

South Carolina Regional Transmission Planning

Stakeholder Meeting

Hilton Garden Inn Charleston Airport

North Charleston, SC

May 31, 2018

Purpose and Goals for Today's Meeting

- Review Current Transmission Expansion Plans
- Receive Stakeholder Input on Current Transmission Expansion Plans
- SCRTP Regional and Interregional Processes
- Reliability Assessments and Multi-Party Studies
- EIPC Update

Current Transmission Expansion Plans



Wade Richards

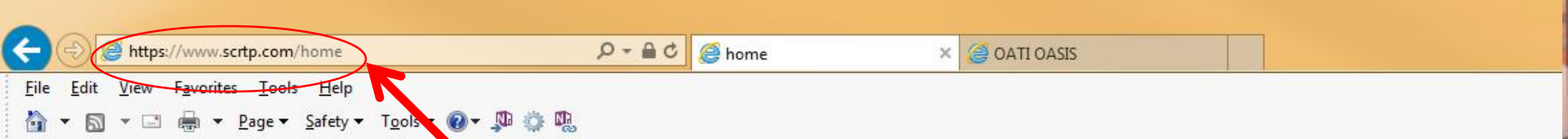


- The projects described in these presentations represent the current transmission plans within the SCRTP footprint.
- The expansion plan is continuously reviewed and may change due to changes in key data and assumptions.
- These presentations do not represent a commitment to build.

SCE&G Transmission Projects

Projects Scheduled for Completion in 2018

- **Queensboro 115 kV Switching Station:** Construct
- **St. George – Summerville 230 kV #1 Line:** Upgrade #1 / Construct #2 SPDC B1272 ACSR
- **Urquhart 115 kV SS:** Modify From Ring Bus to Straight Bus; includes new switchhouse
- **Hopkins:** Install 230/115 kV Transformer
- **Faber Place – Hagood 115 kV #2 Line:** Construct
- **Faber Place – Charlotte Street:** Upgrade 1272 ACSR
- **Dunbar Road – Orangeburg East 115 kV:** Rebuild SPDC 1272 ACSR
- **VCS2 – St. George 230 kV #1 Lines:** Arrowwood Jct-Rapids, Riverbanks-Dunbar Rd-Dixiana-Gaston Jct-Orangeburg Construct
- **Williams – Cainhoy 115 kV:** Rebuild SPDC B795 ACSR



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Welcome

The South Carolina Regional Transmission Planning (SCRTP) process was established by South Carolina Electric & Gas Company (SCE&G) and the South Carolina Public Service Authority (Santee Cooper) to meet the transmission planning requirements of [FERC Order No. 890](#), [890-A](#) and [890-B](#), orders designed to "prevent undue discrimination and preference in transmission service." The SCRTP process was expanded to meet the transmission planning requirements of [FERC Order No. 1000](#), [1000-A](#), and [1000-B](#), orders that reform the Commission's electric transmission planning and cost allocation requirements for public utility transmission providers.

SCRTP provides information on:

- Activities of the SCRTP process
- Order No. 890 (including subsequent rulings associated with Order No. 890)
- Documents related to our compliance with Order No. 890

FERC Order No. 890

On March 15, 2007 the Federal Energy Regulatory Commission (FERC) published in the Federal Register a final rule reforming the 1996 open-access transmission regulatory framework rules in Orders No. 888 and 889. This final rule, called FERC Order No. 890, was adopted by FERC on February 15, 2007. FERC Order No. 890 was

Events

The next meeting of the SCRTP Stakeholder Group will be held May 31, 2018 in North Charleston, SC.

[Meeting Announcement \(PDF\)](#)

[register now](#)

[Meeting Archives](#)

Order 1000 Filing:

- [Order 1000 Transmittal Letter](#) - 7/14/2014
- [Attachment K Clean Order 1000 Revision](#) - 7/14/2014

Planned Facilities

- [2017-2021 above \\$2M Project Descriptions \(PDF\)](#)

SCE&G Planned Projects 2018 (\$2 Million and above)

SCE&G Planned Project Table (\$2M and Over) 2018

	Project	Tentative Completion Date	Expenditures as of 12/31/2017	2018 Estimated Expenditures	Total - Amount Estimated for Additions in 2018
1	Queensboro 115 kV Switching Station: Construct and Terminate 4 Transmission Lines	03/31/18	4,000,433	734,901	4,735,334
2	St. George-Summerville 230 kV #1 Lines: Upgrade #1 / Construct #2 SPDC B1272 ACSR	05/30/18	45,171,423	11,253,390	56,424,813
3	Urquhart 115 kV SS: Modify From Ring Bus to Straight Bus; includes new switchhouse	05/31/18	4,101,559	1,578,203	5,679,762
4	Hopkins: Install 230/115 kV Transformer	05/31/18	3,667,651	432,349	4,100,000
5	Faber Place – Hagood 115 kV #2 Line: Construct	05/31/18	1,989,605	1,117,480	3,107,085
6	Faber Place – Charlotte Street: Upgrade 1272 ACSR	06/30/18	1,211,700	908,300	2,120,000
7	Dunbar Road - Orangeburg East 115 kV: Rebuild SPDC 1272 ACSR	07/30/18	18,372,010	2,612,019	20,984,029
8	VCS2-St. George 230 kV #1 & #2 Lines: Construct	11/30/18	47,772,825	15,381,717	63,154,542
9	Williams – Cainhoy 115 kV: Rebuild SPDC B795 ACSR	12/03/18	543,185	25,506,815	26,050,000
		Total:	126,830,391	59,525,174	186,355,565

Queensboro 115 kV Switching Station: Construct

Project ID

0062A,B,C,D

Project Description

Build 4-terminal 115 kV switching station at Queensboro substation. Terminate the existing Queensboro – St. Andrews, Church Creek – Queensboro, Queensboro – Ft. Johnson Road, and Queensboro – Bayfront 115 kV lines into Queensboro Switching Station.

Project Need

System load growth in Church Creek, Faber Place and James Island areas require increased transmission capacity from the Charleston Peninsula and reduces exposure to customers in the area.

Project Status

Complete

In-Service Date

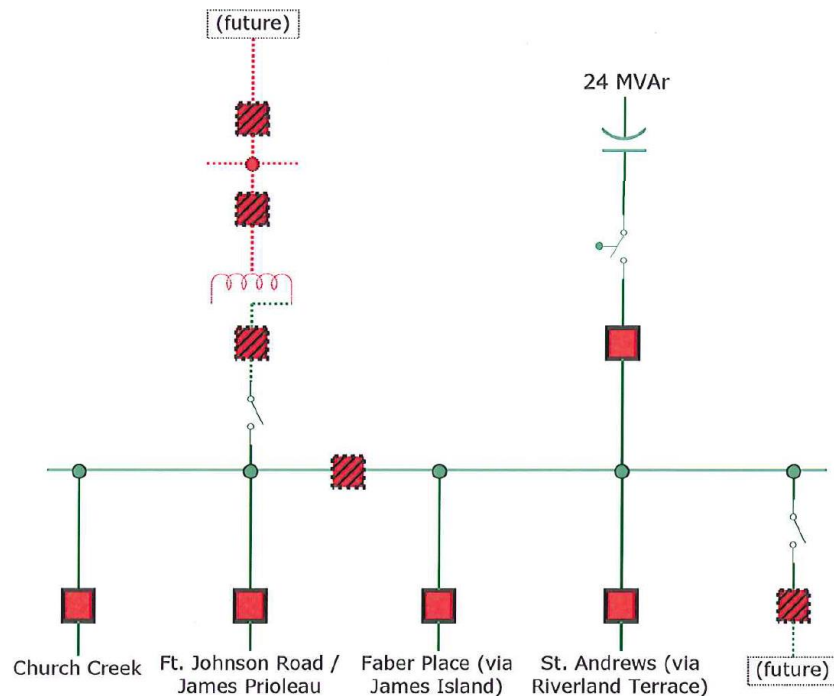
3/31/18

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$4,000,433	\$734,901	\$0	\$0	\$0	\$0	\$4,735,334

*Total Amount applied to 2018 Rate Base Calculation

Queensboro 115 kV Switching Station



- Construct 115 kV transmission switching station with future 230 kV capability at existing Queensboro substation in James Island
 - Four 115 kV line terminals
 - One 24 MVAR Capacitor Bank
 - Future bus tie breaker on 115 kV bus
 - Future terminal space for 230/115 kV 336 MVA autotransformer with high side and low side breakers
- Terminate Queensboro – St. Andrews, Church Creek – Queensboro, Queensboro – Ft. Johnson Rd, and Queensboro – Bayfront 115 kV lines into Queensboro SS.

St. George – Summerville 230 kV #1 Lines: Upgrade #1 / Construct #2 SPDC B1272 ACSR

Project ID

94P,1,2,4

Project Description

Upgrade St. George to Summerville 230 kV to SPDC Bundled 1272 ACSR conductor, adding an additional line, the St. George – Summerville 230 kV #2.

Project Need

System load growth in the Charleston and outlying areas requires upgraded 230 kV source.

Project Status

Complete

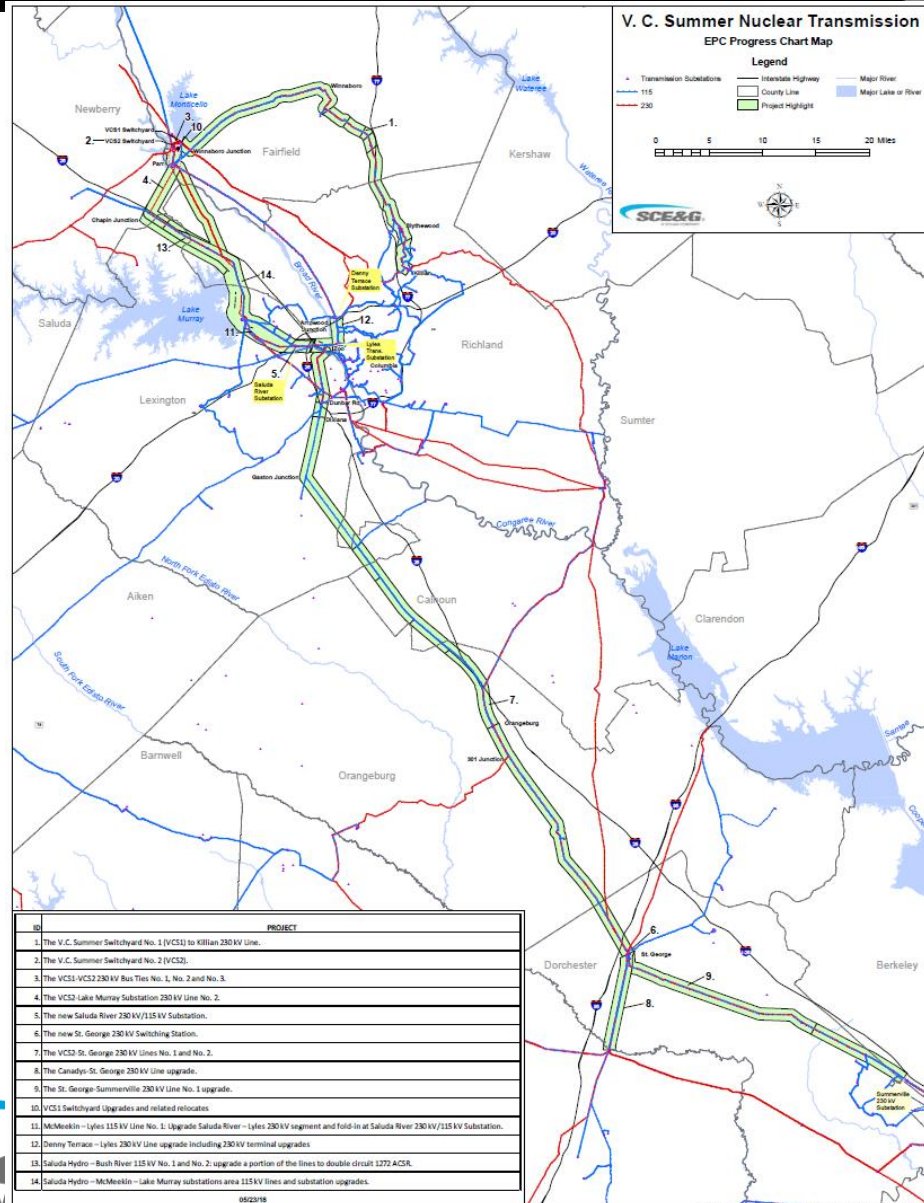
In-Service Date

5/30/2018

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$45,171,423	\$11,253,390	\$0	\$0	\$0	\$0	\$56,424,813

*Total Estimated Amount to be applied to 2018 Rate Base Calculation



Urquhart 115 kV SS: Modify From Ring Bus to Straight Bus; includes new switchhouse

Project ID

1060K

Project Description

Modify ring bus configuration to straight bus configuration and replace switch house and relays at the Urquhart substation

Project Need

Substation Maintenance and Equipment Upgrade

Project Status

In Progress

Planned In-Service Date

5/31/2018

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$4,101,559	\$1,578,203	\$0	\$0	\$0	\$0	\$5,679,762

*Total Estimated Amount to be applied to 2018 Rate Base Calculation

Hopkins 230/115 kV Sub: Install 2nd Autobank

Project ID

5386C

Project Description

Install a second autotransformer at Hopkins with a high and low side PRCB, along with back to back bus tie breakers.

Project Need

System load growth in the Hopkins and Eastover areas require additional transmission capacity. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

In Progress

Planned In-Service Date

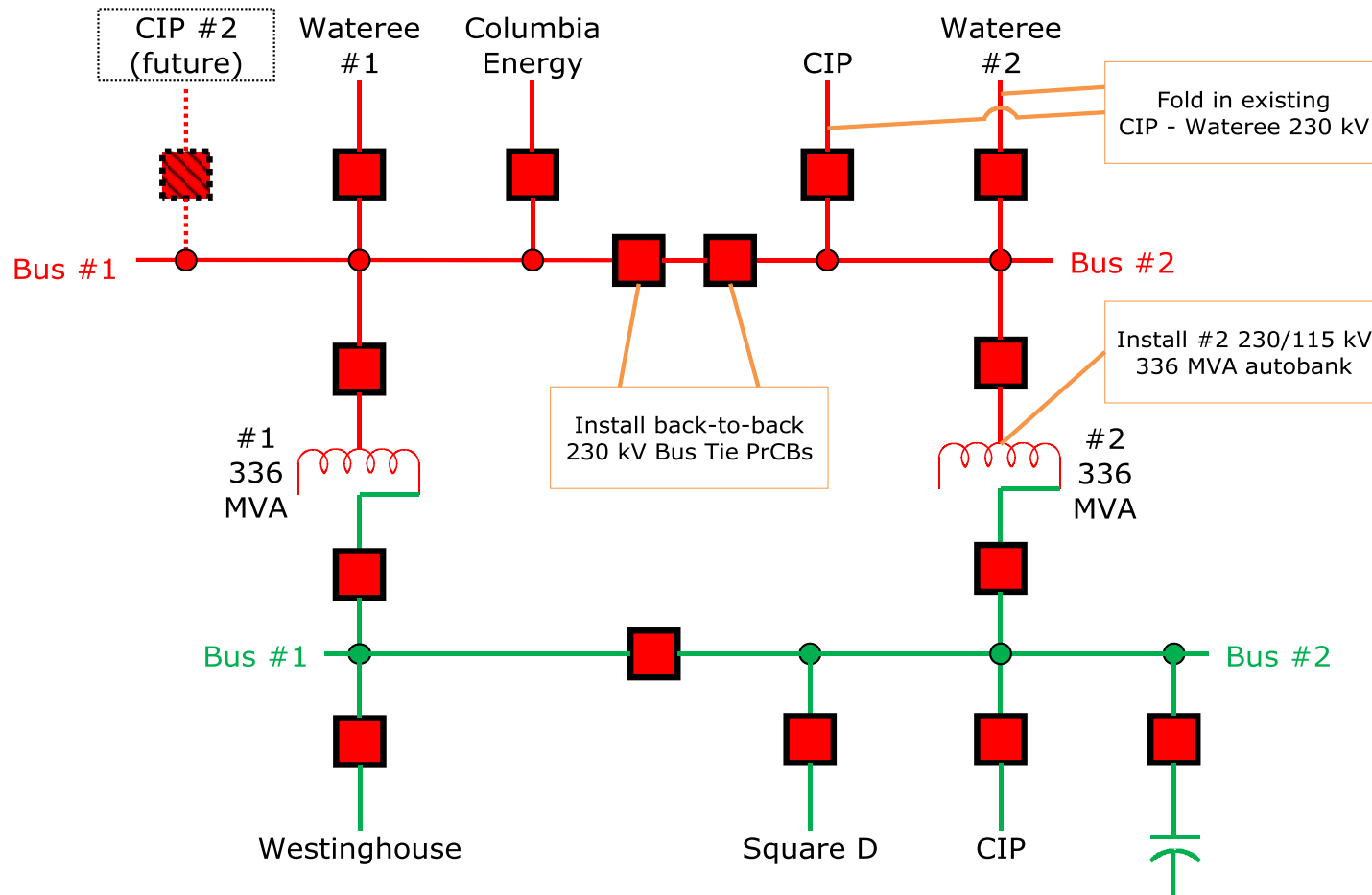
5/31/2018

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$3,667,651	\$432,349	\$0	\$0	\$0	\$0	\$4,100,000

*Total Estimated Amount to be applied to 2018 Rate Base Calculation

Hopkins



Faber Place - Hagood 115 kV #2 Line: Construct

Project ID

1721K,M,N

Project Description

Construct Faber Place to Hagood 115 kV #2 line with 1272 ACSR.

Project Need

System load growth in the Charleston area requires additional 115 kV transmission capacity.

Project Status

In Progress

Planned In-Service Date

5/31/2018

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$1,989,605	\$1,117,480	\$0	\$0	\$0	\$0	\$3,107,085

*Total Amount applied to 2018 Rate Base Calculation

Faber Place – Charlotte Street 115 kV Line Upgrade

Project ID

1721L

Project Description

Upgrade the Faber Place to Hagood Junction section of the Faber Place – Charlotte Street 115 kV line to 1272 ACSR or equivalent capacity conductor.

Project Need

System load growth in the Charleston area requires additional 115 kV transmission capacity.

Project Status

In Progress

Planned In-Service Date

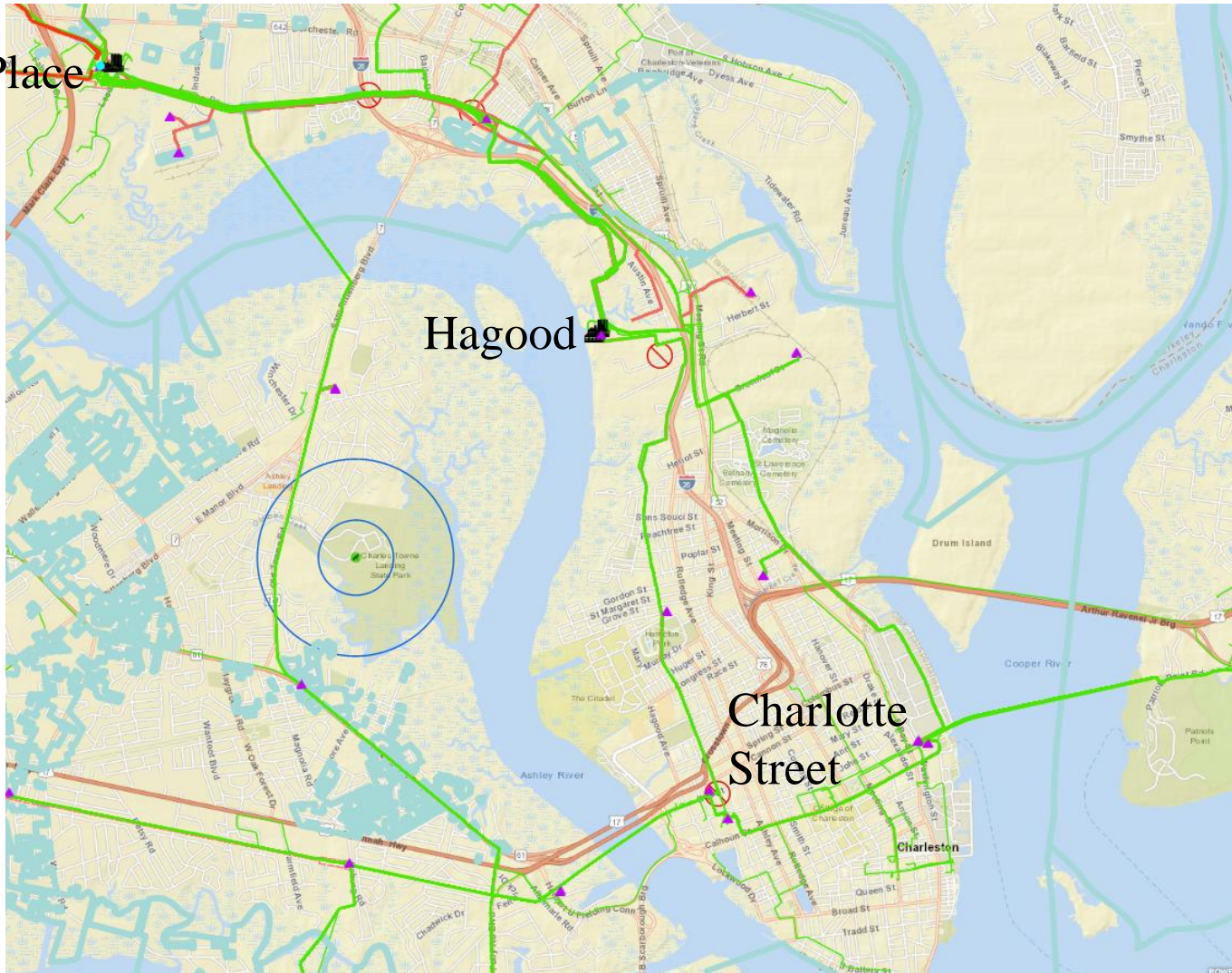
6/30/2018

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$1,211,700	\$908,300	\$0	\$0	\$0	\$0	\$2,120,000

*Total Amount applied to 2018 Rate Base Calculation

Faber Place



Dunbar Road – Orangeburg East 115 kV: Rebuild SPDC 1272 ACSR

Project ID

0094D1,9

Project Description

Tear out and rebuild existing 115 kV and 230 kV lines on the transmission corridor between Dunbar Road and Orangeburg East substations as SPDC 1272 ACSR construction.

Project Need

Improve north-south and south-north power transfer capability while meeting NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

In Progress

Planned In-Service Date

7/30/2018

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$18,372,010	\$2,612,019	\$0	\$0	\$0	\$0	\$20,984,029

*Total Amount applied to 2018 Rate Base Calculation

VCS2 – St. George 230 kV #1 Lines: Construct

Project ID

0094D6, 00948A, 0094D9, 0094D13, 0094D21, 0094D22, 0094D23, 0094D24, 0094D25, 0094P4, 0094P2, 0094U

Project Description

Tear out and rebuild existing 115 kV and 230 kV lines on the transmission corridor between the Riverbanks Zoo and Dunbar Road substation to SPDC 1272 ACSR construction.

Project Need

Improve north-south and south-north power transfer capability while meeting NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

In Progress

Planned In-Service Date

11/30/2018

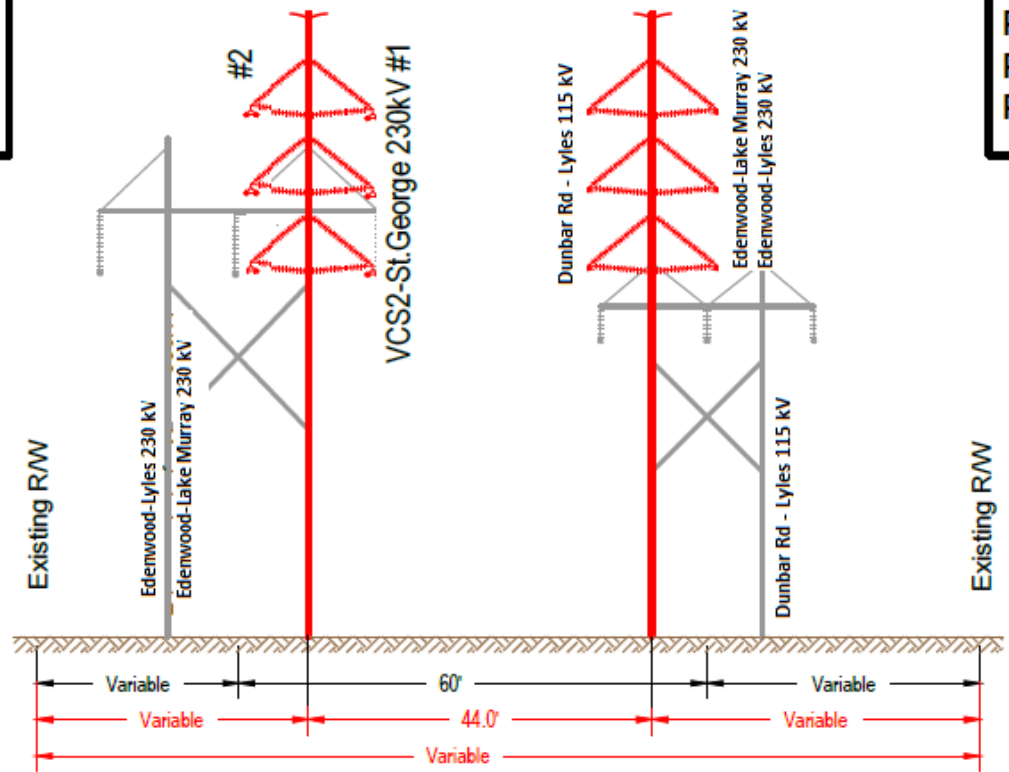
Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$45,329,739	\$15,274,283	\$0	\$0	\$0	\$0	\$60,604,022

*Total Amount applied to 2018 Rate Base Calculation

PROJECT #94D7
 W.O.# [REDACTED]
 P.O.#(E) [REDACTED]
 P.O.#(P) _____
 P.O.#(C) _____

PROJECT #94D6
 W.O.# [REDACTED]
 P.O.#(E) [REDACTED]
 P.O.#(P) _____
 P.O.#(C) _____



CROSS SECTION 6
 SALUDA RAPIDS to DUNBAR RD. MILEAGE - 6.0

EXISTING 200' R / W CORRIDOR

Williams – Cainhoy 115 kV: Rebuild SPDC B795 ACSR (115 kV & 230 kV)

Project ID

2499K, 2499L

Project Description

Rebuild the existing AMW Cainhoy 115 kV line to steel pole SPDC construction using B795 ACSR for both circuits. The Williams – Cainhoy 115 kV #1 line will be built insulated to 115 kV, and the Williams – Cainhoy 115 kV #2 line will be built insulated to 230 kV for future expansion capability. Total line length is 8.5 miles.

Project Need

System load growth in the Cainhoy, Hamlin, Mt Pleasant, and Thomas Island areas require additional 230/115 kV transformation. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

In Progress

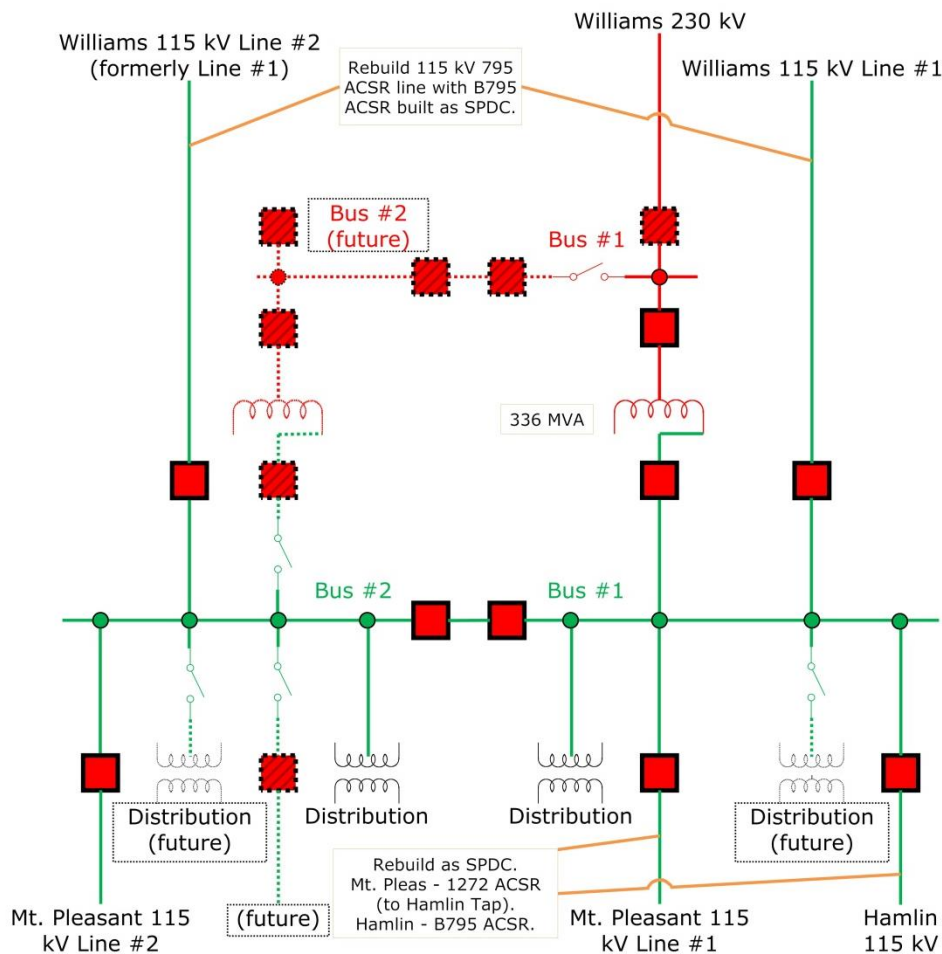
Planned In-Service Date

12/3/2018

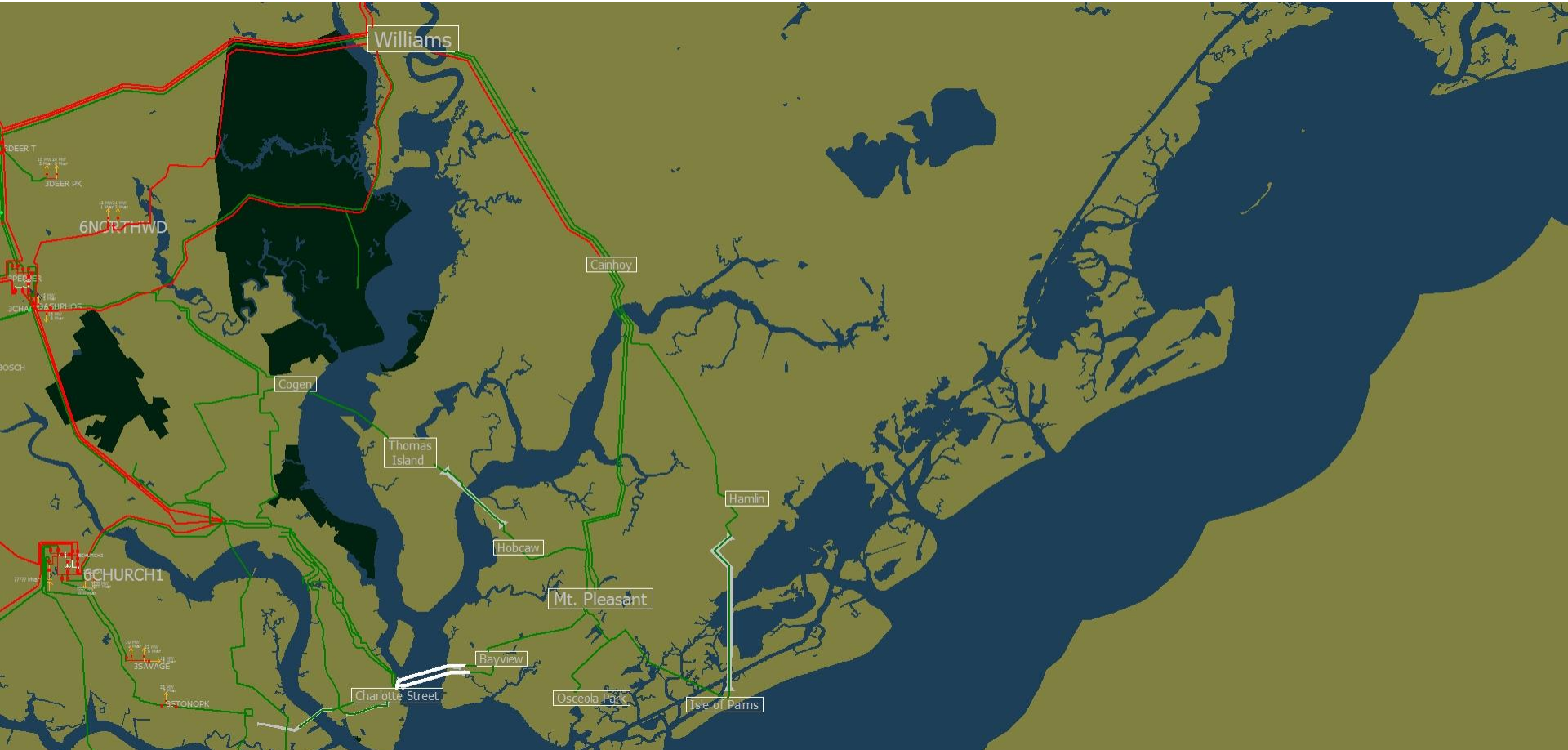
Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$543,185	\$25,506,815	\$0	\$0	\$0	\$0	\$26,050,000

*Total Amount applied to 2018 Rate Base Calculation



- Rebuild Williams – Cainhoy 115 kV SPDC
 - Creates Williams – Cainhoy 115 kV #1 & #2 B795 ACSR
- Add 1-115 kV at AMW and 1-115 kV terminal at Cainhoy



SCE&G Planned Projects 2019-2022 (\$2 Million and above)

SCE&G Planned Projects Table (\$2M and Over) 2019-2022

	Project	Tentative Completion Date	Expenditures as of December 31, 2017	Projected 2019	Projected 2020	Projected 2021	Projected 2022
10	Church Creek - Faber Place 230 & 115 kV Lines: Rebuild Ashley River Crossing	05/31/19	29,698	2,100,000			
11	Urquhart – Graniteville #2 230 kV Line: Rebuild existing 115kV SPDC B1272	05/31/19	561,522	15,707,500			
12	Graniteville – South Augusta 230 kV Tieline: Construct	06/01/20	561,522		15,707,500		
13	Hugh Leatherman 115 kV Tap: Construct	05/31/19		2,100,000			
14	Thomas Is-Jack Primus 115kV Line: Construct	08/01/19	3,784,360	5,722,400			
15	Burton - St. Helena 115 kV Groundline Remediation	12/31/19	724,413	2,200,000			
16	Pepperhill - Summerville 230 kV Construct	05/01/20	272,658		14,070,000		
17	Canadys 230 kV: Add Back-Back Bus Tie Breakers	05/01/20	38,003		4,300,000		
18	Lake Murray - Red Bank 115 kV Line: String 1272 ACSR on existing structures, construct SPDC 1272 ACSR elsewhere	05/01/20			5,675,000		
19	Williams Street - Park Street 115 kV: Construct	05/01/20	124,780		2,350,000		
20	Lake Murray - Harbison 115 kV Rebuild & Saluda Hydro - Denny Terrace 115 kV Construct 1272 ACSR	06/30/20	1,396,234		7,000,000		
21	Burton - Yemassee 115 kV #2 Line Rebuild SPDC B795 ACSR	06/30/20	12,048,133		38,000,000		
22	Coit - Gills Creek 115 kV Line: Construct	12/01/20			2,500,000		
23	Bluffton-Santee 115 kV Tie Construct	12/31/20	4,538	1,100,000	2,000,000		
24	Canadys - Ritter 230 kV: Construct rebuilding existing 115 kV SPDC B1272	05/01/22	-				26,700,000
		Total:	19,545,861	28,929,900	91,602,500	-	26,700,000

Church Creek – Faber Place 230 kV & 115 kV Lines: Rebuild Ashley River Crossing

Project ID

1730A

Project Description

Rebuild the Church Creek – Faber Place 230 kV and 115 kV section of lines at the Ashley River crossing, consisting of four spans which will be rebuilt to SPDC steel pole construction.

Project Need

Structures are in need of replacement. Wood poles will be replaced with steel pole construction.

Project Status

Planned

Planned In-Service Date

5/31/2019

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$29,698	\$0	\$2,100,000	\$0	\$0	\$0	\$2,129,698

*Total Estimated Amount to be applied to 2019 Rate Base Calculation



Church Creek

Faber Place

Urquhart – Graniteville #2 230 kV Line: Rebuild existing 115kV SPDC B1272

Project ID

7973A – 7973N

Project Description

Rebuild current Urquhart – Graniteville 115 kV line to 230 kV SPDC B1272 ACSR construction in order to upgrade the Urquhart – Graniteville #2 230 kV line.

Project Need

Load growth in the Aiken area requires additional transmission capacity. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

In Progress

Planned In-Service Date

5/31/2019

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$561,522	\$0	\$15,707,500	\$0	\$0	\$0	\$16,269,022

*Total Estimated Amount to be applied to 2019 Rate Base Calculation

Graniteville – South Augusta 230 kV Tieline: Construct

Project ID

7973A – 7973N

Project Description

Rebuild current Urquhart – Graniteville 115 kV line to 230 kV SPDC B1272 ACSR construction in order to upgrade create the Graniteville – South Augusta 230 kV SCE&G/SOCO Tieline. The existing Urquhart – Graniteville #2 230 kV line will be converted to 115 kV and re-connected to the newly built South Augusta 115 kV SOCO line to create the Graniteville – South Augusta 115 kV tieline.

Project Need

Load growth in the Aiken area requires additional transmission capacity. Constructing a new 230 kV line from South Augusta to Graniteville will provide an additional source needed during contingencies and increase the transfer capability between SCE&G and Southern Company. Project unloads a highly loaded transmission line on the SCE&G/Southern interface and several internal SCE&G lines. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

In Progress

Planned In-Service Date

6/1/2020

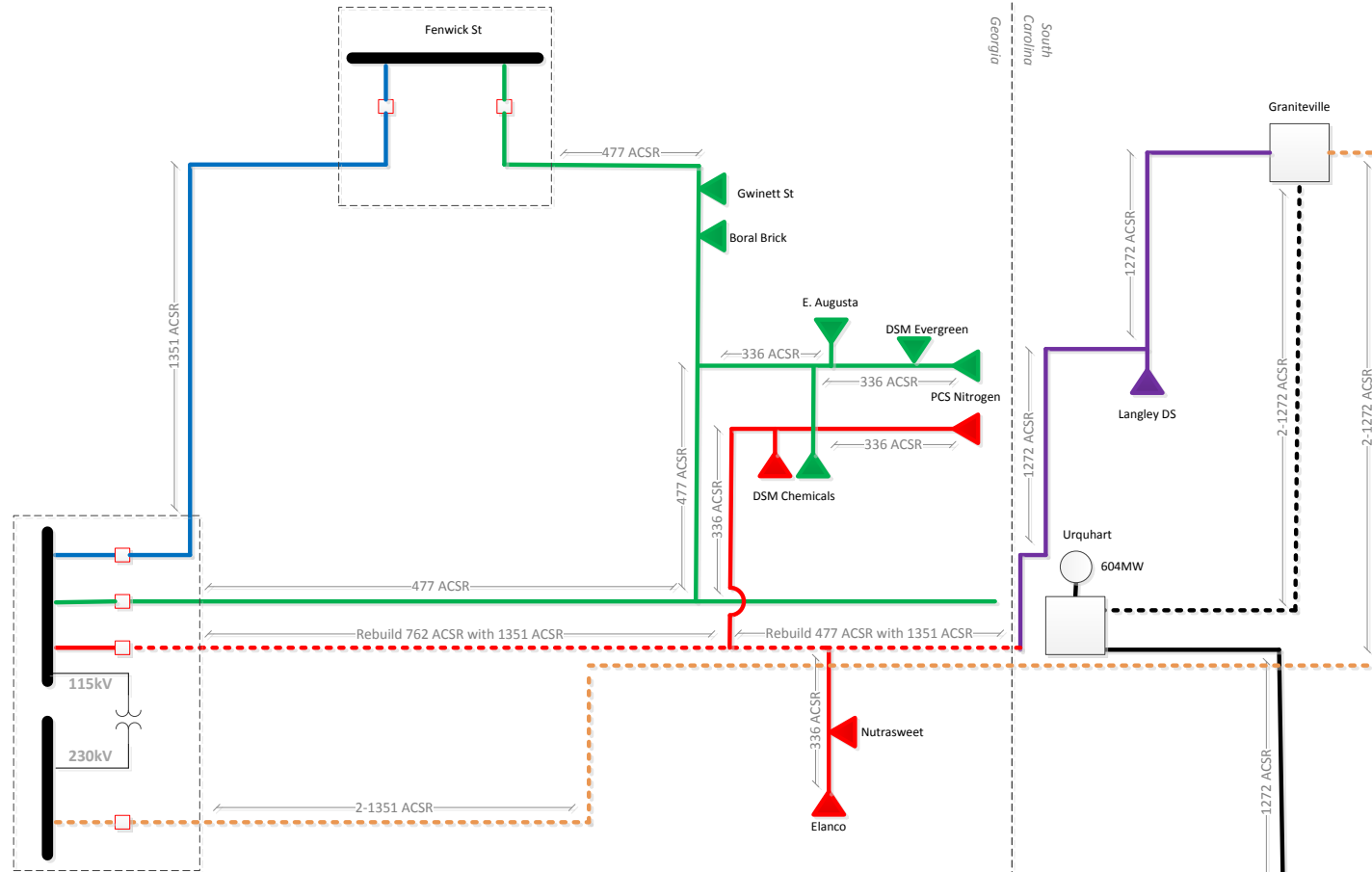
Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$561,522	\$0	\$0	\$15,707,500	\$0	\$0	\$16,269,022

*Total Estimated Amount to be applied to 2020 Rate Base Calculation

Joint Study Results Assessment agreed upon between SCE&G and Southern Company

- Construct a 230 & 115 kV tieline from SOCO's South Augusta substation to SCE&G's Graniteville substation
 - Rebuild current Urquhart – Graniteville 115 kV line to SPDC B1272 ACSR 230 kV lines
 - Creates Graniteville – South Augusta 230 kV & Urquhart – Graniteville #2 230 kV lines
 - Existing Urquhart – Graniteville #2 230 kV line will be converted to 115 kV and re-terminated from Urquhart to new 115 kV SOCO line to become Graniteville – South Augusta 115 kV line (1272 ACSR)
- Mitigates high loading and/or potential overloading seen in future cases on the SRS – Vogtle 230 kV line by increasing the transfer capability on the SCE&G and SOCO interface
- Replaces project “Urquhart – Graniteville 230 kV #2 Line: Construct” previously in queue for SCE&G



- S. Augusta - Elanco 115kV
 - S. Augusta - Fenwick Street (White) 115kV
 - S. Augusta - Fenwick Street (Black) 115kV
 - SCEG 115kV
 - SCEG 230kV
 - SOCO 230kV
 - S. Augusta - Graniteville 230kV
- *Dashed lines represent proposed transmission assets

Hugh Leatherman 115 kV Tap: Construct

Project ID

007977D

Project Description

Construct a new 115 kV tap line from the Charlotte Street – Faber Place 115 kV line to the new Hugh Leatherman substation with 1272 ACSR conductor. Route will be determined by the siting study that is currently underway. Route assumed to be approximately 1.6 miles.

Project Need

Electric Service Contract.

Project Status

Planned

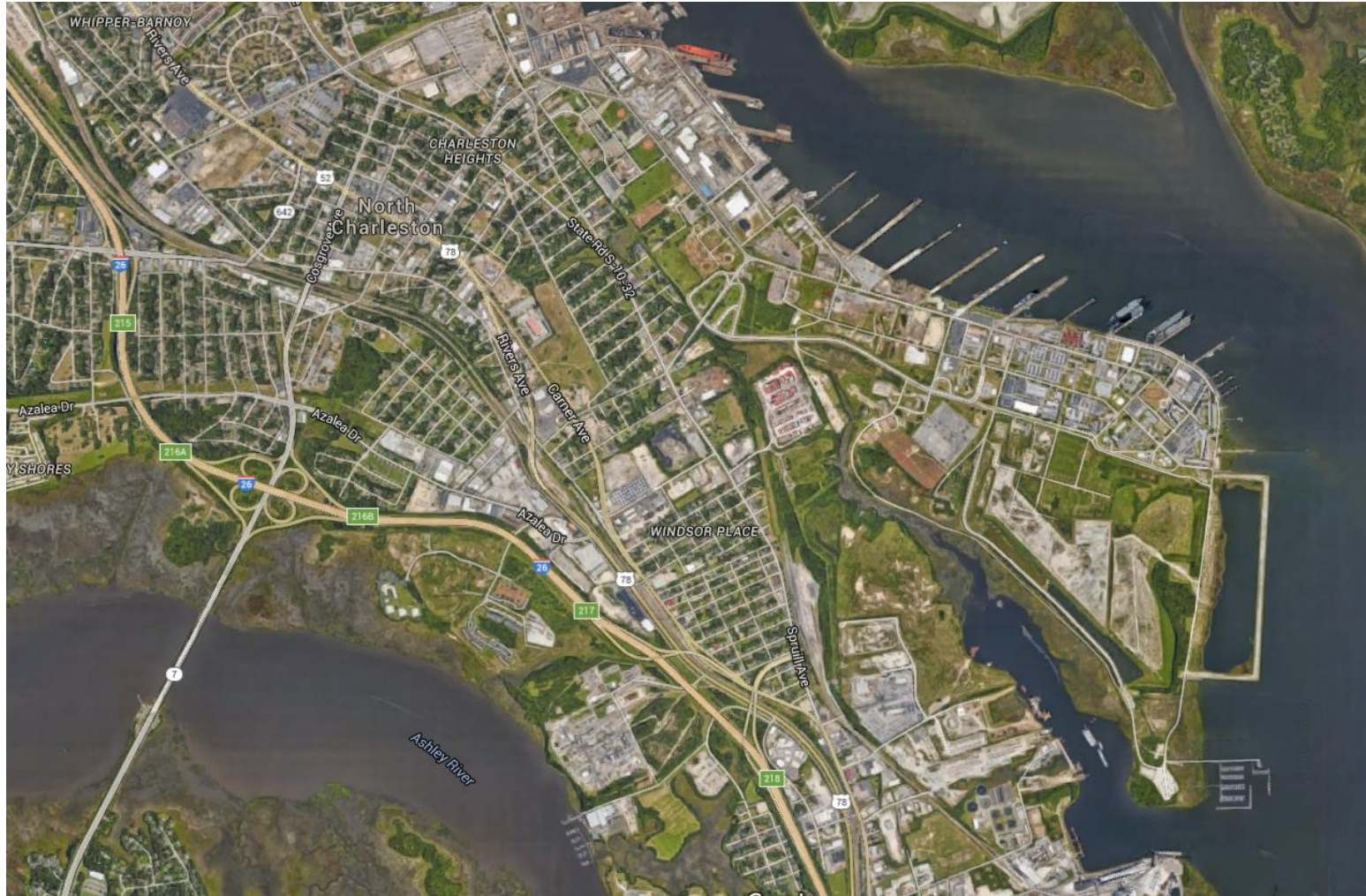
Planned In-Service Date

5/31/2019

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$0	\$0	\$2,100,000	\$0	\$0	\$0	\$2,100,000

*Total Amount applied to 2019 Rate Base Calculation



Thomas Island - Jack Primus 115 kV Line: Construct

Project ID

0270B,G

Project Description

Construct a new 115 kV line from the Thomas Island substation to the new Jack Primus substation with 1272 ACSR conductor. Total line length approximately 4 miles.

Project Need

System load growth in the Thomas Island area requires additional transmission capacity.

Project Status

Planned

Planned In-Service Date

8/1/2019

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$3,784,360	\$0	\$5,722,400	\$0	\$0	\$0	\$9,506,760

*Total Amount applied to 2019 Rate Base Calculation



Thomas Island - Jack Primus 115kV Line
 Nationwide Permit 12 Drawings,
 SAC-2015-01340

August 3, 2017 Sheet 1 of 7



STANDARD SERVICES:
 Prepared by: SCS&G
 Date Created: October 20, 2015
 Date Updated: 2017 October 26, 2017
 Prepared by: SCS&G
 Checked by: SCS&G
 Approved by: SCS&G
 Project: Thomas Island - Jack Primus 115kV Line
 Drawing: 115kV Line - Jack Primus 115kV Line
 Revision: 1
 Revised: 4/26/2017

SITE LOCATION MAP-SCE&G
THOMAS ISLAND-JACK PRIMUS 115kV
NORTH CHARLESTON, SC QUAD MAP
BERKELEY COUNTY, SC

LEGEND	
Site: Existing	
Proposed	

Burton – St. Helena Island 115 kV: Replace 19 Structures and Groundline Remediation

Project ID

006072A

Project Description

Replace several structures (direct embed galvanized steel structures) with new galvanized steel vibratory caissons and galvanic cathodic protection. Apply galvanic cathodic protection to other steel structures on the line that need corrosion protection.

Project Need

Transmission Maintenance and Equipment Upgrade

Project Status

Planned

Planned In-Service Date

12/31/2019

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$724,413	\$0	\$2,200,000	\$0	\$0	\$0	\$2,924,413

*Total Estimated Amount to be applied to 2019 Rate Base Calculation



Pepperhill – Summerville 230 kV: Construct

Project ID

2601A – F

Project Description

Construct a new 230 kV line from Pepperhill to Summerville SPDC with B1272 ACSR. The existing Williams – Canadys 230 kV line will be re-terminated to Pepperhill and Faber Place to create Canadys – Faber Place 230 kV line and Williams – Pepperhill 230 kV line.

Project Need

System load growth in the low country require additional transmission capacity. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

Planned

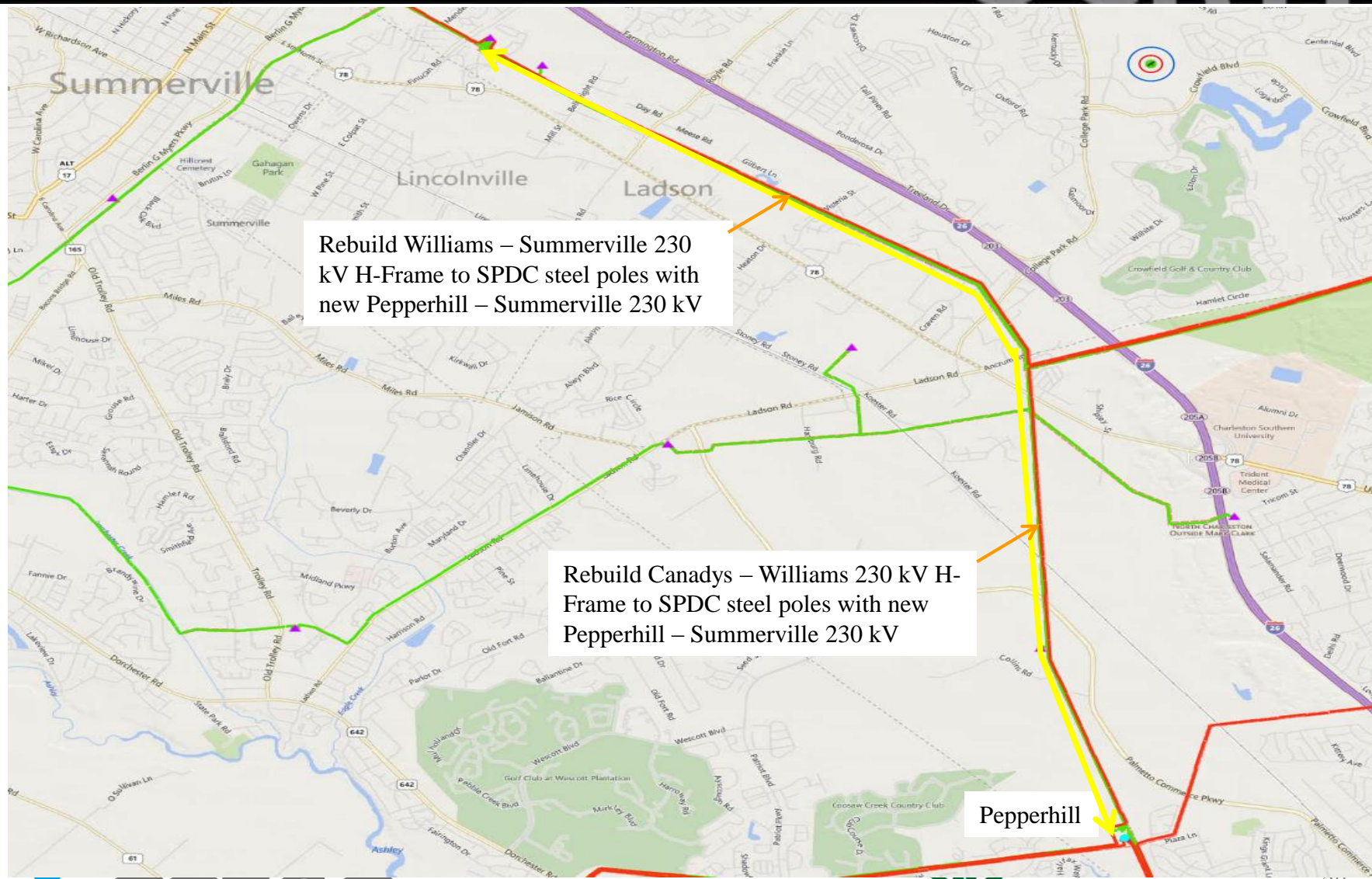
Planned In-Service Date

5/1/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$272,658	\$0	\$0	\$14,070,000	\$0	\$0	\$14,342,658

*Total Estimated Amount to be applied to 2020 Rate Base Calculation



Rebuild Williams – Summerville 230 kV H-Frame to SPDC steel poles with new Pepperhill – Summerville 230 kV

Rebuild Canadys – Williams 230 kV H-Frame to SPDC steel poles with new Pepperhill – Summerville 230 kV

Pepperhill

Canadys 230 kV: Add Back-Back Bus Tie Breakers

Project ID

6074A, 6075A

Project Description

Upgrade the 230kV bus from single 1272 ACSR to bundled 1272 ACSR. Install back to back 230 kV bus tie breakers and re-terminate existing lines into substation.

Project Need

The 230 kV bus upgrades are required for additional load growth in the southern portion of the SCE&G system, and back-to-back bus tie breakers are required for system reliability improvements.

Project Status

Planned

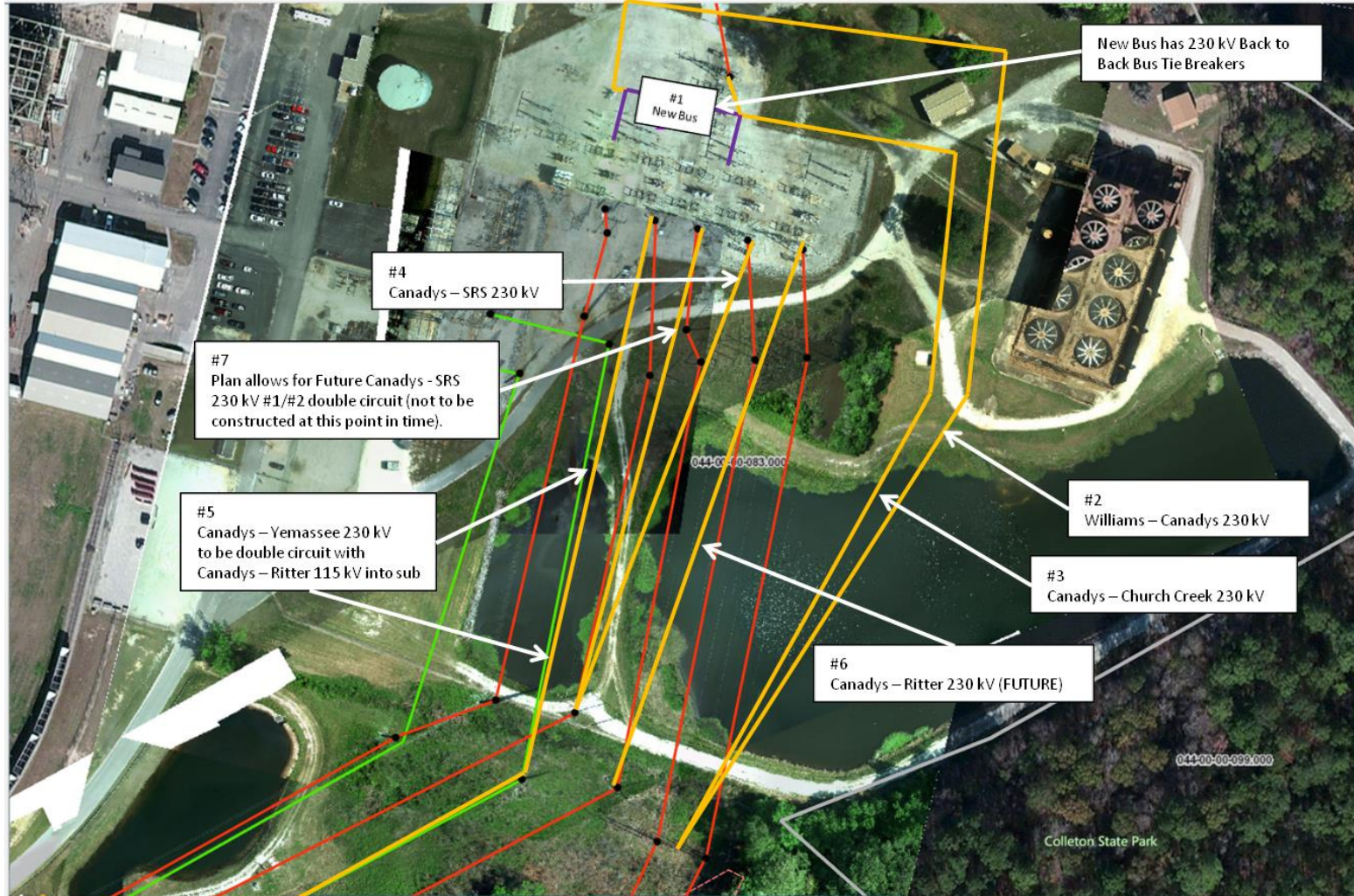
Planned In-Service Date

5/1/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$38,003	\$0	\$0	\$4,300,000	\$0	\$0	\$4,338,003

*Total Estimated Amount to be applied to 2020 Rate Base Calculation



Lake Murray – Red Bank 115 kV Line: String 1272 ACSR on existing structures, construct SPDC 1272 ACSR elsewhere

Project ID
007106D – G

Project Description

Install a new circuit of 1272 ACSR wire from Lake Murray - Lexington Jct. Conductor will be installed on the available side of the Lake Murray - Gilbert 115 kV structures which were designed to be double circuit when it was originally built. Rebuild 115 kV SPDC from Lexington Junction to Lexington Industrial Park to accommodate the Lake Murray - Michelin 115 kV and Lexington Junction - Lexington Industrial Park 115 kV. Upgrade Lexington Junction - Michelin conductor to 1272 ACSR.

Project Need

System growth in the Lexington and Red Bank areas requires additional 115 kV capacity and an additional transmission path to increase reliability.

Project Status

Planned

Planned In-Service Date

5/1/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$0	\$0	\$0	\$5,675,000	\$0	\$0	\$5,675,000

*Total Estimated Amount to be applied to 2020 Rate Base Calculation



Williams Street – Park Street 115 kV: Construct

Project ID

007971B,D

Project Description

Design, purchase, and install a 115 kV line between Williams Street and Park Street substations.

Project Need

System load growth in the downtown Columbia area requires additional transmission capacity.

Project Status

Planned

Planned In-Service Date

5/31/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$124,780	\$0	\$0	\$2,350,000	\$0	\$0	\$2,474,780

*Total Estimated Amount to be applied to 2020 Rate Base Calculation

Lake Murray – Harbison 115 kV: Re-terminate Saluda Hydro – Harbison and rebuild SPDC

Project ID

0203B, 0203C

Project Description

Re-terminate the Saluda Hydro – Harbison 115 kV line to Lake Murray substation in preparation for the SPDC rebuild of the Lake Murray – Harbison 115 kV which will add an additional line to create Saluda Hydro – Denny Terrace 115 kV line.

Project Need

System growth in the Irmo, Harbison, Piney Woods Road, and Kingswood areas requires additional 115 kV capacity and transmission path to increase reliability.

Project Status

In Progress

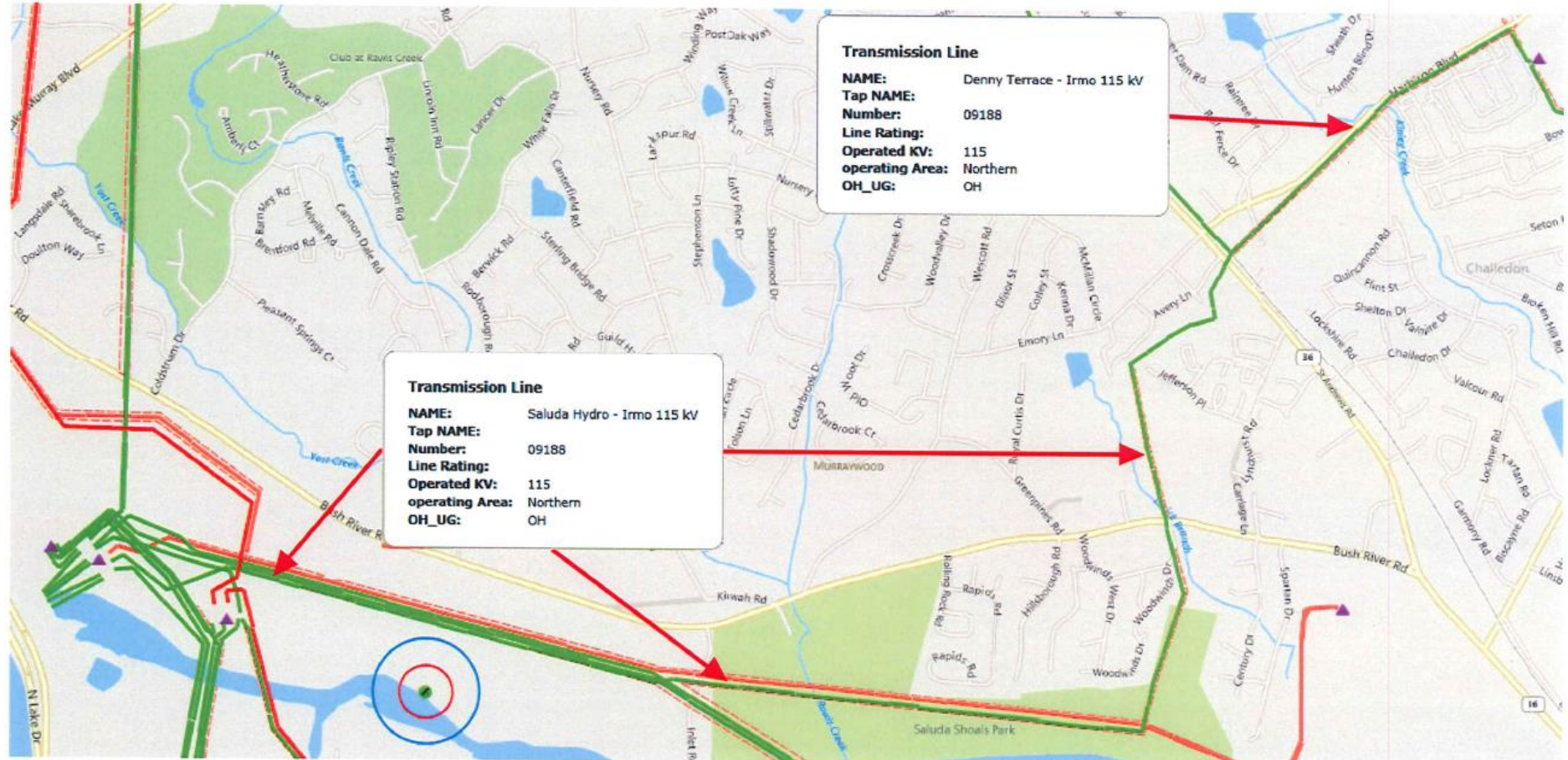
Planned In-Service Date

6/30/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$1,396,234	\$0	\$0	\$7,000,000	\$0	\$0	\$8,396,234

*Total Estimated Amount to be applied to 2020 Rate Base Calculation



Burton-Yemassee 115 kV #2 Line Rebuild SPDC B795 ACSR

Project ID

1268A, 1268C

Project Description

Yemassee-Burton 115 kV Line #2: Rebuild 115 kV SPDC using B795 ACSR (line length 21.24 miles).

Project Need

System load growth in the Burton area requires additional transmission capacity from the Yemassee 230/115 kV substation and added transmission path to increase reliability.

Project Status

In Progress

Planned In-Service Date

6/30/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$12,048,133	\$0	\$0	\$38,000,000	\$0	\$0	\$50,048,133

*Total Estimated Amount to be applied to 2020 Rate Base Calculation

Coit – Gills Creek 115 kV Line: Construct

Project ID

5392A

Project Description

Construct a new 115 kV tie line from Coit substation to the Gills Creek substation.

Project Need

System growth in the Eastern Columbia and Garners Ferry areas requires additional 115 kV capacity and transmission path to increase reliability.

Project Status

Planned

Planned In-Service Date

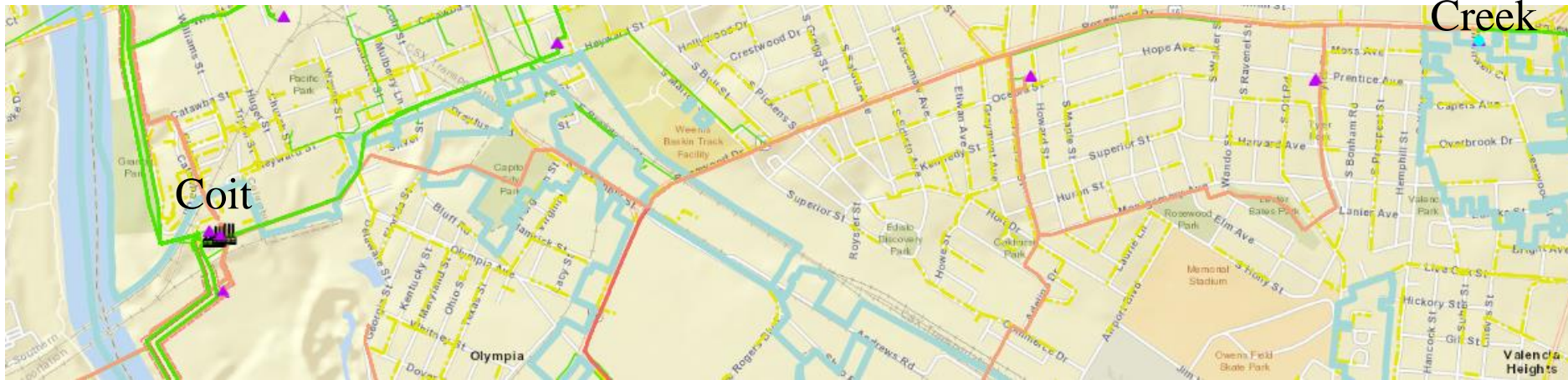
12/1/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$0	\$0	\$0	\$2,500,000	\$0	\$0	\$2,500,000

*Total Estimated Amount to be applied to 2020 Rate Base Calculation

Gills Creek



Bluffton – Santee 115 kV Tie Line Construct

Project ID

7101A, 7101B

Project Description

Construct a new 115 kV tie line from SCE&G Bluffton substation to SCPSA Bluffton substation. Total line length approximately 1.5 miles.

Project Need

This line is needed to reduce outage durations for planned outages and emergency situations for SCE&G's Bluffton, Hardeeville and Pritchardville substations.

Project Status

Planned

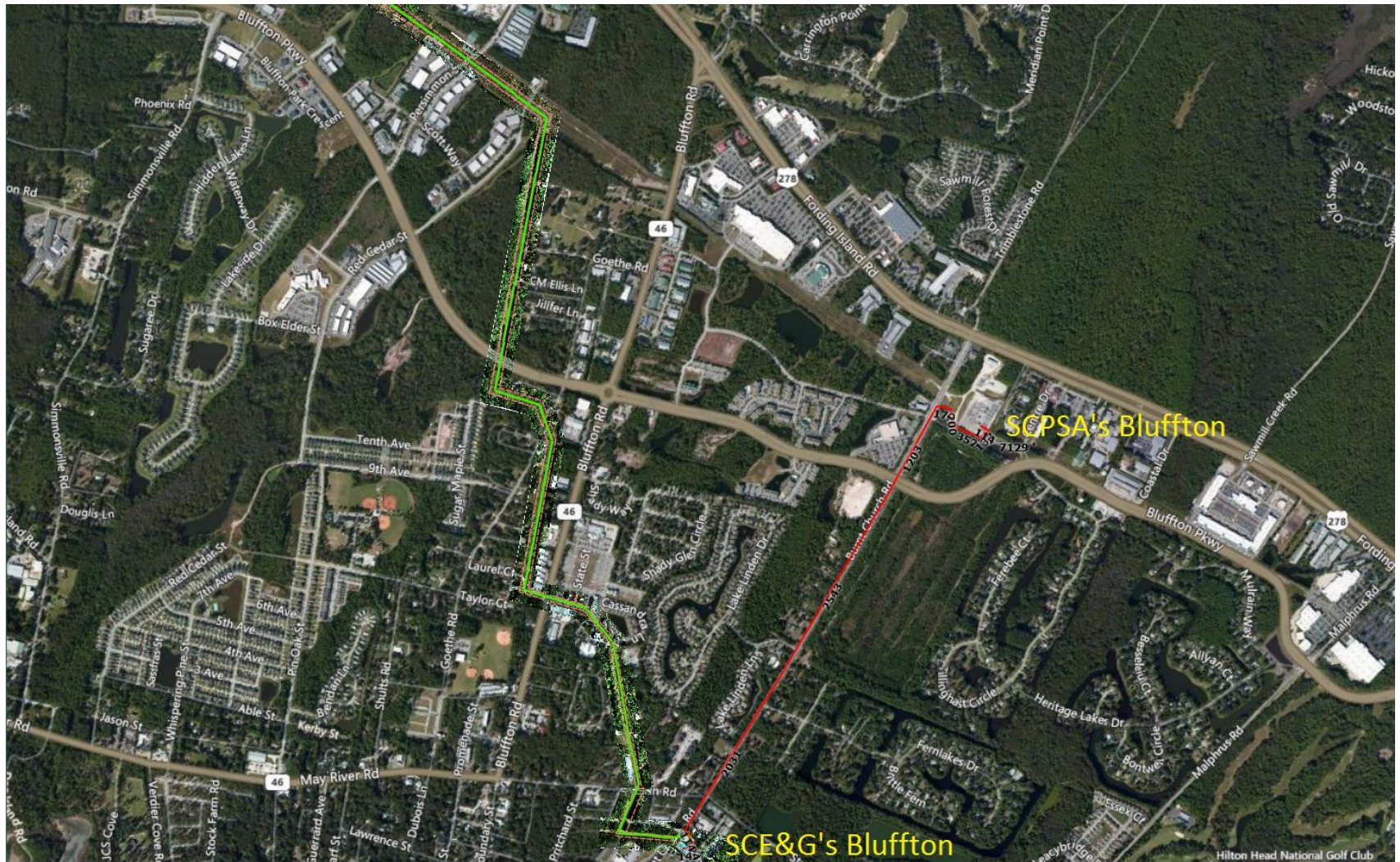
Planned In-Service Date

12/31/2020

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$4,538	\$0	\$1,100,000	\$2,000,000	\$0	\$0	\$3,104,538

*Total Estimated Amount to be applied to 2020 Rate Base Calculation



Canadys – Ritter 230 kV: Rebuild existing 115kV SPDC B1272

Project ID

6706A – C

Project Description

Construct a new 230 kV line from Canadys to Ritter SPDC with B1272 ACSR by rebuilding the existing 115 kV line in this corridor.

Project Need

System load growth in the low country require additional transmission capacity. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

Planned

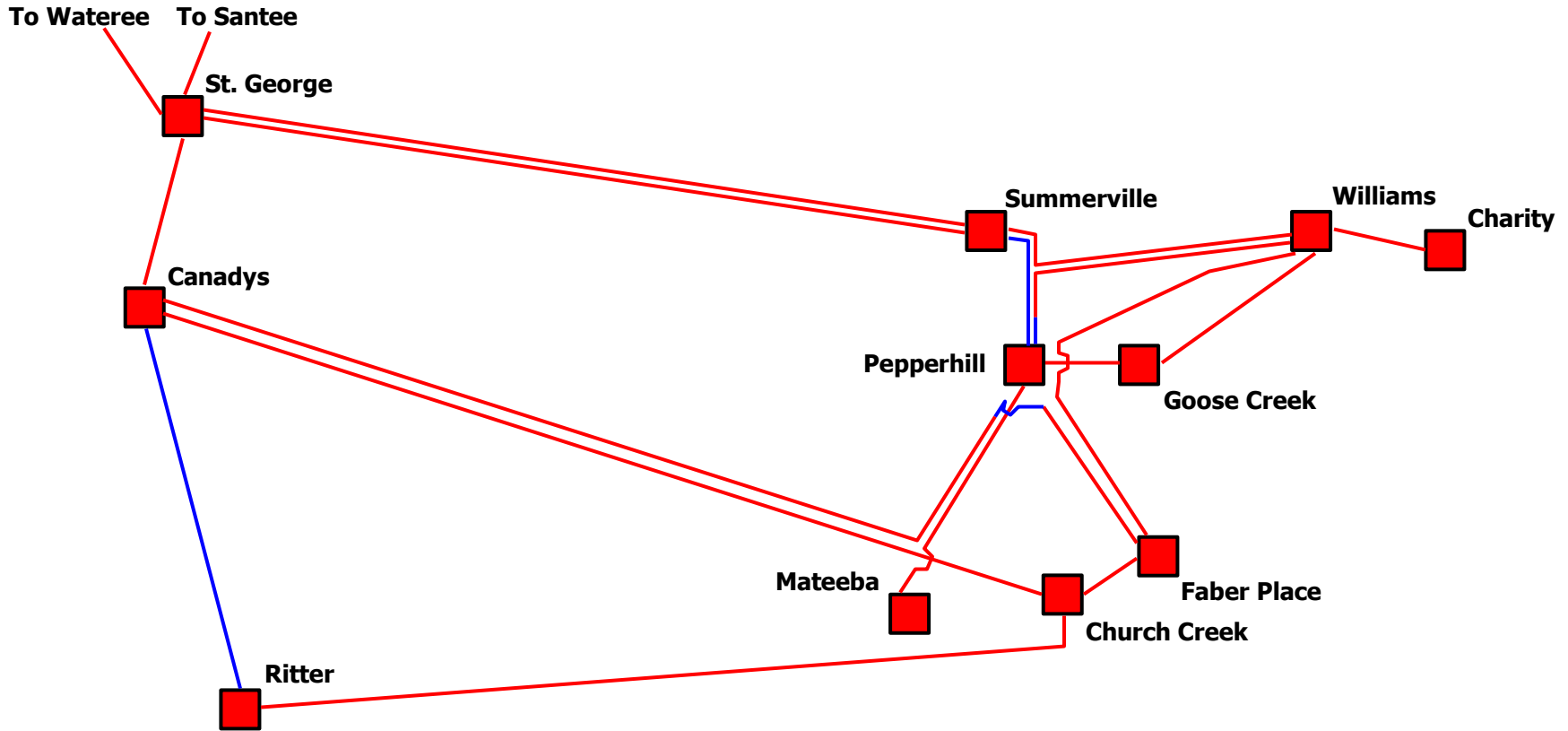
Planned In-Service Date

5/1/2022

Estimated Project Cost

Previous	2018	2019	2020	2021	2022	Total*
\$0	\$0	\$0	\$0	\$0	\$26,700,000	\$26,700,000

*Total Estimated Amount to be applied to 2022 Rate Base Calculation



Questions?

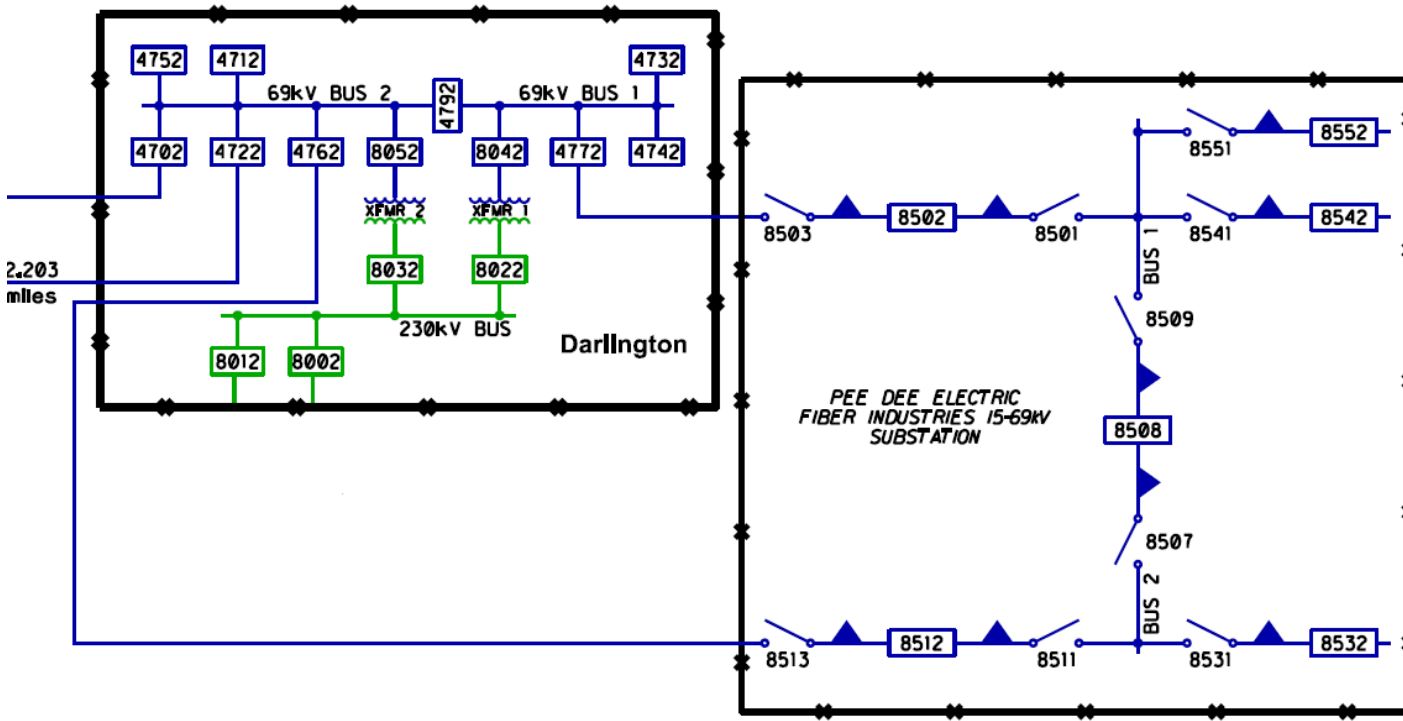
Current Transmission Expansion Plans



Weijian Cong

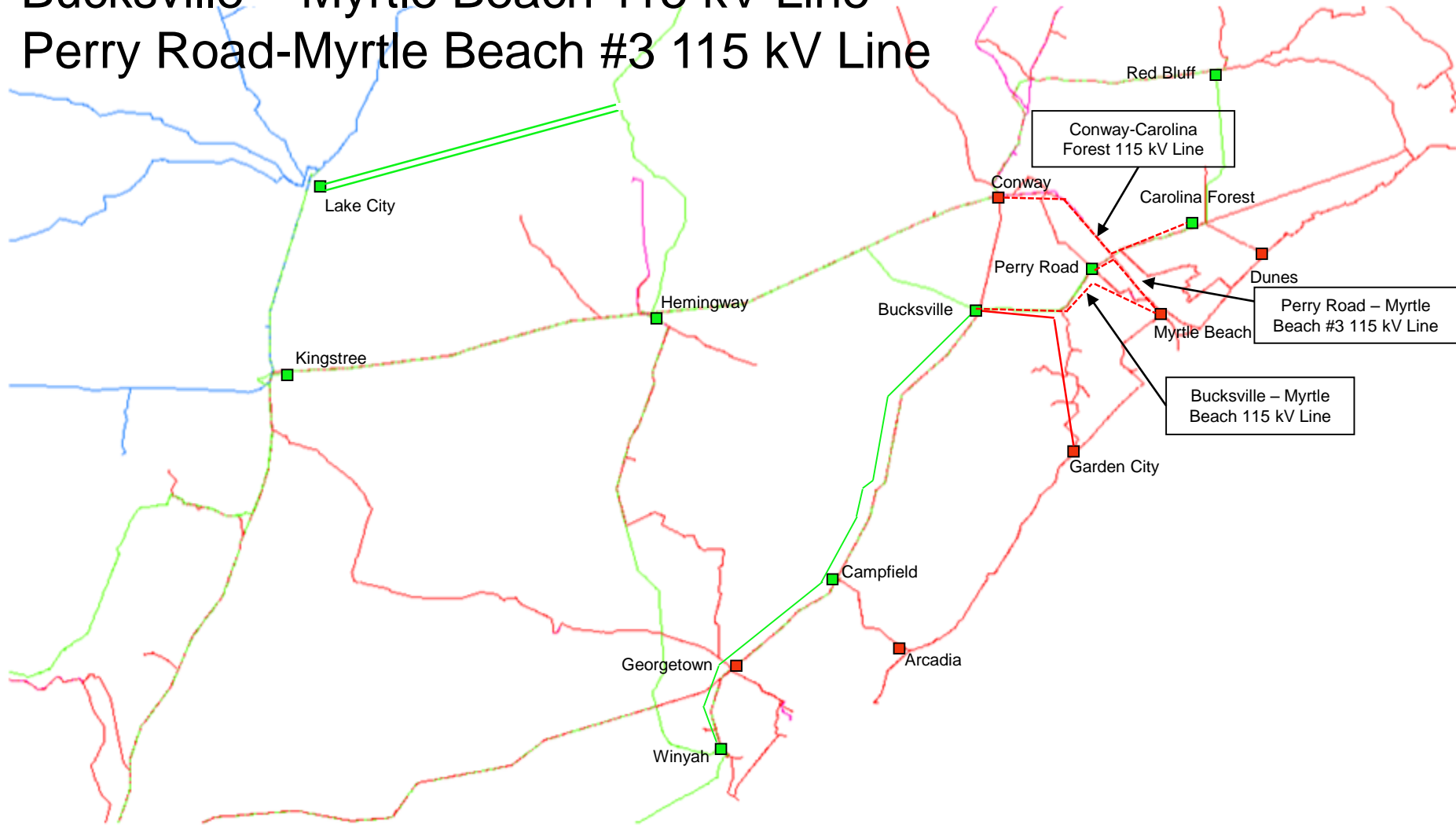
Transmission Network Completed Projects

- Darlington – Fiber Industries 03/2018
- Bucksville – Myrtle Beach 115 kV Line 04/2018
- Perry Rd – Myrtle Beach #3 115kV Line 05/2018



Rebuilt and re-established
Darlington – Fiber Industries 69kV Lines

Bucksville – Myrtle Beach 115 kV Line Perry Road-Myrtle Beach #3 115 kV Line



Transmission Network Active Projects

Johns Island – Ritter/Church Creek 115 kV Interconnection	12/2018
Pine Level-Allen #2 115 kV Line	04/2019
Sandy Run 230-115 kV Substation	12/2019
Add Bucksville 230-115 kV Transformer #2	12/2019
Pomaria-Orangeburg 230 kV Line	12/2020
Georgetown-Campfield 115 kV line switches replacement	12/2018
Carnes-Harleys Bridge 115 kV Line via McQueen phase II	12/2019
Bluffton-Market Place #2 115 kV line-Phase I	12/2019
Add Bluffton 230 kV series bus tie breaker	12/2019

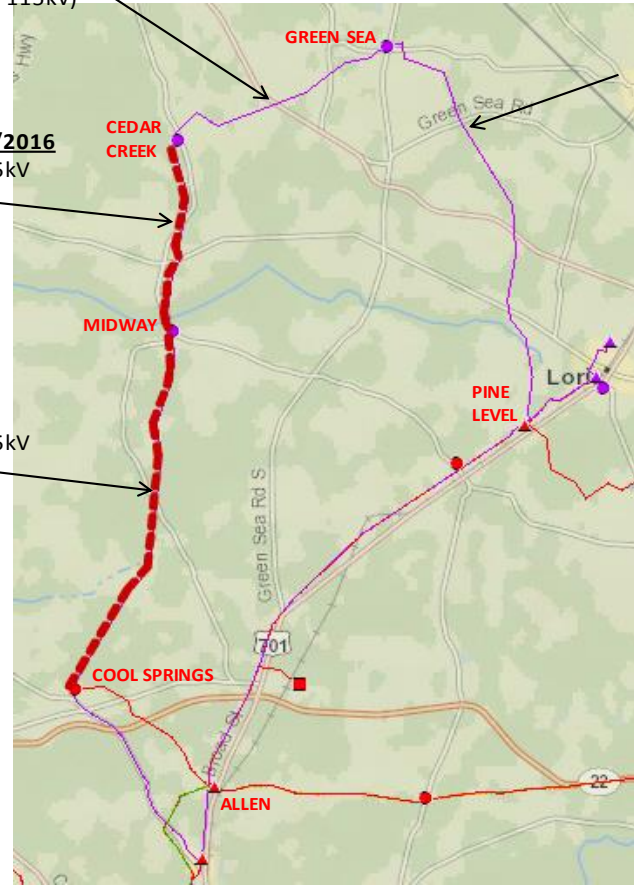
Pine Level-Allen #2 115 kV Line

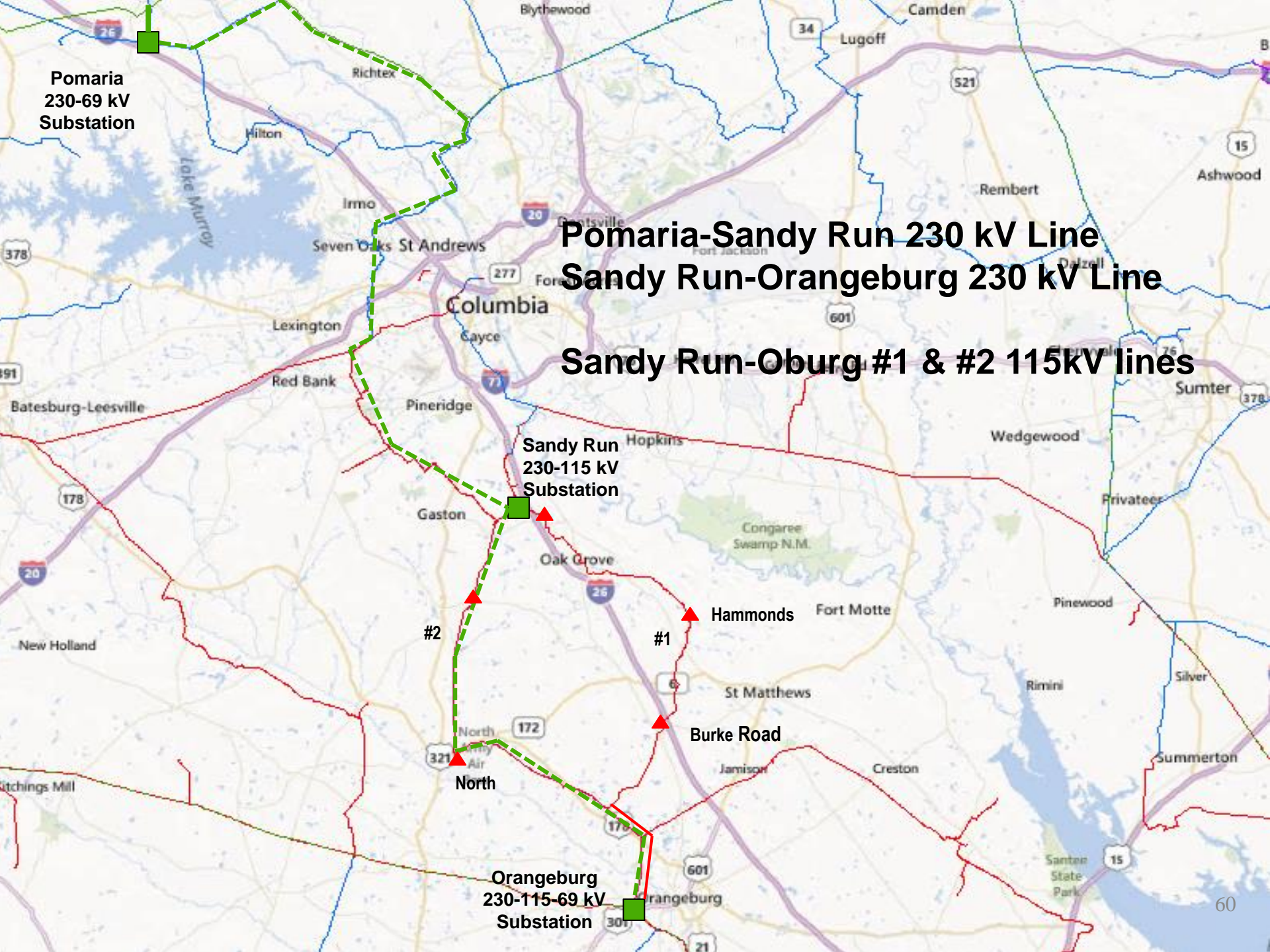
Changed to 8/20/2018
OPERATE AT 115kV
(ALREADY 477 ACSR
BUILT FOR 115KV)

Changed to 5/1/2016
REBUILD FOR 115KV
795 ACSR

BY 11/30/2015
REBUILD FOR 115KV
795 ACSR

Changed to 2/26/2019
OPERATE AT 115KV
(ALREADY 477 ACSR
BUILT FOR 115KV)





**Pomaria
230-69 kV
Substation**

**Pomaria-Sandy Run 230 kV Line
Sandy Run-Orangeburg 230 kV Line
Sandy Run-Oburg #1 & #2 115kV lines**

**Sandy Run
230-115 kV
Substation**

**Orangeburg
230-115-69 kV
Substation**

#2

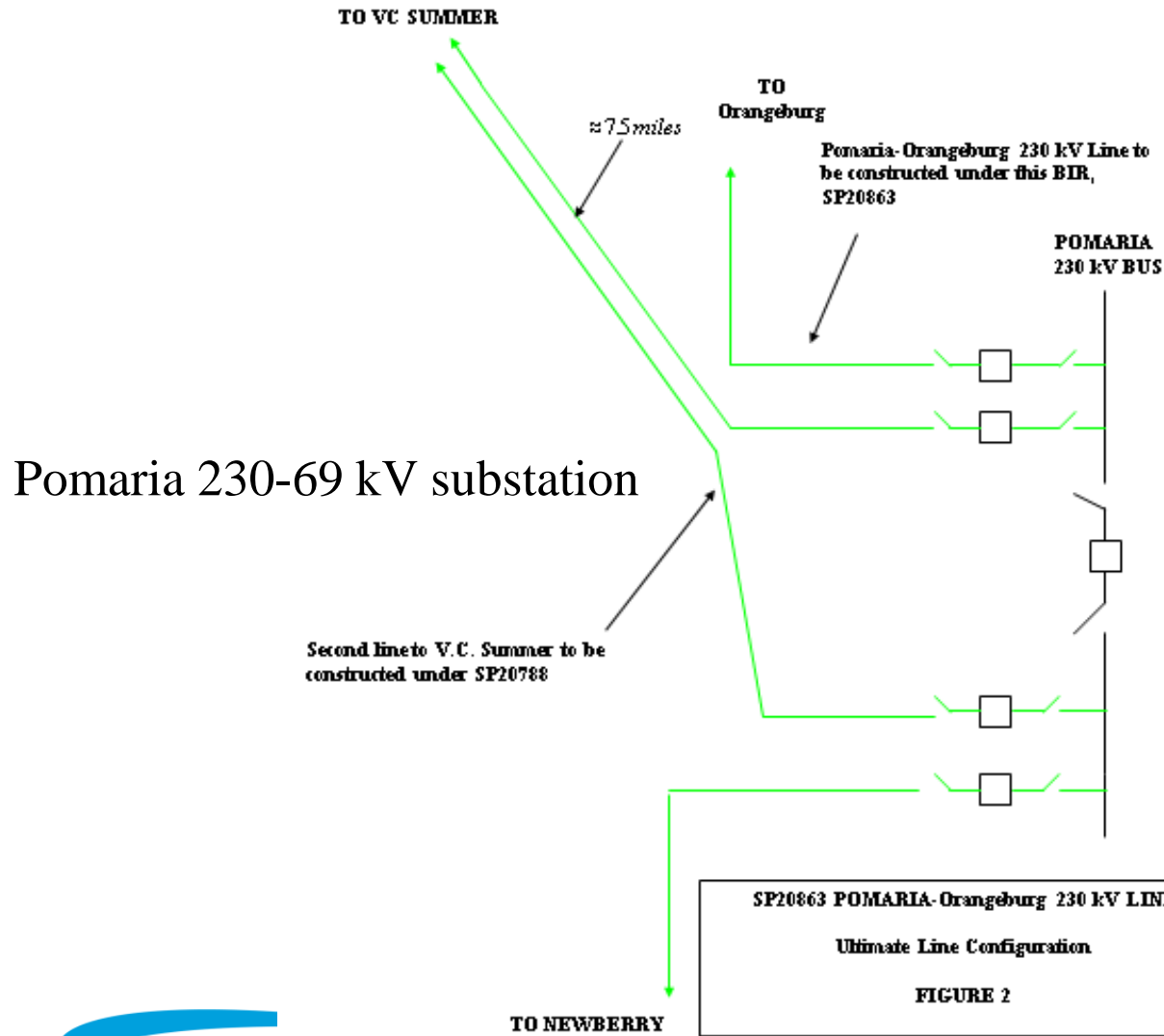
#1

Pomaria-Orangeburg 230 kV Line

- Approx. 90 miles of transmission line will be built from Pomaria to Sandy Run 115 kV Switching Station and then to Orangeburg Substation. Sandy Run will become a 230-115 kV substation
- At Orangeburg: one new 230 kV terminal will be added. New 115 kV line from Orangeburg to Sandy Run has been completed (total of two Orangeburg-Sandy Run 115 kV circuits in-service)



Pomaria-Orangeburg 230 kV Line



Pomaria 230-69 kV substation

Second line to V.C. Summer to be constructed under SP20788

Pomaria-Orangeburg 230 kV Line to be constructed under this BIR, SP20863

POMARIA 230 kV BUS

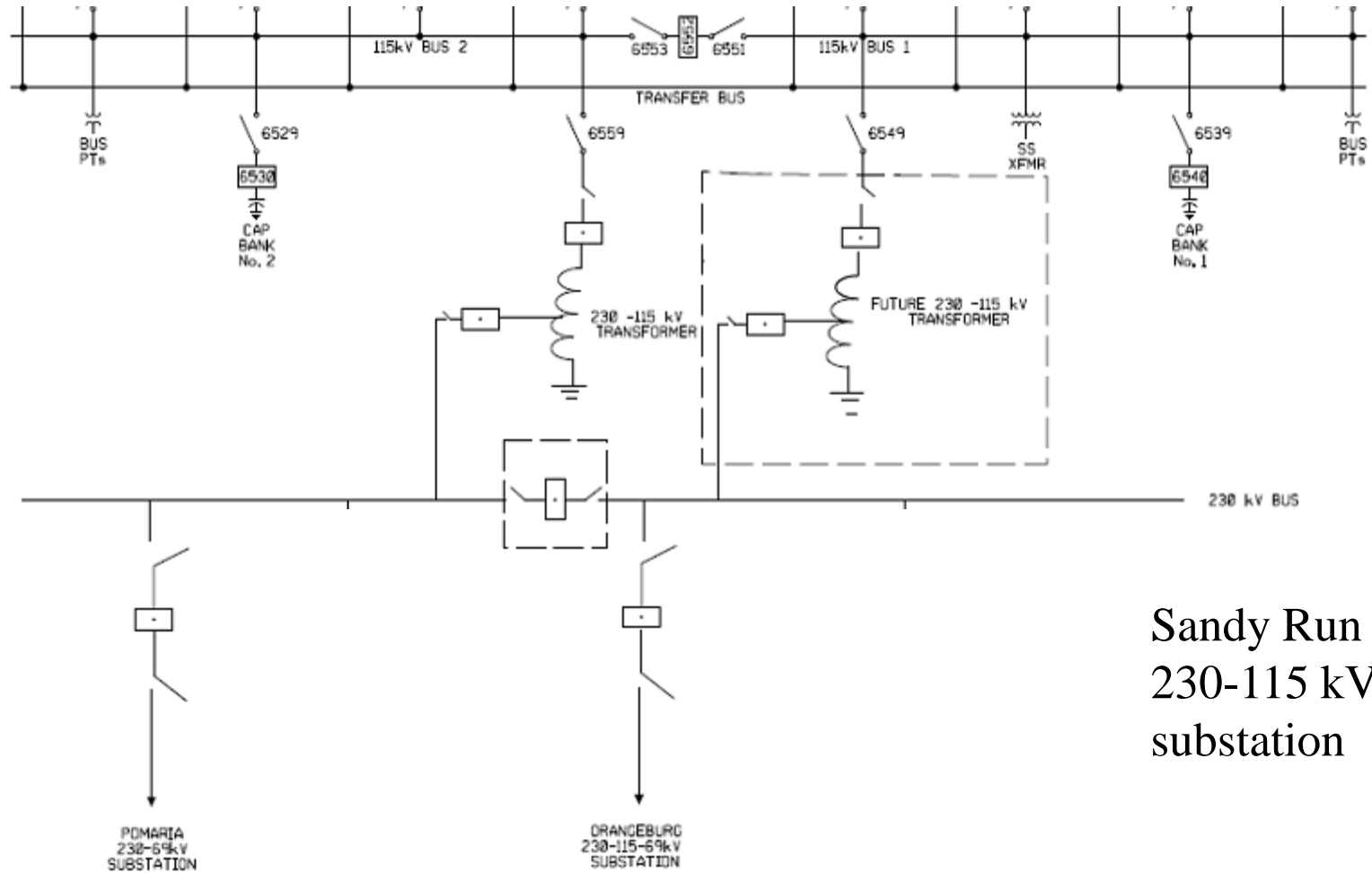
SP20863 POMARIA-Orangeburg 230 kV LINE

Ultimate Line Configuration

FIGURE 2

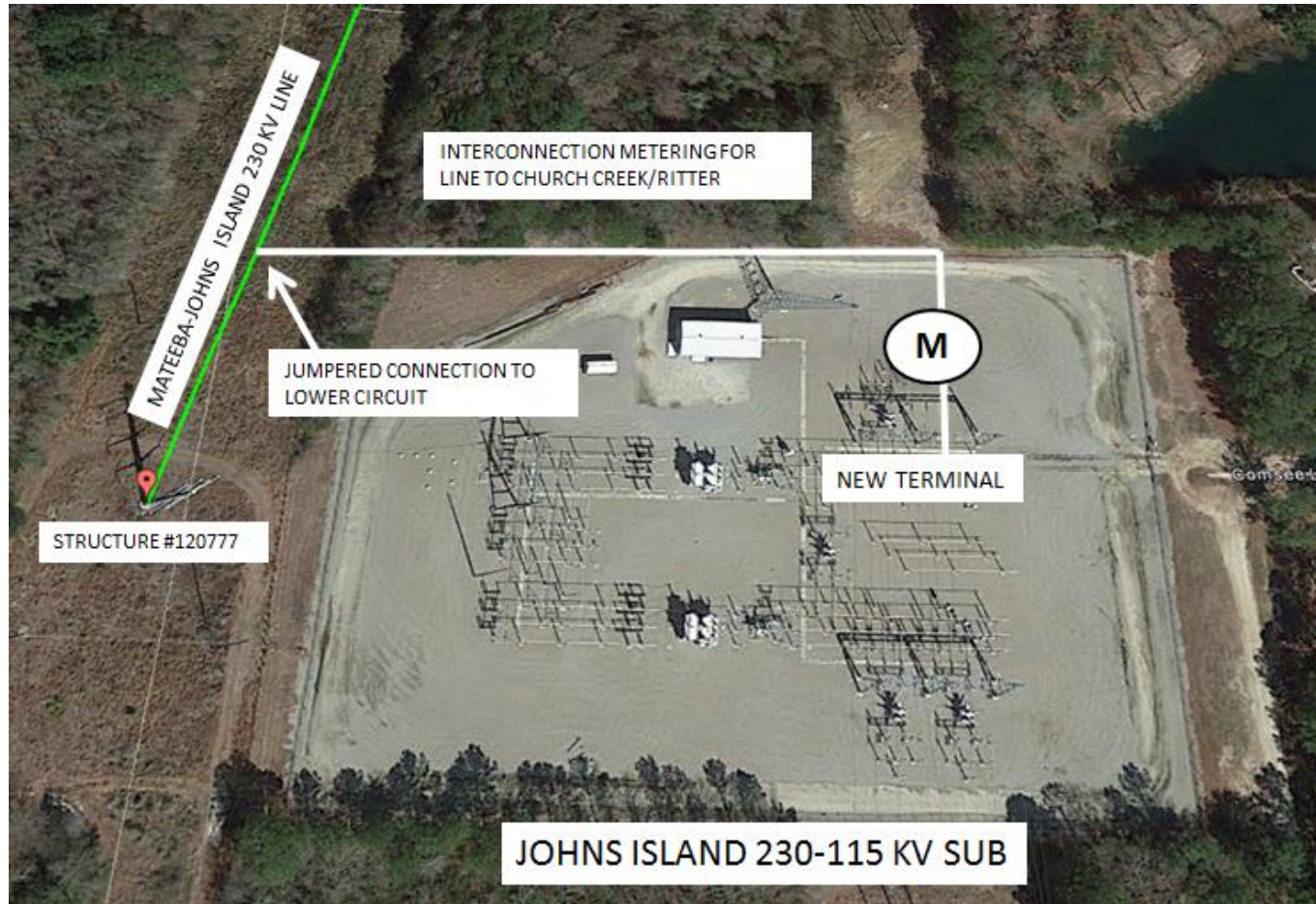


Pomaria-Orangeburg 230 kV Line

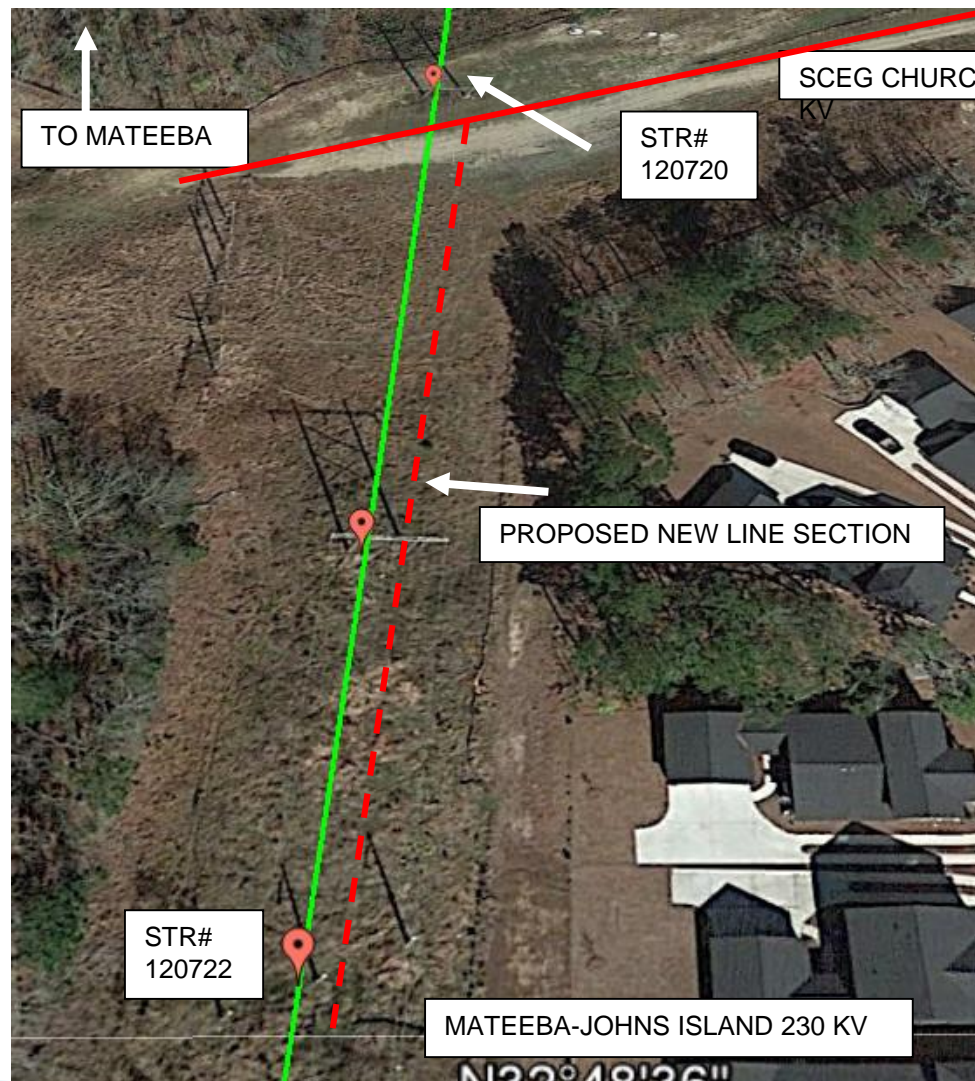


Sandy Run
230-115 kV
substation

Johns Island – Church Creek 115 kV Line



Johns Island – Church Creek 115 kV Line

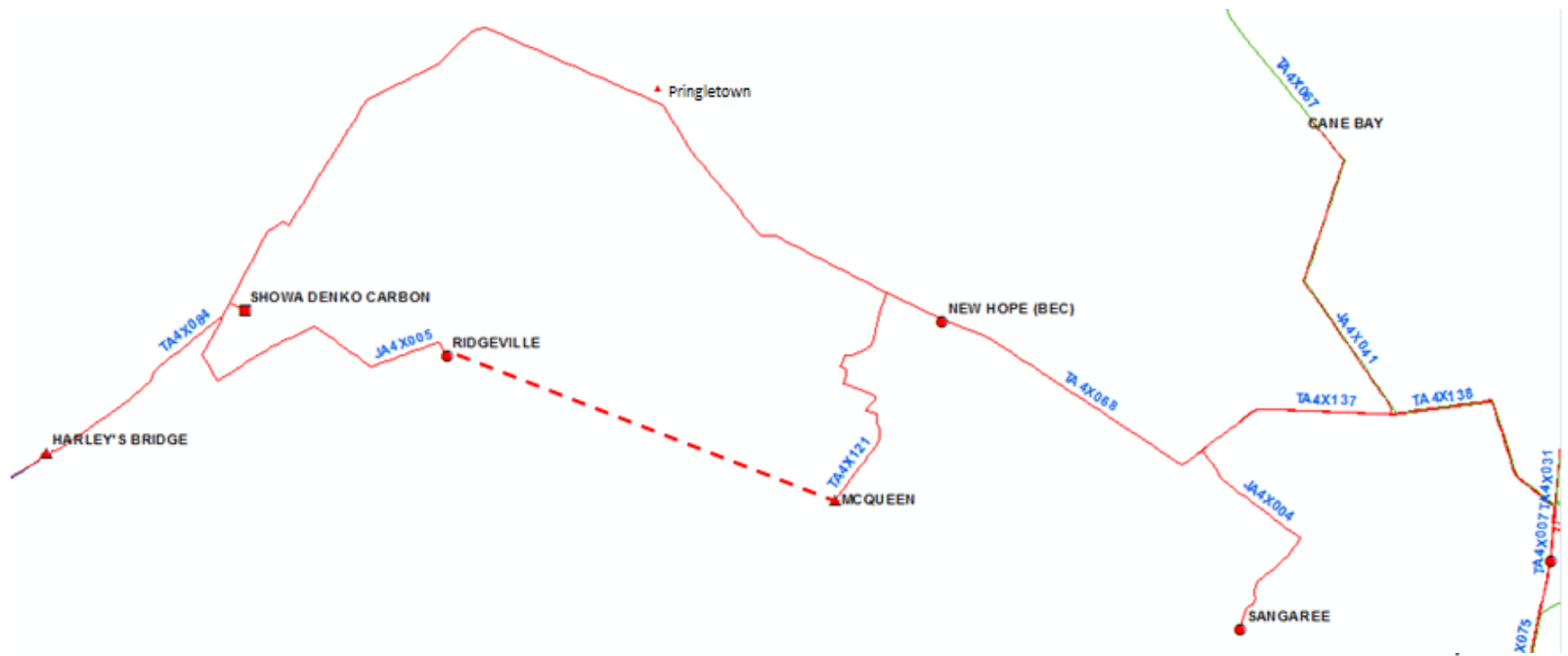


Transmission Network Planned Projects

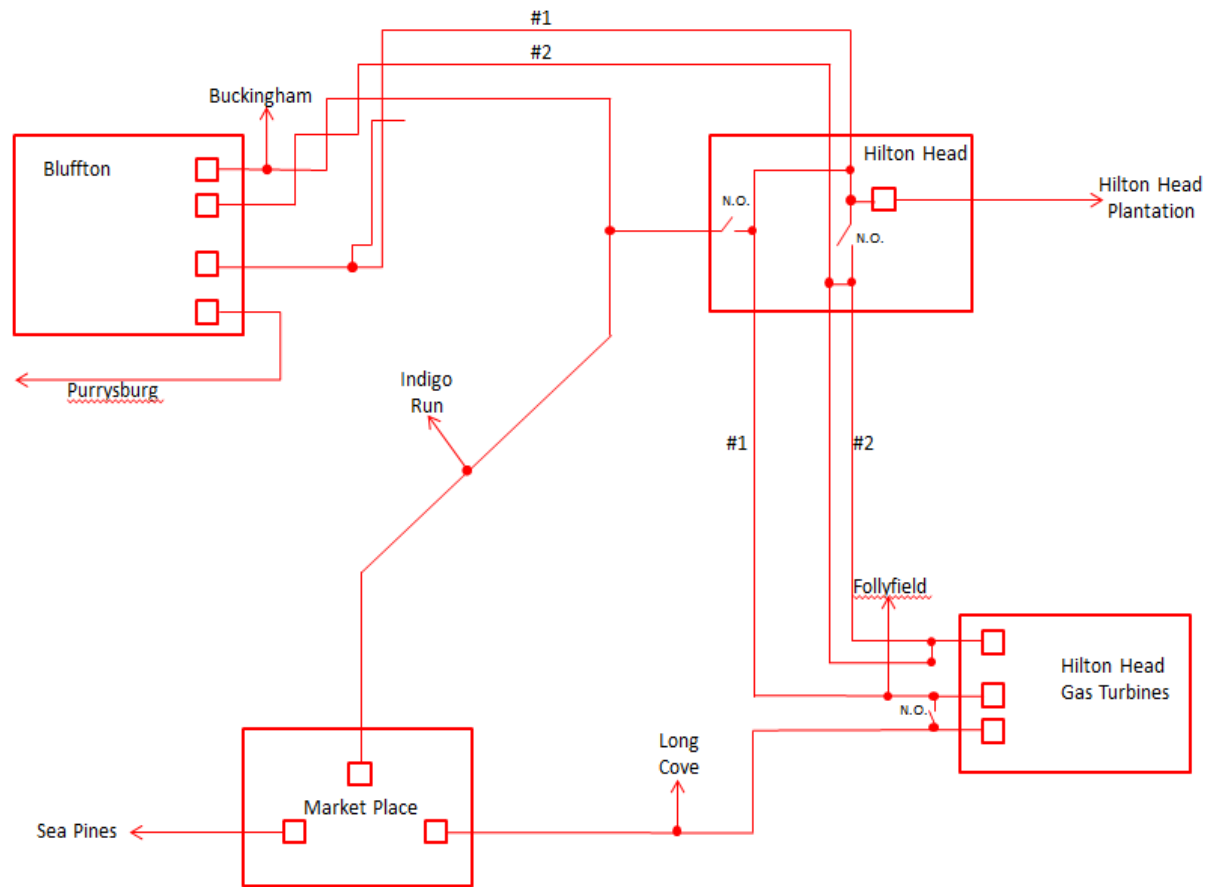
- Red Bluff-Nixons Crossroads #1 115 kV 06/2023
- Georgetown-Arcadia 115 kV 06/2023
- Conway 230 kV Switching Station 06/2025
- Marion-Conway 230 kV line 06/2025

Carnes-Harleys Bridge 115 kV Line via McQueen phase II

- Central will build a 115 kV line from McQueen DP to Ridgeville DP
- Phase I of Carnes-Harleys Bridge 115 kV line has Ridgeville Tap operated as a radial circuit out of the new Harleys Bridge 115-69 kV substation
- Reconfigure transmission line connections at Carnes Crossroads 230-115 kV sub and Cane Bay tap to establish:
 - Carnes-Pringletown 115 kV
 - Carnes-Cane Bay 115 kV Tap
 - Carnes-Harleys Bridge 115 kV via McQueen and Ridgeville

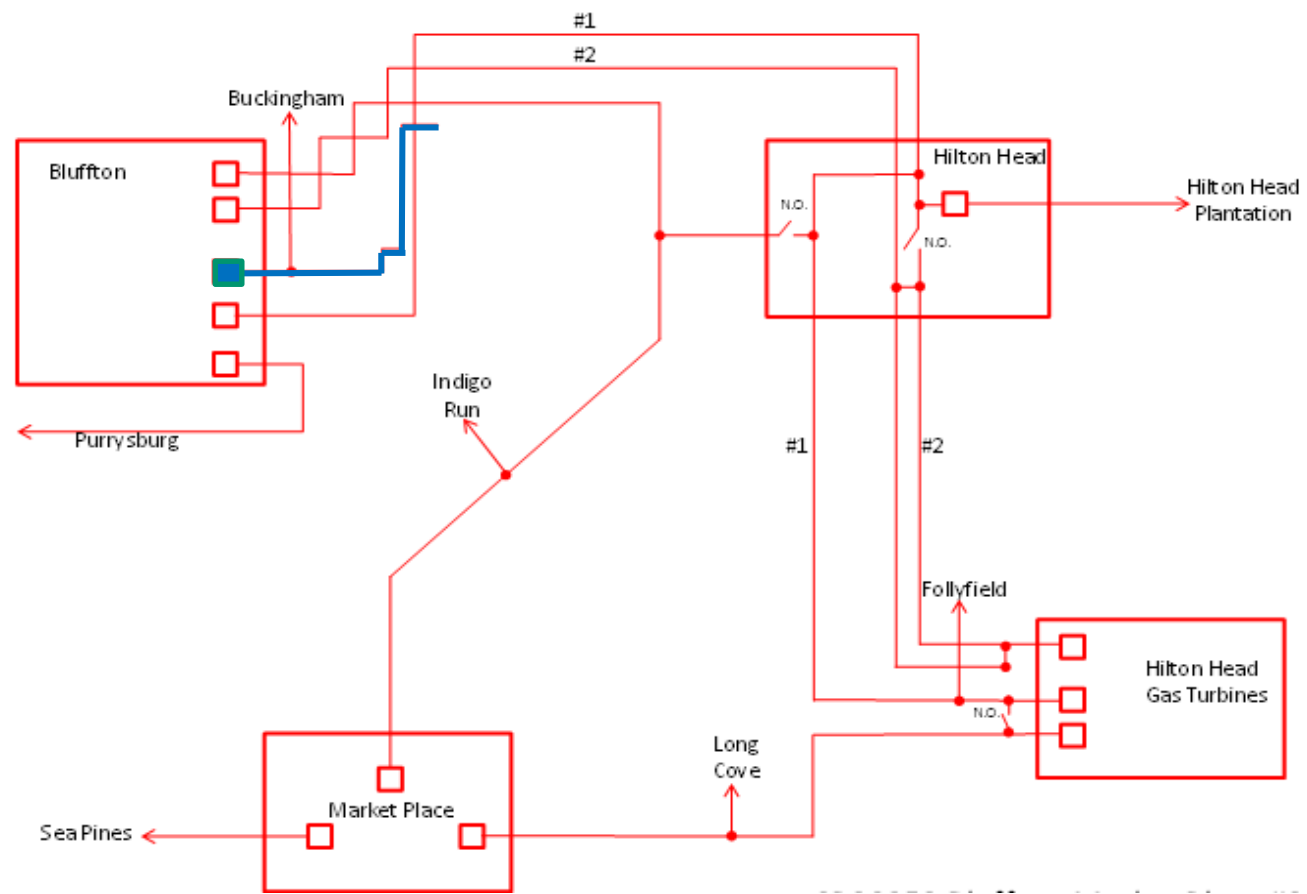


Bluffton-Market Place #2 115 kV phase I Bluffton-Buckingham section

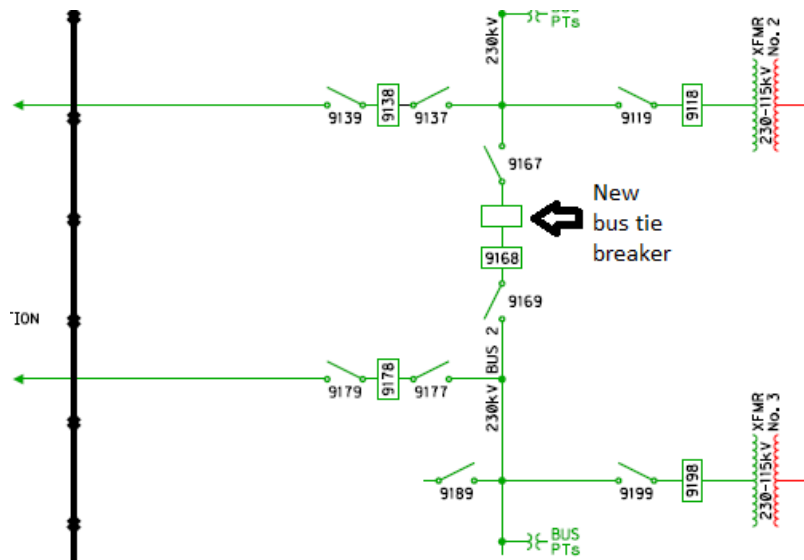


Existing Configuration

Bluffton-Market Place #2 115 kV phase I Bluffton-Buckingham section



Bluffton 230 kV series bus tie breaker



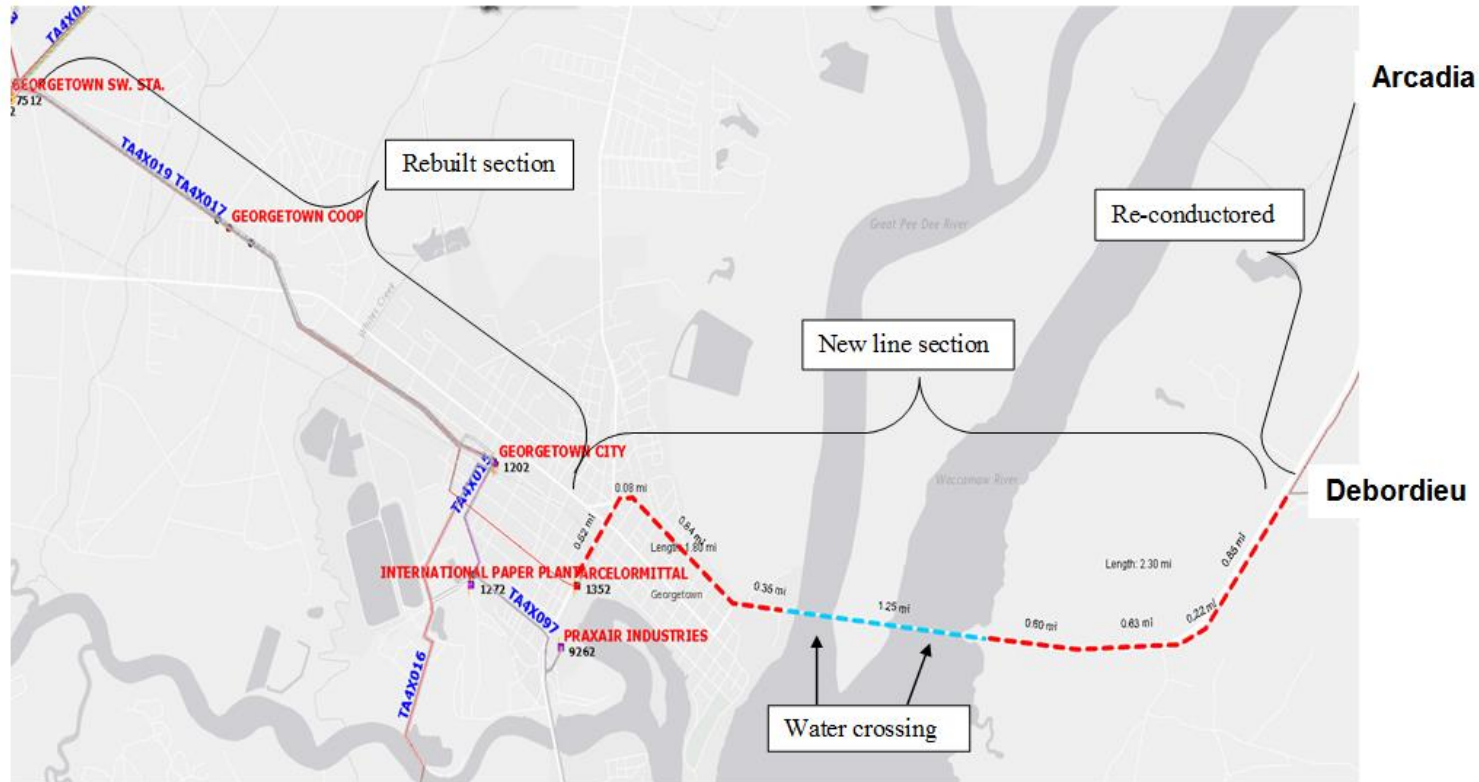
- Single contingency can lose the Bluffton/HH area
- Increase reliability to the customers
- Improve reliability to transmission system

Red Bluff-Nixons Crossroads #1 115 kV Line



- ~4 miles of 115 kV line section from Nixons Crossroads substation to Brooksville
- Improves transmission network reliability for the area
- Allows Brooksville and Little River fed from alternate source
- Increases network flexibility

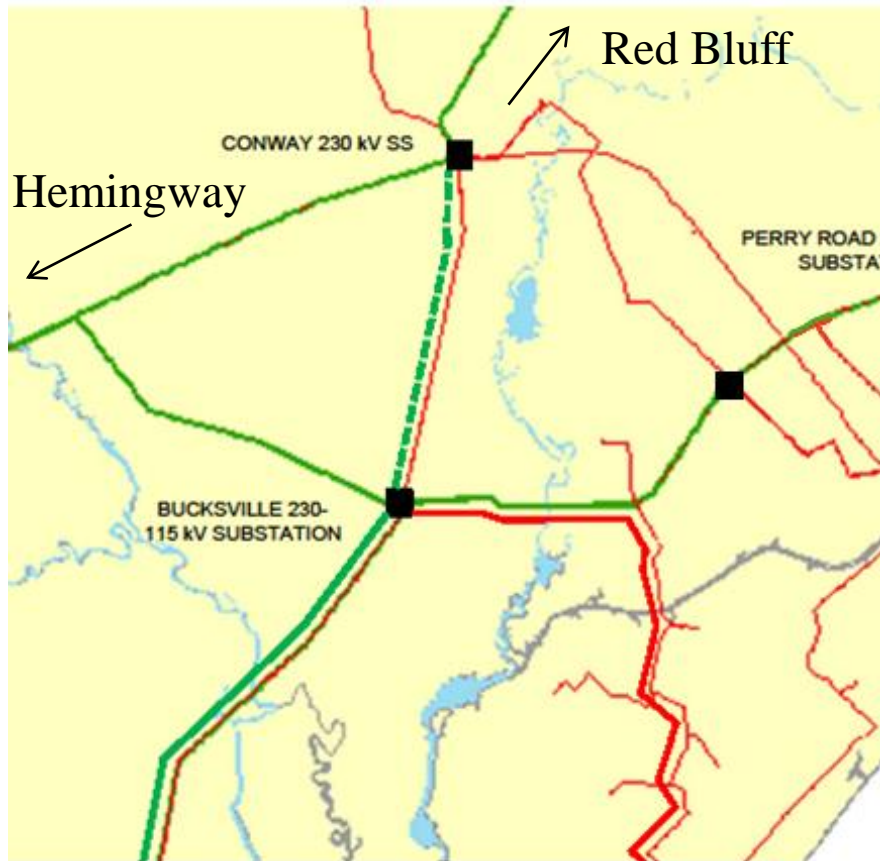
Georgetown-Arcadia 115 kV Line



- Existing Georgetown-Campfield 115 kV line reliability concerns
- Provide alternate 115 kV source for support
- Arcadia-Campfield 115 kV cable failure

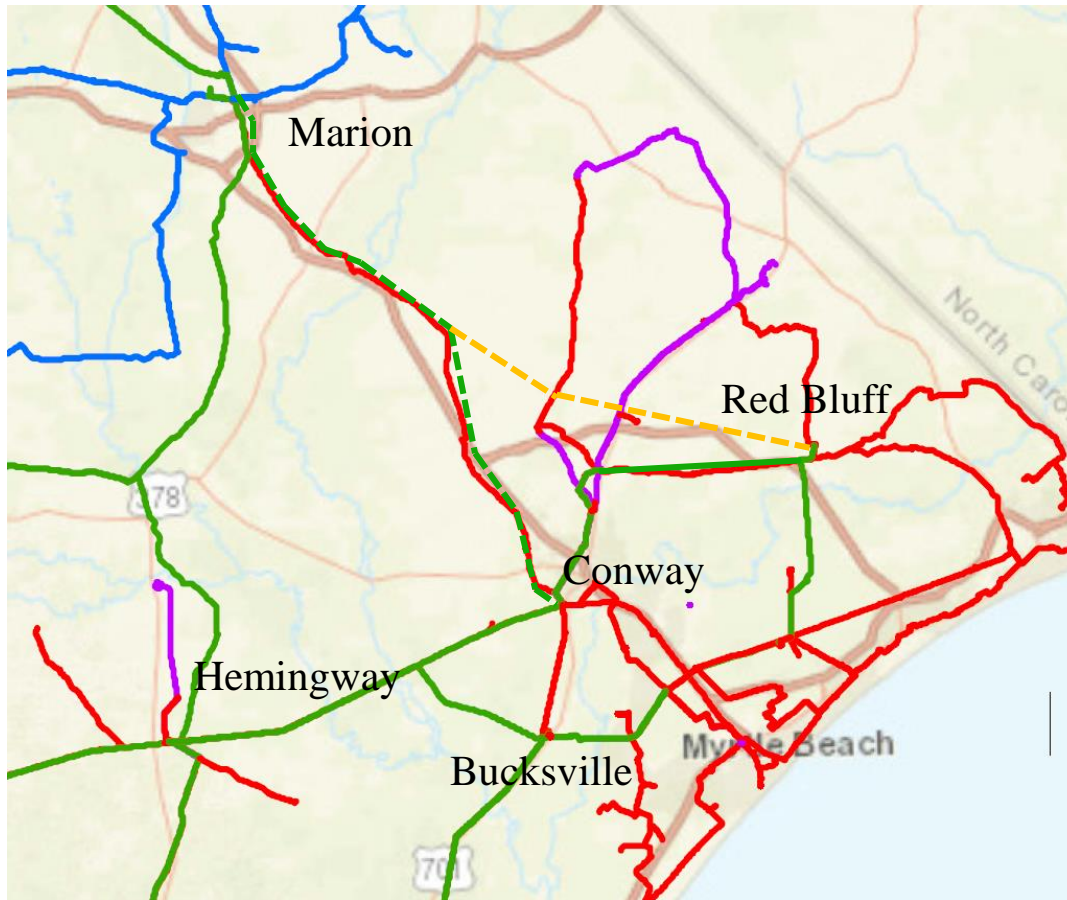
Conway 230 kV Switching Station

SCRTP



- Fold-in existing 230 kV line on existing site
- Marion-Conway 230 kV line ready
- Future Bucksville-Conway 230 kV

Marion-Red Bluff → Marion-Conway 230 kV (2025)



- Construction is expected to be faster to meet system needs
- Utilize existing ROW to rebuild as double circuit 230/115 kV
- ~34 miles
- Rebuild Marion-Conway 115 kV line to 795 ACSR

Proposed Transmission Expansion Plan

Stakeholder Input, Comments and Questions



<https://www.SCRTP.com/home>

Available Power Flow Base Cases

To apply for access to base cases you must complete the [CEI and Non-disclosure Agreement](#) and follow the instructions included in the form.

The following is a list of available Power Flow Base Cases:

2015 Base Cases

1. 2016 Spring Light Load
2. 2016 Summer Peak
3. 2016/17 Winter Peak
4. 2017 Spring Light Load
5. 2017 Summer Shoulder
6. 2017 Summer Peak
7. 2017/18 Winter Peak
8. 2021 Spring Light Load
9. 2021 Summer Peak
10. 2021/22 Winter Peak
11. 2026 Summer Peak
12. 2026/27 Winter Peak

User Sign In

Username

Password

[sign in](#)



- home
- contact us
- meetings
- reports
- base cases**
- FERC orders
- sign up for e-mail alerts
- industry links
- document library

User Sign In

Username

Password

[sign in](#)

Welcome

The South Carolina Regional Transmission Planning (SCRTP) process was established by South Carolina Electric & Gas Company (SCE&G) and the South Carolina Public Service Authority (Santee Cooper) to meet the transmission planning requirements of [FERC Order No. 890](#), [890-A](#) and [890-B](#), orders designed to "prevent undue discrimination and preference in transmission service." The SCRTP process was expanded to meet the transmission planning requirements of [FERC Order No. 1000](#), [1000-A](#), and [1000-B](#), orders that reform the Commission's electric transmission planning and cost allocation requirements for public utility transmission providers.

SCRTP provides information on:

- Activities of the SCRTP process
- Order No. 890 (including subsequent rulings associated with Order No. 890)
- Documents related to our compliance with Order No. 890

FERC Order No. 890

On March 15, 2007 the Federal Energy Regulatory Commission (FERC) published in the Federal Register a final rule reforming the 1996 open-access transmission regulatory framework rules in Orders No. 888 and 889. This final rule, called FERC Order No. 890, was adopted

Events

The next meeting of the SCRTP Stakeholder Group will be held October 13, 2016. This meeting will be by WebEx Conference Only.

[Meeting Announcement](#)

[register now](#)

[Meeting Archives](#)

Order 1000 Filing:

- [Order 1000 Transmittal Letter](#) - 7/14/2014
- [Attachment K Clean Order 1000 Revision](#) - 7/14/2014

Planned Facilities

- [2016-2020 above \\$2M Project Descriptions \(PDF\)](#)

SCRTP Regional and Inter-regional Processes

Clay Young

SCRTP Regional and Public Policy Planning

- Biennial Process (currently in year 2, Meeting #7)
- Restarts in 4th quarter of even years
- Regional Projects – Proposed, Evaluation and Selection
 - Must be submitted by January 15 of odd years
 - None received in current Regional Planning cycle

When proposals are submitted, during this meeting

- Transmission Providers will review requests for cost allocation submitted by Qualified Developers
- Stakeholders may submit comments on all requests for cost allocation
- Transmission Providers and Stakeholders may discuss requests for cost allocation
- Transmission Providers will post all comments on the SCRTP website

SCRTP Regional and Public Policy Planning

- Public Policy – Proposed, Evaluation and Selection
 - Must be submitted by January 15 of odd years
 - None received in current Public Policy Planning cycle

SCRTP Inter-regional Process

- Inter-regional process includes SCRTP and SERTP (Southeastern Regional Transmission Planning)
- Includes requirement to:
 - Coordinate Regional and Local Plans
 - Exchange data, power flow base cases and transmission expansion plans
 - Joint Evaluation of Proposed Inter-regional Projects
 - Cost Allocation Methodology for selected Inter-regional Projects
- July 12, 2018 – Joint SCRTP/SERTP Meeting (Charleston)
 - Local and Regional Plans for near the seams will be reviewed for both SCRTP and SERTP
 - Transmission Providers will consider if more cost effective or efficient joint/inter-regional alternatives are available as compared to individual and separate Regional Plans

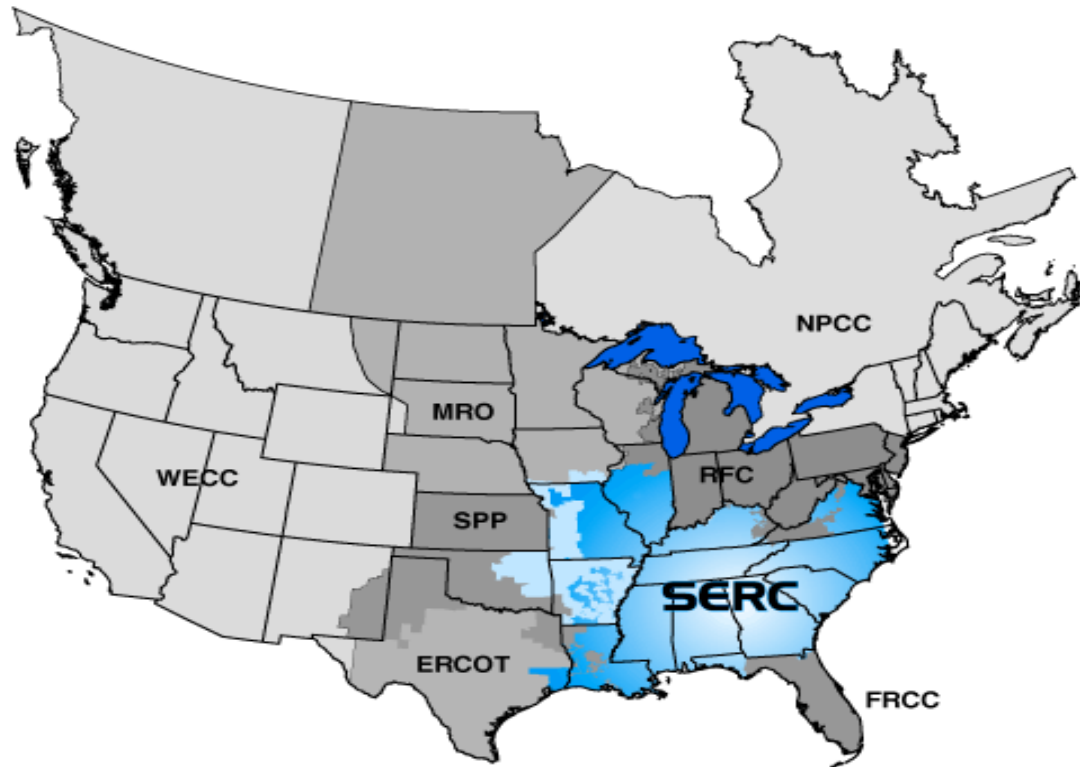
Reliability Assessment and Multi-Party Studies

Weijian Cong

Multi-Party Assessments

- **SERC Reliability Corporation Assessments**
- **Eastern Interconnection Reliability Assessment Group (ERAG)**
- **Carolina Transmission Coordination Arrangement (CTCA) Assessments**

SERC Future Year Assessments Long Term Study Group (LTSG)



SERC LTSG Study

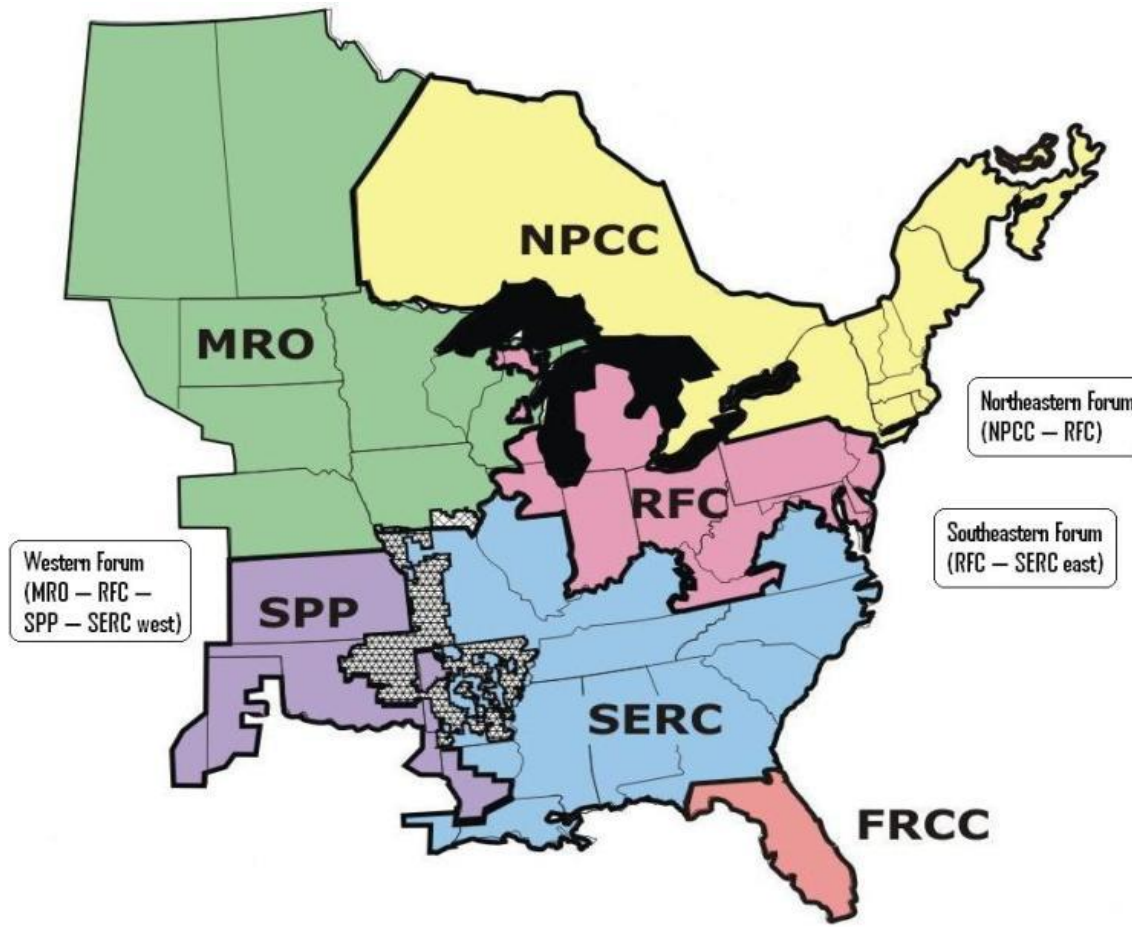
Purpose

- Analyze the performance of the members' transmission systems and identify limits to power transfers occurring non-simultaneously among the SERC members.
- Evaluate the performance of bulk power supply facilities under both normal and contingency conditions for future years.
- Focus on the evaluation of sub-regional and company-to-company transfer capability.

SERC Long Term Study Group 2018 Work Schedule

- 2018 DBU kickoff began in January, 2018
- Power flow cases scheduled to be finalized on June 14, 2018
- Future Study Year Case: 2023 Summer Peak Load
- Study and report to be completed by LTSG June thru October
- Final Report to be approved in December, 2018

Eastern Interconnection Reliability Assessment Group (ERAG) Assessments



- ReliabilityFirst Corporation (RF)
- Midwest Reliability Organization (MRO)
- Florida Reliability Coordinating Council (FRCC)
- Northeast Power Coordinating Council (NPCC)
- Southeastern Electric Reliability Council (SERC)
- Southwest Power Pool Regional Entity (SPP RE)

ERAG MMWG

The Multiregional Modeling Working Group (MMWG) is responsible for developing a library of solved power flow models and associated dynamics simulation models of the Eastern Interconnection.

The models are for use by the Regions and their member systems in planning future performance and evaluating current operating conditions of the interconnected bulk electric systems.

ERAG MMWG 2018 activity

- **MMWG power flow cases finalized October 2017**
- **Model update from August – September 2018**

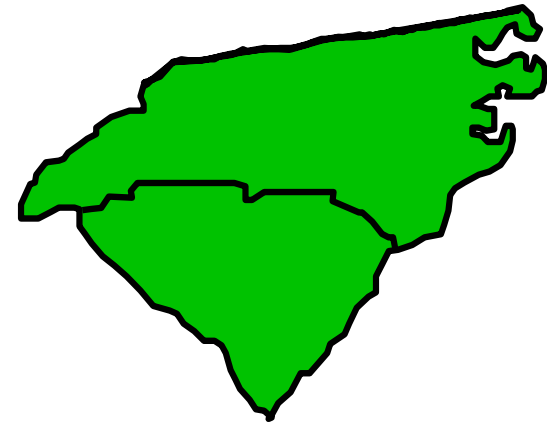
ERAG Assessments

- The purpose of the Eastern Interconnection Reliability Assessment Group (ERAG) is to further augment the reliability of the bulk-power system in the Eastern Interconnection through periodic studies of seasonal and longer-term forecasted transmission system conditions.
- No ERAG Long Term Study currently planned in 2018

CTCA Purpose

- **Collection of agreements developed concurrently by the Principals, Planning Representatives, and Operating Representatives of multiple two-party Interchange Agreements**
- **Establishes a forum for coordinating certain transmission planning assessment and operating activities among the specific parties associated with the CTCA**
- **Participating entities:**
 - Duke Energy Carolinas
 - Duke Energy Progress
 - South Carolina Electric & Gas
 - Santee Cooper

CTCA Future Year Assessments



- No CTCA Long Term Study currently planned in 2018
- 2018 NERC TPL-001 analysis study files coordination
 - Selected Power flow cases
 - Contingency files updated

Questions?

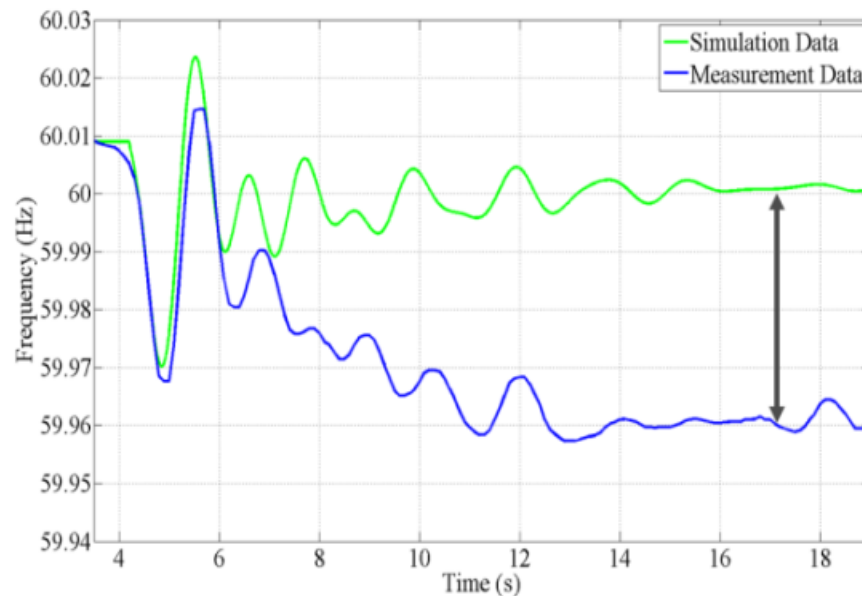
Eastern Interconnection Planning Collaborative (EIPC)

Frequency Response Task Force

Phil Kleckley

Frequency Response Issue

Eastern Interconnection frequency response simulation results not correlating closely with measurements



**Mismatch
between
frequency
response.**

Background and Purpose

- Difficult to predict frequency response impacts of wind and photo-voltaic generation
- Approached by NERC Essential Reliability Services Working Group (ERSWG)
- Facilitate forward looking frequency response analysis

Background and Purpose

Support of NERC Essential Reliability Services Working Group Forward Looking Measures

- ERSWG Measurement 1 – Determine Synchronous Inertial Response (SIR) of Eastern Interconnection
- ERSWG Measurement 2 – Determine initial frequency deviation of largest contingency during minimum SIR conditions
- ERSWG Measurement 4 – Determine frequency response of Eastern Interconnection beyond initial deviation

Background and Purpose

EIPC Frequency Response Task Force has created an additional Measure for the Eastern Interconnection:

MW loss margin before reaching 59.5 Hz nadir.

- Will be capped at 10,000 MWs.
- The 59.5 Hz will be an average.

EIPC

Background and Purpose

- Generation sources need to provide frequency response to maintain synchronous and stable system operation
- Variable energy resources (VERs) do not provide frequency support comparable to high inertia fossil/nuclear sources
- Simulation of frequency response of VERs needs further development

Tasks

- Build on work by University of Tennessee – Knoxville and Lawrence Berkeley National Laboratory
- Review current research on frequency response of Eastern Interconnection
- Establish baseline confidence in solutions provided by currently available models

Tasks

- Calculate inertia of MMWG cases
- Select historical low inertia and frequency events
- Collect historical dispatch data associated with frequency events
- Identify any gaps in MMWG frequency response models
- Identify potential improvements to model development practices

Tasks

- Develop changes required to transform MMWG case into a low inertia dispatch with generator model modifications and create dynamics case
- Create base case(s) for future frequency response studies and identify data improvements
- Perform frequency response simulation tests
- Provide results to NERC ESRWG, NERC MMWG, other interconnections for future base case improvements

Continuing Tasks

- Outreach to other interconnections – monthly web conferences
- Provide input to NERC Long term Reliability Assessment report

Completion

- Dynamics case and associated models are CEII – available to individuals approved through EIPC CEII process
- Projected project completion July 31, 2018

Questions?

Contact Phil Kleckley

pkleckley@scana.com

Next SCRTP Meeting

- Review and receive stakeholder input on the initial results of requested economic power transfer sensitivities selected by the Stakeholder Group
- SCRTP Email Distribution List will be notified
- Register online

South Carolina Regional Transmission Planning

Stakeholder Meeting

Hilton Garden Inn Charleston Airport

North Charleston, SC

May 31, 2018