

South Carolina Regional Transmission Planning

Stakeholder Meeting

Web Conference

June 4, 2015

Purpose and Goals of Today's Meeting

- FERC Order 1000 Update
- Review the initial study results (for Stakeholder input) of RTP studies
- Discuss any revisions to the Local Transmission Plan being considered (Stakeholders can discuss possible alternatives to the proposed revisions)
- Review and Discuss Assessment and Planning Studies
 - CTCA
 - ERAG
 - SERC
 - Other

FERC Order 1000 Transmission Planning and Cost Allocation

Clay Young

FERC Order 1000

Regional:

- Feb 23, 2015 SCE&G filed a revised Attachment K (v4) including proposed additional revisions
- FERC Ruling issued yesterday

Interregional:

- Mar 24, 2015 SCE&G filed a revised Attachment K (v2) including proposed additional revisions
- FERC reviewing

Transmission Expansion Plans

SCE&G

Jeff Neal

- 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.
- This presentation does not represent a commitment to build.

SCE&G Transmission Projects

Projects Scheduled for Completion in 2015

- Canadys – Williams 230 kV: Replace Ashley River Crossing
- Thomas Island – Jack Primus 115 kV Line: Acquire R/W
- Clemson Wind Turbine 115 kV Tap: Construct
- Williams – Faber Place 230 kV: Replace structures #53-59
- Cooper River #2 Cable: Repair/Replace
- Aiken Trans – Aiken Hampton 115 kV Line: Rebuild
- Faber Place – Hagood – Bee Street 115 kV Line: Rebuild
- Parr 115 kV Substation: Install lighting mast and replace relay panel

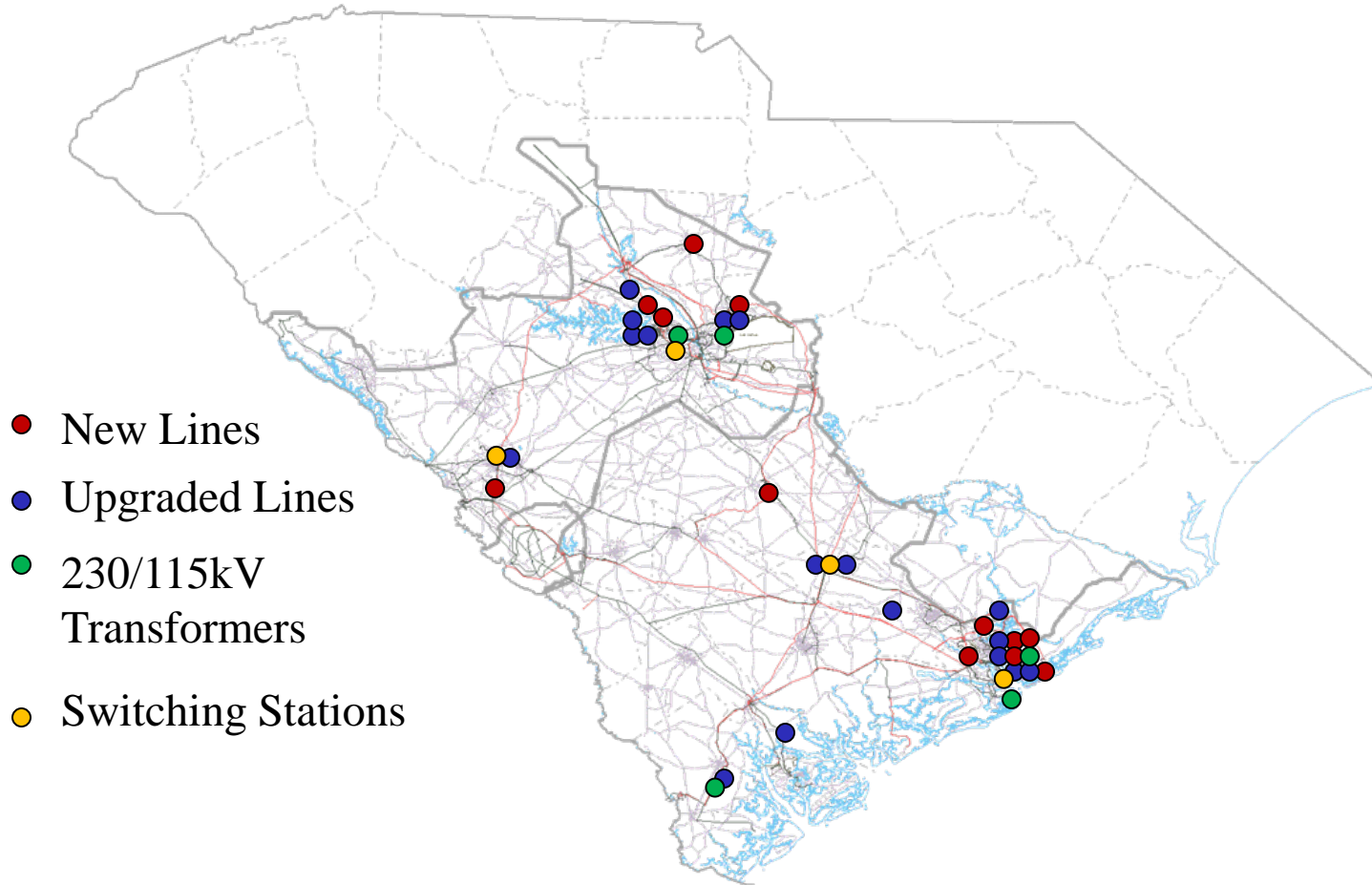
SCE&G Transmission Projects

Projects Scheduled for Completion in 2015

System Improvement (NND) Projects (not included in BLRA)

- Orangeburg – St. George 115 kV: Rebuild
- Saluda River – Lyles 230 kV: Construct
- Lyles – McMeekin 115 kV: Rebuild 230 & 115 kV
- Dunbar Road – Orangeburg 115 kV: Rebuild
- Lake Murray – Saluda River – Lyles 230 kV: Construct
- Saluda Hydro – Williams St & McMeekin – Coit 115 kV: Rebuild 230 kV

SCE&G Planned Projects



VC Summer Nuclear Unit #2 Related Projects

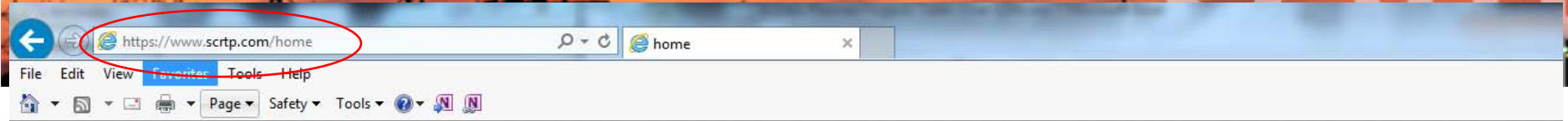
- Saluda River 230/115 kV Substation Construct August 2015
- Saluda River – Lyles 230 & 115 kV Lines Construct August 2015
- Saluda River – Lake Murray 230 & 115 kV Lines Construct September 2015
- Saluda Hydro – Williams St 115 kV Rebuild SPDC 115 kV/Fold-In September 2015
- McMeekin – Coit 115 kV Rebuild to SPDC 230 kV September 2015

VC Summer Nuclear Unit #3 Related Projects

- St George 230 kV Switching Station Construct May 2016
- St George - Canadys 230 kV Line Upgrade May 2016
- St George - Summerville 230 kV Line Upgrade May 2017
- VCS2- St George 230 kV 1&2 Construct December 2017

SCE&G Planned Projects 2015 (\$2 Million and above)

	Project	Tentative Completion Date	Expenditures as of December 31, 2014	Projected 2015	Projected 2016	Projected 2017	Projected 2018	Projected 2019	Total
1	Canadys-Williams 230 kV - Replace Ashley River Crossing	Dec-15	9,174	1,990,826					2,000,000
2	Thomas Island - Jack Primus 115kv Line R/W	Jun-15	1,630,909	999,091					2,630,000
3	Clemson Wind Turbine 115 kV Tap Construct	Jun-15	3,083,820	841,180					3,925,000
4	Williams - Faber Place 230kv Replace Structures #53-59	Nov-15	1,120	1,998,880					2,000,000
5	Cooper River #2 115kv Cable Repair/Replace	Dec-15	511,347	3,988,653					4,500,000
6	Aiken Trans - Aiken Hampton 115kv Rebuild	Dec-15	156,217	1,993,783					2,150,000
7	Faber Place - Hagood - Bee Street 115 kV Rebuild	Dec-15	7,956,779	2,543,221					10,500,000
8	Parr 115 kV Substation: Install Lighting Mast & Replace Relay Panel	Dec-15	1,492,396	3,282,604					4,775,000
		Total:	\$14,841,762	\$17,638,238	\$0	\$0	\$0	\$0	\$32,480,000
	System Improvement (NND) Projects (not included in BLRA)								
9	Orangeburg-St George 115 kV Rebuild (Orangeburg-301 Jct Section & 301 Jct-St George Section)	April-15	17,214,419	485,581					\$17,700,000
10	Saluda River - Lyles 230Kv, Lyles-McMeekin 115kv	Aug-15	531,733	2,468,267					\$3,000,000
11	Dunbar Road-Orangeburg 115 kV (Dixiana-Gaston Jct Sec)	Jul-15	354,273	5,495,727					\$5,850,000
12	Lake Murray-Saluda River-Lyles 230 kV	Sep-15	594,187	7,705,813					\$8,300,000
13	Saluda Hydro-Williams St/McMeekin-Coit 115 kV	Sep-15	6,383,972	966,028					\$7,350,000



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Welcome

The South Carolina Regional Transmission Planning (SCRTTP) 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 SCRTTP 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.

SCRTTP provides information on:

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

Events

The next meeting of the SCRTTP Stakeholder Group has not been scheduled.

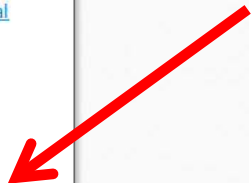
[Meeting Archives](#)

Order 1000 Filing:

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

Planned Facilities

- [2014-2018 above \\$2M Project Descriptions](#)



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Canadys – Williams 230 kV Line: Replace Ashley River Crossing

Project ID

05313A

Project Description

Replace 8 structures on the Canadys to Williams 230 kV Line and rebuild SPDC with the Pepperhill – Mateeba (SCPSA) 230 kV Tie. Install B-1272 ACSR for both circuits. Total line length approximately 1.04 miles.

Project Need

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

Project Status

Planned

Planned In-Service Date

12/31/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$9,174	\$1,990,826	\$0	\$0	\$0	\$0	\$2,000,000

South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



Dorchester Road

Rebuild existing H-Frame (dual circuits) to SPDC steel poles with new Pepperhill – Mateeba & Canadys – Williams 230 kV lines

Ashley River

South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



Thomas Island - Jack Primus 115 kV Line: Acquire R/W

Project ID

0270C

Project Description

Acquire R/W in order to construct a new 115 kV line from the Thomas Island substation to the new Jack Primus substation with 1272 ACSR conductor.

Project Need

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

Project Status

In Progress

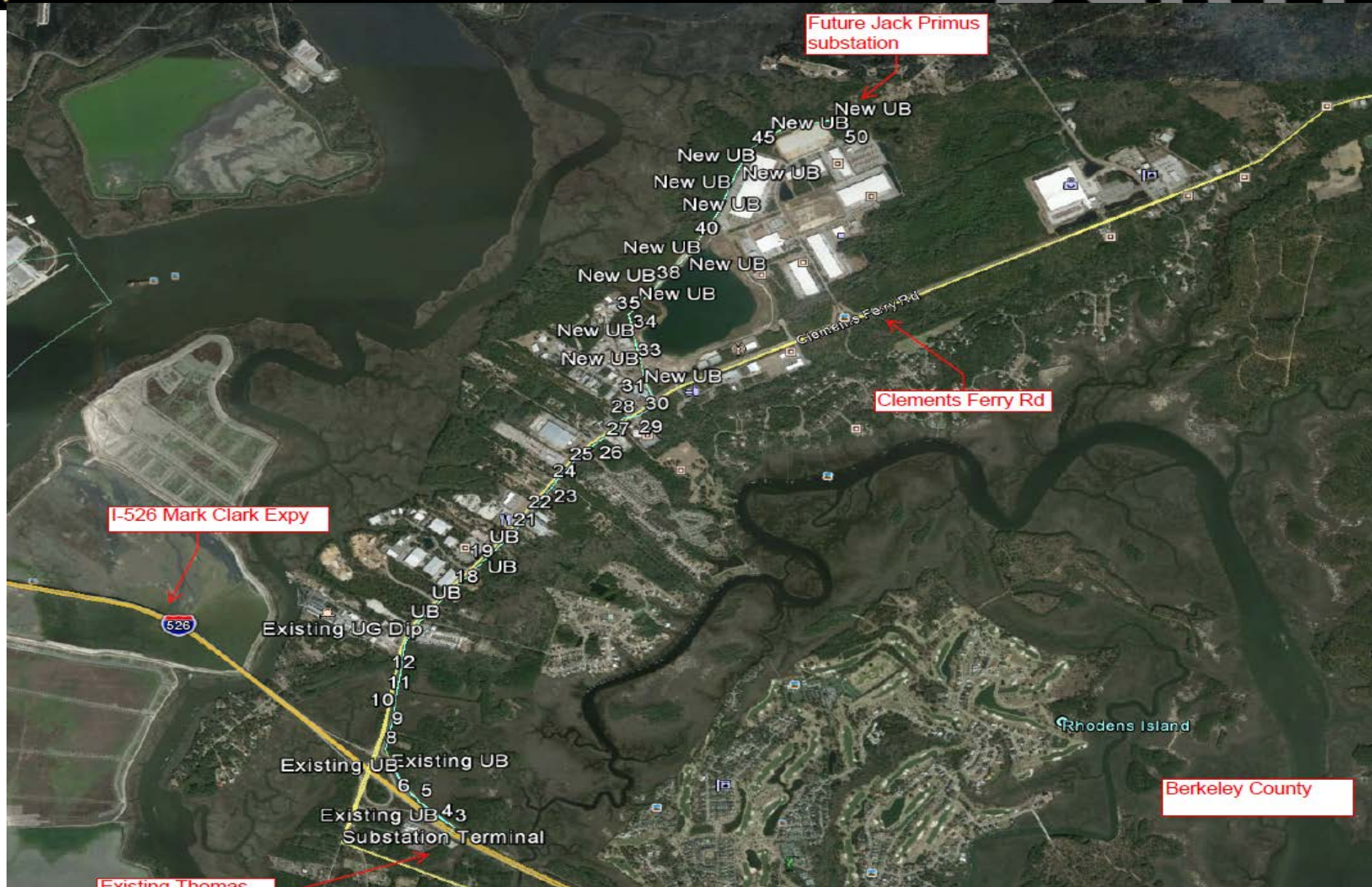
Planned In-Service Date

6/30/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$1,630,909	\$999,091	\$0	\$0	\$0	\$0	\$2,630,000

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**



Clemson Wind Turbine 115 kV Tap Line Construct

Project ID

0022B, 0022D

Project Description

Construct a new 115 kV line from the Navy Yard substation to the new Clemson Wind Turbine substation with 1272 ACSR conductor.

Project Need

Customer requested electrical service for Wind Turbine Project.

Project Status

Under Construction

Planned In-Service Date

6/30/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$3,083,820	\$841,810	\$0	\$0	\$0	\$0	\$3,925,000

South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



Williams – Faber Place 230 kV Line: Replace Structures #53-59

Project ID

05397A

Project Description

Replace the double circuit steel lattice towers with double circuit steel poles from structures 53 to 59. Total line length is approximately ¾ mile.

Project Need

The tower arms were severely damaged in a storm in January 2014, and entire structures need replacing.

Project Status

Planned

Planned In-Service Date

11/30/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$1,120	\$1,998,880	\$0	\$0	\$0	\$0	\$2,000,000



South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



Naval Weapons Station

Red Bank Road

South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



Cooper River 115 kV Cable #2 Repair/Replace

Project ID

0502E

Project Description

This project will install a new HDD section of steel conduit and cable under the Cooper River and tie that new conduit and cable to the "existing good" cable and conduit on both the Charleston and Mt. Pleasant side of the HDD section.

Project Need

This project is due to a nitrogen gas leak that occurred on the HDD section under the Cooper River on the Charlotte St. - Bayview 115 kV Cable #2.

Project Status

Under Construction

Planned In-Service Date

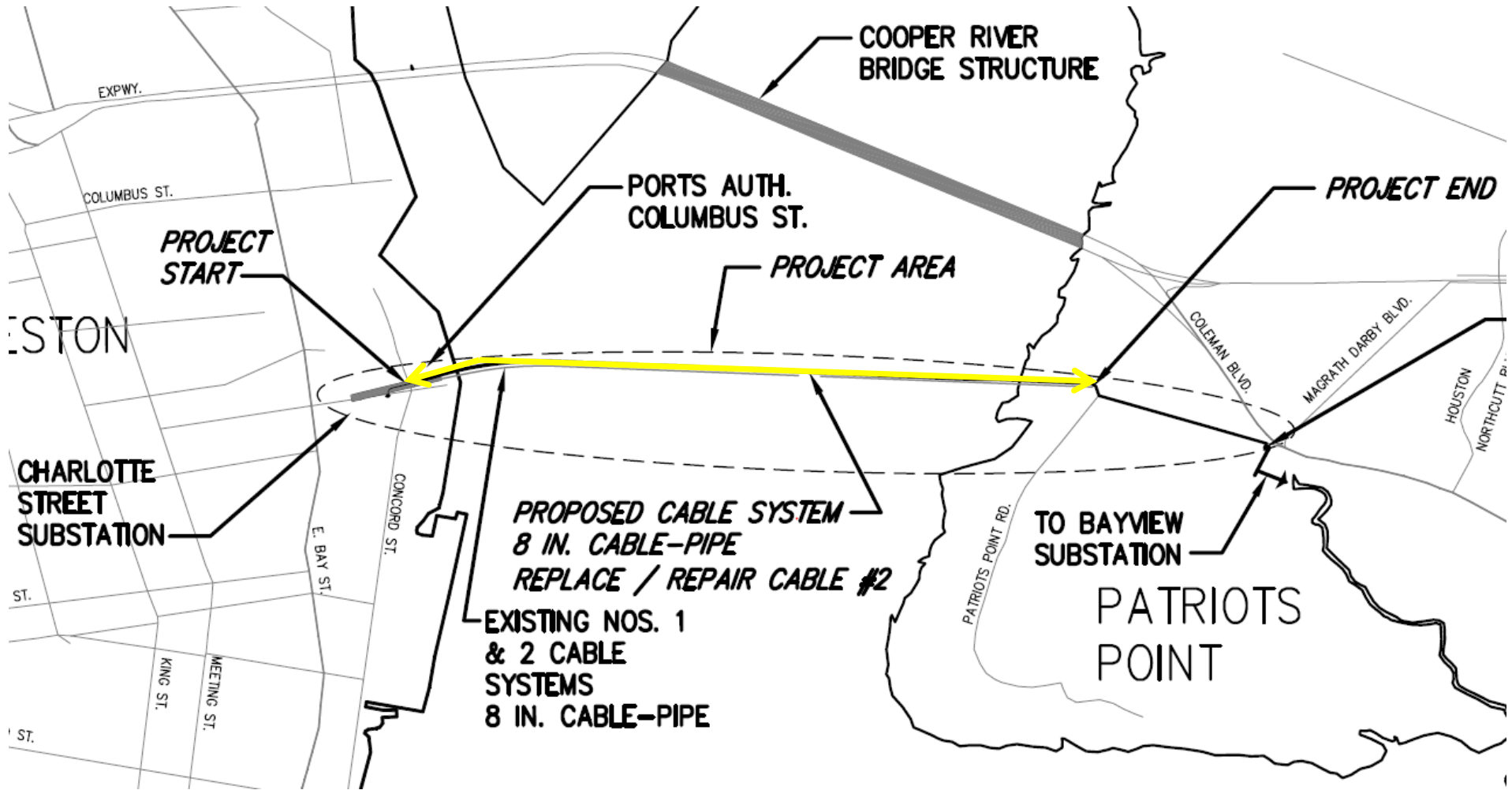
12/31/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$511,347	\$3,988,653	\$0	\$0	\$0	\$0	\$4,500,000



South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



Aiken Trans - Aiken Hampton 115 kV Line: Upgrade

Project ID

1272A

Project Description

Upgrade the 115 kV line between Aiken and Aiken Hampton substations

Project Need

The line overloads under certain contingencies and needs additional capacity to continue providing reliable service to Aiken area load. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

Planned

Planned In-Service Date

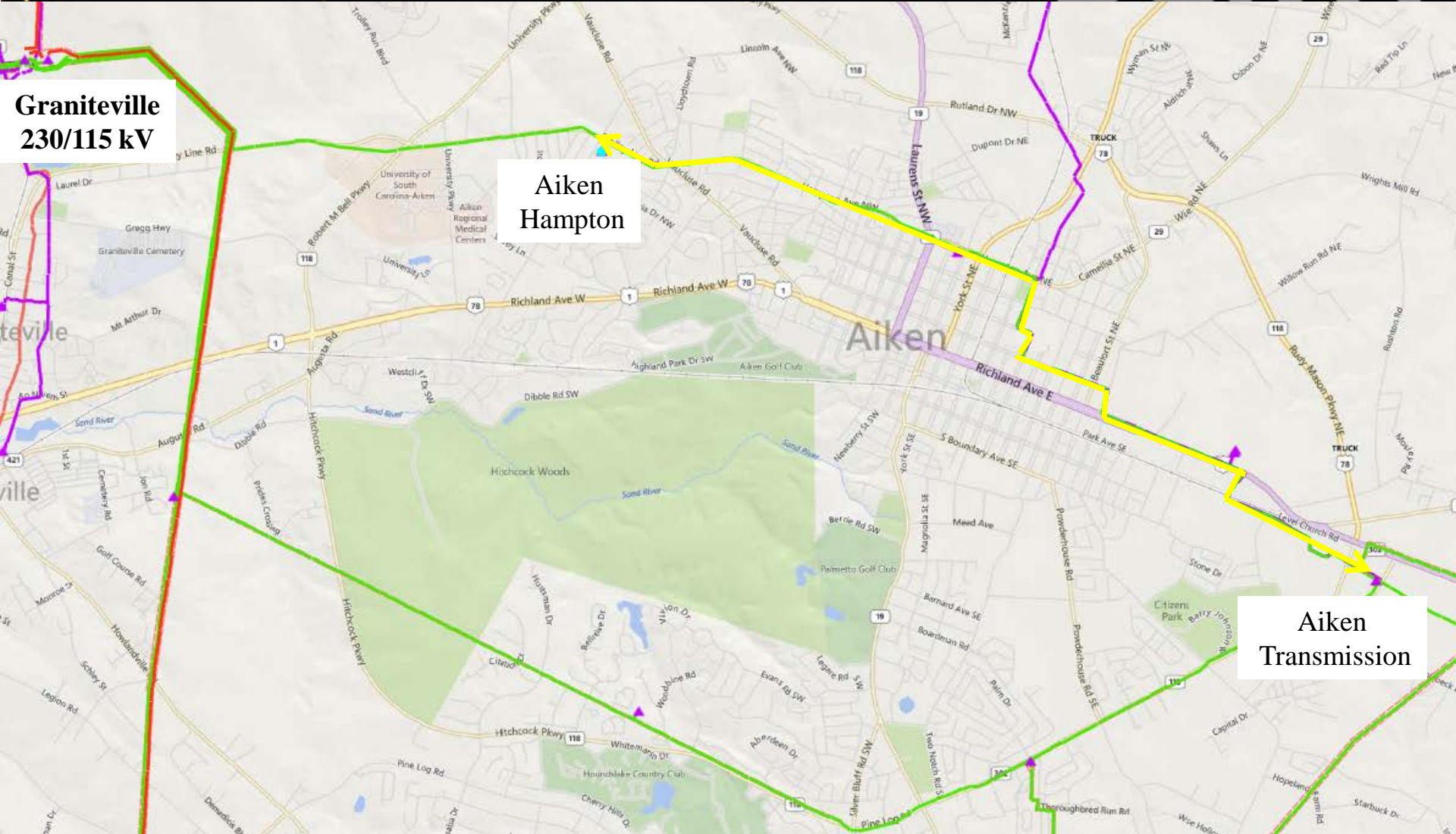
12/31/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$156,217	\$1,993,783	\$0	\$0	\$0	\$0	\$2,150,000



Project 6 of 38
South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**



Faber Place-Hagood – Bee Street 115 kV Line: Rebuild

Project ID

1721G, 1721H, 1721S, 1721T

Project Description

Rebuild Faber Place to Hagood 115 kV #1 line to 1272 ACSR or equivalent. Total line length approximately 4.4 miles. Rebuild Hagood to Bee Street 115 kV to B795 ACSR or equivalent. Total line length approximately 3.2 miles.

Project Need

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

Project Status

Under Construction

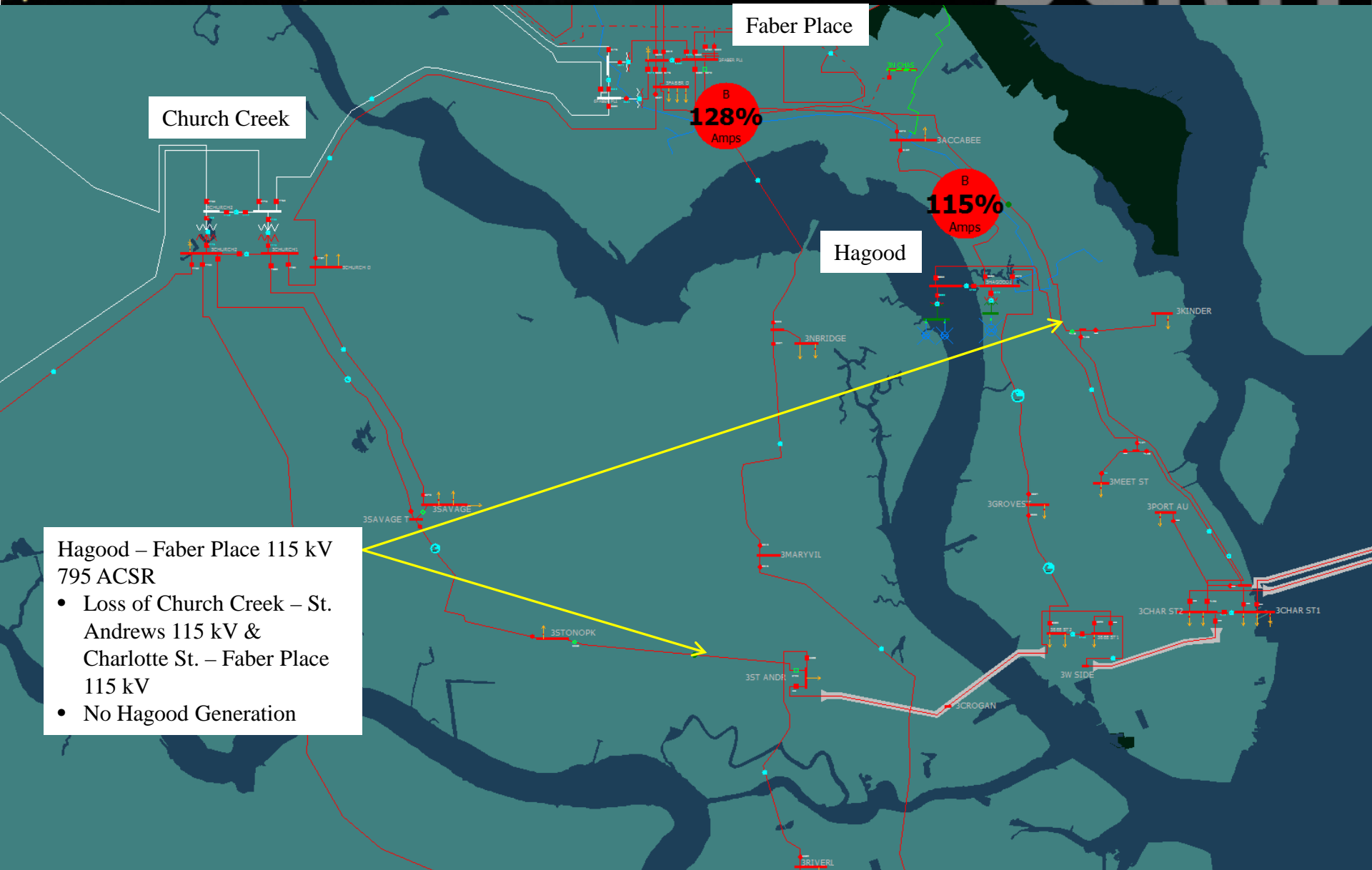
Planned In-Service Date

12/31/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$7,956,779	\$2,543,221	\$0	\$0	\$0	\$0	\$10,500,000

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



Church Creek

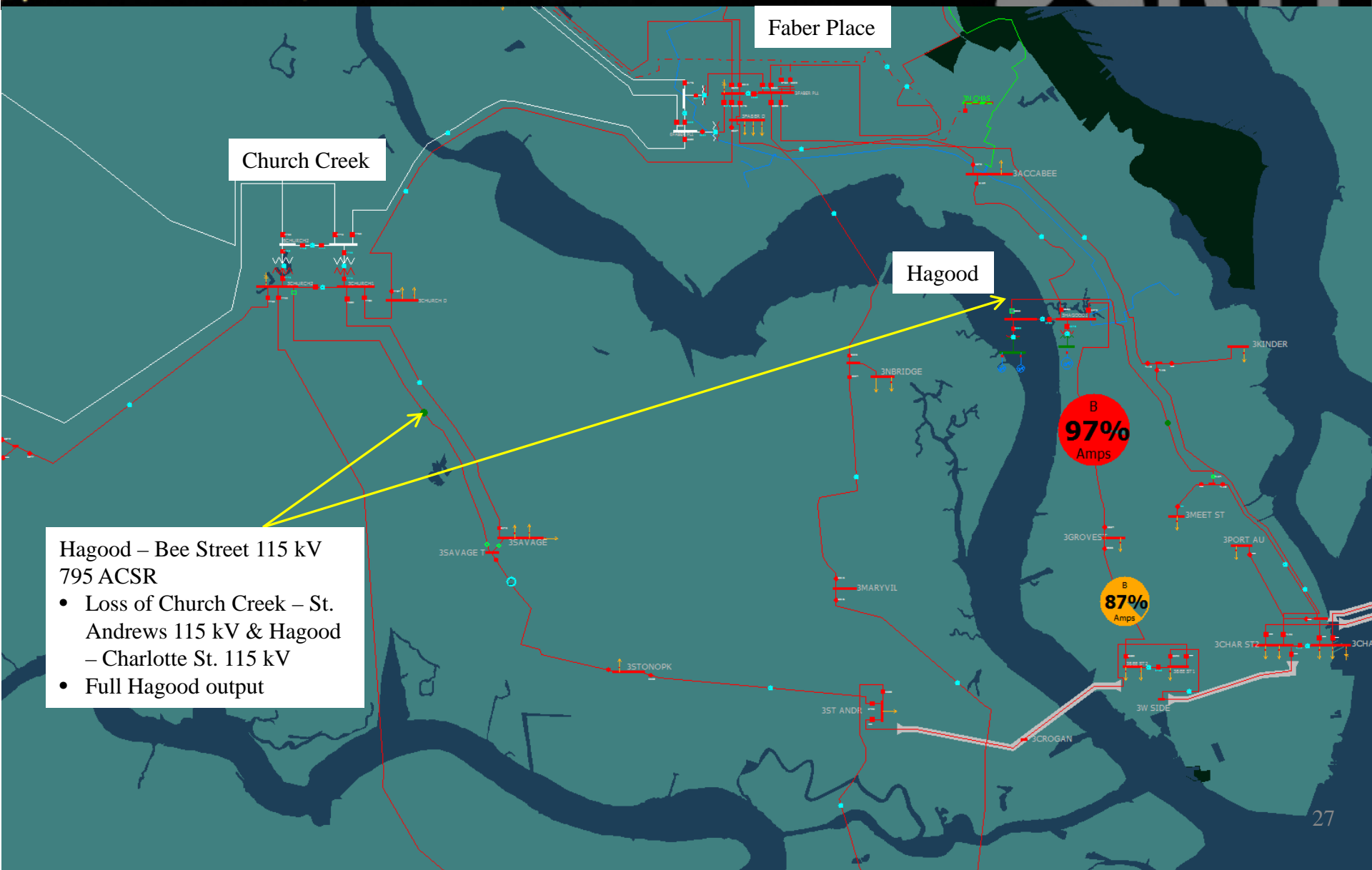
Faber Place

Hagood

Hagood – Faber Place 115 kV
795 ACSR

- Loss of Church Creek – St. Andrews 115 kV & Charlotte St. – Faber Place 115 kV
- No Hagood Generation

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



Hagood – Bee Street 115 kV
795 ACSR

- Loss of Church Creek – St. Andrews 115 kV & Hagood – Charlotte St. 115 kV
- Full Hagood output

South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



Parr 115 kV Substation: Install Lightning Masts & Replace Winnsboro Relay Panel

Project ID

03093A

Project Description

Install lightning masts in Parr 115 kV substation , and replace Parr – Winnsboro 115 kV line relay panel.

Project Need

Parr 115 kV substation serves off site power to VC Summer ESF (Emergency Safeguard Feed) bus. Extreme voltage deviations at this site will cause automatic emergency processes to be initiated at VC Summer. The installation of lightning mast and upgraded relay panel will prevent extreme voltage deviations due to lightning strikes in the area.

Project Status

Planned

Planned In-Service Date

10/31/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$1,492,396	\$3,282,604	\$0	\$0	\$0	\$0	\$4,775,000



South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



Orangeburg – St. George 115 kV: Rebuild

Project ID

0094D15, 94D17

Project Description

Rebuild the Orangeburg – St. George 115 kV lines SPDC 1272 ACSR. Total line length is approximately 25 miles.

Project Need

These projects are needed to allow VCS2-St. George 230 kV Line #1/#2 to be constructed within existing R/W.

Project Status

Complete

Planned In-Service Date

04/30/2015

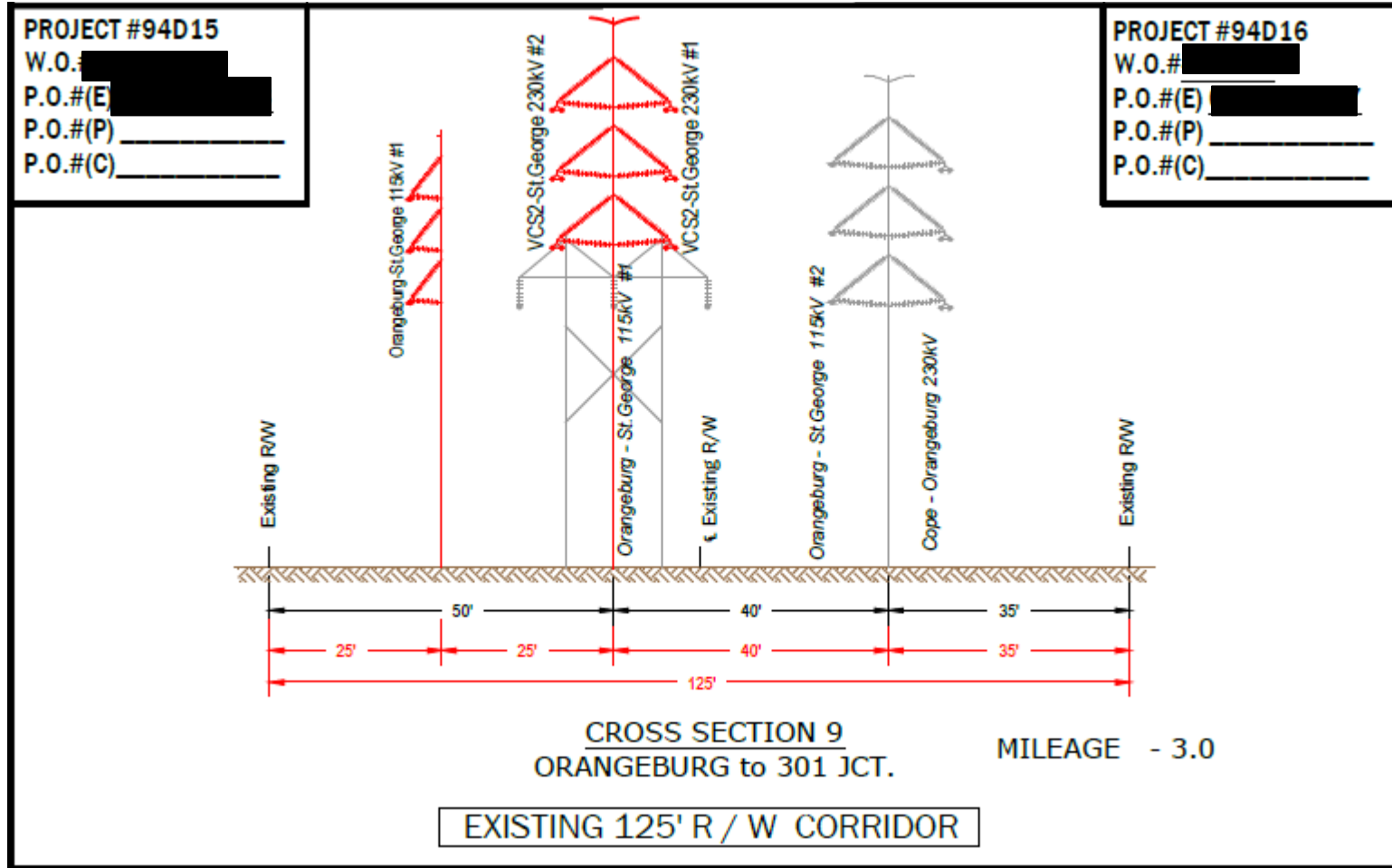
Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$17,214,419	\$485,581	\$0	\$0	\$0	\$0	\$17,700,000



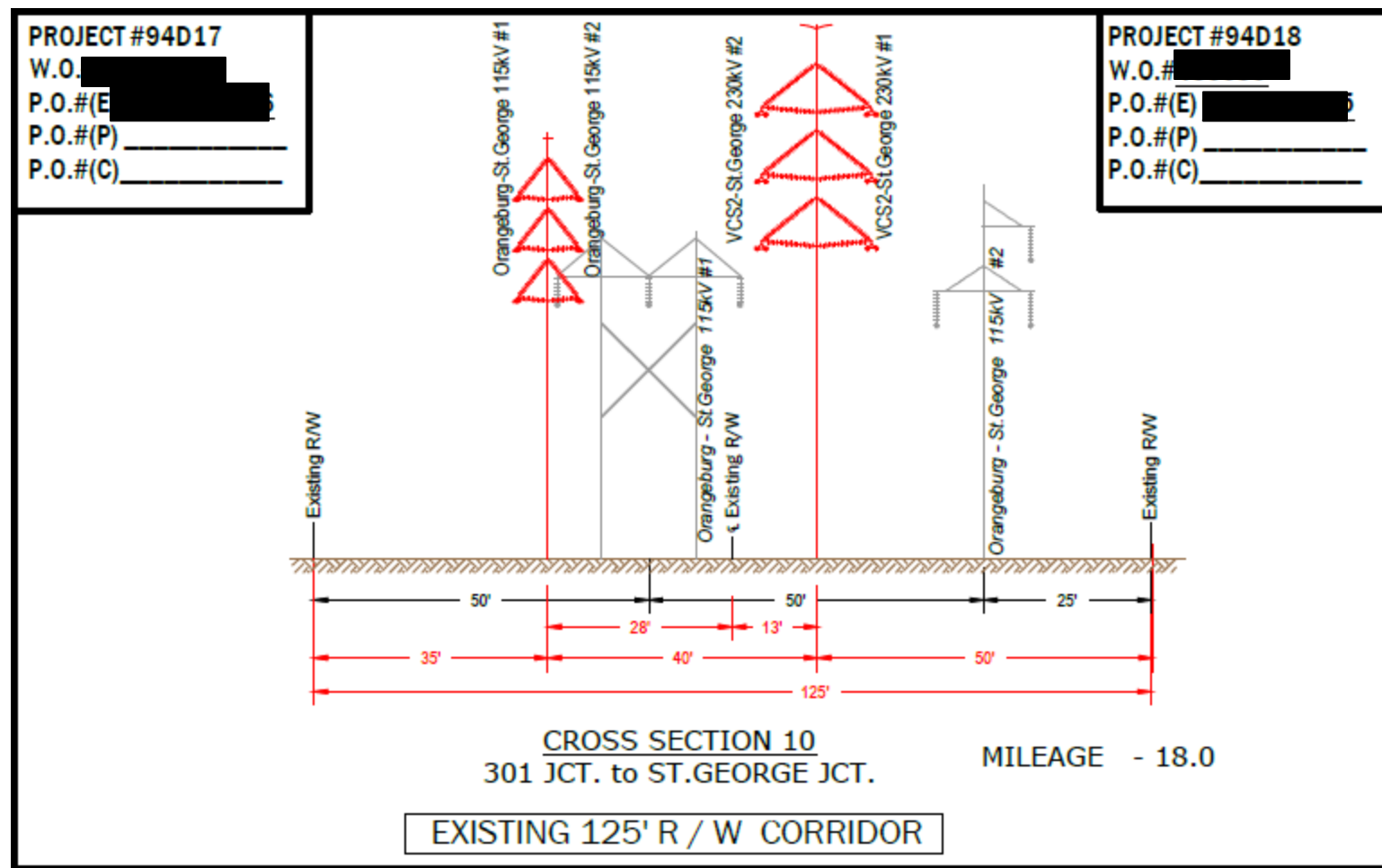


Project 9 of 38
 South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget





Project 9 of 38
 South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Saluda River – Lyles 230 kV, Lyles – McMeekin: Rebuild

Project ID

0091PB, 0091PC

Project Description

Rebuild the Lyles – McMeekin and Lake Murray – Lyles 115 kV Line SPDC 230 kV between Lyles, Saluda River and Lake Murray substations w/B1272 ACSR on the circuit operating at 230 kV and 1272 ACSR on the circuit operating at 115 kV.

Project Need

Addition 230/115 kV support needed for the Lake Murray and Saluda Hydro substations with the anticipated retirement of McMeekin generating station (250 MW).

Project Status

Under Construction

Planned In-Service Date

08/31/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$531,733	\$2,468,267	\$0	\$0	\$0	\$0	\$3,000,000

South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



Dunbar Road – Orangeburg 115 kV Line: Rebuild

Project ID

0094D11

Project Description

Rebuild the Dunbar Road – Orangeburg 115 kV between Dixiana – Gaston Junction. This line section is 6.5 miles and will be configured SPSC 115 kV 1272 ACSR & distribution underbuild.

Project Need

This project is needed to allow VCS2-St. George 230 kV Line #1/#2 to be constructed within existing R/W.

Project Status

Under Construction

Planned In-Service Date

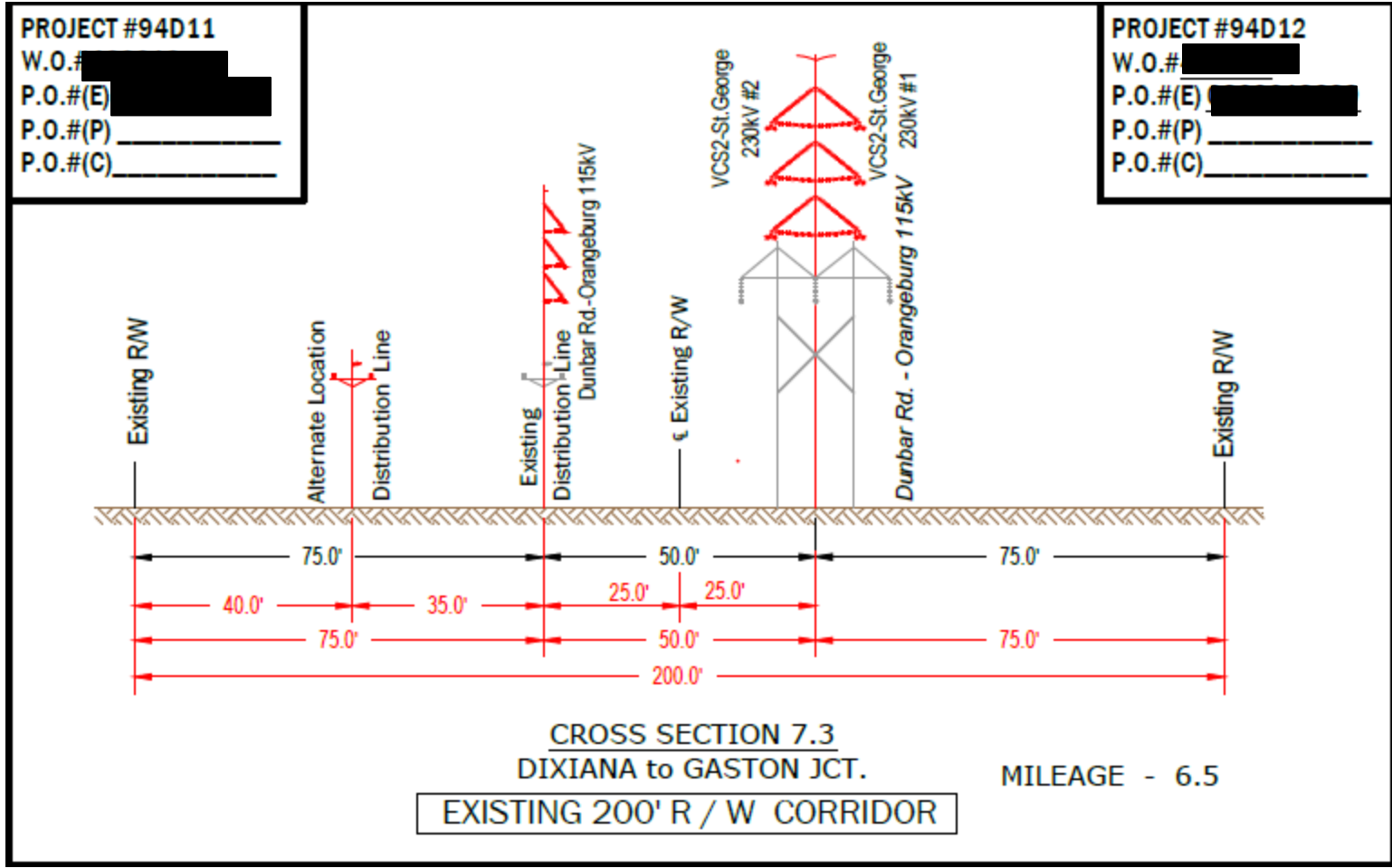
7/31/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$354,273	\$5,495,727	\$0	\$0	\$0	\$0	\$5,850,000



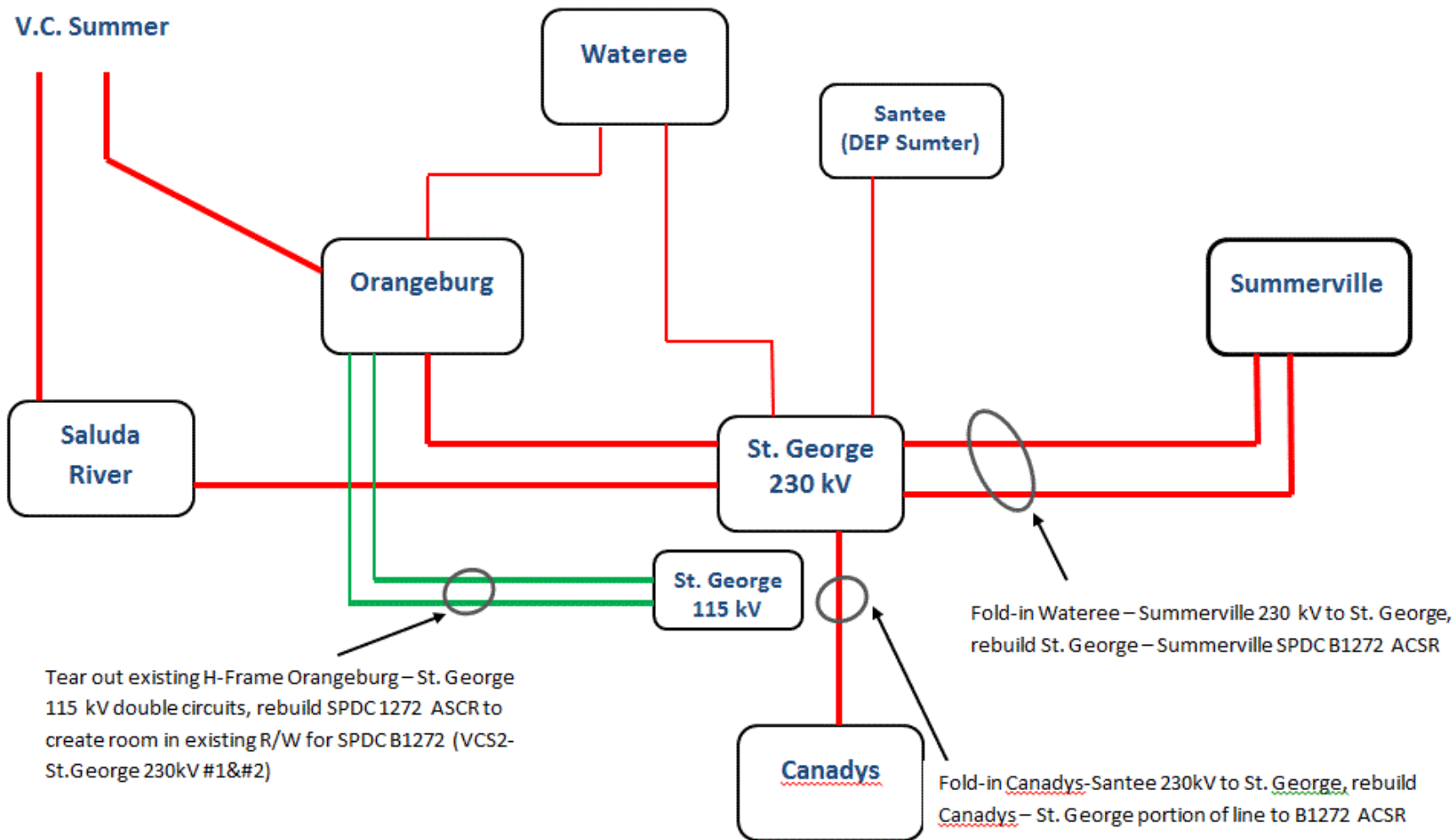
South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



V.C. Summer



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Lake Murray – Saluda River – Lyles 230 kV Lines: Construct

Project ID

0091X

Project Description

Rebuild the Lyles – McMeekin and Lake Murray – Lyles 115 kV Line SPDC 230 kV between Lyles, Saluda River and Lake Murray substations w/B1272 ACSR on the circuit operating at 230 kV and 1272 ACSR on the circuit operating at 115 kV.

Project Need

Addition 230/115 kV support needed for the Lake Murray and Saluda Hydro substations with the anticipated retirement of McMeekin generating station (250 MW).

Project Status

Under Construction

Planned In-Service Date

9/30/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$594,187	\$7,705,813	\$0	\$0	\$0	\$0	\$8,300,000

**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Saluda Hydro – Williams St & McMeekin – Coit 115 kV Lines: Rebuild

Project ID

0094D3

Project Description

Rebuild 2 mile section of the Saluda Hydro – Williams & McMeekin – Coit 115 kV SPDC 1272 ACSR.

Project Need

This project is needed to allow VCS2-St. George 230 kV Line #1/#2 to be constructed within existing R/W.

Project Status

Under Construction

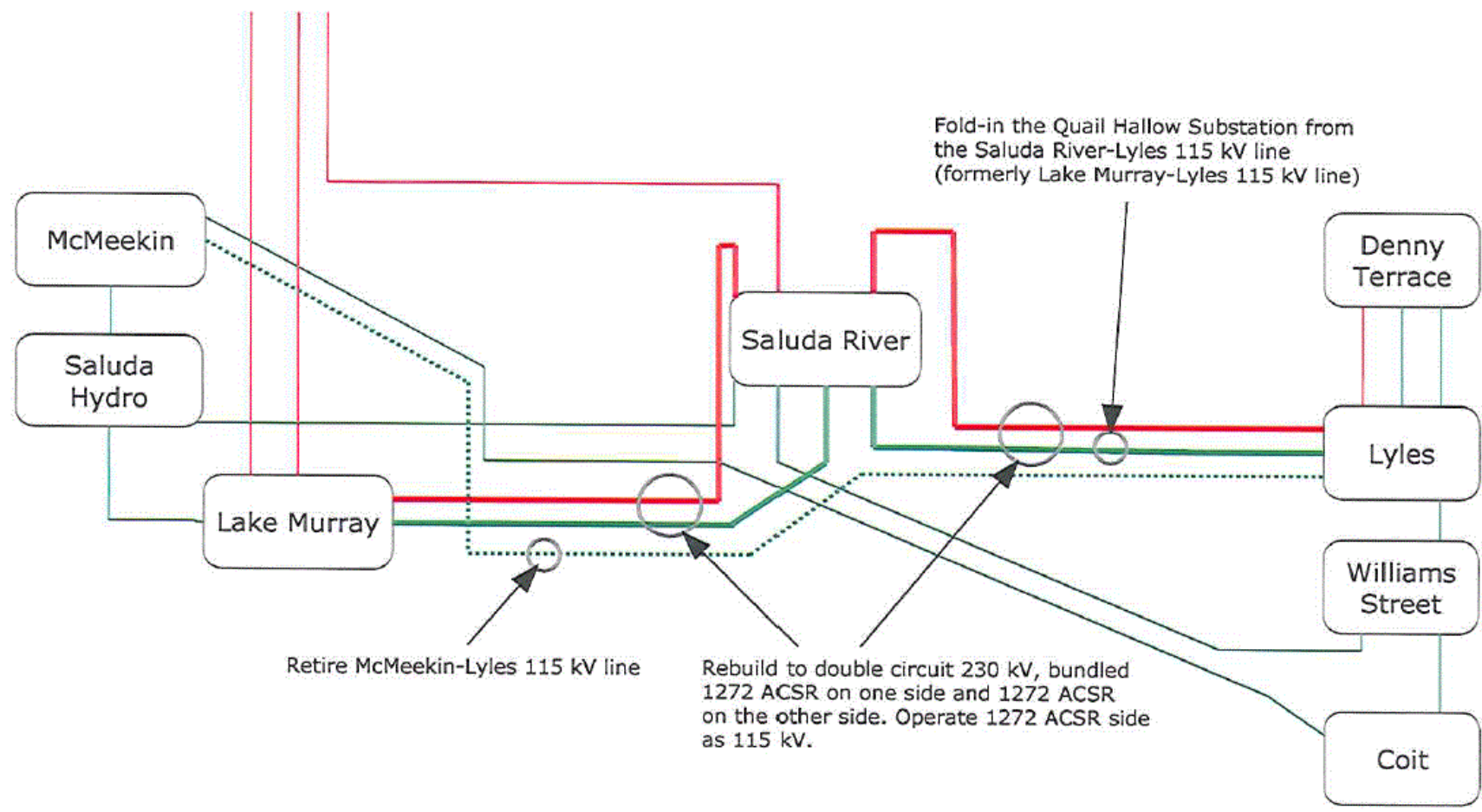
Planned In-Service Date

9/30/2015

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$6,383,972	\$966,028	\$0	\$0	\$0	\$0	\$7,350,000

V.C. Summer



SCE&G Planned Projects 2016-2019 (\$2 Million and above)



	Project	Tentative Completion Date	Expenditures as of December 31, 2014	Projected 2015	Projected 2016	Projected 2017	Projected 2018	Projected 2019	Total
14	Jack Primus 115 kV Line Construct	May-16	406,312		2,600,000				3,006,312
15	Okatie 230/115 kV Sub Construct and Line Upgrades	May-16			6,750,000				6,750,000
16	CIP-Edenwood 115 kV Rebuild	May-16	31,556		2,500,000				2,531,556
17	Summerville upgrade 230/115 kV transformer & Relocate 224 MVA transformer	May-16	50,288		3,700,000				3,750,288
18	Church Creek upgrade 230/115 kV transformer & Relocate 224 MVA transformer	May-16	1,648		2,700,000				2,701,648
19	Blythewood 115 kV Switching Station	May-16	17,257		3,500,000				3,517,257
20	Queensboro 115 kV Switching Station	Dec-16			4,250,000				4,250,000
21	Urquhart Sub: Replace Switch House	Dec-16	1,903,464		1,200,000				3,103,464
22	Burton - Yemassee 115 kV #2 Line Rebuild SPDC B795 ACSR	Dec-16	10,529,937	25,000,000					35,529,937
23	Toolebeck 115 kV Switching Station	Dec-16	167,635	3,850,000					4,017,635
24	Lyles - Williams St 115 kV Rebuild	Dec-16	696,494	2,550,000			2,500,000		5,746,494
25	St. Andrews - Queensboro 115 kV Rebuild	Dec-16	122,722	2,500,000	2,500,000				5,122,722
26	Cainhoy 230/115kV Sub Construct and Line Upgrades	Dec-16	1,144,638	9,482,000	9,050,000				19,676,638
27	Bluffton-Santee 115 kV Tie Construct	May-17					2,200,000		2,200,000
28	Orangeburg 230kV Sub: Fold in VCS2_St.George #1 Line	May-17	22,467	400,000	1,800,000				2,222,467
29	VCS #2-St. George 230 kV Lines #1 & #2	Dec-15	130,565	10,458,321	22,405,000	118,933			33,112,819
30	St. George-Summerville 230 kV upgrade	May-17	455,282	5,012,124	6,334,475	478,339			12,280,220
31	Faber Place-Charlotte Street 115 kV Line Upgrade	Dec-17				2,200,000			2,200,000
32	Faber Place-Hagood 115 kV #2 Construct	Dec-17				4,000,000			4,000,000
33	Urquhart - Graniteville 230 kV #2 Line Construct	Dec-17	133,179		9,500,000	10,200,000			19,833,179
34	Summerville-Pepperhill 230 kV Construct	May-18	239,673		200,000		8,000,000		8,439,673
35	Hopkins 230/115 kV Substation: Install 2nd Autobank	May-18					7,500,000		7,500,000
36	Stevens Creek Replace Switch House	Dec-18			100,000	1,000,000	1,000,000	2,500,000	4,600,000
37	AM Williams-Summerville 115 kV Line Upgrade	May-19						12,000,000	12,000,000
38	AM Williams Sub: Replace Switch House	Dec-19					1,000,000	1,000,000	2,000,000
		Total:	\$16,053,117	\$59,252,445	\$79,089,475	\$17,997,272	\$22,200,000	\$15,500,000	\$210,092,309

**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Okatie 230/115 kV Sub: Construct and Line Upgrades

Project ID

0139A, 0139B

Project Description

Construct 230/115 kV substation at Okatie site and upgrade 115 kV circuit to Hardeeville

Project Need

System load growth in the Hardeeville and Bluffton areas require additional transmission capacity.

Project Status

Planned

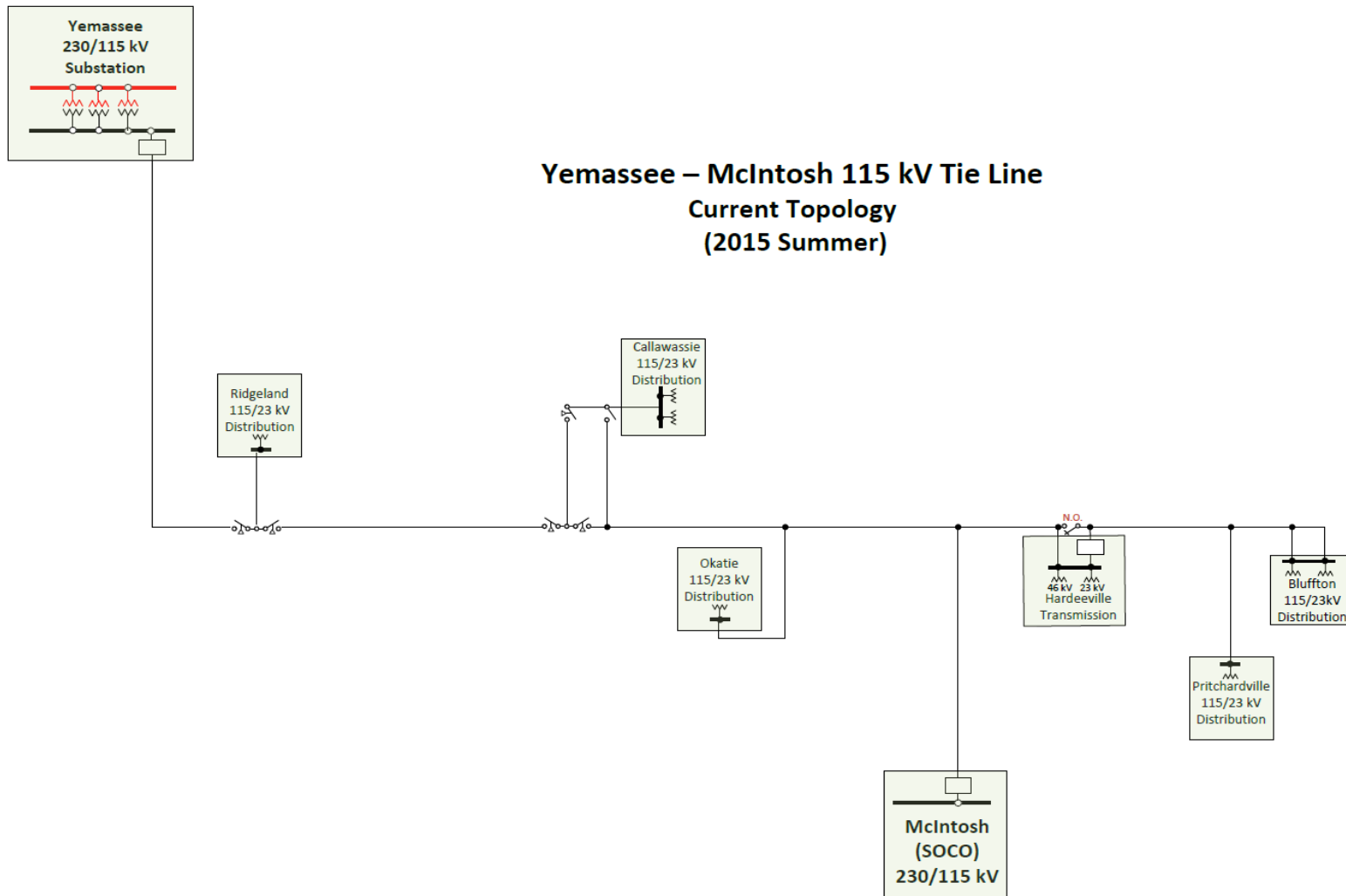
Planned In-Service Date

5/1/2016

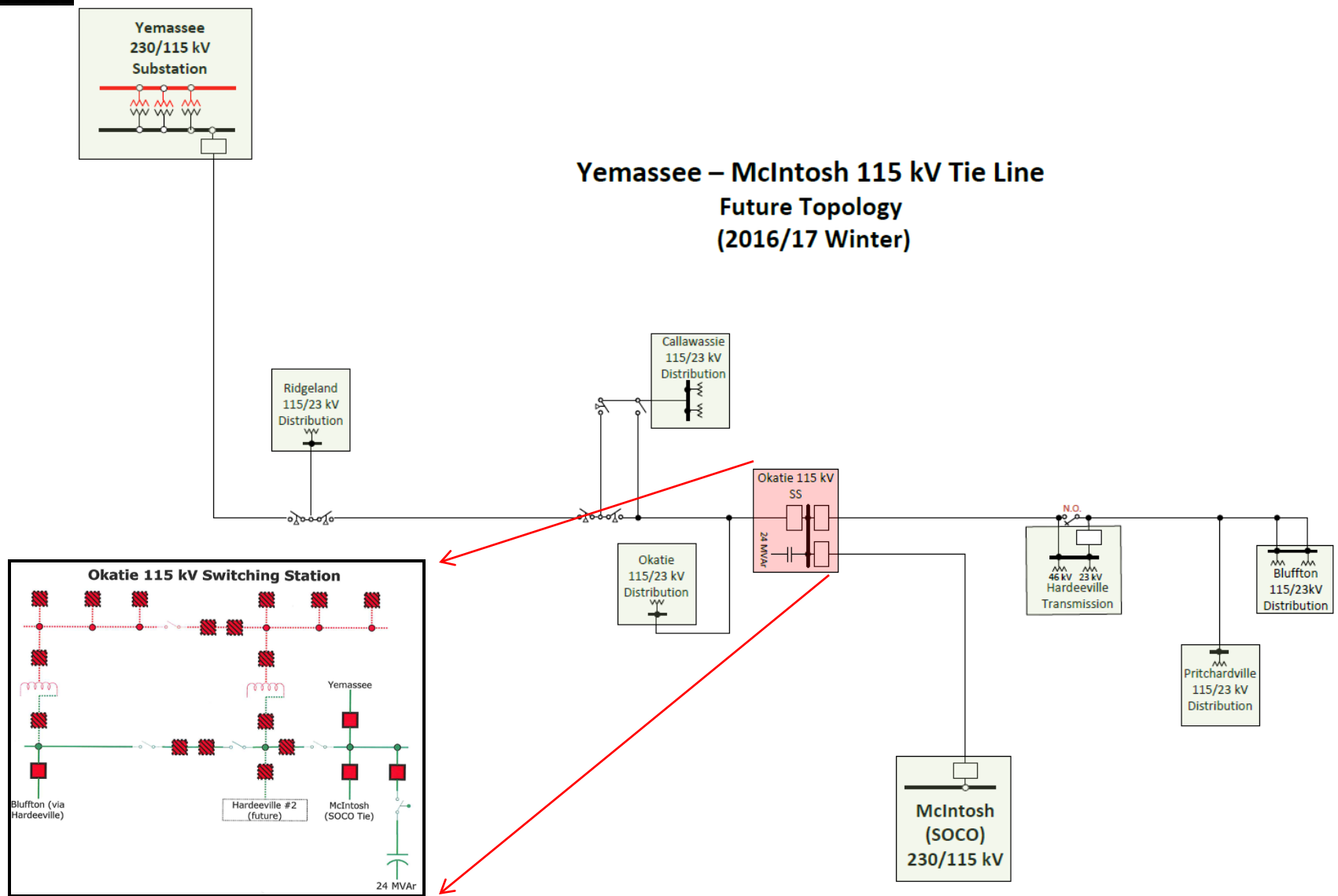
Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$0	\$0	\$6,750,000	\$0	\$0	\$0	\$6,750,000

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**



Columbia Industrial Park - Edenwood 115 kV Line: Rebuild

Project ID

4005H

Project Description

Rebuild from State Newspaper tap to Columbia Industrial Park (2.9 miles) with steel structures and 1272 ASCR conductor

Project Need

Identified in Transmission Planning studies as one of Top 50 worst performers, improvements required.

Project Status

Planned

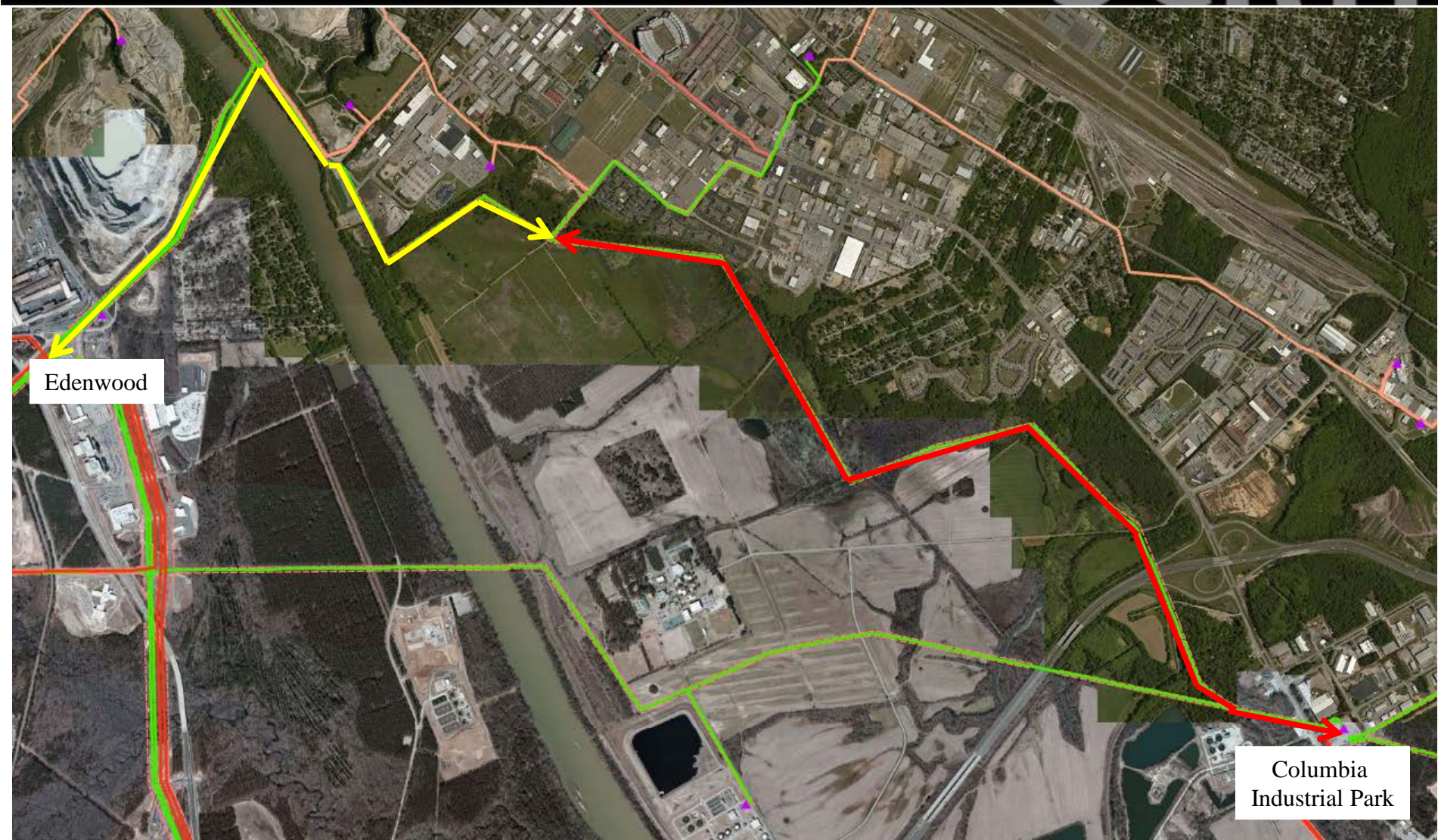
Planned In-Service Date

5/1/2016

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$31,556	\$0	\$2,500,000	\$0	\$0	\$0	\$2,531,556

South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



Edenwood

Columbia
Industrial Park

**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Blythewood 115 kV Switching Station: Construct

Project ID

03087A

Project Description

Construct Blythewood Switching Station with four 115 kV line terminals, with plans to expand to 230 kV at a future date. Fold in the Pineland – Winnsboro 115 kV line, retap the Killian – S. Lubeca(Amcor) 115 kV and Killian – Blythewood 115 kV lines.

Project Need

Load growth in the Blythewood and Columbia areas requires additional transmission capacity and reliability. This project is required to meet NERC TPL standards and SCE&G's internal Planning Criteria.

Project Status

Planned

Planned In-Service Date

5/31/2016

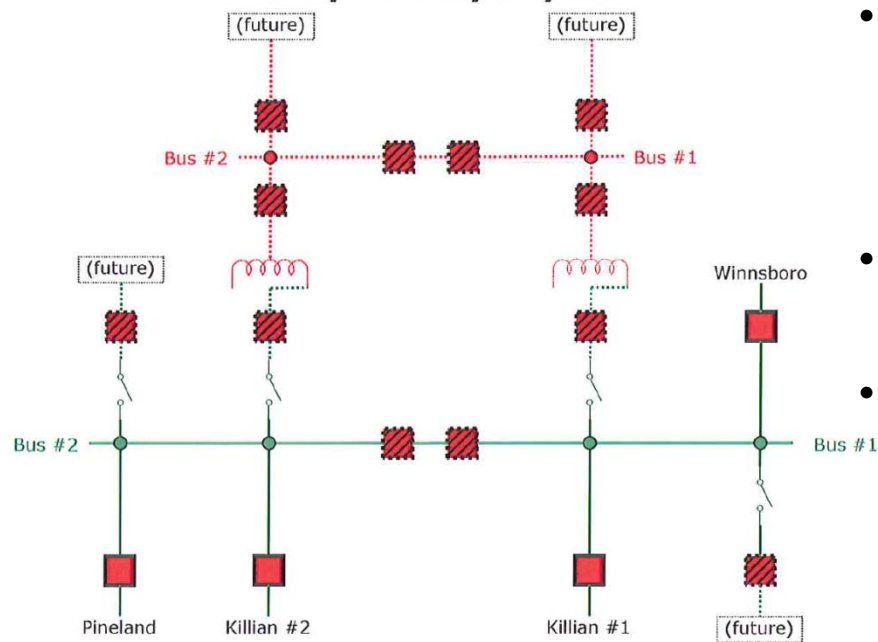
Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$17,257	\$0	\$3,500,000	\$0	\$0	\$0	\$3,517,257

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget

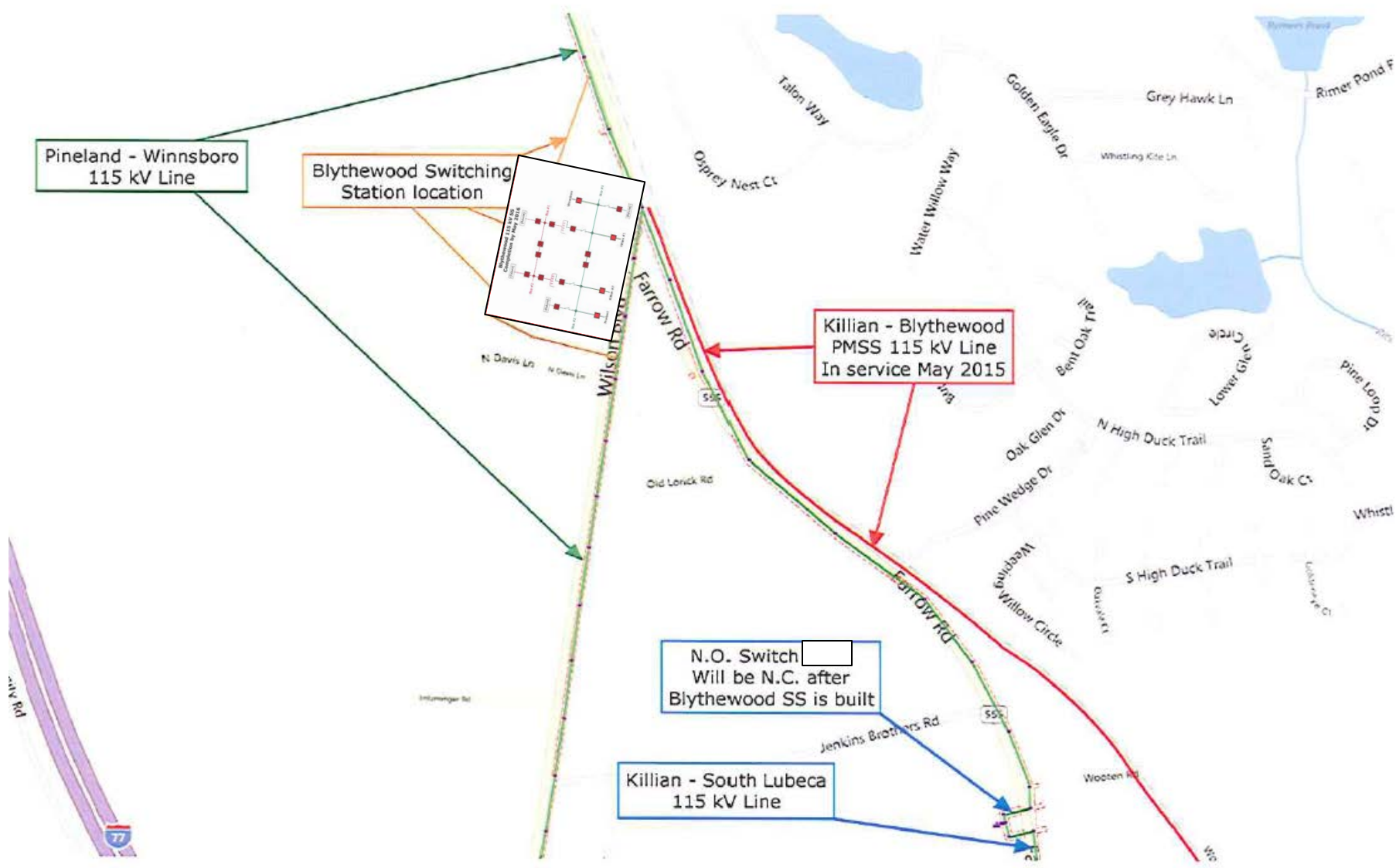


Blythewood 115 kV SS Completion by May 2016



- Construct 115 kV transmission switching station with future 230 kV capability in Blythewood
 - Four 115 kV line terminals
 - Future Back-to-back bus tie breakers on 115 kV bus
 - Future 230/115 kV 336 MVA autotransformers with high side and low side breakers
- Normally open point between Killian and Blythewood will be closed, creating new Killian – Blythewood 115 kV #1 line .
- Killian – Blythewood 115 kV #2 line completed in May 2014 along with VCS1 – Killian 230 kV line construction (NND)

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



Queensboro 115 kV Switching Station: Construct

Project ID

0062A, 0062B

Project Description

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

Project Need

System load growth in Church Creek, Faber Place and Queensboro areas require increased transmission capacity from the Charleston Peninsula.

Project Status

Planned

Planned In-Service Date

12/1/2016

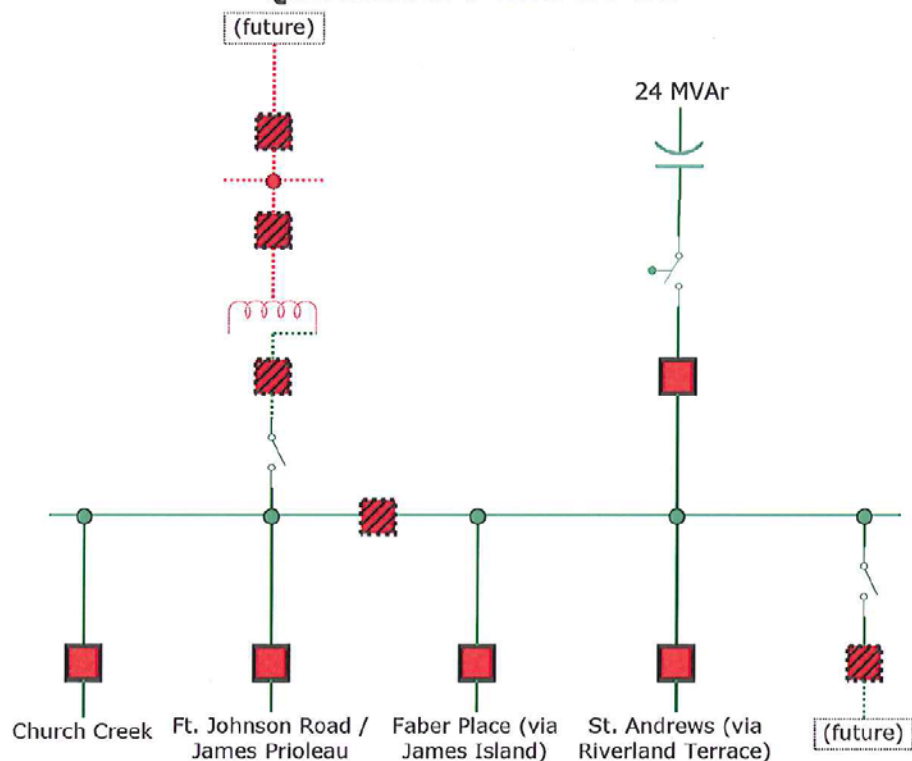
Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$0	\$0	\$4,250,000	\$0	\$0	\$0	\$4,250,000



South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget

Queensboro 115 kV SS



-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.

-New Point of Interconnection agreement under legal review to establish a new Queensboro – Johns Island (SCPSA) 115 kV tie line.

**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**



Burton-Yemassee 115 kV #2 Line: Rebuild as Double Circuit

Project ID

1268A, 1268C

Project Description

Rebuild the Yemassee to Burton 115 kV #2 line as a double circuit with 1272 ACSR conductor

Project Need

Load growth in the Burton area requires additional transmission capacity from the Yemassee source.

Project Status

Planned

Planned In-Service Date

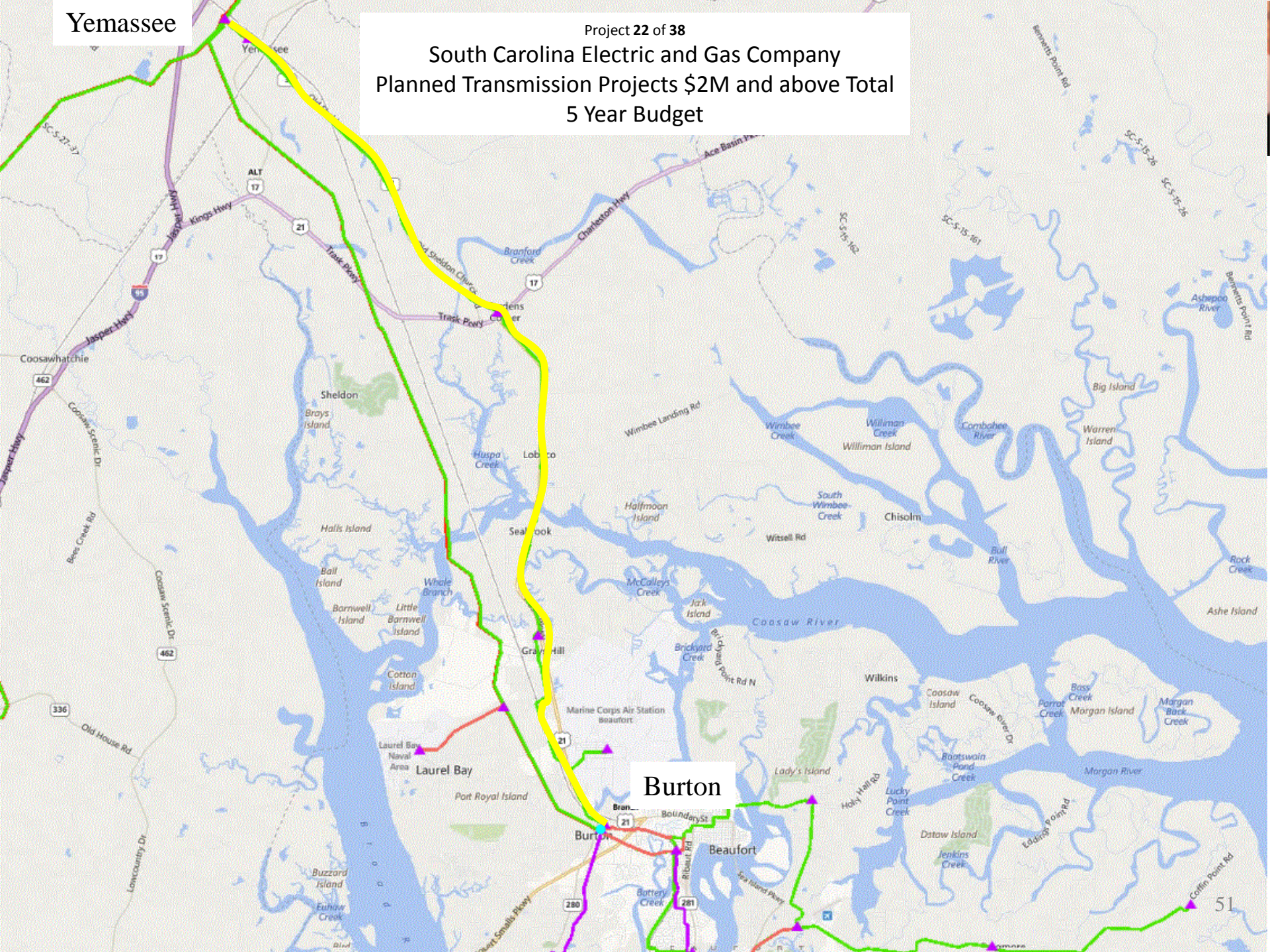
12/31/2016

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$10,529,937	\$25,000,000	\$0	\$0	\$0	\$0	\$35,529,937

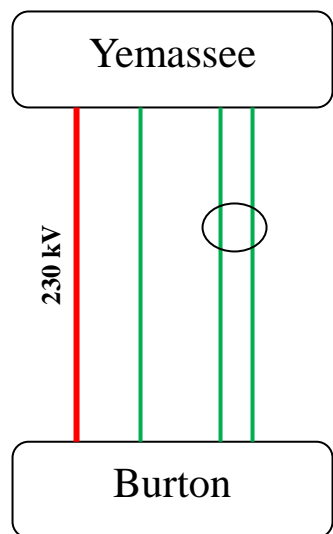
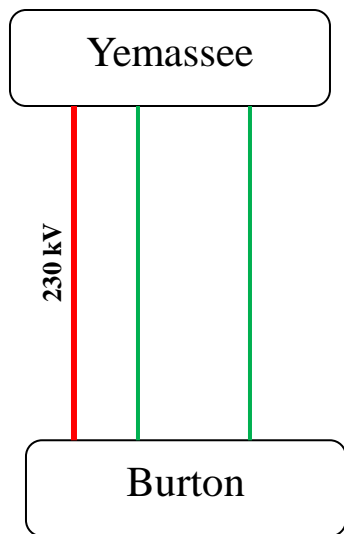
Yemassee

Project 22 of 38
South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget



Burton

South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



- Remove existing H-Frame 477 ACSR 115 kV line, rebuild approximately 21 miles SPDC B795 ACSR
 Burton – Yemassee 115 kV #2 upgraded
 Burton – Yemassee 115 kV #3 created
- Upgrade/Add 115 kV terminals at Yemassee & Burton
- Project required to alleviate potential N-2 contingency overload that requires load shedding under peak conditions
 - Radial load shed only, does not have any adverse effects on BES
- Scheduled for completion by May 31, 2016, but new R/W constraints, FAA permitting delays, and wetlands issues have created significant delays and will most likely push completion date out to **12/31/2017**.

Current Configuration:

1-230 kV 1272 ACSR
 2-115 kV 477 ACSR

Future Configuration:

1-230 kV 1272 ACSR
 1-115 kV 477 ACSR
 2-115 kV B795 ACSR

Total Capacity: **500 MVA** Total Capacity: **1,074 MVA**

**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Cainhoy 230/115kV Sub: Construct and Line Upgrades

Project ID

2499A, 2499H, 2499K, 2499L

Project Description

Establish a new 230/115 kV substation near the Cainhoy distribution substation, initially with one 230/115 kV 336 MVA transformer

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

Planned

Planned In-Service Date

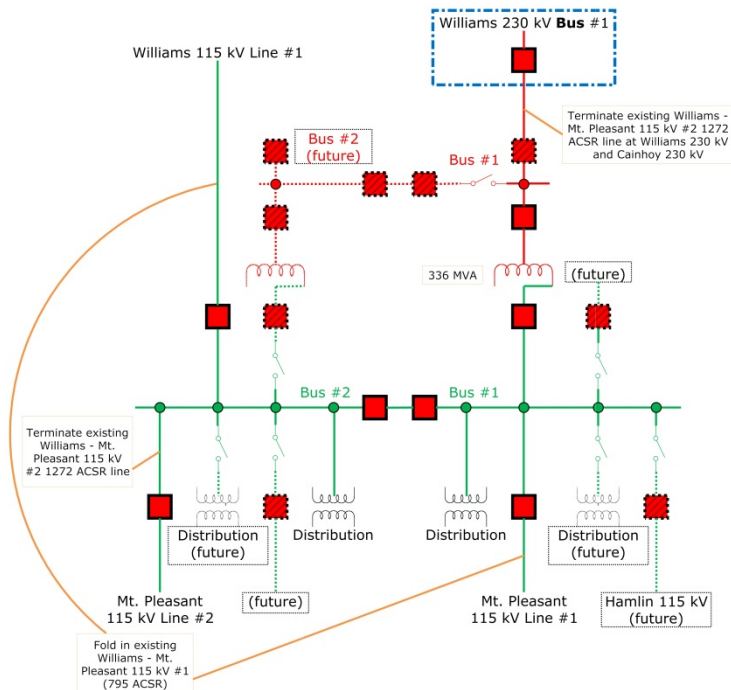
12/31/2016

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$1,144,638	\$9,482,000	\$9,050,000	\$0	\$0	\$0	\$19,676,638

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget

Cainhoy 230 kV Substation - Phase 1 Completion by December 2015

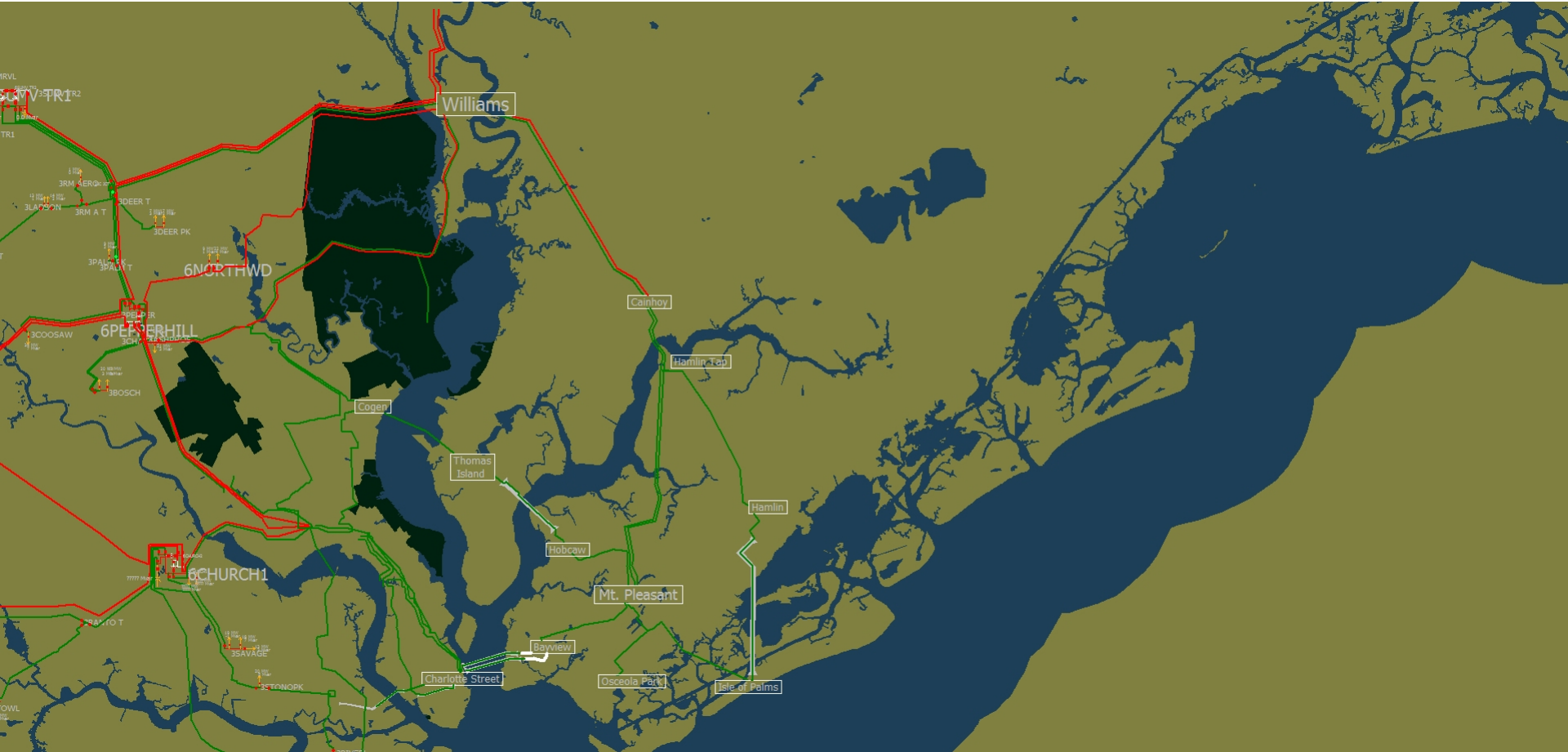


Phase I (Completed by December 2015)

- Construct 230/115 kV transmission substation near existing Cainhoy distribution substation
 - Three 115 kV line terminals
 - Back-to-back bus tie breakers on 115 kV bus
 - One 230/115 kV 336 MVA autotransformer with high side and low side breakers
 - Relocate Cainhoy distribution transformers to new 115 kV site
- Add one 230 kV terminal to #1 AM Williams 230 kV bus
- Fold Williams – Mt. Pleasant 115 kV #2 into Cainhoy 230 kV and 115 kV
 - Creates Williams – Cainhoy 230 kV & Cainhoy – Mt. Pleasant 115 kV #2
- Fold Williams – Mt. Pleasant 115 kV #1 into Cainhoy 115 kV #2 bus
 - Creates Williams – Cainhoy 115 kV and Cainhoy – Mt. Pleasant 115 kV #1

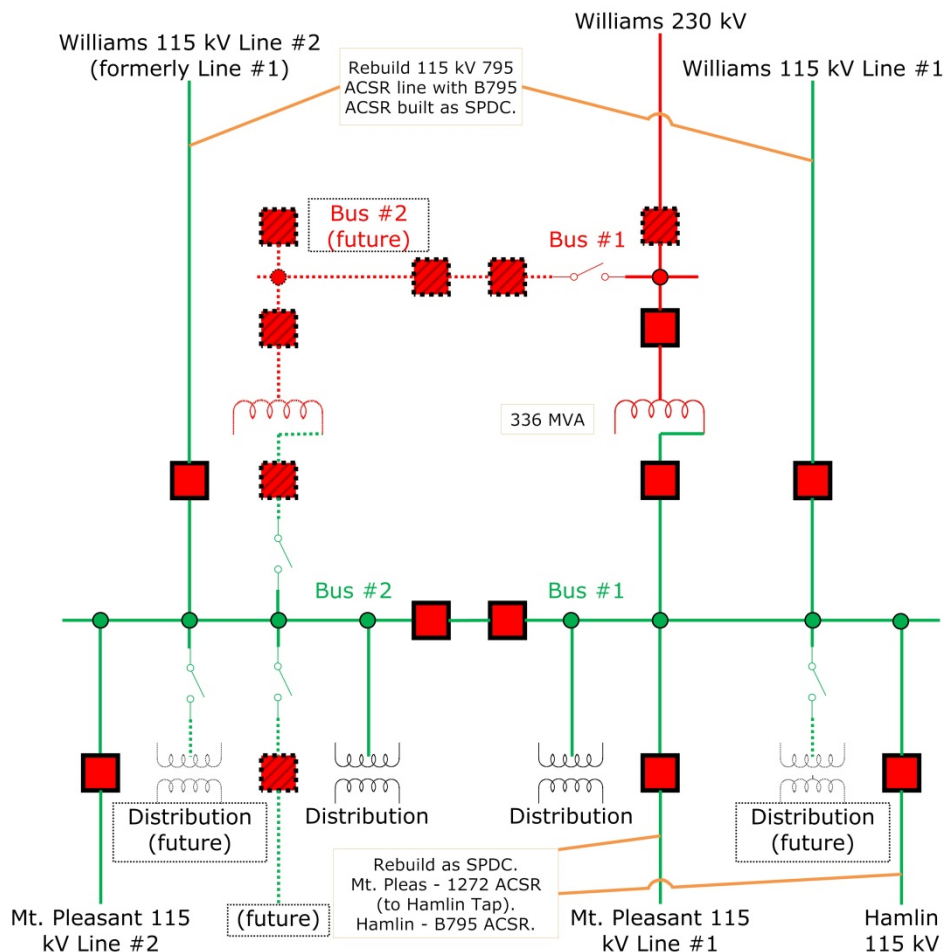


Project 26 of 38
 South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget

**Cainhoy 230 kV Substation - Phase 2
Completion by December 2016**

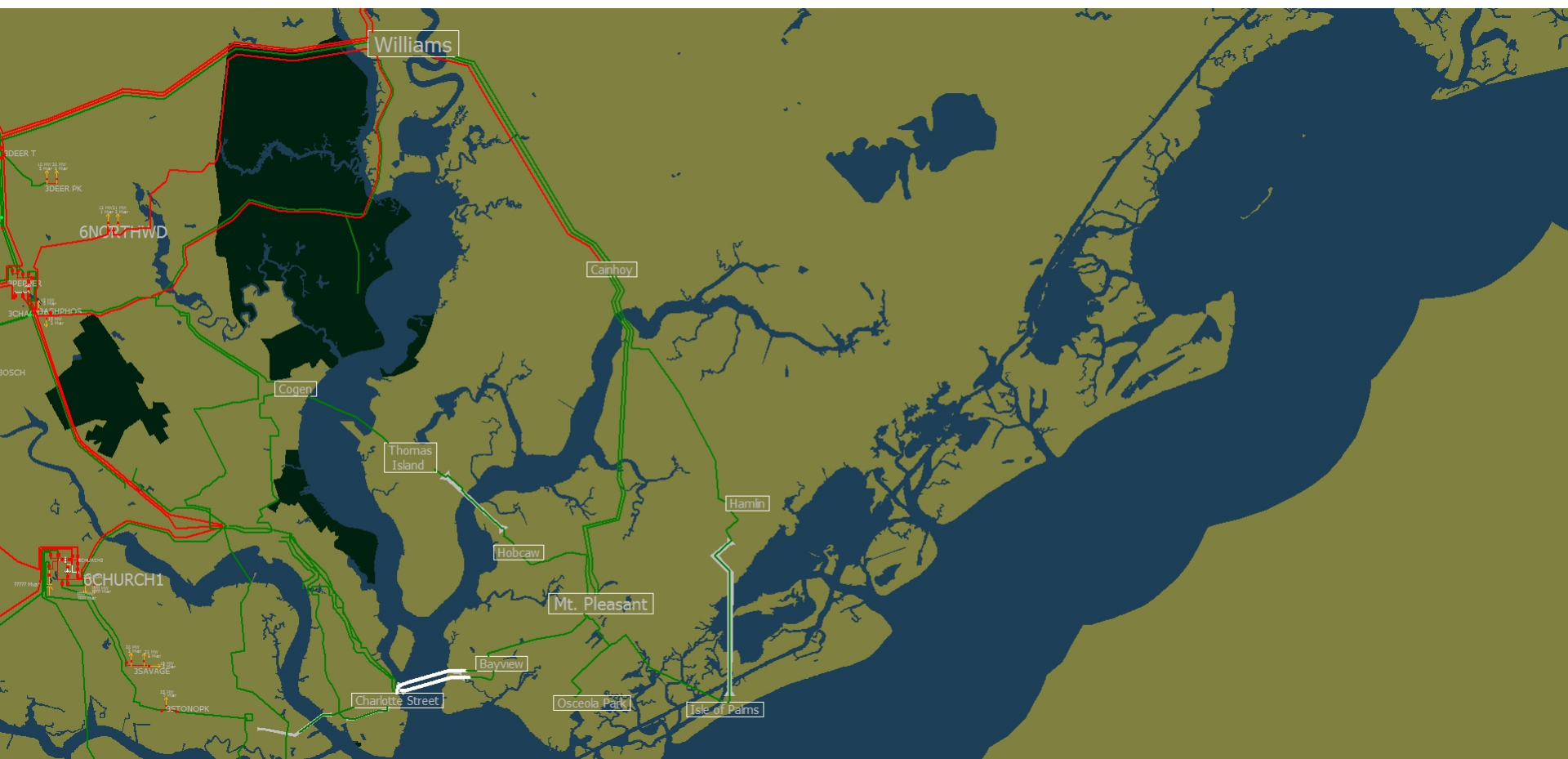


Phase II (Completed by December 2016)

- Rebuild Cainhoy – Hamlin 115 kV to SPDC
 - Creates Cainhoy – Mt. Pleasant 115 kV partially 1272 ACSR & Cainhoy – Hamlin 115 kV B795 ACSR
- Add 115 kV Hamlin terminal
- Rebuild Williams – Cainhoy 230 kV SPDC
 - Creates Williams – Cainhoy 115 kV #1 & #2 B795 ACSR
- Upgrade terminals at Williams to 2000A for Cainhoy 115 kV circuits



Project 26 of 38
 South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Orangeburg 230 kV Sub: Fold in VCS2 – St. George 230 kV #1

Project ID

94D23, 94D24

Project Description

Fold in the future VCS2 – St. George 230 kV #1 line at Orangeburg Transmission. Add two 230 kV line terminals at Orangeburg transmission, replace existing 230 kV 2000 Amp bus-tie breaker with 3000 Amp circuit breaker.

Project Need

Canadys generation previously provided 323 MW of support to the 115 kV transmission system serving load around the Orangeburg, St. George and Walterboro load centers. Increased support of Orangeburg 230 kV will decrease the burden of 115 kV system in Orangeburg/St. George areas. This project is required to meet NERC TPL standards and SCE&G's Internal Planning Criteria, as well as providing increased reliability to the Orangeburg and St. George areas.

Project Status

Planned

Planned In-Service Date

5/1/2017

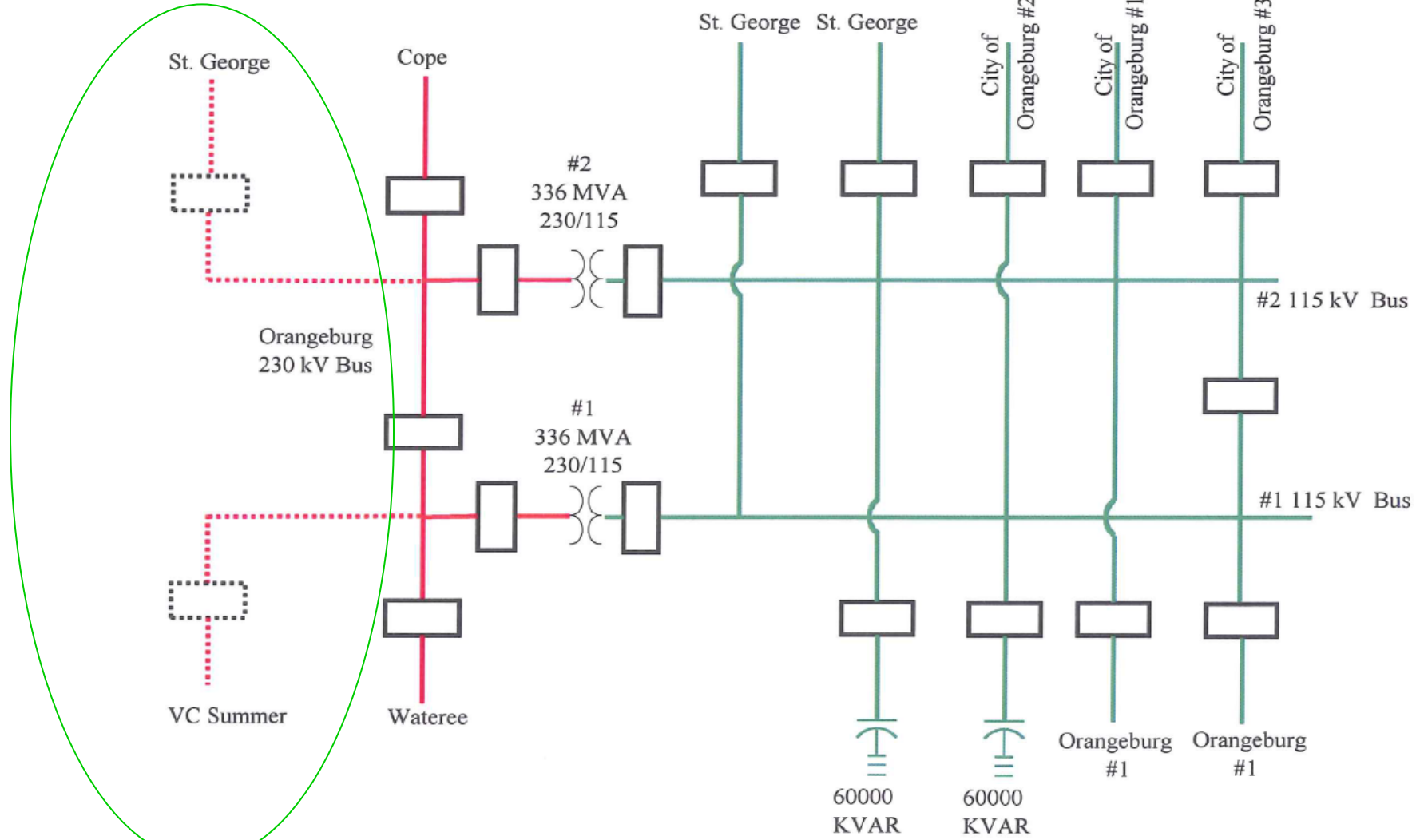
Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$22,467	\$400,000	\$1,800,000	\$0	\$0	\$0	\$2,222,467

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



Orangeburg East 230/115 kV Substation



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

VCS2 – St. George 230 kV Line #1 & #2: Construct

Project ID

0094D1, 0094D2, 0094D4, 0094D5, 0094D6, 0094D7, 0094D8, 0094D10, 0094D12, 0094D14, 0094D16, 0094D18

Project Description

Construct two 230 kV lines from VCS #2 to future St. George 230 kV switching station

Project Need

VCS Nuclear Unit #3 Interconnection Requirement. Distribute power from the generation to load while meeting NERC TPL standards and SCE&G's Internal Planning Criteria.

Project Status

Under Construction

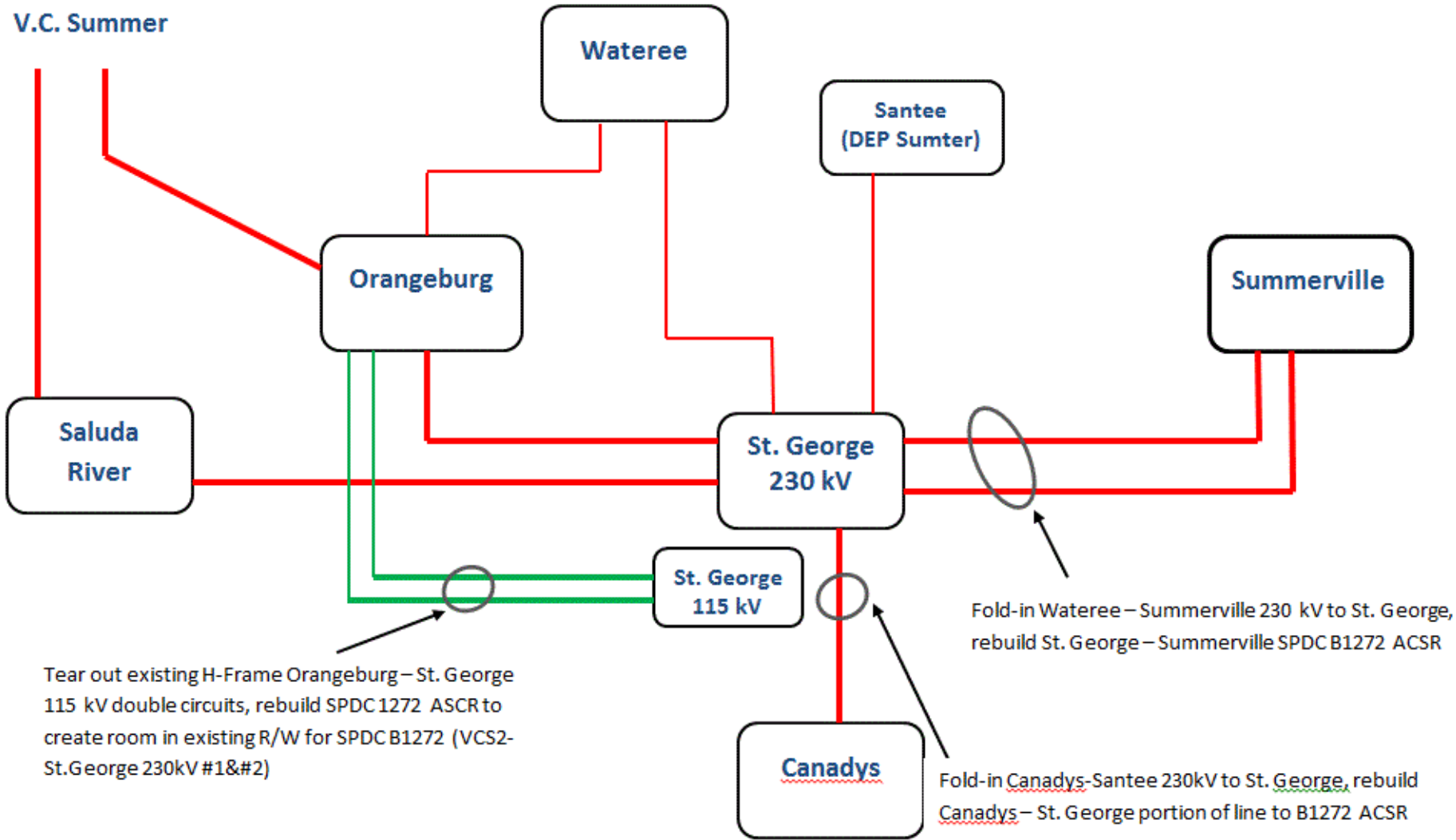
Planned In-Service Date

12/31/2017

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$130,565	\$10,458,321	\$22,405,000	\$118,933	\$0	\$0	\$33,112,819

South Carolina Electric and Gas Company Planned Transmission Projects \$2M and above Total 5 Year Budget



South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



St. George – Summerville 230 kV: Upgrade

Project ID

0094P

Project Description

Upgrade St. George to Summerville 230 kV to SPDC Bundled 1272 ACSR conductor.

Project Need

VCS Nuclear unit #3 Interconnection Requirement. Distribute power form the generation to load while meeting NERC TPL standards and SCE&G’s Internal Planning Criteria

Project Status

Planned

Planned In-Service Date

5/1/2017

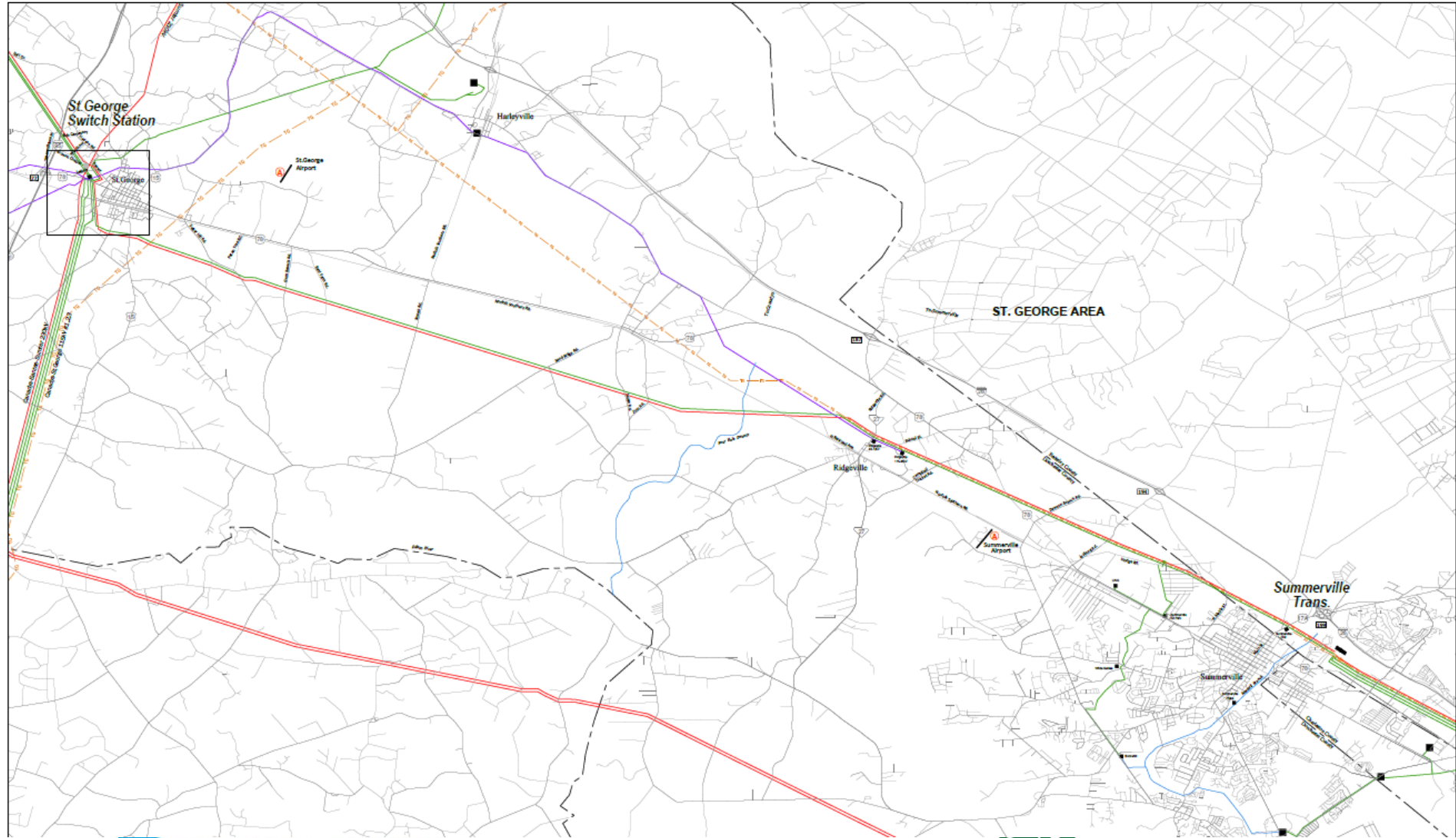
Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$455,282	\$5,012,124	\$6,334,475	\$478,339	\$0	\$0	\$12,280,220





Project 30 of 38
 South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



**South Carolina Electric and Gas Company
Planned Transmission Projects \$2M and above Total
5 Year Budget**

Summerville – Pepperhill 230 kV: Construct

Project ID

2600A

Project Description

Construct a new 230 kV line from Pepperhill to Summerville with B-1272 ACSR. Total line length is approximately 9 miles.

Project Need

System load growth in the Pepperhill and Summerville areas 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

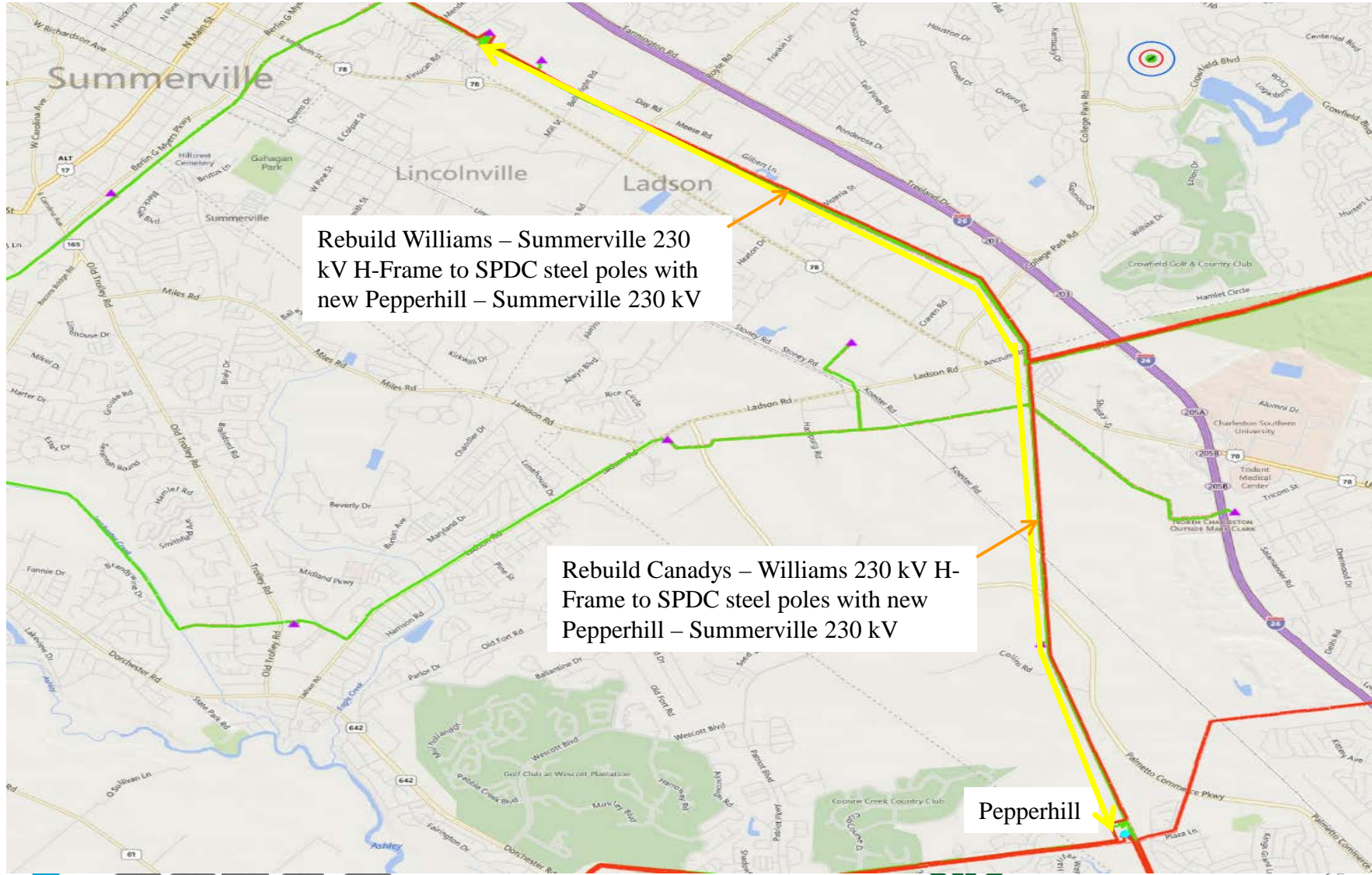
5/1/2018

Estimated Project Cost (\$)

Previous	2015	2016	2017	2018	2019	Total
\$239,673	\$0	\$200,000	\$0	\$8,000,000	\$0	\$8,439,673



Project 34 of 38
 South Carolina Electric and Gas Company
 Planned Transmission Projects \$2M and above Total
 5 Year Budget



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

SCE&G Planned Project Scope/Date Changes

Urquhart – Graniteville 230/115 kV Rebuild SPDC

- Currently exploring other options to replace/supplement this project
 - Possible new tie line with Southern Company, from their South Augusta 230 kV substation to Graniteville 230 kV. Line would utilize the proposed path of the Urquhart – Graniteville 230 kV #2 line and use existing R/W from SCE&G's Urquhart Generation Plant to South Augusta (SOCO).
- Scheduled for completion in **May 31, 2016** but most likely will be delayed to **December 31, 2018**

SCE&G Planned Project Scope/Date Changes

Savannah River Services – Vogtle 230 kV

- Potential overloads have been identified in 2015 NERC TPL studies, beginning in 2018/2019 as a result of new nuclear installations at Southern Company's Vogtle Plant.
- Currently conducting joint studies with Southern Company and Georgia Power to identify possible solutions

SCE&G Planned Project Scope/Date Changes

Salem SS – Baldock 115 kV

- Potential overloads have been identified in 2015 NERC TPL studies, beginning in 2018/2019 as a result of new nuclear installations at Southern Company's Vogtle Plant.
- Currently conducting joint studies with SOCO to identify possible solutions

SCE&G Planned Project Scope/Date Changes

Bayview-Charlotte St 115 kV #2 Underground Cable Construct

- Damage to conduit discovered shortly after initial installation/energization, complete and extensive project overhaul required
- Completion delayed to **December 31, 2015**

SCE&G Planned Project Scope/Date Changes

Toolebeck Switching Station: Construct

- Delays encountered due to land acquisition, Public Service Commission (PSC) application, other site permitting requirements
- Other upgrades in Aiken area are currently being considered to supplement this project
- Completion delayed to **December 31, 2016**

Questions?

Transmission Expansion Plans

Santee Cooper

Rick Thornton

Transmission Network Completed Projects

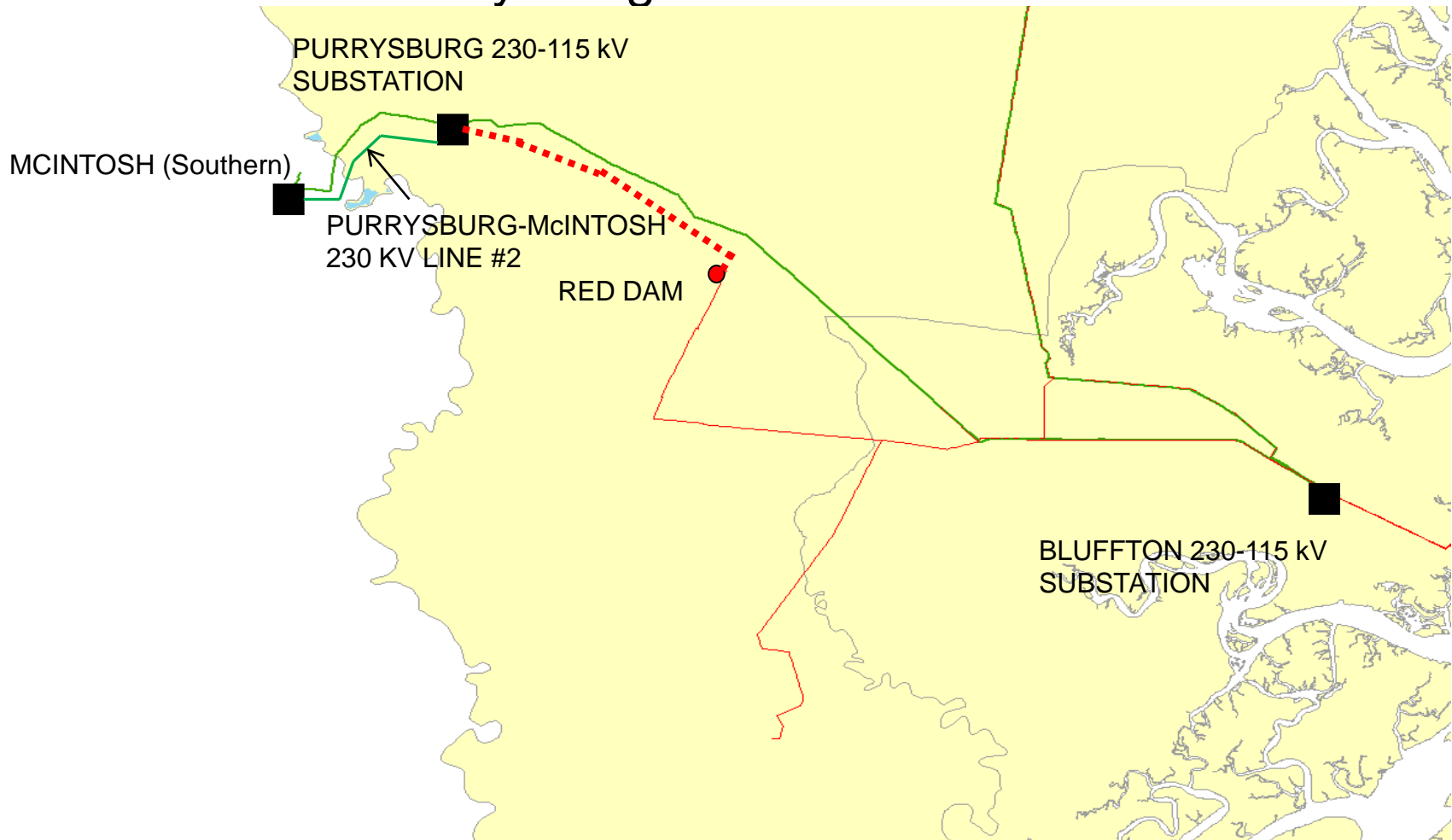
- Purrysburg-McIntosh 230 kV Line #2 04/2015
- Richburg 230-69 kV Substation 05/2015
- Winnsboro-Richburg 230 kV Line 05/2015

Transmission Network

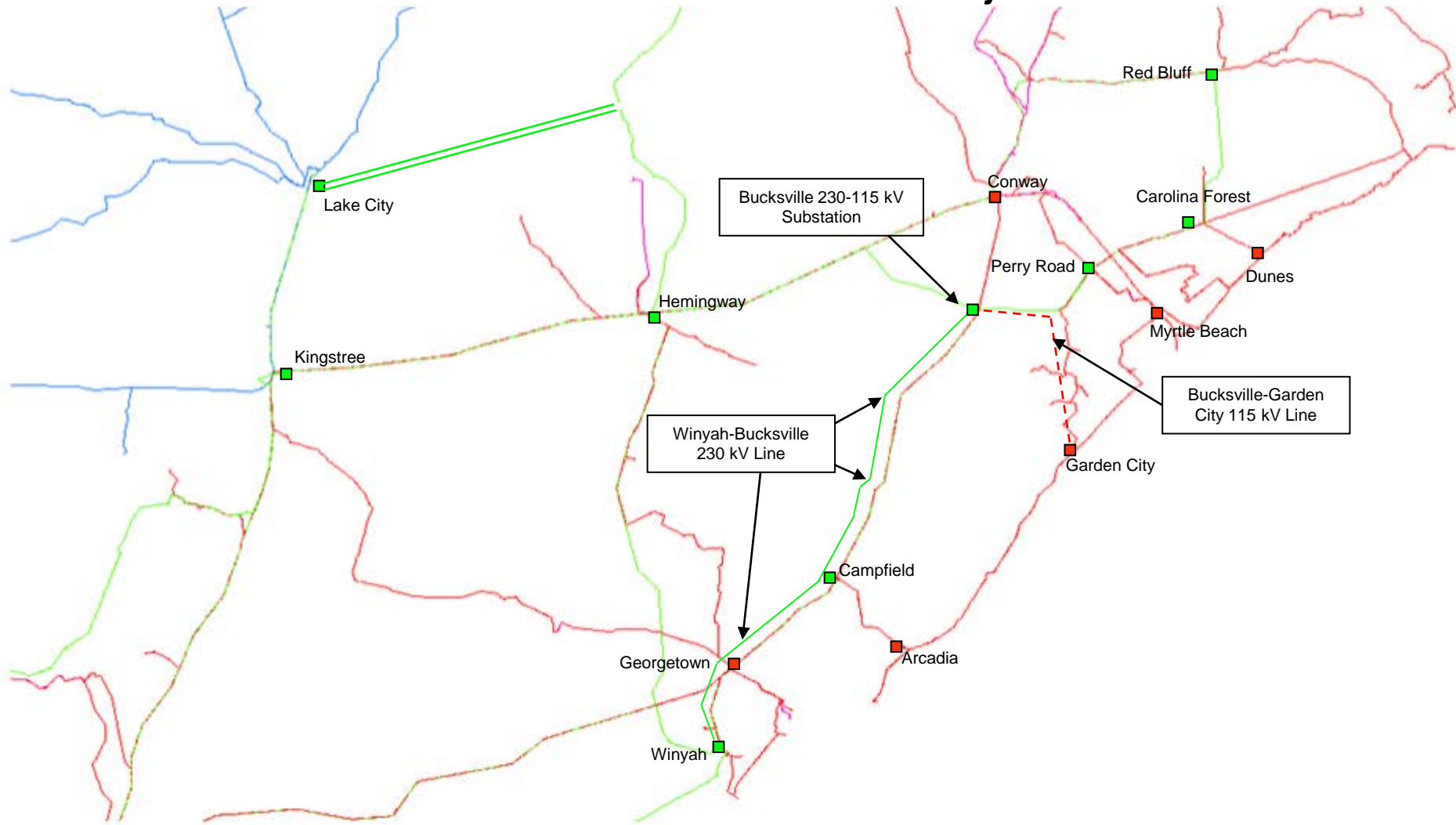
Active Projects

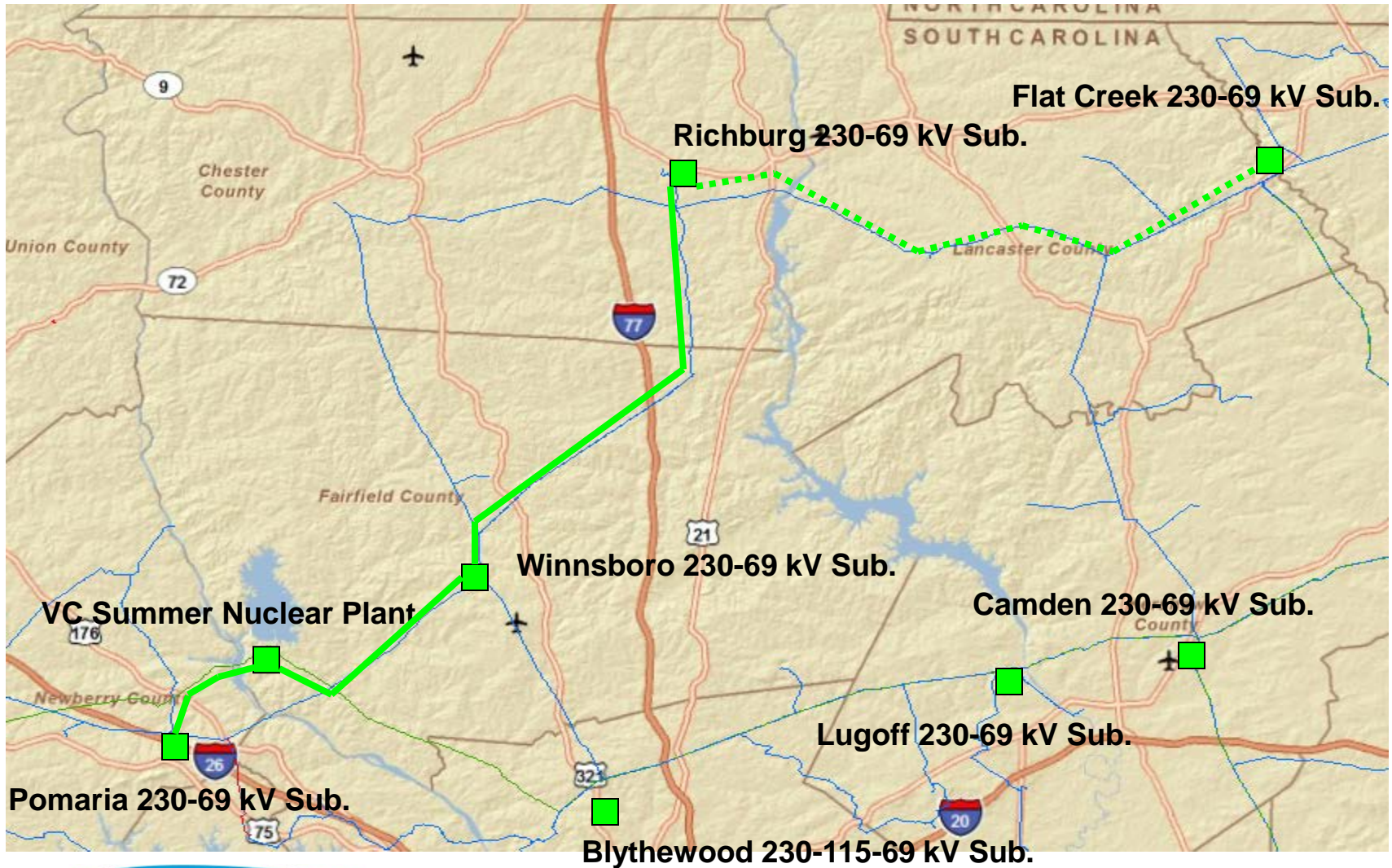
- Purrysburg 230-115 kV Substation 06/2015
- Winyah-Bucksville 230 kV Line 12/2015
- Richburg-Flat Creek 230 kV Line 06/2016
- Bucksville-Garden City 115 kV Line 06/2016
- Bucksville-Myrtle Beach 115 kV Line 12/2016
- Carnes Crossroads-Medway 115 kV Line #2 12/2016
- Jefferies-Medway 115 kV Line #2 12/2016
- Sandy Run 230-115 kV Substation 05/2018
- Marion-Red Bluff 230 kV Line 12/2018
- Pomaria-Sandy Run-Orangeburg 230 kV Line 06/2019

Purrysburg 230-115 kV Substation

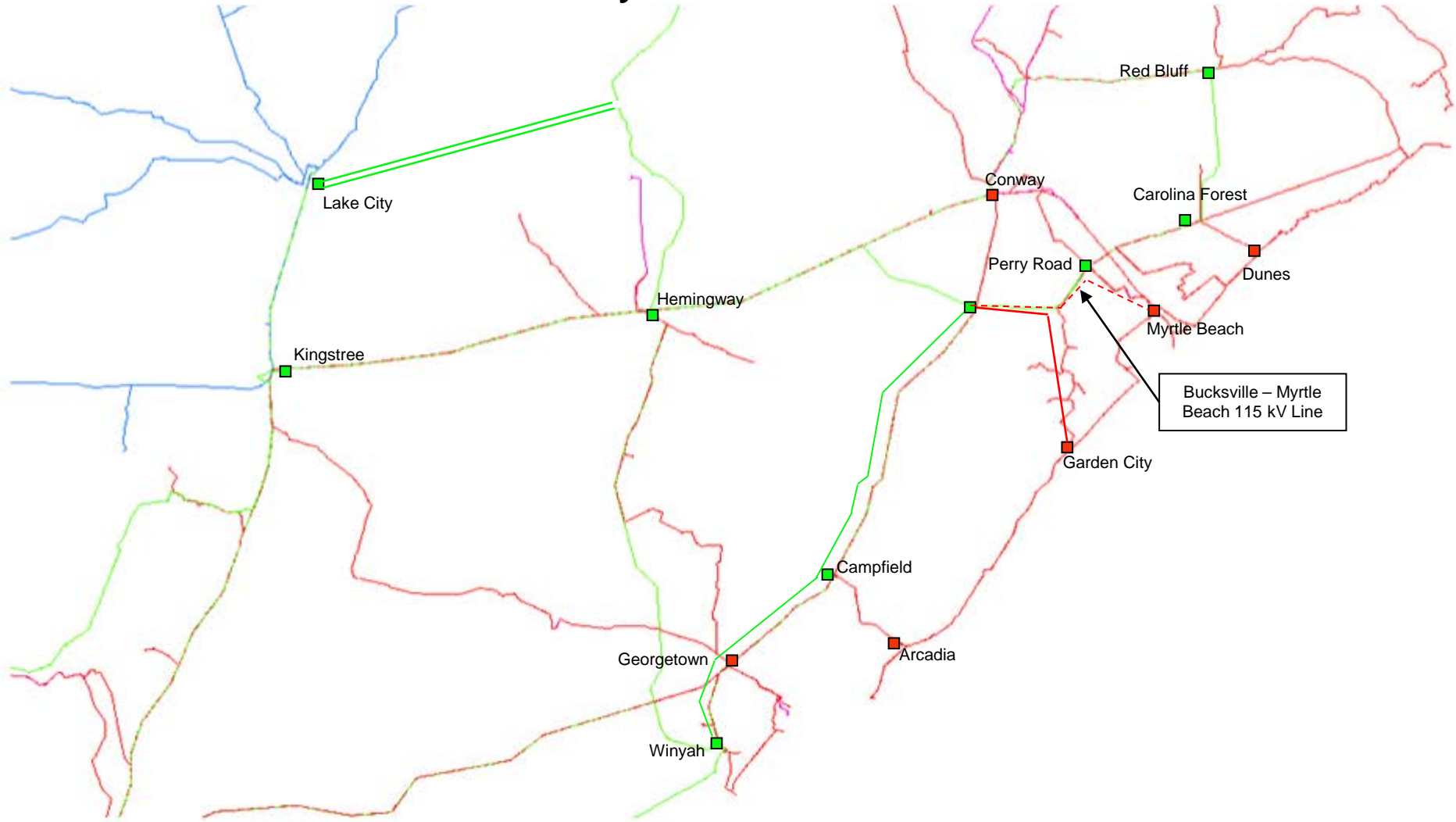


Bucksville Transmission Projects





Bucksville – Myrtle Beach 115 kV Line



Carnes-Medway 115 kV Line #2 Jefferies-Medway 115 kV Line #2

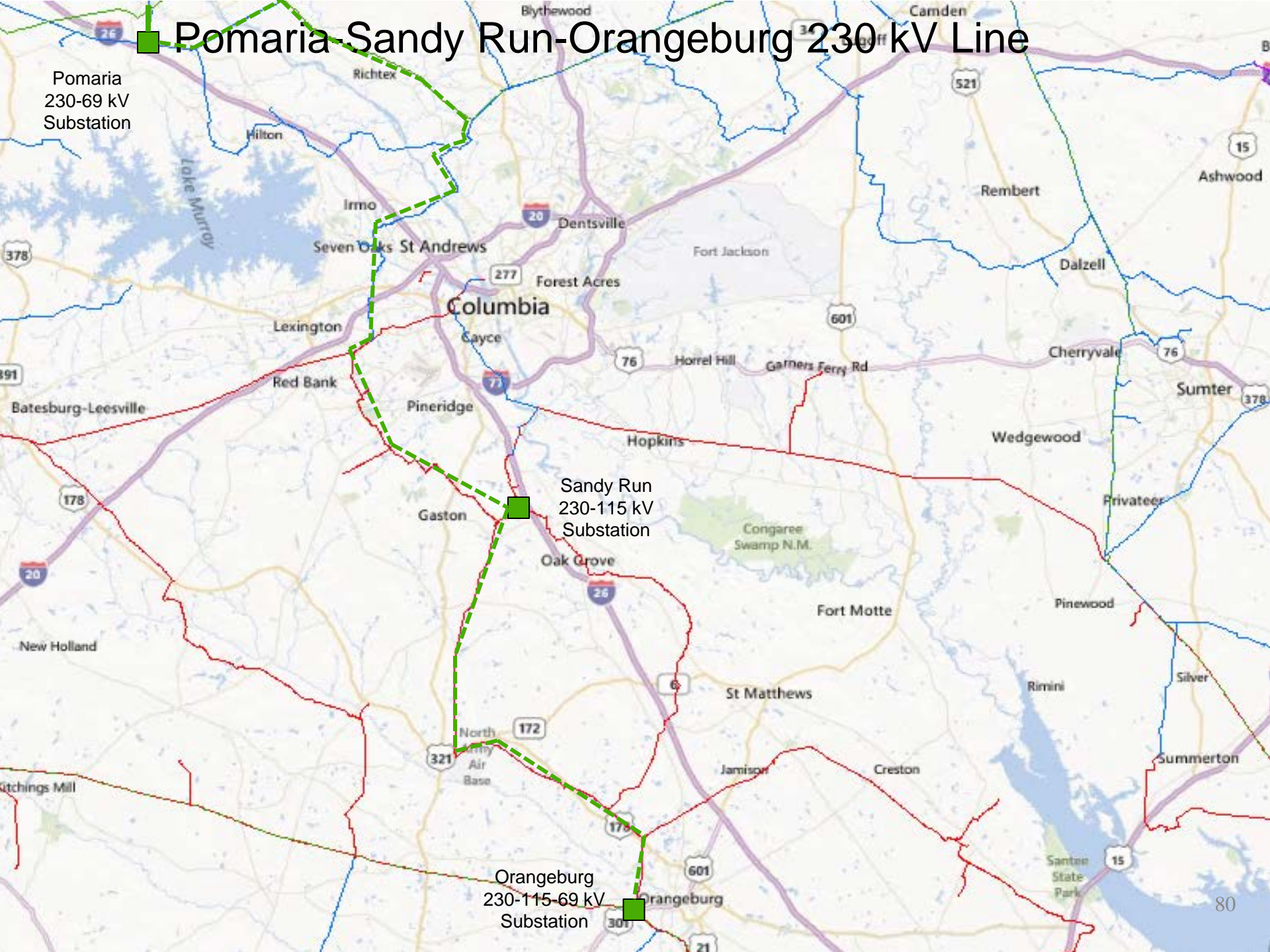


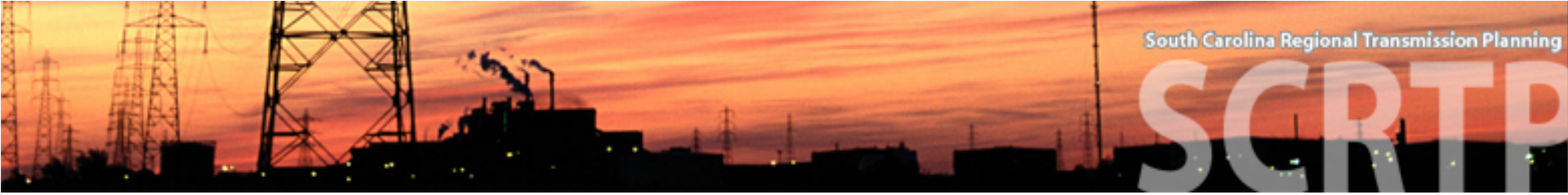
Pomaria-Sandy Run-Orangeburg 230 kV Line

Pomaria
230-69 kV
Substation

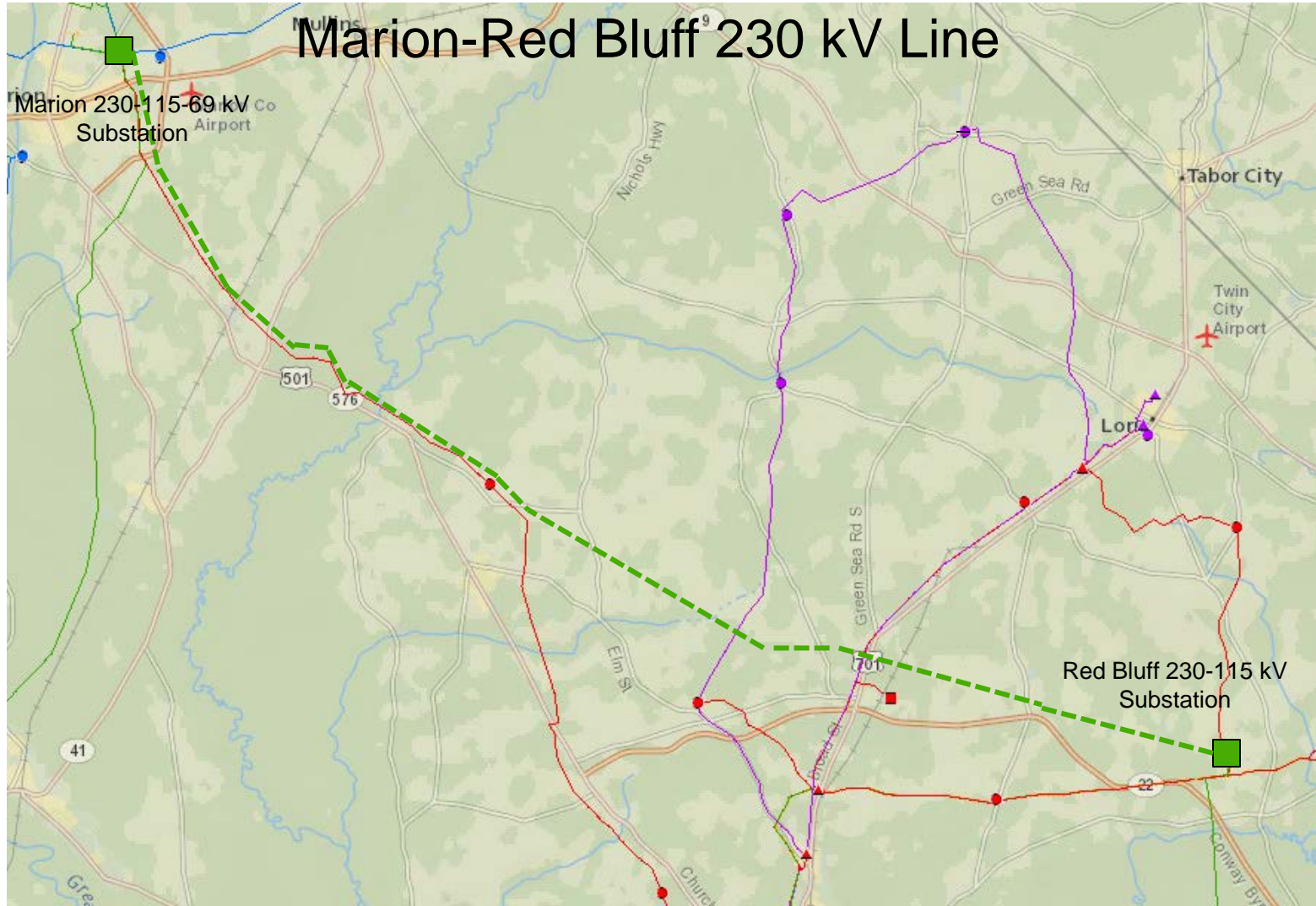
Sandy Run
230-115 kV
Substation

Orangeburg
230-115-69 kV
Substation





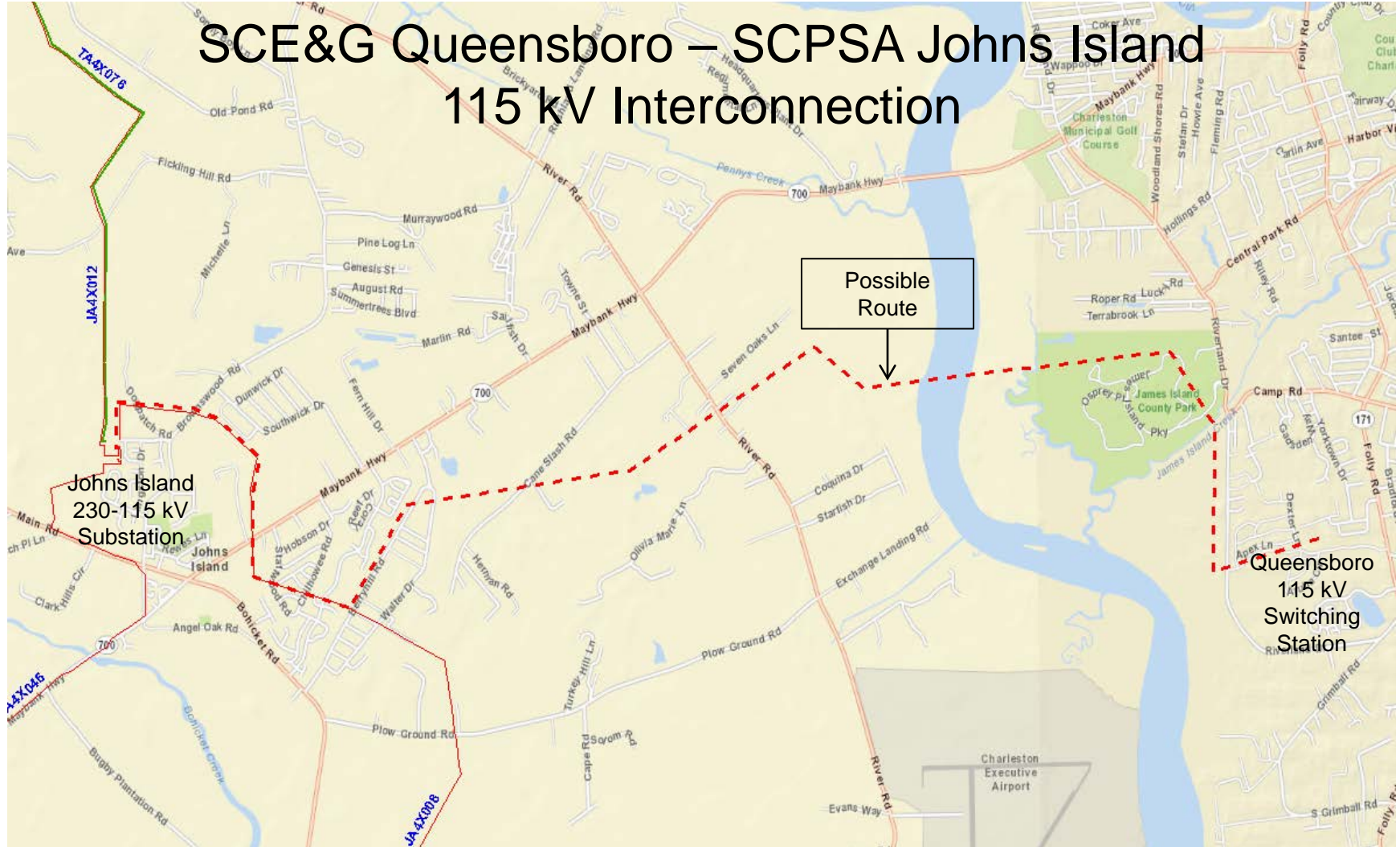
Marion-Red Bluff 230 kV Line



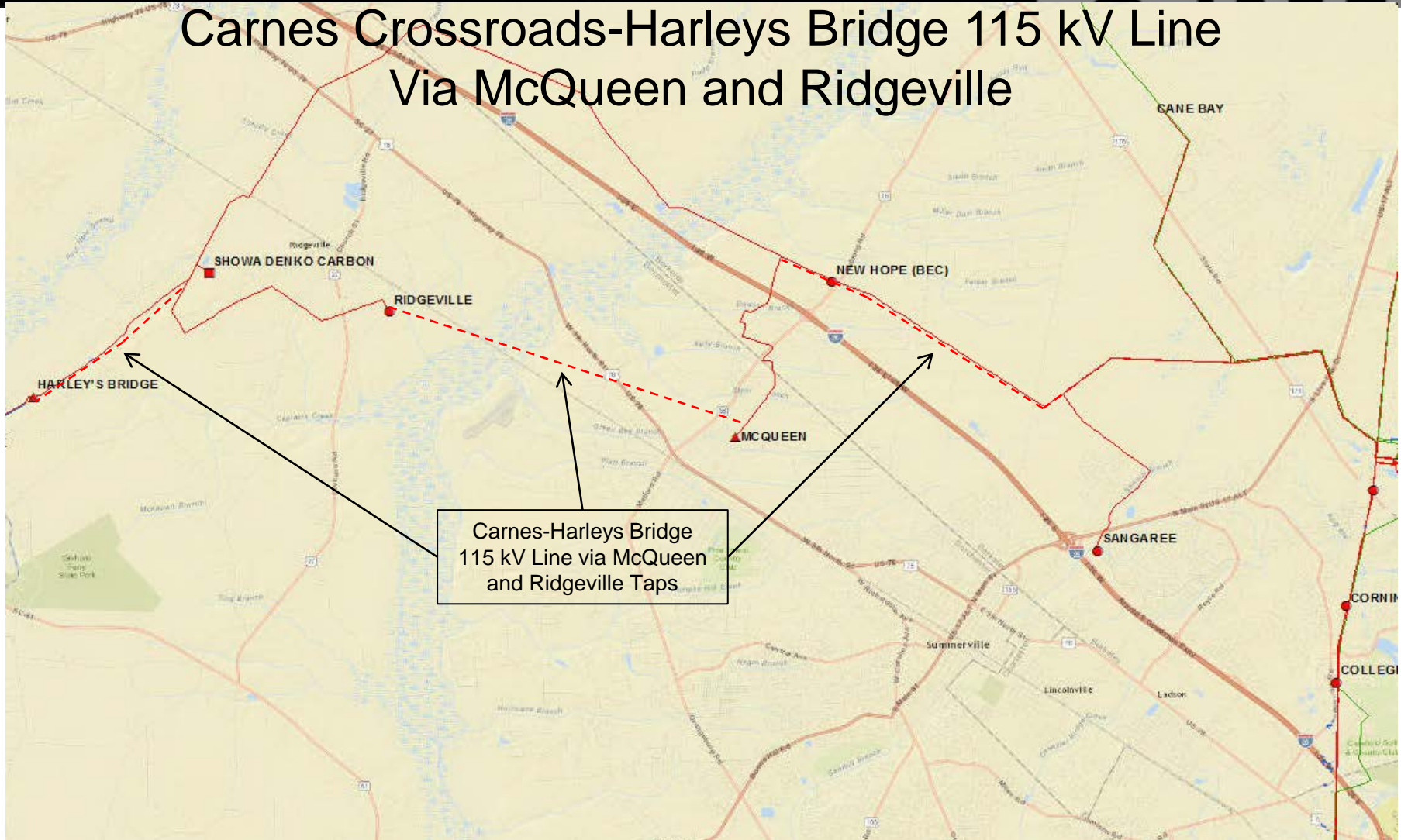
Transmission Network Planned Projects

- New Harleys Bridge 115-69 kV Substation 12/2017
- SCE&G Queensboro-SCPSA Johns Island
115 kV Interconnection 06/2018
- Carnes-Harleys Bridge 115 kV Line via McQueen 12/2019
- Dalzell-Lake City 230 kV Line 04/2020
- Sandy Run-Pinewood 230 kV Line 12/2021

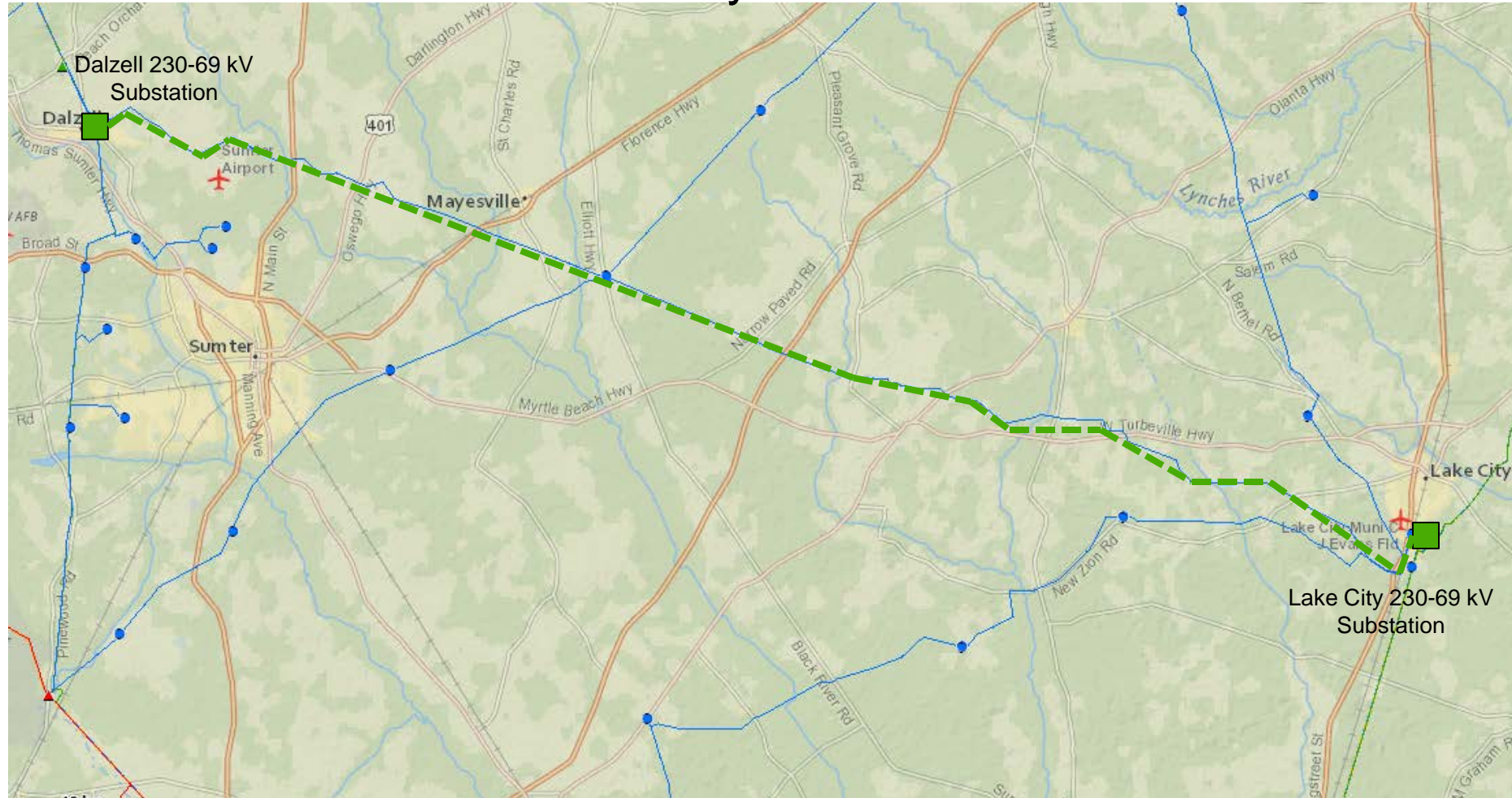
SCE&G Queensboro – SCPSA Johns Island 115 kV Interconnection



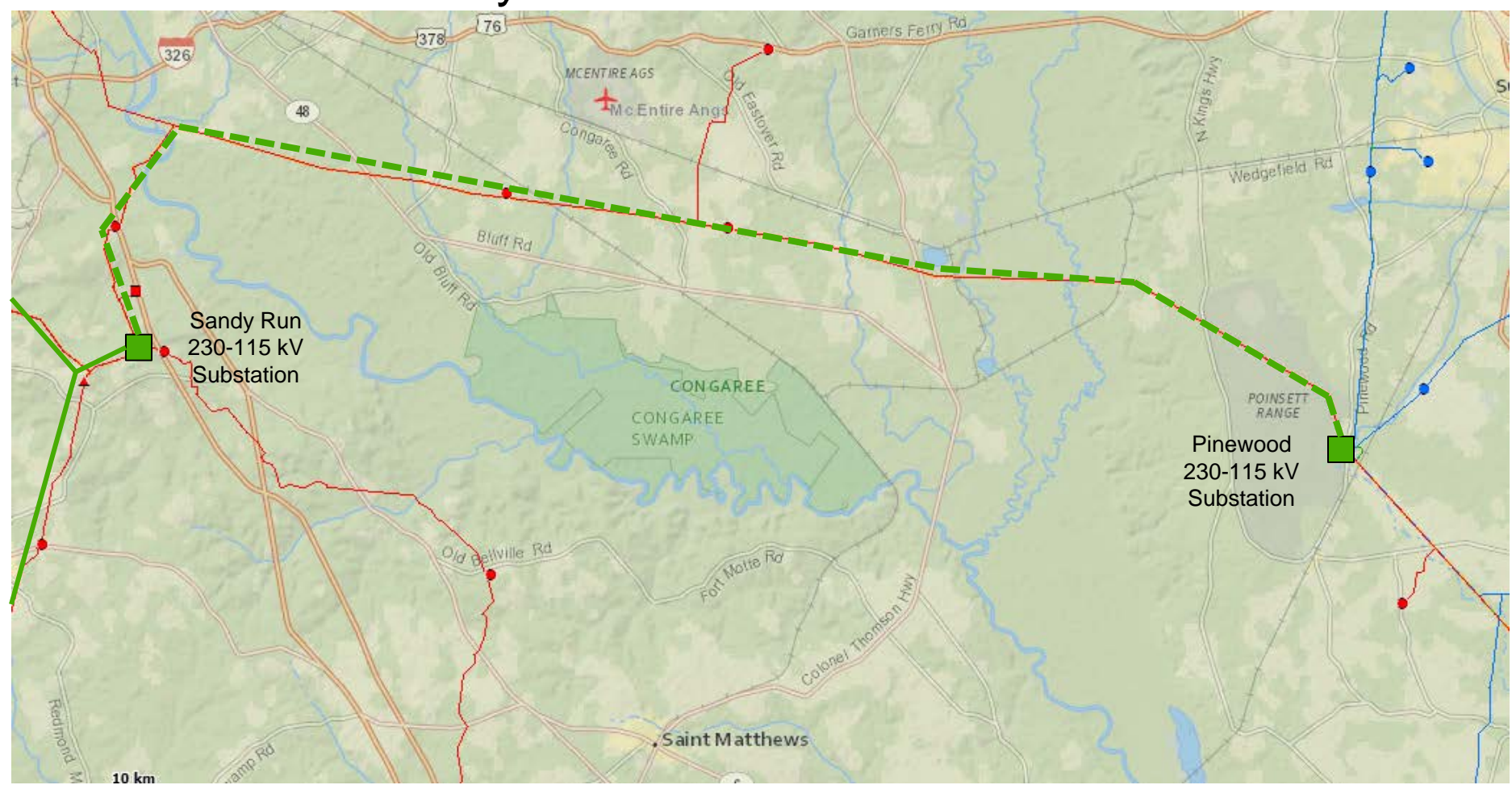
Carnes Crossroads-Harleys Bridge 115 kV Line Via McQueen and Ridgeville



Dalzell-Lake City 230 kV Line



Sandy Run-Pinewood 230 kV Line



Transmission Expansion Plans

Stakeholder Input, Comments and Questions

Power Flow Case Access

South Carolina Regional Transmission Planning
SCRTP

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

Events

The next meeting of the SCRTP Stakeholder Group will be held on June 4, 2015 by web conference.

[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

- [2014-2018 above \\$2M Project Descriptions](#)

Navigation menu:

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- 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](#)

Power Flow Case Access

- Power Flow Starting Point Cases available as of June 15, 2015

<u>ERAG-MMWG 2014 Cases</u>	
2015 Fall Peak	2016 Spring Peak
2015 Spring Light Load	2016 Winter Peak
2015 Spring Peak	2020 Spring Light Load
2015 Summer Shoulder	2020 Summer Peak
2015 Summer Peak	2020 Winter Peak
2015 Winter Peak	2025 Summer Peak

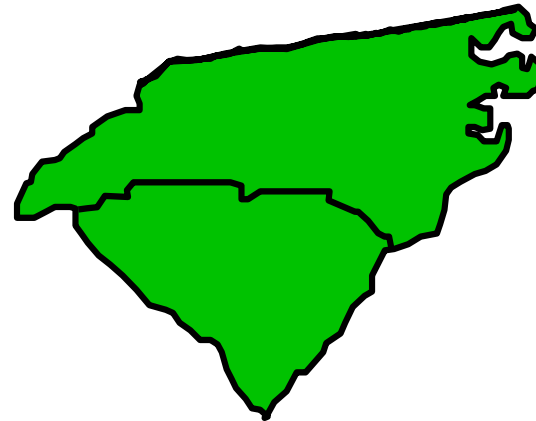
Reliability Assessment Studies

Rick Thornton

Multi-Party Assessments

- Carolina Transmission Coordination Arrangement (CTCA) Assessments
- Southeastern Electric Reliability Corporation (SERC) Assessments
- Eastern Interconnection Reliability Assessment Group (ERAG)
- Eastern Interconnection Planning Collaboration (EIPC)

CTCA Future Year Assessments



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 and assessment and operating activities among the specific parties associated with the CTCA

CTCA Purpose

Interchange Agreements associated with the CTCA

Duke Energy Carolinas (“Duke”) and Duke Energy Progress (“Progress”)

Duke Energy Carolinas (“Duke”) and South Carolina Electric & Gas Company (“SCE&G”)

Duke Energy Carolinas (“Duke”) and South Carolina Public Service Authority (“SCPSA”)

Duke Energy Progress (“Progress”) and South Carolina Electric & Gas Company (“SCE&G”)

Duke Energy Progress (“Progress”) and South Carolina Public Service Authority (“SCPSA”)

South Carolina Electric & Gas Company (“SCE&G”) and South Carolina Public Service Authority (“SCPSA”)

CTCA Power Flow Study Group

- Duke Energy Carolinas (“Duke”)
- Duke Energy Progress (“Progress”)
- South Carolina Electric & Gas (“SCEG”)
- South Carolina Public Service Authority (“SCPSA”)

CTCA Studies

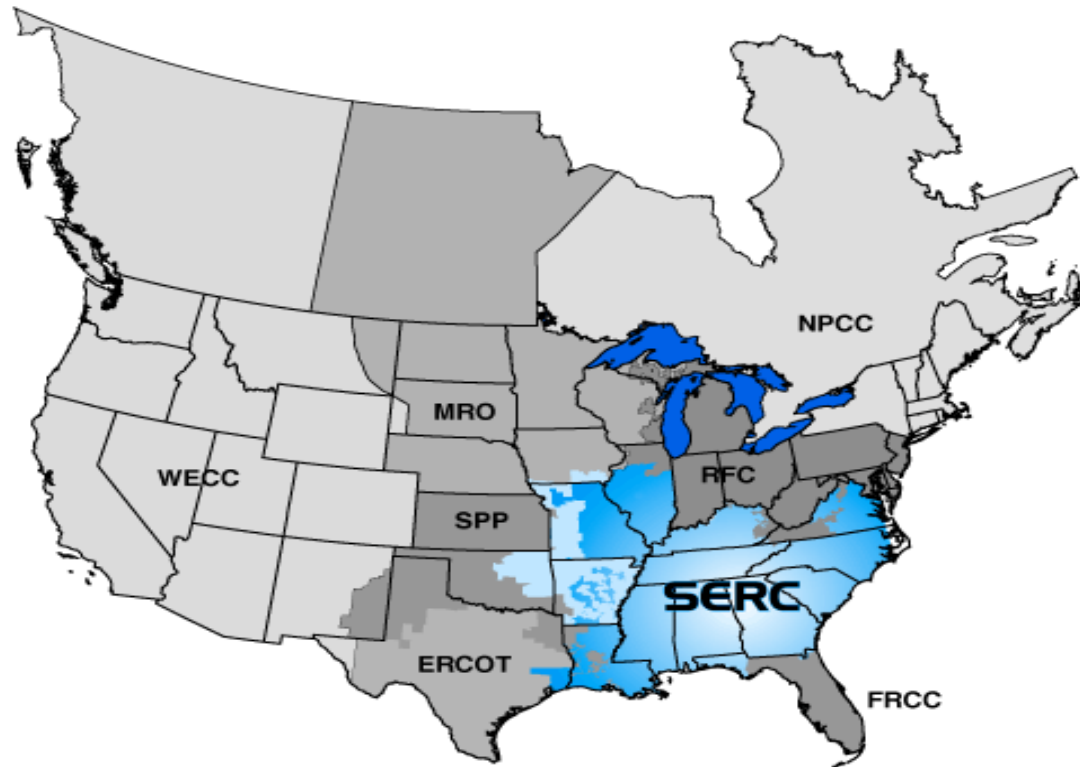
- Assess the existing transmission expansion plans of Duke, Progress, SCEG, and SCPSA to ensure that the plans are simultaneously feasible.
- Identify any potential joint solutions that are more efficient or cost-effective than individual company plans, which also improve the simultaneous feasibility of the Participant companies' transmission expansion plans.
- The Power Flow Study Group ("PFSG") will perform the technical analysis outlined in this study scope under the guidance and direction of the Planning Committee ("PC").

CTCA Studies 2015 Study

- No 2015 study defined

SERC LTSG Assessments

SERC Future Year Assessments Long Term Study Group (LTSG)



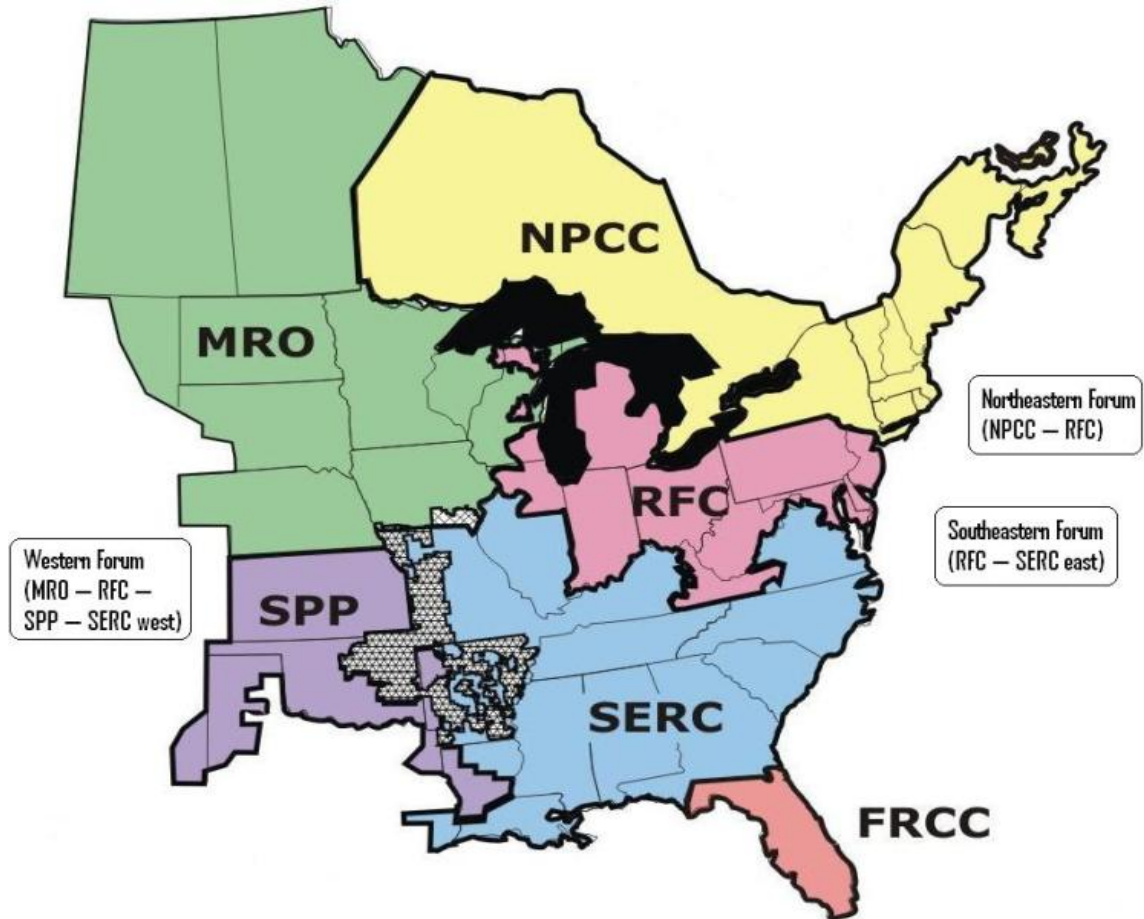
SERC LTSG Study Purpose

- 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 2015 Work Schedule

- LTSG Data Bank Update –May 12-14 Hosted by Southern
- Study Case: 2020 Summer Peak Load
- Work completed by LTSG June thru October
- Final Report December, 2015

ERAG Assessments



ERAG Assessments

- No Long Term Study Performed

EIPC Assessments

Model Development and Evaluation

- Develop 2025 summer and winter models
- Perform contingency and transfer analysis
- Identify gaps and develop enhancements as appropriate
- Provide feedback to regional planning processes

Next SCRTP Meeting

- Update on FERC Order 1000
- SCE&G will review, discuss and receive input from the SCSG on results of requested economic power transfer sensitivities conducted by the SCRTP transmission providers
- Discuss how to acquire all data and study assumptions used to conduct the power transfer sensitivity studies
- SCRTP Email Distribution List will be notified
- Register online

South Carolina Regional Transmission Planning

Stakeholder Meeting

Web Conference

June 4, 2015