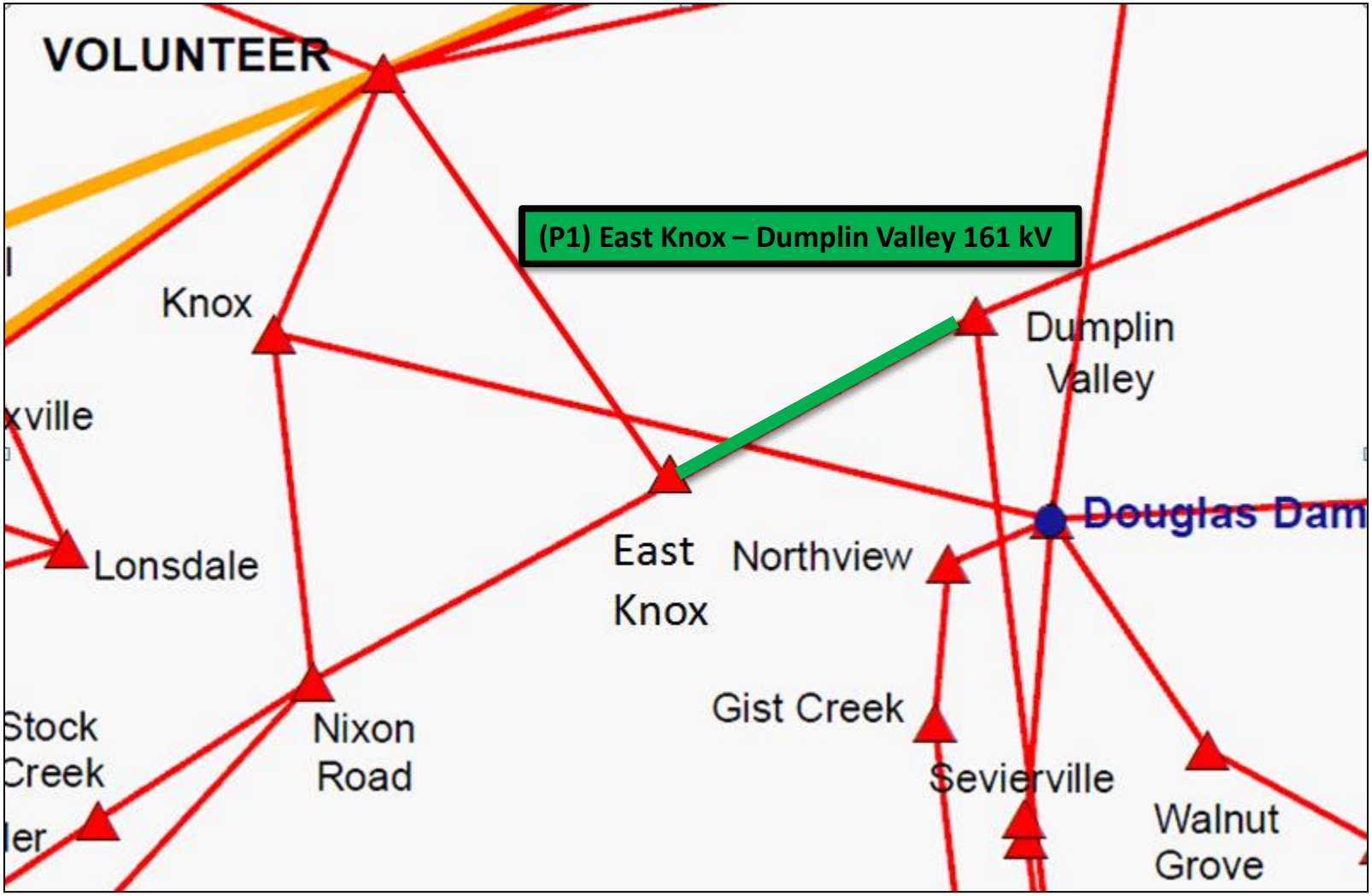
Southern/SCE&G to PJM – 1500 MW

Significant Constraints – *TVA*



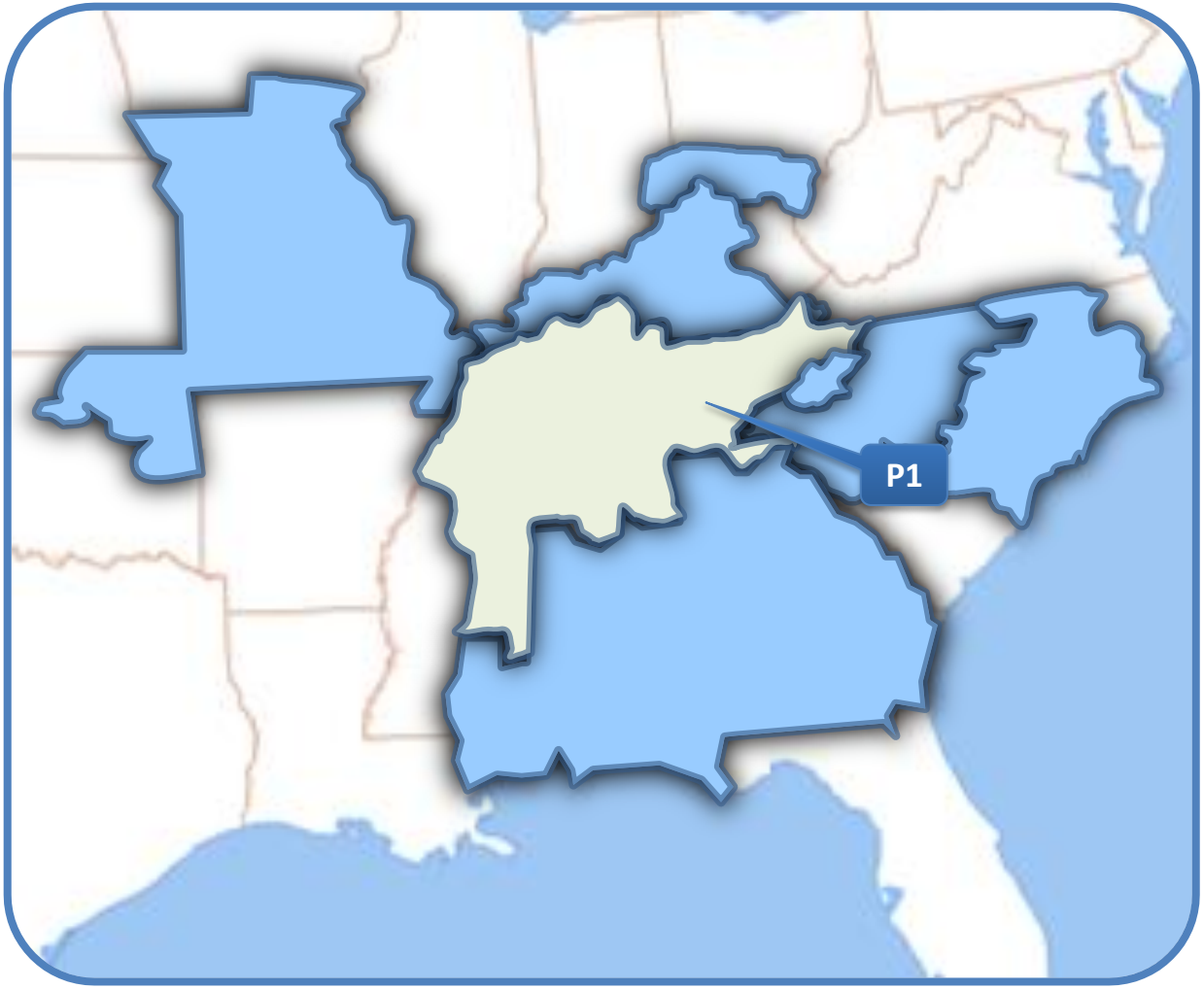
Southern/SCE&G to PJM – 1500 MW

Potential Solutions – *TVA*



Southern/SCE&G to PJM – 1500 MW

Project Locations – *TVA*



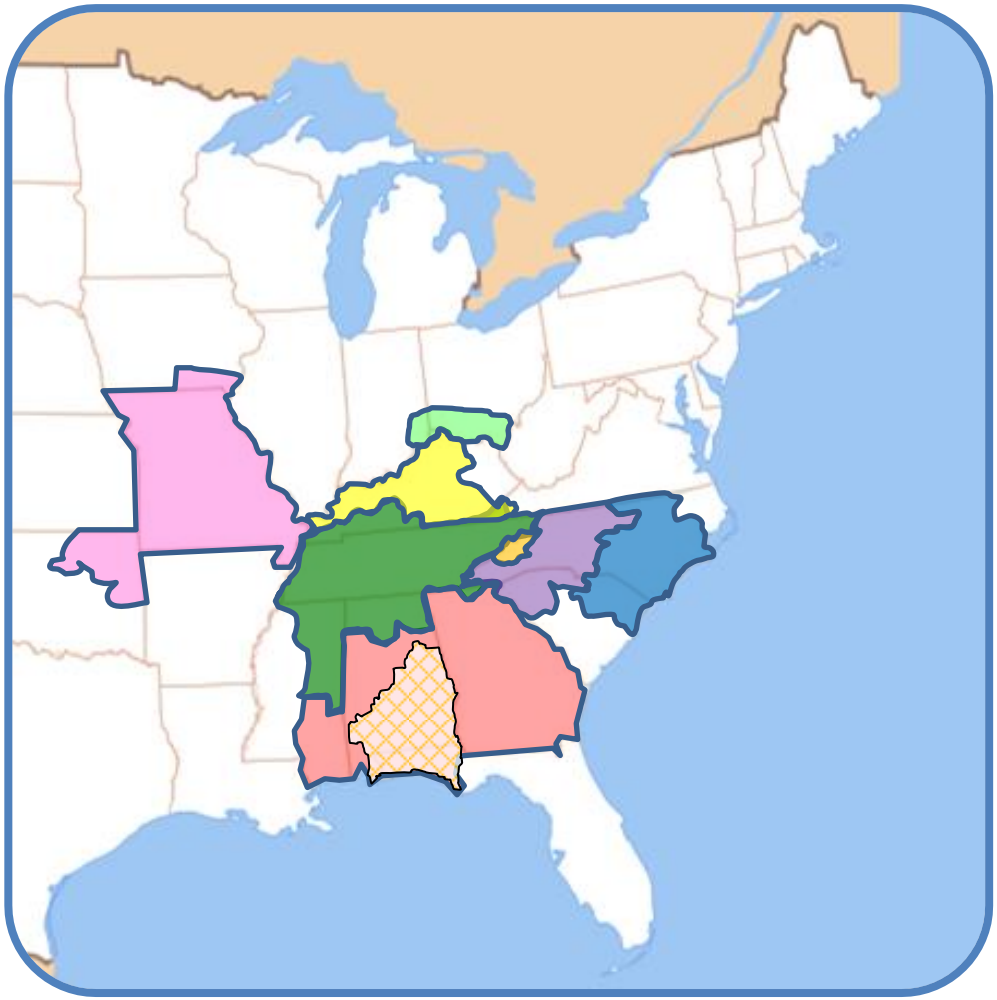
SERTP

Regional Modeling Assumptions

SERTP

Regional Transmission Plan

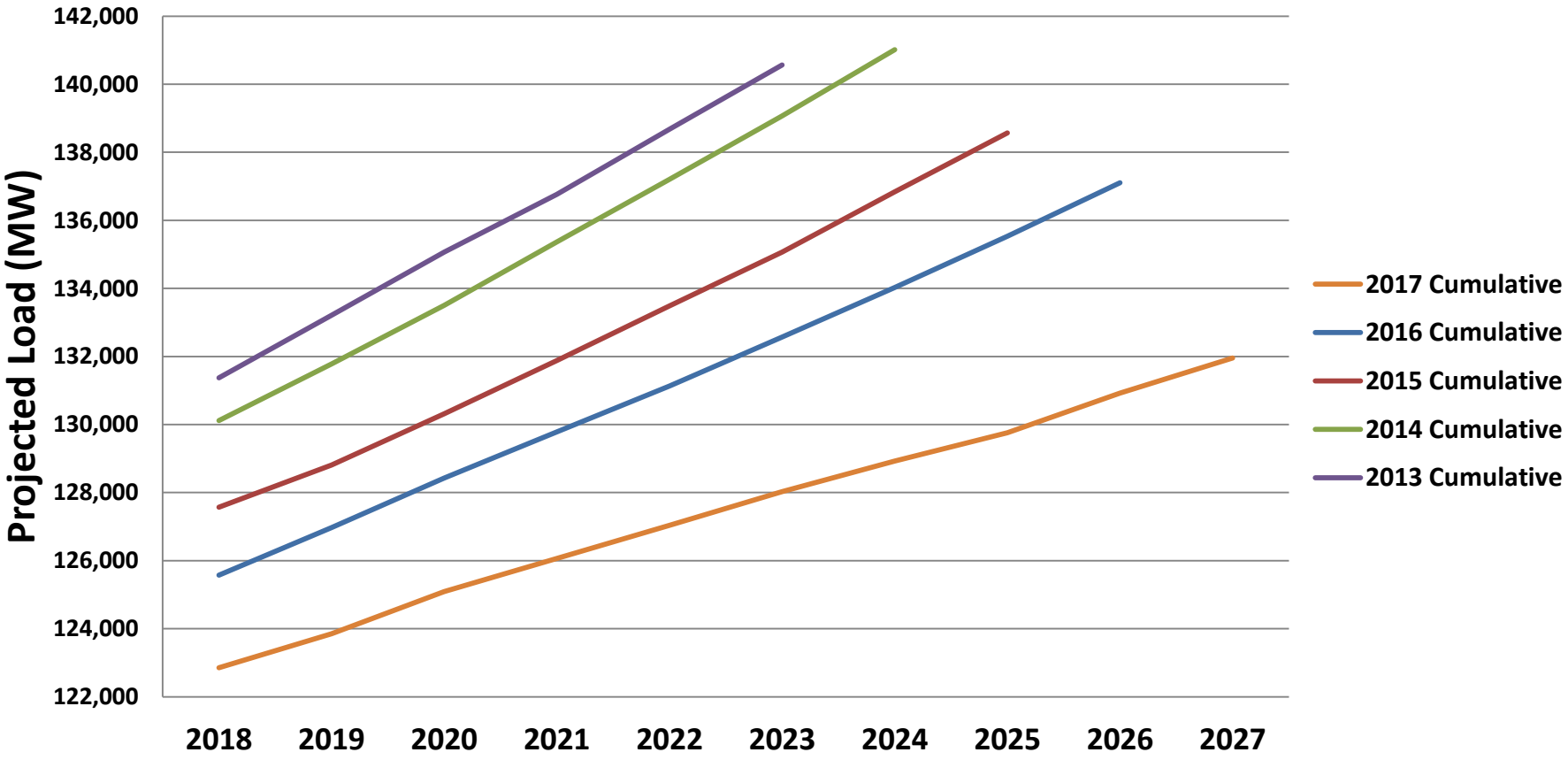
SERTP Regional Modeling Assumptions



Balancing Authority Areas

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

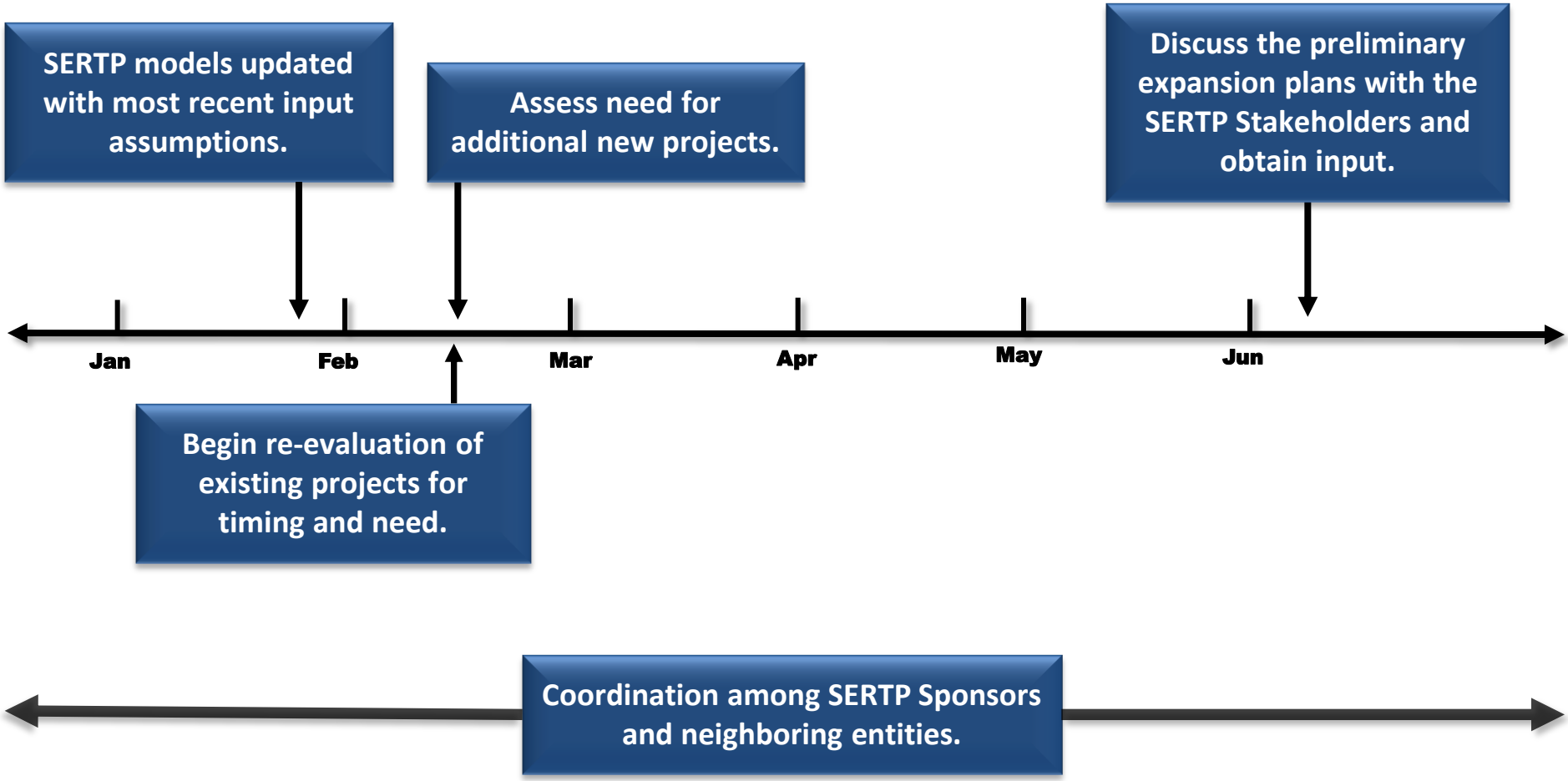
SERTP Cumulative Summer Peak Load Forecast



Southeastern Regional TRANSMISSION PLANNING

2016 SERTP

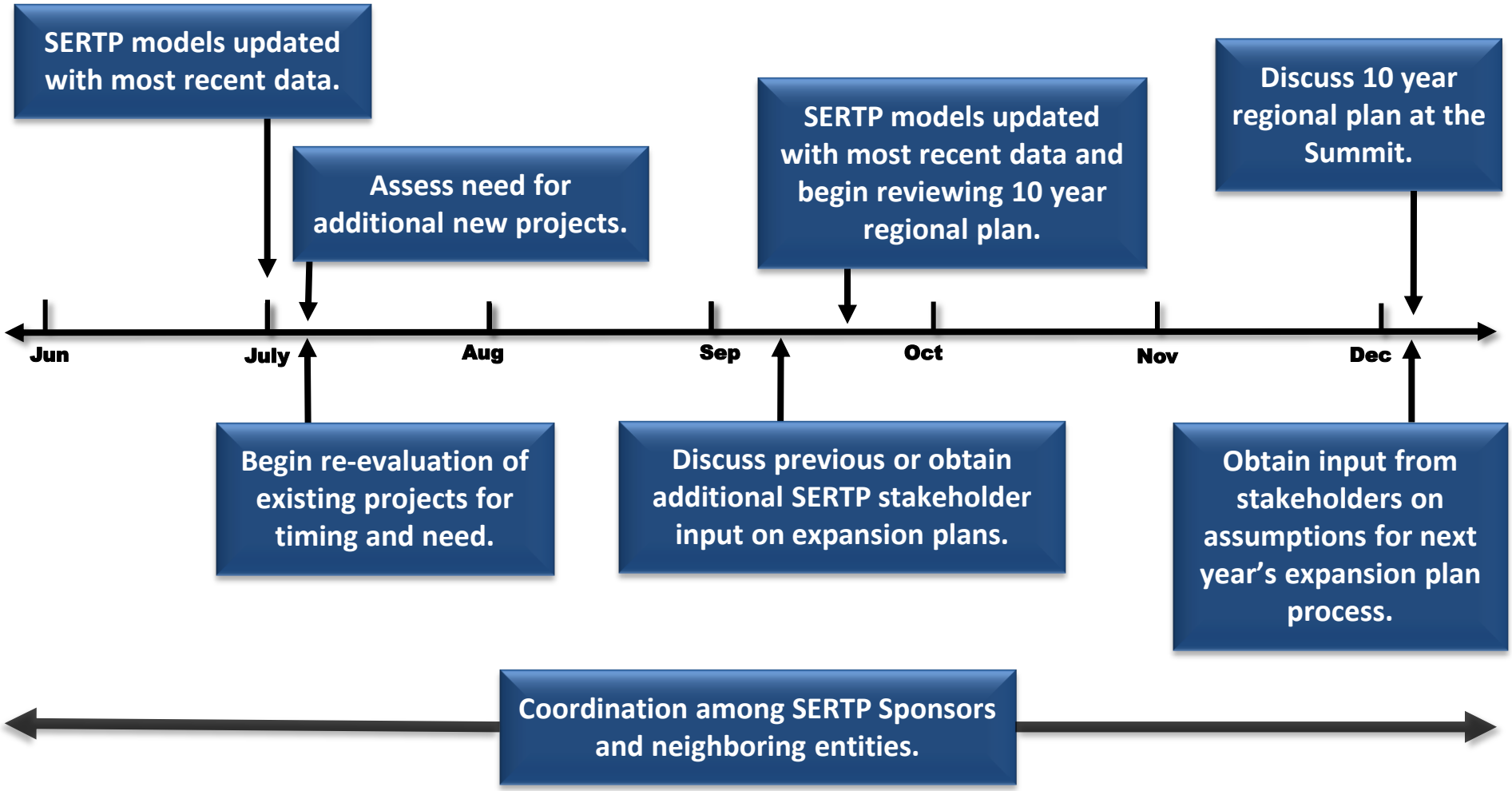
Approximate 10 Year Transmission Expansion Plan Timeline



Southeastern Regional TRANSMISSION PLANNING

2016 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 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

2016 Generation Assumptions

* **AECI has no generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process.**

AECI Balancing Authority

SERTP Regional Transmission Plan

AECI Balancing Authority

AECI – 1 2018

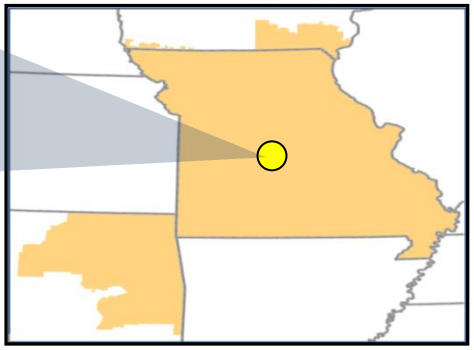
MARIES – ROLLA NORTH WYE 161 KV T.L. & ROLLA NORTH WYE 161 KV SUBSTATION

DESCRIPTION:

Construct approximately 21 miles of 161 kV transmission line from Maries to Rolla North Wye with 795 ACSR at 100°C and install a 56 MVA 161/69 kV transformer at Rolla North Wye.

SUPPORTING STATEMENT:

The Maries – Rolla North Wye transmission line overloads under contingency and voltage support is needed in the Maries and Rolla North Wye area under contingency.



Southeastern Regional TRANSMISSION PLANNING

AECI Balancing Authority

AECI – 2

2025

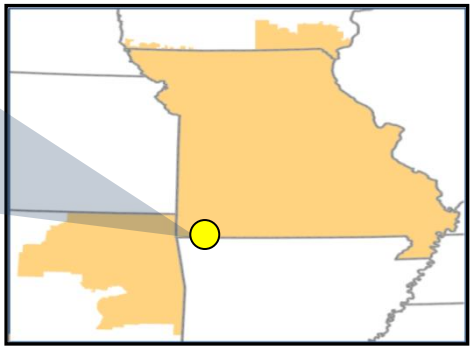
WHEATON – CASSVILLE 161 KV T.L. & STELLA 345/161 KV SUBSTATION

DESCRIPTION:

Construct a 345/161 kV Substation on the Brookline – Flintcreek 345 kV transmission line. Construct approximately 15 miles of 795 ACSR 161 kV transmission line at 100°C from Wheaton – Cassville, and install a 161/69 kV transformer at Cassville.

SUPPORTING STATEMENT:

The Neosho and Washburn 161/69 kV transformers overload under contingency.



AECI Balancing Authority

Upcoming 2017 Generation Assumptions

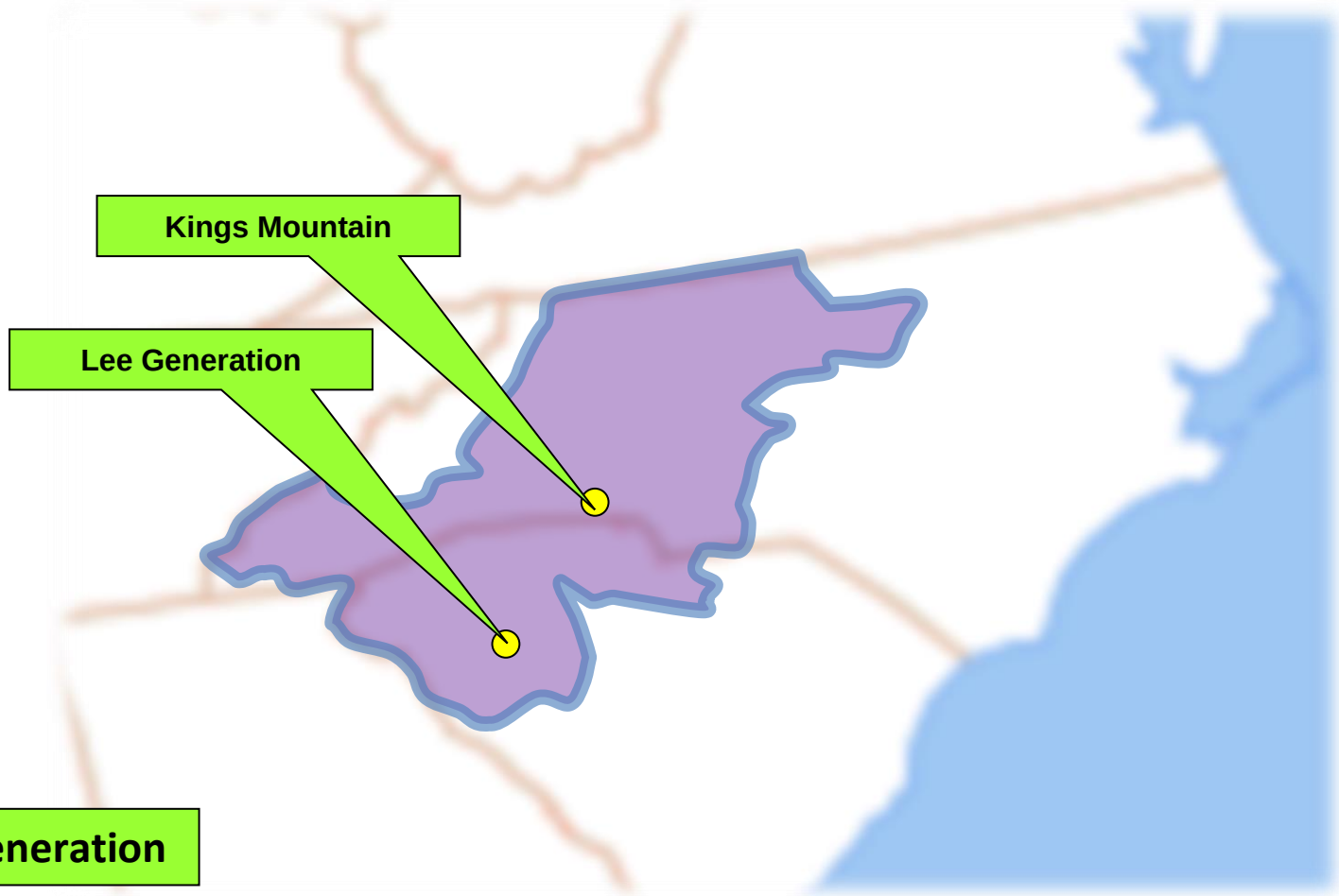
* **AECI has no generation assumptions expected to change throughout the ten year planning horizon for the 2017 SERTP Process.**

DUKE CAROLINAS Balancing Authority

2016 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 2016 SERTP Process.



DUKE CAROLINAS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
LEE CC	--	776	776	776	776	776	776	776	776	776
KINGS MOUNTAIN ENERGY CENTER	--	452	452	452	452	452	452	452	452	452

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	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
DUKE FLEET	100	100	100	100	100	100	100	100	100	100
ROWAN	150	150	150	150	150	150	150	150	150	150
CATAWBA	155	155	155	155	155	155	155	155	155	155
BROAD RIVER	850	850	850	850	850	850	850	850	850	850

DUKE CAROLINAS Balancing Authority

SERTP Regional Transmission Plan

DUKE CAROLINAS – 1 2017

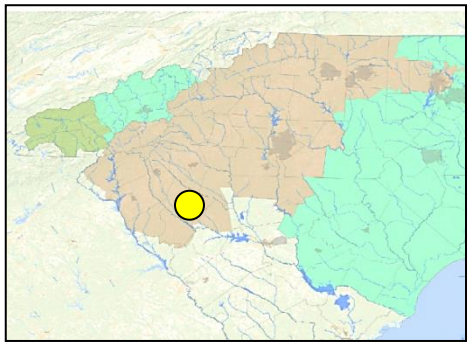
GREENBRIAR AREA IMPROVEMENTS

DESCRIPTION:

- Upgrade 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.

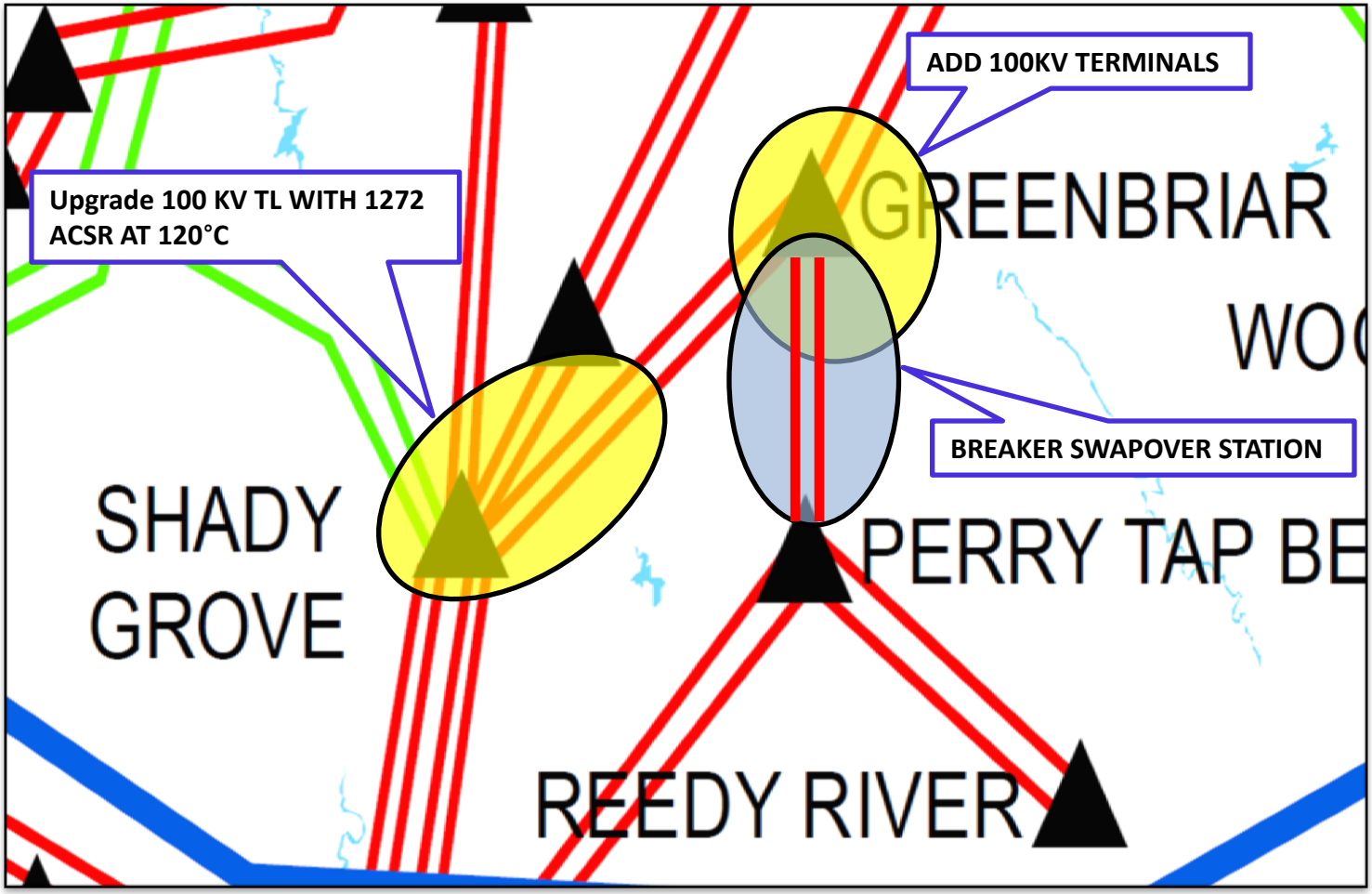
SUPPORTING STATEMENT:

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



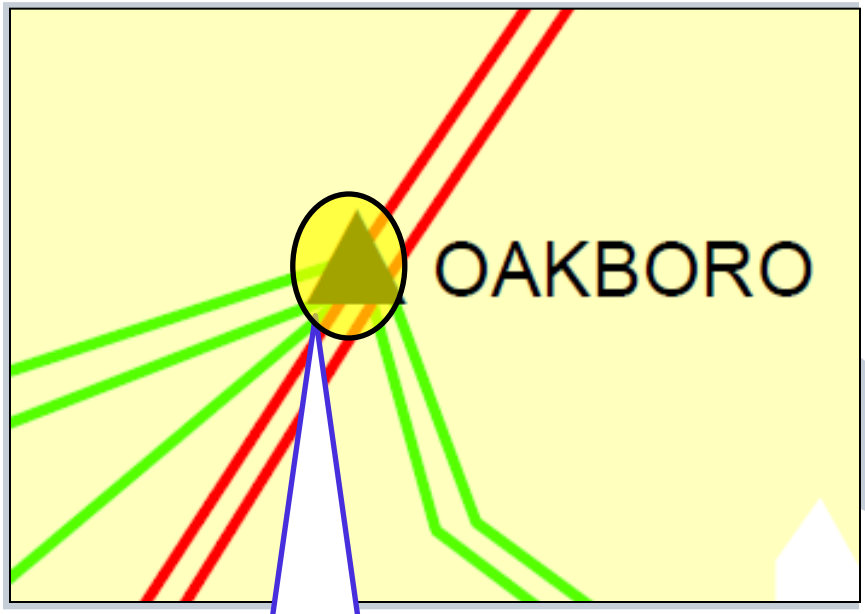
DUKE CAROLINAS – 1 2017

GREENBRIAR AREA IMPROVEMENTS



DUKE CAROLINAS – 2 2017

OAKBORO 230/100 KV TIE

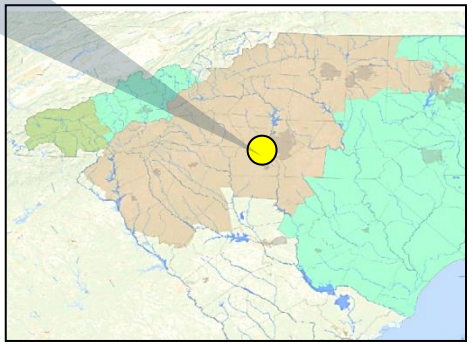


DESCRIPTION:

Add a fourth 200 MVA 230/100 kV transformer at Oakboro Tie.

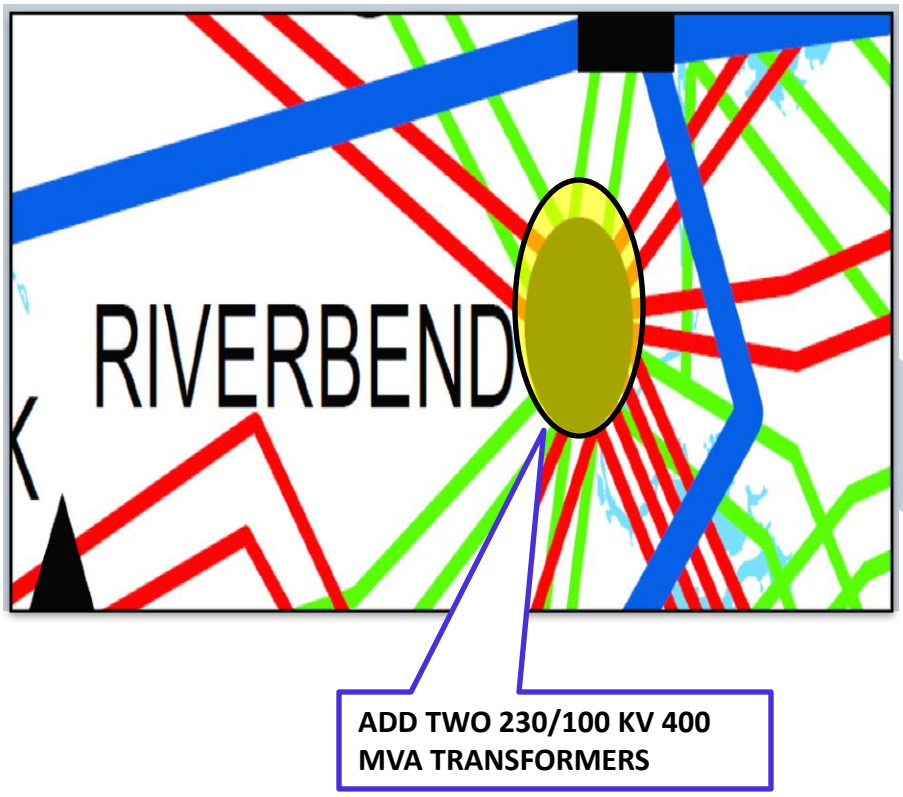
SUPPORTING STATEMENT:

The Oakboro 230/100 kV transformer overloads under contingency.



DUKE CAROLINAS – 3 2017

RIVERBEND STEAM STATION

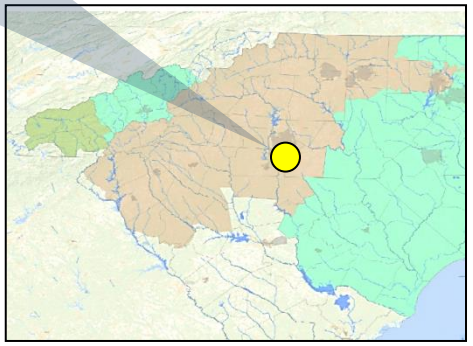


DESCRIPTION:

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

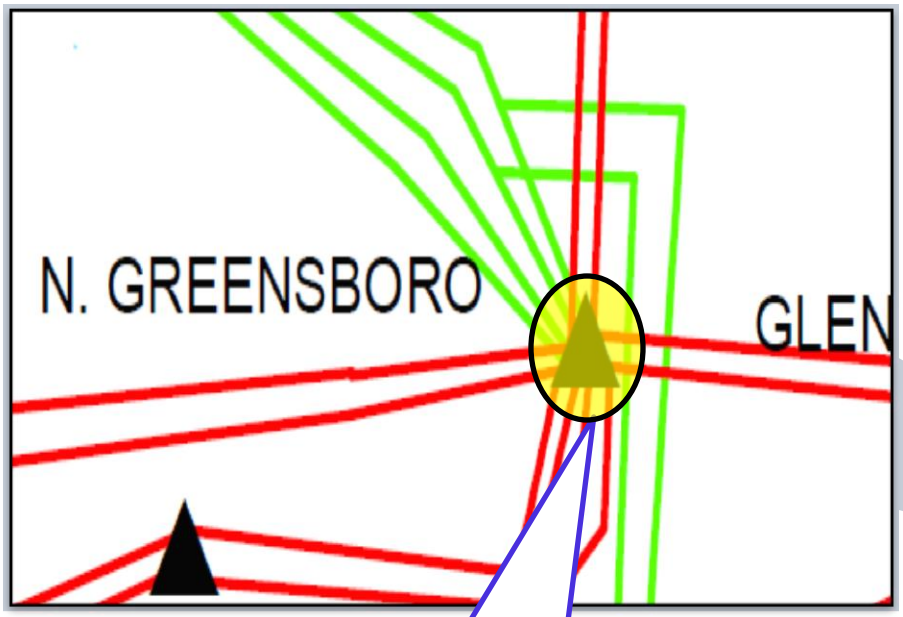
SUPPORTING STATEMENT:

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 – 4 2018

NORTH GREENSBORO SUBSTATION

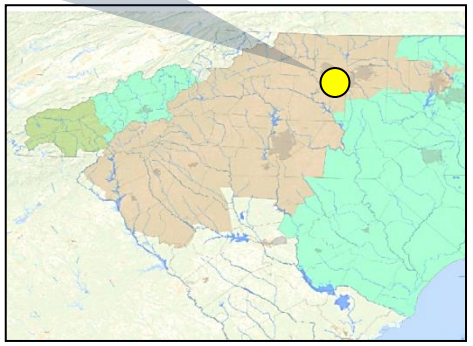


DESCRIPTION:

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

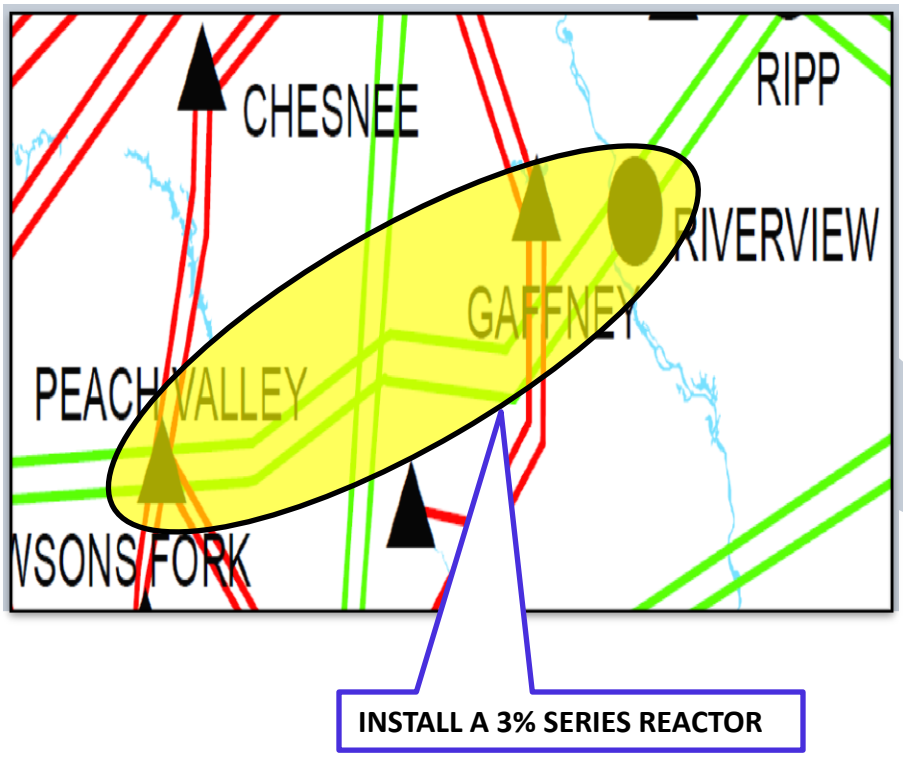
SUPPORTING STATEMENT:

North Greensboro 230/100 kV transformer overloads under contingency.



DUKE CAROLINAS – 5 2018

PEACH VALLEY – RIVERVIEW 230 KV T.L.

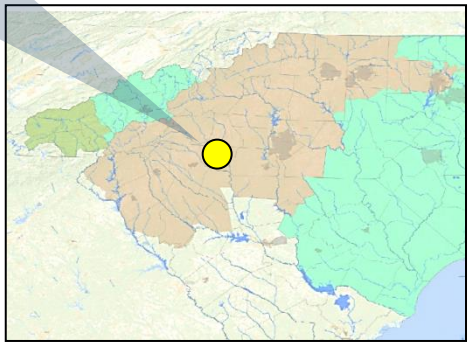


DESCRIPTION:

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

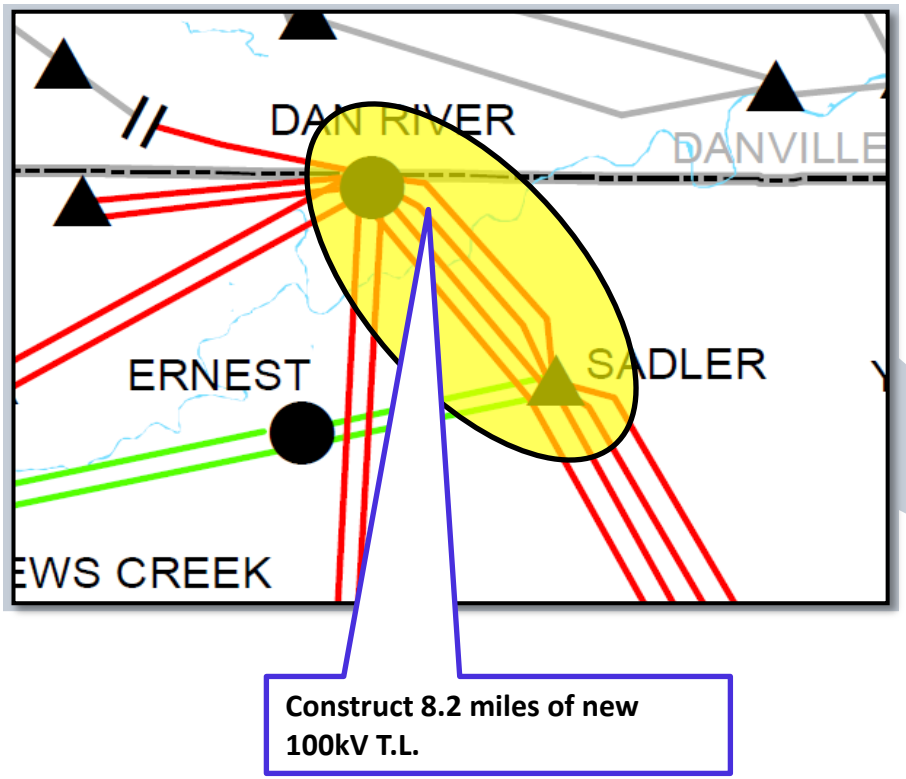
SUPPORTING STATEMENT:

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



DUKE CAROLINAS – 6 2019

SADLER TIE – DAN RIVER 100 KV T.L.

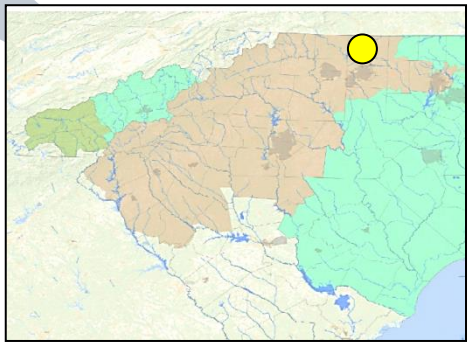


DESCRIPTION:

Construct approximately 8.2 miles of new 100 kV transmission line between Dan River Combined Cycle station and Sadler Tie with 795 ACSS at 200°C.

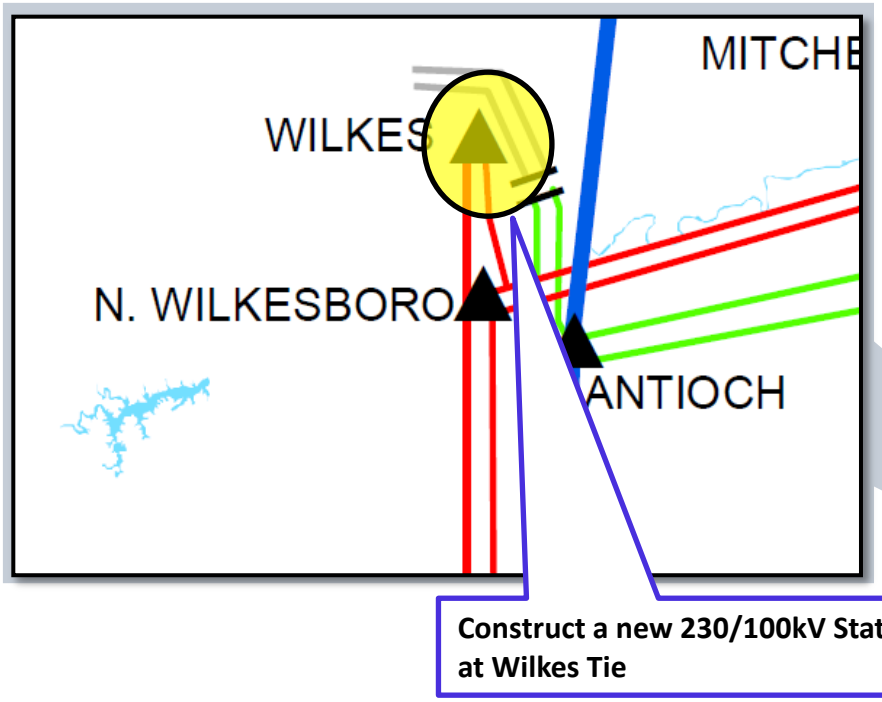
SUPPORTING STATEMENT:

Thermal overloads occur around Dan River Steam Station and Dan River Combined Cycle Station under contingency.



DUKE CAROLINAS – 7 2020

WILKES TIE 230 KV SUBSTATION

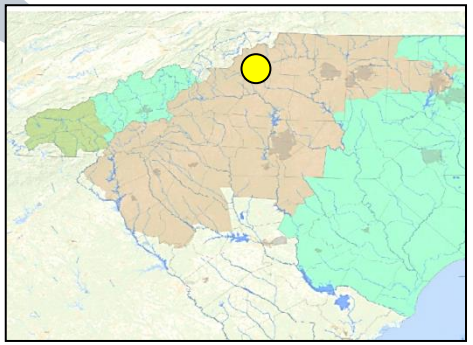


DESCRIPTION:

Install a new 230/100 kV 448 MVA transformer at Wilkes Tie.

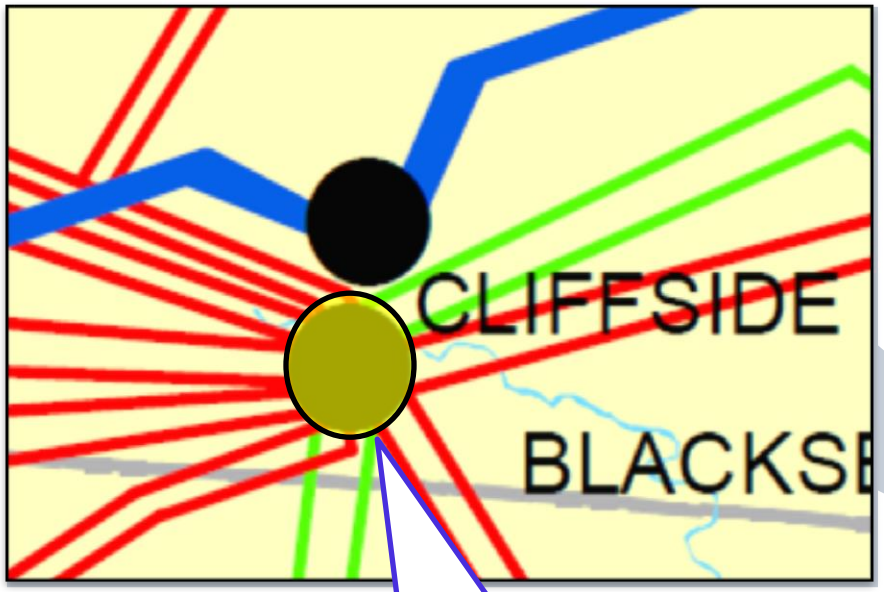
SUPPORTING STATEMENT:

Thermal overloads occur near North Wilkesboro Tie. Also, additional voltage support is needed in the area.



DUKE CAROLINAS – 8 2020

CLIFFSIDE STEAM STATION



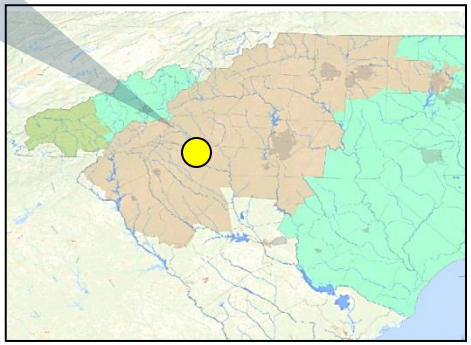
ADD A THIRD 448 MVA 230/100 KV TRANSFORMER AT CLIFFSIDE STEAM STATION

DESCRIPTION:

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

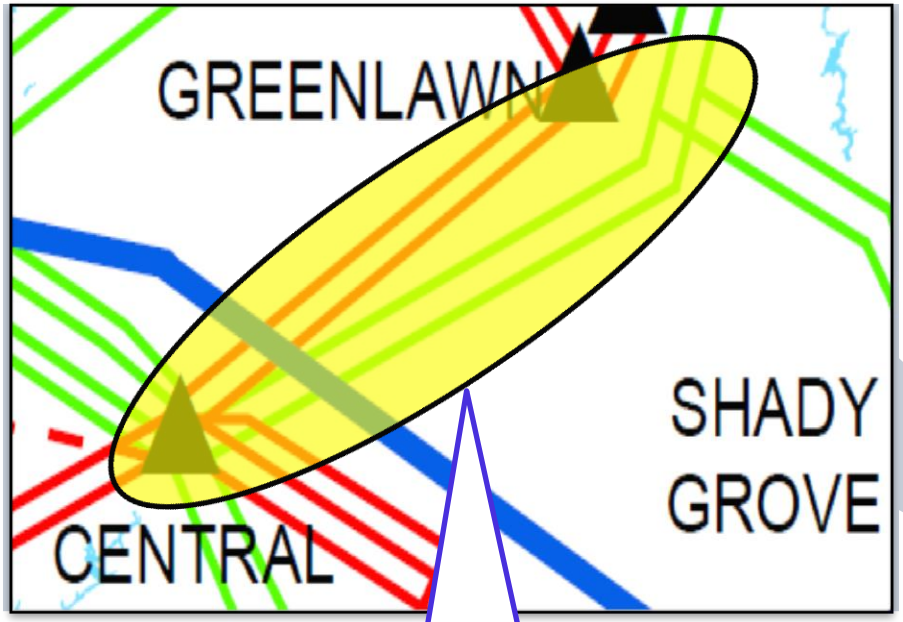
SUPPORTING STATEMENT:

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



DUKE CAROLINAS – 9 2022

CENTRAL – SHADY GROVE 230 KV T.L.

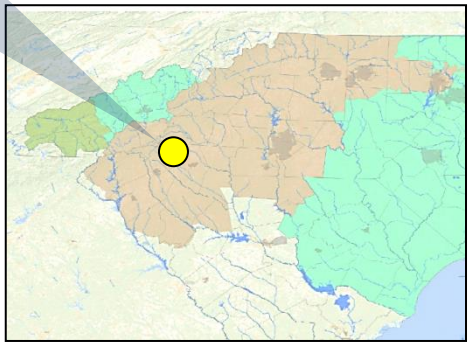


DESCRIPTION:

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

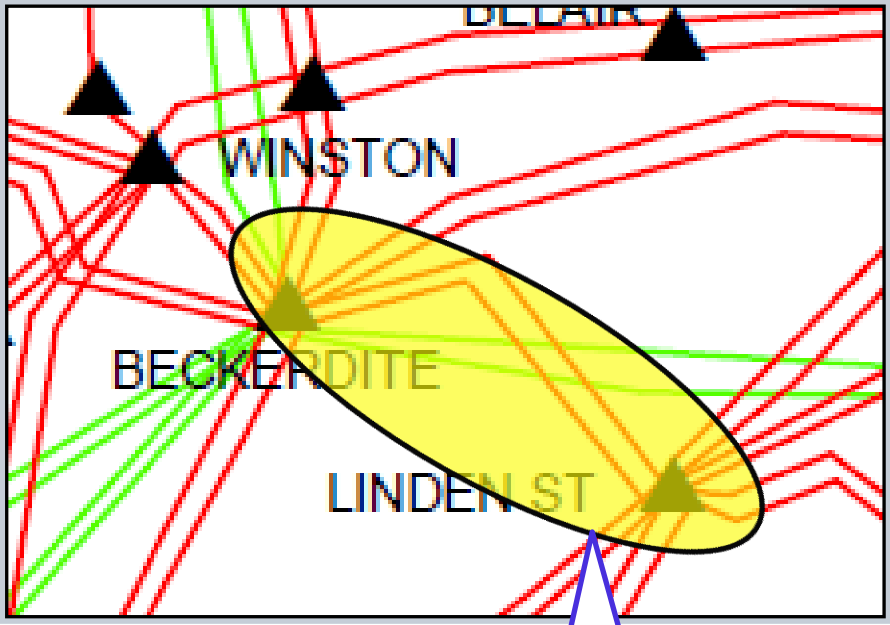
SUPPORTING STATEMENT:

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



DUKE CAROLINAS – 10 2023

BECKERDITE – LINDEN STREET 100 KV T.L.



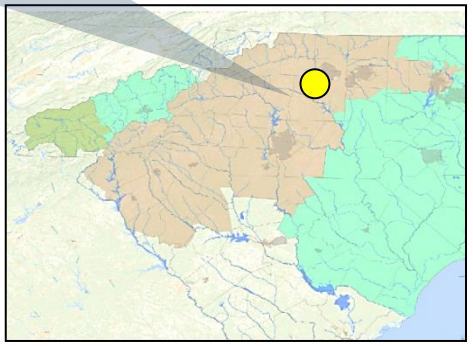
DESCRIPTION:

Reconductor approximately 16 miles of the double circuit Beckerdite – Linden St 100 kV transmission line with bundled 477 ACSR.

SUPPORTING STATEMENT:

The Beckerdite – Linden Street 100 kV transmission line overloads under contingency.

RECONDUCTOR 16 MILES OF THE BECKERDITE – LINDEN STREET 100 KV TL WITH BUNDLED 477 ACSR



DUKE CAROLINAS Balancing Authority

Upcoming 2017 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 2017 SERTP Process.

DUKE CAROLINAS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2017 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
LEE CC	776	776	776	776	776	776	776	776	776	776
KINGS MOUNTAIN ENERGY CENTER	452	452	452	452	452	452	452	452	452	452
ALLEN 1	174	174	174	174	174	174	174	--	--	--
ALLEN 2	172	172	172	172	172	172	172	--	--	--
ALLEN 3	271	271	271	271	271	271	271	--	--	--

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	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
DUKE FLEET	100	100	100	100	100	100	100	100	100	100
ROWAN	150	150	150	150	150	150	150	150	150	150
CATAWBA	155	155	155	155	155	155	155	155	155	155
BROAD RIVER	850	850	850	850	850	850	850	850	850	850

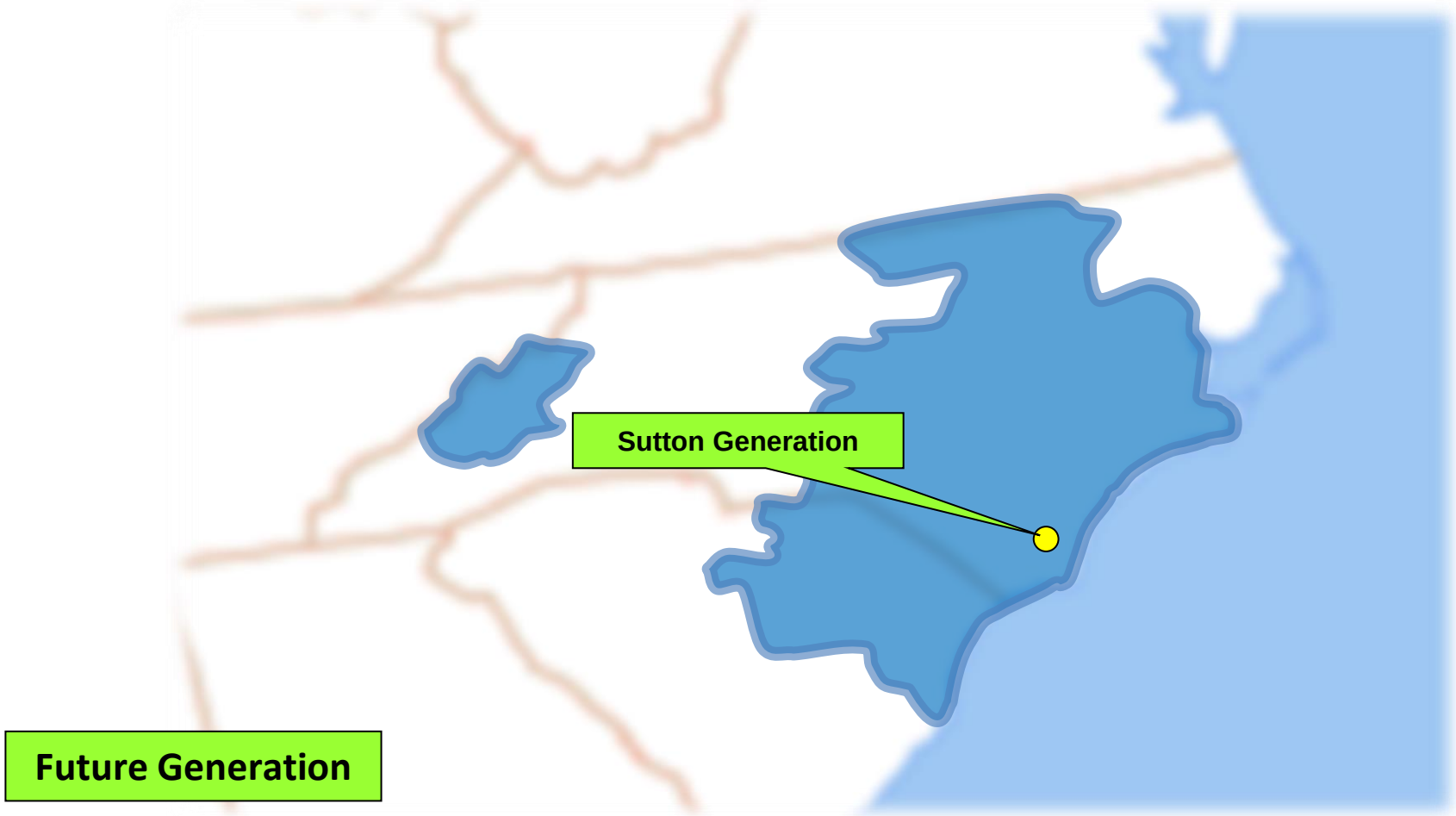
DUKE PROGRESS EAST/WEST

Balancing Authorities

2016 Generation Assumptions

DUKE PROGRESS – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2016 SERTP Process.



DUKE PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
SUTTON IC#1	0	0	0	0	0	0	0	0	0	0
SUTTON IC#2A	0	0	0	0	0	0	0	0	0	0
SUTTON IC#2B	0	0	0	0	0	0	0	0	0	0
SUTTON CC#1	42	42	42	42	42	42	42	42	42	42
SUTTON CC#2	42	42	42	42	42	42	42	42	42	42

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.

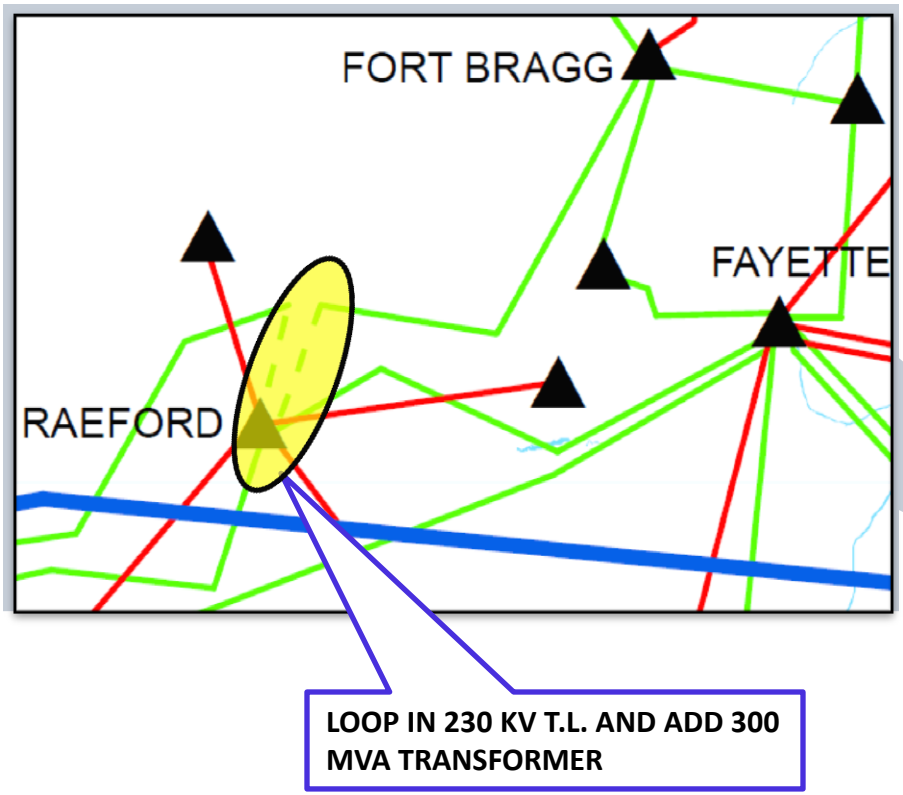
SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
HAMLET #1	55	55	55	55	55	55	55	55	55	55
HAMLET #2	55	55	55	55	55	55	55	55	55	55
HAMLET #3	55	55	55	55	55	55	55	55	55	55
INGENCO	6	6	6	6	6	6	6	6	6	6

DUKE PROGRESS EAST Balancing Authority

SERTP Regional Transmission Plan

DUKE PROGRESS EAST – 1 2018

RAEFORD 230 KV SUBSTATION

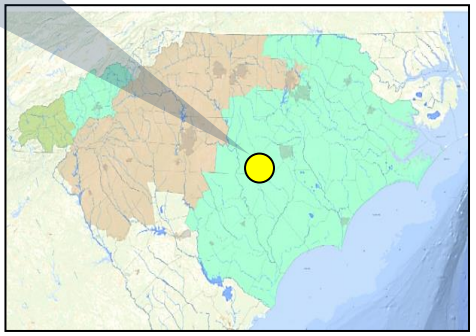


DESCRIPTION:

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

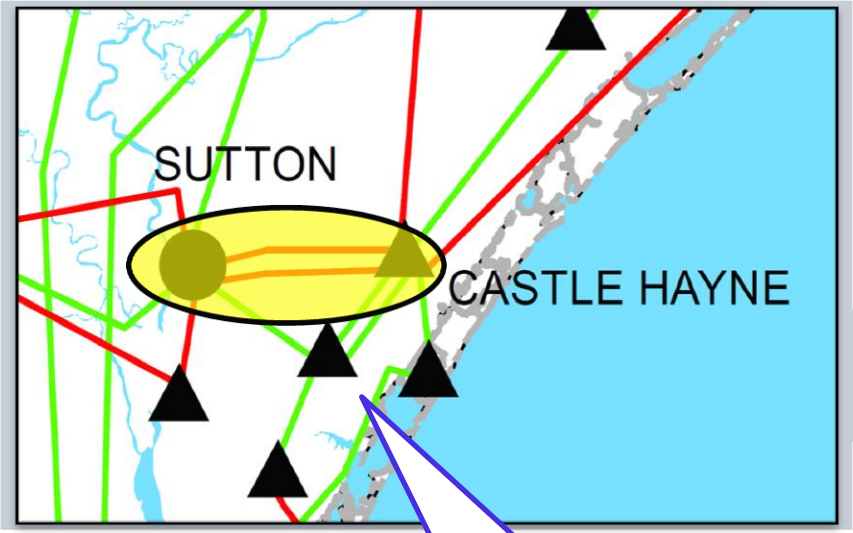
SUPPORTING STATEMENT:

The Weatherspoon – Raeford 115 kV transmission line overloads under contingency.



DUKE PROGRESS EAST – 2 2018

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

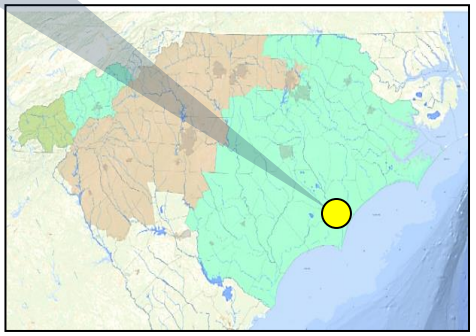


DESCRIPTION:

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

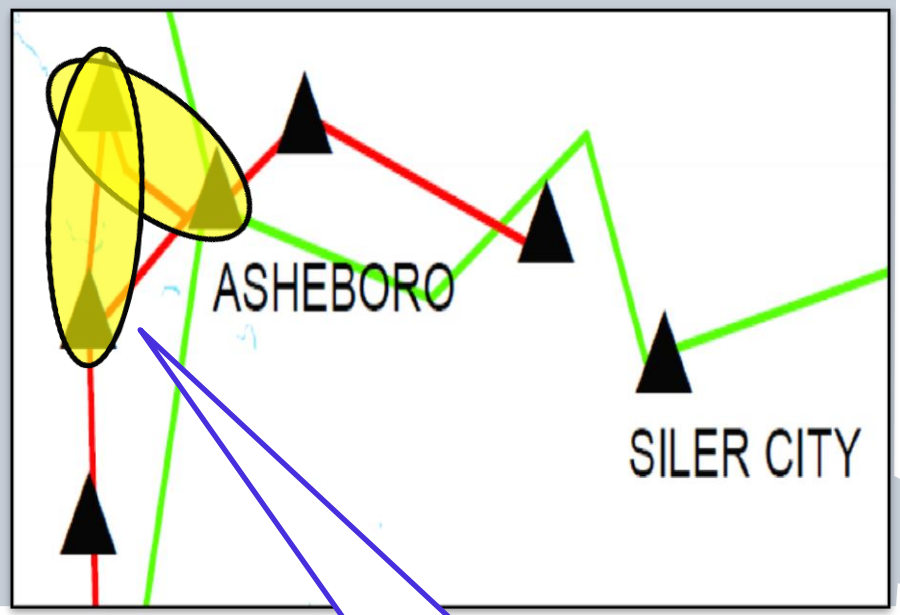
SUPPORTING STATEMENT:

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



DUKE PROGRESS EAST – 3 2019

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

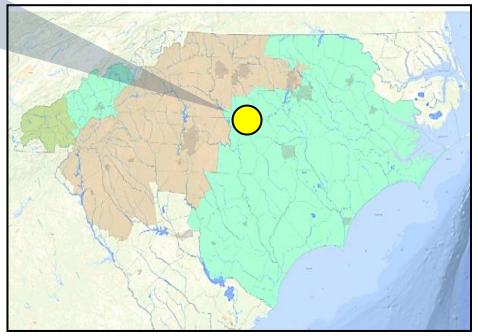


DESCRIPTION:

Rebuild approximately 6.5 miles of the Asheboro – Asheboro East (North) 115 kV transmission line using 1590 ACSR rated for 307 MVA. Replace disconnect switches at Asheboro 230 kV and both the breaker and the disconnect switches at Asheboro East 115 kV with equipment of at least 2000 A capability.

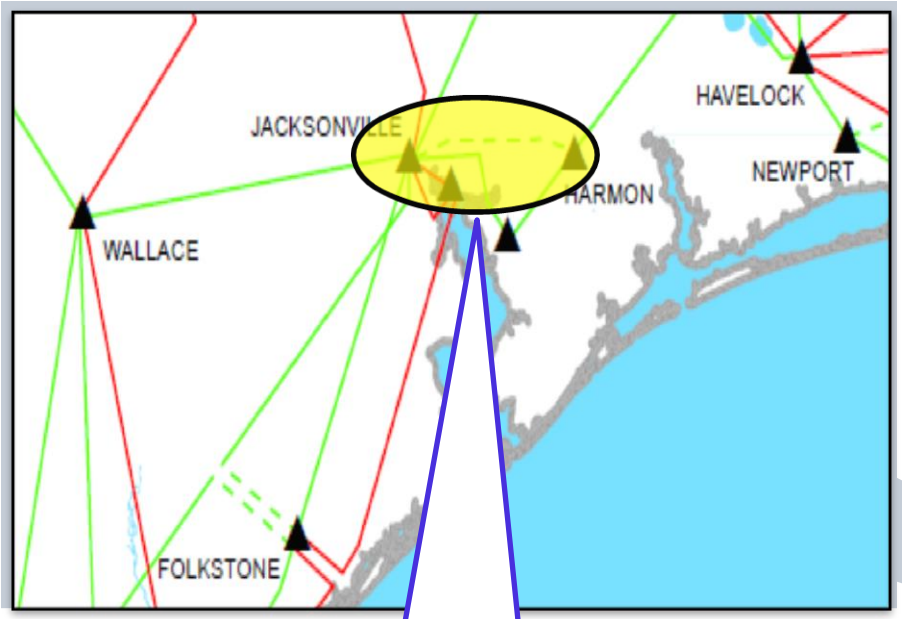
SUPPORTING STATEMENT:

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



DUKE PROGRESS EAST – 4 2020

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



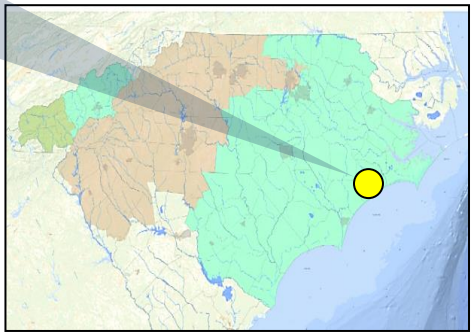
NEW 230 KV TL WITH 1590 ACSR OR EQUIVALENT CONDUCTOR. NEW 230 KV SUBSTATION WITH A 200 MVA OR 300 MVA 230/115 KV TRANSFORMER

DESCRIPTION:

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

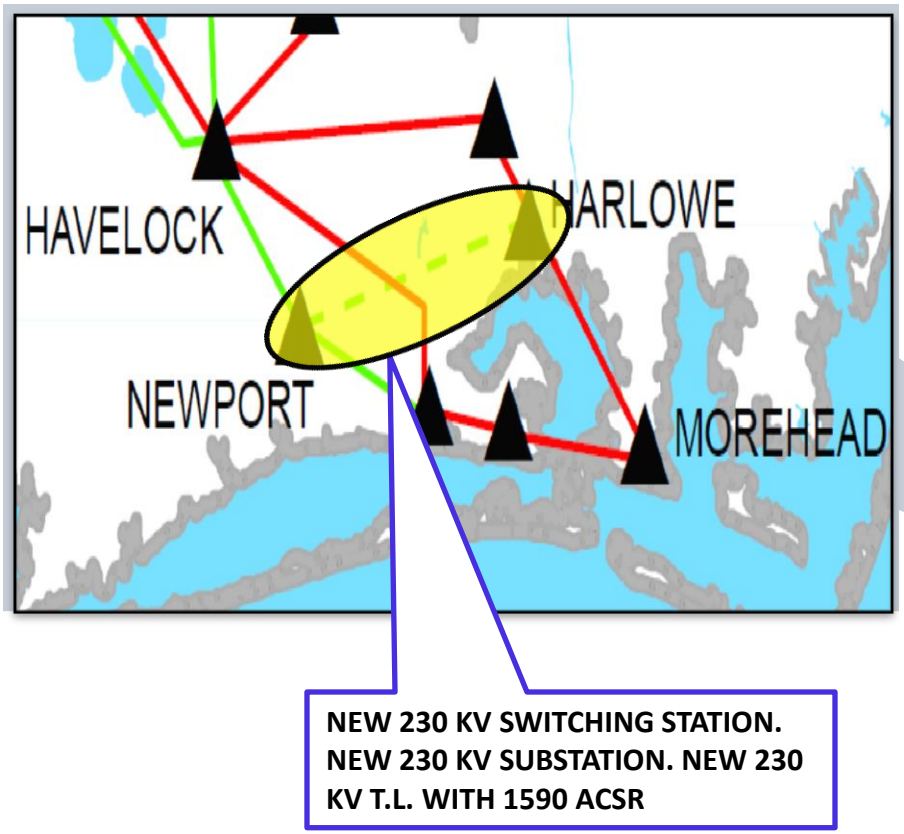
SUPPORTING STATEMENT:

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



DUKE PROGRESS EAST – 5 2020

HARLOWE – NEWPORT 230 KV T.L.

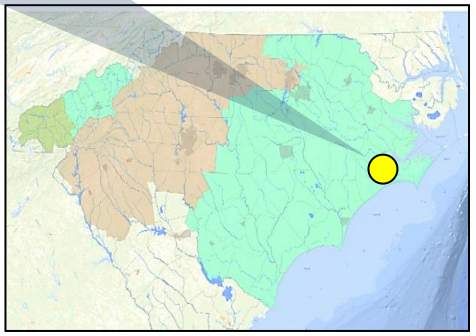


DESCRIPTION:

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

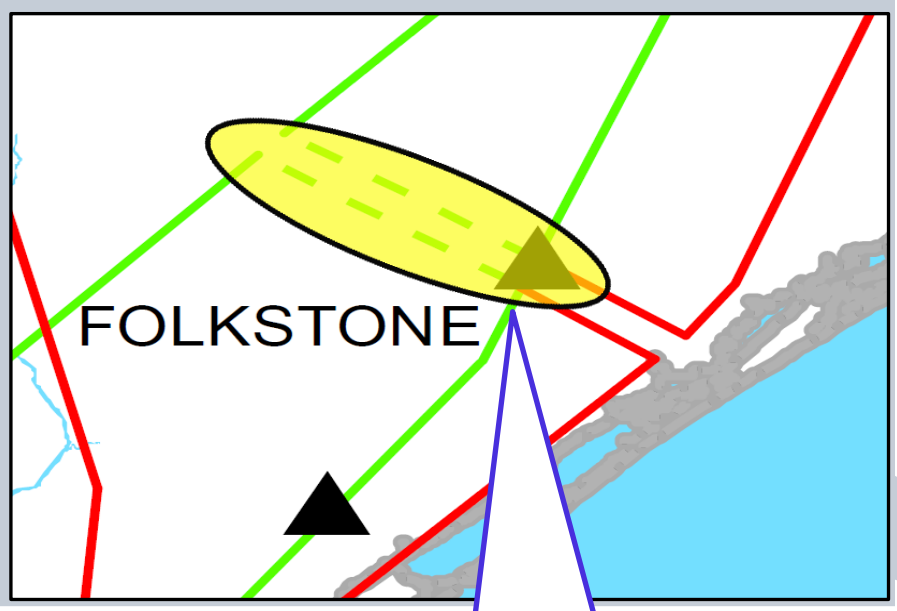
SUPPORTING STATEMENT:

Voltage support is needed in Havelock – Morehead area.



DUKE PROGRESS EAST – 6 2024

BRUNSWICK #1 – JACKSONVILLE 230 KV T.L.

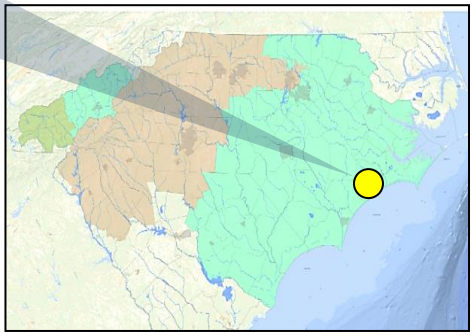


DESCRIPTION:

Loop the existing Brunswick Plant Unit 1 – Jacksonville 230 kV Line into the Folkstone 230 kV Substation. Also convert the Folkstone 230 kV bus configuration to breaker-and-one-half by installing three (3) new 230 kV breakers.

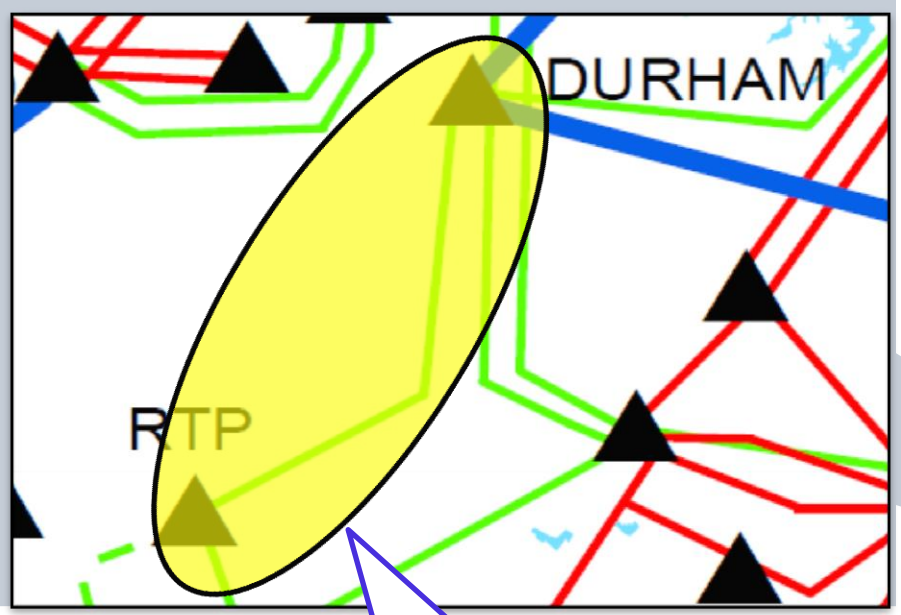
SUPPORTING STATEMENT:

The Castle Hayne – Folkstone 115 kV transmission line overloads under contingency.



DUKE PROGRESS EAST – 7 2024

DURHAM – RTP 230 KV T.L.

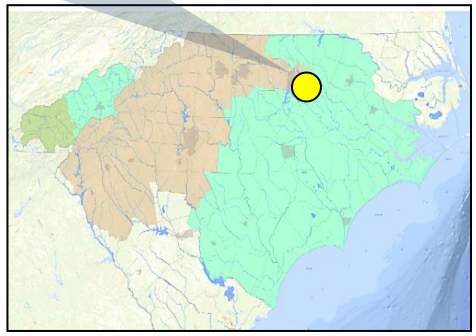


DESCRIPTION:

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

SUPPORTING STATEMENT:

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

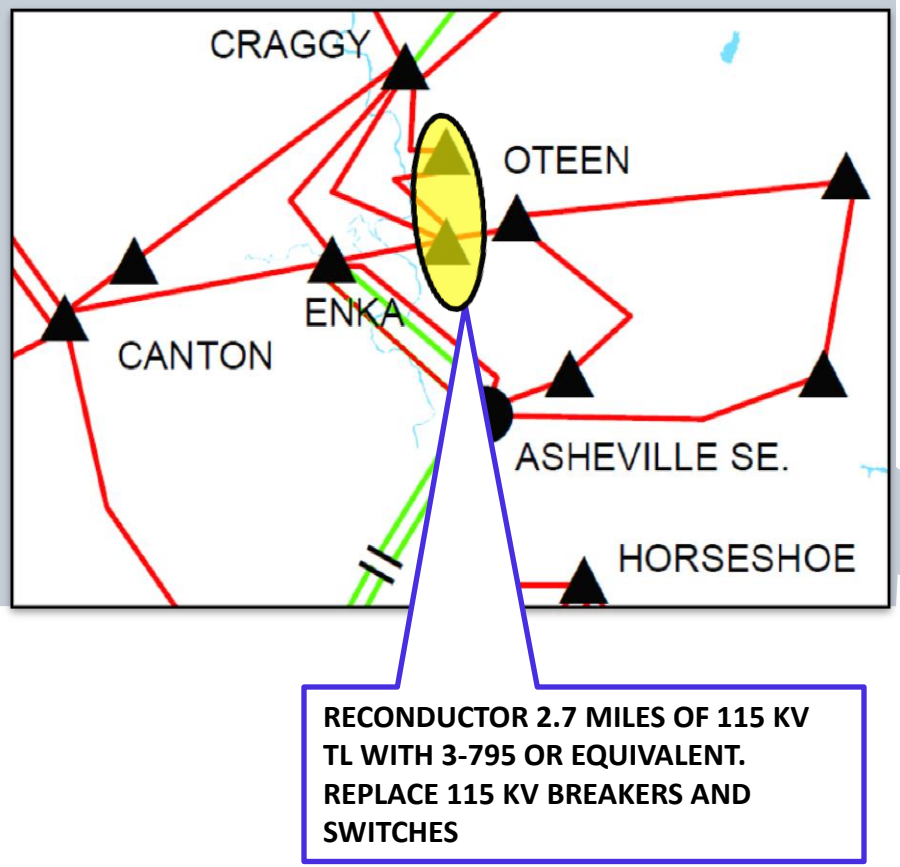


DUKE PROGRESS WEST Balancing Authority

SERTP Regional Transmission Plan

DUKE PROGRESS WEST – 1 2018

VANDERBILT – WEST ASHEVILLE 115 KV T.L.

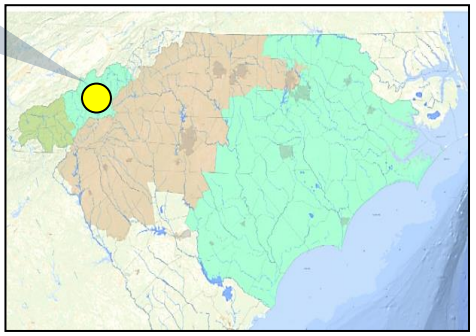


DESCRIPTION:

Reconductor approximately 2.7 miles of the Vanderbilt – West Asheville 115 kV transmission line with 795 ACSR rated for 300 MVA. Replace one 115 kV breaker, two 115 kV disconnect switches, and one 115 kV switch at Vanderbilt.

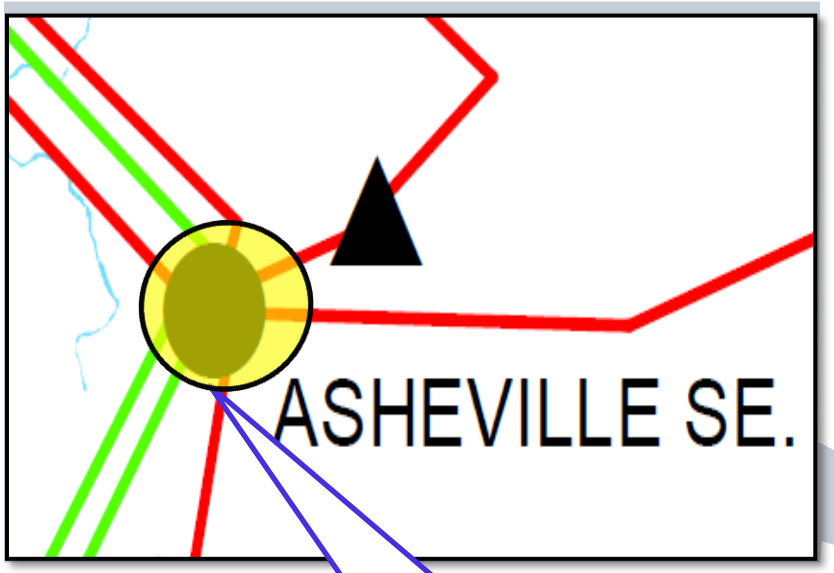
SUPPORTING STATEMENT:

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



DUKE PROGRESS WEST – 2 2019

ASHEVILLE SE PLANT



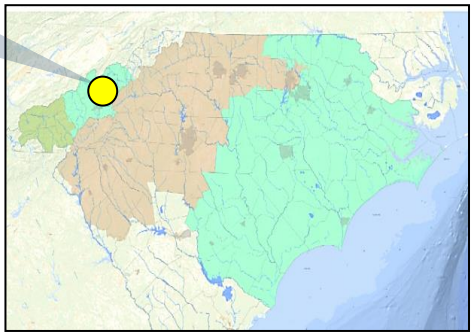
REPLACE TRANSFORMERS. REBUILD 1.2 MILES 0F 115 KV TL WITH 1590 ACSR. REPLACE BREAKERS WITH 3000 A BREAKERS. ADD 72 MVAR CAPACITOR BANK.

DESCRIPTION:

Upgrade the two existing 230/115 kV transformers to 400 MVA each, reconductor the 115 kV north and south transformer tie lines with 1590 ACSR at 100°C, replace the existing breakers with 3000A breakers, and add a 72 MVAR 230 kV capacitor bank.

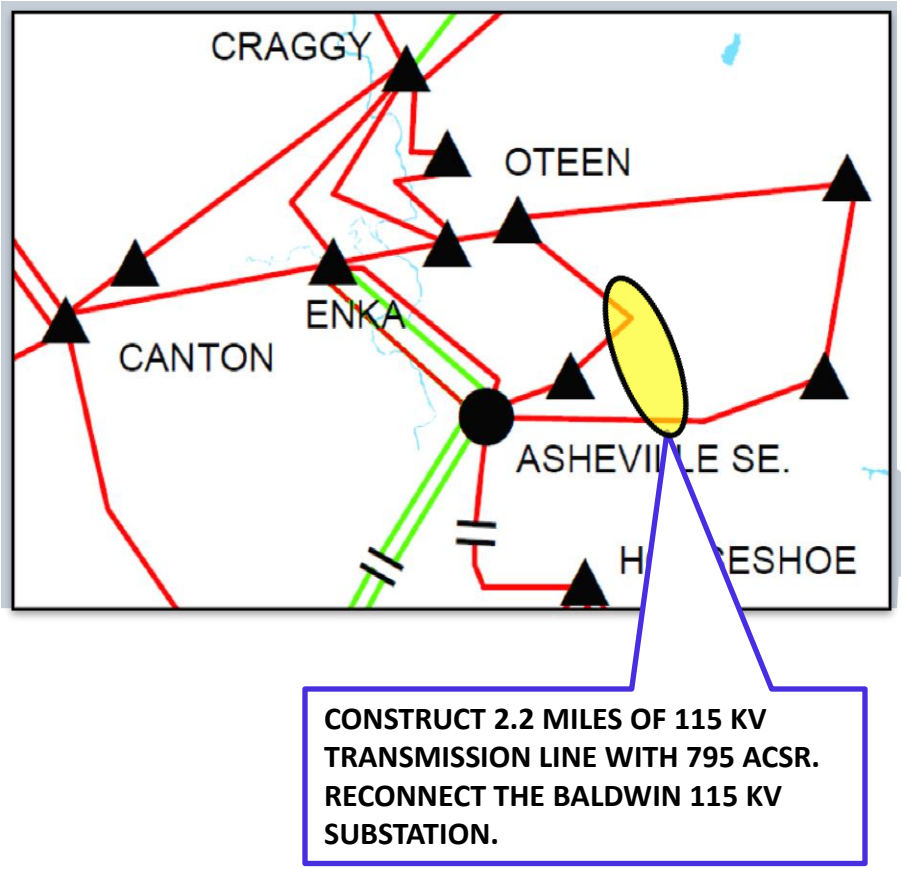
SUPPORTING STATEMENT:

Necessary upgrades to allow for the interconnection of two combined cycle units at Asheville Plant.



DUKE PROGRESS WEST – 3 2022

ASHEVILLE PLANT – OTEEN WEST 115 KV T.L., BALDWIN TAP

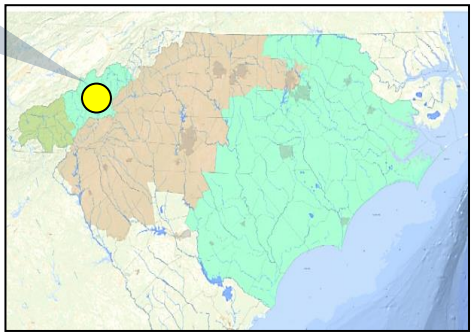


DESCRIPTION:

Construct approximately 2.2 miles of new 115 kV transmission line from the Asheville Plant – Oteen West 115 kV transmission line to the Asheville Plant – Oteen East 115 kV transmission line with 795 ACSR. The Baldwin 115 kV substation will be reconnected to this new tap line.

SUPPORTING STATEMENT:

Voltage support is needed in the Baldwin area.



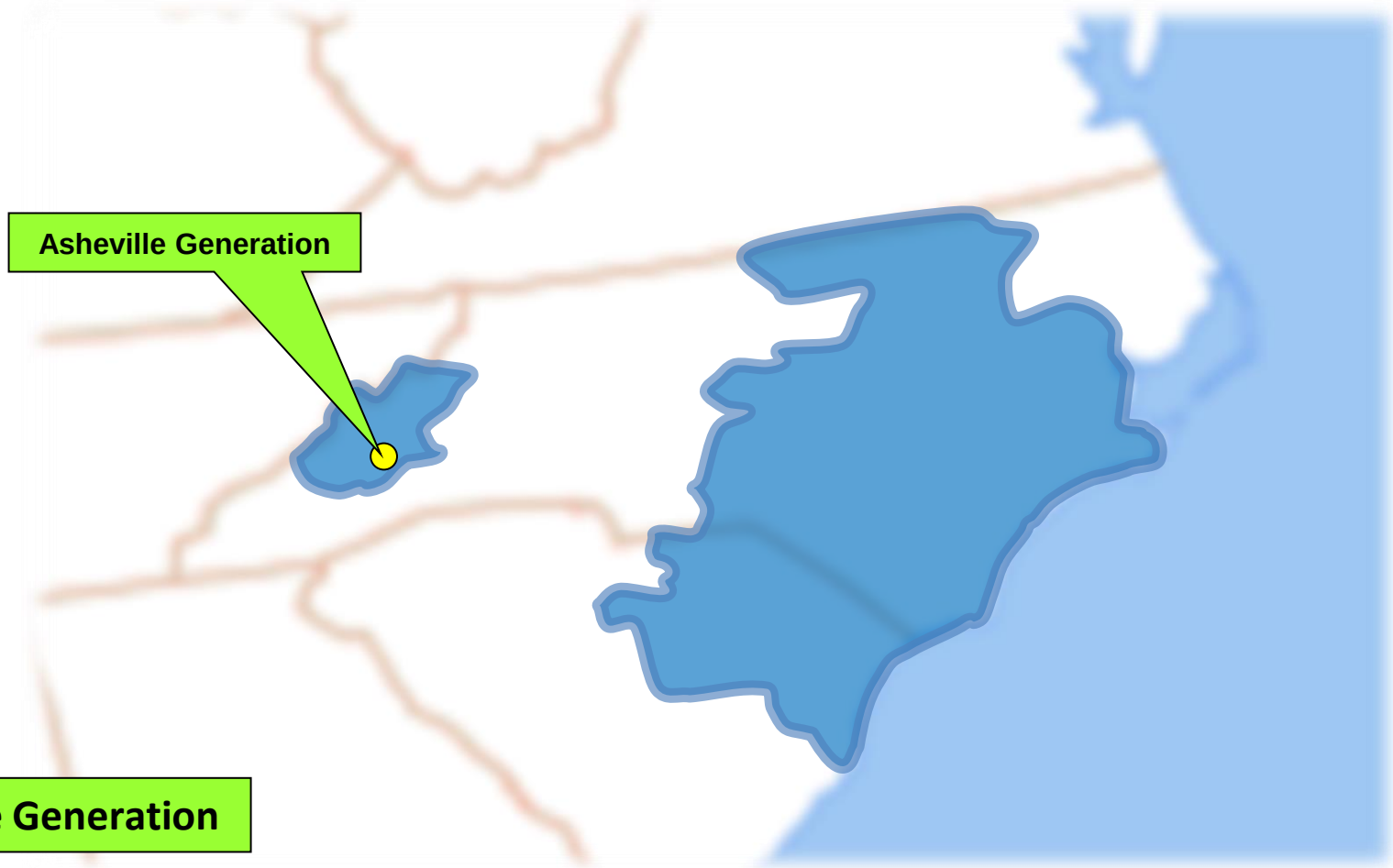
DUKE PROGRESS EAST/WEST

Balancing Authorities

Upcoming 2017 Generation Assumptions

DUKE PROGRESS – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2017 SERTP Process.



DUKE PROGRESS – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2017 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
ASHEVILLE #1 COAL	191	191	0	--	--	--	--	--	--	--
ASHEVILLE #2 COAL	185	185	0	--	--	--	--	--	--	--
ASHEVILLE A	--	--	260	260	260	260	260	260	260	260
ASHEVILLE B	--	--	260	260	260	260	260	260	260	260

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	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
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
INGENCO	6	6	6	6	6	6	6	6	6	6

LG&E/KU Balancing Authority

2016 Generation Assumptions

* **LG&E/KU has no generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process.**

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	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

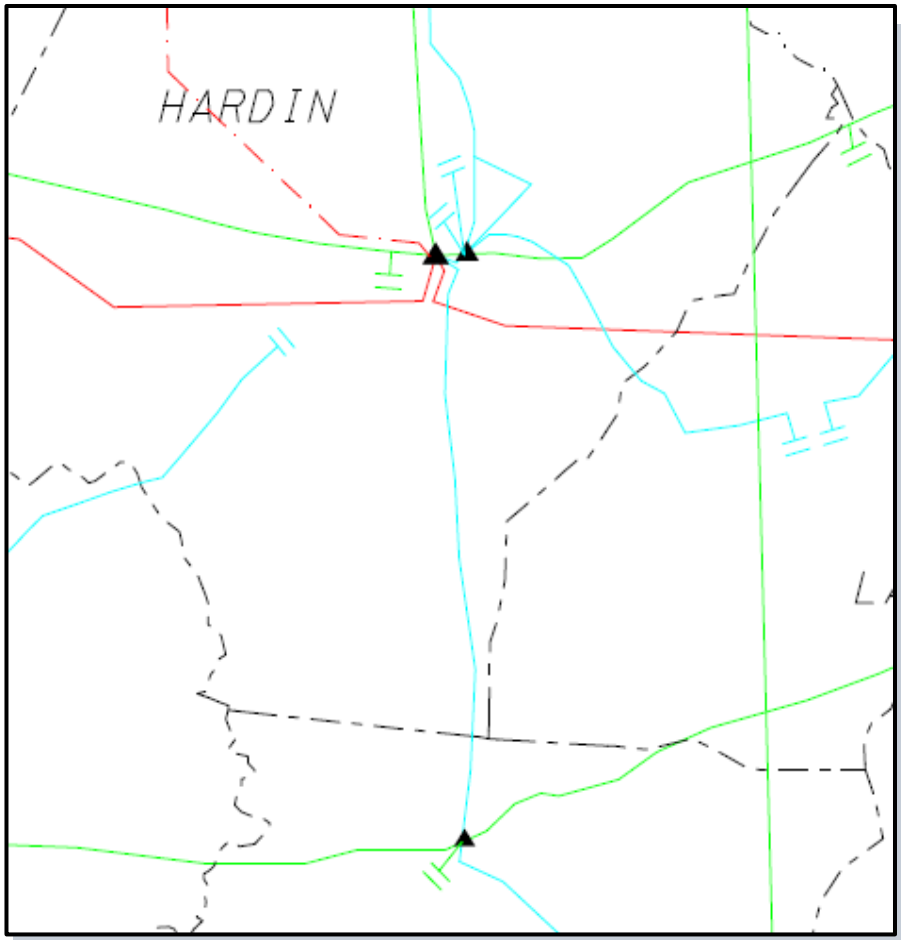
LG&E/KU Balancing Authority

SERTP Regional Transmission Plan

LG&E/KU – 1

2017

ELIZABETHTOWN – HARDIN COUNTY 138 KV T.L.

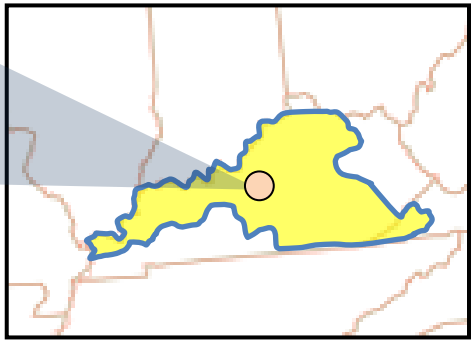


DESCRIPTION:

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

SUPPORTING STATEMENT:

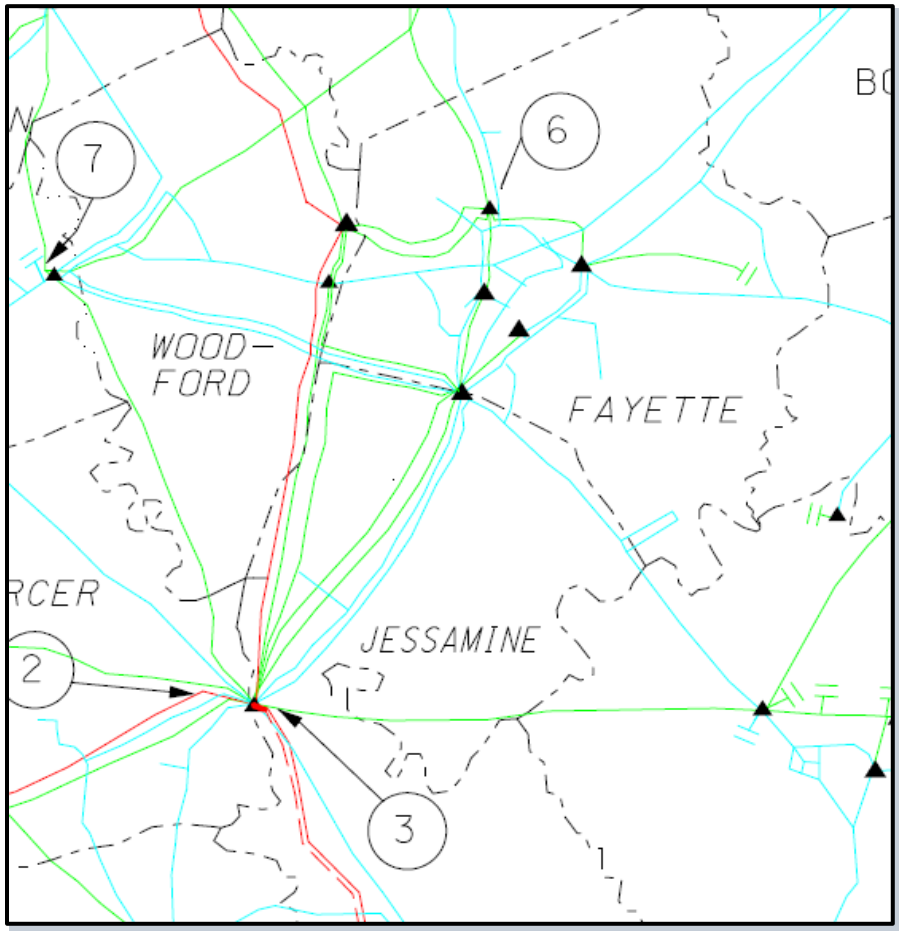
The Hardin County 138/69 kV transformer overloads under contingency.



LG&E/KU – 2

2017

WEST LEXINGTON – VILEY ROAD 138 KV T.L.

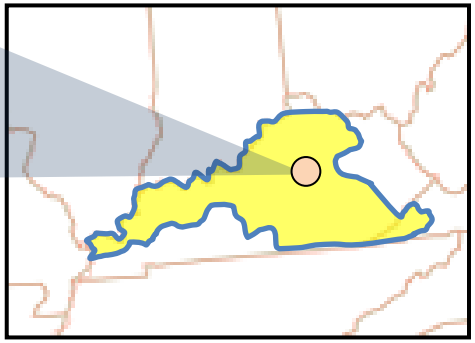


DESCRIPTION:

Reconductor approximately 5.2 miles of 795 ACSR conductor in the West Lexington – Viley Road section of the West Lexington – Viley Road – Haefling 138 kV transmission line, using high temperature conductor capable of at least 358 MVA.

SUPPORTING STATEMENT:

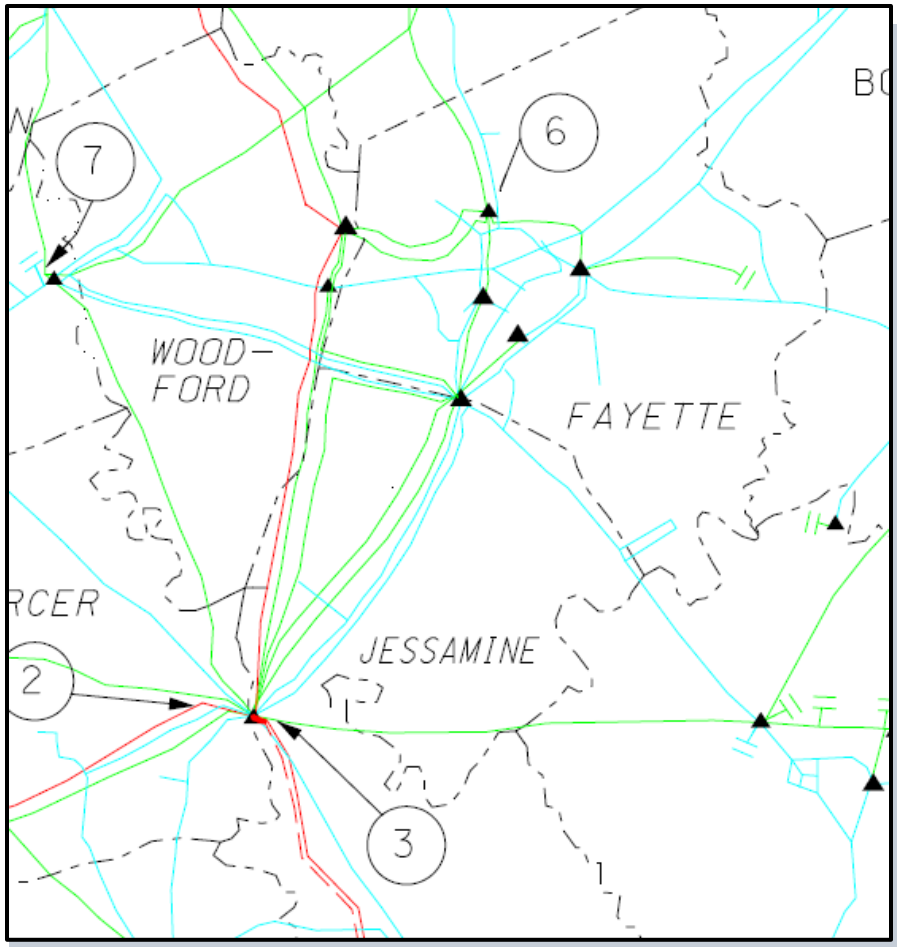
The West Lexington – Viley Road 138 kV transmission line overloads under contingency.



LG&E/KU – 3

2019

WEST LEXINGTON – HAEFLING 138 KV T.L.

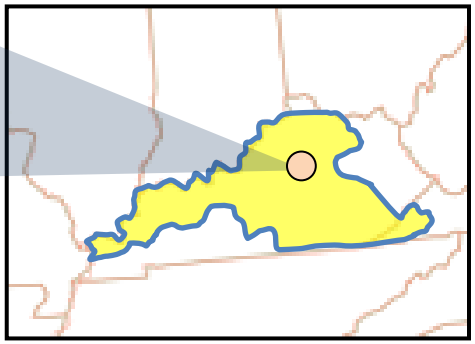


DESCRIPTION:

Reconductor 7.3 miles of 795 ACSR conductor on the West Lexington – Haefling 138 kV line, using high temperature conductor capable of at least 358 MVA.

SUPPORTING STATEMENT:

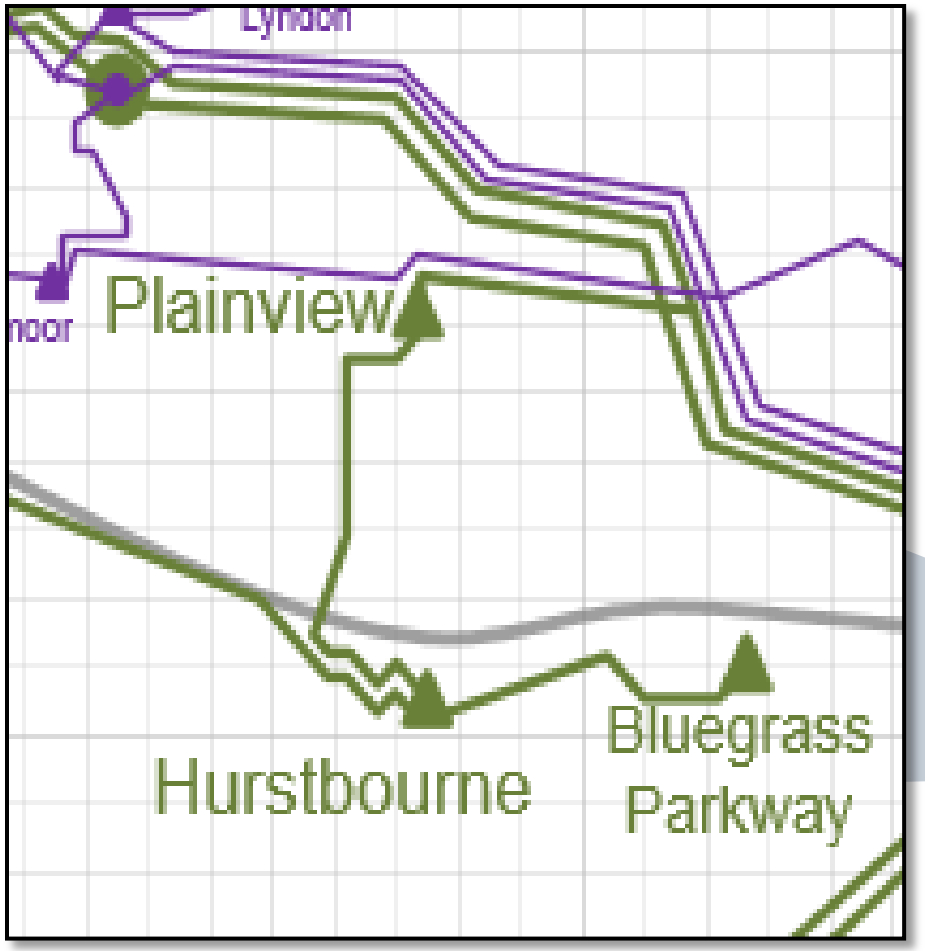
The West Lexington – Haefling 138 kV transmission line overloads under contingency.



LG&E/KU – 4

2020

PLAINVIEW – PLAINVIEW TAP 138 KV T.L.

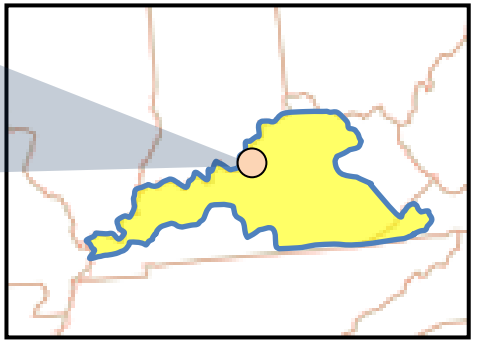


DESCRIPTION:

Replace approximately 1.6 miles of 1272 AAC conductor in the Plainview Tap – Plainview section of the Middletown – Beargrass 138 kV line with 1272 ACSR capable of at least 341 MVA.

SUPPORTING STATEMENT:

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



LG&E/KU Balancing Authority

Upcoming 2017 Generation Assumptions

* **LG&E/KU has no generation assumptions that change throughout the ten year planning horizon for the 2017 SERTP Process.**

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	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
TRIMBLE COUNTY	324	324	324	324	324	324	324	324	324	324

OVEC Balancing Authority

SERTP Regional Transmission Plan & 2016 Generation Assumptions

* **OVEC has no transmission projects included in the 2016 SERTP Regional Transmission Plan. In addition, OVEC has no generation assumptions expected to change throughout the ten year planning horizon for the 2017 SERTP Process.**

POWERSOUTH Balancing Authority

2016 Generation Assumptions

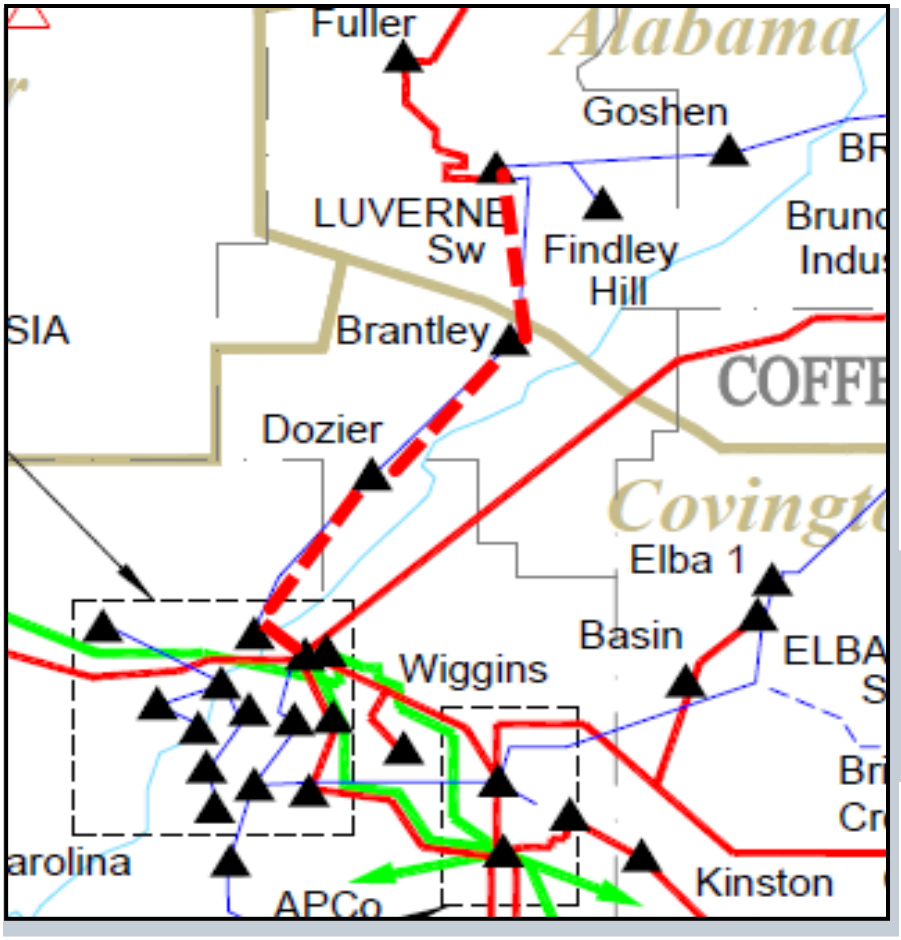
* **POWERSOUTH has no generation assumptions expected to change throughout the ten year planning horizon for the 2016 SERTP Process.**

POWERSOUTH Balancing Authority

SERTP Regional Transmission Plan

POWERSOUTH – 1 2017

MCWILLIAMS – LUVERNE 115 KV T.L.

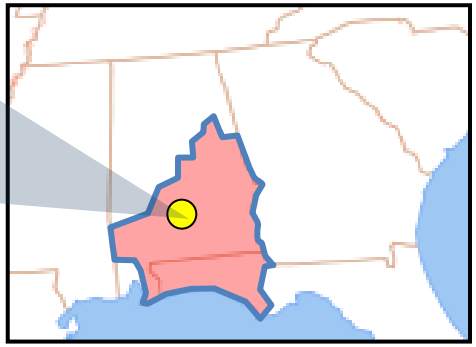


DESCRIPTION:

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

SUPPORTING STATEMENT:

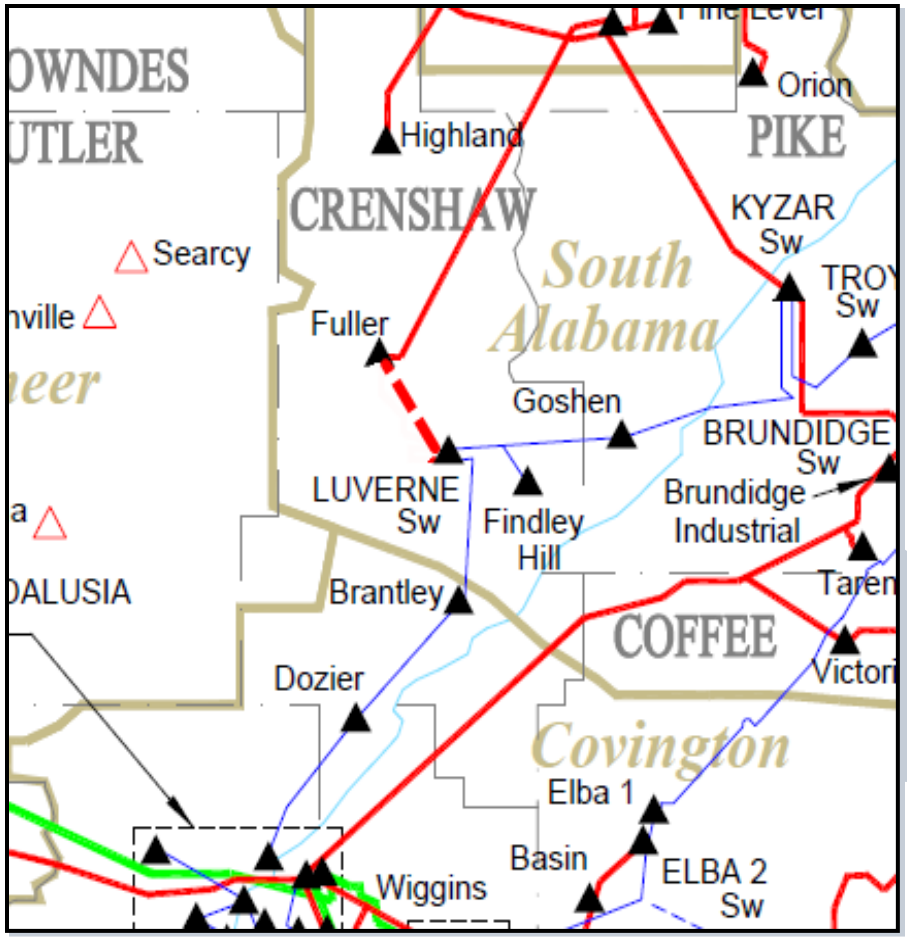
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 2

2017

LUVERNE – FULLER 115 KV T.L.

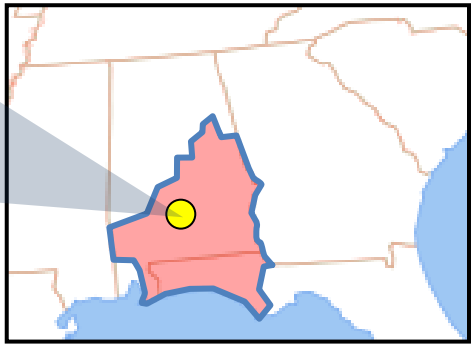


DESCRIPTION:

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

SUPPORTING STATEMENT:

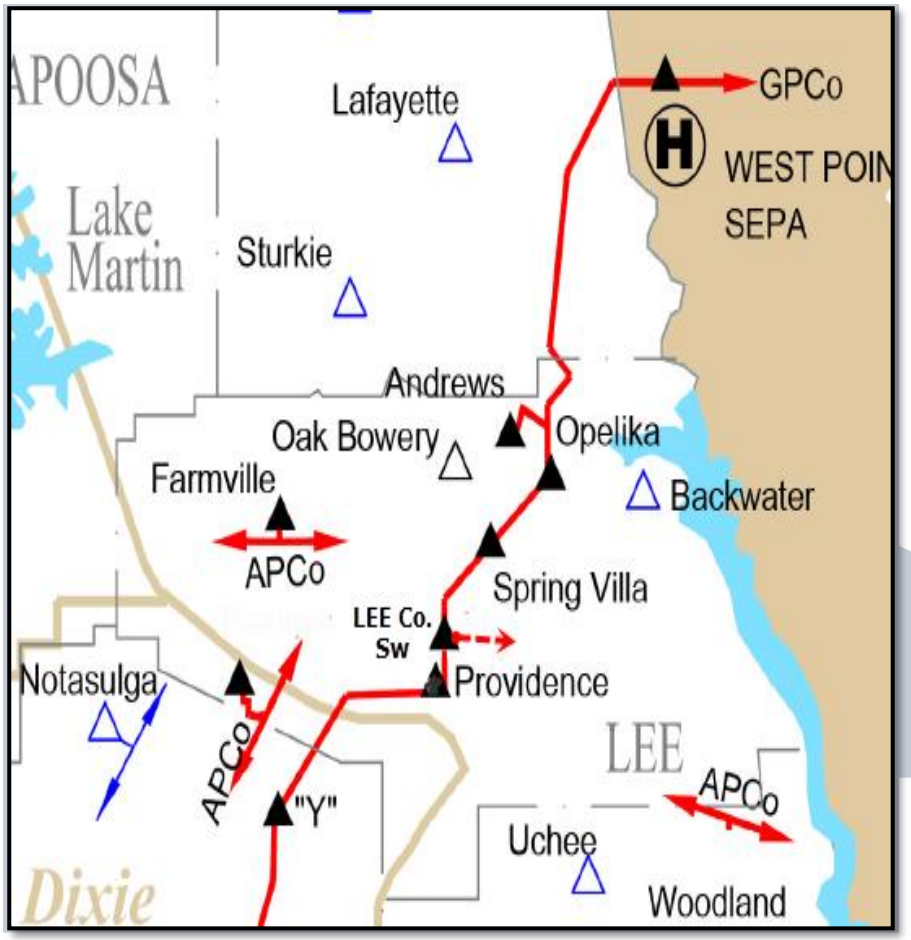
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 3

2017

LEE CO. 115 KV SWITCHING STATION

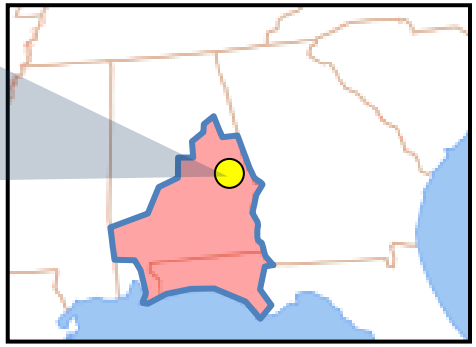


DESCRIPTION:

Construct a new 115 kV switching station that taps the existing Dublin – West Point 115 kV transmission line to facilitate the Lee County – Fuller Road 115 kV transmission line.

SUPPORTING STATEMENT:

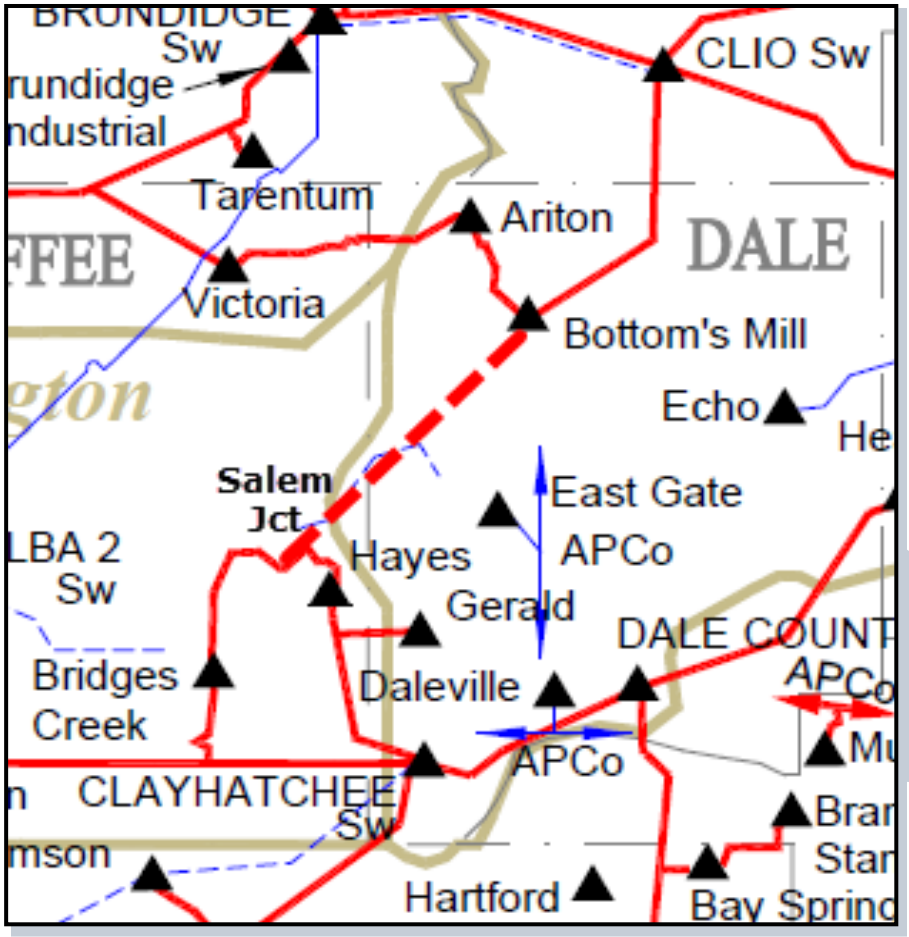
Additional voltage support is needed on the Dublin – West Point 115 kV transmission line under contingency.



POWERSOUTH – 4

2018

SALEM JUNCTION – BOTTOMS MILL 115 KV T.L.

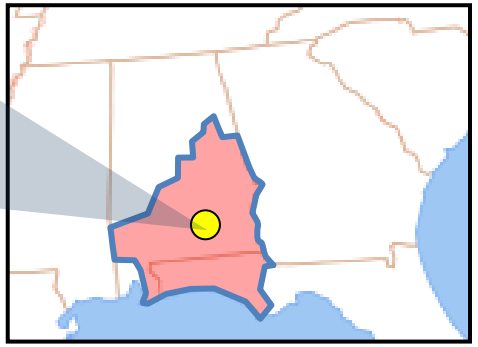


DESCRIPTION:

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

SUPPORTING STATEMENT:

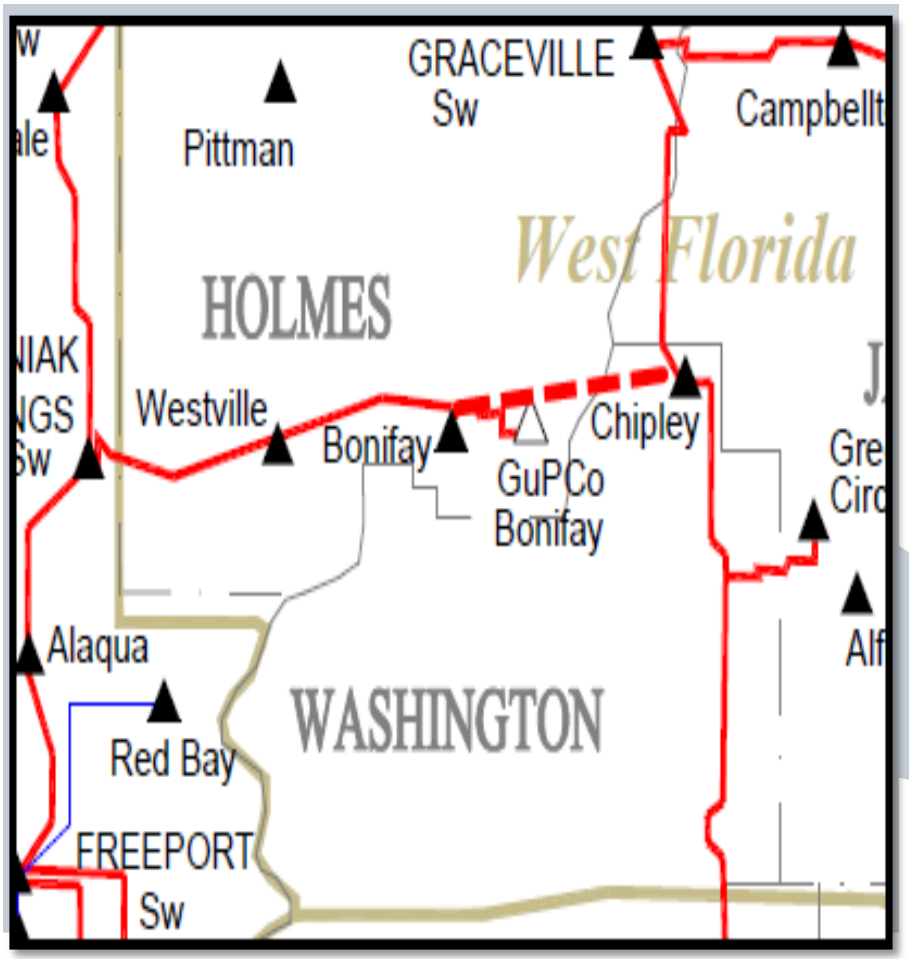
Additional voltage support needed in the Dublin, Kyzar, Brundidge, Clio, and Victoria areas under contingency.



POWERSOUTH – 5

2018

BONIFAY – CHIPLEY 115 KV T.L.

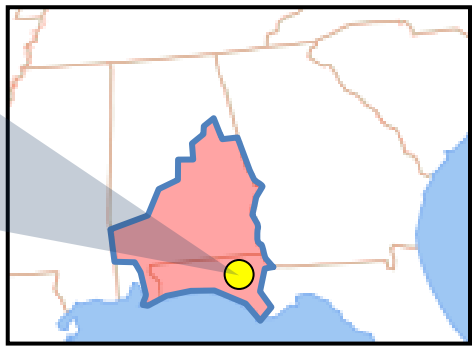


DESCRIPTION:

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

SUPPORTING STATEMENT:

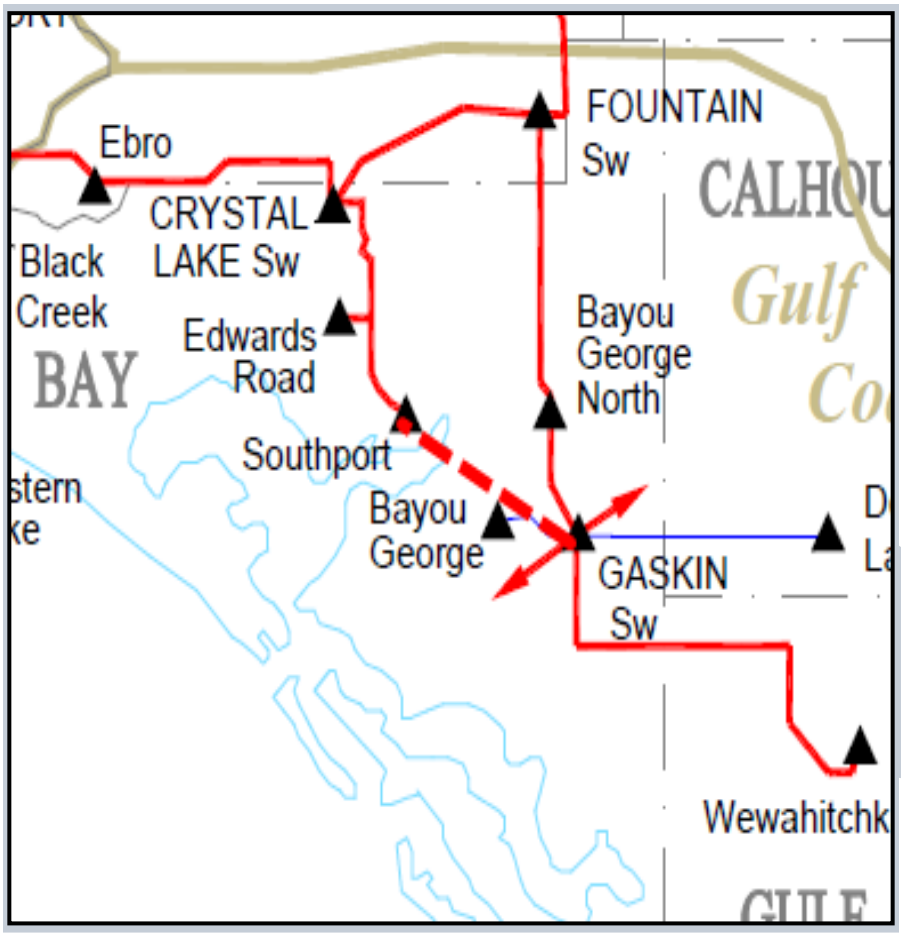
Additional voltage support is needed at Graceville and Fountain under contingency.



POWERSOUTH – 6

2018

GASKIN – SOUTHPORT 115 KV T.L.

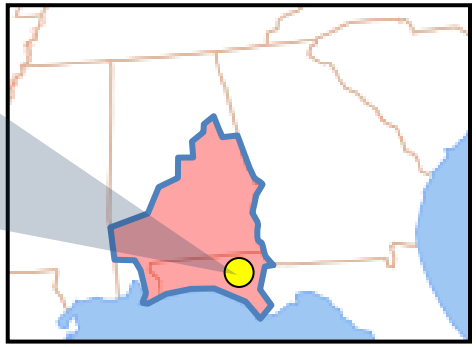


DESCRIPTION:

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

SUPPORTING STATEMENT:

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



POWERSOUTH Balancing Authority

Upcoming 2017 Generation Assumptions

* **POWERSOUTH has no generation assumptions expected to change throughout the ten year planning horizon for the 2017 SERTP Process.**

SOUTHERN Balancing Authority

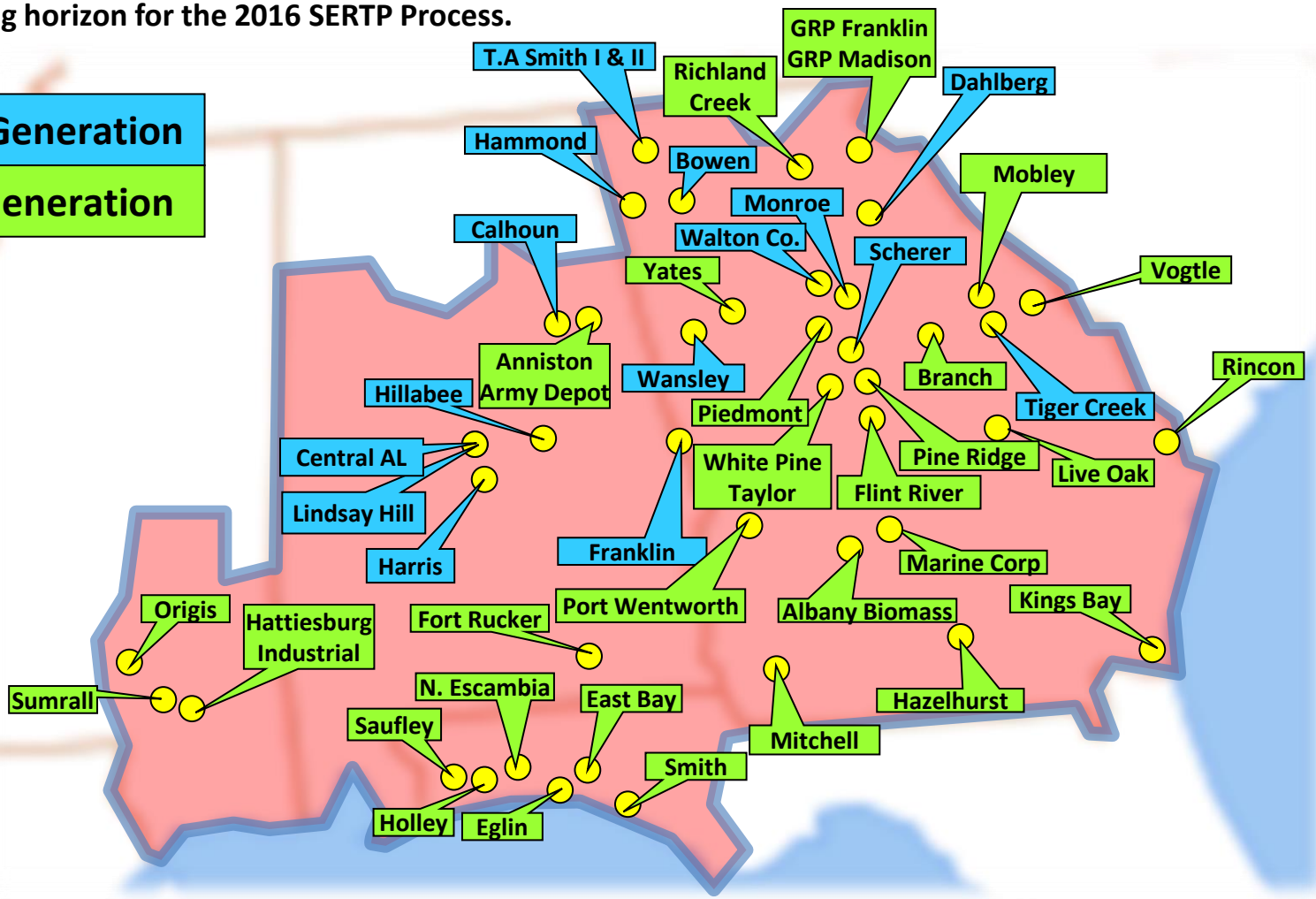
2016 Generation Assumptions

SOUTHERN – Generation Assumptions

The following diagram depicts the location of generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2016 SERTP Process.

Existing Generation

Future Generation



Southern Company – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2016 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
MARINE CORP SOLAR	30	30	30	30	30	30	30	30	30	30
ALBANY BIOMASS	50	50	50	50	50	50	50	50	50	50
EGLIN SOLAR	30	30	30	30	30	30	30	30	30	30
KINGS BAY SOLAR	30	30	30	30	30	30	30	30	30	30
HOLLEY SOLAR	40	40	40	40	40	40	40	40	40	40
SAUFLEY SOLAR	50	50	50	50	50	50	50	50	50	50
LIVE OAK SOLAR	51	51	51	51	51	51	51	51	51	51
MOBLEY SOLAR	77	77	77	77	77	77	77	77	77	77
WHITE PINE SOLAR	102	102	102	102	102	102	102	102	102	102
HATTIESBURG INDUSTRIAL SOLAR	50	50	50	50	50	50	50	50	50	50

Southern Company – Generation Assumptions

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
FORT RUCKER SOLAR	11	11	11	11	11	11	11	11	11	11
ANNISTON ARMY DEPOT	8	8	8	8	8	8	8	8	8	8
GRP FRANKLIN	58	58	58	58	58	58	58	58	58	58
GRP MADISON	58	58	58	58	58	58	58	58	58	58
SUMRALL SOLAR	52	52	52	52	52	52	52	52	52	52
HARRIS 2	649	649	0	--	--	--	--	--	--	--
WANSLEY 6	0	--	--	--	--	--	--	--	--	--
ORIGIS SOLAR	72	72	72	72	72	72	72	72	72	72
PIEDMONT BIO	55	55	55	55	55	55	55	55	55	55
RICHLAND CREEK	11	11	11	11	11	11	11	11	11	11
PINE RIDGE	7	7	7	7	7	7	7	7	7	7

Southern Company – Generation Assumptions

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
FLINT RIVER	20	20	20	20	20	20	20	20	20	20
RINCON SOLAR	16	16	16	16	16	16	16	16	16	16
PORT WENTWORTH	15	15	15	15	15	15	15	15	15	15
WALTON COUNTY	447	447	465	465	465	465	465	0	--	--
VOGTLE 3	--	--	504	504	504	504	504	504	504	504
VOGTLE 4	--	--	--	504	504	504	504	504	504	504
CALHOUN 1-4	632	632	632	632	632	632	0	--	--	--
CENTRAL ALABAMA	885	885	885	885	885	885	0	--	--	--
MONROE	310	310	310	310	310	310	310	0	--	--

Southern Company – Generation Assumptions

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
NORTH ESCAMBIA [1]	--	--	--	--	--	--	460	460	460	460
LANSING SMITH[1]	--	--	--	--	--	--	460	460	460	460
TIGER CREEK	310	310	310	310	310	310	310	0	--	--
YATES[1]	--	--	--	--	--	--	--	940	940	940
BRANCH[1]	--	--	--	--	--	--	--	940	1400	1400

(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	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
VOGTLE	206	206	206	206	206	206	206	206	206	206
LINDSAY HILL	300	300	300	300	300	300	300	300	300	300
HAMMOND	10	10	10	10	10	10	10	10	10	10
HILLABEE	350	350	350	350	350	350	350	350	350	350
FRANKLIN	424	424	424	424	424	424	424	424	424	424
SCHERER	911	911	911	911	911	911	911	911	911	911
DAHLBERG	494	494	494	494	494	494	494	494	494	494
BOWEN	159	159	159	159	159	159	159	159	159	159

GTC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
FRANKLIN CC 2	625	625	625	625	625	625	625	625	625	625
HILLABEE CC	123	123	123	123	123	123	123	123	123	123
T.A. SMITH I CC	647	647	647	647	647	647	647	647	647	647
T.A. SMITH II CC	647	647	647	647	647	647	647	647	647	647
LINDSAY HILL CC	300	300	300	300	300	300	300	300	300	300
DAHLBERG CT	375	375	375	375	375	375	375	375	375	375
TAYLOR SOLAR	143	143	143	143	143	143	143	143	143	143
WANSLEY 6	561	561	561	561	561	561	561	561	561	561
VOGTLE 3	--	--	330	330	330	330	330	330	330	330
VOGTLE 4	--	--	--	330	330	330	330	330	330	330

GTC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
TIGER CREEK	309	309	309	309	309	309	309	309	309	309
SCHERER 3	132	132	132	56	56	56	56	56	56	56
HAZELHURST SOLAR I	20	20	20	20	20	20	20	20	20	20
HAZELHURST SOLAR II	50	50	50	50	50	50	50	50	50	50

MEAG – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
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 2016 SERTP Process. The years shown represent Summer Peak conditions.

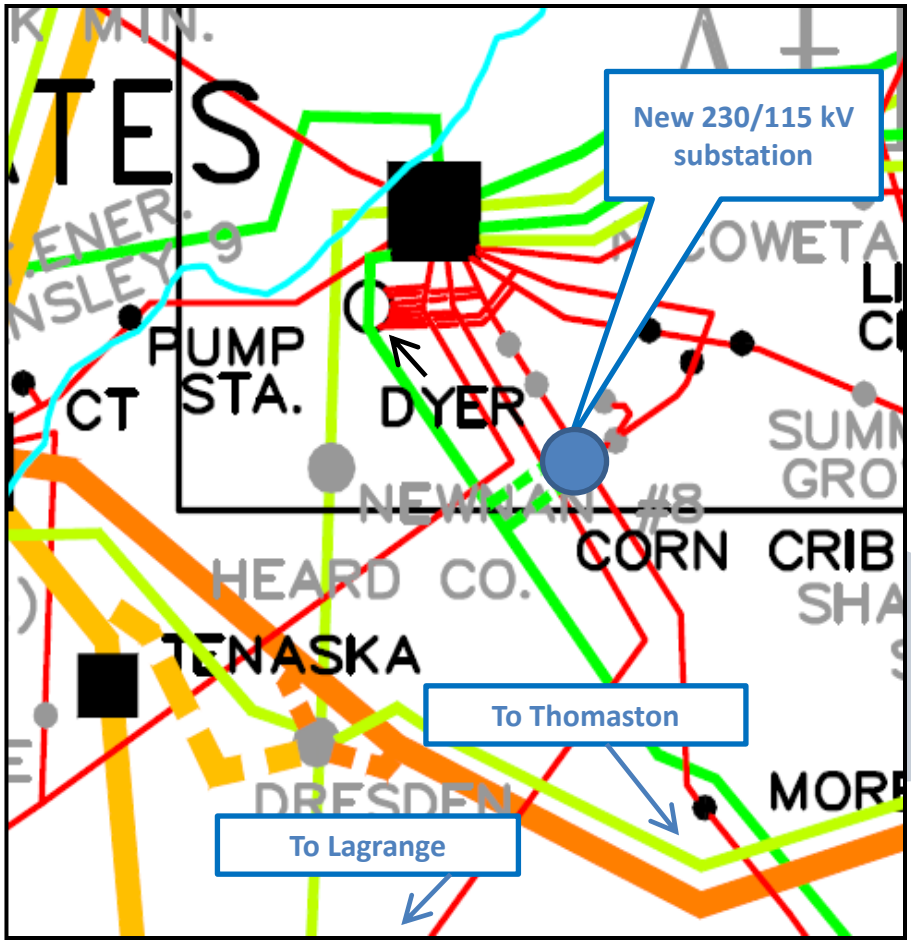
SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
VOGTLE 3	--	--	16	16	16	16	16	16	16	16
VOGTLE 4	--	--	--	16	16	16	16	16	16	16

SOUTHERN Balancing Authority

SERTP Regional Transmission Plan

SOUTHERN – 1E 2017

CORN CRIB 230/115 KV SUBSTATION

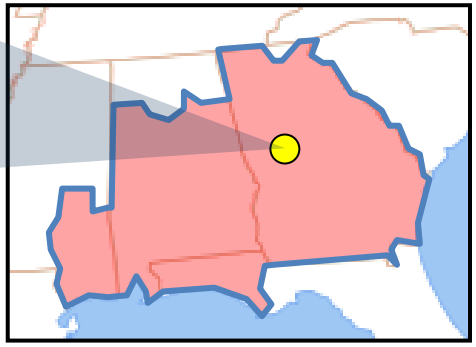


DESCRIPTION:

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

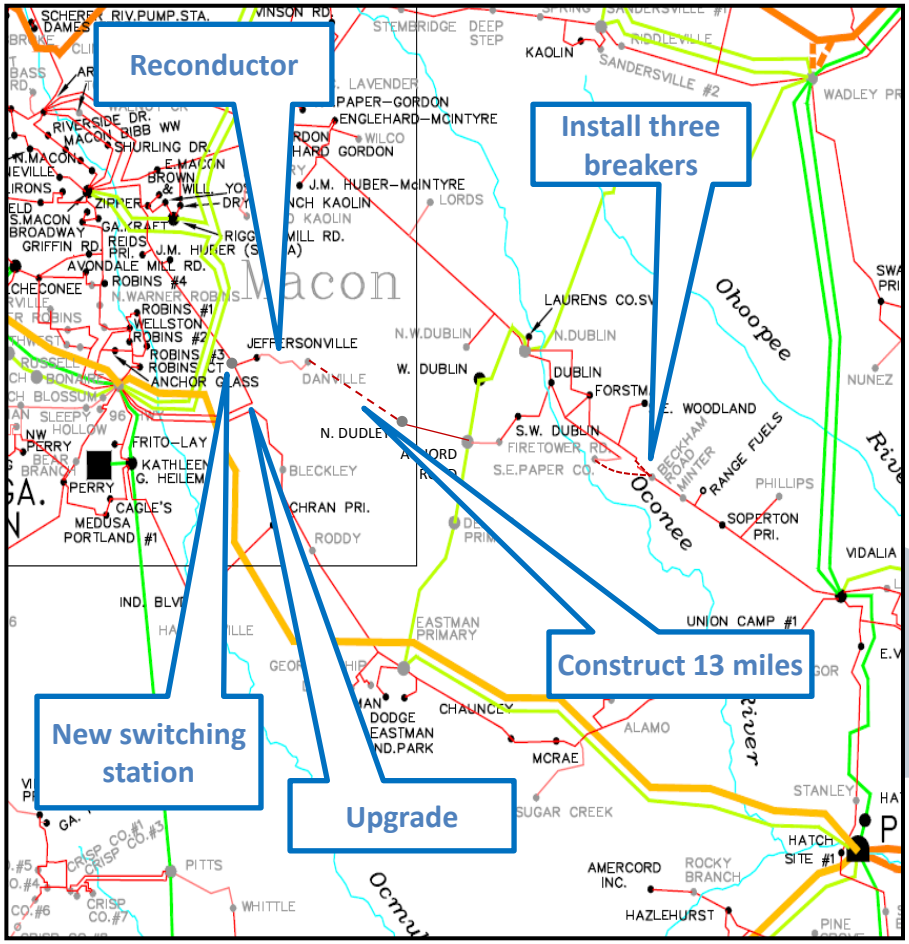
SUPPORTING STATEMENT:

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



SOUTHERN – 2E 2017

DUBLIN AREA IMPROVEMENTS

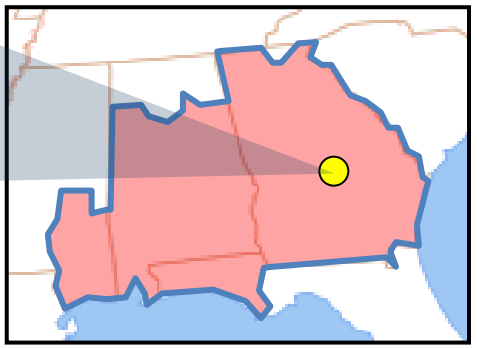


DESCRIPTION:

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

SUPPORTING STATEMENT:

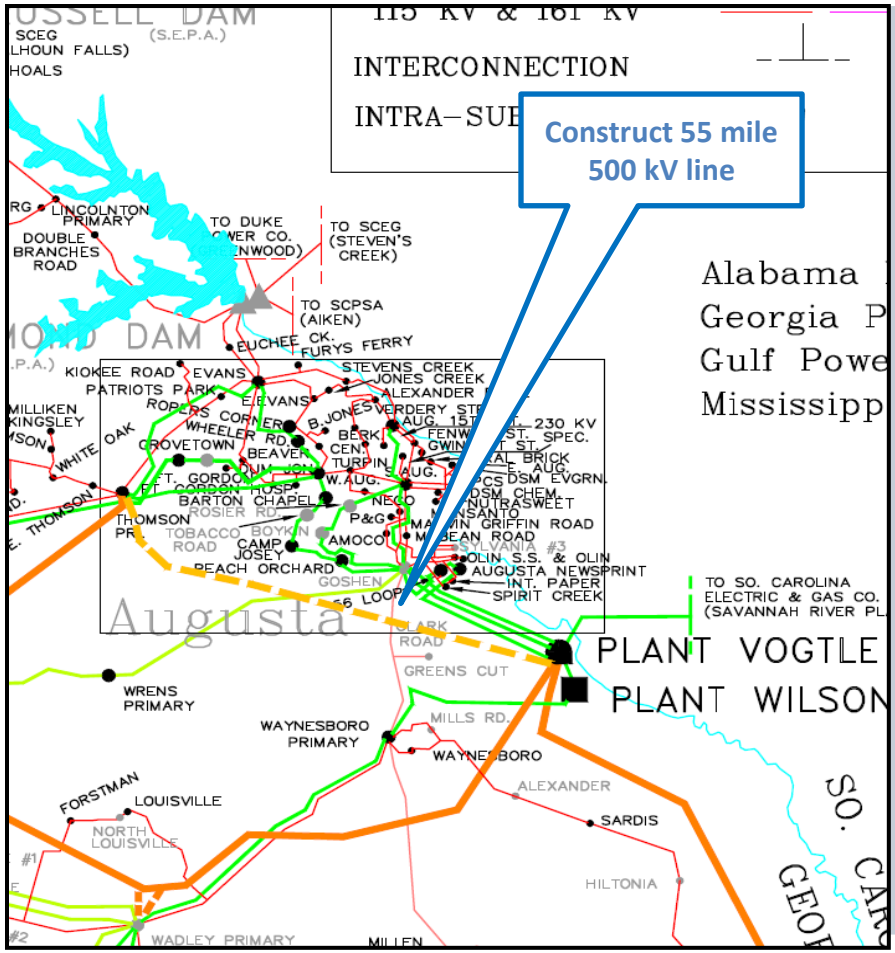
Additional voltage support needed in the Dublin area under contingency.



SOUTHERN – 3E

2017

THOMSON PRIMARY – VOGTLE 500 KV T.L.

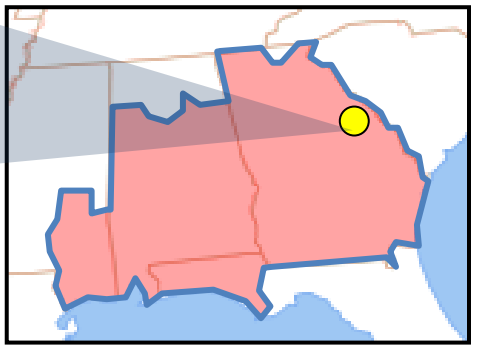


DESCRIPTION:

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

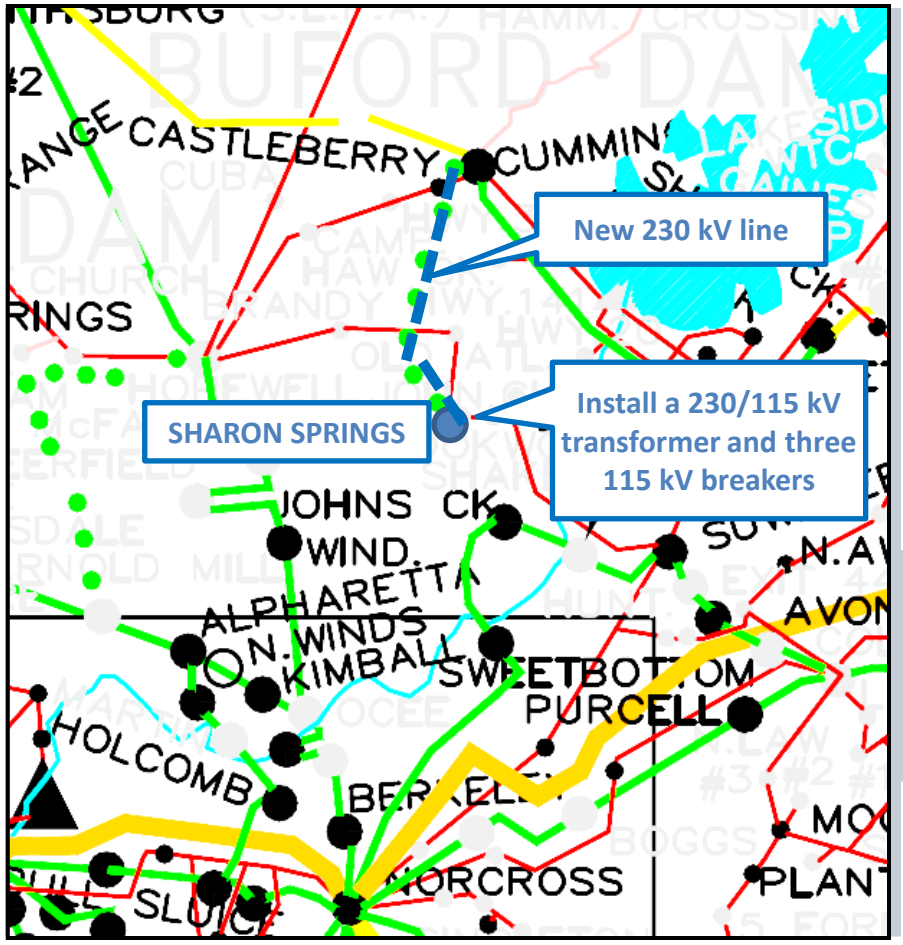
SUPPORTING STATEMENT:

Needed to support the expansion of Plant Vogtle.



SOUTHERN – 4E 2017

PINECREST 230/115 KV AREA PROJECT

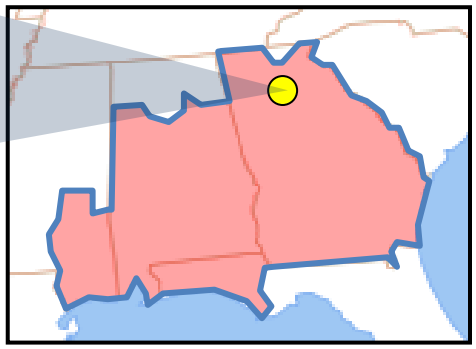


DESCRIPTION:

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

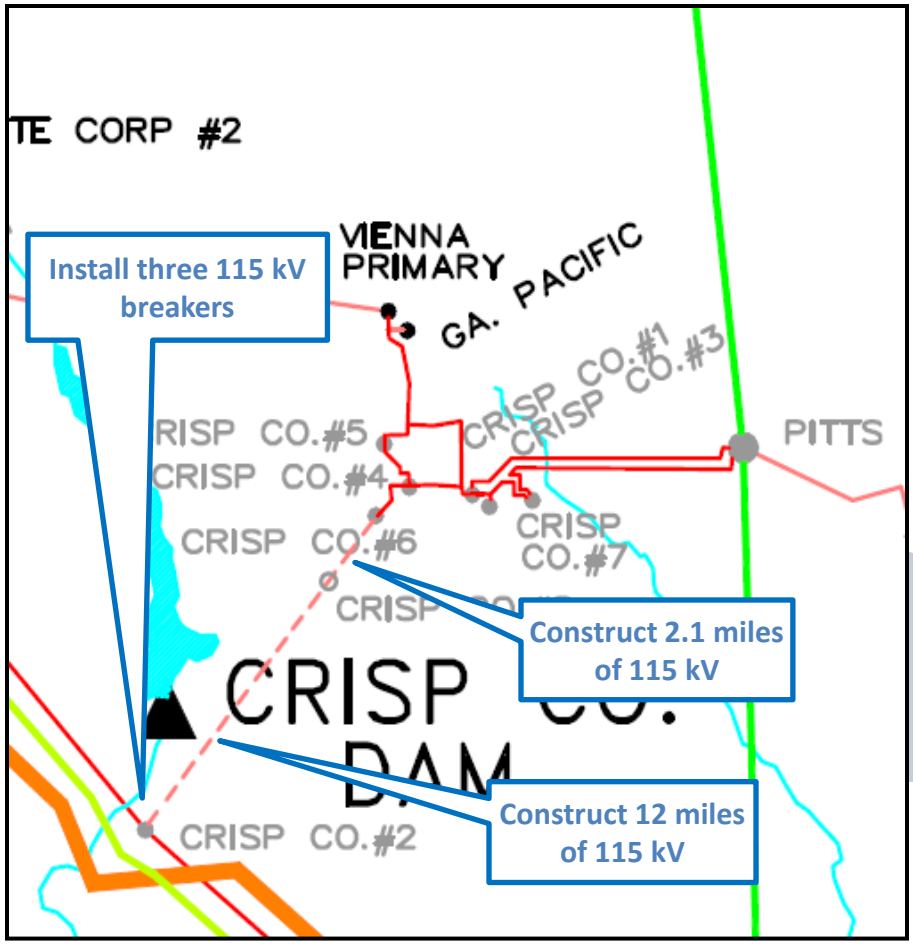
SUPPORTING STATEMENT:

The Suwanee – Old Atlanta Road section of the T.L. overloads under contingency.



SOUTHERN – 5E 2018

CRISP COUNTY AREA IMPROVEMENTS

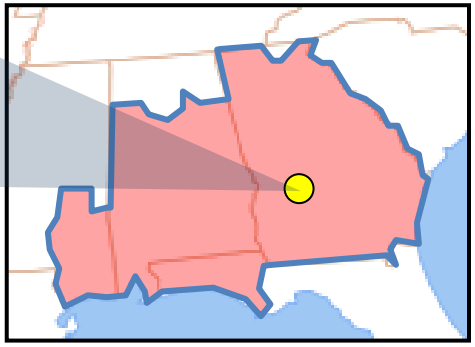


DESCRIPTION:

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

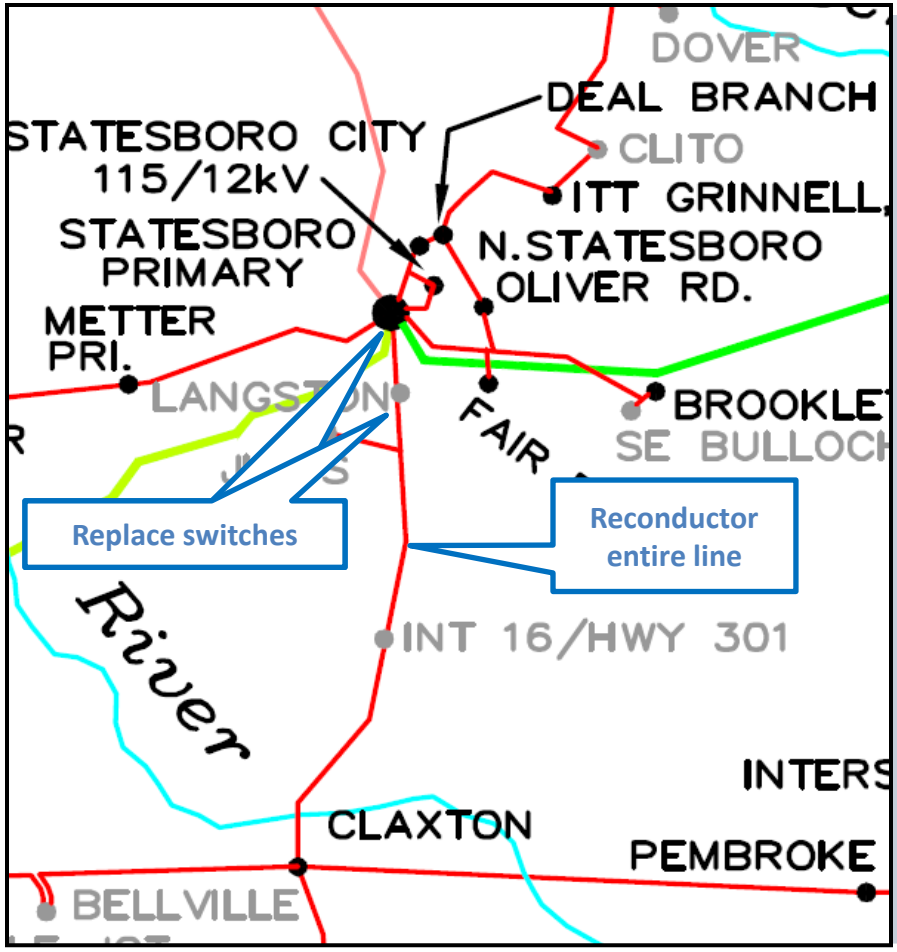
SUPPORTING STATEMENT:

The North Americus – Turkey Creek 115 kV T.L. overloads and additional voltage support is needed in the Crisp County area under contingency..



SOUTHERN – 6E 2019

CLAXTON – STATESBORO PRIMARY 115 KV T.L.

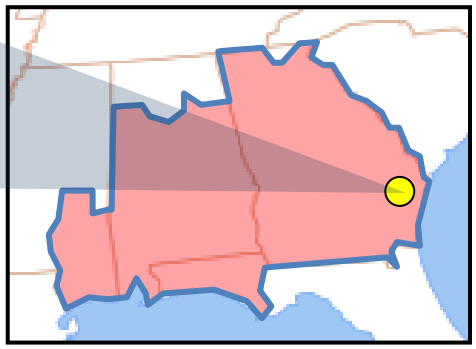


DESCRIPTION:

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.

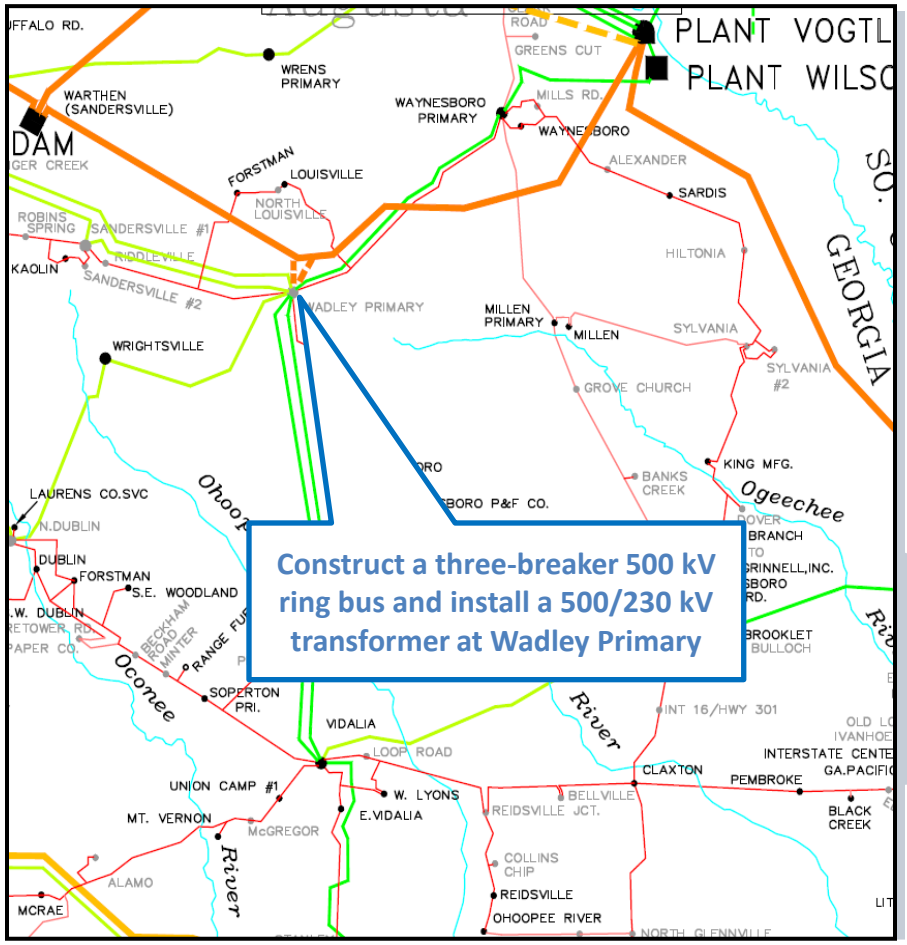
SUPPORTING STATEMENT:

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



SOUTHERN – 7E 2019

WADLEY PRIMARY 500/230 KV SUBSTATION

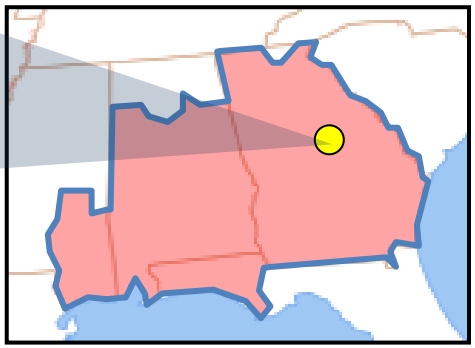


DESCRIPTION:

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

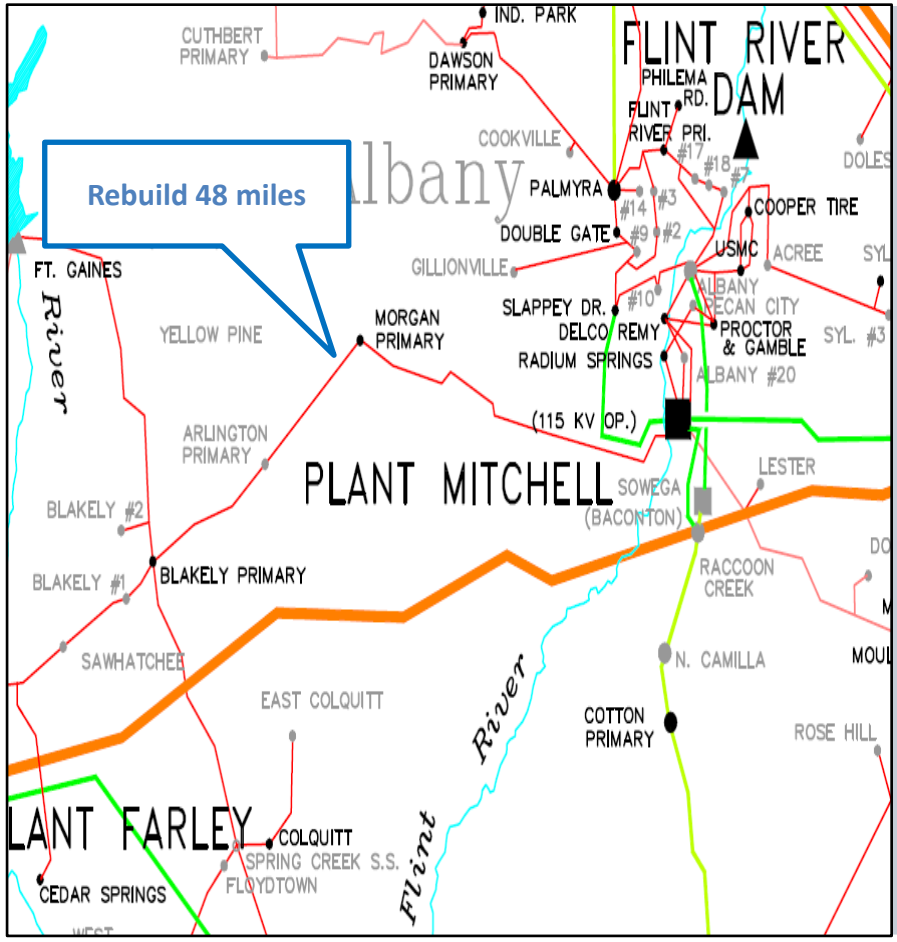
SUPPORTING STATEMENT:

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



SOUTHERN – 8E 2020

BLAKELY PRIMARY – MITCHELL 115 KV T.L.

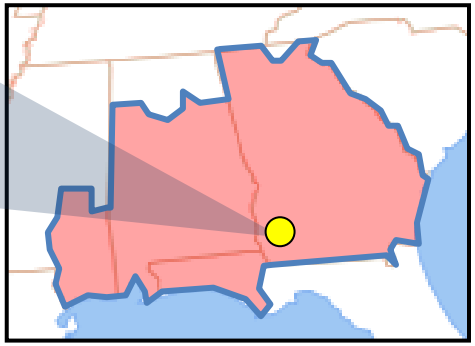


DESCRIPTION:

Rebuild approximately 48.2 miles of 115 kV transmission line of the Blakely Primary – Mitchell 115 kV transmission line with 795 ACSR at 100°C operation.

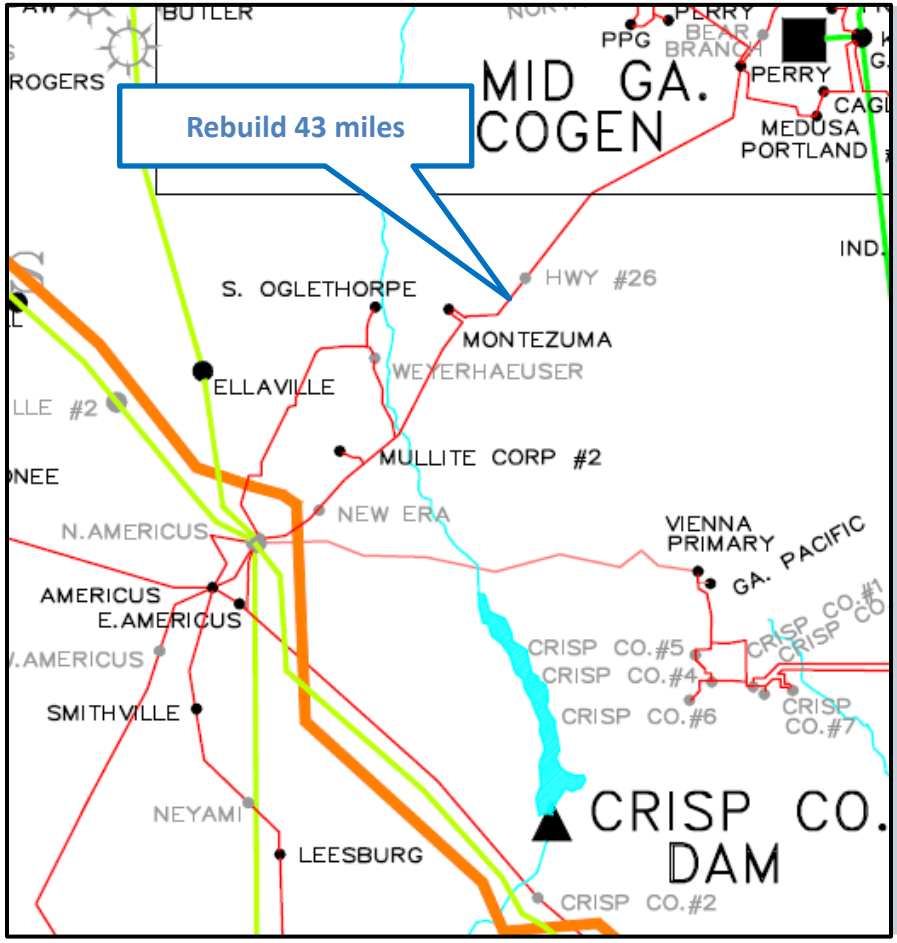
SUPPORTING STATEMENT:

The Blakely Primary – Mitchell 115 kV line overloads under contingency.



SOUTHERN – 9E 2020

NORTH AMERICUS – PERRY 115 KV T.L.

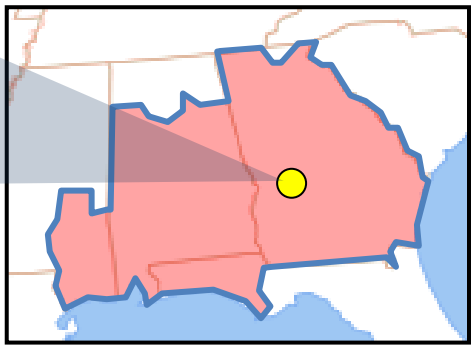


DESCRIPTION:

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

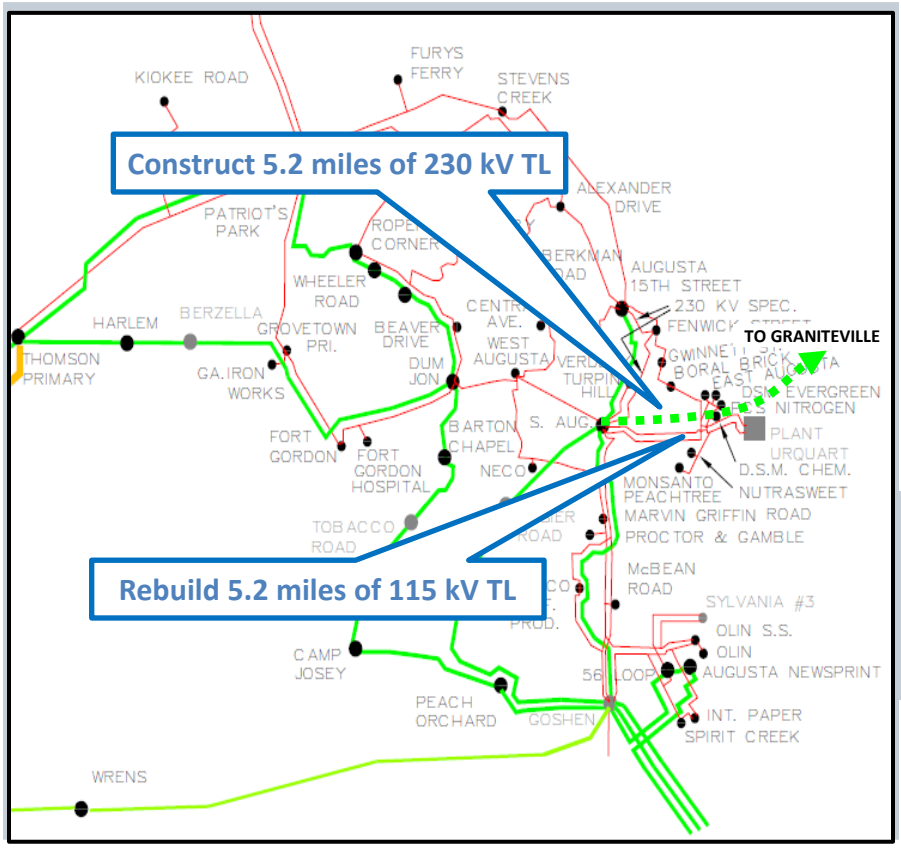
SUPPORTING STATEMENT:

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



SOUTHERN – 10E 2020

SOUTH AUGUSTA – GRANITEVILLE, SC 115 & 230 KV T.L.

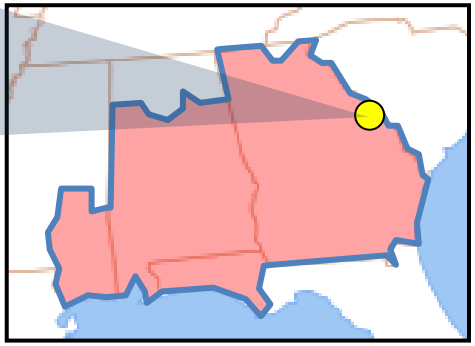


DESCRIPTION:

Construct a new 5.2 mile 230 kV tie-line (GPC to SCEG) from the South Augusta 230/115 kV substation to the GA/SC state line with bundled 1351 ACSR at 100°C. Also, rebuild 4.2 miles of the South Augusta – Elanco 115 kV transmission line from S. Augusta to Nutrasweet Junction and 1.0 mile from Nutrasweet Junction to the GA/SC state line with 1351 ACSR at 100°C.

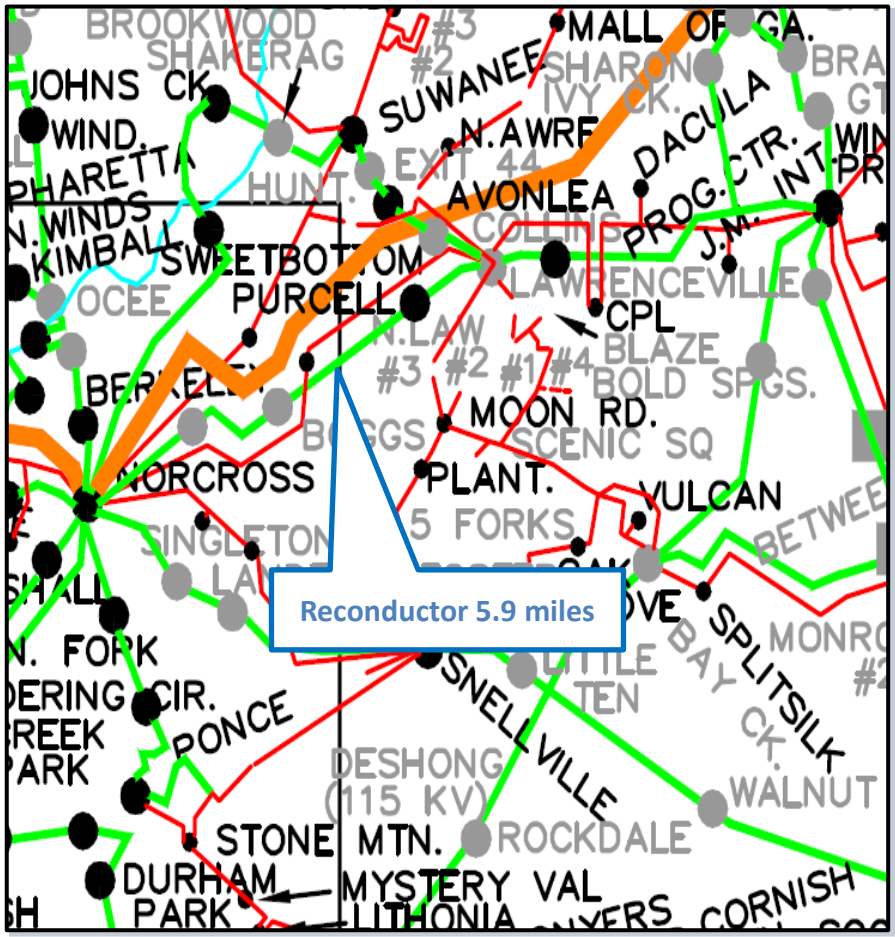
SUPPORTING STATEMENT:

The Savannah River (SCEG) – Vogtle 230 kV transmission line and multiple facilities on SCEG system overload under contingency.



SOUTHERN – 11E 2024

LAWRENCEVILLE – NORCROSS 230 KV T.L.

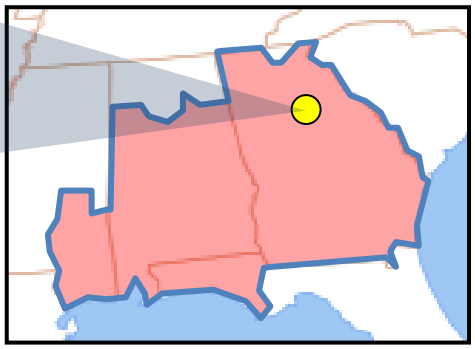


DESCRIPTION:

Reconductor 5.9 miles of 1033 ACSR conductor with 1351 ACSS conductor at 170°C from Boggs Road to Lawrenceville on the Lawrenceville – Norcross 230 kV transmission line.

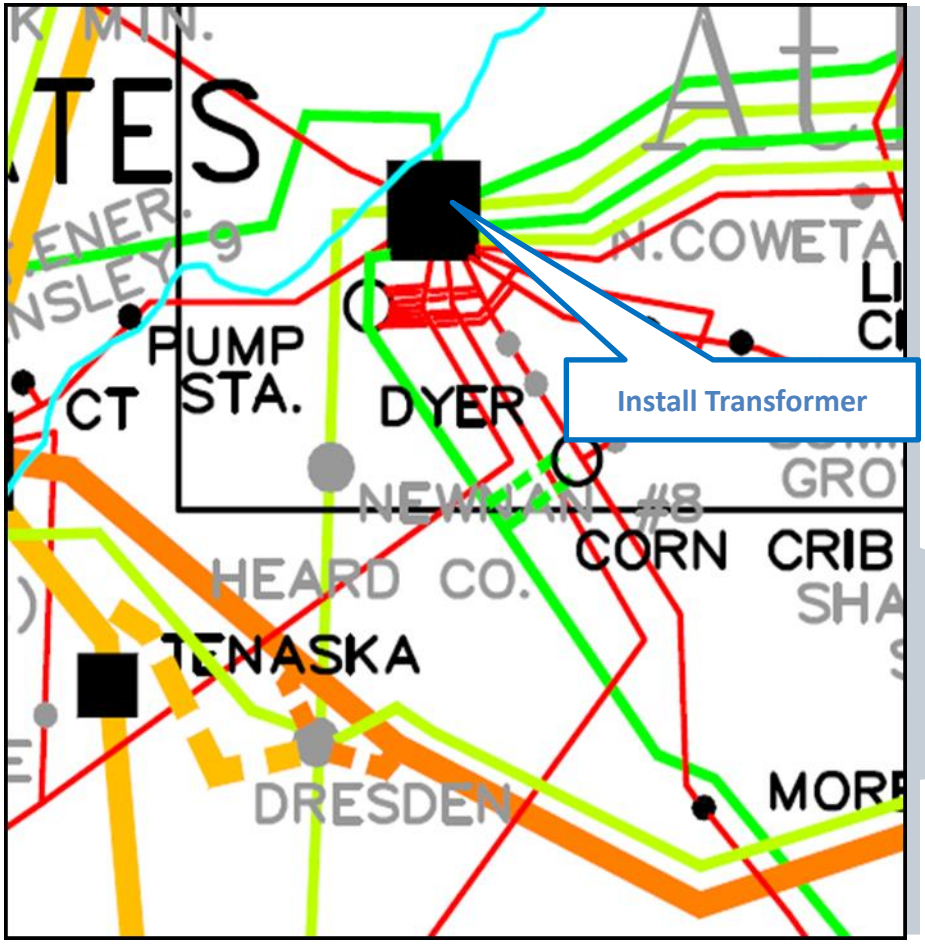
SUPPORTING STATEMENT:

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



SOUTHERN – 12E 2024

DYER ROAD 230/115 KV SUBSTATION

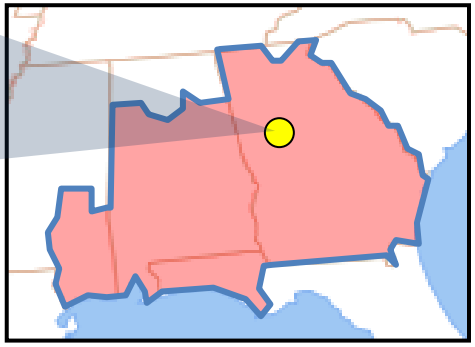


DESCRIPTION:

Install a second 230/115 kV, 400 MVA transformer at Dyer Road.

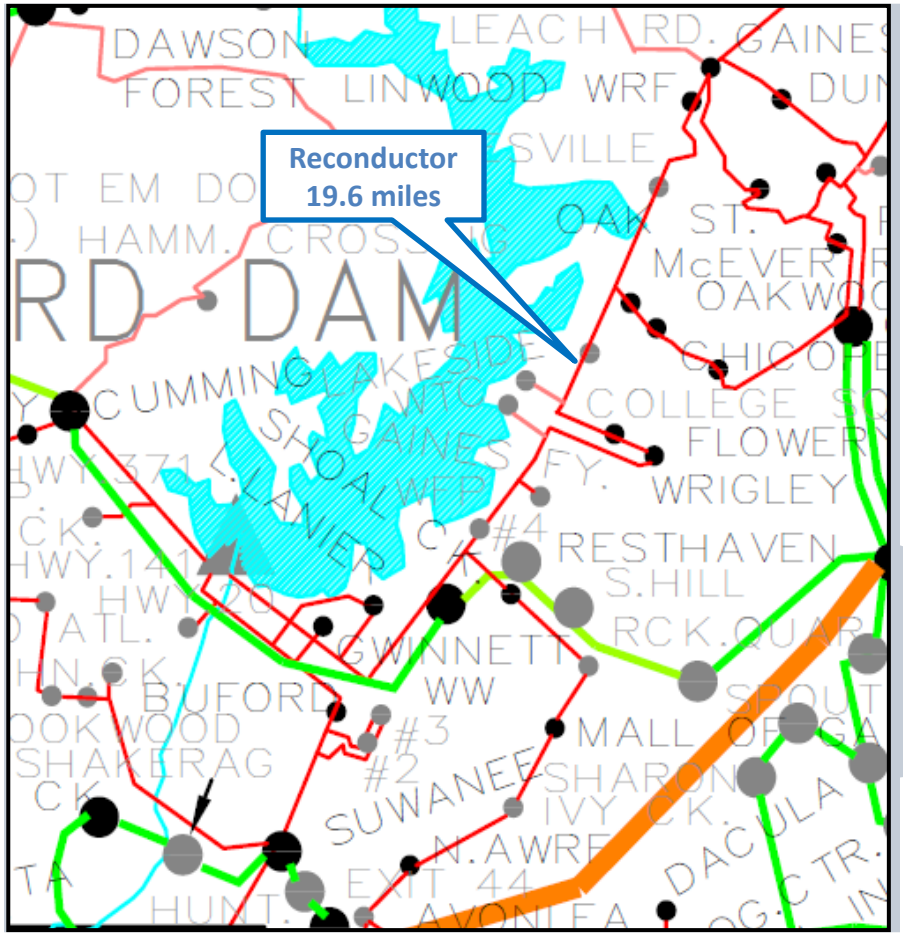
SUPPORTING STATEMENT:

The existing Corn Crib 230/115 kV transformer overloads under contingency.



SOUTHERN – 13E 2025

MCEVER ROAD – SHOAL CREEK 115 KV T.L.

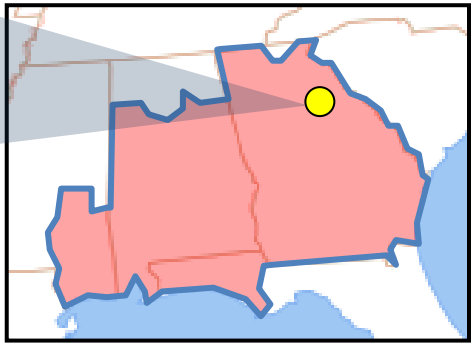


DESCRIPTION:

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

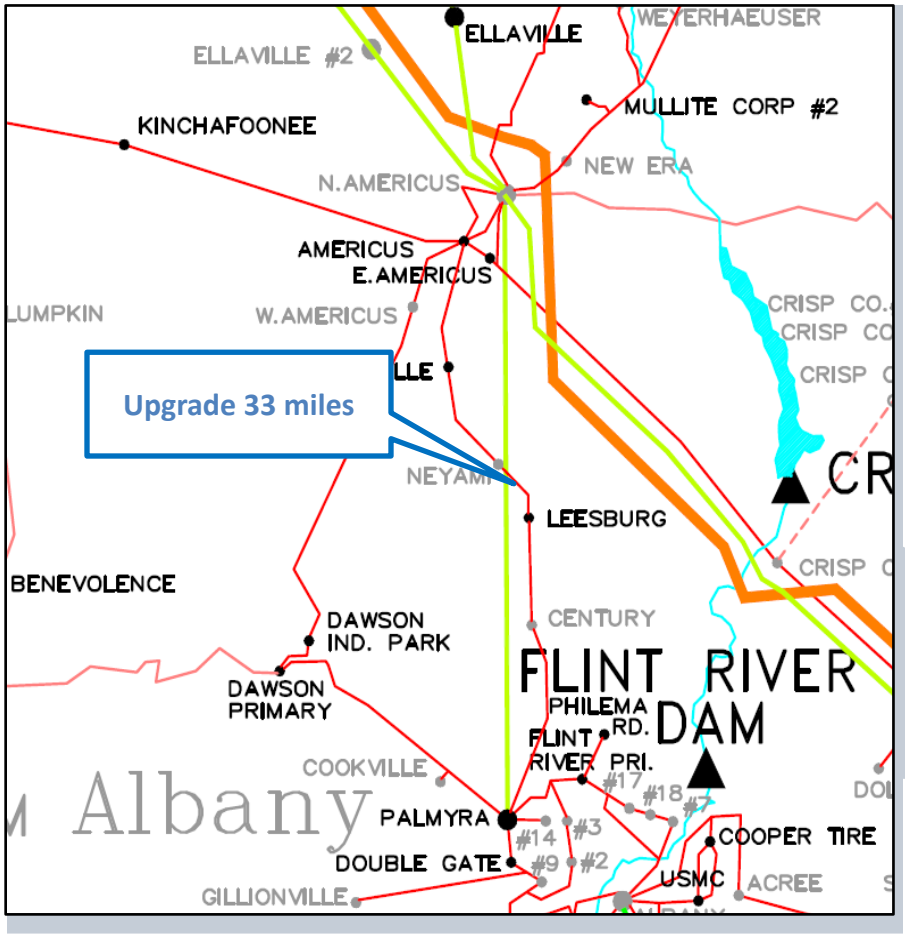
SUPPORTING STATEMENT:

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



SOUTHERN – 14E 2026

NORTH AMERICUS – PALMYRA 230 KV T.L.

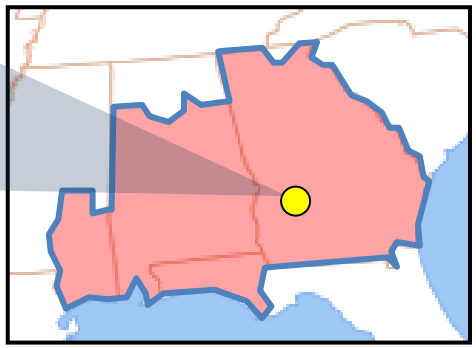


DESCRIPTION:

Upgrade 33.3 miles of the North Americus – Palmyra 230 kV transmission line to 100°C operation.

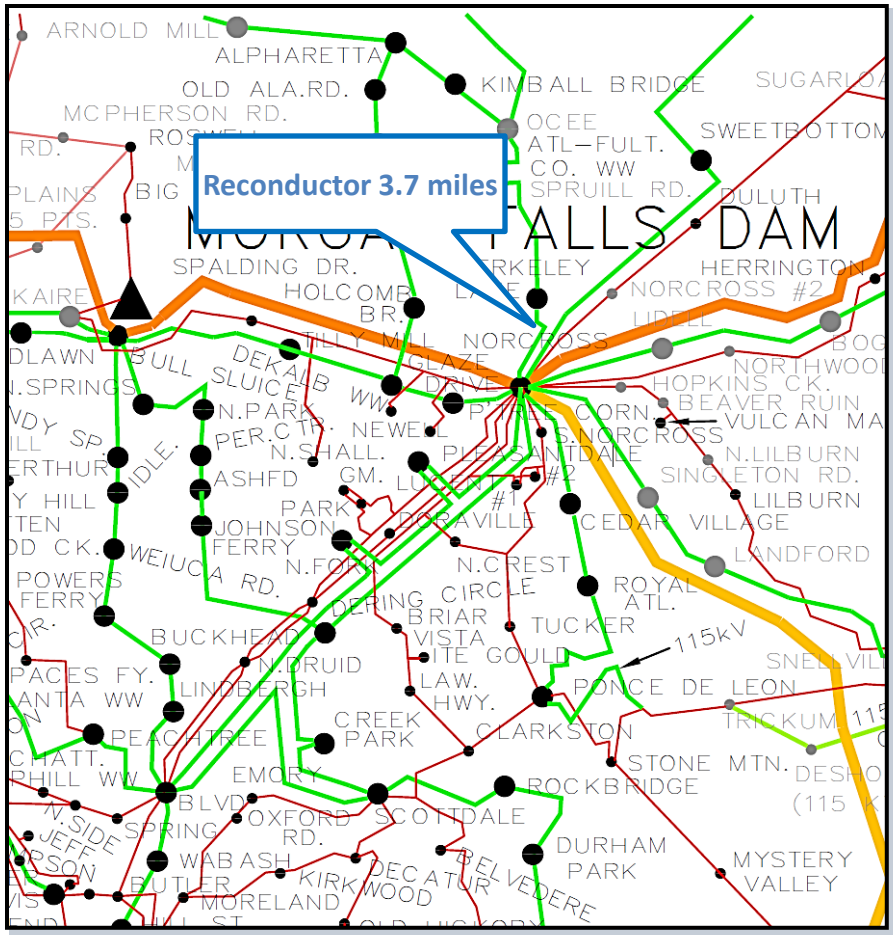
SUPPORTING STATEMENT:

The North Americus – Palmyra 230 kV transmission line overloads under contingency.



SOUTHERN – 15E 2026

NORCROSS – OCEE 230 KV T.L.

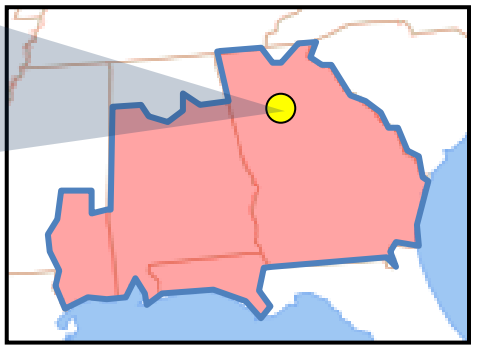


DESCRIPTION:

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

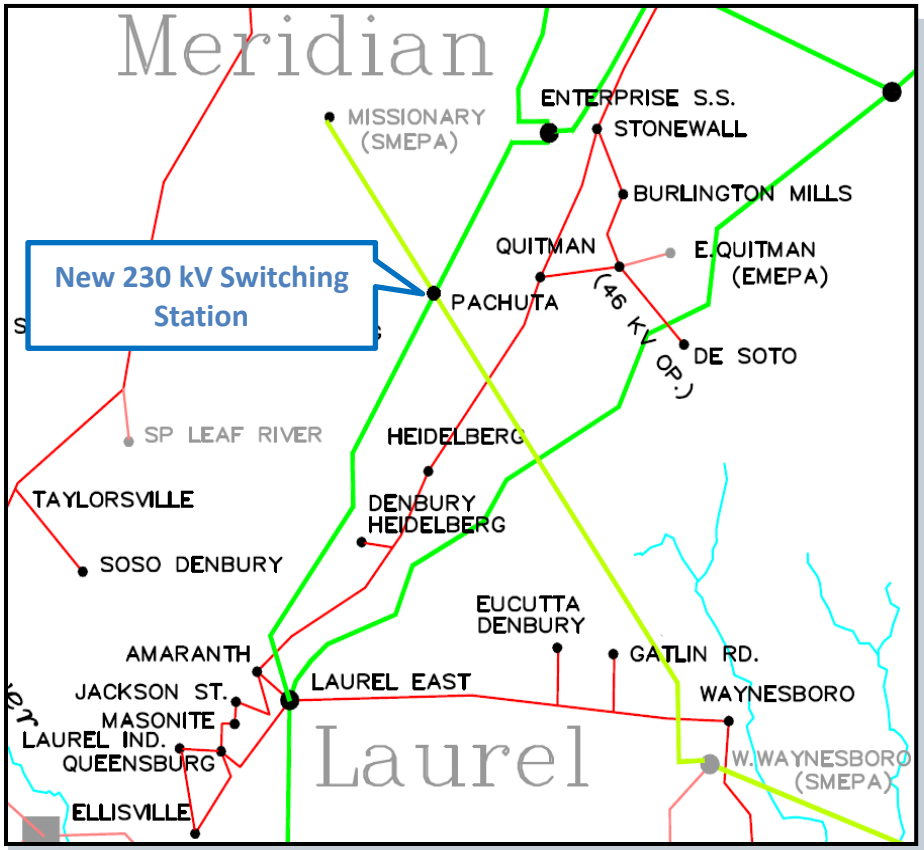
SUPPORTING STATEMENT:

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



SOUTHERN – 1W 2017

JASPER EAST – MISSIONARY (SMEPA) 230 KV T.L.

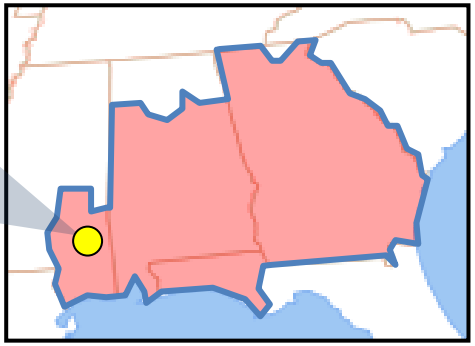


DESCRIPTION:

Tap the Missionary – Waynesboro 161 kV transmission line at the intersection of the Enterprise – Laurel East 230 kV transmission line. Construct a four (4) breaker 230 kV ring bus in Jasper County, MS.

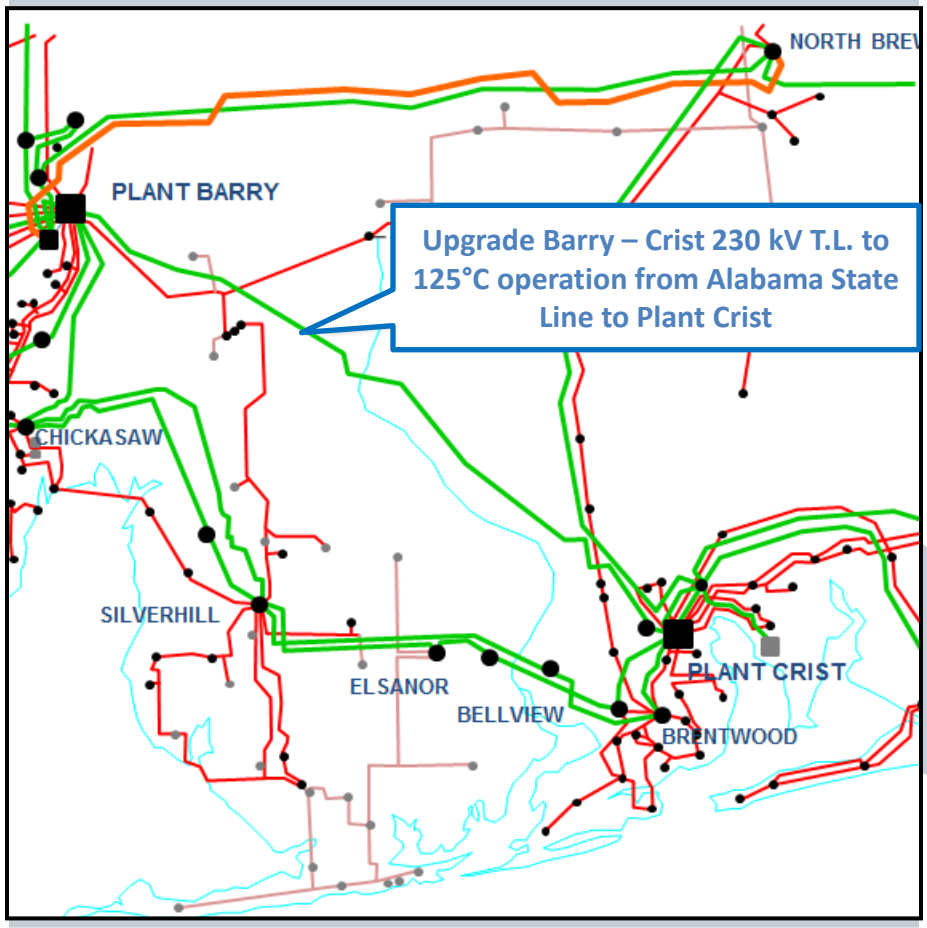
SUPPORTING STATEMENT:

The project provides additional voltage support needed in the area.



SOUTHERN – 2W 2017

BARRY – CRIST 230 KV T.L.

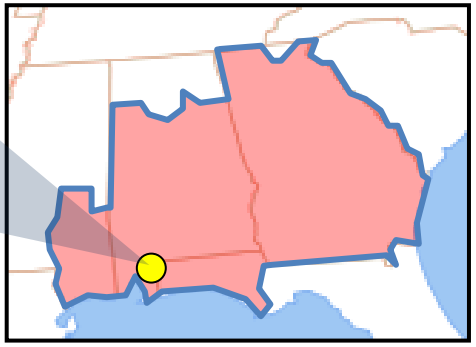


DESCRIPTION:

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

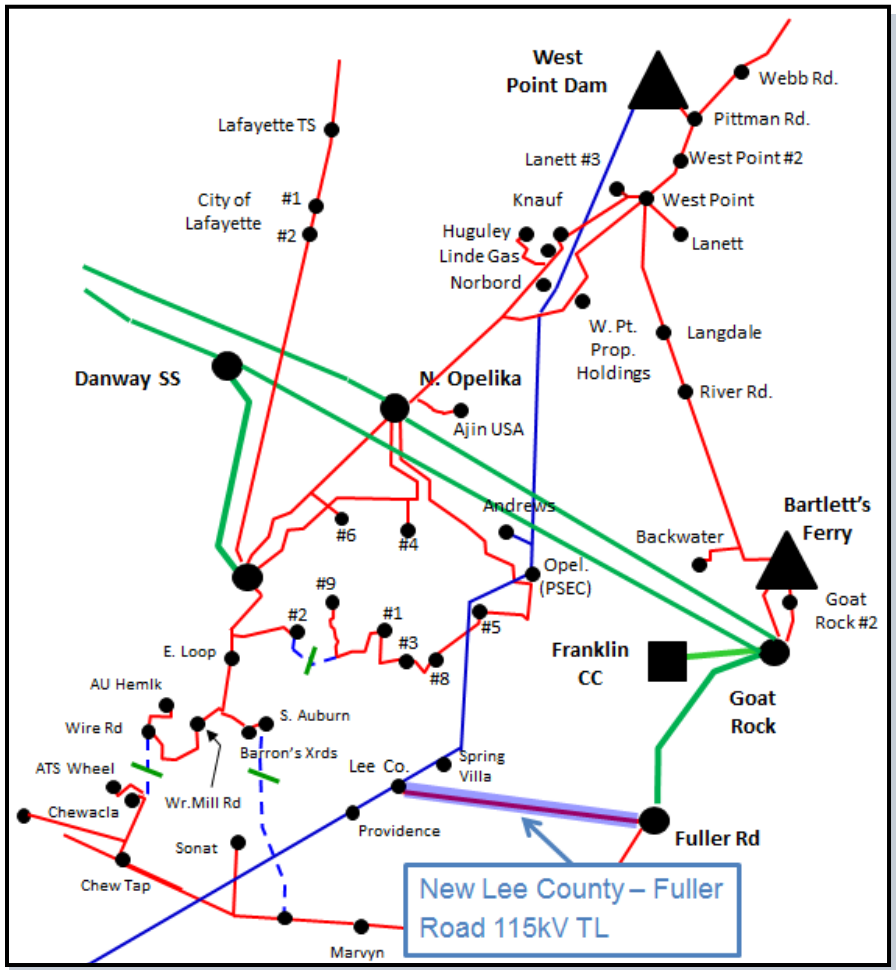
SUPPORTING STATEMENT:

The project provides additional maintenance flexibility.



SOUTHERN – 3W 2018

FULLER ROAD – LEE COUNTY (POWER SOUTH) 115 KV T.L.

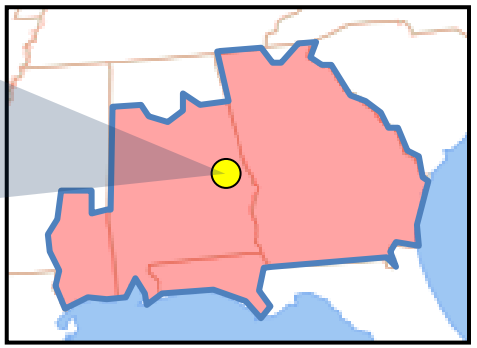


DESCRIPTION:

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

SUPPORTING STATEMENT:

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



SOUTHERN – 4W 2018

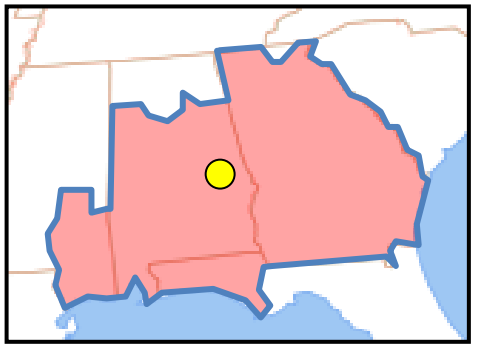
AUBURN – OPELIKA 115 KV T.L. NETWORKING

DESCRIPTION:

- Add four new 115 kV switching stations:
  a) Near East Loop DS (East Loop SS)
  b) West of North Auburn (Pear Tree SS)
  c) Near the Chewacla Tap (Pin Oaks SS)
  d) West of Marvyn DS intersecting the Fuller Rd – Notasulga and South Auburn 115 kV T.L.'s (Sanford SS).
- Construct approximately 4.0 miles of 115 kV T.L. from Pear Tree SS to Wire Road.
- Reconductor approximately 1.8 miles of 115 kV T.L. line between Opelika #1 and Opelika #3 with 795 ACSR at 100°C.
- Reconductor approximately 14.5 miles of 115 kV T.L. between Sanford SS – Sonat Tap – Pin Oaks – Beehive Tap – Chewacla with 397 ACSS at 200°C.
- Reconductor approximately 6 miles of 115 kV T.L. line between North Auburn – Pear Tree SS with 795 ACSS @ 200°C.

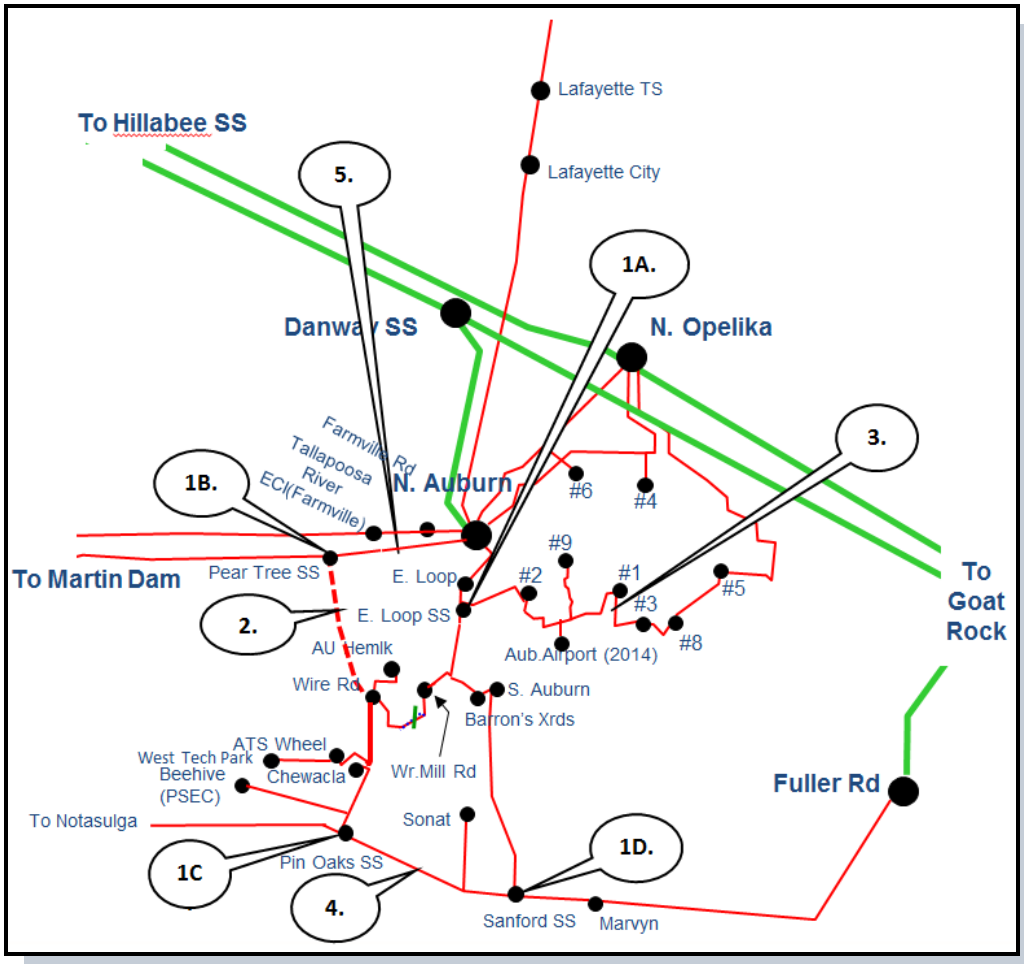
SUPPORTING STATEMENT:

The project provides additional reliability and maintenance flexibility.

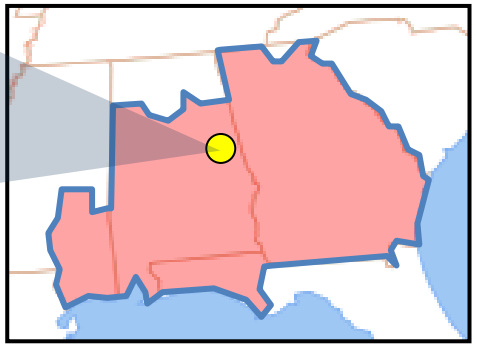


SOUTHERN – 4W 2018

AUBURN – OPELIKA 115 KV T.L. NETWORKING

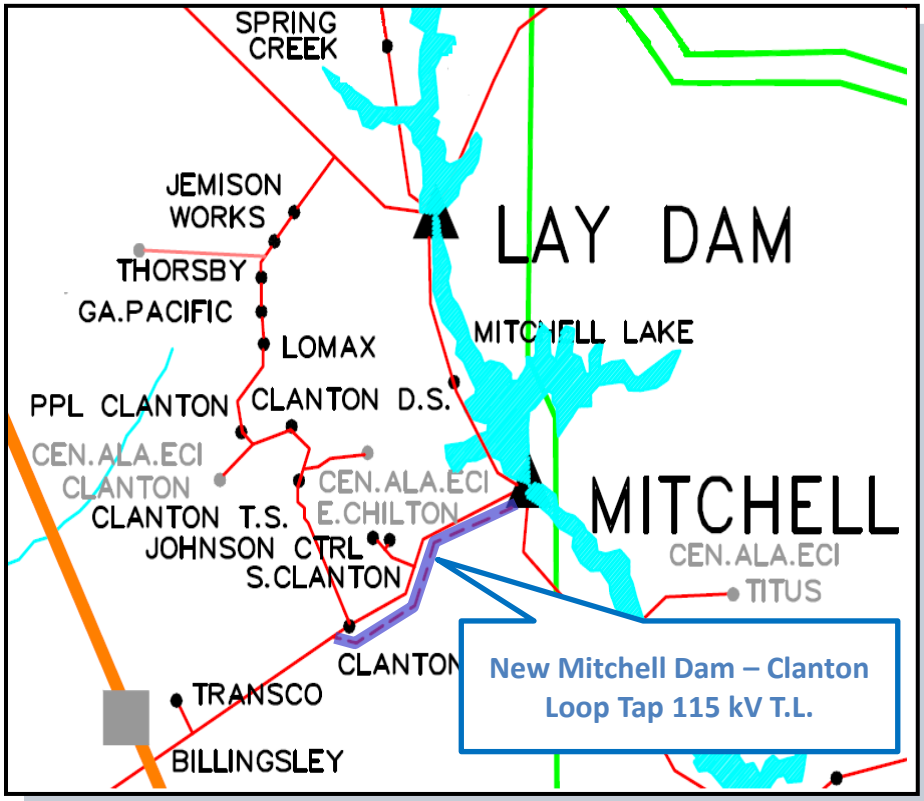


1. Add four new 115 kV switching stations.
2. Construct approx. 4.0 miles of 115 kV T.L. from Pear Tree SS to Wire Road.
3. Reconductor approx. 1.8 miles of 115 kV T.L. between Opelika #1 and Opelika #3 with 795 ACSR at 100°C.
4. Reconductor approx. 14.5 miles of 115 kV T.L. between Sanford SS – Sonat Tap – Pin Oaks – Beehive Tap – Chewacla with 397 ACSS at 200°C.
5. Reconductor approx. 6 miles of 115 kV T.L. between North Auburn – Pear Tree SS with 795 ACSS at 200°C.



SOUTHERN – 5W 2018

MITCHELL DAM – CLANTON LOOP TAP 115 KV T.L.

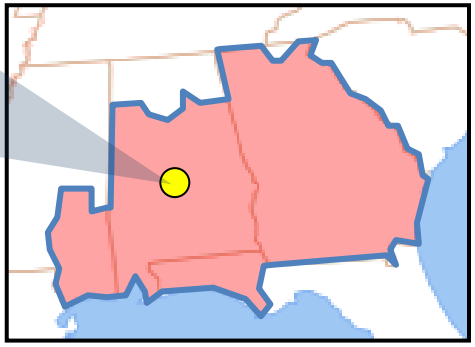


DESCRIPTION:

Construct approximately 10.3 miles of 115 kV transmission line from Mitchell Dam to Clanton Loop Tap with 795 ACSS at 200°C.

SUPPORTING STATEMENT:

The Mitchell Dam – CRH Tap – Clanton Tap 115 kV transmission line overloads under contingency.



SOUTHERN – 6W 2019

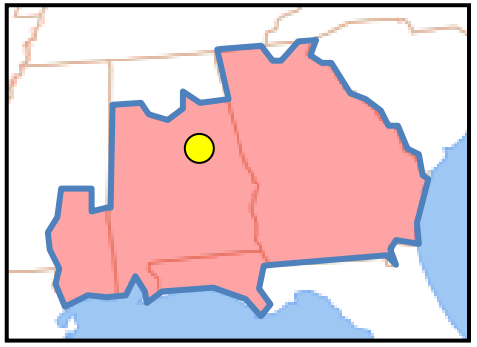
EASTERN AL AREA 115KV PROJECT

DESCRIPTION:

- Reconductor approximately 5.3 miles of 115 kV transmission line between Gulf States Steel and Rainbow City SS with 795 ACSS at 200°C.
- Install new 115 kV switching station around Rainbow City.
- Install new 115kV terminal at Clay TS and 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

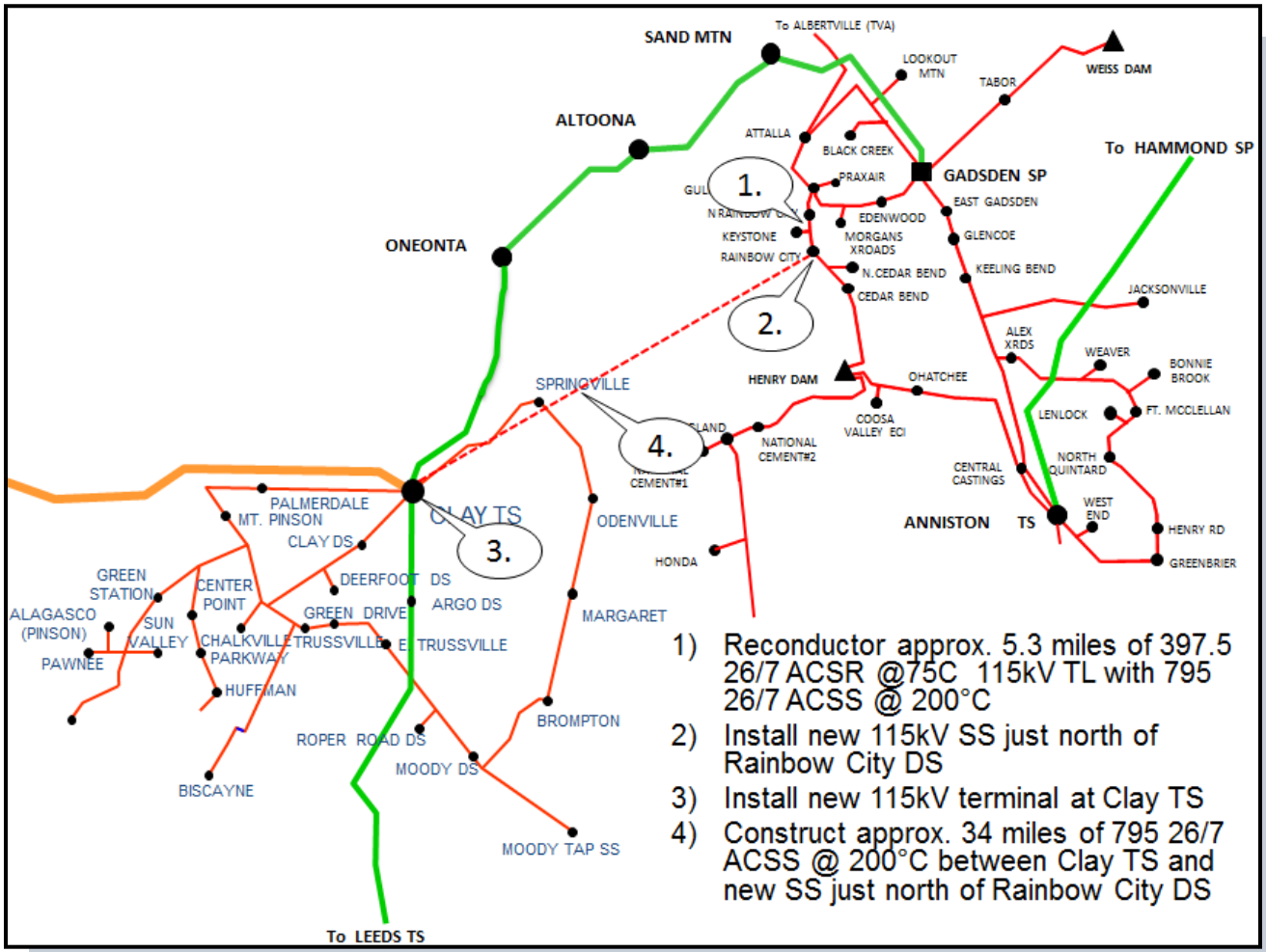
SUPPORTING STATEMENT:

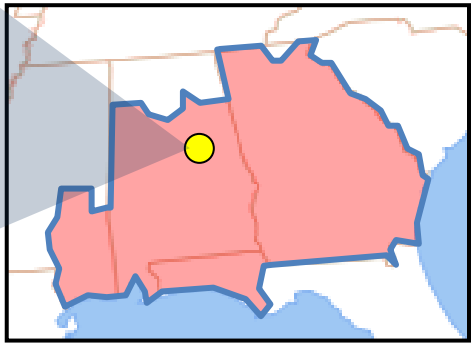
A contingency causes high loadings and hinders maintenance abilities on several 115 kV transmission lines in the Gadsden area.



SOUTHERN – 6W 2019

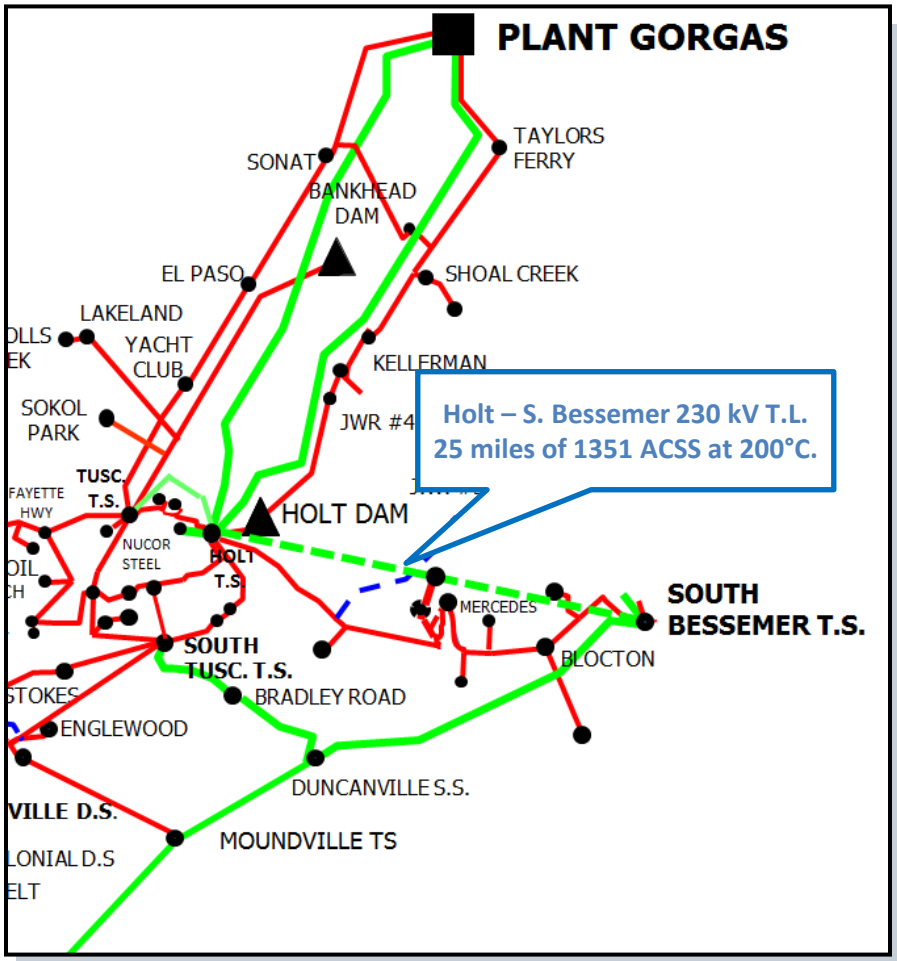
EASTERN AL AREA 115KV PROJECT





SOUTHERN – 7W 2019

HOLT – SOUTH BESSEMER 230 KV T.L.

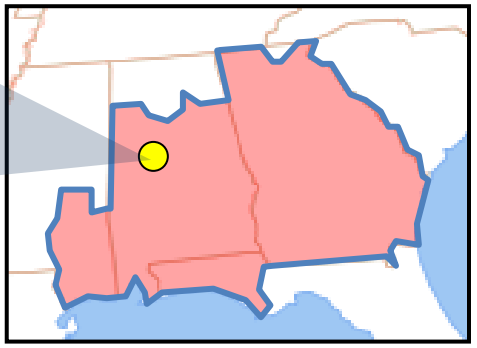


DESCRIPTION:

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

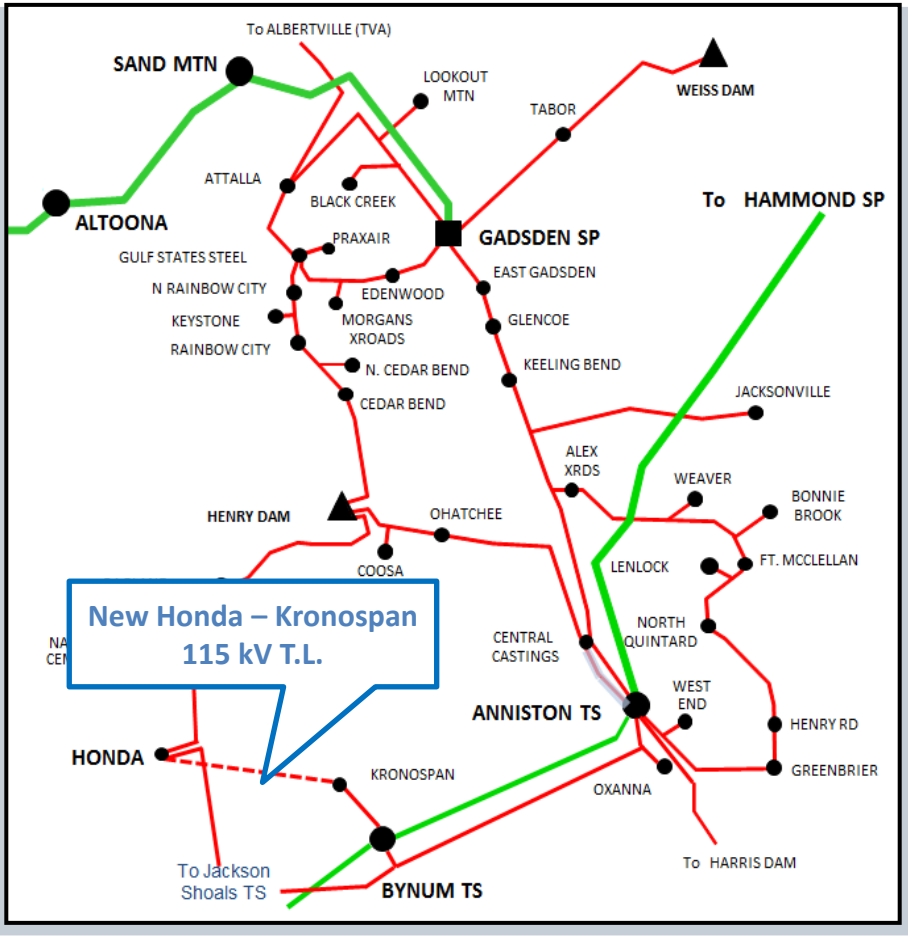
SUPPORTING STATEMENT:

The Holt – Mercedes 115 kV transmission line overloads under contingency. This project also provides increased reliability and maintenance flexibility for the Tuscaloosa Area.



SOUTHERN – 8W 2019

HONDA – KRONOSPAN 115 KV T.L.

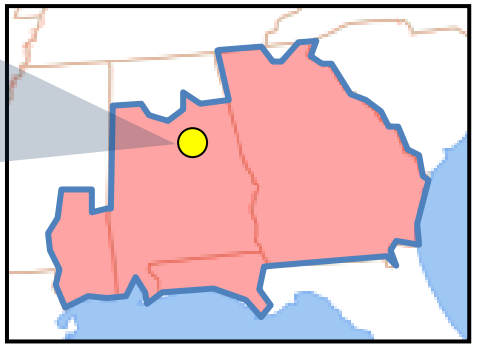


DESCRIPTION:

Construct approximately 10.3 miles of 795 ACSR 115 kV transmission line at 100°C from Honda to Kronospan.

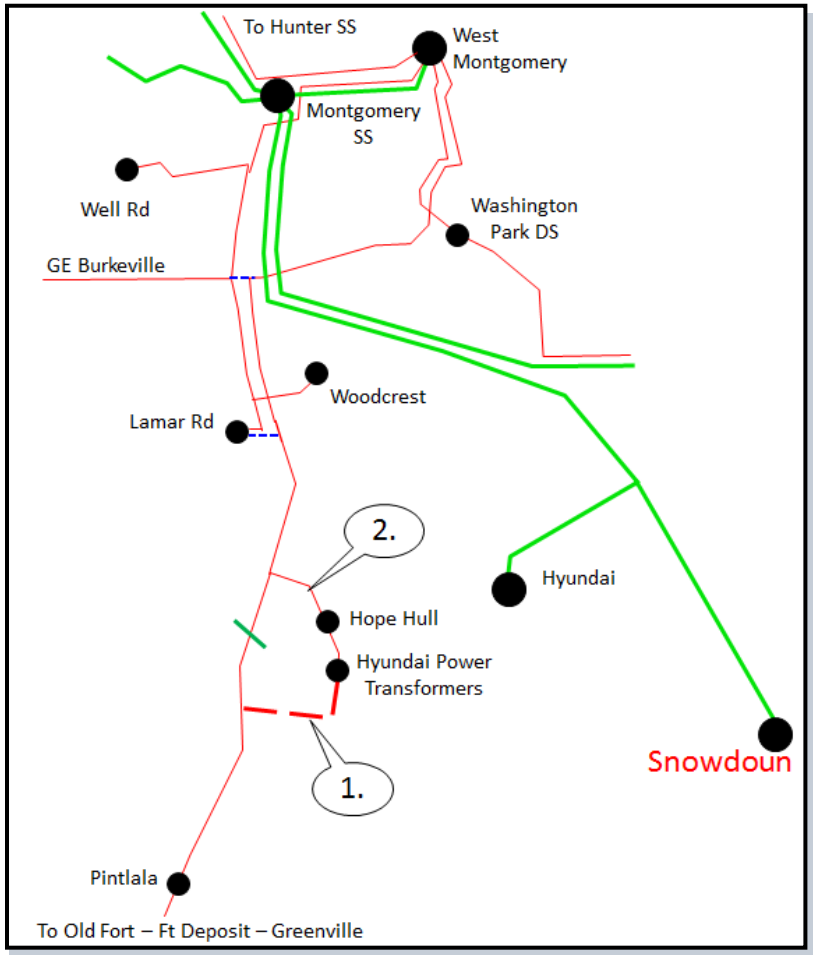
SUPPORTING STATEMENT:

This project provides increased reliability, voltage support, and maintenance flexibility in the area.



SOUTHERN – 9W 2019

HOPE HULL AREA SOLUTION

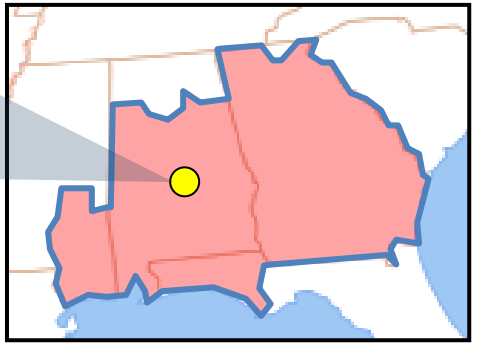


DESCRIPTION:

1. Construct approximately 1.8 miles of 795 ACSR 115 kV T.L. from Hyundai P.T. to the West Montgomery – Greenville 115kV T.L.
2. Reconductor 2.7 miles of the Hope Hull Tap – Hyundai Power Transformers 115 kV T.L. with 795 ACSR.

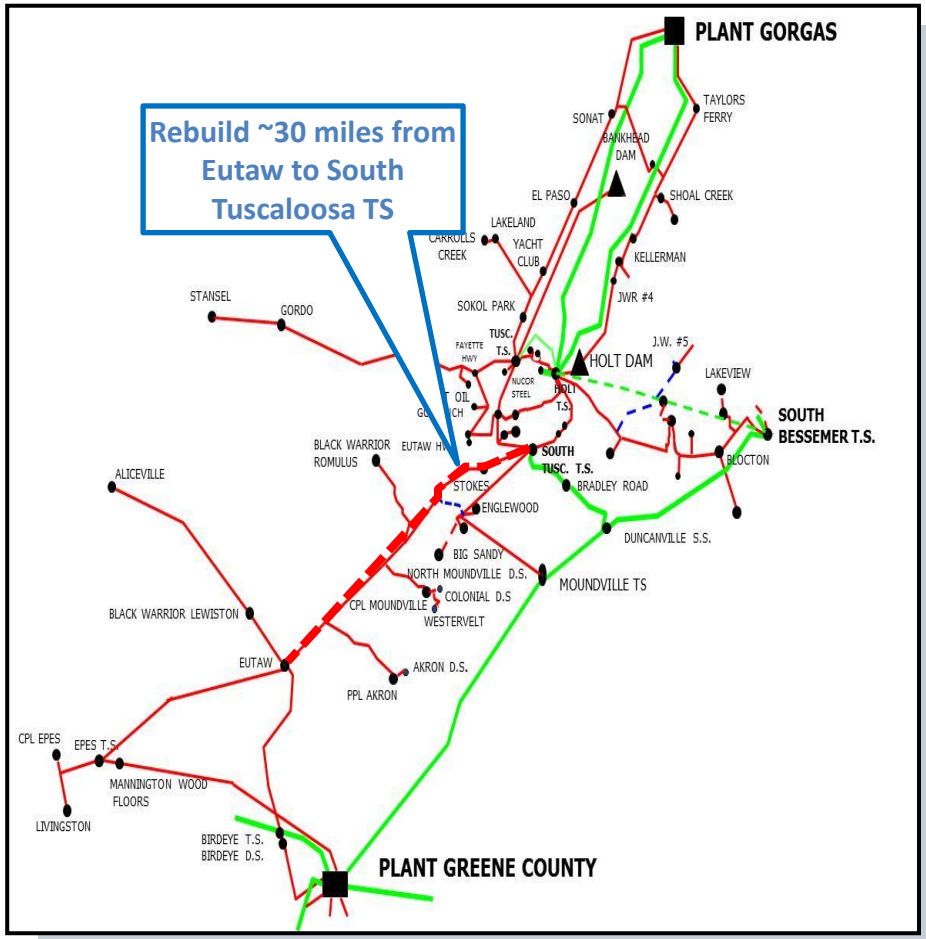
SUPPORTING STATEMENT:

Provides increased reliability and additional maintenance flexibility.



SOUTHERN – 10W 2019

EUTAW – SOUTH TUSCALOOSA 115 KV T.L.

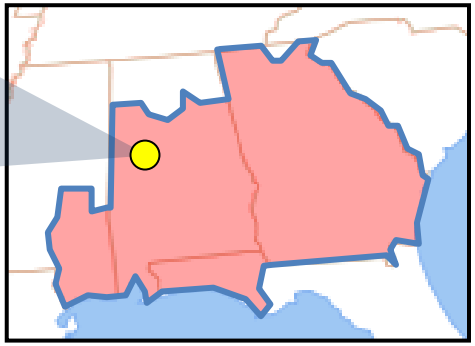


DESCRIPTION:

Rebuild approximately 30 miles of 397 ACSR 115 kV T.L. from Eutaw to South Tuscaloosa TS with 1033 ACSR at 100° C.

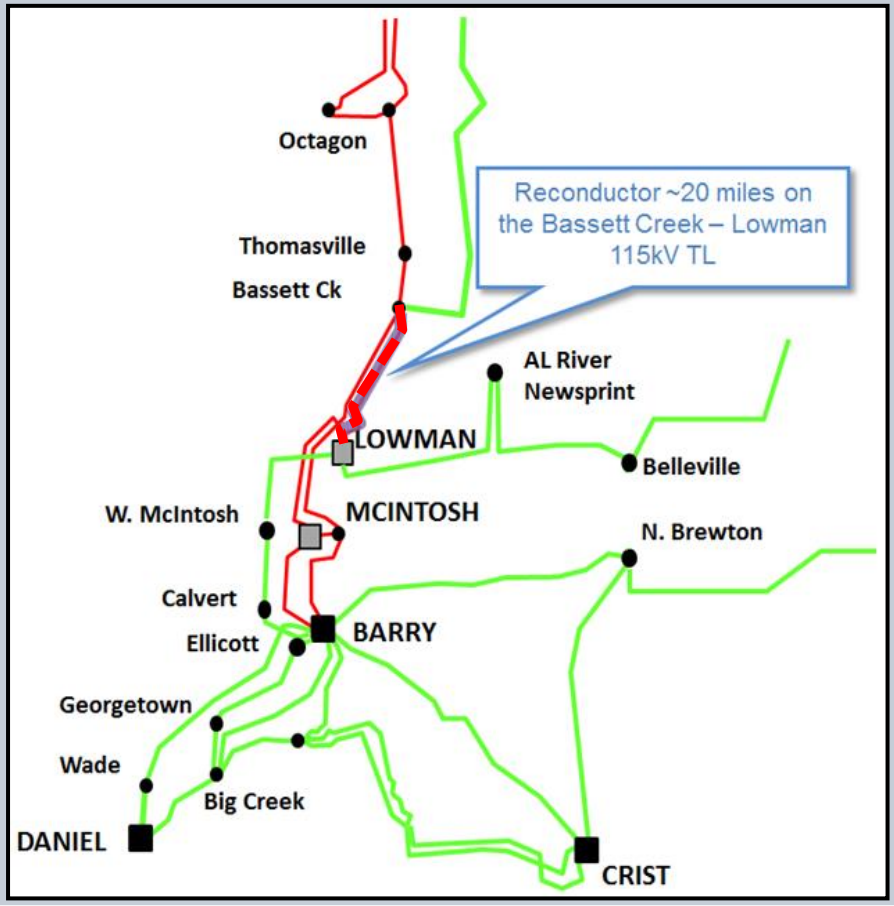
SUPPORTING STATEMENT:

The Eutaw – South Tuscaloosa TS 115 kV T.L. overloads under contingency.



SOUTHERN – 11W 2023

BASSETT CREEK – LOWMAN 115 KV T.L.

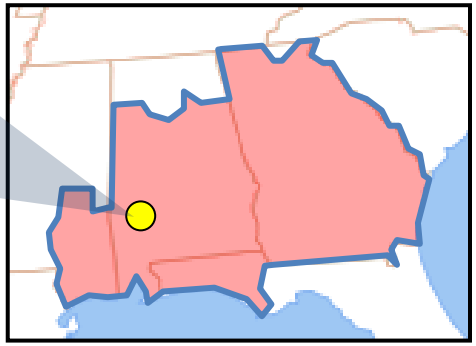


DESCRIPTION:

Reconductor approximately 20 miles of 115 kV transmission line from Bassett Creek to Lowman with 1351 ACSS at 200°C.

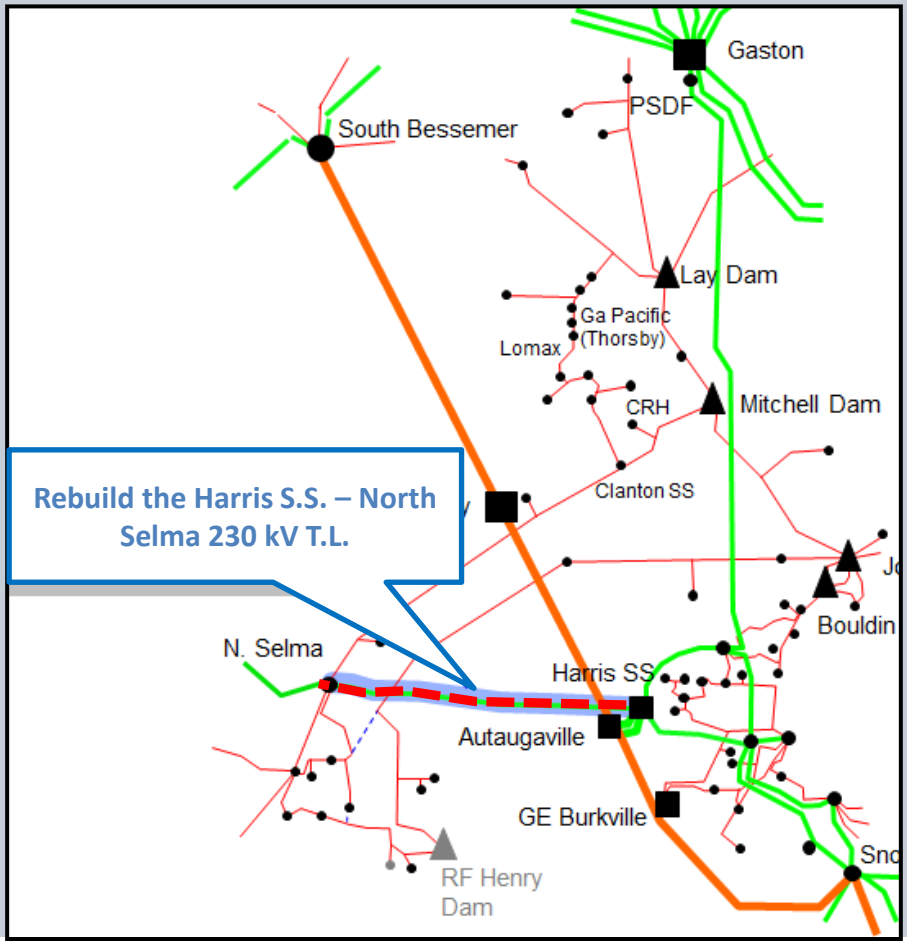
SUPPORTING STATEMENT:

This project creates additional maintenance and operational flexibility along the Bassett Creek to Barry corridor.



SOUTHERN – 12W 2023

HARRIS – NORTH SELMA 230 KV T.L.

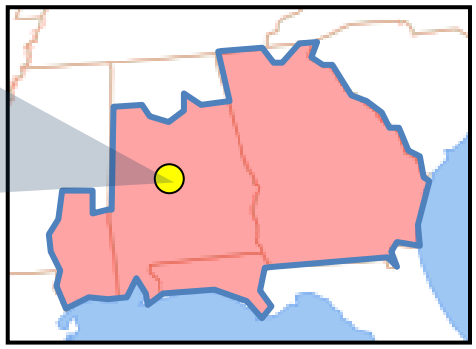


DESCRIPTION:

Rebuild approximately 26 miles of the Autaugaville (Harris SS) – North Selma 230 kV transmission line with 1033 ACSS at 160°C.

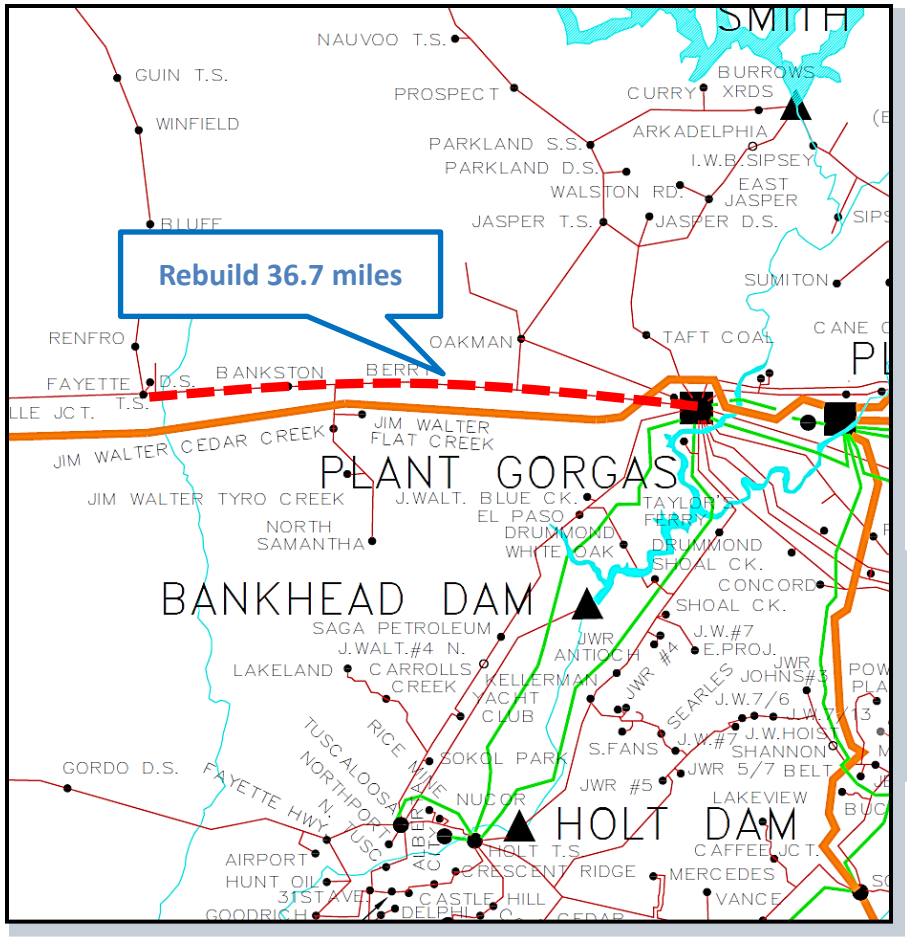
SUPPORTING STATEMENT:

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



SOUTHERN – 13W 2024

FAYETTE – GORGAS 161 KV T.L.

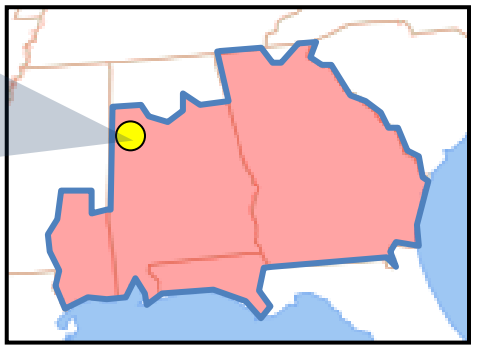


DESCRIPTION:

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

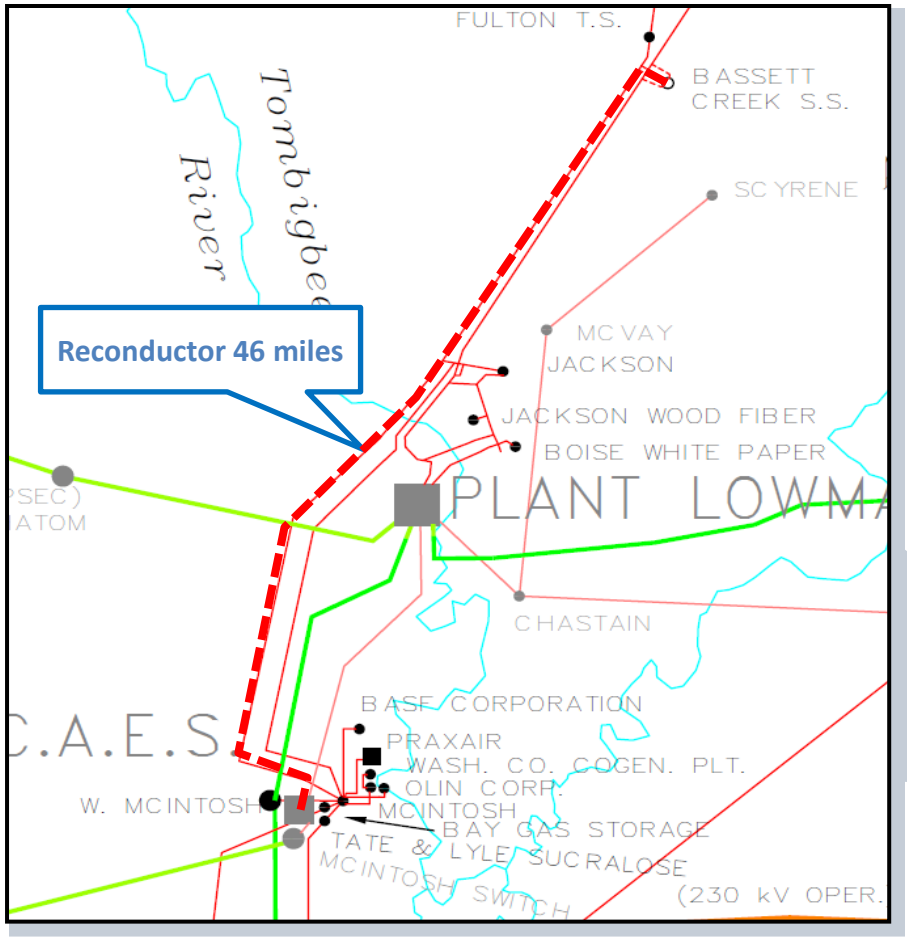
SUPPORTING STATEMENT:

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



SOUTHERN – 14W 2026

BASSETT CREEK – MCINTOSH 115 KV T.L.

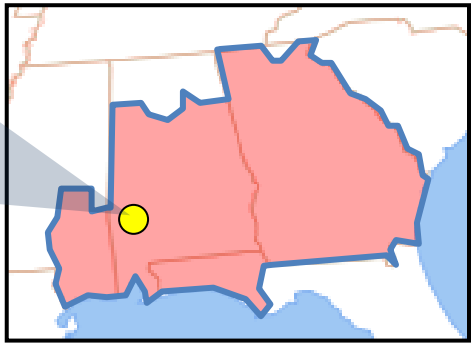


DESCRIPTION:

Reconductor approximately 46 miles along the Bassett Creek – McIntosh 115 kV transmission line with 1351 ACSS at 200°C.

SUPPORTING STATEMENT:

This project creates additional maintenance and operational flexibility along the Bassett Creek to Barry corridor.

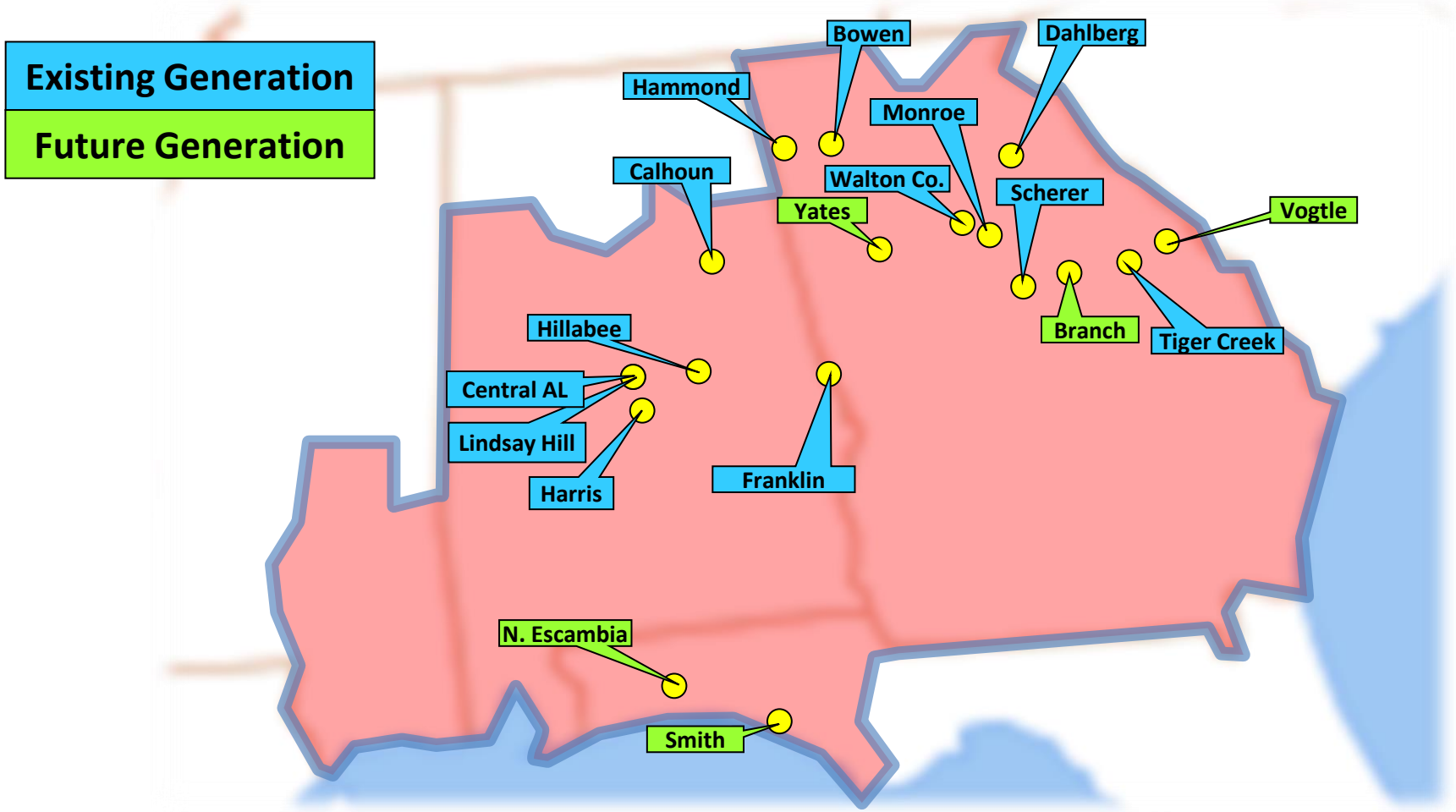


SOUTHERN Balancing Authority

Upcoming 2017 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 2017 SERTP Process.



Southern Company – Generation Assumptions

The following table depicts the generation assumptions <u>that change</u> throughout the ten year planning horizon for the 2017 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
HARRIS 2	649	0	--	--	--	--	--	--	--	--
WALTON COUNTY	447	465	465	465	465	465	0	--	--	--
VOGTLE 3	--	504	504	504	504	504	504	504	504	504
VOGTLE 4	--	--	504	504	504	504	504	504	504	504
CALHOUN 1-4	632	632	632	632	632	0	--	--	--	--
CENTRAL ALABAMA	885	885	885	885	885	0	--	--	--	--
MONROE	310	310	310	310	310	310	0	--	--	--
TIGER CREEK	310	310	310	310	310	310	0	--	--	--

Southern Company – Generation Assumptions

SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
NORTH ESCAMBIA [1]	--	--	--	--	--	460	460	460	460	460
SMITH[1]	--	--	--	--	--	460	460	460	460	460
YATES[1]	--	--	--	--	--	--	940	940	940	940
BRANCH[1]	--	--	--	--	--	--	940	1400	1400	1400

(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	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
VOGTLE	206	206	206	206	206	206	206	206	206	206
LINDSAY HILL	300	300	300	300	300	300	300	300	300	300
HAMMOND	10	10	10	10	10	10	10	10	10	10
HILLABEE	350	350	350	350	350	350	350	350	350	350
FRANKLIN	424	424	424	424	424	424	424	424	424	424
SCHERER	911	911	911	911	911	911	911	911	911	911
DAHLBERG	494	494	494	494	494	494	494	494	494	494
BOWEN	159	159	159	159	159	159	159	159	159	159

GTC – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2017 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
SCHERER 3	132	132	56	56	56	56	56	56	56	56
VOGTLE 3	--	330	330	330	330	330	330	330	330	330
VOGTLE 4	--	--	330	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 2017 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
VOGTLE 3	--	250	250	250	250	250	250	250	250	250
VOGTLE 4	--	--	250	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 2017 SERTP Process. The years shown represent Summer Peak conditions.

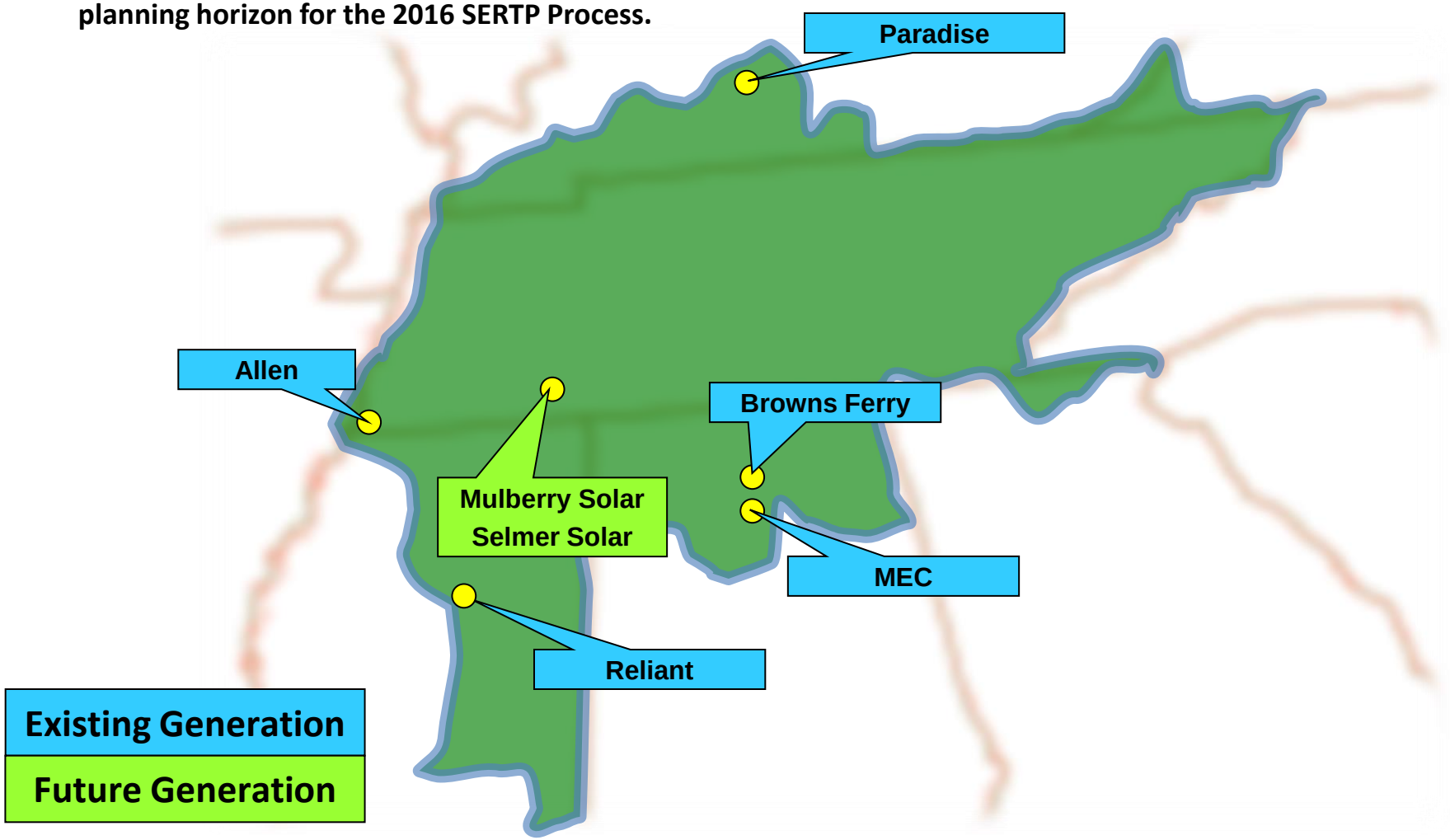
SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
VOGTLE 3	--	16	16	16	16	16	16	16	16	16
VOGTLE 4	--	--	16	16	16	16	16	16	16	16

TVA Balancing Authority

2016 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 2016 SERTP Process.



TVA – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2016 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
MEC	615	615	615	615	615	615	615	615	615	615
MULBERRY SOLAR	16	16	16	16	16	16	16	16	16	16
PARADISE 1-2	0	--	--	--	--	--	--	--	--	--
PARADISE CC	1015	1015	1015	1015	1015	1015	1015	1015	1015	1015
SELMER SOLAR	16	16	16	16	16	16	16	16	16	16
ALLEN 1-3	741	0	--	--	--	--	--	--	--	--
ALLEN CC	--	1082	1082	1082	1082	1082	1082	1082	1082	1082
BROWNS FERRY UNIT 3	1108	1242	1242	1242	1242	1242	1242	1242	1242	1242
BROWNS FERRY UNIT 1	1103	1103	1237	1237	1237	1237	1237	1237	1237	1237
BROWNS FERRY UNIT 2	1108	1108	1242	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	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026
RELIANT	525	525	525	525	525	525	525	525	525	525

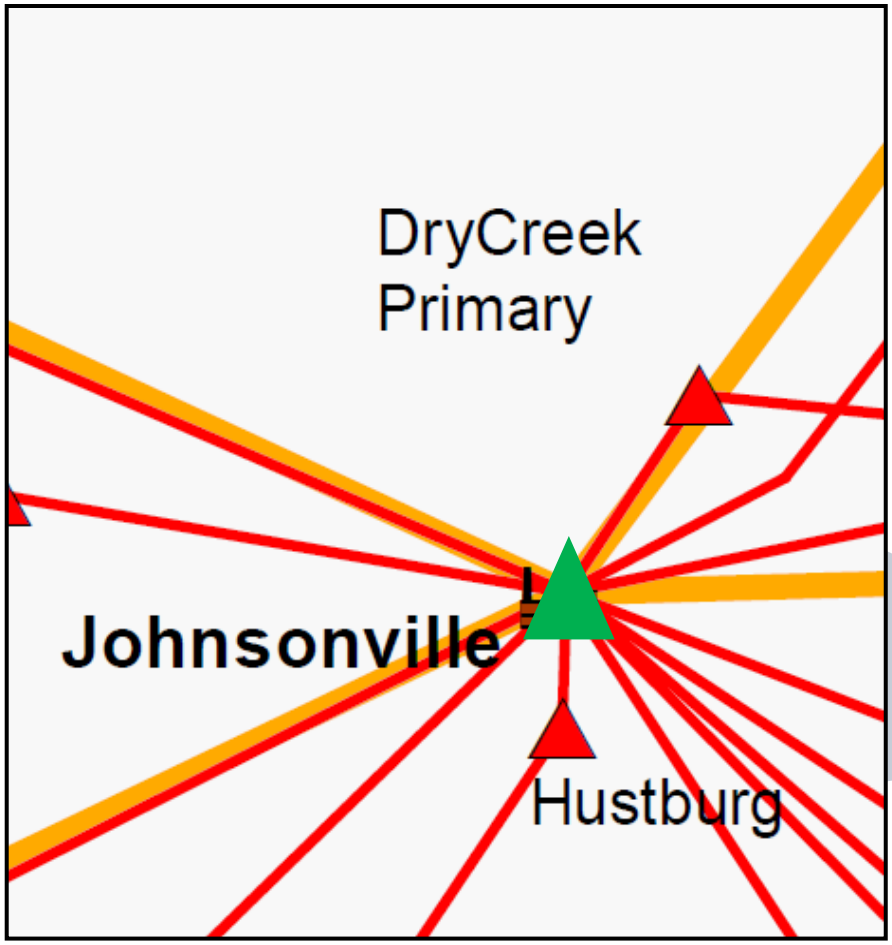
TVA Balancing Authority

SERTP Regional Transmission Plan

TVA – 1

2017

JOHNSONVILLE FP SUBSTATION

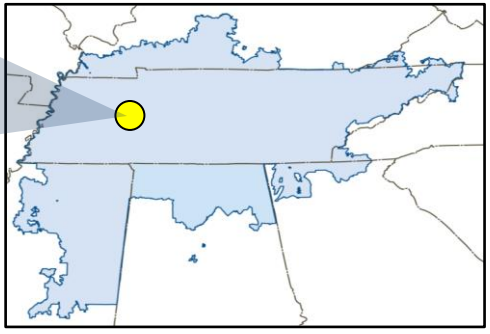


DESCRIPTION:

- Install a 500/161 kV inter-tie transformer bank.
- Install a capacitor bank of 5, 36 MVAR capacitors.
- Reconfigure the Johnsonville Fossil Plant Substation.

SUPPORTING STATEMENT:

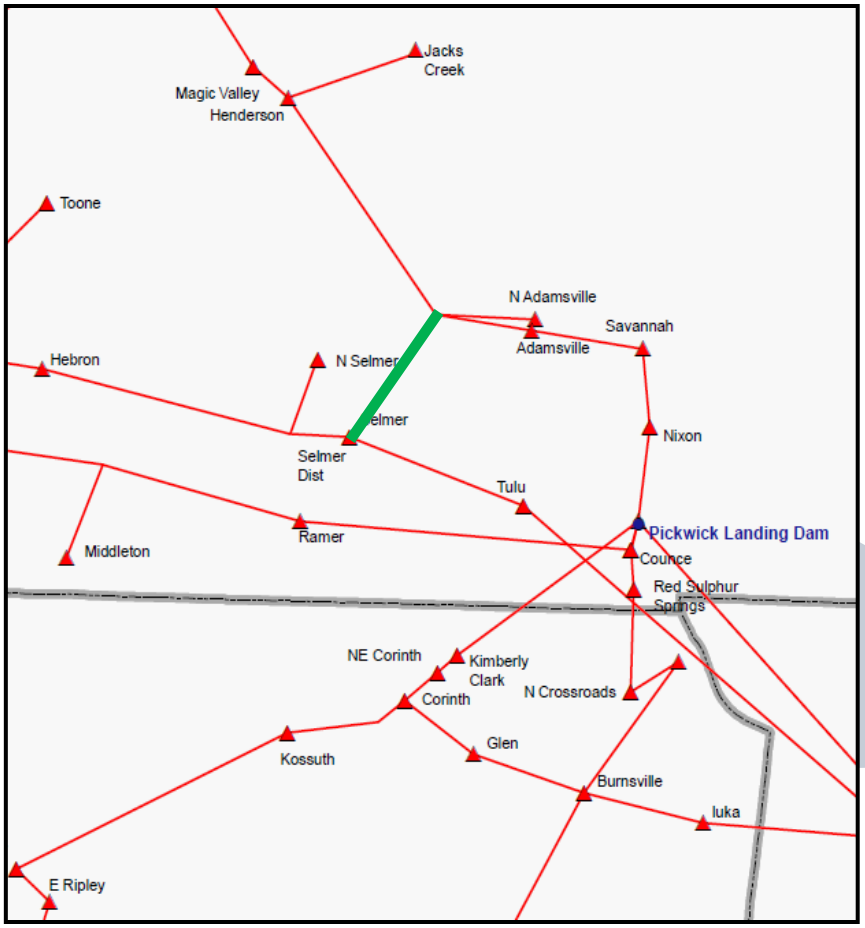
The retirement of Johnsonville units 1-10 requires the replacement of the 500/161 kV inter-tie transformer bank at Johnsonville. Also, additional voltage support is needed in the Johnsonville area.



TVA – 2

2017

SELMER – WEST ADAMSVILLE 161 KV T.L.

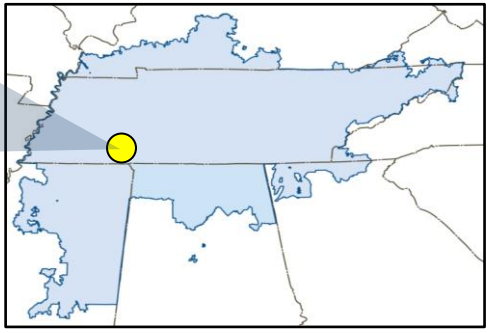


DESCRIPTION:

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

SUPPORTING STATEMENT:

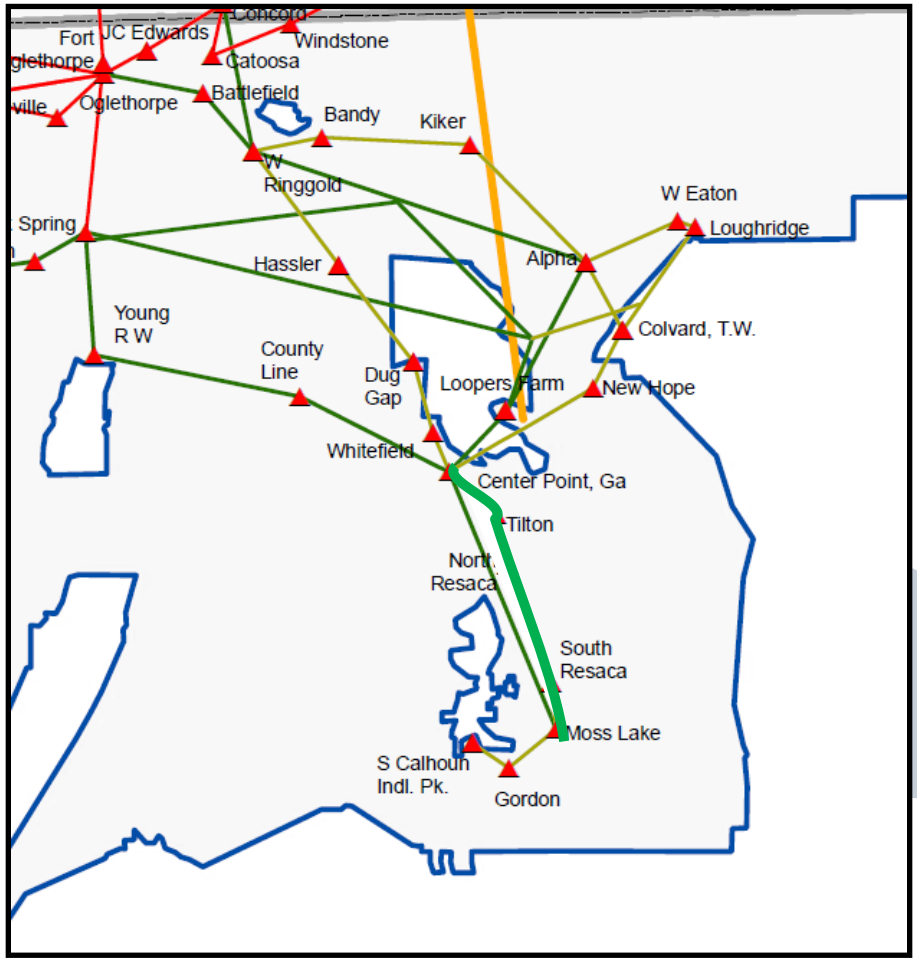
Additional voltage support needed in the Bolivar, TN area under contingency.



TVA – 3

2017

CALHOUN AREA IMPROVEMENT 115 KV T.L.

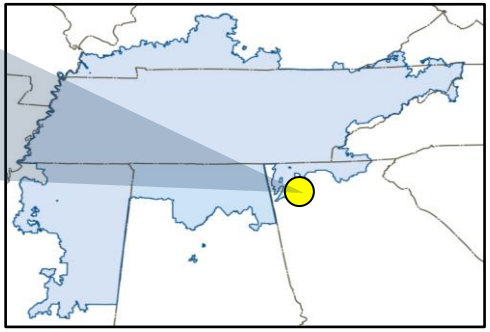


DESCRIPTION:

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

SUPPORTING STATEMENT:

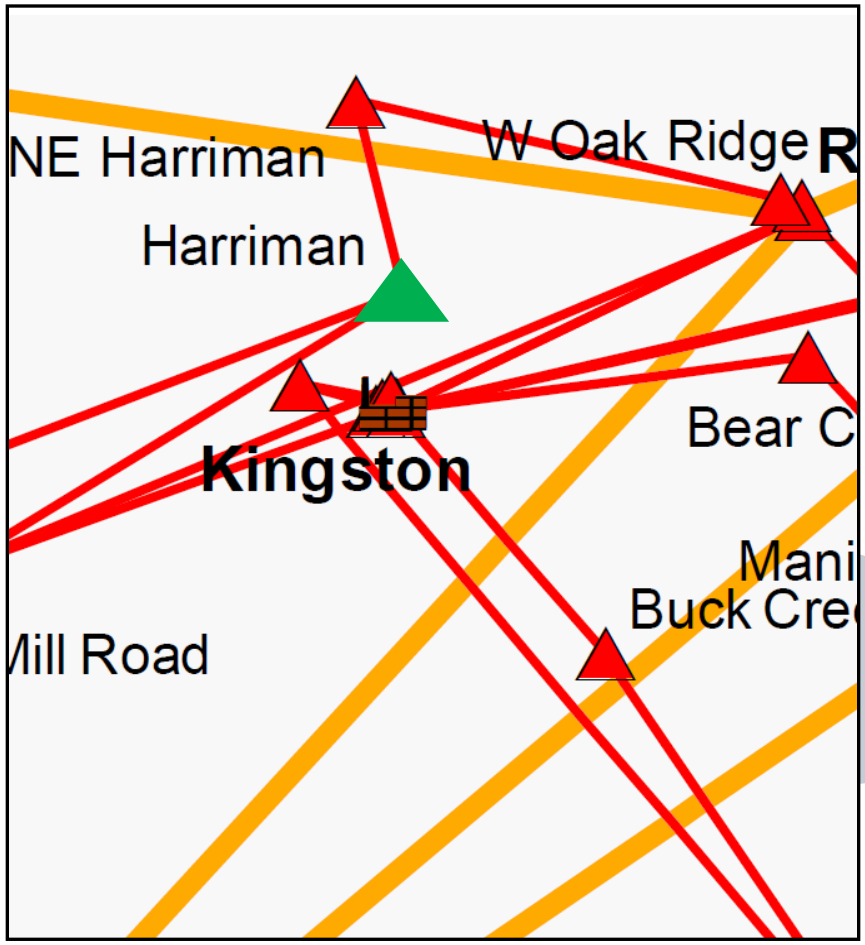
Additional voltage support needed in the northern GA area under contingency.



TVA – 4

2018

HARRIMAN, TN 161 KV SUBSTATION

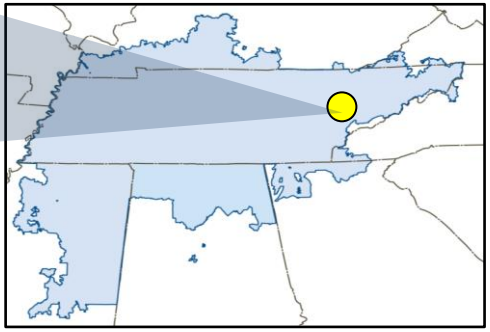


DESCRIPTION:

Reconfigure the Harriman, TN 161 kV substation by looping an additional 161 kV transmission line into the substation and installing 3, 161 kV breakers.

SUPPORTING STATEMENT:

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



TVA – 5

2018

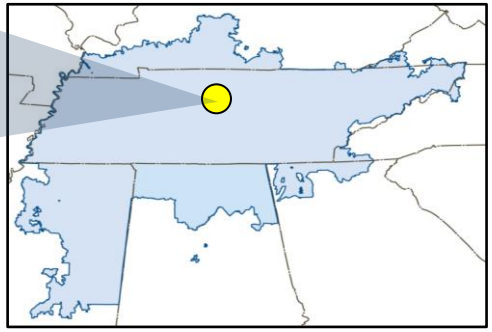
NASHVILLE AREA IMPROVEMENT PLAN

DESCRIPTION:

Install an additional 1344 MVA, 500/161 kV transformer bank at the Pin Hook 500 kV substation. Reconductor the Nolensville Road – Elysian Fields 161 kV T.L. with 636 ACSS at 150°C. Reconductor the Murfreesboro Road – Airport 161 kV T.L. with 636 ACSS at 150°C. Reconductor the Blackman Tap – Smyrna 161 kV T.L. with 636 ACSS at 150°C. Construct the Montgomery – Clarksville #3 161 kV T.L. with 1590 ACSS at 150°C.

SUPPORTING STATEMENT:

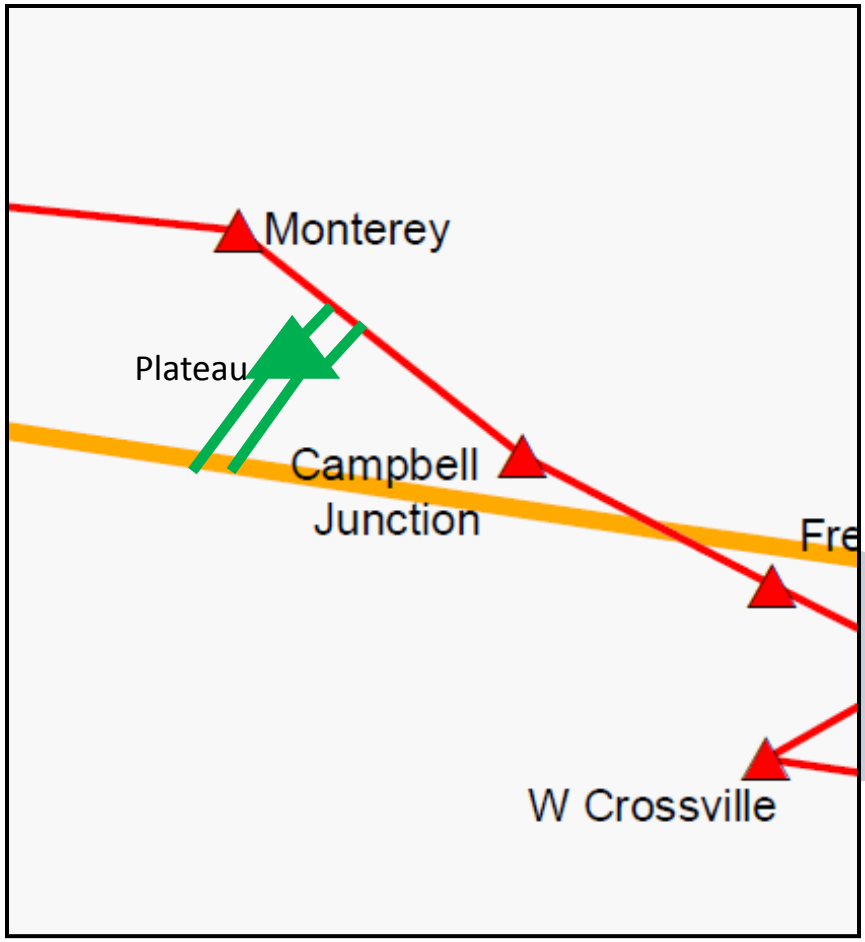
Thermal overloads and additional voltage support needed in the Nashville area under contingency.



TVA – 6

2018

PLATEAU 500 KV SUBSTATION

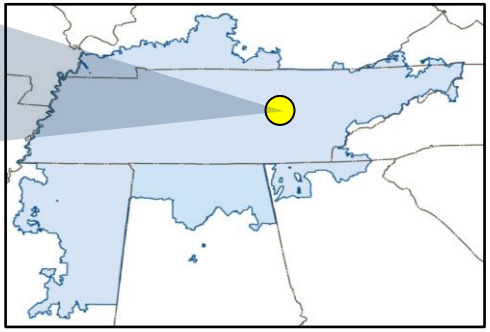


DESCRIPTION:

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

SUPPORTING STATEMENT:

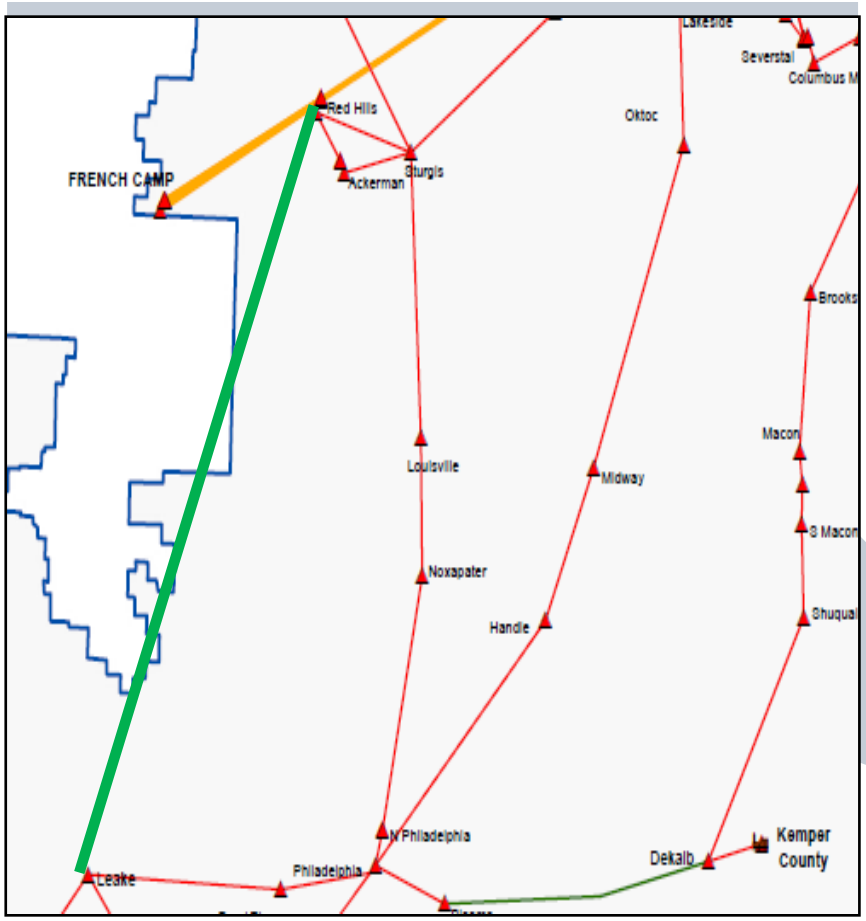
Thermal overload and need for additional voltage support in the Murfreesboro, TN and Knoxville, TN areas under contingency.



TVA – 7

2019

RED HILLS – LEAKE 161 KV T.L.

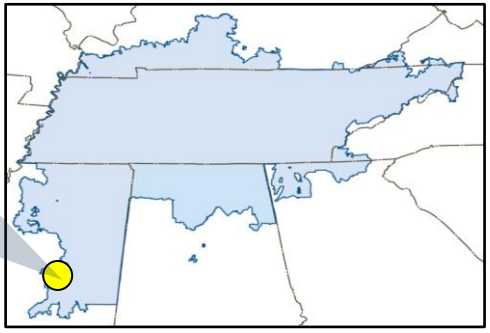


DESCRIPTION:

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

SUPPORTING STATEMENT:

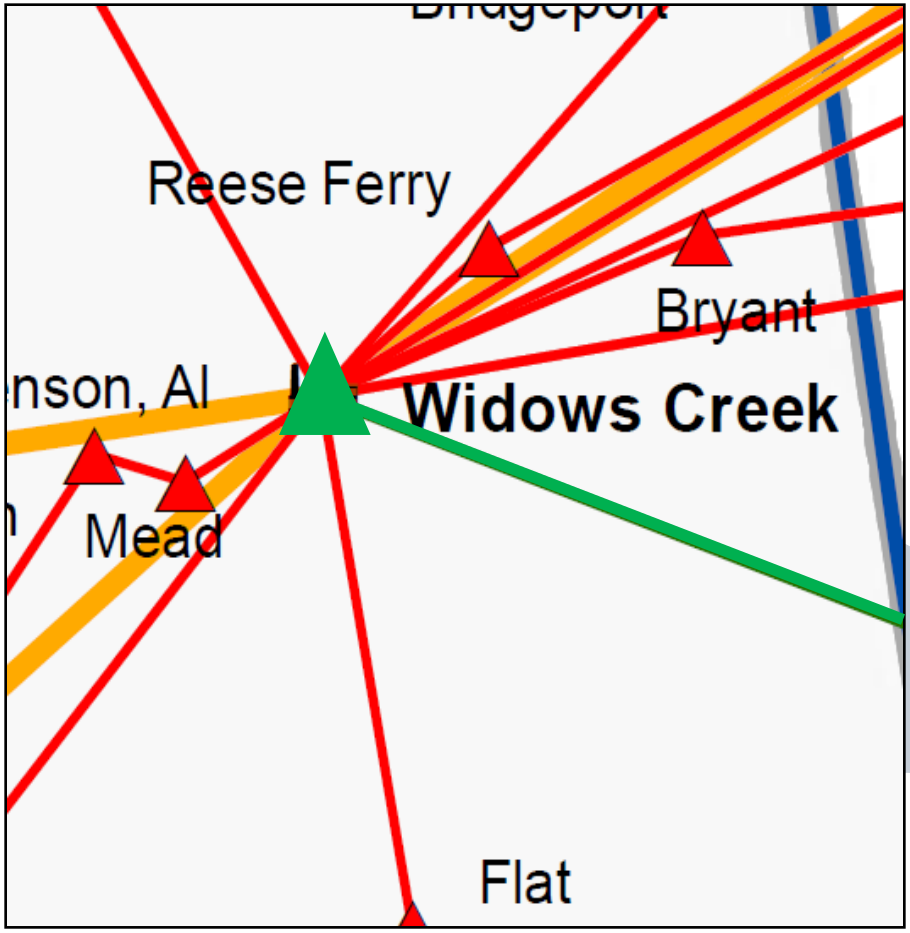
Multiple 161 kV transmission lines in the lower MS area overload under contingency and additional voltage support is needed in the lower MS area under contingency.



TVA – 8

2019

WIDOWS CREEK FP SUBSTATION

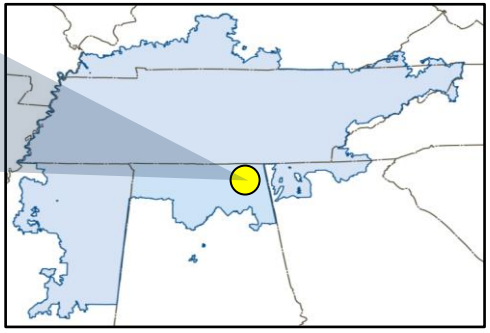


DESCRIPTION:

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

SUPPORTING STATEMENT:

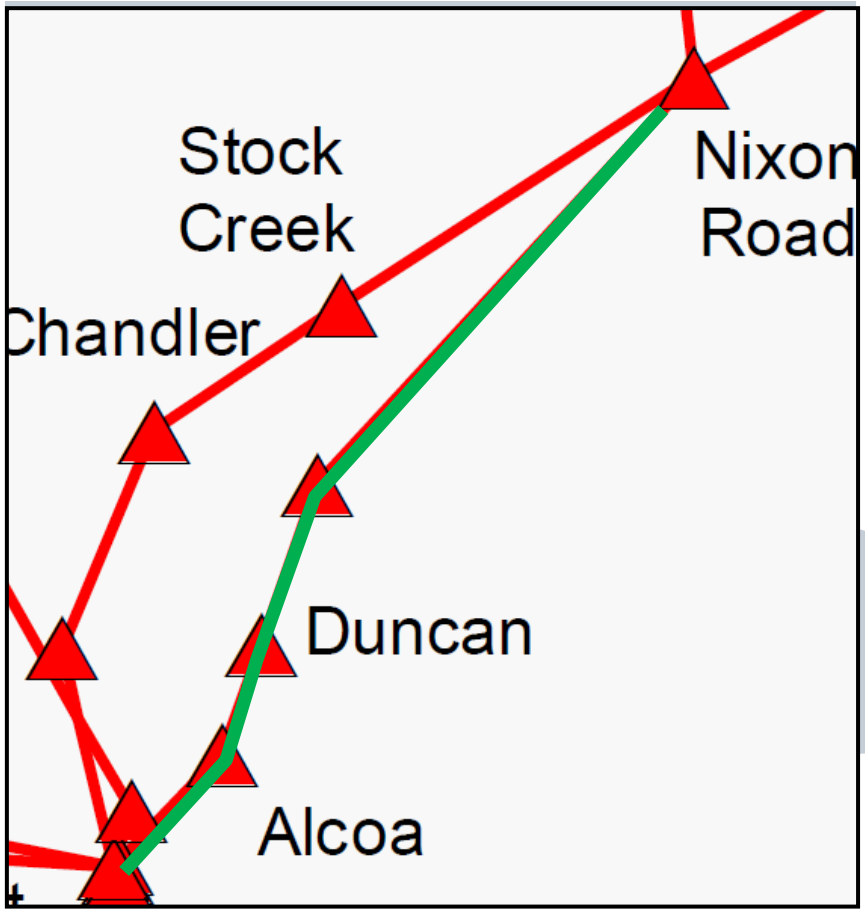
Multiple transmission lines overload and additional voltage support needed in the Huntsville, AL area under contingency.



TVA – 9

2020

ALCOA SS – NIXON ROAD 161 KV T.L.

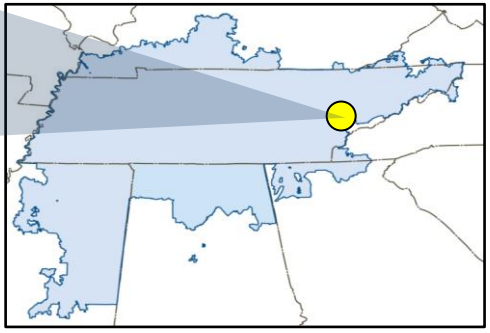


DESCRIPTION:

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

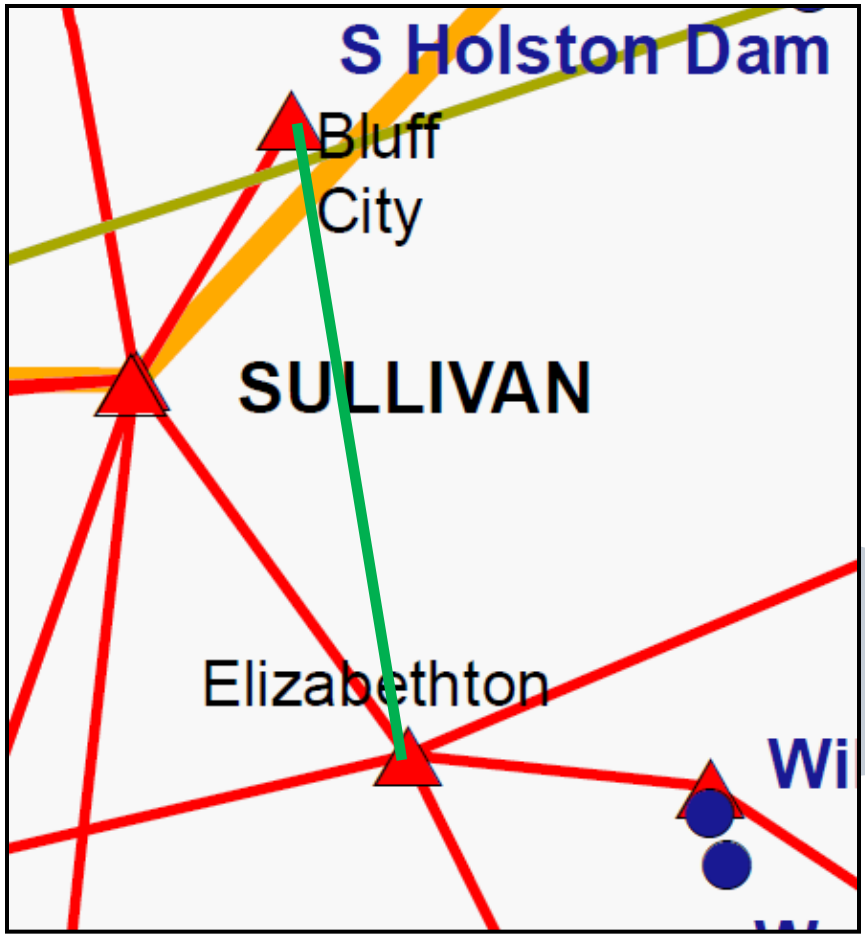
SUPPORTING STATEMENT:

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



TVA – 10 2020

BLUFF CITY – ELIZABETHTON 161 KV T.L.

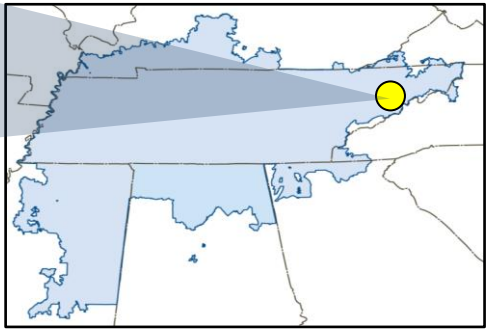


DESCRIPTION:

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

SUPPORTING STATEMENT:

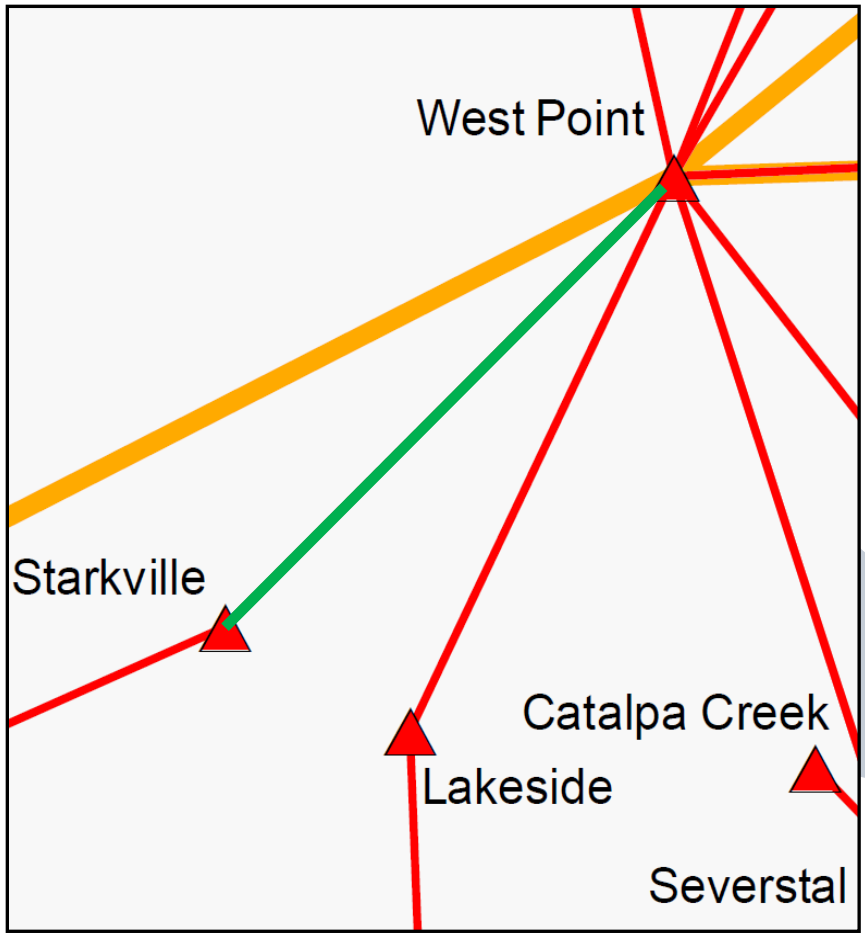
Additional voltage support is needed in the Elizabethton, TN area under contingency.



TVA – 11

2021

WEST POINT – STARKVILLE 161 KV T.L.

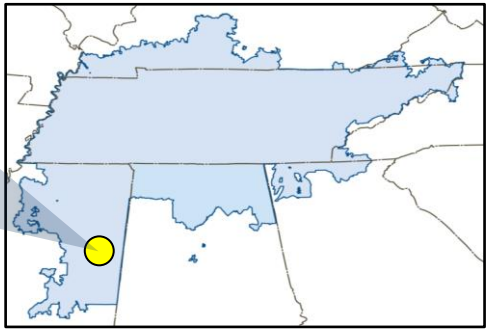


DESCRIPTION:

Reconductor approximately 14 miles of the West Point – Starkville 161 kV transmission line with 954 ACSS at 125°C.

SUPPORTING STATEMENT:

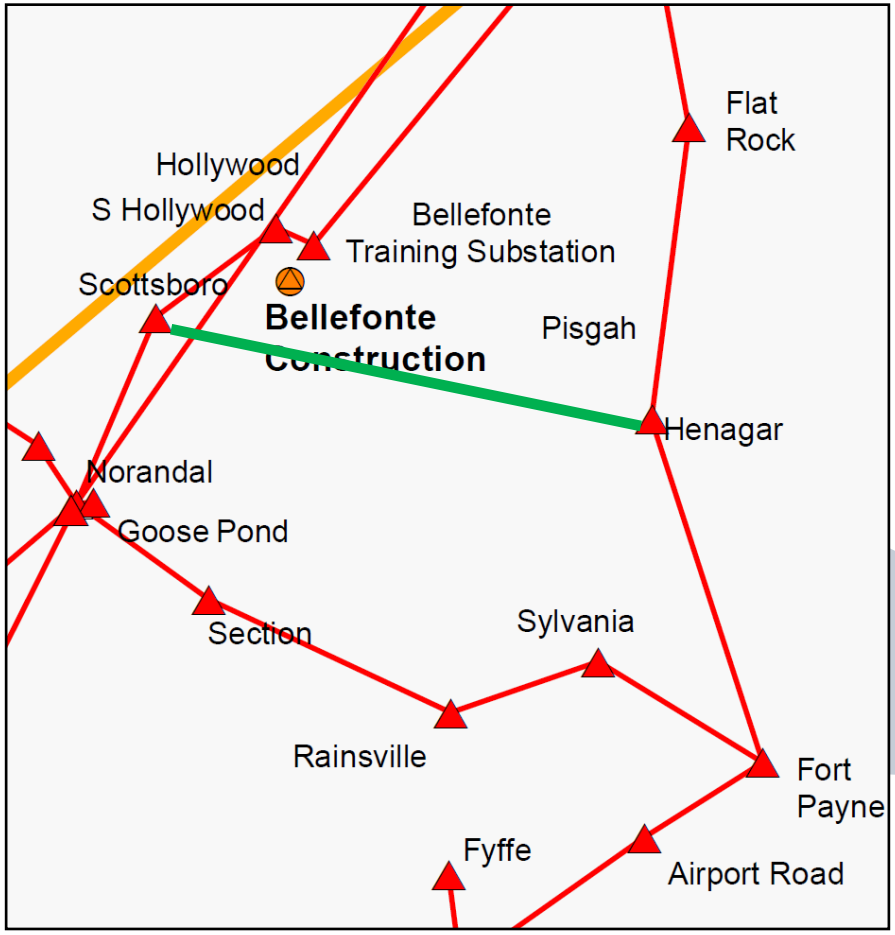
The West Point – Starkville 161 kV transmission line overloads under contingency.



TVA – 12

2023

SCOTTSBORO – HENAGAR 161 KV T.L.

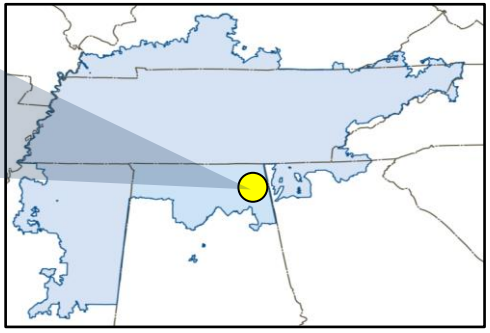


DESCRIPTION:

Construct approximately 14 miles of 161 kV transmission line from Scottsboro, AL to Henagar, AL with 954 ACSR at 100°C.

SUPPORTING STATEMENT:

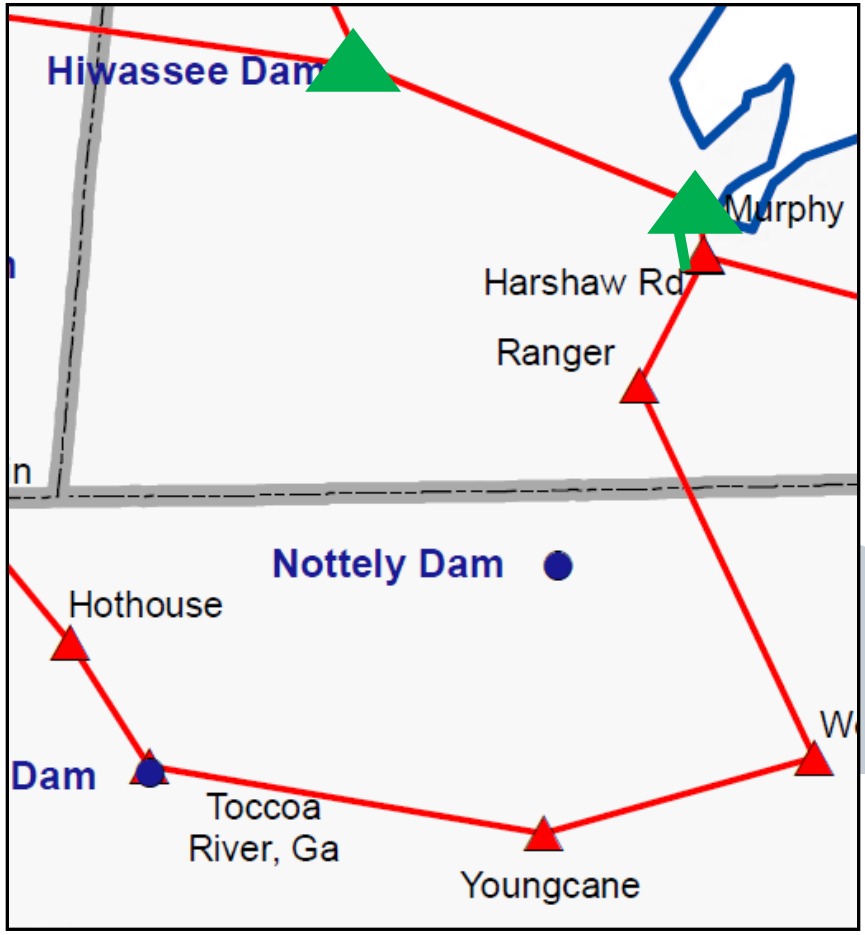
Additional voltage support is needed in the Henagar, AL and Fort Payne, AL areas under contingency.



TVA – 13

2025

HIWASSEE HP AND MURPHY 161 KV SUBSTATION

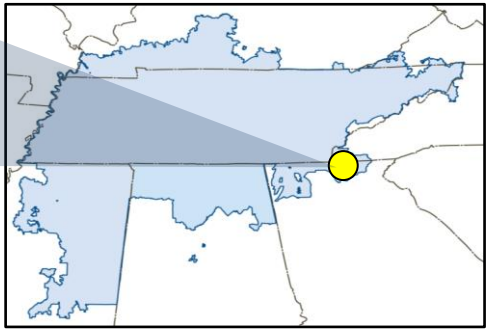


DESCRIPTION:

Install additional breakers at the Hiwassee HP and Murphy, NC 161 kV Substations. Construct approximately 2 miles of transmission line from the Murphy 161 kV Substation to Harshaw Road 161 kV Substation with 954 ACSR at 100°C.

SUPPORTING STATEMENT:

Additional voltage support is needed in the area under contingency.

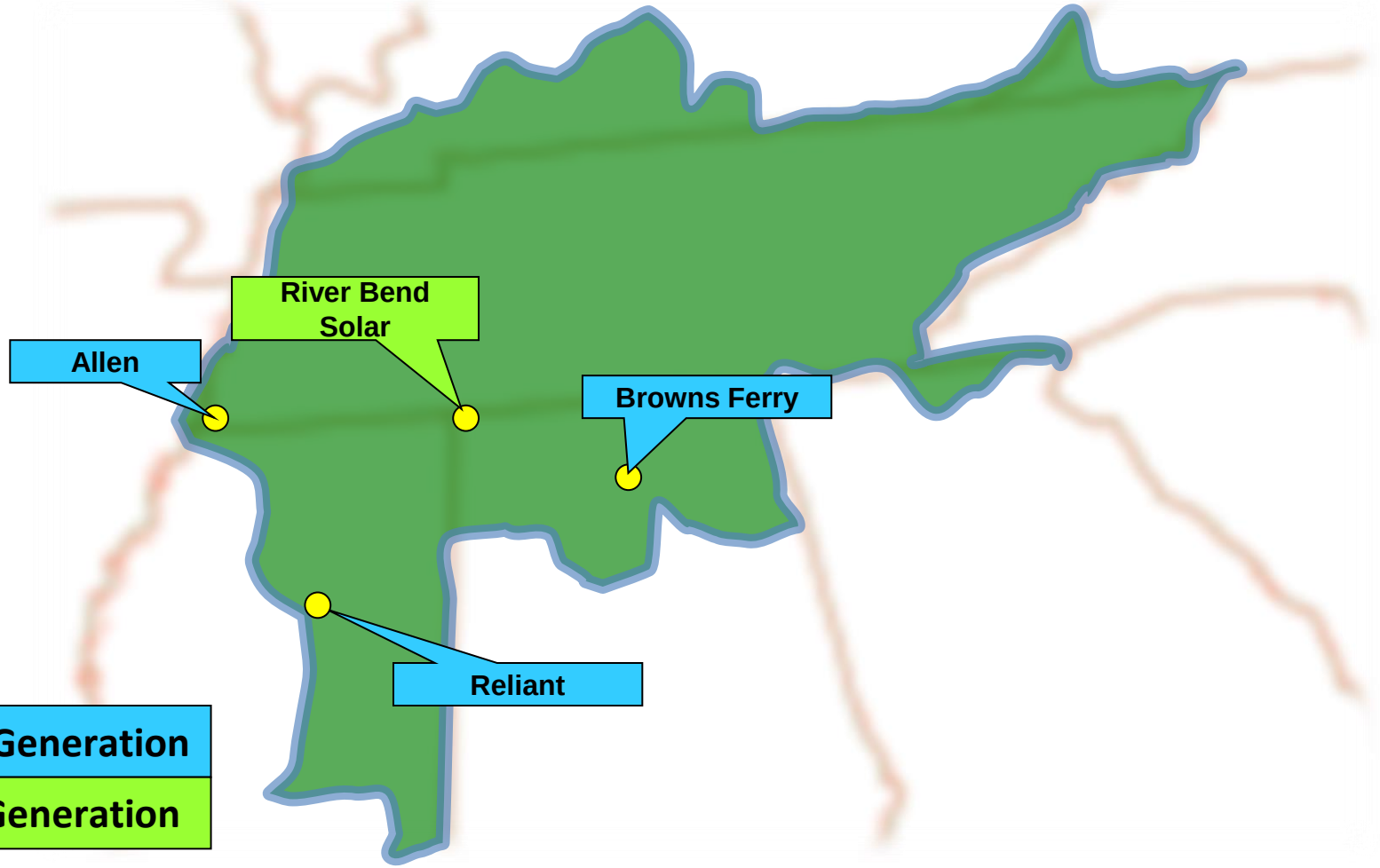


TVA Balancing Authority

Upcoming 2017 Generation Assumptions

TVA – Generation Assumptions

The following diagram depicts the location of generation assumptions that change throughout the ten year planning horizon for the 2017 SERTP Process.



TVA – Generation Assumptions

The following table depicts the generation assumptions that change throughout the ten year planning horizon for the 2017 SERTP Process. The years shown represent Summer Peak conditions.

SITE	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
RIVER BEND SOLAR	75	75	75	75	75	75	75	75	75	75
ALLEN 1-3	0	--	--	--	--	--	--	--	--	--
ALLEN CC	1082	1082	1082	1082	1082	1082	1082	1082	1082	1082
BROWNS FERRY UNIT 3	1242	1242	1242	1242	1242	1242	1242	1242	1242	1242
BROWNS FERRY UNIT 1	1103	1237	1237	1237	1237	1237	1237	1237	1237	1237
BROWNS FERRY UNIT 2	1108	1242	1242	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	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
RELIANT	800	800	800	800	800	800	800	800	800	800

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

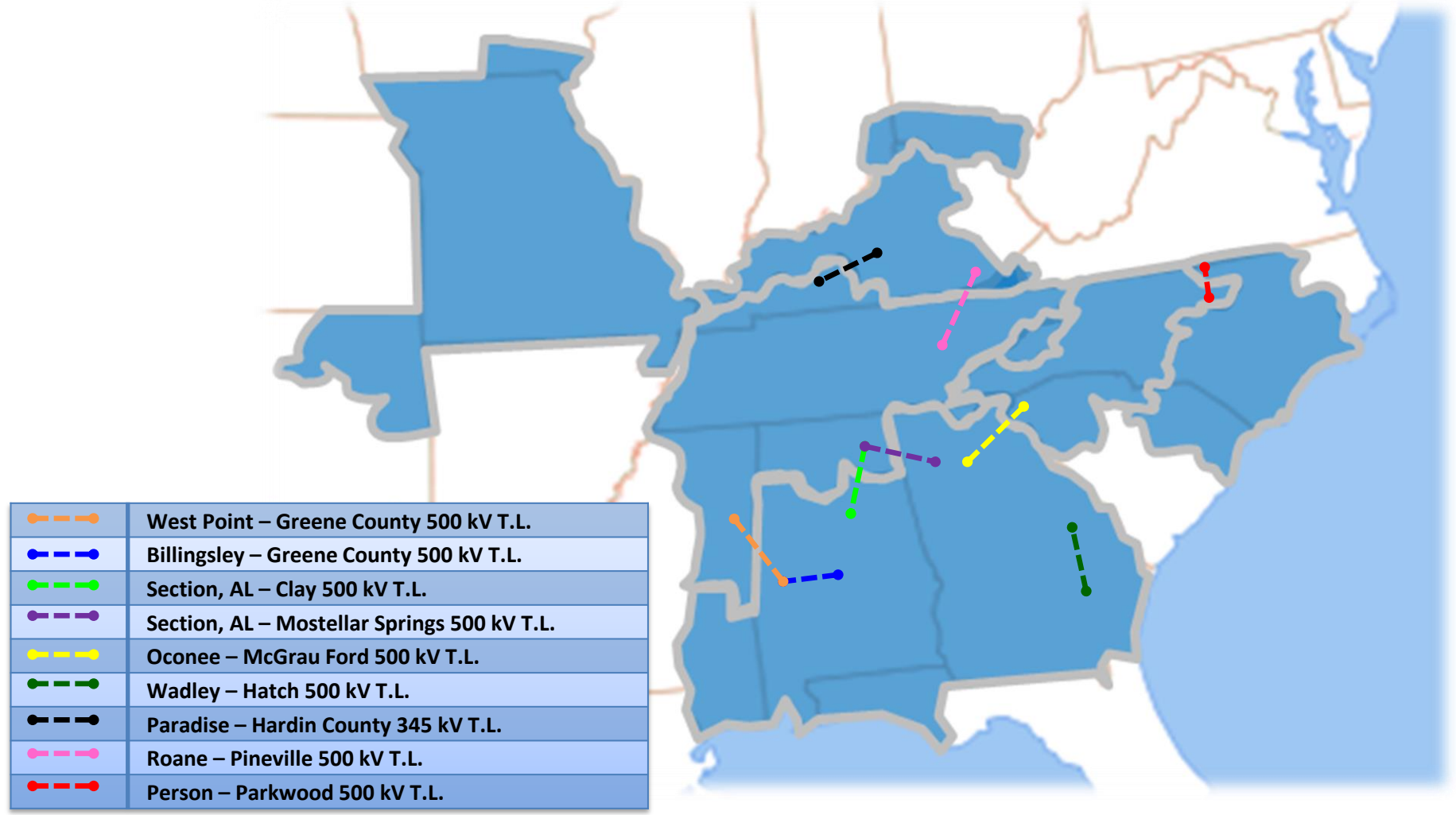
- **SERTP Sponsors developed 12 coordinated regional models***
- **Models include latest transmission planning model information within the SERTP region**
- **Contingency analysis was performed to identify potential constraints that may result from the regional coordination of latest input assumptions**

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

No.	Season	Year
1	SUMMER	2017
2		2019
3		2021
4		2022
5		2024
6		2026
7	SHOULDER	2019
8		2021
9		2024
10		2026
11	WINTER	2021
12		2026

Regional Transmission Analyses

Assessment of Alternative Transmission Projects



	West Point – Greene County 500 kV T.L.
	Billingsley – Greene County 500 kV T.L.
	Section, AL – Clay 500 kV T.L.
	Section, AL – Mostellar Springs 500 kV T.L.
	Oconee – McGrau Ford 500 kV T.L.
	Wadley – Hatch 500 kV T.L.
	Paradise – Hardin County 345 kV T.L.
	Roane – Pineville 500 kV T.L.
	Person – Parkwood 500 kV T.L.

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

Miscellaneous Updates

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

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

Upcoming 2017 SERTP Process

- **SERTP 1st Quarter –** ***1st RPSG Meeting & Interactive Training Session***

  March 2017
  - Form RPSG
  - Select Economic Planning Studies
  - Interactive Training Session

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

  June 2017
  - Review Modeling Assumptions
  - Preliminary 10 Year Expansion Plan
  - Stakeholder Input & Feedback Regarding the Plan

Upcoming 2016 SERTP Process

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

  September 2017

  – Preliminary Results of the Economic Studies
  – Stakeholder Input & Feedback Regarding the Study Results
  – Discuss Previous Stakeholder Input on the Expansion Plan

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

  December 2017

  – Final Results of the Economic Studies
  – Regional Transmission Plan
  – Regional Analyses
  – Stakeholder Input on the 2018 Transmission Model Input Assumptions

Questions?

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