TAG Meeting
December 13, 2007

NCEMC Office

Raleigh, NC

TAG Meeting Agenda

1. Report on the NCTPC 2007 Collaborative Transmission Plan
2. Report on the NCTPC 2008 Study Scope
3. Discussion on the Duke and Progress Attachment K Filing
4. Discussion on the proposed changes to the NCTPC documents
5. Open Forum discussion

Report on the NCTPC 2007 Collaborative Transmission Plan

Bryan Guy

Progress Energy

2007 North Carolina Transmission Planning Collaborative Report

- Overview of the Report
- Reliability Planning Results
  - Base Reliability
  - Resource Supply Options
- Collaborative Transmission Plan

Overview of the Report

I. Executive Summary
II. North Carolina Transmission Planning Collaborative Process
III. 2007 Reliability Planning Study Scope & Methodology
IV. Base Reliability Study Results
V. Resource Supply Option Study Results
VI. Collaborative Transmission Plan

Planning Process

Participants jointly:

- Establish assumptions, criteria, and study methodologies
- Perform studies: thermal, voltage, stability, short circuit
- Evaluate results to identify problems and potential solutions
- Perform cost analysis and rough scheduling of solutions
- Select preferred final and alternative plans
- Solicit input from TAG periodically throughout processes

Key Assumptions

- Study Year and Planning Horizon
  - 2012 summer: near-term base reliability analysis
  - 2016 summer: long-term base reliability analysis and resource supply option analysis
  - 10 year planning horizon through 2017
- Network Modeling
  - Included projected transmission and generation
- Interchange and Generation Dispatch
  - Each Participant provided resource dispatch order for its Designated Network Resources
  - Transmission Reliability Margin was modeled for Progress import cases

Reliability Planning Study

- The Scope of the Reliability Planning Study included a base reliability analysis as well as analysis of potential resource supply options
- The purpose of the base reliability study was to evaluate the transmission system's ability to meet load growth projected for 2012 through 2017 with the Participants' planned Designated Network Resources
- The purpose of the resource supply option analysis was to evaluate transmission system impacts for various resource supply options to meet future native load requirements

Summary of 2007 Collaborative Transmission Plan

- Comprised of 17 Duke and Progress Projects
- Only projects with projected cost of $10 million or more are listed in the Plan
- Total cost of projects in the Plan approximately $400M
- Details listed in Appendices B & C
- List will be updated on an ongoing basis

Major Projects in 2007 Plan			
Reliability Project	TO	Planned I/S Date	$M
Marion-Whiteville 230 kV line	Progress	I/S 6/7/07	10
Reconductor Lee Sub-Wommack 230 kV South line	Progress	June ’08	13
Durham 500 kV sub	Progress	June ’08	29
Durham-Falls 230 kV line	Progress	June ’08	10
Rockingham-West End 230 kV line	Progress	June ’09	11
Richmond 500 kV sub, reactor	Progress	June ’09	10
Clinton-Lee 230 kV line	Progress	June ’10	21

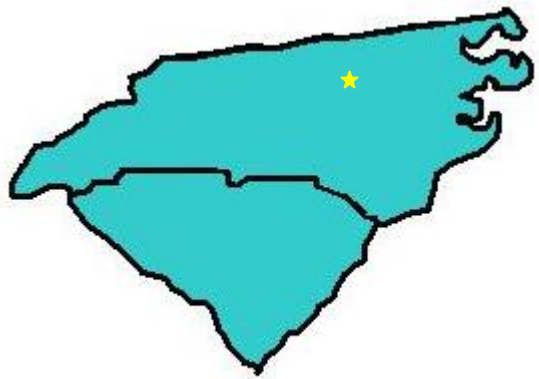
Major Projects in 2007 Plan (Continued)			
Reliability Project	TO	Planned I/S Date	$M
Asheville-Enka 230 kV line, Convert 115 kV line; and Asheville-Enka 115 kV, Build new line	Progress	Dec ’10 Dec ’12	28
Greenville-Kinston Dupont 230 kV line	Progress	June ’11	19
Rockingham-West End 230 kV East line	Progress	June ’11	32
Harris-RTP 230 kV line	Progress	June ’11	46
Pleasant Garden-Asheboro 230 kV line, replace Asheboro 230 kV xfmrs	Progress & Duke	June ’11	40

Major Projects in 2007 Plan (Continued)			
Reliability Project	TO	Planned I/S Date	$M
Rockingham-Lilesville 230 kV line	Progress	June ’11	16
Add 3rd Wake 500/230 kV xfmr	Progress	June ’13	23
Cape Fear-West End 230 kV West line, Install reactor	Progress	June ’16	12
Replace Antioch 500/230 KV xfmrs	Duke	June ’13	51.9
Reconductor Fisher 230 kV lines	Duke	June ’16	28.5

New or Modified Projects in the 2007 Plan

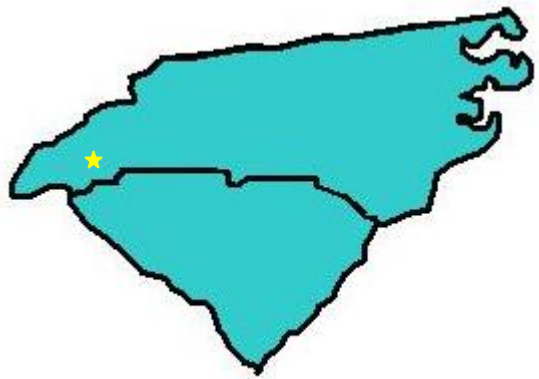
Durham-Falls 230 kV Line — June 1, 2008

- Description
  - Remove the Raleigh Honeycutt 230 kV Tap Line from Method-DPC East Durham 230 kV Line
  - Complete Durham-Falls 230 kV Line
- Need
  - When the Mayo Plant-Wake 500 kV Line is looped into Durham, a loss of Durham terminal of the Durham-Method 230kV line will cause the Cary Regency Park-Durham 230kV line to load to capacity under times of high import
- Cost
  - $10 M



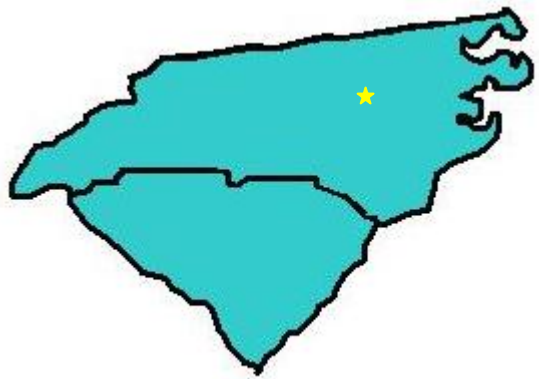
Asheville-Enka 230 kV Line December 1, 2010 and 2012

- Description
  - Convert existing Asheville-Enka 115 kV line to 230 kV
  - Construct a new Asheville-Enka 115 kV line
- Need
  - With an Asheville unit down, an outage of one 230/115 kV transformer at Asheville 230 kV will cause the remaining transformer to exceed its rating.
- Cost
  - $28 M



Wake 500/230 kV Bank #3 June 1, 2013

- Description
  - Install a third 500/230 kV 1000 MVA transformer bank at Wake 500 kV Substation.
- Need
  - With the Harris unit down, an outage of one of the existing two Wake 500/230 kV banks causes the remaining bank to exceed its rating.
- Cost
  - $23 M

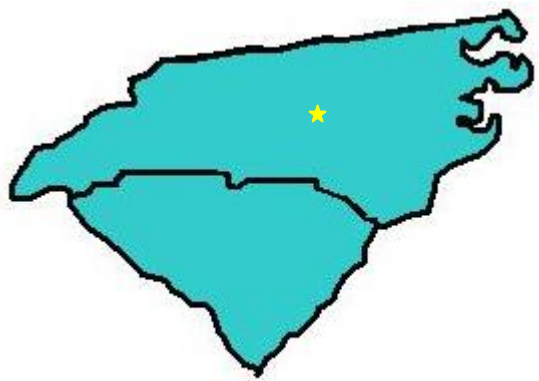


Rockingham-Lilesville 230 kV Line June 1, 2011

- Description
  - Construct approximately 14 miles of 3-1590 MCM ACSR between Rockingham 230kV Sub and Lilesville 230kV Sub
- Need
  - By the summer of 2011, with the Harris unit down, the outage of the Richmond-Newport 500kV Line will cause an overload on the Rockingham-Lilesville Black and White 230kV Lines
- Cost
  - $16 M

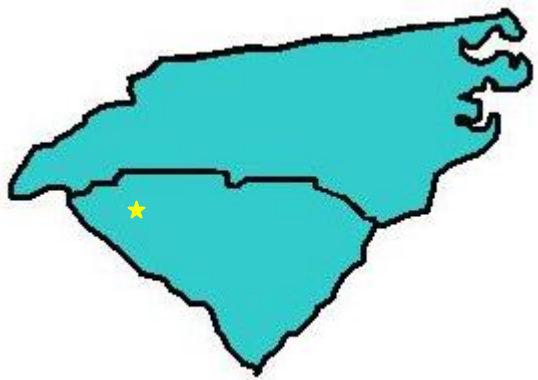
Reactor on Cape Fear-West End 230 kV Line June 1, 2016

- Description
  - Install 230kV series reactor at or near the West End terminal of the Cape Fear Plant-West End 230kV Line
- Need
  - By the summer of 2016, with the Harris unit down, the loss of the Richmond-Cumberland 500kV Line will cause the Cape Fear-West End 230kV Line to overload
- Cost
  - $12 M



Reconductor Fisher 230 kV Line 2016

- Description
  - Reconductoring 18 miles of the existing 954 ACSR conductor with bundled 954 ACSR conductor
- Need
  - Loss of one circuit of this double circuit line causes the remaining line to overload. The line is sensitive to south to north transfers. Duke will continue to monitor the timing of this upgrade.
- Cost
  - $28.5 M



Wateree Operating Solutions

- An Operating Guide exists to mitigate loading in the Wateree-Camden-Elgin Tap area.
- Guide calls for a decrease in local generation or opening both circuits of the Wateree 100 kV lines (Great Falls-Wateree).
- Study identified possibility that tie lines will be left open at all times.

Resource Supply Option Study Results

2016 Hypothetical Import Scenarios (RSOs)		
Resource From	**Sink**	**Test Level (MW)**
Duke	Progress East	600
Duke	Progress East	1,200
PJM	Progress East	200
SCPSA	Progress East	400
SCEG	Progress East	600
Progress East	Duke	100
PJM	Duke	600
SCEG	Duke	600
SOCO	Duke	600
TVA	Duke	600

2016 Hypothetical Generation Scenarios (RSOs)		
Resource in (County)	**Sink**	**Test Level (MW)**
Scotland	Progress East	450
Cumberland	Progress East	450
Wilson	Progress East	450
Johnston	Progress East	450
Robeson	Progress East	600
Guilford	Duke	150
Davidson	Duke	150
Union	Duke	150
Gaston	Duke	150
Rockingham	Duke	800

Hypothetical Resource Supply Option Scenarios - Issues & Solutions

Primary Alternative Investigated	Issue Identified	TO	Lead Time (yrs)	Scotland County 450 MW		Robeson County 600 MW	
				Date Needed	($M)	Date Needed	($M)
Construct Weatherspoon-Cumberland 230 kV line and Cumberland-Fayetteville East 230 kV line	Thermal loadings on Fayetteville-Fayetteville East 230 kV line and Weatherspoon Plant-Fayetteville DuPont 115 kV line	PEC	5	---	---	2016	65
Install 115 kV series reactor on Weatherspoon Plant-Fayetteville Dupont 115 kV line and Weatherspoon-Raeford 115 kV line	Thermal load on Weatherspoon-Raeford 115 kV line	PEC	4	---	---	2016	5
Install 115 kV series reactor at Weatherspoon on Wagram 115 kV terminal	Thermal loading on Raeford-Wagram 115 kV line	PEC	4	2016	2	---	---

2007 Supplemental Studies & Report

- NCTPC will develop a supplemental report regarding:
  - Potential imports into Progress West Control Area
  - Impact of Richmond CC and Richmond-Fort Bragg Woodruff Street 230 kV line
- Target date for completing any studies, as required, and report is the end of the 1st quarter of 2008

NCTPC Schedule

Dec 7, ‘07	2007 Plan & draft report distributed to TAG for review & comment
Dec 13, ‘07	TAG Meeting - Present 2007 Plan & summary of draft report
Dec 31, ‘07	**Comments due from TAG on 2007 Plan & draft report**
Jan 16, ‘08	**Distribute final 2007 Plan & report to TAG**

Questions ?

Report on the NCTPC 2008 Study Scope

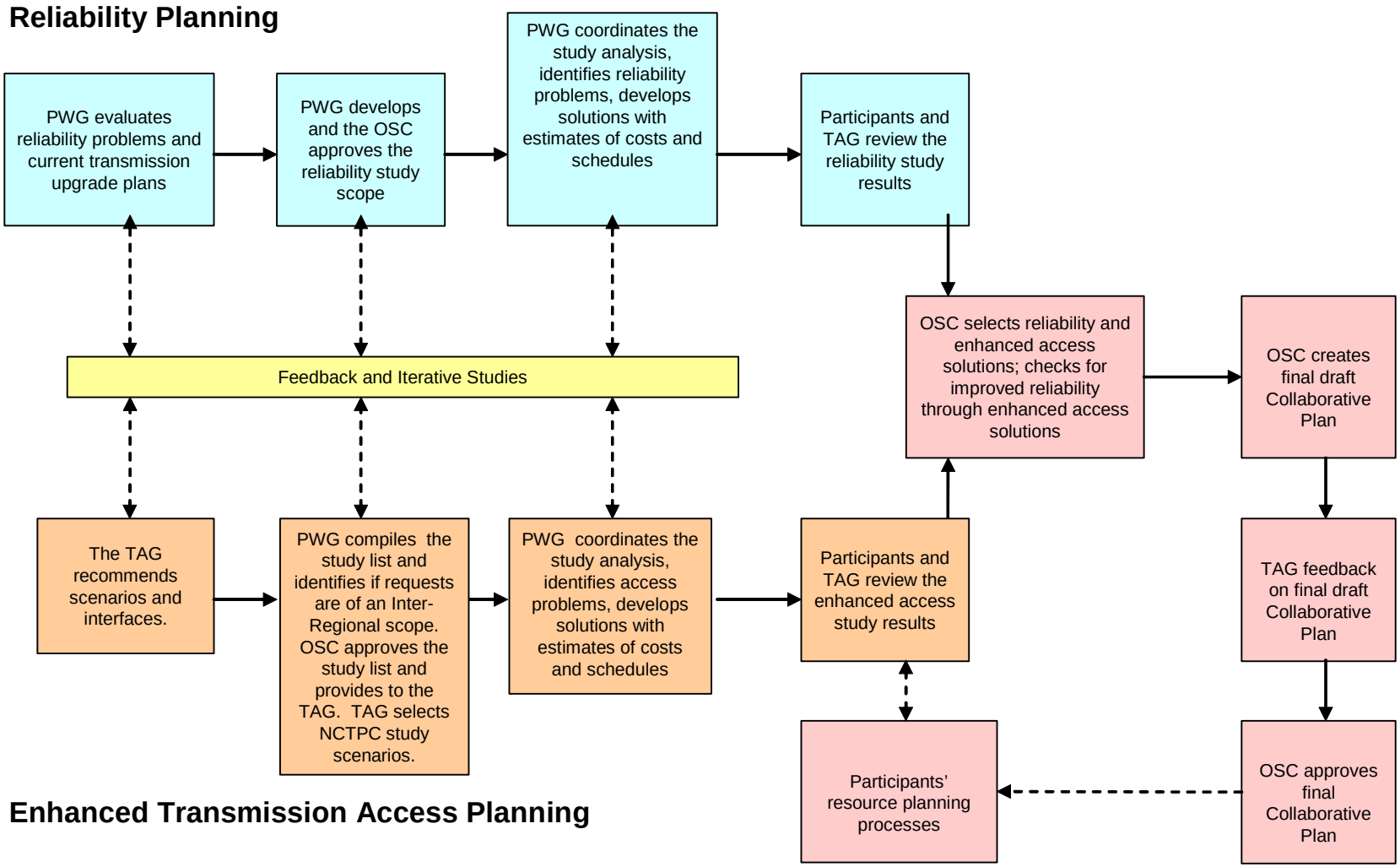
Bob Beadle

NCEMC

Purpose of Study

- Assess Duke and Progress transmission systems' reliability and to develop a single Collaborative Transmission Plan
- Also assess Enhanced Access Options provided by Participants or TAG members

NCTPC Process Flowchart



Study Assumptions Selected

- Study Year – Plan to perform analysis on 2013 and 2018
- All LSEs provide input for load forecasts and resource supply assumptions
- Dispatch order for resources provided by LSEs
- Coordinated interchange between Participants and neighboring systems

Study Criteria Established

- NERC Reliability Standards
  - ***Perform sensitivity analysis to subset of new TPL standards***
- SERC Requirements
- Individual company criteria

Models and Cases Developed

- Latest available MMWG or SERC LTSG cases are selected / updated for study years
- Combined detailed model for Duke and Progress is prepared
- Planned transmission additions from 2007 Collaborative Plan are included
- Case scenarios are established

Study Methodologies Selected

- Thermal Power Flow Analysis
  - ***Duke and Progress Contingencies***
  - ***Duke and Progress Monitored Elements***
- Voltage, stability, short circuit, phase angle analysis is performed as needed

Technical Analysis Performed

- Assessment of transmission reliability and enhanced access scenarios

Problems Identified and Solutions Developed

- Identify limitations and develop potential alternative solutions for further testing and evaluation
- Estimate project costs and schedule

Collaborative Plan Projects Selected

- Compare all alternatives and select preferred solutions

Study Report Prepared

- Prepare draft report and distribute to TAG for review and comment

2008 Overview Schedule

North Carolina Transmission Planning Collaborative

Reliability Planning Process

- Evaluate current reliability problems and transmission upgrade plans
- Perform analysis, identify problems, and develop solutions
- Review Reliability Study Results

Enhanced Access Planning Process

- Propose and select enhanced access scenarios and interface
- Perform analysis, identify problems, and develop solutions
- Review Enhanced Access Study Results

Coordinated Plan Development

- Combine Reliability and Enhanced Results
- OSC publishes DRAFT Plan
- TAG review and comment

TAG Meetings

Questions ?

Duke / Progress Attachment K Filing

Questions ?

NCTPC Document Changes

Rich Wodyka

Gestalt

NCTPC Process Document

- Expands the transmission planning process to include analysis of through or out transactions
- Updates the Enhanced Transmission Access Planning Studies Process to match the proposed Attachment K
- Updates the Figure 1- Process Flowchart for the Enhanced Transmission Access Planning Studies Process

TAG Scope Document

- Updates TAG responsibilities for more direct involvement in the NCTPC Process
- Updates the TAG Membership section to clarify who can be a TAG Member
- Updates the TAG Voting section to clarify the voting process for the ETAP scenarios
- Establishes a new Data and Information Release Protocol

TAG Scope Document

- Expands TAG Membership section to now include participation requirements for becoming a TAG Voting Member
- Clarifies that portions of a TAG meeting may be closed and only available to TAG Voting Member representatives that are permitted to access confidential and CEII information
- Updates the TAG Voting section to match the TAG Voting Member definition
- Updates the Data and Information Release Protocol for the TAG Voting Member access

Questions ?

TAG
Open Forum Discussion

Comments or Questions ?