McClellanville 115 kV Transmission Line Proposal

Scoping Meeting

September 29, 2010

Introduction – What is RUS?

Rural Electrification Administration (REA)

Farmers Home Administration (FmHA) – Water/Waste Programs

Connecting Rural America

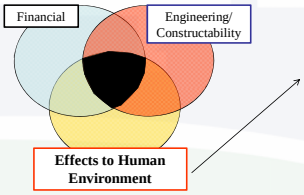
RUS

Rural Utilities Service

Mission: improve access to affordable, high-quality utility infrastructure for all people in rural America.

Introduction

RUS Decision-making



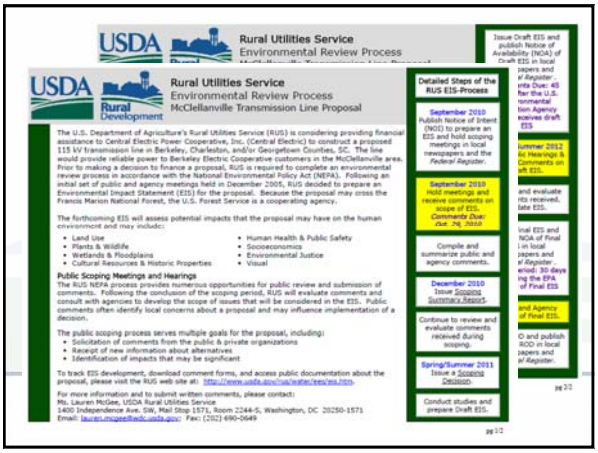
Human Environment

- Public & Private Land Use
- Cultural Resources & Historic Properties
- Human Health & Safety
- Plants & Wildlife (includes sensitive & protected species)
- Sensitive habitat (includes wetlands & unique ecosystems)
- Socioeconomics
- Environmental Justice
- Aesthetics, etc.

What has happened to date?

- December 2005: Public and agency scoping meetings were held and comments were evaluated
- October 2007: RUS issued a Scoping Summary/Decision report (available for public review at: http://www.usda.gov/rus/water/ees/eis.htm)
- September 2010: Project team updated the preliminary engineering/corridor siting documents in response to:
  - Comments received during scoping about the GIS model
  - New information about residences, endangered species, cultural resources, etc.

RUS EIS-PROCESS



What will happen before the EIS is issued?

- December 2010: RUS will issue a scoping summary report
- Spring/Summer 2011: RUS will issue a scoping decision report
  - Documents how the project team decided which corridors will be evaluated in further detail in the EIS. Decision will be based on comments received during scoping and on consideration of RUS' three decision-making criteria: cost, engineering, and human environ.
- The EIS:
  - will identify a preferred corridor – may not identify a route within the corridor
  - may not evaluate in detail all the corridor alternatives presented in the macro-corridor study

How do I participate in this process?

- Attend public meetings & provide feedback
- Request addition to project mailing list
- Review preliminary documents:
  http://www.usda.gov/rus/water/ees/eis.htm
  - Alternatives Evaluation Study
  - Macro-Corridor Study
- Submit written comments
  - Comments re: scoping due **Friday, Oct. 29, 2010**
  - When issued, comment on draft & final EIS

How do I participate in this process?

- Resources
  - RUS EIS webpage – online repository of RUS documentation for the McClellanville 115 kV Transmission Line proposal
    http://www.usda.gov/rus/water/ees/eis.htm
  - Council on Environmental Quality's Citizen's Guide to the NEPA: Having your Voice Heard
    http://ceq.hss.doe.gov/publications/citizens_guide_to_nepa.html
  - Advisory Council on Historic Preservation's Protecting Historic Properties: A Citizen's Guide to Section 106 Review
    http://www.achp.gov/docs/CitizenGuide.pdf

McClellanville Power Supply

Alternative Evaluation Study

September 2010

McClellanville Power Supply
Alternative Evaluation Study

- Description of Central Electric Power Cooperative
- Purpose/Need for the Proposal
- Project Description/Proposed Action
- Alternative Evaluation

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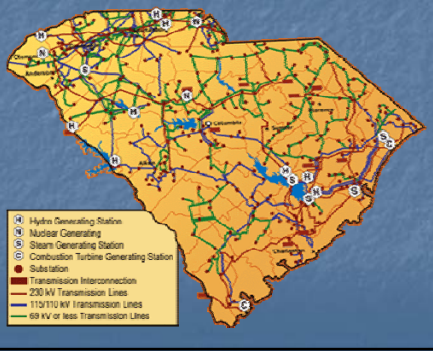
Transmission Serving Cooperatives



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Mission Statement

- To provide a reliable, long-term, and stable supply of power
- To accommodate growth at the lowest possible cost while maintaining good utility practices
- To secure reliable delivery of power when and where desired within guidelines
- To assist in any additional energy-related or delivery-related services as directed by the Board of Trustees

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McClellanville Power Supply
Alternative Evaluation Study

- Description of Central Electric Power Cooperative
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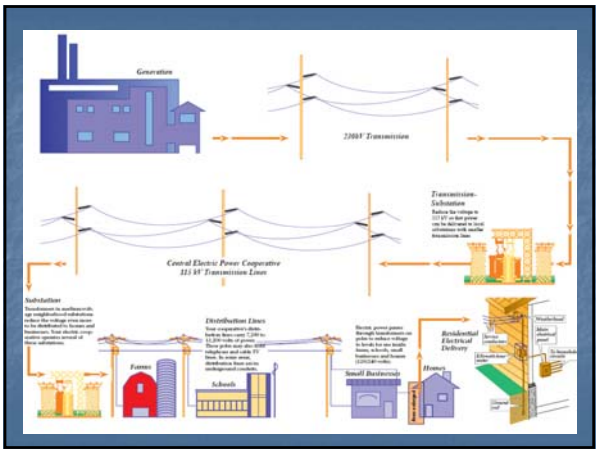

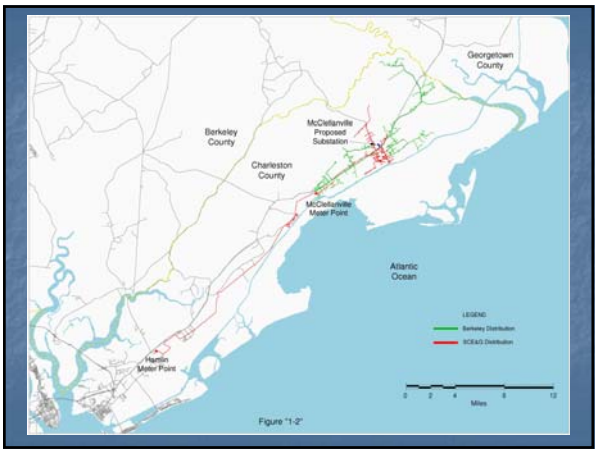

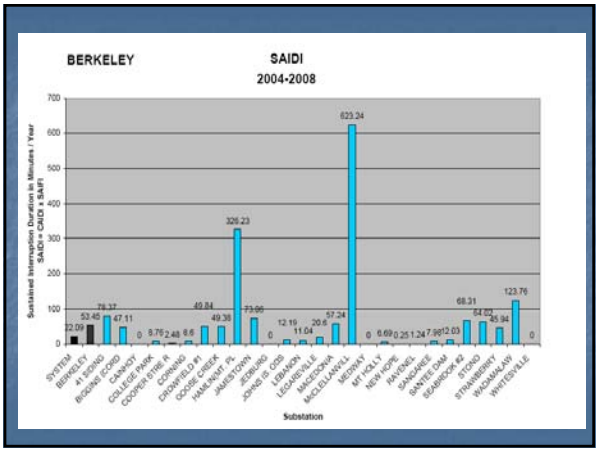

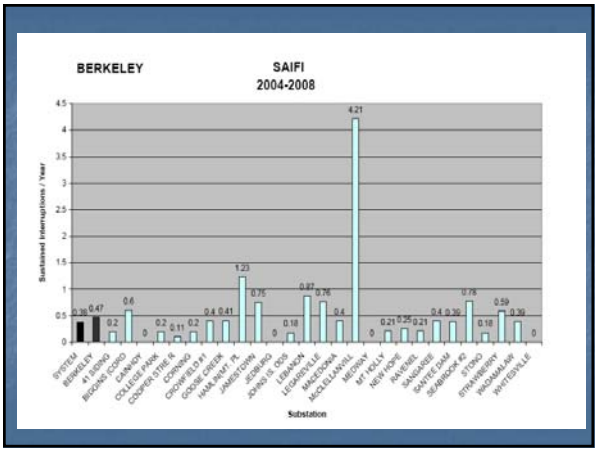

McClellanville Power Supply

Alternative Evaluation Study

Table 1

BEC Reliability Indices	McClellanville Source 2004-2008	Typical Berkeley Source 2004-2008
SAIDI	623.24	29.95
SAIFI	4.21	0.34

Table 2

BEC Reliability Indices	McClellanville Circuit 2004-2008	Typical Berkeley Circuit 2004-2008
SAIDI	581.71	289.64
SAIFI	4.40	2.76

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McClellanville Power Supply
Alternative Evaluation Study

- Description of Central Electric Power Cooperative
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Transmission Line

McClellanville Power Supply
Alternative Evaluation Study

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McClellanville Power Supply
Alternatives Evaluation Study

The 115 kv Transmission Line Project being evaluated in this report will ensure that Central Electric will be able to serve Berkeley Electric's members in the most reliable and cost-effective manner possible. As presented in the Alternative Evaluation Study, Central Electric has reviewed a number of alternatives in order to address the issue of providing long term reliable service, an issue that is of concern as they are presently served.

The details of each of the other alternatives that were evaluated, as well the reason as to why they were not an viable option are described in Section 3.0 of the AES.

McClellanville Power Supply
Alternatives Evaluation Study

Alternatives Considered

- No Action Alternative
- Energy Efficiency/Conservation and Renewable Resources
- Rebuild Existing Distribution System
- On–Site Generation
- Preferred Alternative: New Transmission System

Revised Macro Corridor Study for the McClellanville 115kV Transmission Line Project

Preliminary Alternative Transmission Line Corridors

1

Overview -- 2010 Macro-corridor Study

- Review Macro-Corridor Analysis Requirements and Methods
- Note Revisions to Data and Methods since 2005
- Show Least-Risk Paths and Corridors found in the Revised Analysis
- Compare Revised Paths and Corridors

2

Review Macro Corridor Analysis Requirements

RUS guidance* requires a Macro Corridor Study to:

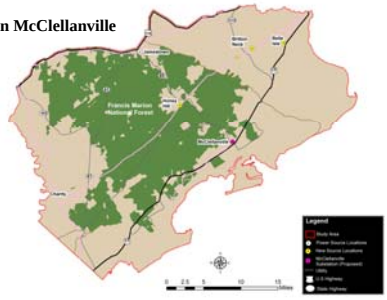
- define a project study area and show the end points on a linear project
- identify alternative routing based on environmental, engineering, land use, and permitting constraints
- allow corridors to vary in width from a few hundred feet up to a mile
- consider using existing rights-of-way or double circuiting of existing electric transmission lines

*RUS Bulletin 1794A-603

3

Macro Corridor Analysis Study Area and End Points

- *Destination:*
  - proposed substation in McClellanville
- *Existing Sources:*
  - Charity
  - Jamestown
- *New Source Locations:*
  - -Belle Isle (new switch)
  - -Honey Hill (new substation)
  - -Britton Neck (new substation)



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Macro Corridor Analysis Map Data

Identifying Relevant Risk and Opportunity Categories

Biological/Environmental Risk **:**
- Threatened and Endangered Species
- Wetlands
- Wilderness Areas
- Wilderness Linkages
- Wildlife Management Areas

Cultural and Visual Risk **:**
- NRHP Historic/Archaeological Districts
- NRHP Listed/Eligible Cultural Sites
- Areas of High Cultural Site Probability
- Santee Delta Vista
- Recreation Site Vistas

Development/Land Use Risk **:**
- Privately Owned Structures and Parcels
- Conservation Easements
- Major and Minor Road Beds and Medians
- Georgetown County Airport

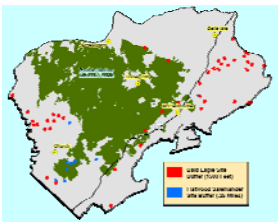
Opportunities **:**
- Areas Paralleling Existing Transmission Rights-of-Way
- Existing Road Rights-of-Way

5

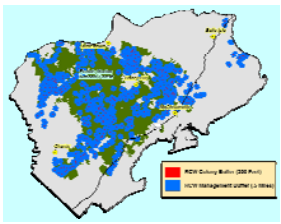
Macro Corridor Analysis Map Data

Biological/Environmental Risk Data Layers

Bald Eagle and Flatwoods Salamander Site Buffers



Red-Cockaded Woodpecker Sites and Management Areas



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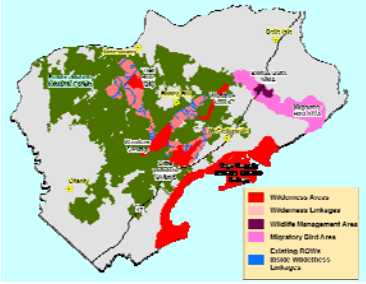
Macro Corridor Analysis Map Data

Biological/Environmental Risk Data Layers

Wilderness Areas, Wilderness Linkages, and Wildlife Management Areas



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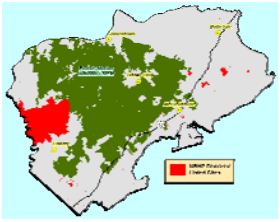
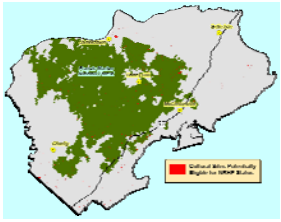
Macro Corridor Analysis Map Data

Cultural Risk Data Layers

NRHP Districts and Listed Sites



Cultural Sites Potentially Eligible for NRHP Status



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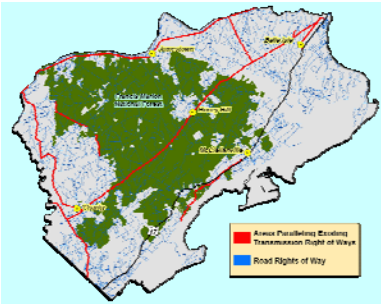
Macro Corridor Analysis Map Data

Opportunity Data Layers

Road Rights-of-Way and Areas Paralleling Existing Transmission Rights of Way



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Macro Corridor Analysis Methods

Step-by-step Process:

- **more recent (2006 – 2009) mapped data were obtained for each resource**
- **applicable buffers were applied to sensitive resources**
  (e.g. RCW colony buffer: 200 ft exclusion, ½ mi +50)
- **all mapped data within study area was converted to 10-m grid cells**
- **grid versions of original map data were ranked to account for relative risk or opportunity for construction of a transmission line**
- **grid cells considered "risks" were given positive values**

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Macro Corridor Analysis Methods

Step-by-step Process:

- **grid cells considered "opportunities" were given negative values**
- **values range from -50 (highest opportunity) to +50 (highest risk)**
- **areas unsuitable for siting a transmission line (e.g. wilderness areas, bald eagle sites, NRHP-Listed sites) were excluded from consideration**
- **cells where no data existed for a resource were given a value of zero**

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Macro Corridor Analysis Methods

Ranking of Mapped Data

Biological/Environmental Risk

Data Layer	Value
Threatened and Endangered Species	
RCW Colony (200 ft buffer)	Excluded
RCW Management Area (200 ft - .5 mile buffer)	+50
Bald Eagle Management Area (1500 ft buffer)	Excluded
Flatwoods Salamander (.25 mile buffer)	Excluded
State Listed Species (200 ft buffer	+50
Wetlands	
Forested Wetlands	+50
Other Wetlands	+25
Wilderness Areas	Excluded
Wilderness Linkages (MA 29)	Excluded
Existing Rights of Way Between Wilderness Linkages	+50
Santee Delta Wildlife Management Area	+50
Migratory Bird Area	+25

Cultural Visual Risk

Data Layer	Value
NRHP Historic/Archaeological Districts	Excluded
NRHP Listed/Eligible Cultural Sites	Excluded
Cultural Sites Potentially Eligible for NRHP Status	+25
Areas of High Cultural Probability	+25
Vistas	
Cultural Site Foreground	+50
Delta Foreground (0 - 300 ft)	+50
Delta Midground (300 ft - .5 miles)	+30
Delta Background (Beyound .5 miles)	+15
Recreation Areas and Trails (300 ft buffer)	+50

Development/Land Use Risk

Data Layer	Value
Privately Owned Structures and Parcels	
Structures (300 ft buffer)	+50
Parcels 0 - .25 Acres	+50
Parcels .26 - .75 Acres	+40
Parcels .76 - 1.5 Acres	+30
Parcels 1.6 - 3 Acres	+20
Parcels 3.1 - 6 Acres	+10
Conservation Easements	+50
Major and Minor Road Beds/Medians	+50
Georgetown County Airport	Excluded

Opportunities

Data Layer	Value
Areas Paralleling Existing Transmission Rights of Way (30 meters on either side of existing right of way)	-50
Existing Road Rights of Way	-25

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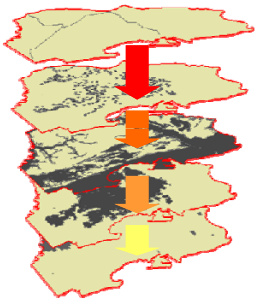
Macro Corridor Analysis Suitability Surface

Calculating the Overall Suitability Surface

- Risk and opportunity values were summed to create an overall suitability surface.
- Each grid cell in the overall suitability surface is the sum of all risks and opportunities for routing a transmission line through that grid cell



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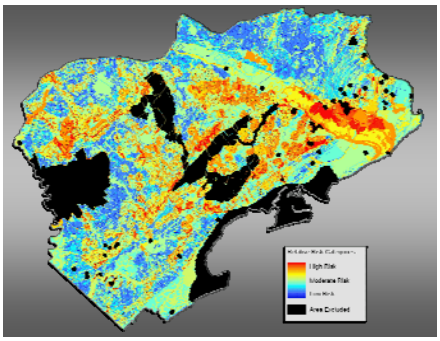
Macro Corridor Analysis Suitability Surface

The Overall Suitability Surface



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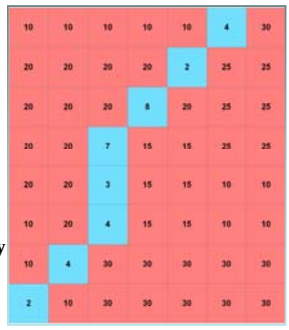
Macro Corridor Analysis Least Risk Path

Least Risk Path:

- Calculated from overall suitability surface
- Represents the "path of least resistance" through the data from each source to the destination point (McClellanville)
- Similar to mapping a likely stream course through the data "terrain".



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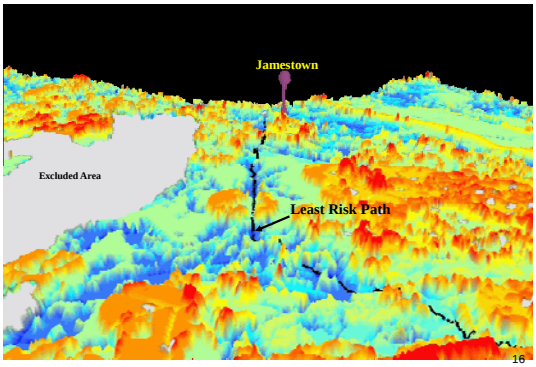
3-D GIS Image of Least Risk Path



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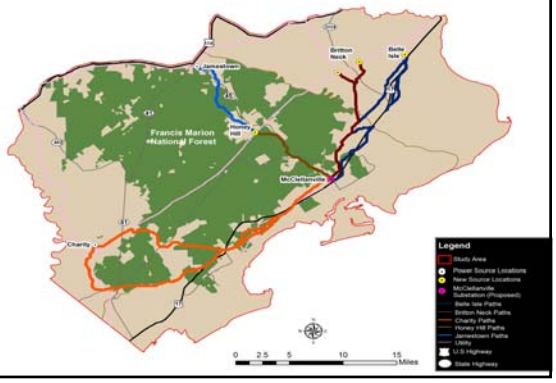
Macro Corridor Analysis Least Risk Path

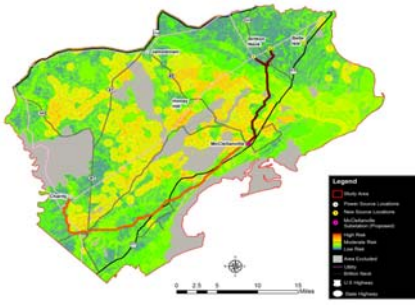


Macro Corridor Analysis Corridors

Defining the Least Risk Corridors

Each corridor is derived from the risk surface based on the length of the modeled least risk path—for each mile of path the model generated roughly a square mile of least risk corridor.

A corridor's width expands or contracts based on the risks in the overall suitability layer.



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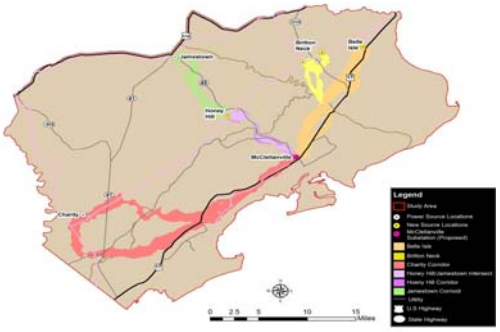
Macro Corridor Analysis Least Risk Corridor



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Revisions to the Macro Corridor Analysis

The 2005 macro corridor analysis was revised based on:

- **Concerns about the 2005 preliminary alternative corridors raised by the public, government agencies, and nonprofit organizations at the scoping meetings held in McClellanville in December 2005 and otherwise during the scoping period**
- **Updated environmental, socioeconomic, and cultural resources data**
- **Improvements in the modeling analysis methods**

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GIS Mapped Data Updates

- **Bald Eagle location data was provided by the U.S. Fish and Wildlife Service 2006**
- **Red-Cockaded Woodpecker location data for the Francis Marion National Forest was provided by the U.S. Forest Service 2008**
- **data on other threatened and endangered species and State-listed species off the Francis Marion National Forest was provided by South Carolina DNR 2009**
- **conservation easement data was provided by the Lowcountry Open Land Trust and The Nature Conservancy 2008**
- **tax parcel and subdivision information was provided by the GIS Divisions of Berkeley, Charleston, and Georgetown Counties 2008**
- **cultural resources data was provided by the South Carolina State Historic Preservation Office (SHPO) 2006**

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Analytical Revisions

In addition to revisions based on new data, some methods were changed to improve the analysis:

- **parcel information was added as an analysis layer to better account for potential impacts to private land and structures on private land, including planned subdivisions**
- **alternative routes were directed to follow the U.S. Hwy 17 right-of-way from Belle Isle to McClellanville and from Charity to McClellanville**
- **the path analysis was changed from 10 meters (33 ft) to 30 meters wide (98 ft) to better reflect the impacts of constructing a 75-ft right of way**
- **the Britton Neck route was created to traverse unpopulated areas west of the residential County Rd S2224 area and east of Wambaw Creek and Hampton Plantation State Park**
- **ratings of existing transmission rights-of-way and how they are used in the Macro-Corridor analysis were changed**

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Example MCS Analytical Revision Parcel – Structure Buffer Rating Scheme

Parcel Size (Acres)	Risk Value Rating
300-ft Structure Buffer	50
0 - .25	50
.26 – .75	40
.76 – 1.5	30
1.6 – 3	20
3.1 – 6	10

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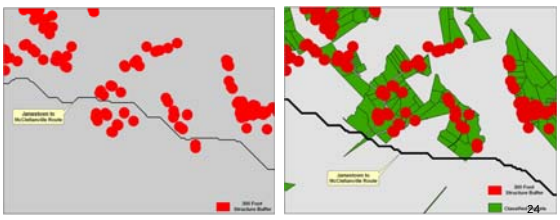
Path Modeling Effect of Adding Parcel Information to Structure Layer

Original Structure Layer and Least-Risk Path:

Path weaves in between structures

Revised Structure Layer and Least-Risk Path:

Path seeks to avoid current and planned residential areas



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Use of Modeling Constraints to Develop Alternative Paths and Corridors

- ***Some paths and corridors were modeled using the entire risk surface between endpoints. All or portions of others were "directed" to avoid risk areas and take advantage of low-risk opportunities***

Route	Charity Path & Corridor Modeling Constraints	
	West of Hwy 17	East of Hwy 17
Charity1	Uses entire risk surface between endpoints	Uses entire risk surface between endpoints
Charity 2	Uses entire risk surface between endpoints	Use risk surface within 1-mile of Hwy 17
Charity 3	Starts by using risk surface south of Charity	Uses entire risk surface between endpoints
Charity 4	Starts by using risk surface south of Charity	Use risk surface within 1-mile of Hwy 17
Route	Jamestown & Honey Hill Path & Corridor Modeling Constraints	
	Starting Point	Through Wilderness Linkage Area
Jamestown	1-mile buffer on Jamestown Station*	Must use Hwy 45 ROW to traverse WLA
Honey Hill	New 230/115kV switching/substation	Must use Hwy 45 ROW to traverse WLA
Route	Belle Isle & Britton Neck Path & Corridor Modeling Constraints	
	Starting Point	Santee Crossing to McClellanville
Belle Isle 1	Uses entire risk surface between endpoints	Overhead line west of U.S. Hwy 17
Belle Isle 2	Uses risk surface to "pole yard" connector	Directional bore to South Santee connector
Belle Isle 3	1-mile buffer of U.S. Hwy 17	Hwy 17 ROW then 1-m buffer of Hwy 17
Britton Neck	New 230/115kV switching/substation (2 pts)	East of Hampton Plantation State Park

*done to correct a modeling anomaly that kept the Jamestown in the FMNF but pushed the Jamestown corridor outside the FMNF. The eastern portion of the outside corridor was the basis for development of the Britton Neck corridor.

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Additional Recommended MCS Revisions

RUS Responses to Additional Suggestions

- ***Conservation Easements*** – Not excluded, maintained at +50
- ***Santee Delta WMA*** – Not removed from analysis, maintained at +50
- ***Santee Delta Vista*** – Not removed from analysis, maintained at +15 to +50
- ***Cultural Sites*** – Not increased to +50, maintained at +25
- ***Wetlands*** – Not increased to all wetlands +50; added riparian buffer, forested wetlands rated +50, all other wetlands rated +35
- ***Migratory Bird Layer*** – Not removed from analysis, maintained at +25
- ***Francis Marion National Forest**** – Not rated at +50, remains at +25

* Analysis of rating the Francis Marion National Forest as +50 showed it would push the Jamestown route completely off the forest, causing it to cross the Santee Rivers twice before running south to McClellanville. The last part of that longer path was used to develop the Britton Neck corridor, which does avoid NF lands.

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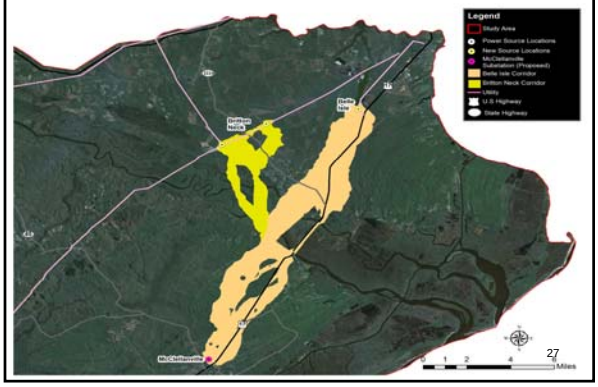
Revised MCS Corridors



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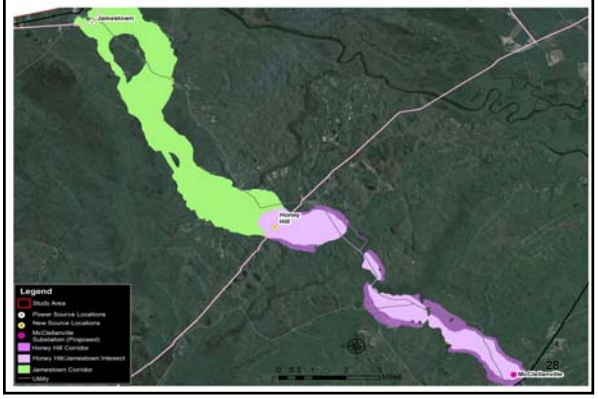
Revised MCS Corridors



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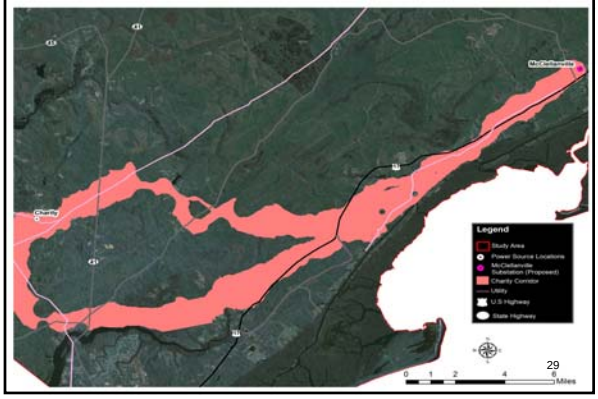
Revised MCS Corridors



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Revised MCS Corridors – 6 Compared

	Bell Isle 1	Britton Neck	Honey Hill	Jamestown	Charity 1	Charity 3
Path Length (Miles)	16.9	14 to 14.9	9.9	20.6	28.5	33
Corridor Area (mi²)	15.23	12.04	8.39	17.42	26.92	30.75
National Forest Area (mi²)	0.26	0.28	4.65	7.28	9.37	9.24
National Forest Percentage	1.74%	2.35%	55.39%	41.77%	34.71%	30.06%
Corridor Risk Score*	19.03	13.65	23.69	27.53	36.88	39.69
Risk Score Per Miles²*	1.25	1.13	2.82	1.58	1.36	1.29
Land Use /Land Cover (Acres)						
Total Acreage	9,747	7,706	5,370	11,149	17,229	20,826
Urban/Developed	271	64	152	270	638	990
Agricultural	42	82	36	220	194	204
Grassland/Pasture	644	428	288	995	1,567	1,555
Forested	3,845	3,467	2,873	5,463	7,700	9,082
Scrub/Shrub	471	359	302	473	880	885
Wetland (Woody and Emergent)	4,315	3,179	1,721	3,594	6,084	7,688

*Corridor Risk Scores' were calculated by summing the suitability scores of each individual 10 x 10 meter cell that fell within the corridor boundary. Due to the large number created by this summation, it was then divided by 1,000,000 for the purposes of display.

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Summary

- **The MCS used a GIS-based analysis to identify least-risk paths and corridors from different power sources to avoid sensitive resources and take advantage of existing ROWs**
- **Consideration of all substantive comments from agency and public scoping, as well as method improvements and updated data, led to revisions in the Macro-Corridor Study**
- **A total of 10 corridors were identified through modeling, including directing paths to use the Hwy 17 right of way.**
- **Comparison of paths and corridors shows the benefits and risks of each route alternative.**

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