Meade County
Rural Electric Cooperative Corporation

2010-2012 Construction Work Plan

October 2009

Kentucky 18 Meade

Brandenburg, Kentucky

Distribution System Solutions, Inc.
Walton, Kentucky

Meade County RECC
Environmental Report

I. PURPOSE AND SCOPE

The purpose and scope of the Borrower's Environmental Report is for the protection of threatened and endangered species, flood plains, wetlands, historic, archaeological and cultural properties, important farmland, forest land and prime range land. Meade County RECC (Meade) will comply with state implementation plans for air quality and requirements of Federal Laws, regulations, executive orders and U.S. Department of Agriculture memoranda. Through this report to the Rural Utilities Service (RUS), Meade is providing sufficient evidence that the action of providing loan funds for the projects discussed in this report is in compliance.

Meade, with assistance from Distribution System Solutions, Inc., Walton, Kentucky, has prepared a three-year construction work plan (CWP) 2010-2012. The CWP outlines required outside plant construction that will most economically and efficiently supply the existing and projected loads during this planning period.

All CWP project locations will be reviewed by the Kentucky-18 staff to ensure that there will be no impact upon any properties listed in either the Federal or State of Kentucky Registers of Historic Places. If archaeological remains are discovered during construction activities of the CWP projects, the work shall be stopped and the SHIPO Preservation Officers and RUS will be notified immediately.

The Long Range Plan was updated in 2002. The CWP is in concurrence with the present Long Range Plan. Meade reviews each CWP recommendation prior to the actual construction to ensure that the project is required due to electrical loading or physical conditions.

The loading levels for the CWP are based upon system demand projections listed in the current Load Forecast – jointly prepared by the power supplier, Big Rivers Electric and Meade. Management, staff, RUS representatives and consulting engineers analyze the data to develop applicable recommendations that Meade will be expected to follow during the planning period.

Meade may use the construction work plan in preparing a loan application to RUS for financing the construction and other costs as outlined in the CWP.

This report discusses the environmental consequences of the proposed line construction.

A. Services to New Customers

Meade presently has over 27,000 services in place. It is projected from historical data that 1,425 new services will be constructed during the CWP period. 1,030 transformers will be added to the system.

B. Upgrading Existing Services

It is projected from historical data that 185 service capacity upgrades will take place during the CWP period. This may include any one or all of the following: increasing wire size, metering upgrades or increasing transformer size. Some upgrades will be required to replace old single wire services which, because of age, have stretched beyond their elastic limits and may cause outages due to breakage. Triplex is the term for two covered wires interlaced with a higher-strength bare neutral messenger.

C. Construction Work Plan Recommended Improvements

Meade is a member of Big Rivers Electric G& T Cooperative. All wholesale power is purchased from Big Rivers. All improvement projects will follow existing right of way.

1. Increased Capacity of Existing Lines

   As the increasing loads warrant and older conductors deteriorate, it becomes necessary to build new facilities. Field checking of line loading and condition takes place so that only the most necessary improvements are made within the planning period.

2. Installation of Line Equipment

   The CWP recommends the installation of certain line equipment to improve the overall operation and efficiency of the system.
   Voltage regulators and capacitor banks are recommended in certain areas in order to improve voltage and defer more costly projects, where only a low voltage condition exists.

   Sectionalizing devices including reclosers are presently being maintained throughout the system. Additional units may be installed for the purpose of further isolating faulted lines in an effort to keep the duration of outages to a minimum.

   Ordinary pole replacement will be conducted based upon past records and anticipated requirements.

II. NEED FOR PROJECTS IN CONSTRUCTION WORK PLAN

A. Extensions to New Customers

Extensions to new customers are required to meet the requests for electric service. Meade is obligated to serve prospective customers that are located within their service territory.

The quantities, lengths and costs of new services from the CWP were established from historical cost data and the Load Forecast.

B. Upgrading Existing Services

The upgrading of existing services is required to meet the increasing capacity needs of the members. Most of the service area is residential and agricultural in nature. Expanding farm operation and the remodeling of homes account for many of the services to be upgraded.

Meade must maintain a specific level of service to all customers.

C. Specified System Improvements

1. Substations
   All substations are the responsibility of Meade. No new substations are planned for this CWP period. Brandenburg #1 and Custer Substation are having their capacity increased during this planning period.

2. Increased Capacity of Primary Distribution Lines
   Each project item is reviewed for need, economic viability and priority in the improvement list. All improvement projects will follow existing rights of way.

III. DISCUSSION OF ALTERNATE CONSIDERATIONS

A. Extension of Service to New Customers

Meade is obligated to provide service to new members.
The utilization of alternate energy sources may reduce initial load requirements; however, service from the utility is normally still required.

The design standards, materials and methods employed by Meade have been set by RUS with the intent to provide maximum reliability, safety and cost effectiveness. The method of construction, either overhead or underground, will vary depending upon terrain, location of structures, service points, etc. The routing and type of construction are resolved with the property owner prior to construction.

B. Upgrade Existing Services

The upgrading of existing services is limited by the same alternatives as those for service to new customers. Conservation and efficiency improvement efforts are important. In some cases, the customer's conservation efforts could eliminate the need for the service upgrade. These conservation and efficiency efforts are encouraged by Meade. However, when the customer's electrical energy requirements exceed the installed capacity, an upgrade must be made if adequate, dependable service is to be provided.

C. Specified System Improvements

1. Substations
   There are two required substation capacity upgrades during the CWP period. No new substations are planned.

2. Increased Capacity of Primary Distribution Line
   Each project item was considered against an alternative solution. Alternatives to capacity increases include: three-phase load balancing; refeeding the area from a different source; adding voltage regulators and adding capacitors. When the above measures are ineffective, construction for a capacity increase is selected at the best solution.
   See the following attachment for the specific line conversion projects.

MEADE COUNTY RECC 2010-2012 CWP

COST SUMMARY SPREADSHEET

NEW CONSTRUCTION -- RUS CODE 100

ITEM	RUS CODE	AVE. $/CONSUMER	# CONS.		2010	2011	2012	TOTAL
New Services	100	$1,739	1425		$751,084	$824,523	$902,636	$2,478,243
		TOTAL CODE 100:						

LINE CONVERSION / REPLACEMENT - RUS CODE 300

SUB - SECTION	RUS CODE	CONDUCTOR	$/MILE	MILES	2010	2011	2012	TOTAL
Brandenburg #2 CO41392-CO40557	301	#4 ACSR-1ϕ to 3/0 ACSR-3ϕ	$90,000	0.1	$9,000			$9,000
Doe Valley CO44767-CO43560	302	#4 ACSR-1ϕ to 3/0 ACSR-3ϕ	$90,000	0.6	$54,000			$54,000
Falls of Rough CO35009-CO33952	303	8A-1ϕ to 3/0 ACSR-3ϕ	$97,300	0.4			$38,920	$38,920
Falls of Rough CO36043-CO36631	304	#2 ACSR-1ϕ to 3/0 ACSR-3ϕ	$97,300	1.6			$155,680	$155,680
Flaherty CO19489-CO19378	305	3/0 ACSR-3ϕ to 336 ACSR-3ϕ	$105,000	2.1	$220,500			$220,500
Garrett #1 Sub - CO51998	306	3/0 ACSR-3ϕ to 336 ACSR-3ϕ	$105,000	1.7	$178,500			$178,500
Garrett #1 CO43201-CO42846	307	6A-1ϕ to 3/0 ACSR-3ϕ	$90,000	0.2	$18,000			$18,000
Irvington CO21284-CO17166	308	#4 ACSR-1ϕ to 3/0 ACSR-3ϕ	$93,600	1.6		$149,760		$149,760
Irvington CO21447-CO21453	309	#2 ACSR-3ϕ to 3/0 ACSR-3ϕ	$93,600	0.3		$28,080		$28,080
Irvington CO21973-CO21340	310	#2 ACSR-3ϕ to 3/0 ACSR-3ϕ	$93,600	0.3		$28,080		$28,080
McDaniels CO32444-CO37801	311	8A-1ϕ to 3/0 ACSR-3ϕ	$93,600	0.1		$9,360		$9,360
		TOTAL CODE 300:		9.0	$480,000	$215,280	$194,600	$889,880

SUBSTATION UPGRADES - RUS CODE 500'S

ITEM	RUS CODE	3 YR. AVE. COST	# ITEMS		2010	2011	2012	TOTAL
Brandenburg-1 Transformer Upgrade	526				$325,115	$0	$0	$325,115
Custer Transformer Upgrade	527				$0	$7,500	$0	$7,500
Substation Recloser Upgrades	528				$42,500	$42,500	$42,500	$127,500
		TOTAL CODE 500			$367,615	$50,000	$42,500	$460,115

Trendbucks

A Simple Analysis of Distribution and
and Transmission Investments
for
KY 18 Meade

22-Oct-09

Analysis and Data Input

Year	Distribution Additions from Line 15 Page 3 of the Form 7	Transmission Additions from Line 34 Page 3 of the Form 7	Total Investments Transmission Plus Distribution With No *Escalator*
2008	$4,313,464	$0	$4,313,464
2007	$5,381,567	$0	$5,381,567
2006	$5,232,898	$0	$5,232,898
2005	$4,953,558	$0	$4,953,558

Results

Historical investment average multiplied by the number of years

Two Year	Three Year	Four Year
$9,940,744	**14,911,115**	**$19,881,487**

Escalation factor applied to historical data to determine values for future years (see below).

Two Year	Three Year	Four Year
$11,233,661	**17,275,179**	**$23,618,773**

The borrower's work plan is larger than the Trendbux analysis due to the large amount of line replacements planned for over the work plan period to replace aged conductor.

5.00% **Escalation Factor**

If work plan totals exceed the values in the last row, further justification needs to be attached to this sheet.

2010-2012 Construction Work Plan Report

Meade County Rural Electric Cooperative Corporation

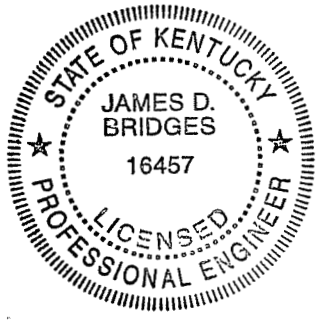
Kentucky 18 Meade

Brandenburg, Kentucky

Prepared by:

Distribution System Solutions, Inc.
Walton, Kentucky

October 2009



I hereby certify that this 2010-2012 Construction Work Plan Report was prepared by me or under my direct supervision and that I am a duly registered professional engineer under the laws of the State of Kentucky. Registration No. 16457

Oct. 15, 2009
Date

By: James D. Bridges P.E.
James D. Bridges, P.E.

MEADE COUNTY RURAL ELECTRIC COOPERATIVE CORPORATION
2010 – 2012 CONSTRUCTION WORK PLAN REPORT

Kentucky 18 Meade

TABLE OF CONTENTS

PURPOSE OF REPORT

This report documents the engineering analysis of, and summarizes the proposed construction for Meade County Rural Electric Cooperative Corporation's (MCRECC) electric distribution system for the three-year planning period of 2010-2012.

The report also provides engineering support in the form of descriptions, costs and justifications of the required new facilities for a loan application to RUS in order to finance the proposed construction program.

RESULTS OF PROPOSED CONSTRUCTION

Upon completion of the proposed construction, the system will provide adequate and dependable service to 29,400 active customers including 2,100 small commercial loads. It is estimated that there will be 2,000 idle services.

GENERAL BASIS OF STUDY

The January 2013 projected number of customers, the total peak system load, the historical data and future projections - shown below - were all based upon the MCRECC 2009 Load Forecast (LF) as approved by RUS. Residential and small commercial loads were grown at rates consistent with the LF. Large power loads were allocated on a site-specific basis.

System analysis models are based on projected, system peaks. These peaks are shown in the LF as coincidental. Coincidence factors are used to determine the projected non-coincident (NC) system load. The projected winter 2013 NC peak is 146,000 kW.

The MCRECC 2002 Long Range Plan (LRP) load projections and improvement recommendations were reviewed and they generally agree with the scope of the 2010-2012 CWP recommendations.

A RUS Operations and Maintenance Survey (FORM 300) was completed with the RUS GFR. This survey is used to determine portions of the construction required to replace physically deteriorated equipment and material, upgrade areas of the system to conform to code or safety requirements, and improve the reliability and quality of service.

An analysis using RUS guidelines and the MCRECC Design Criteria was performed on all of the substations and distribution lines of the system. Milsoft Utility Solutions' PC-Based Distribution Analysis Program – "Windmil" Version 7.3 was used to analyze the existing system configuration that was modeled with the projected load growth.

For each deficiency that was found, alternate solutions were considered and economically evaluated.

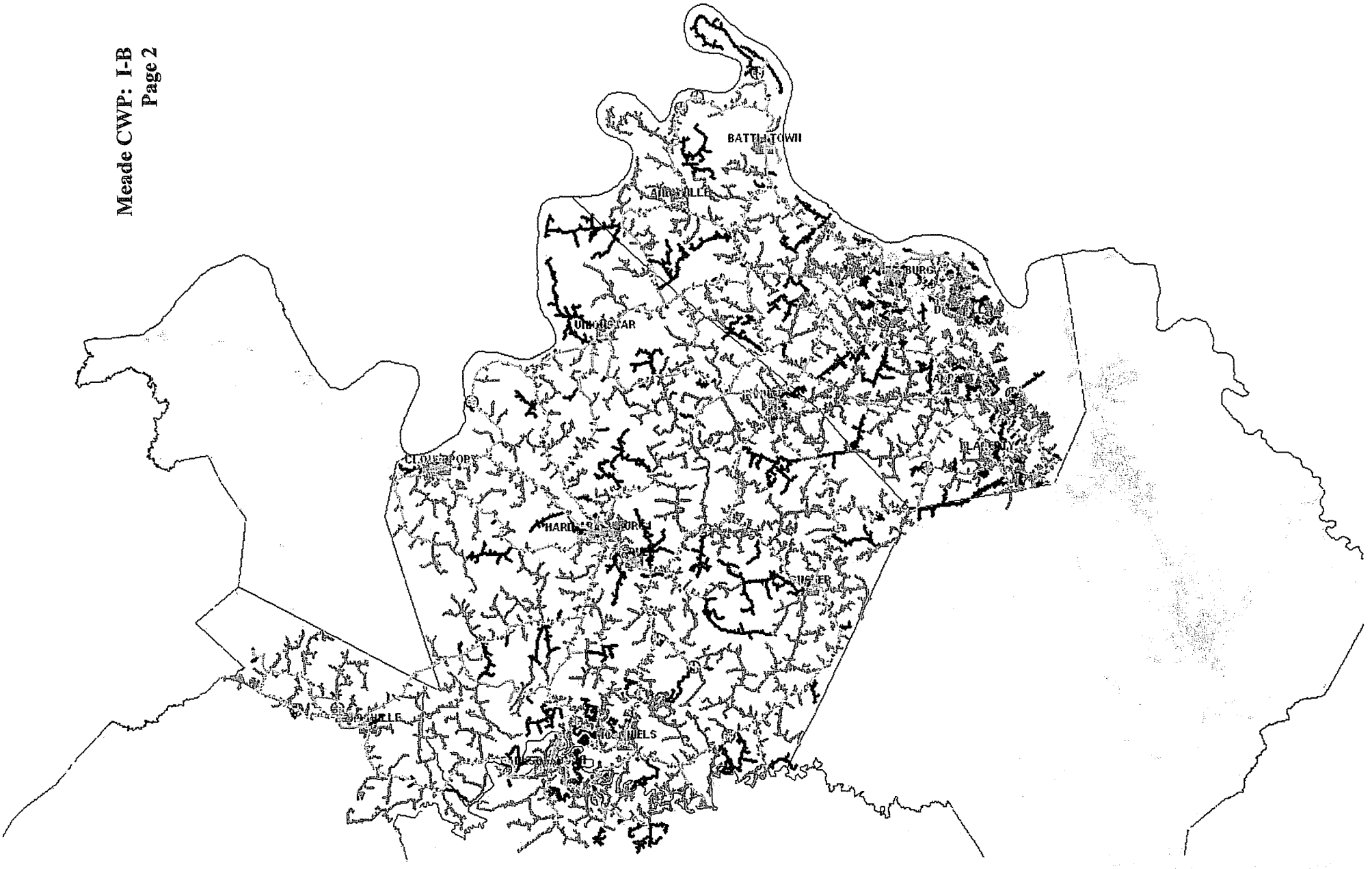
Generation and Transmission Power Supplier

Big Rivers Electric Corporation (BREC) provides all power and energy needs to MCRECC and two other distribution cooperatives. BREC is located in Henderson, Kentucky. New distribution, transmission, and substation construction requirements are considered simultaneously as a "one system" concept – between MCRECC & BREC - for the orderly and economical development of the total system. All recommendations relative to power supply and delivery are discussed with BREC.

SERVICE AREA

Meade County Rural Electric Cooperative Corporation (MCRECC) provides service to customers located in Breckinridge, Grayson, Hancock, Hardin, Meade, and Ohio Counties in northwestern Kentucky. MCRECC purchases power from the Big Rivers Electric Corporation (BREC) at 15 delivery points and distributes it at a primary voltage of 12.5/7.2 kV over approximately 2,970 miles of lines.

The area *(see map on following page)* is adjacent to the southwest of Louisville, Kentucky. A large percentage of customers are residential. Several industries and the proximity to Louisville contribute to the growing residential population. The Rough River Dam recreational area continues to grow.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SUMMARY OF CONSTRUCTION PROGRAM AND COSTS

MCRECC's distribution system was analyzed in order to identify the construction requirements needed to adequately serve the projected CWP load of 146 MW. Improvements were identified based on voltage drop, conductor loading, system reliability improvement, economic conductor analysis and operational experience. A narrative list of system improvements is located in section IV.

A breakdown of proposed construction projects by RUS 740C codes is listed below in Table I-C-1.

Table I-C-1
System Additions and Improvements Summary

RUS Form 740C Category	Category Name	Estimated Cost
100	**New Distribution Line**	**$2,478,243**
300	**Line Conversion & Replacement**	**$889,880**
400	**New Substations**	**$0**
500	**Substation Upgrades**	**$460,115**
600	**Misc. Equip & Poles**	**$13,897,045**
700	**Security Lights & SCADA**	**$837,255**
	2010-2012 CWP TOTAL	**$18,562,538**

100 – New Construction planned to serve 1,425 new customers.

300 – 9.0 miles of conductor upgrading and improvements.

400 – No new substations are projected during the CWP period.

500 – Two substation upgrades are projected during the CWP period.

600 – Miscellaneous distribution equipment and pole changes. This includes aged conductor replacement, voltage regulators, capacitors, sectionalizing, meters, transformers, increased service capacity upgrades, line relocation and pole material replacement.

700 – Other Distribution Items. Security Lights 701 & SCADA 703.

MEADE COUNTY RECC 2010-2012 CWP

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MISCELLANEOUS DISTRIBUTION EQUIPMENT - RUS CODE 600'S

ITEM	RUS CODE	3 YR. AVE. COST	# ITEMS		2010	2011	2012	TOTAL
New Transformers	601	$1,162	1030		$363,107	$396,980	$436,333	$1,196,420
New Meters	601	$341	3600		$393,363	$409,097	$425,461	$1,227,921
Service Upgrades	602	$1,646	185		$86,721	$98,389	$119,378	$304,488
Sectionalizing	603				$75,000	$75,000	$75,000	$225,000
Voltage Regulators	604				$0	$45,000	$0	$45,000
Capacitors	605				$0	$37,970	$0	$37,970
Pole Changes -Including Clearance	606	$1,774	750		$426,244	$443,293	$461,025	$1,330,562
Miscellaneous Replacement	607				$50,000	$50,000	$50,000	$150,000
Conductor Replacement	608		300 miles		$2,740,000	$2,849,600	$2,963,584	$8,553,184
Line Relocation - Highway 313	610				$826,500	$0	$0	$826,500
		TOTAL						
		MISC. CODE 600'S:			$4,960,935	$4,405,329	$4,530,781	$13,897,045

OTHER DIST. ITEMS - RUS CODE 700

ITEM	RUS CODE	3 YR. AVE. COST	# ITEMS		2010	2011	2012	TOTAL
Security Lights	701	$667	1030		$217,940	$226,658	$242,657	$687,255
SCADA	703				$50,000	$50,000	$50,000	$150,000
		TOTAL CODE 700:			$267,940	$276,658	$292,657	$837,255

2010-2012 Kentucky 18 - Meade	**CONSTRUCTION WORK PLAN TOTAL:**	**$18,562,538**

DISTRIBUTION SYSTEM DESIGN CRITERIA

Construction projects proposed herein are required to meet the following minimum standards of adequacy for voltage, thermal loading, safety, and reliability on the system:

1) The minimum voltage on primary distribution lines is 118 volts (120 volt base, 126 volts at source) after re-regulation.

2) Primary conductors are not to be loaded over 75% of their thermal rating.

3) The following equipment will not be thermally loaded by more than the percentage shown of its nameplate rating:

   a) 100% - Power Transformers
   b) 100% - Voltage Regulators
   c) 100% - Step Transformers
   d) 70% - Reclosers
   e) 70% - Line Fuses

4) Conversions of single phase to multiphase to correct voltage drop and phase balance will be considered as appropriate. Single-phase lines with a load exceeding 50 amps will be considered for multiphasing. Operating and engineering practices used to develop this loading criteria are based on a single-phase line interruption that may cause operation of the ground trip on three phase oil circuit reclosers. This is due to a 50 ampere unbalance that can be more than doubled during cold load pickup.

5) Conductors (and associated poles and hardware as required) will be considered for replacement on a systematic basis and/or other outage reports.

6) Primary conductor sizes to be considered using the Economic Conductor Analysis.

7) All new distribution lines to be designed and built according to RUS standard construction specifications and guidelines.

8) It is recommended that proposed construction items required for voltage improvements, based solely on calculated voltage from computerized circuit analysis printouts, not be authorized for construction until such calculated voltages are measured in the field.

DISTRIBUTION LINE AND EQUIPMENT COSTS

Construction cost estimates for the three year planning period are shown in Table II-B-1. Cost summaries for distribution equipment are shown in Table II-B-2.

Table II-B-1
Line Construction Cost Estimates
Annual Projected Dollars/Mile

SIZE	TYPE	2010	2011	2012
3/0 ACSR	CONV 3-PH	$90,000	$93,600	$97,300
336.4 ACSR	CONV 3-PH	$105,000	$109,200	$113,600
DCT 336.4 ACSR	CONV 3-PH	$135,000	$140,400	$146,000
#2 ACSR	CONV 1-PH	$27,400	$28,500	$29,600

Table II-B-2
Distribution Equipment Cost Estimates
Annual Projected Unit Costs

DEVICE	TYPE	2010	2011	2012
V.Regulators (3)	100 amp	$26,000	$27,000	$28,000
V.Regulators (3)	150 amp	$30,000	$31,200	$32,500
V.Regulators (3)	219 amp (167)	$38,000	$39,500	$41,000
V.Regulators (1)	50 amp	$9,000	$9,400	$9,800
300 kVAR Capacitors	3-ph w/ cont.	$6,000	$6,240	$6,490
600 kVAR Capacitors	3-ph w/ cont.	$7,000	$7,300	$7,600

STATUS OF 2005-2008 CWP ITEMS

Item Number	Status
352- Rhodelia	In-progress
354- Flood Cut Rd.	608 ITEM IN NEW CWP
355- Iron Ore Hill Rd.	608 ITEM IN NEW CWP
356- Balltown	608 ITEM IN NEW CWP
358- Fairfield/Buras	608 ITEM IN NEW CWP
367- Matthews Ln.	608 ITEM IN NEW CWP
368- Hites Falls	608 ITEM IN NEW CWP
374- Norton's Valley	608 ITEM IN NEW CWP
382- Fackler Rd.	Completed, Not Closed
387- Hidden Valley	Completed, Not Closed
389- Sewsbury	Completed, Not Closed
391- Cart Manning	Completed, Not Closed

ANALYSIS OF LONG RANGE PLAN

A Long Range Plan (LRP) update was completed in 2002.
The 2002 LRP projects two new substations.

Salem- This station, near Ekron, will relieve projected transformer overloading on Brandenburg I and Brandenburg II substations. It is projected for sometime in the next two CWP periods. No activity is needed for this substation during this CWP period.

Sand Hill- This substation, due north of Irvington, will relieve loading on the Irvington and Union Star substations. Construction on this substation is not projected to begin for another five years.

The capacity at Brandenburg-1 and Custer Substations is being increased in this CWP period. The LRP recommends the Custer Substation upgrade. The Brandenburg-1 upgrade was required due to ongoing growth in the Brandenburg area. This project will defer the construction of the proposed Salem Substation for some period of time.

Extensive copper replacement is scheduled in the 2002 LRP. A 100 mile per year replacement program is included in this CWP period.

The LRP was developed using four three-year load blocks. These blocks are intended to loosely coincide with future three-year construction work plan reports.
The LRP projects a peak load of 147.3 MW during this CWP period. The forecasted load used in the computer analysis model was 146 MW.
In ***summary,*** the 2010-2012 Construction Work Plan is in basic agreement with the 2002 LRP.

OPERATIONS & MAINTENANCE SURVEY

The current O&M Survey ("Review Rating Summary") was completed in August 2007. A copy of the survey is included in the Appendix of this report.

One-half of the MCRECC system is personally patrolled and inspected bi-annually. This results in the entire overhead system being visually inspected every two years. As a result, many maintenance and right-of-way items are found, documented, and corrected after each patrol.

A contractor is utilized to inspect and treat some selected three-phase pole routes.

Rust was noted on some substation fences and steel structures.

Telephone systems should transfer and retire old poles in joint-use situations.
CATV attachments require follow-up to ensure code compliance.

A 5-year right-of-way cycle is being maintained for the rural area of the system. In the town areas, a 3-year cycle is maintained. 500 miles per year are trimmed.
Additional steps in right-of-way clearing will be taken.

The Sectionalizing Study will be updated on a substation-by-substation basis.

SECTIONALIZING STUDIES

A sectionalizing study analyzes the existing overcurrent protection scheme and proposes changes to improve the overall effectiveness of the scheme.
Sectionalizing studies take place on a substation-by-substation basis.

The four main goals of a sectionalizing study are Safety, Coordination, Protection, and Reliability.

1. Safety – Protective devices should be able to detect the full range of fault currents available in their zone of protection coverage. Calculated minimum fault current values (Using RUS Bulletin 61-2) should be detected and cleared by the protective device.

2. Coordination – Good protective device coordination will ensure that the closest device to the fault opens. Fault locating is also enhanced. Miscoordination of protective devices can cause confusion and ultimately add to outage times.

3. Protection – A well designed protection scheme will minimize damage to the distribution system by limiting the time that damaging overcurrent is present on the faulted portion of the system.

4. Reliability – Limit the outage hours per consumer by isolating or "sectionalizing" faulted portions of the circuit so that the minimum number of customers are interrupted. Additional devices – where needed – will further limit the overall outage hours.

Changes that can affect the coordination scheme include: load growth; substation transformer capacity increases; reconductoring distribution lines; single-phase to three-phase conversions; changes in the system's circuit configuration; and the addition of loads in specific locations.

Protective device cost projections will be listed in the "603" category in this report.

TABLE II-E-1
SUBSTATION LOAD TABLE

HISTORICAL AND FORECAST LOAD IN KVA

	Installed Capability			Existing Winter		3 Year Winter		Existing Summer		3Year Summer		
NAME	Nameplate (kVA)	Winter Rating (kVA)	Summer Rating (kVA)	Jan '09 (kVA)	% Load	Jan '13 (kVA)	% Load	Aug '08 (kVA)	% Load	Aug '12 (kVA)	% Load	Notes
Andyville	7000	6300	6300	4622	73.37%	4,923	78.14%	3290	52.23%	3,843	61.00%	
Battletown	7500	6750	6750	3694	54.72%	3,031	44.90%	2711	40.17%	2,747	40.70%	
Brandenburg 1	9375	8438	8438	11949	141.62%	12,601	100.01%	7011*	83.09%	8,242	65.41%	1
Brandenburg 2	9375	8438	8438	6888	81.63%	8,184	97.00%	8280*	98.13%	7,047	83.52%	3
Cloverport	14000	12600	12600	4929	39.12%	5,347	42.44%	4615	36.63%	4,304	34.16%	
Custer	6250	5625	5625	6434	114.39%	6,856	81.25%	3892	69.20%	4,688	55.56%	2
Doe Valley	10500	9450	9450	10333	109.35%	9,204	97.40%	6120	64.76%	7,165	75.82%	3
Falls of Rough	14000	12600	12600	6737	53.47%	6,871	54.53%	5766	45.76%	5,697	45.21%	
Flaherty	14000	12600	12600	15354	121.85%	12,863	102.09%	9446	74.97%	9,784	77.65%	4
Fordsville	9375	8438	8438	7485	88.71%	7,768	92.07%	6826	80.90%	7,692	91.16%	
Garrett 1	14000	12600	12600	9434	74.88%	10,688	84.83%	5348	42.44%	6,910	54.84%	3
Garrett 2	14000	12600	12600	4788	38.00%	9,288	73.71%	2946	23.38%	5,983	47.48%	4
Hardinsburg 1	9375	8438	8438	8000	94.81%	7,856	93.11%	7457	88.37%	7,378	87.44%	5
Hardinsburg 2	9375	8438	8438	4969	58.89%	6,232	73.86%	4711	55.84%	5,969	70.74%	5
Harned	7500	6750	6750	6204	91.91%	6,763	100.19%	5656	83.79%	6,350	94.07%	
Irvington	14000	12600	12600	12778	101.41%	14,005	111.15%	9609	76.26%	11,911	94.53%	6
McDaniels	14000	12600	12600	12556	99.65%	13,980	110.95%	9885	78.46%	9,282	73.67%	6
Union Star	6250	5625	5625	4131	73.45%	4,359	77.49%	2957	52.57%	3,377	60.04%	

*Load switching during this month

1. Upgrade to a 10/14 MVA
2. Upgrade to 9375 kVA using transformer from Brandenburg 1.
3. Offload Doe Valley substation to Garrett 1 and Brandenburg 2.
4. Offload Flaherty substation to Garrett 2.
5. Offload Hardinsburg 1 to Hardinsburg 2.
6. Substation will be relieved with new substation planned for next CWP.

SERVICE RELIABILITY

The record of Meade County RECC's service interruptions for the past five years is shown in Table II-E-2. The five-year average outage minutes per consumer was **843.2.** **Major storm activity has been a majority factor in these results.**

TABLE II-E-2

	POWER SUPPLY	EXTREME STORM	PRE-ARRANGED	ALL OTHER	TOTAL
2008					
OUTAGE MINS./CONS	**92.4**	**1,199.9**	**5.5**	**52.9**	**1,350.7**
FIVE YEAR AVE.					
OUTAGE MINS./CONS	**189.1**	**600.1**	**3.5**	**50.5**	**843.2**

NON-FUNDED SYSTEM IMPROVEMENTS

The following recommendations are based upon the review of the 2009 system. Action items listed below were analyzed in the 2010-2012 Construction Work Plan computer model.

- Section CO41479 is at 50.6A in the grown winter model. Use a 70L OCR if available fault current levels permit.

- Section CO23518 (Custer) is at 51A in the grown winter model. Use a 70L OCR if available fault current levels permit.

- Relieve Doe Valley Substation. Close switch SW12941 and open at SW12862 (approx. 1.1MW transferred to Brandenburg 2) and close switch SW12869 and open at SW12878 (approx. 700kW transferred to Garrett 1)

- Relieve Flaherty Substation. Close switch SW12770 and open switch SW12766. (approx. 4MW)

- Build single phase #2 ACSR feed off of line section CO19497 to subdivision south of Woodland Rd. to relieve overload on CO19289

- Flaherty Substation: Backfeed line section CO20432 from CO20433 and open at CO-1716059028 (Custer Substation)

- Fordsville Substation: Close switch SW955255939 and open at CO37281 to relieve voltage issues and overload at CO36867.

- Garrett Substation: Backfeed CO14910 from CO13596 and open at CO13394 to relieve overload on CO16124.

- Hardinsburg 1&2 Substation: Close switch SW12481 and open switch SW12510 (approx. 1MW transferred to Hardinsburg 2).

- McDaniels Substation: Backfeed CO-314128806 from CO35425 open at CO345280006 in order to relieve overload on CO35957.

DATA RESOURCES

The following is a list of the basic data used for this analysis and report.

1. Updated primary map indicating the following items:
   a) Substations with present feeder configurations.
   b) All open points.
   c) Transmission lines.

2. Monthly substation non-coincident peak (NCP) demands for the past year and annual system peaks as obtained from the *Load Forecast.*.

3. Billing system kWh and kW sales for last winter and summer peaks.

4. Present Big Rivers Electric Corporation/MCRECC *Load Forecast.*

5. Five Year Outage Summary.

6. RUS Form 7 data.

7. Substation transformer ratings.

8. Load projections for each existing and proposed substation with regards to the summer and winter peak demands.

9. Substation Data Sheets.

10. Windmil Version 7.3 circuit model databases with voltage drop calculations for each line section.

BASIC DATA AND ASSUMPTIONS

Design Load – The construction program in the CWP covers a three-year period to serve the 146 MW, January 2013 winter peak. The design load was derived after reviewing the Load Forecast with the GFR.

Load Allocation – Individual substations were grown at different rates based on the potential for growth in their service areas. The total system design load was attained by allocating each substation's load to its individual line sections proportional to the kWh consumption on each of the line sections. Peak summer and peak winter loading were modeled and analyzed.

Voltage Drop – For the design load, an eight volt drop with one set of downline voltage regulators was assumed to be the maximum allowable drop from the substation to the end of the distribution feeder.

Substation Voltage Regulation – Voltage regulation was assumed for each substation such that a 10% voltage drop could be experienced on the transmission system at peak load and 126 volts could still be supplied to the substation bus.

System Power Factor – System power factor values were assumed to coincide with the requirements set by MCRECC. Capacitor banks can be utilized for power factor correction and system voltage support.

Reliability – In areas where more than a total load of 50 amps is served from a single-phase line, conversion to 2 or 3 phase was considered in order to provide greater system reliability. 2-phase conversions were generally chosen where a single-phase line split into two taps – with a large amount of load being present on only one of the taps. 3-phase conversions were chosen for the more heavily loaded taps and when the single-phase tap split into more than two directions.

Inflation – An annual inflation rate of 4.0% was used in this CWP.

Construction Cost Estimates – Cost estimates for the various distribution equipment and conductor sizes are presented in Tables II-B-1 and II-B-2.

Computer Model of Distribution System – The system is modeled on Version 7.3 of Milsoft Integrated Solution's Windmil analysis software. Downloading monthly billing computer data into the Windmil billing file directory was the framework for building the winter and summer models. Residential and small commercial loads were allocated by the kwh method. Projected models were analyzed for Design Criteria violations.

Economic Conductor Analysis – Economic Conductor analysis includes the consideration of initial construction costs and the associated losses of the selected conductors. For two alternative conductors compared, there is generally a kW load level at which the fixed costs associated with construction plus the variable costs related to line losses are equal for both alternatives.

The following recommendations were generated from the analysis:

1. New single-phase line extensions should be constructed of #2 ACSR.
2. New and converted 3-phase construction should be of 3/0 ACSR for initial loads of less than 2,500 kW and 336.4 ACSR for all greater loads. 336.4 ACSR should also be used near present and future substation areas regardless of the initial load.

The data tables preceeding each analysis graph lists the assumptions that were made in each scenario of the conductor analysis. This analysis appears in the Appendices of this report.

FINANCIAL DATA

- ***Cost of Capital = 5.5%***
- ***Inflation = 4.0%***
- ***Present Worth Discount Factor = 5.5%***
- ***Depreciation = 3.3%***
- ***O & M = 5.3%***
- ***Tax & Insurance = 0.2%***

TABLE III-B-1 Inflation = 4%

COST SUMMARY DATA

KY-18 MEADE

DESCRIPTION	24 mo. Historical	2010	2011	2012	CWP TOTAL
New Construction (100)					
1. New services constructed	1771	450	475	500	1425
2. Cost per Customer	$1,543	$1,669	$1,736	$1,805	
3. Cost of New Customers	$2,732,926	$751,084	$824,523	$902,636	$2,478,243
Padmount Transformers (601)					
1. New transformers added	11	3	3	5	11
2. Cost per Transformer	$1,884	$2,038	$2,119	$2,204	
3. Cost of New Transformers	$20,726	$6,114	$6,358	$11,021	$23,493
3 PH Padmount Transformers (601)					
1. New transformers added	2	3	3	3	9
2. Cost per Transformer	$14,051	$15,198	$15,806	$16,438	
3. Cost of New Transformers	$28,103	$45,594	$47,417	$49,314	$142,325
New Transformers (601)					
1. New transformers added	1252	318	337	355	1010
2. Cost per Transformer	$905	$979	$1,018	$1,059	
3. Cost of New Transformers	$1,133,517	$311,399	$343,205	$375,998	$1,030,602
New Meters (601)					
1. New Meters added	2290	1200	1200	1200	3,600
2. Cost per Meter	$303	$328	$341	$355	
3. Cost of New Meters	$694,034	$393,363	$409,097	$425,461	$1,227,921
Service Upgrades (602)					
1. Number of Service Upgrades	114	55	60	70	185
2. Cost per Service Upgrade	$1,458	$1,577	$1,640	$1,705	
3. Cost of Service Upgrades	$166,188	$86,721	$98,389	$119,378	$304,488
Pole Changes - Replacement (606)					
1. Poles Changed	674	250	250	250	750
2. Cost per Pole Change	$1,576	$1,705	$1,773	$1,844	
3. Cost of Pole Changes	$1,062,457	$426,244	$443,293	$461,025	$1,330,562
Miscellaneous - Replacement (607)					
1. Cost of Misc. Replacements		$50,000	$50,000	$50,000	$150,000
Conductor Replacement (608)					
1. Miles of small conductor to be replaced		100	100	100	300
2. Cost per mile		$27,400	$28,496	$29,636	
3. Total cost of small conductor replacement		$2,740,000	$2,849,600	$2,963,584	$8,553,184
Line Relocates - road (610)*					
1. Cost of line relocates		$826,500			$826,500
Security Lights (701)					
1. New Security Lights Added	683	340	340	350	1,030
2. Cost per Security Light	$595	$641	$667	$693	
3. Cost of Security Lights	$406,666	$217,940	$226,658	$242,657	$687,255
SCADA (703)					
1. SCADA Hardware & Communications		$50,000	$50,000	$50,000	$150,000

***Hwy 313 project**

SERVICE TO NEW CUSTOMERS – RUS CODE 100

A total of 1,425 new services are anticipated. The projected cost is $2,478,243.

Cost history and projections are shown in Table III-B-1.

SYSTEM IMPROVEMENTS – RUS CODE 300

LINE CONVERSION NARRATIVES
Note: Refer to the Design Criteria (DC) on Page II-A

Brandenburg #2 Substation
Code 301
Estimated Cost: $9,000
Year: 2010

Description of Proposed Construction
Convert 0.1 mile of single-phase #4 ACSR to three-phase 3/0 ACSR from CO41392 to CO40557.

Reason For Proposed Construction
Design Criteria (DC) item 4 is being violated.

Results of Proposed Construction
Single-phase overloading will be corrected.

Alternative Corrective Plan Investigated
No viable backfeeds were available to relieve loading.

Doe Valley Substation
Code 302
Estimated Cost: $54,000
Year: 2010

Description of Proposed Construction
Convert 0.6 mile of single-phase #4 ACSR to three-phase 3/0 ACSR from CO44767 to CO43560.

Reason For Proposed Construction
Design Criteria (DC) item 4 is being violated.

Results of Proposed Construction
Single-phase overloading will be corrected.

Alternative Corrective Plan Investigated
No viable backfeeds were available to relieve loading.

SYSTEM IMPROVEMENTS – RUS CODE 300

Falls of Rough Substation

Code 303

Estimated Cost: $38,920
Year: 2012

Description of Proposed Construction
Convert 0.4 mile of single-phase 8ACWC to three-phase 3/0 ACSR from CO35009 to CO33952.

Reason For Proposed Construction
Design Criteria (DC) item 4 is being violated.

Results of Proposed Construction
DC item 5 will be met and system reliability will be improved.

Alternative Corrective Plan Investigated
Since this section was chosen for aged conductor replacement, no alternatives were considered.

Falls of Rough Substation

Code 304

Estimated Cost: $155,680
Year: 2012

Description of Proposed Construction
Convert 1.6 miles of single-phase #2 ACSR to three-phase 3/0 ACSR from CO36043 to CO36631.

Reason For Proposed Construction
Design Criteria (DC) item 4 is being violated.

Results of Proposed Construction
DC item 5 will be met and system reliability will be improved.

Alternative Corrective Plan Investigated
No viable backfeeds were available to relieve loading.

SYSTEM IMPROVEMENTS – RUS CODE 300

Flaherty Substation

Code 305

Estimated Cost: $220,500
Year: 2010

Description of Proposed Construction
Replace 2.1 miles of three-phase 3/0 ACSR with three-phase 336.4 ACSR from CO19489 to CO19378.

Reason For Proposed Construction
Design Criteria (DC) item 2 is being violated.

Results of Proposed Construction
DC item 2 will be met and primary voltage levels will be improved.

Alternative Corrective Plan Investigated
This section is at the eastern edge of the system in a high-growth area. This upgrade represented the least-cost alternative vs. a new substation or larger conductor.

Garrett #1 Substation

Code 306

Estimated Cost: $178,500
Year: 2010

Description of Proposed Construction
Replace 1.7 miles of three-phase 3/0 ACSR with three-phase 336.4 ACSR from Substation to CO51988.

Reason For Proposed Construction
Design Criteria (DC) item 2 is being violated.

Results of Proposed Construction
DC item 2 will be met and primary voltage levels will be improved.

Alternative Corrective Plan Investigated
This section is a high-growth area. This upgrade represented the least-cost alternative vs. a new substation or larger conductor.

SYSTEM IMPROVEMENTS – RUS CODE 300

Garrett #1 Substation

Code 307
Estimated Cost: $18,000
Year: 2010

Description of Proposed Construction
Convert 0.2 mile of single-phase 6ACWC to three-phase 3/0 ACSR from CO43201 to CO42646.

Reason For Proposed Construction
Design Criteria (DC) item 4 is being violated.

Results of Proposed Construction
DC item 4 will be met and system reliability will be improved.

Alternative Corrective Plan Investigated
Since this section was aged conductor replacement and was overloaded, no alternatives were considered.

Irvington Substation

Code 308
Estimated Cost: $149,760
Year: 2011

Description of Proposed Construction
Convert 1.6 miles of single-phase #4 ACSR to three-phase 3/0 ACSR from CO21284 to CO17166.

Reason For Proposed Construction
Design Criteria (DC) item 4 is being violated.

Results of Proposed Construction
DC item 4 will be met and system reliability will be improved.

Alternative Corrective Plan Investigated
No viable backfeeds were available to relieve loading.

SYSTEM IMPROVEMENTS – RUS CODE 300

Irvington Substation

Code 309

Estimated Cost: $28,080
Year: 2011

Description of Proposed Construction
Convert 0.3 mile of three-phase #2 ACSR to three-phase 3/0 ACSR from CO21447 to CO21453.

Reason For Proposed Construction
Design Criteria (DC) item 2 is being violated.

Results of Proposed Construction
DC item 2 will be met and system reliability will be improved.

Alternative Corrective Plan Investigated
This line is a key link in the distribution network in the City of Irvington, no alternatives were considered.

Irvington Substation

Code 310

Estimated Cost: $28,080
Year: 2011

Description of Proposed Construction
Convert 0.3 mile of three-phase #2 ACSR to three-phase 3/0 ACSR from CO21973 to CO21340.

Reason For Proposed Construction
Design Criteria (DC) item 2 is being violated.

Results of Proposed Construction
DC item 2 will be met and system reliability will be improved.

Alternative Corrective Plan Investigated
This line is a key link in the distribution network in the City of Irvington, no alternatives were considered.

SYSTEM IMPROVEMENTS – RUS CODE 300

McDaniels Substation

Code 311

Estimated Cost: $9,360
Year: 2011

Description of Proposed Construction
Convert 0.1 mile of single-phase 8ACWC to three-phase 3/0 ACSR from CO32444 to CO37801.

Reason For Proposed Construction
Design Criteria (DC) item 4 is being violated.

Results of Proposed Construction
DC item 4 will be met and system reliability will be improved.

Alternative Corrective Plan Investigated
Since this section was aged conductor replacement and was overloaded, no alternatives were considered.

SUBSTATION IMPROVEMENTS – RUS CODE 500

Brandenburg #1 Transformer Upgrade – RUS Code 526
The transformer at Brandenburg #1 Substation nearing overload. The existing unit will be replaced with a 10/14 MVA unit. The projected cost is $325,115.

Custer Transformer Upgrade – RUS Code 527
The transformer at Custer Substation is nearing overload. The transformer that was replaced at Brandenburg #1 Substation will be installed at Custer Substation. This will provide a rating of 8,348 kVA. The projected cost is $7,500.

Substation OCR Upgrades – RUS Code 528
New substation reclosers will be installed. One unit at Battletown Substation; three units at Custer Substation; and three units at Andyville Substation. The projected cost is $127,500.

MISCELLANEOUS DISTRIBUTION EQUIPMENT – RUS CODE 600's

Meters and Transformers – RUS Code 601

Historical data was gathered for meters and transformers and is included in Table III-B-1. 3,600 new meters are projected at a cost of $1,227,921. The system will be completely fitted with automated meter reading capability during this CWP period.

1,030 new transformers are projected at a cost of $1,196,420.

Service Upgrades – RUS Code 602

There are 185 service upgrades projected at a total cost of $304,488. Historical data is included in Table III-B-1.

Sectionalizing – RUS Code 603

Overcurrent analysis is performed on an ongoing basis. Device changeouts, conductor multiphasing and load shifts require overcurrent device purchases. The total projected cost for sectionalizing is $225,000.

Voltage Regulators – RUS Code 604

One set of voltage regulators are projected for the CWP as follows:

CFR CODE	SUBSTATION	SECT/RATING	YEAR	COST
604.1	Flaherty	CO20672 250 kVA	2011	$45,000

Capacitor Banks – RUS Code 605

Six sets of capacitors are projected for the CWP. Specific feeder locations were not selected. A review of substation power factors during summer loading was the basis for the following recommendations:

CFR CODE	SUBSTATION	RATING	YEAR	COST
605.1	Cloverport	300 kVAR	2011	$6,240
605.2	Custer	450 kVAR	2011	$6,770
605.3	Doe Valley	4 – 300 kVAR	2011	$24,960

MISCELLANEOUS DISTRIBUTION EQUIPMENT – RUS CODE 600's (cont.)

Pole Changes (All Categories) – RUS Code 606
There are 750 projected pole changes in the CWP. The cost for the pole changes is projected to be $1,330,562. Historical cost data for pole changes may be found in Table III-B-1.

Miscellaneous Hardware Replacement – RUS Code 607
This new category includes replacement of guys, anchors, insulators, crossarms, braces, arresters and other non-sectionalizing hardware. $150,000 is the projected cost for this CWP period.

Aged Conductor Replacement – RUS Code 608
This category allows the cooperative to replace aged conductor on both a targeted and as-needed basis. 300 miles of aged conductor will be replaced at an estimated cost of $8,553,184.

Line Relocation for Highway Projects – RUS Code 610
The Highway 313 project requires significant line relocation work out of the Garrett and Flaherty Substations. The projected cost to relocate several main feeders is $826,500.

SECURITY LIGHTS – RUS CODE 701

A total of 1,030 new security lights are anticipated. The projected cost is $687,255. Cost history and projections are shown in Table III-B-1.

SCADA – RUS CODE 703

Supervisory Control and Data Acquisition equipment will be installed in 14 substations at a total cost of $150,000

Equipment list per substation

Survalent Scout Remote Terminal Unit

Fiber Optic Cable

Fiber to Ethernet converters

Ethernet switch

Form 6 recloser controls

CL-6 regulator controls

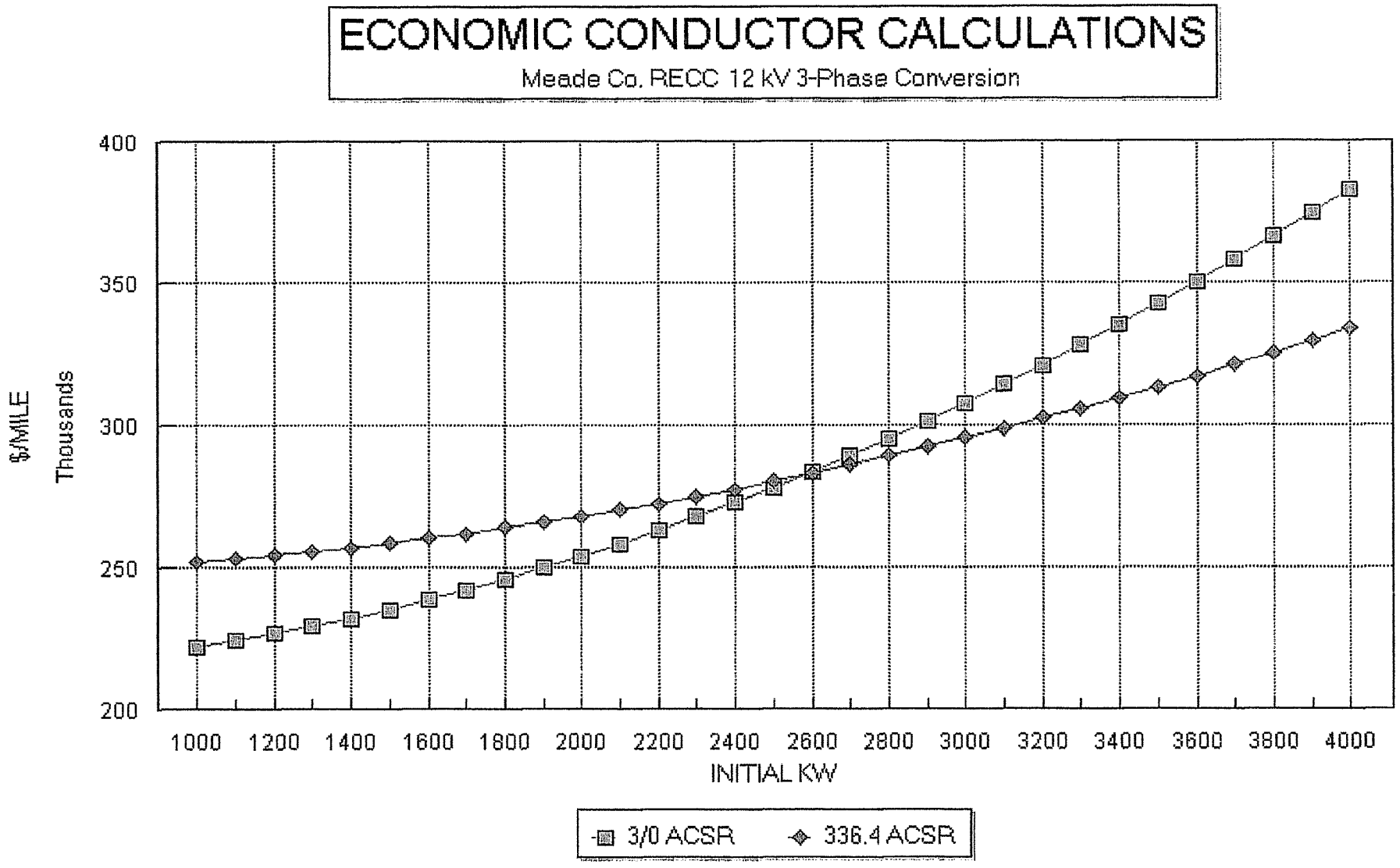
Appendix A

Economic Conductor Analysis

Meade County RECC
12 kV 3-Phase
ECONOMIC CONDUCTOR CALCULATIONS
CONVERSIONS

O&M	TAX	INS	INT	$/KW	$/KWH	KW
5.30%	0.10%	0.10%	5.50%	7.37	0.020	1000
RMO	**RAT**	**KWI**	**KWHI**	**LGR**	**INF**	**m**
12	0.0%	3.50%	3.50%	3.50%	4.00%	30
LF	**PF**	**CF**	**N**	**KV**	**P**	
48.0%	97.0%	95.0%	0.64	7.2	3	

CONDUCTOR	3/0 ACSR	336.4 ACSR
COST/MI	$90,000	$105,000
OHMS/MI	0.546	0.278
TCOST/MI	$477,327	$540,921
PWCOST/MI	$221,958	$251,910


ECONOMIC CONDUCTOR CALCULATIONS
Meade Co. RECC 12 kV 3-Phase Conversion
$/MILE
Thousands
400
350
300
250
200
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
INITIAL KW
3/0 ACSR
336.4 ACSR

Meade County RECC

Annual Loss Cost Calculations

Month	kWh	kW	kW Loss	Load Fact	Loss Fact	kWh Loss
JANUARY	52,795,320	132,545	1.00	0.54	0.33	243
FEBRUARY	41,178,824	106,037	0.64	0.58	0.37	160
MARCH	36,630,435	105,149	0.63	0.47	0.26	121
APRIL	30,519,000	73,830	0.31	0.57	0.37	82
MAY	28,450,310	63,879	0.23	0.60	0.40	69
JUNE	37,742,320	84,246	0.40	0.62	0.42	124
JULY	41,726,820	90,108	0.46	0.62	0.43	146
AUGUST	40,253,500	88,280	0.44	0.61	0.41	136
SEPTEMBER	33,124,760	89,354	0.45	0.51	0.31	100
OCTOBER	30,669,070	72,992	0.30	0.56	0.36	81
NOVEMBER	39,355,480	90,112	0.46	0.61	0.41	135
DECEMBER	51,824,690	120,772	0.83	0.58	0.37	230
TOTAL	464,270,529	1,117,304	6.17	6.87	4.43	1627

KW CHARGE = $7.37/KW **$7.37 x 6.17(KW LOSS)=** **$45.49**

ENERGY = $0.0204/KWH **$0.0204x 2445(KWH LOSS)=** **$33.19**

TOTAL LOSS COST/KW PEAK **$78.68**

"N" = 6.17/12 = 0.64

Appendix B
Operation & Maintenance Survey

United States Department of Agriculture | Rural Economic and Community Development | Rural Utilities Service | Washington, DC 20250

August 23, 2007

SUBJECT: OPERATIONS AND MAINTENANCE SURVEY

TO: BURNS MERCER, PRESIDENT/CEO
MEADE COUNTY RECC

In accordance with 7 CFR 1730-1, a review and evaluation of your electric system and facilities as related to system operation and maintenance was made on August 23, 2007.

The objectives of this review are to carry out RUS's responsibility for loan security and to assure that your electric plant is being operated and maintained in a safe and satisfactory condition and that you are providing an acceptable quality of service.

My review has indicated that your facilities are being adequately operated and maintained and you have an effective O & M program supported by proper records. There are several comments and recommendations for further improvements.

Numerous residential and rural trees were observed close to or in the lines. Non-residential trees should be removed if possible. Directional trimming is the recommended procedure to keep trees out of the lines.

We observed several telephone poles left standing next to electric poles which need to be removed. According to your staff cable TV attachments require constant follow-up to ensure code compliance.

A sectionalizing study needs to be prepared prior to the next work plan.

MIKE NORMAN
RUS FIELD REPRESENTATIVE

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL UTILITIES SERVICE

REVIEW RATING SUMMARY

BORROWER DESIGNATION: KY 18

DATE PREPARED: August 23, 2007

Ratings on form are: 0: Unsatisfactory -- No Records; 1: Corrective Action Needed; 2: Acceptable, but Should be Improved -- See Attached Recommendations; 3: Satisfactory -- No Additional Action Required at this Time; NA: Not Applicable

PART I. TRANSMISSION and DISTRIBUTION FACILITIES

1. Substations (Transmission and Distribution)	(Rating)
a. Safety, Clearance, Code Compliance	3
b. Physical Conditions: Structure, Major Equipment, Appearance	3
c. Inspection Records - Each Substation	3
d. Oil Spill Prevention	3
2. Transmission Lines	
a. Right-of-Way: Clearing, Erosion, Appearance, Intrusions	NA
b. Physical Condition: Structure, Conductor, Guying	NA
c. Inspection Program and Records	NA
3. Distribution Lines - Overhead	
a. Inspection Program and Records	3
b. Compliance with Safety Codes: Clearances	3
Foreign Structures	2
Attachments	2
c. Observed Physical Condition from Field Checking: Right-of-Way	2
Other	

4. Distribution - Underground Cable	(Rating)
a. Grounding and Corrosion Control	3
b. Surface Grading, Appearance	3
c. Riser Pole: Hazards, Guying, Condition	3
5. Distribution Line Equipment: Conditions and Records	
a. Voltage Regulators	3
b. Sectionalizing Equipment	3
c. Distribution Transformers	3
d. Pad Mounted Equipment	
Safety: Locking, Dead Front, Barriers	3
Appearance: Settlement, Condition	3
Other	
e. Kilowatt-hour and Demand Meter Reading and Testing	3

PART II. OPERATIONS and MAINTENANCE

6. Line Maintenance and Work Order Procedures	(Rating)
a. Work Planning & Scheduling	3
b. Work Backlogs: Right-of-Way Maintenance	3
Poles	3
Retirement of Idle Services	3
Other	

7. Service Interruptions

a. Average Annual Hours/Consumer by Cause (Complete for each of the previous 5 years)

PREVIOUS 5 YEARS (Year)	POWER SUPPLIER a.	MAJOR STORM b.	SCHEDULED c.	ALL OTHER d.	TOTAL e.	(Rating)
2002	0.46	0.83	0.05	1.20	2.54	3
2003	0.11	0.97	0.04	0.71	1.83	3
2004	13.02	26.60	0.06	0.99	40.67	2
2005	1.31	0.57	0.07	0.60	2.55	3
2006	0.15	2.40	0.04	0.99	3.58	3

b. Emergency Restoration Plan: 3

8. Power Quality	(Rating)
a. General Freedom from Complaints	3
9. Loading and Load Balance	
a. Distribution Transformer Loading	3
b. Load Control Apparatus	NA
c. Substation and Feeder Loading	3
10. Maps and Plant Records	
a. Operating Maps: Accurate and Up-to-Date	3
b. Circuit Diagrams	3
c. Staking Sheets	3

PART III. ENGINEERING

11. System Load Conditions and Losses		(Rating)
a. Annual System Losses	4.10%	3
b. Annual Load Factor	45.9%	3
c. Power Factor at Monthly Peak	95+%	3
d. Ratios of Individual Substation Annual Peak kW to kVA		3
12. Voltage Conditions		
a. Voltage Surveys		3
b. Substation Transformer Output Voltage Spread		3

13. Load Studies and Planning	(Rating)
a. Long Range Engineering Plan	3
b. Construction Work Plan	3
c. Sectionalizing Study	1
d. Load Data for Engineering Studies	3
e. Load Forecasting Data	3

PART IV. OPERATION AND MAINTENANCE BUDGETS

YEAR	For Previous 2 Years		For Present Year	For Future 3 Years		
	2005	2006	2007	2008	2009	2010
	Actual $ Thousands	Actual $ Thousands	Budget $ Thousands	Budget $ Thousands	Budget $ Thousands	Budget $ Thousands
Normal Operation	1,727,359	1,847,397	2,006,680	2,066,880	2,128,887	2,192,753
Normal Maintenance	2,327,565	2,290,509	2,550,609	2,627,127	2,705,941	2,787,119
Additional (Deferred) Maintenance						
Total	4,054,924	4,137,906	4,557,289	4,694,007	4,834,828	4,979,872

14. Budgeting: Adequacy of Budgets for Needed Work 3 *(Rating)*

15. Date Discussed with Board of Directors 9/19/2007 *(Date)*

EXPLANATORY NOTES

ITEM NO.	COMMENTS
1b.	Rust was observed on some substation fences and steel structures.
3b.	Telephone poles left standing close to electric poles should be removed. Cable TV attachments require constant monitoring and follow-up to ensure code requirements are met.
3c.	Residential trees in the lines should be removed or directionally trimmed.
7a.	Severe summer storms caused massive outages in this area.
13c.	A sectionalizing study needs to be prepared.

		TITLE	DATE
RATED BY:		VP OPERATIONS & ENGINEERING	08/23/07
REVIEWED BY:		PRESIDENT/CEO	08/23/07
REVIEWED BY:		RUS GFR	08/23/07