South Carolina Regional Transmission Planning

Stakeholder Meeting

Teams Meeting

October 6, 2022 9:00am – 11:00am

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Purpose and Goals for Today's Meeting

- Overview of the Regional and Interregional Planning Process
- Review and Discuss the Initial Results of the Stakeholder Selected Economic Power Transfer Sensitivities

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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:

- 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

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SCRTP Interregional Process

- Interregional 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

- September 20, 2022 – Joint SCRTP/SERTP Meeting (Teams)
  - Local and Regional Plans for near the seams were 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 – none proposed

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Economic Transmission Planning Studies

Edward Chapman/
Jake Biddix

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Study Methodology

- Linear transfer analysis using PowerGem's TARA Software. Analysis includes single contingencies of SERC while monitoring the DESC's and Santee Cooper's internal Transmission Systems.

- A Thermal and Voltage analysis using PowerGem's TARA and/or PowerWorld Simulator Software. This analysis of DESC's and Santee Cooper's internal transmission systems included single contingencies, double contingencies and selected bus outages with and without the simulated transfer in effect. However, this analysis is not a complete testing of NERC TPL standards.

Case Development

- The most current MMWG models were used for the systems external to DESC and SCPSA as a starting point for the study case.

- The study cases include detailed internal models for DESC and SCPSA. The study cases include new transmission additions currently planned to be in-service for the given year (i.e. in-service by winter 2022 for 2022W case).

- Santee Cooper's 450 MW TSRs with SOCO and Duke were included in the base cases

Case Development

- DESC and SCPSA have coordinated interchange which includes all confirmed long term firm transmission reservations with roll-over rights applicable to the study year.
- The coordinated cases were used to build base cases.
- Base cases were used to build transfer cases.

Study Results

- DESC and SCPSA have reported results based on thermal loading and voltage violations in accordance with their planning criteria.

- Overloaded facilities that had a low response to the requested transfer were excluded and problems or issues identified that are local area in nature were also excluded.

2022 Economic Planning Scenarios

Selected by Stakeholders During the May 24, 2022 Meeting

#	Source	Sink	Amount (MW)	Year	Study Conditions
1	DEC	SCPSA	200	2026	Summer
2	DEC	SCPSA	200	202627	Winter
3	SOCO	SCPSA	600	202627	Winter
4	DEC	SCPSA	200	2031	Summer
5	DEC	SCPSA	200	203132	Winter

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Power Flow Base Cases

- 2021 MMWG Series PSSE Models with DESC and SCPSA 2022 Internal Model Updates
  - 2026 Summer
  - 2026/27 Winter
  - 2031 Summer
  - 2031/32 Winter

Preliminary Result Components

- The following information is preliminary and subject to change pursuant to additional analyses.
- The following information does not represent a commitment to proceed with the recommended enhancements nor implies that the recommended enhancements could be implemented by the study dates.
- These potential solutions only address constraints identified within the respective areas that comprise the SCRTP. Balancing Areas external to the SCRTP were not monitored, which could result in additional limitations and required system enhancements.

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Scenario 1

2026 Summer

DUK – SCPSA 200 MW

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Preliminary Results – SCPSA

DUK – SCPSA 200 MW
2026 Summer Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Purrysburg – McIntosh #1/2 230 kV Line	102%	104%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of Jasper Units 1&4	New Ties
Purrysburg – McIntosh #1/2 230 kV Line	102%	104%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of all Jasper Units	New Ties

Operating Guides can be developed to mitigate the contingency loading indicated in the Base Case

- Purrysburg - McIntosh #1/2 230 kV Line Constrained Facility:
  - Start available Gas Turbines and Hydro Units. Curtail the TSR by 200 MW.

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Preliminary Results – SCPSA

DUK – SCPSA 200 MW

2026 Summer Study

Project	Description	Cost (2022$)	Duration (Months)
*New Ties to be determined		TBD	TBD
	TOTAL (2022$)	$TBD	

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Preliminary Results – DESC

DUK – SCPSA 200 MW

2026 Summer Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Graniteville #2 – Sand Bar Ferry 115kV SOCO Tie	104%	107%	Loss of Toolebeck – South Augusta 230kV SOCO Tie and SRS – Vogtle 230kV SOCO Tie	DESC1
Okatie – Yemassee 230kV	99%	101%	Loss of Bluffton (SC) – Purrysburg (SC) 230kV and Jasper – Yemassee 230kV	DESC2
Church Creek – Faber Place 115kV	95%	100%	Loss of Faber Place #1 & #2 230/115kV Transformer	DESC3

*DESC has Op Guides to reduce some base case overloads that would not be relied on in transfer cases

**Potentially overloaded or heavily loaded facilities that had a low response to the requested transfer were excluded and problems or issues identified that are local area in nature were excluded

Preliminary Results – DESC

DUK – SCPSA 200 MW

2026 Summer Study

Project	Description	Cost (2022$)	Duration (Months)
DESC1	Install series reactor on the Graniteville #2 – Sand Bar Ferry 115kV Tie.	$3,500,000	24-36
DESC2	Create a Jasper – Ritter 230kV line. New R/W needed from Jasper – Yemassee but then connect with already planned future Ritter – Yemassee 230kV line at Yemassee.	$77,000,000	66-72
DESC3	Rebuild Church Creek – Faber Place 230/115kV as B-1272 ACSR	$8,600,000	36
	TOTAL (2022$)	$89,100,000	66-72

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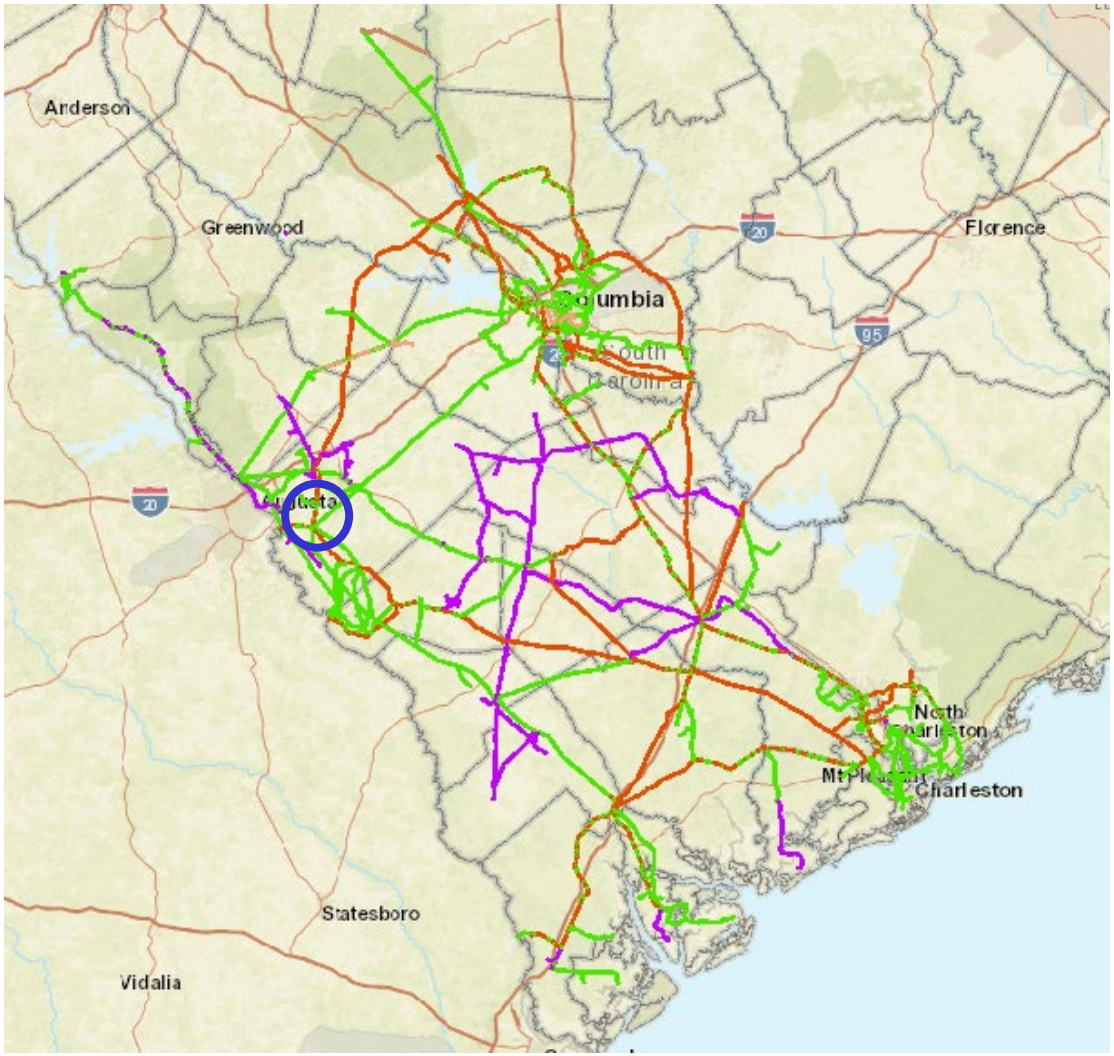
DESC1 – Reactor on Graniteville #2 – Sand Bar Ferry 115kV Tie Line



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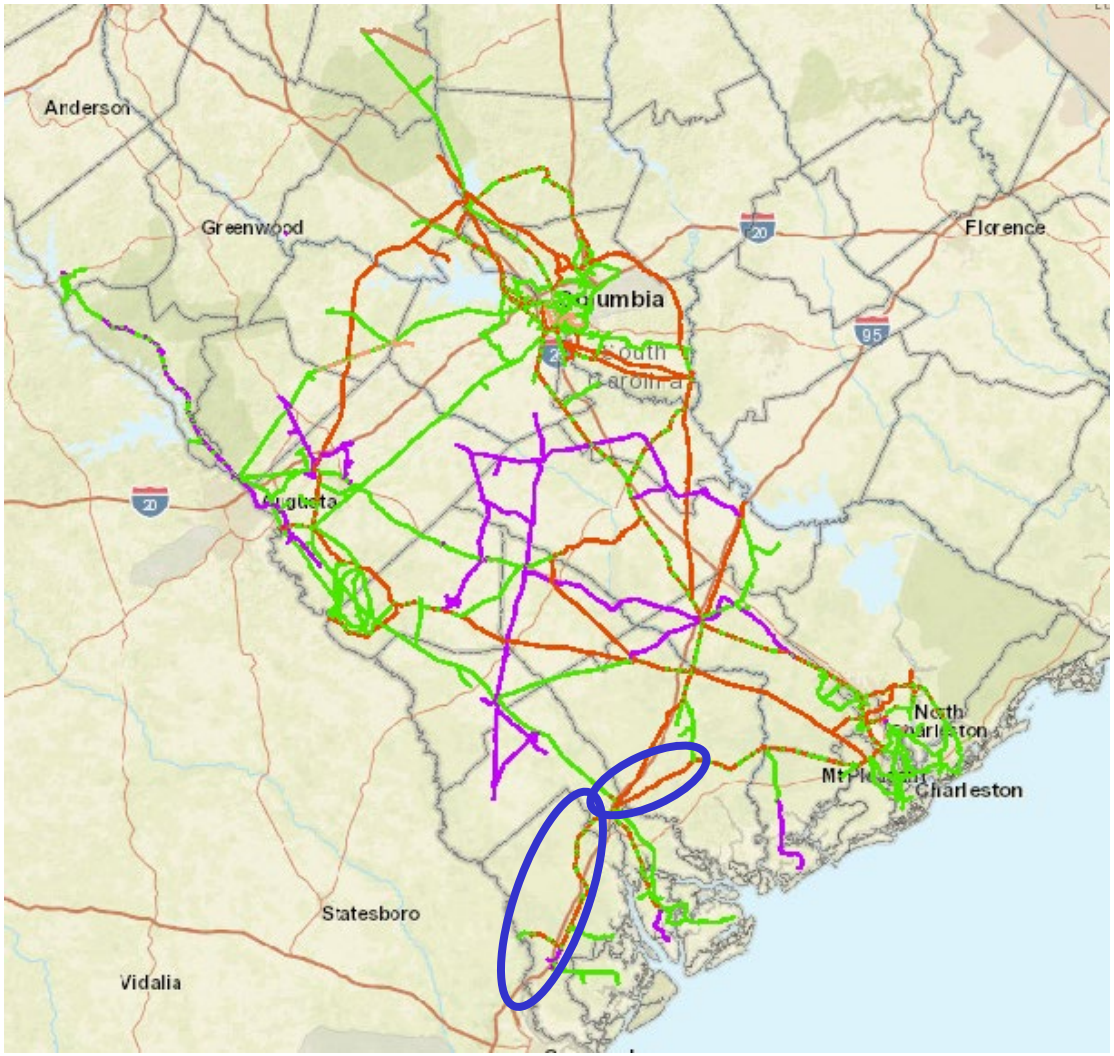
DESC2 - Jasper – Ritter 230kV line



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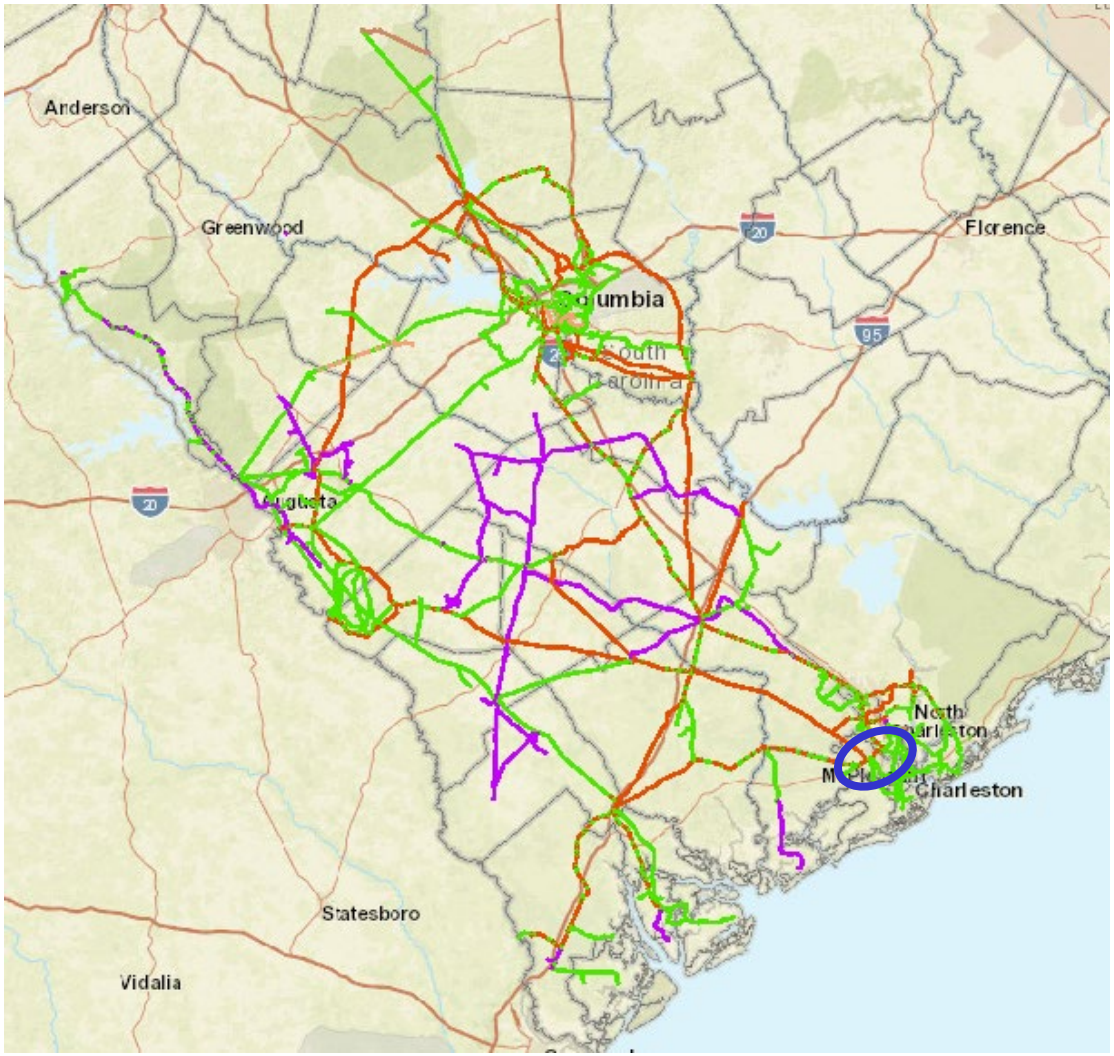
DESC3 – Church Creek – Faber Place 230/115kV line



Scenario 2

2026/27 Winter

DUK – SCPSA 200 MW

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Preliminary Results – SCPSA

DUK – SCPSA 200 MW
2026/27 Winter Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Purrysburg – McIntosh #1/2 230 kV Line	107%	108%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of Jasper Units 1&4	New Ties
Purrysburg – McIntosh #1/2 230 kV Line	107%	108%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of all Jasper Units	New Ties

Operating Guides can be developed to mitigate the contingency loading indicated in the Base Case

- Purrysburg - McIntosh #1/2 230 kV Line Constrained Facility:
  - Start available Gas Turbines and Hydro Units. Curtail the TSR by 200 MW.

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Preliminary Results – SCPSA

DUK – SCPSA 200 MW
2026/27 Winter Study

Project	Description	Cost (2022$)	Duration (Months)
*New Ties to be determined		TBD	TBD
	TOTAL (2022$)	$TBD	

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Preliminary Results – DESC

DUK – SCPSA 200 MW
2026/27 Winter Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
None Identified				

*DESC has Op Guides to reduce some base case overloads that would not be relied on in transfer cases

**Potentially overloaded or heavily loaded facilities that had a low response to the requested transfer were excluded and problems or issues identified that are local area in nature were excluded

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Preliminary Results – DESC

DUK – SCPSA 200 MW
2026/27 Winter Study

Project	Description	Cost (2022$)	Duration (Months)
None Identified			
	TOTAL (2022$)		

Scenario 3

2026/27 Winter

SOCO – SCPSA 600 MW

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Preliminary Results – SCPSA

SOCO – SCPSA 600 MW

2026/27 Winter Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Purrysburg – McIntosh #1/2 230 kV Line	107%	117%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of Jasper Units 1&4	New Ties
Purrysburg – McIntosh #1/2 230 kV Line	107%	117%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of all Jasper Units	New Ties
Aiken 3 230-115 kV Transformer #1	94%	99%	Loss of Aiken 3 230 kV Bus #2	SC1
Aiken 3 230-115 kV Transformer #1/2	98%	101%	Loss of Aiken 3 230-115 kV Transformer #1/2 & Loss of Aiken 1 – Briggs Road 115 kV line	SC1

Operating Guides can be developed to mitigate the contingency loading indicated in the Base Case

- Purrysburg - McIntosh #1/2 230 kV Line Constrained Facility:
  - Start available Gas Turbines and Hydro Units. Curtail the TSR by 200 MW.

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Preliminary Results – SCPSA

SOCO – SCPSA 600 MW

2026/27 Winter Study

Project	Description	Cost (2022$)	Duration (Months)
	*New Ties to be determined	TBD	TBD
SC1	Replace Aiken 230-115 kV Transformers with 250 MVA rated transformers	$9,000,000	30
	TOTAL (2022$)	TBD	TBD

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Preliminary Results – DESC

SOCO – SCPSA 600 MW
2026/27 Winter Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Graniteville #2 – Sand Bar Ferry 115kV SOCO Tie	92%	109%	Loss of Toolebeck – South Augusta 230kV SOCO Tie and SRS – Vogtle 230kV SOCO Tie	DESC1
Okatie – Yemassee 230kV	97%	106%	Loss of Bluffton (SC) – Purrysburg (SC) 230kV and Jasper – Yemassee 230kV	DESC2
Jasper – Yemassee 230kV	94%	103%	Loss of Bluffton (SC) – Purrysburg (SC) 230kV and Okatie – Yemassee 230kV	DESC2

*DESC has Op Guides to reduce some base case overloads that would not be relied on in transfer cases

**Potentially overloaded or heavily loaded facilities that had a low response to the requested transfer were excluded and problems or issues identified that are local area in nature were excluded

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Preliminary Results – DESC

SOCO – SCPSA 600 MW

2026/27 Winter Study

Project	Description	Cost (2022$)	Duration (Months)
DESC1	Install series reactor on the Graniteville #2 – Sand Bar Ferry 115kV Tie.	$3,500,000	24-36
DESC2	Create a Jasper – Ritter 230kV line. New R/W needed from Jasper – Yemassee but then connect with already planned future Ritter – Yemassee 230kV line at Yemassee.	$77,000,000	66-72
	TOTAL (2022$)	$80,500,000	66-72

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Scenario 4

2031 Summer

DEC – SCPSA 200 MW

Preliminary Results – SCPSA

DEC – SCPSA 200 MW

2031 Summer Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Purrysburg – McIntosh #1/2 230 kV Line	99%	102%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of Jasper Units 1&4	New Ties
Purrysburg – McIntosh #1/2 230 kV Line	99%	102%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of all Jasper Units	New Ties

Preliminary Results – SCPSA

DEC – SCPSA 200 MW

2031 Summer Study

Project	Description	Cost (2022$)	Duration (Months)
*New Ties to be determined		TBD	TBD
	TOTAL (2022$)	$TBD	

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Preliminary Results – DESC

DUK – SCPSA 200 MW

2031 Summer Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Graniteville #2 – Sand Bar Ferry 115kV SOCO Tie	99%	101%	Loss of Toolebeck – South Augusta 230kV SOCO Tie and SRS – Vogtle 230kV SOCO Tie	DESC1
Okatie – Yemassee 230kV	97%	100%	Loss of Bluffton (SC) – Purrysburg (SC) 230kV and Jasper – Yemassee 230kV	DESC2
Church Creek – Faber Place 115kV	100%	103%	Loss of Faber Place #1 & #2 230/115kV Transformer	DESC3

*DESC has Op Guides to reduce some base case overloads that would not be relied on in transfer cases

**Potentially overloaded or heavily loaded facilities that had a low response to the requested transfer were excluded and problems or issues identified that are local area in nature were excluded

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Preliminary Results – DESC

DUK – SCPSA 200 MW

2031 Summer Study

Project	Description	Cost (2022$)	Duration (Months)
DESC1	Install series reactor on the Graniteville #2 – Sand Bar Ferry 115kV Tie.	$3,500,000	24-36
DESC2	Create a Jasper – Ritter 230kV line. New R/W needed from Jasper – Yemassee but then connect with already planned future Ritter – Yemassee 230kV line at Yemassee.	$77,000,000	66-72
DESC3	Rebuild Church Creek – Faber Place 230/115kV as B-1272 ACSR	$8,600,000	36
	TOTAL (2022$)	$89,100,000	66-72

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Scenario 5

2031/32 Winter

DEC – SCPSA 200 MW

Preliminary Results – SCPSA

DEC – SCPSA 200 MW
2031/32 Winter Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
Purrysburg – McIntosh #1/2 230 kV Line	111%	112%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of Jasper Units 1&4	New Ties
Purrysburg – McIntosh #1/2 230 kV Line	111%	112%	Loss of Purrysburg – McIntosh #1/2 230 kV Line & Loss of all Jasper Units	New Ties

Operating Guides can be developed to mitigate the contingency loading indicated in the Base Case

- Purrysburg - McIntosh #1/2 230 kV Line Constrained Facility:
  - Start available Gas Turbines and Hydro Units. Curtail the TSR by 300 MW.

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Preliminary Results – SCPSA

DEC – SCPSA 200 MW
2031/32 Winter Study

Project	Description	Cost (2022$)	Duration (Months)
*New Ties to be determined		TBD	TBD
	TOTAL (2022$)	$TBD	

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Preliminary Results – DESC

DUK – SCPSA 200 MW
2031/32 Winter Study

Constrained Facility	% Base Loading	% Study Loading	Contingency	Project
None Identified				

*DESC has Op Guides to reduce some base case overloads that would not be relied on in transfer cases

**Potentially overloaded or heavily loaded facilities that had a low response to the requested transfer were excluded and problems or issues identified that are local area in nature were excluded

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Preliminary Results – DESC

DUK – SCPSA 200 MW
2031/32 Winter Study

Project	Description	Cost (2022$)	Duration (Months)
None Identified			
	TOTAL (2022$)		

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2022 Economic Planning Scenarios

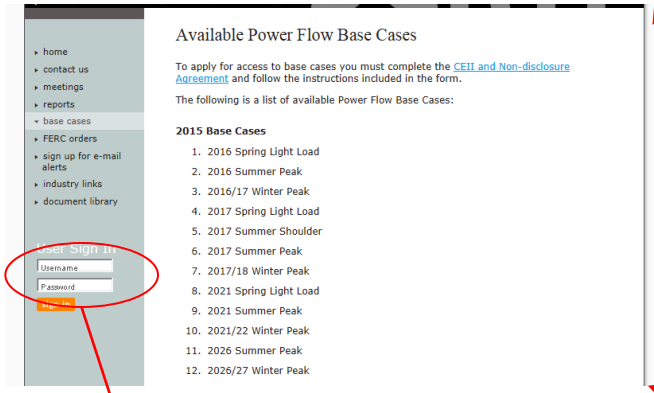
Linear Transfer Results - SCPSA

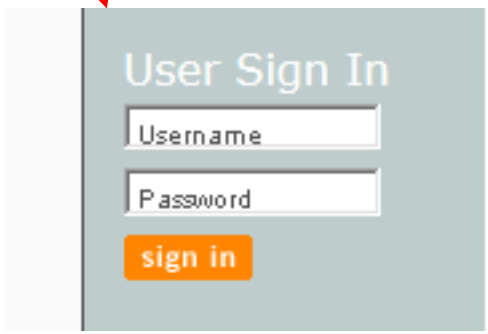
#	Source	Sink	MW	Year	FCITC LIMIT	LIMIT/CONTINGENCY
1	DEC	SCPSA	200	2026S	No Limit found	N/A
2	DEC	SCPSA	200	2026/27W	No Limit found	N/A
3	SOCO	SCPSA	600	2026/27W	No Limit found	N/A
4	DEC	SCPSA	200	2031S	No Limit found	N/A
5	DEC	SCPSA	200	2031/32W	No Limit Found	N/A

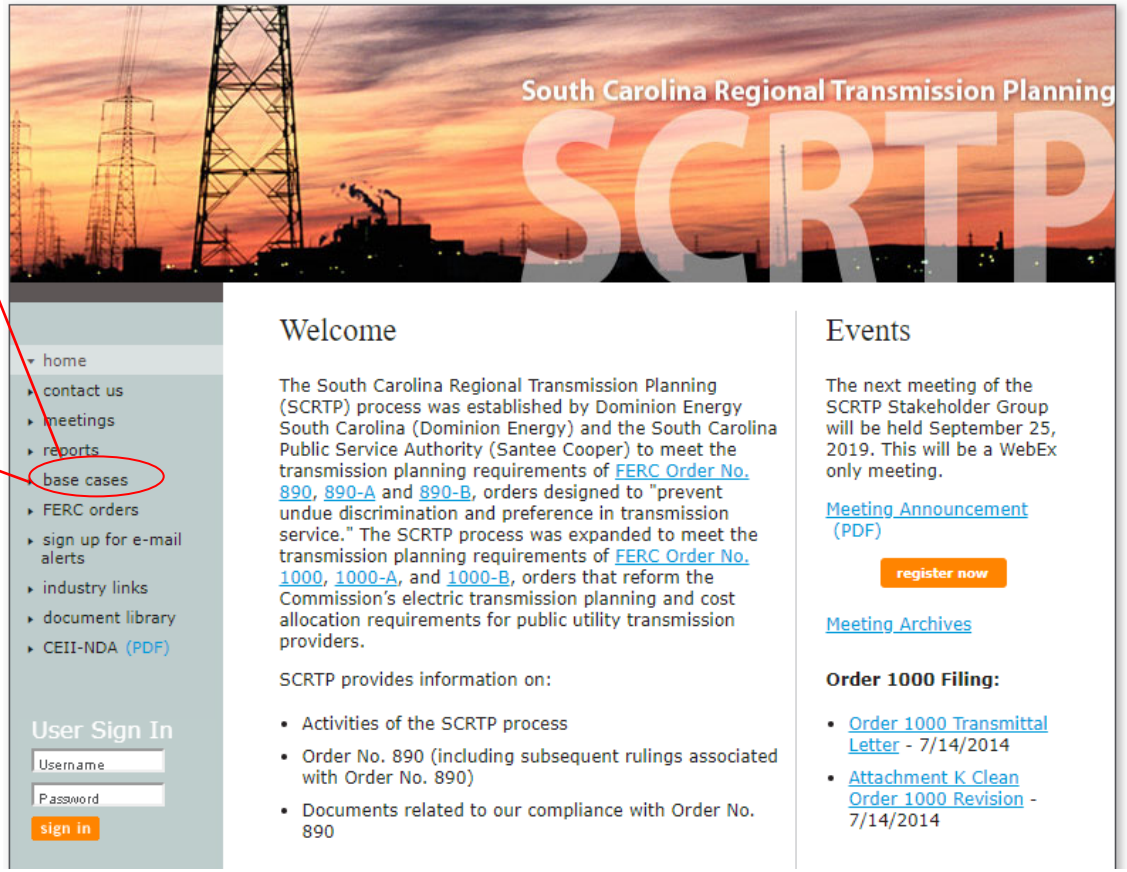
Report and Power Flow Case Access

- Draft reports will be provided to stakeholders
- Power Flow Starting Point Cases also available

https://www.SCRTP.com/home







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Economic Transmission Planning Studies Initial Findings

Stakeholder Input, Comments and Questions

Next SCRTP Meeting

- Key assumptions and data used for modeling
- Reliability Planning process
- Review all major projects included in current Local Transmission Plans
- Review and discuss Multi-Party Assessment Studies
- SCRTP Email Distribution List will be notified
- Register online

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Stakeholder Meeting

Teams Meeting

October 6, 2022 9:00am – 11:00am

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