South Kentucky RECC

A Touchstone Energy® Cooperative

2010-2013 Construction Work Plan

Kentucky 54 Wayne
Somerset, Kentucky

South Kentucky RECC
A Touchstone Energy® Cooperative

SOUTH KENTUCKY RURAL ELECTRIC COOPERATIVE CORPORATION

KENTUCKY 54 WAYNE
SOMERSET, KENTUCKY

CONSTRUCTION WORK PLAN (CWP)
January 2010 – December 2013

ENGINEERING CERTIFICATION

Upon completion of the construction proposed herein, the above electric distribution system can provide adequate and dependable service to the approximate 71,363 customers. The peak demand is estimated to be approximately 559,000 kW in the winter 2013-2014.

The loads estimated for the next four years are consistent with the 2008 Power Requirements Study and the applicable RUS bulletins. The Long Range System Study (LRSS) was completed in 2007 and the construction included herein is in accordance with the LRSS.

I certify that this 2010-2013 Construction Work Plan 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.

John Kevin Newton
Kentucky P.E. No. 21,520

Engineer's Certification

Table of Contents

I. EXECUTIVE SUMMARY

A. PURPOSE OF THE REPORT

This report documents the winter of 2008-2009 engineering analysis and summarizes the proposed construction for South Kentucky Rural Electric Cooperative Corporation's (SKRECC) electric distribution system for the four-year planning period of 2010 through 2013.

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

RESULTS OF THE PROPOSED CONSTRUCTION

Upon completion of the construction of facilities proposed herein, the system will provide adequate and dependable service to 65,138 residential consumers using an average of 1203 kWh per consumer per month; 6,087 small commercial consumers, and 17 large consumers which are provided for on an individual basis. It is estimated that there will be 9,500 idle services.

GENERAL BASIS OF THE STUDY

The 2013 projected number of consumers and total peak system loads were taken directly from the cooperative's 2008 Power Requirements Study (PRS) prepared jointly by East Kentucky Power Cooperative (EKP) and SKRECC as approved by the RUS. The projected load increases were spread uniformly except for projected high growth areas that were projected individually.

New distribution, transmission, and power supply construction requirements were considered simultaneously as a "one system" approach for the orderly and economical development of the total system. All of the proposed construction and recommendations herein, relative to power supply and delivery, were discussed with the cooperative's power supplier, EKP.

A complete list of the lines and equipment with their estimated cost (all based on recent historical data) required to serve additional members is developed in Section III. A similar list and cost of necessary service upgrades to existing members is also included in Section III.

An analysis, using as a basis RUS guidelines and the design criteria herein, for thermal loading, voltages, physical conditions and reliability was performed on all of the substations and distribution lines and major equipment of the existing system. Milsoft Distribution Analysis Software (WINDMIL) was used to analyze the distribution circuits during the winter of 2008 peak loading conditions. The exhibits in Section II form the rest of the basis of this analysis.

For each inadequacy that was determined, alternate solutions were investigated and economically evaluated, so that the most cost effective construction, if required, could be proposed.

B. SERVICE AREA AND POWER SUPPLY

South Kentucky Rural Electric Cooperative Corporation's headquarters is in Somerset. The system is located in south central Kentucky. It serves a large portion of the rural areas of all or part of Wayne, Russell, Pulaski and McCreary Counties, and sections of Adair, Casey, Lincoln and Laurel Counties. The system covers the major geographical portions of these counties, with Kentucky Utilities Company serving the towns and some rural areas along the main roads. The coop purchased the municipal system in Monticello during 2007, which added approximately 3,500 members. The small towns and district offices within the service area are Russell Springs, Monticello, Albany, and Whitley City.

Most of the service area is rural in nature with some industry, tourism, farming, and commercial establishments. The geographic area consists of significant rolling hills, some rocky, rough terrain and some grazing lands along streams and tributaries. The population of our service area is increasing at a modest rate. Manufacturing and the development of industrial parks is occurring system wide.

The following data is from SKRECC's 12/31/2008 Form 7:

Number of Consumers:	66,276
MWh Purchased:	1,347,309
MWh Sold:	1,266,216
Maximum kW Demand:	359,641
Total Utility Plant:	$186,345,885
Consumers per Mile:	9.9

Most of our 40 substations are constructed for 69/12.47 kV operation, with only a few constructed for 69/24.9 kV. Total distribution line mileage is 6,685. Installed conductor sizes range from 6A CWC to 336ACSR.

SKRECC receives its power from East Kentucky Power Cooperative (EKPC). They provide transmission lines and distribution substations for our supply. EKPC owns, maintains and is responsible for the operation of the substations.

EKPC provides all of our power and energy requirements, by virtue of a standard "all requirements" power contract. EKPC is an RUS financed G & T in Winchester KY.

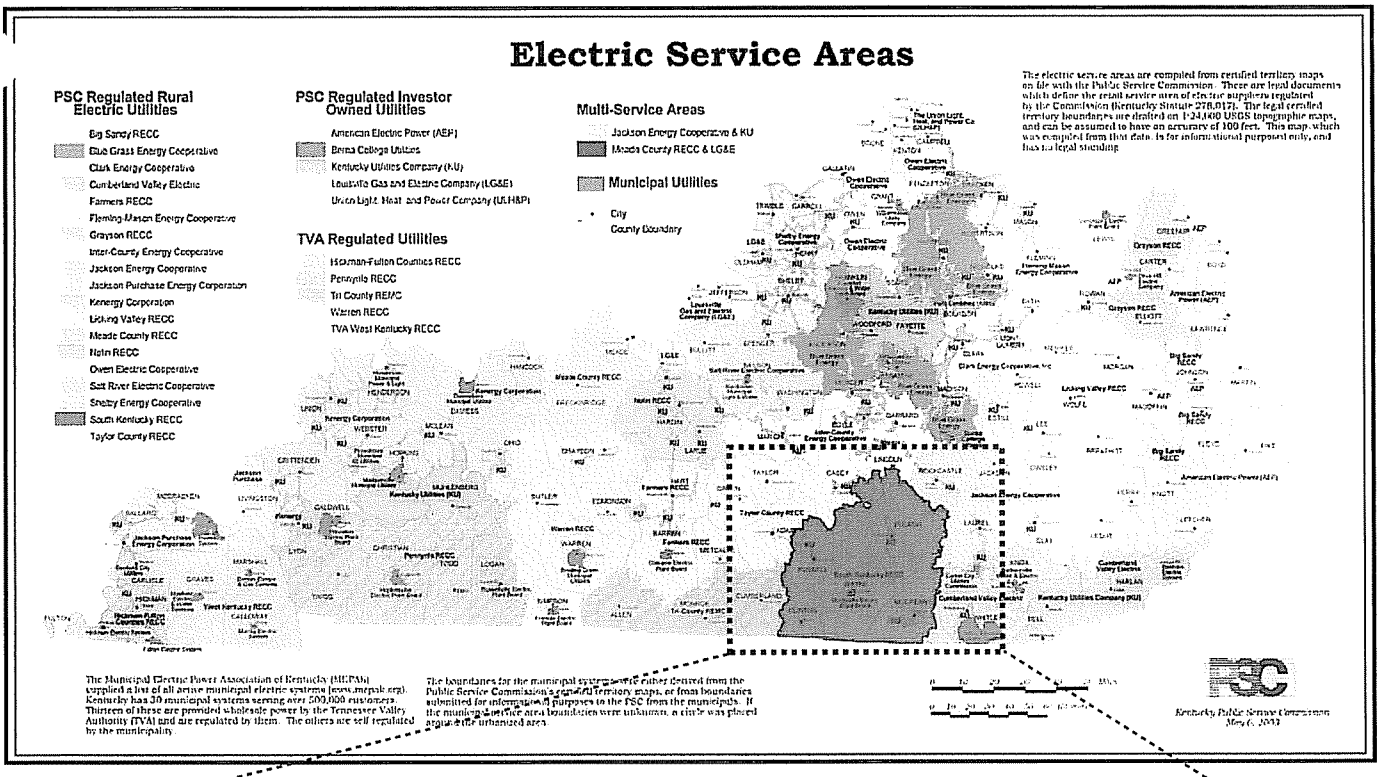
C. SYSTEM ORGANIZATION AND OPERATION

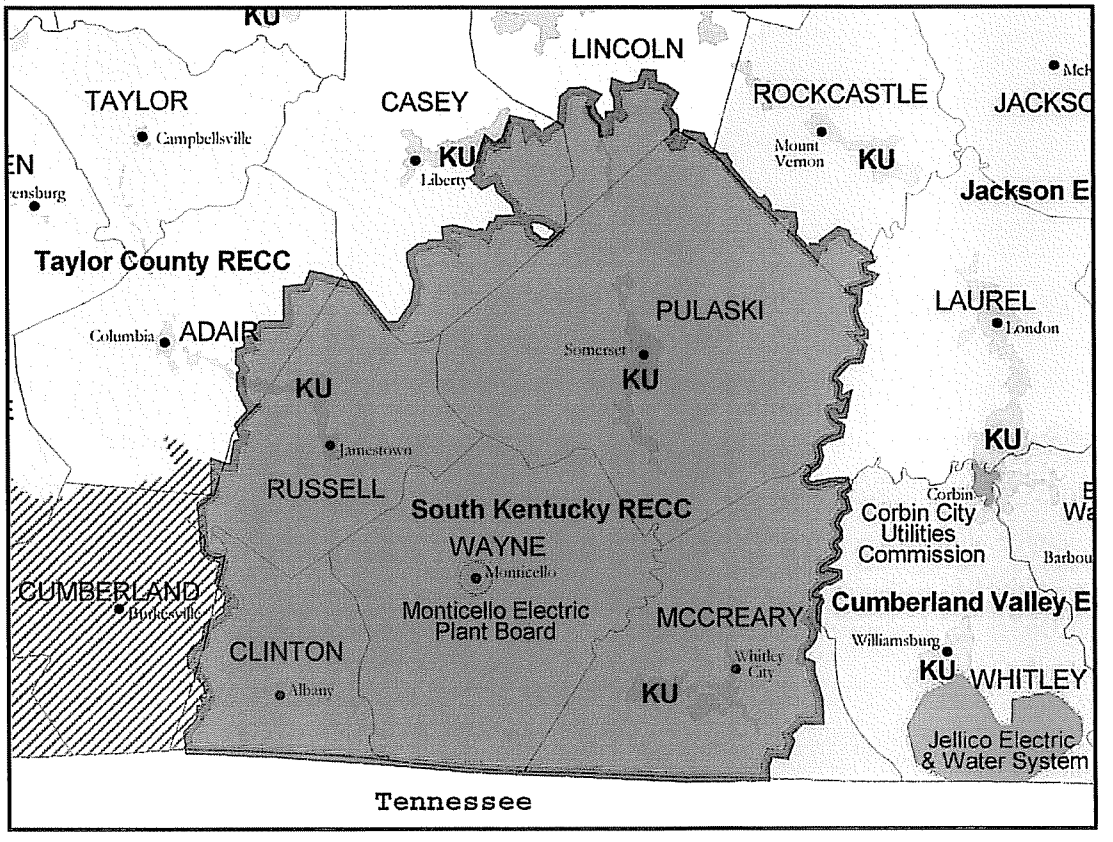
SKRECC's headquarters as mentioned earlier is in Somerset, Kentucky, near the geographic center of the system. The system is operated and maintained under the leadership of engineering teams and leaders. Additional support staff of technicians, administrators, and aides compliments the system operations.

SKRECC utilizes contractor construction crews for both large system improvements and member line extensions as needed.

D. STATUS OF PREVIOUS WORKPLAN PROJECTS

All of the previous CWP multi-phase projects will be completed or nearing completion at year end 2009. This 100 percent completion rate reflects the seriousness the engineering staff and employees at SKRECC have for the CWP, by completing the work in a timely manner. Due to the current economic climate a decision was made in 2008 to carry over 13 re-conductor jobs to the new work plan. These lines were being upgraded from 6A CWC to #2 ACSR as part of our ongoing plan to replace the copper wire over a number of years. It is our opinion that this short delay in changing this wire will not have an adverse affect on the system.


Electric Service Areas
PSC Regulated Rural Electric Utilities
Big Sandy RECC
Blue Grass Energy Cooperative
Clark Energy Cooperative
Cumberland Valley Electric
Farmers RECC
Fleming-Mason Energy Cooperative
Grayson RECC
Inter-County Energy Cooperative
Jackson Energy Cooperative
Jackson Purchase Energy Corporation
Kenergy Corporation
Licking Valley RECC
Meade County RECC
Nolin RECC
Owen Electric Cooperative
Salt River Electric Cooperative
Shelby Energy Cooperative
South Kentucky RECC
Taylor County RECC
PSC Regulated Investor Owned Utilities
American Electric Power (AEP)
Berea College Utilities
Kentucky Utilities Company (KU)
Louisville Gas and Electric Company (LG&E)
Union Light, Heat and Power Company (ULH&P)
TVA Regulated Utilities
Hickman-Fulton Counties RECC
Pennyrile RECC
Tri County RELC
Warren RECC
TVA West Kentucky RECC
Multi-Service Areas
Jackson Energy Cooperative & KU
Meade County RECC & LG&E
Municipal Utilities
City
County Boundary
The electric service areas are compiled from certified territory maps on file with the Public Service Commission. These are legal documents which define the retail service area of electric suppliers regulated by the Commission (Kentucky Statute 278.0171). The legal certified territory boundaries are drafted on 1:24,000 USGS topographic maps, and can be assumed to have an accuracy of 100 feet. This map, which was compiled from that data, is for informational purposes only, and has no legal standing.
The Municipal Electric Power Association of Kentucky (MEPAK) supplied a list of all active municipal electric systems (www.mepak.org). Kentucky has 30 municipal systems serving over 500,000 customers. Thirteen of these are provided wholesale power by the Tennessee Valley Authority (TVA) and are regulated by them. The others are self regulated by the municipality.
The boundaries for the municipal systems were either derived from the Public Service Commission's certified territory maps, or from boundaries submitted for informational purposes to the PSC from the municipals. If the municipal service area boundaries were unknown, a circle was placed around the urbanized area.
PSC
Kentucky Public Service Commission
May 6, 2003


KU
LINCOLN
TAYLOR
Campbellsville
CASEY
KU
Liberty
ROCKCASTLE
Mount Vernon
KU
JACKSO
Jackson E
Taylor County RECC
Columbia
ADAIR
PULASKI
Somerset
KU
KU
LAUREL
London
KU
Jamestown
RUSSELL
South Kentucky RECC
WAYNE
Monticello
Monticello Electric Plant Board
CUMBERLAND
Burkesville
CLINTON
Albany
MCCREARY
Whitley City
KU
Corbin
Corbin City Utilities Commission
Cumberland Valley E
Williamsburg
KU
WHITLEY
Jellico Electric & Water System
Tennessee

F. SUMMARY OF PROPOSED 4-YEAR CONSTRUCTION AND COSTS

The costs of the recommended construction program over the next four years are summarized as follows:

Year	New Construction	System Improvements		Total
2010	$6,576,500	$2,952,715	=	$9,529,215
2011	$7,518,500	$3,085,330	=	$10,603,830
2012	$8,219,600	$3,160,310	=	$11,379,910
2013	$8,949,850	$3,134,940	=	$12,084,790
CWP totals	$31,264,450	$12,510,445	=	$43,597,745

The total amount above is subject to RUS loan funds. Specifics of new construction items and system improvements begin on page 16.

II. BASIS OF THE STUDY AND PROPOSED CONSTRUCTION

A. DESIGN CRITERIA

The RUS General Field Representative reviewed each of the following design criteria items on June 30, 2009.

Construction proposed herein is required to meet the following minimum standards for voltage, thermal load, safety, and system reliability.

1. The minimum voltage on primary distribution lines is 117 volts on a 120-volt base (125 volts at the source after re-regulation).

2. Primary conductors loaded over 75% of their thermal loading are to be evaluated for uprating. Thermal conductor ratings will be calculated using the ANSI/IEEE STD 738-91 method of calculation.

3. The following equipment will have maximum loading not to exceed the following nameplate percentages:
   a. Power transformers — 130% winter; 100% summer
   b. Regulators — 130% winter; 100% summer
   c. Voltage Conv. Trans. — 130% winter; 100% summer
   d. Reclosers — 70% winter or summer
   e. Line Fuses — 70% winter or summer

4. Conductors (and associated poles and hardware as required) will be rebuilt as needed.

5. Poles and/or crossarms will be replaced if found to be physically deteriorated by visual inspection and/or tests.

6. All distribution lines are to be designed and built according to RUS standard construction specifications and guidelines.

7. New lines and line conversions will be built according to the standard primary voltage levels as recommended in the Long Range Plan.

8. New primary conductor sizes will be determined on a case-by-case basis using the economic conductor sizing computer program and presently known constants and variables. The final proposed conductor may be modified to conform to SKRECC's standard sizes and recommendations of the Long Range Plan.

9. Conversions to multiphase will be considered to correct voltage drop and phase balance problems. Single phase and vee phase lines operating at 7.2/12.5 kV with loads exceeding 250 kW per phase will be considered for multi-phasing. Single phase and vee phase lines operating at 14.4/24.9 kV with loads exceeding 430 kW per phase will be considered for multi-phasing. Operating and engineering practices used to develop the 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 35 ampere unbalance at 7.2 kV and 30 ampere unbalance at 14.4 kV, which can be more than doubled during cold load pick up.

10. Voltage conversions from 7.2/12.5 kV to 14.4/24.9 kV will be considered to relieve thermally loaded conductors, reduce voltage drop, and relieve single and vee phase lines exceeding 250 kW per phase. Major factors used to determine if voltage conversions are appropriate rather than multi-phasing and/or conductor replacement are:
    a. Overall economics
    b. Condition of conductor.
    c. Location of project relative to existing 14.4/24.9 kV.
    d. Ability to reuse retired 7.2/12.5 kV transformers.
    e. Impact of planned outages during conversions to critical loads such as hospitals, water treatment facilities, etc.
    f. Special operating conditions and factors

11. Capacitors will be considered for improvement of substation power factors at peak loading and improvement of line voltage.

12. It is recommended that proposed construction items required for voltage improvements whose forecasted need is based solely on calculated voltages from computerized circuit analysis printouts, not be authorized for construction until such calculated voltages are measured in the field and extrapolated to peak loading conditions, and then compared to calculated values to corroborate that actual values exceed the minimum design level.

B. HISTORICAL LINE AND EQUIPMENT COSTS

Historical Data and Construction Required

CODE 100 NEW SERVICES	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of New Services								
Undergrd. & Overhead	1,713	1,375	1,544	1,600	1,800	1,900	2,000	7,300
Linear Feet of New Line								
Undergrd. & Overhead	408,680	352,615	380,648	400,000	450,000	475,000	500,000	1,825,000
Ave. Length	239	256	247	250	250	250	250	250
Cost of New Line								
Total Urd. & Overhead	$4,376,256	$3,673,187	$4,024,722	$4,424,000	$5,157,000	$5,633,500	$6,130,000	$ 21,344,500
Ave. Cost	$2,555	$2,671	$2,607	$2,765	$2,865	$2,965	$3,065	$ 2,915

CODE 300 LINE CHG. & CONV.	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Total Cost of Line Chg				$791,200	$922,500	$940,200	$841,400	$ 3,495,300

CODE 601 TRANSFORMERS	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
# of New Transf *	1690	1181	1436	1,500	1,600	1,700	1,800	6,600
Total Cost of Transformers	$1,682,504.00	$1,229,296.00	$1,455,900	$1,615,500	$1,784,000	$1,961,800	$2,151,000	$ 7,512,300
Ave Cost per Transformers	$996	$1,041	$1,014	$1,077	$1,115	$1,154	$1,195	$ 1,135

*- includes 165 overhead trans for 25 kV conversion items

CODE 601 METERS	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of New Meters	4,698	7,122	5,910	3,000	3,000	3,000	3,000	12,000
Cost of Meters	$287,961	$432,441	$360,201	$189,000	$195,000	$204,000	$210,000	$ 798,000
Ave Installed Cost	$61	$61	$61	$63	$65	$68	$70	$ 67

* 2008-9 meters included approx. 3500 for MEPB changeout

CODE 602 SERVICE UPGRADES	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of Inc Capacity	80	96	88	90	90	90	90	360
Cost of Inc Capacity	$78,915	$229,045	$153,980	$222,300	$230,040	$238,050	$246,420	$ 936,810
Ave Installed Cost	$986	$2,386	$1,686	$2,470	$2,556	$2,645	$2,738	$ 2,602

**jump in avg cost is due to the code 602 including not only secondary upgrades, but all cost associated with upgrading to a single member

CODE 603 SECTIONALIZING	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Sectionalizing Total				$17,200	$17,200	$17,200	$17,100	$ 68,700

CODE 604 LINE REGULATORS	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Single Phase Unit, 100 amp @ $7,500 installed								
Single Phase Unit, 219 amp @ $10,000 installed				$90,000	$25,000	$35,000	$30,000	
Single Phase Unit, 328 amp@ $13,333 installed								
Single Phase Unit, 100 amp 14.4kV@$10,000 installed								
Total				$90,000	$25,000	$35,000	$30,000	$ 180,000

CODE 605 CAPACITORS/ CONTROLS	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of Capacitors/Controls				2		2		4
Ave Installed Cost				$ 2,000		$ 2,100		$ 2,050
Total								$8,200

CODE 606 POLE REPLACEMENTS	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of Poles	667	1130	899	800	800	800	800	**3,200**
Total	$1,171,936	$2,127,128	$1,649,532	$1,558,400	$1,612,800	$1,669,600	$1,728,000	**$ 6,568,800**
Ave Installed Cost	$1,757	$1,882	$1,836	$1,948	$2,016	$2,087	$2,160	$2,053

CODE 607 MISC. REPLACEMENTS	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of jobs	90	98	94	95	95	95	95	**380**
Total	$111,469	$120,939	$116,204	$121,315	$125,590	$129,960	$134,520	**$ 511,385**
Ave Cost	$1,239	$1,234	$1,236	$1,277	$1,322	$1,368	$1,416	$1,346

* new category for replacement of guys, anchors, crossarms, insulators, switches where pole is not changed out

CODE 608 GAP ARRESTOR REPLACEMENT	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of Arrestors		2565	2565	1,300	1,300	1,300	1,300	**5,200**
Total		$226,674	$226,674	$118,300	$122,200	$126,100	$130,000	**$ 496,600**
Ave Installed Cost		$88	$88	$91	$94	$97	$100	**$ 96**

* gap arrestor replacement program started in 2005

CODE 609 STEP- TRANS.	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of 1000 kVA auto transformers				3	3			**6**
Ave Installed Cost				$ 10,000	$ 10,000			
Total				$ 30,000	$ 30,000			**$ 60,000**
Number of 333 kVA auto transformers								**0**
Ave Installed Cost								
Total								**$ -**

CODE 701 SECURITY LIGHTS	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of Lights	929	777	853	800	850	900	950	3,500
Total	$408,413	$327,420	$367,917	$348,000	$382,500	$420,300	$458,850	$ 1,609,650
Ave Installed Cost	$440	$421	$431	$435	$450	$467	$483	$ 459

CODE 702 SCADA	March 2007- Feb 2008	March 2008- Feb 2009	Yearly Average Prior two years	2010	2011	2012	2013	2010-2013
Number of RTUs							1	1
Total							$7,500	$ 7,500
Ave Installed Cost								$ -

TOTAL YEARLY COSTS	$9,529,215	$10,603,830	$11,379,910	$12,084,790
TOTAL CWP COSTS				$43,597,745

C. CONDUCTOR CHANGE OUT PROGRAM

Copper weld conductors (which are primarily 6A and 8A CWC) are the first priority to be replaced. Following is a summary of the mileage left on the system:

Single Phase	1300
Two Phase	9
Three Phase	3

Other copper conductors still in service will be replaced as a second priority. Following is a summary of these conductors:

Three Phase, 1/0 Cu.	3 miles
Three Phase, 2-3 str.	10 miles

Another conductor concern is #4 ACSR. This conductor will be replaced as it is found faulty.

NOTE: The system improvement projects in this work plan result in the replacement of over 63.7 miles of copper conductors.

D. ANALYSIS OF CURRENT SYSTEM STUDIES (LF, LRSS, RUS FORM 300)

LOAD FORECAST (LF)

The load forecast used in this CWP is the 2008 Load Forecast prepared jointly by East Kentucky Power and South Kentucky RECC engineering personnel. It has been approved by South Kentucky RECC's management and Board of Directors.

2007 LONG RANGE SYSTEM STUDY (LRSS)

Patterson & Dewar Engineers, Inc., completed a LRSS for SKRECC's distribution system in early 2007. A comparison of the current 2008 Load Forecast and the LRSS for total consumers and total system peak kW demands is as follows:

2007 LRSS Load Levels	Long Range System Study and Load Forcast Cons.	MW*	2010-2013 CWP Cons.	MW*
LL 1- 2005	61696actual	314.5		
LL 2- 2010	66846	485		
LL 3- 2013	70749	524	71363	559
LL 4- 2016	74684	564		
LL 5- 2026	86790	724		

* For extreme winter scenario (10% probability)

It should be noted that the increase in MW peak (559 vs. 524) is due to the addition of the Monticello system, and the consumers show a smaller increase than expected in 2013 due to the economic conditions and lower growth than projected in the past.

ANALYSIS OF THE 2006 OPERATIONS AND MAINTENANCE SURVEY

In December of 2006, the Operations and Engineering Department of SKRECC completed the Operations and Maintenance Survey (Form 300). In general, the distribution facilities, operations and maintenance, and engineering programs are adequate and improvements are made every year. A few recommendations were noted:

1. Telephone poles are left standing next to electric poles and need to be removed after the joint-use facilities have been attached to SKRECC poles. Cable TV attachments require constant follow-up to ensure contract compliance.
2. Several problem trees were observed in residential areas.
3. The report of idle services should be reconciled with billing records and adjusted.

E. EXISTING AND PROJECTED SUBSTATION LOADING

SUBSTATION WINTER LOADING

Substation	Substation Capacity Winter Rating	Actual 2009	Winter 2013/2014 Design Load	Sub Loading at Design Load	Required Action
Russell Springs	36,280	16,852	24,075	66%	
Windsor	18,140	8,575	10,371	57%	
Nancy	18,140	14,229	12,259	68%	
Mt. Olive	18,140	8,191	10,583	58%	
Somerset	18,140	9,966	12,596	69%	
E. Somerset	18,140	13,548	17,259	95%	*
Shopville	18,140	9,705	13,550	75%	
Norwood	18,140	12,471	17,469	96%	*
Floyd	18,140	7,914	12,184	67%	
N. Albany	18,140	10,270	12,019	66%	
S. Albany	18,140	12,995	16,166	89%	
Sewellton	18,140	8,873	11,480	63%	
Zula	18,140	9,292	11,596	64%	
Monticello	36,290	11,705	20,317	56%	
Bronston	36,280	22,477	27,431	76%	
Mt. Victory	8,350	3,040	3,511	42%	
Whitley City	18,140	9,988	15,751	87%	
Pine Knot	18,140	10,472	14,181	78%	
Oak Hill	18,140	11,393	15,300	84%	
Asahi	18,140	6,100	6,792	37%	
W. Somerset	18,140	12,416	17,138	94%	
Salem	18,140	10,895	15,764	87%	
Cabin Hollow	18,140	10,623	16,972	94%	
S. Floyd	18,140	13,772	17,266	95%	*
S. Oakhill	24,840	16,381	21,545	87%	
Snow	18,140	7,543	9,162	51%	
Slat	31,050	15,486	21,122	68%	
E. Pine Knot	18,140	5,789	7,976	44%	
Cemetery Rd.	8,350	4,717	6,721	80%	
Wiborg	18,140	13,555	16,582	91%	
Jamestown	18,140	10,512	11,906	66%	
Nelson Valley	18,140	9,380	12,397	68%	
Zollicoffer	18,140	6,061	7,798	43%	
Gap of the Rdg.	18,140	10,253	13,212	73%	
Upchurch	18,140	10,260	14,463	80%	
Webb's X-rds.	18,140	8,097	10,967	60%	
Woodstock	18,140	6,785	9,358	52%	
Homestead	47,100	27,875	32,000	68%	
Jabez (fall 2009)	18,140		6,473	36%	
Gregory Road (fall 2009)	8,350		5,391	65%	
	799,230	***418,456***	***559,103***		

* -- These substations will not become overloaded during the workplan period; however, load shifts where possible or power supply studies will be started during the workplan period to address their future loading concerns.

Zollicoffer was upgraded to 11.2MVA in 2009

F. SERVICE INTERRUPTIONS

AVERAGE ANNUAL HOURS/CONSUMER BY CAUSE

Year	Power Supply	Storm	Pre-Arranged	Other	Total
2004	.12	1.23	.01	2.81	4.17
2005	.09	.26	.12	2.06	2.53
2006	.19	.04	.8	2.79	3.22
2007	.12	1.39	.13	2.13	3.77
2008	.15	1.97	.36	2.83	5.31
5 Year Average	.13	.98	.28	2.52	3.80

G. HISTORICAL ANNUAL ENERGY, LOAD AND CONSUMER DATA

HISTORICAL ANNUAL ENERGY, LOAD AND CONSUMER DATA

Year	Energy Purchased (mWh)	Energy Sold (mWh)	% Inc.	Energy Loss (mWh)	% Loss	non-coincident Peak (mW)	% Inc.	% Annual Load Factor	# of Consumers Annual Avg.	% Inc.
1997	836,252	774,808	1.2%	61,444	7.3%	237.3	-1.4%	40.2%	51,808	2.8%
1998	865,809	819,088	5.7%	46,721	5.4%	207.9	-12.4%	47.5%	53,152	2.6%
1999	944,207	888,281	8.4%	55,926	5.9%	242.0	16.4%	44.5%	54,377	2.3%
2000	1,026,327	950,641	7.0%	75,686	7.4%	262.8	8.6%	44.6%	55,685	2.4%
2001	1,024,321	985,426	3.7%	38,895	3.8%	282.0	7.3%	41.5%	56,877	2.1%
2002	1,092,297	1,024,676	4.0%	67,621	6.2%	265.4	-5.9%	47.0%	58,058	2.1%
2003	1,106,010	1,037,801	1.3%	68,209	6.2%	312.0	17.6%	38.0%	59,081	1.8%
2004	1,142,493	1,076,755	3.8%	65,738	5.8%	316.3	1.4%	41.2%	60,128	1.8%
2005	1,207,092	1,133,474	5.3%	73,618	6.1%	314.5	-0.6%	43.8%	60,922	1.3%
2006	1,169,831	1,117,337	-1.4%	52,494	4.5%	337.6	7.3%	39.6%	61,869	1.6%
2007	1,232,718	1,161,833	4.0%	70,885	5.8%	354.7	5.1%	39.7%	62,408	0.9%
2008	1,347,309	1,266,216	9.0%	81,093	6.0%	371.9	4.8%	41.4%	66,276	6.2%

Notes: All data is from the Form 7.

PROJECTED ANNUAL ENERGY, LOAD AND CONSUMER DATA

Year	Energy Purchased	Energy Sold	% Inc.	Energy Loss	% Loss	non-coincident Demand	% Inc.	% Annual Load Factor	Number of Consumers	% Inc.
2010	1,459,164	1,378,090	-	81,074	5.6%	444.8	-	37.4%	68,515	-
2011	1,491,078	1,408,239	2.2%	82,839	5.6%	453.9	2.0%	37.5%	69,451	1.4%
2012	1,527,650	1,442,769	2.5%	84,881	5.6%	468.7	3.3%	37.2%	70,399	1.4%
2013	1,567,899	1,480,758	2.6%	87,141	5.6%	477.4	1.9%	37.5%	71,363	1.4%

Note: All of the projections above are from the 2008 Power Requirement Study. The increase in consumers, demand, and sales in 2008 was due to the addition of the MEPB system.

H. CIRCUIT LOADING AND VOLTAGE CONDITIONS

SKRECC's system has consistently been a winter peaking system; therefore, the winter conditions have been used as the basis for identifying needed system improvements.

The 2008/2009 winter peak for SKRECC was 418,500 kW during January 2009. The corresponding peak kWh consumer billing data was used to develop the system model in Windmil. During January 2009 the system served approximately 66,479 consumers with each residential consumer averaging 1,624 kWh each.

Appendix 1 contains the primary analysis for the winter 2008/2009 system. The analysis disc provides circuit loading by substation and line section, voltage drops on a 120 volt base, primary losses, number of consumers by section, circuit, and substation, primary conductor size and miles from the sub, and fault current levels.

Map 1 is a diagram of the conditions in Appendix 1, reflecting actual system peak that occurred in January 2009. The circuit diagram also shows the CWP system improvements.

Similarly, the primary analysis of the existing 2009 system configuration with future winter 2013/2014 loads of 559 MW is presented in Appendix 2.

Appendix 3 represents a primary analysis for the proposed future winter 2013/2014 system after all the CWP improvements are implemented. Map 2 is a diagram of Appendix 3 conditions.

Through the use of line voltage regulators and capacitors, adequate system voltages are being maintained for current system conditions. Some regulator changes will be necessary to maintain adequate voltage. These will be discussed on page 28.

The improvements in this plan will reduce line losses by approximately $4,800 per year.

III. REQUIRED CONSTRUCTION ITEMS

A. NEW SERVICES – CODE 100

SKRECC continues to experience good customer growth in many parts of the service territory. During the 24-month period ending February 2009, SKRECC added 2,888 services for new consumers. The average line extension cost for each new service was $2,607, and the average service length was 247 feet.

During the upcoming 2010 – 2013 work plan period, SKRECC projects that 7,300 new services will be added, with a total cost over the four year period of $21,344,500. The historical data that was used to make the projections is shown on page 7. In this work plan, services to new consumers make up approximately 49 % of the total capital required over the CWP period.

B. SYSTEM IMPROVEMENTS – CODE 300

The following descriptions provide details of each construction item and a rationale of how the decisions were reached for each project.

Project: New Antioch DC Lewis Bray Rd.
Project Code: 315.41 1.6 miles $192,000

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert a 3 phase 336 ACSR line to a DC 336 ACSR line.

REASON FOR THE PROPOSED CONSTRUCTION

The conductor is reaching its thermal loading rating and this dc will allow load to be shifted to another circuit. Other load growth is also taking place in the general area.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses, and correct voltage problems in the area.

ALTERNATIVE PLANS CONSIDERED

We looked at reconductoring the circuit from the sub, but economically the proposed construction is preferred.

Project: Pumphouse Rd. from Hwy 80
Project Code: 306.41 1.5 miles $39,000

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert a 2-phase 2 ACSR line to a 3-phase 2 ACSR line.

REASON FOR THE PROPOSED CONSTRUCTION

The existing line is becoming thermally overloaded due to general load growth throughout the area.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses, and allow for phase balance.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: Hwy 192 end of 3ph to Sears Rd. takeoff
Project Code: 316.41 .1 miles $2,600

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert a 2-phase 2 ACSR line to a 3-phase 2 ACSR line.

REASON FOR THE PROPOSED CONSTRUCTION

The existing line is becoming thermally overloaded due to general load growth throughout the area.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses, and allow for phase balance.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: Sears Rd. to Poplarville Rd.
Project Code: 316.42 2.9 miles $110,200

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert a single phase 2ACSR line to a 3-phase 2 ACSR line.

REASON FOR THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses, and allow for phase balance.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses, and allow for phase balance.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: Poplarville Rd. to Paradise Rd.
Project Code: 316.43 4.0 miles $140,000

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert a single phase 2 ACSR line to a 2-phase 2 ACSR line.

REASON FOR THE PROPOSED CONSTRUCTION

The existing single phase 2 ACSR line is becoming overloaded due to general load growth in the area.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses and allow for phase balance.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: New Circuit to Maplewood Subd.
Project Code: 323.41 2.0 miles $160,000

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Conversion of existing 3ph to a 336 ACSR 3ph line.

REASON FOR THE PROPOSED CONSTRUCTION

The existing load is overloading East Somerset Substation, and this new circuit out of Cabin Hollow Substation will shift 2MW off East Somerset Substation. The overloading is due to general load growth in the area.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area and reduce loading on East Somerset Substation.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: Bugwood 1ph
Project Code: 327.33 3.0 miles $105,000

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert a single phase 2 ACSR line to a 3-phase (1) 2 and add (2)1/0 ACSR line.

REASON FOR THE PROPOSED CONSTRUCTION

The existing line is becoming thermally overloaded due to subdivisions and general load growth throughout the area.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses and allow for phase balance.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: Stilesville Rd. from end of 2ph to Old Bull Rd.
Project Code: 332.41 .5 miles $17,500

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert a single phase 2 ACSR line to a 2-phase 2 ACSR line.

REASON FOR THE PROPOSED CONSTRUCTION

The existing single phase 2 ACSR line is becoming overloaded due to general load growth in the area.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses and allow for phase balance.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Voltage Conversions:

Project: Faubush Norfleet Rd.
Project Code: 303.41 5.0 miles $50,000

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert single phase 7.2/12.5 kV to 14.4/25 kV.

REASON FOR THE PROPOSED CONSTRUCTION

The existing auto transformer is becoming overloaded at the projected design load.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will correct all overload problems while reducing losses and giving capacity for future growth. This agrees with our Long Range Plan of extending 25 kV in this part of our service territory.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: Pleasant Point School Rd.
Project Code: 303.42 5.4 miles $54,000

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert single phase 7.2/12.5 kV to 14.4/25 kV.

REASON FOR THE PROPOSED CONSTRUCTION

The existing auto transformer is becoming overloaded at the projected design load.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will correct all overload problems while reducing losses and giving capacity for future growth. This agrees with our Long Range Plan of extending 25 kV in this part of our service territory.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Project: Coffey Mtn. along Hwy 92
Project Code: 327.36 10.6 miles $137,800

DESCRIPTION OF THE PROPOSED CONSTRUCTION

Convert 3-phase and single phase 7.2/12.5 kV to 14.4/25 kV.

REASON FOR THE PROPOSED CONSTRUCTION

The existing circuit will have voltage problems at the projected design load.

RESULTS OF THE PROPOSED CONSTRUCTION

This project will correct all voltage and overload problems while reducing losses and giving capacity for future growth. This agrees with our Long Range Plan of extending 25 kV in this part of our service territory.

ALTERNATIVE PLANS CONSIDERED

No other reasonable alternatives exist.

Summary of multi-phase projects described above is shown in the below table.

Multiphase jobs:

WP#	substation	line description	description	distance	Yearly Cost Summary 2010	2011	2012	2013	design criteria	cost per mile
306 41	E Som	Pumphouse Rd	2ph #2 to 3ph #2	1 5			$39,000		9	$26,000
315 41	Bronston	DC to Antioch 3ph	336 to DC336	1 6	$ 192,000				9	$120,000
316 41	Mt Victory	Hwy 192 end of 3ph to Sears Rd takeoff	2ph#2 to 3ph #2	0 1			$2,600		9	$26,000
316 42	Mt Victory	Sears Rd to Poplariville Rd	1ph #2 to 3ph #2	2 9			$110,200		9	$38,000
316 43	Mt Victory	Poplarville Rd to Paridise Rd	1ph #2 to 2ph #2	4			$140,000		9	$35,000
323 41	Cabin Hollow	Gofftown	3ph #2-3ph 336	2		$160,000			9	$80,000
327 33	Slat	Parnell- Bugwood 1ph	1ph #2 add 2ph 1/0	3		$105,000			9	$35,000
332 41	Nelson Valley	Stilesville to Old Bull	1ph #2 to 2ph #2	0 5				$17,500	9	$35,000
					$192,000	$265,000	$291,800	$17,500		
				15.6	**$ 766,300**	**Total**				

Voltage Conversions:

WP #	substation	line description	description		distance	Cost
303 41	Nancy	Faubush Norfleet Rd	25KV conv	staked	5 0	$50,000
303 42	Nancy	Pleasant Point School Rd	25KV conv	staked	5 4	$54,000
327 36	Mont	Coffey Mtn. to regulators	25KV conv	staked	10 6	$137,800

Project: Miscellaneous Conductor Replacement Projects
Project Code: 301.91 thru 399.91 70.9 miles $2,544,700

DESCRIPTION OF THE PROPOSED CONSTRUCTION
Note: Please see list on the next page.

Single Phase jobs: Convert single phase 6 cu lines to new single phase #2 ACSR lines.
Three Phase jobs: Convert 1/0 ACSR to 336 ACSR.

REASON FOR THE PROPOSED CONSTRUCTION

Single Phase: The old single phase copper lines are deteriorated and meet design criteria #5.
Three Phase: The 1/0 ACSR is becoming overloaded due to growth and needs to be upgraded.

RESULTS OF THE PROPOSED CONSTRUCTION

Single Phase: These projects will allow us to replace the old conductor, reduce losses and improve reliability.
Three Phase: This project will allow us to carry the load resulting from the increasing electrical demand in the area, reduce losses and allow for phase balance.

ALTERNATIVE PLANS CONSIDERED

Single Phase: These lines are part of South Kentucky RECC's ongoing conductor replacement program.
Three Phase: No other reasonable alternatives exist.

Listing of conductor replacement items:

	Wire change jobs:						Yearly Cost Summary		
WP #	substation	line description	description	distance	2010	2011	2012	2013	design criteria
301.91	Russell Spr	Arlis Hale Rd. off Hwy 92	8a to #2	1.0				$ 25,000	4
302.91	Windsor	Merritt Rdg 1ph	6a to #2	6				$ 150,000	4
308.81	Norwood	Parkway Manor- Ringgold 1ph	6a to #2	1.6		$ 40,000			4
308.91	Norwood	Wesley Rd off Old Salts	6a to !/0 and #2	2.3			$ 57,500		4
311.82	S. Albany	Churntop tap	6a to #2	1.6	$ 40,000				4
311.91	South Albany	Adams Dock	1/0 to 336	1.9			$144,400		4
311	South Albany	Wisdom Dock	1/0 to 336	1.7				$129,200	4
313.81	Zula	Alpha ckt - Nett Denney Rd.	6a to #2	1			$25,000		4
313.82	Zula	Alpha ckt - Walnut Grove Rd	6a to #2	2.5			$62,500		4
313.84	Zula	Powersbg. Ckt - Slickford Hwy 1009	6a to #2	3.8		$ 95,000			4
314.91	Monticello	Hwy 92 fr Gregory tkoff to Elk Spr Ch	1/0 to 336	1.7	$129,200				4
315.91	Bronston	Twin Rivers 2ph	#4 to #2 acsr	1.5				$ 37,500	4
315.92	Bronston	Kidder- to Echo Point takeoff	1/0 to 336	2.5		$190,000			4
315.93	Bronston	Flynn Rd off 790	6a to #2 acsr	1.0				$25,000	4
321.91	West Som.	Todd Rd. of W80	8a to #2	0.8	$20,000				4
322.91	Salem	Harristown Rd	6a to #2	2.3		$ 57,500		$ 57,500	4
324.91	South Floyd	1676 from Beech Grove takeoff	6a to #2	2.0			$50,000		4
330.85	J-town	Moore Sch Rd - Hwy 92 to bypass	6a to #2	0.8	$20,000				4
330.91	J-town	Dock ckt	1/0 to 336	1.9				$144,400	4
331.81	Wiborg	Beulah Hts Ckt - Sawyer tap	6a to #2	3.0		$75,000			4
331.82	Wiborg	Day Rdg End of 1ph	6a to #2	4	$100,000				4
331.91	Wiborg	Beulah Hts CKt. From sub	#2 to 336	1.0			$80,000		4
334.91	Gap of the Ridge	From Mystic View to Strawberry Rd	#2 cu to 336	3	$240,000				4
337.81	Woodstock	Albright Rd tap	6a to #2	2	$50,000				4
399.91	various	misc. taps across system	6a to #2	20.0		$ 150,000	$175,000	$175,000	4
					$599,200	$607,500	$ 594,400	$743,600	
				70.9	$2,544,700	Sub Total			

Total Code 300 miles- 107.5 miles
Total Code 300 costs- $3,676,550

C. TRANSFORMERS AND METERS – CODE 601

For the 24-month period ending February 2009, SKRECC required 2,871 transformers. Based upon this historical data, SKRECC expects to require 6,600 transformers over the next four-year CWP period. The average cost for each transformer is $1135, requiring a capital outlay of $7,512,300. During the same time period SKRECC expects to require 12,000 meters at a capital outlay of $798,000.

D. SERVICE UPGRADES – CODE 602

For the 24-month period ending February 2009, SKRECC increased service wire capacity for 176 customers. Based upon this historical data, SKRECC expects to upgrade services for 360 customers over the four-year CWP period. The average cost for each service upgrade is $2,602, yielding a capital requirement of $936,810.

E. SECTIONALIZING – CODE 603

The engineering staff of SKRECC has completed a sectionalizing study for the entire system. The following table indicates sectionalizing changes that will need to be completed during the 2010-2013 CWP period.

Code 603 Sectionalizing
The following sectionalizing changes are required to assure South Kentucky RECC is protecting for minimum and maximum faults, loads, and additions due to multi-phasing

Reason for change codes.

1- to meet maximum fault
2- to meet minimum fault
3- load
4- workplan multi-phasing
5- new substation

substation	pri key #	existing device	new device	reason	description of location
Asahi	no changes required				
Bronston		35H	50H	1	Hwy 790 -2nd ocr
		remove VWVE looking at Antioch Shores		3	new circuit in CWP
Cabin Hollow	no changes required				
Cemetery Rd	no changes required				
E. Pine Knot	no changes required				
E. Somerset	no changes required				
Floyd	209	50L	70L	1	Bullock Lane
Gap of the Ridge	1553	50H	50F2	1	Fall Creek
	1591	50H	70F2	1	from old 90 across from Betsy
	1589	(3)50F2	(3)70F2	1	Betsy 3ph
	1527	25E	50F2	1	It off 90 before Straw. Rd.
Gregory Rd	2378	50H	50F2	1,5	Pueblo tap
	2405	25H	35F2	1,5	Pueblo tap -2nd ocr
		remove (3) 50H		5	hwy 790 from Denney Gap split
		(3)50H	(3)50F2	1,5	Denny Gap 3ph
	2406	25H	35H	1,5	tap north off 3ph
	2064202788	15H	25H	1,5	left at end of DG 3ph
Homestead	no changes required				
Jabez		remove (3)50F2		5	toward 4H Camp at jabez
		remove (3)70L		5	toward Cherokee
	1433	25F2	cutout	1,5	Wolf Creek Rd
	1464	35H	cutout	1,5	Denny Ridge tap
	1489	25F2	50F2	1,5	Cedar Crest
	1520	25F2	50F2	1,5	Pine Tree
	1521	25F2	50F2	1,5	Spring Branch
	1585	25F2	50F2	1,5	4H Camp tap
	1398	35F2	50F2	1,5	Ben Roy Rd
		(2)35H	(2)50L	1,5	Pottershop 2ph
		35H	50L	1,5	Twin Oaks across from Pottershop
		50H	50L	1,5	Pleasant View off Richardson
		(2)50H	(2)50L	1,5	Clearwater 2ph
		50H	50L	1,5	at end of 3ph on Richardson
Jamestown	1462	(3)50H	(3)70L	1	Moore Sch Rd
	1460	50H	50L	1	Basket Factory tap
	1487	50H	70L	1	Little Louisville
	1518	(2)50H	(2)50F2	1	Harbor Springs
	1486	50L	70L	1	Lily Creek
Monticello	no changes required				

Mt. Olive	no changes required				
Mt. Victory			(1)70F2	4	Hwy 192 2ph to 3ph to Sears Rd.
Nancy	521	(2)50H	(2)50E	1	Waterloo Rd.
Nelson Valley	no changes required				
North Albany	no changes required				
Norwood	no changes required				
Oakhill	1290	50L	70L	1	tap rt off Burbon past Gn Meadows ent
Pine Knot		(3)70F2	(3)70L	1	Mt. Pleasant Rd.
Russell Spings	no changes required				
Salem	no changes required				
Sewellton	1575	50L	70L	1	Carnes Loop
	1548	50L	70L	1	Cutoff Rd
		50L	70L	1	Powell Rd.
Shopville	no changes required				
Slat		(2)50L	(2) 70 L	1	Greenbriar 2ph
Snow	no changes required				
Somerset	no changes required				
South Albany	no changes required				
South Floyd	no changes required				
South Oakhill	no changes required				
Upchurch	no changes required				
Webb's X-rds.	no changes required				
West Somerset		(3)50L	(3)70L	1	Lees Ford 3ph
		50H	50F2	1	N. Hart Rd off Hacker
Whitley City	no changes required				
Wiborg		25E	50F2	1	Wiborg Hollow Rd
		35E	50F2	1	Harley Coffey Rd
		35H	35F2	1	Day Ridge 1ph
Windsor	no changes required				
Woodstock	no changes required				
Zollicoffer	no changes required				
Zula	no changes required				

Sectionalizing Summary

Code 603 Sectionalizing
Summary of sectionalizing expense for work needed during the 2010-2013 CWP

Device	Unit Costs	Remove/Replace	Added	Surplus	Required	Total Cost
H-15	$ 1,250.00	1		1		
H-25	$ 1,250.00	2	1	1		
H-35	$ 1,250.00	6	1	5		
H-50	$ 1,250.00	23	1	22		
L-25	$ 2,150.00					
L-35	$ 2,150.00					
L-50	$ 2,150.00	11	8	3		
L-70	$ 2,150.00		18		18	$ 38,700.00
L-100	$ 2,150.00					
E-25	$ 2,000.00	2		2		
E-35	$ 2,000.00	1		1		
E-50	$ 2,000.00		2		2	$ 4,000.00
E-70	$ 2,000.00					
4E-50	$ 2,900.00					
4E-70	$ 2,900.00					
F2-25	$ 2,000.00	5		5		
F2-35	$ 2,000.00	1	2		1	$ 2,000.00
F2-50	$ 2,000.00	6	16		10	$ 20,000.00
F2-70	$ 2,000.00	3	5		2	$ 4,000.00
F2-100	$ 2,000.00					
VWVE	$ 17,500.00		2	2		
Versa Tech	$ 4,100.00					
	Units	61	56		33	$ 68,700.00 TOTAL COST

We will consider using the Versatech recloser in place of 70L's.

F. LINE REGULATORS – CODE 604

Below are the voltage regulators to be added during the 2010-2013 CWP:

Regulators (code 604):

substation	line description	description	size	2010	2011	Yearly Cost Summary 2012	2013
South Albany	Wisdom Dk	relocate	219			$ 5,000	
Monticello	Rocky Br Hwy 92	chg to 219	219		$ 25,000		
Cemetery Rd	Parlor Grove ckt	add 3	219				$ 30,000
Nelson Valley	Stilesville Rd	add 3	219	$30,000			
Wiborg	Beulah Hts Ckt	add 3	219	$30,000			
Zollicoffer	JA Meece Ckt	add 3	219			$ 30,000	
Gap of the Ridge	Betsy 3ph regulators	add 3	219	$30,000			

$ 180,000 Total

G. CAPACITORS/CONTROLS – CODE 605

South Kentucky RECC monitors substation power factor monthly and makes any needed changes immediately, striving to maintain a minimum power factor of 95% at substation peak. EKPC supplies all capacitors on South Kentucky's system. South Kentucky is responsible for the controls on any switched banks, two are expected during this CWP at a cost of $8,200.

H. POLE REPLACEMENTS – CODE 606

The physical condition of SKRECC's electric plant is satisfactory according to work order inspections completed by Patterson and Dewar Engineers. A significant number of pole replacements have been made in recent years, and we have an ongoing inspection program that is carried out by two, in-house, full-time line inspectors.

SKRECC's distribution system contains approximately 130,000 wood poles. RUS guidelines recommend that approximately 10% of the pole plant be inspected annually. This means that we should check approximately 13,000 per year. Our current program clearly meets and exceeds this number, because we are inspecting approximately 20,000 poles annually with our ground line inspection program. We are also visually inspecting ½ of our system each year as part of a PSC requirement.

During the 2010-2013 CWP period, SKRECC is projected to change out 3,200 poles (800 per year) at a total cost of $6,568,800. Both the number of poles and the costs are based upon recent historical data of SKRECC's pole replacement activity.

I. MISCELLANEOUS REPLACEMENTS - CODE 607

The historical data shows that we likely replace miscellaneous equipment at 380 locations at a total cost of $511,385 over the work plan period. This includes replacement of guys, anchors, crossarms, insulators and switches where no pole is being changed out.

J. GAPPED ARRESTOR REPLACEMENT – CODE 608

Over the last several years, SKRECC has begun to experience several power quality problems from the older gapped-type lightning arrestors that it has on its system. For many years, the newer MOV arrestors have been used exclusively, but many of the older lightning arrestors are still in service. It is estimated that nearly 1/3 of the approximately 60,000 transformers (or 20,000) have gapped arrestors.

This CWP includes provisions for us to continue replacing the old arrestors. The estimated capital expenditure of $496,600 that has been included will allow us to change out approximately 5,200 old lightning arrestors over the three-year period. Areas initially targeted will be those (1) where reoccurring power quality problems are being experienced, and (2) where there are special or sensitive customers such as hospitals.

K. STEP- TRANSFORMERS – CODE 609

South Kentucky RECC will need 6 additional 1000 kVA autotransformers at a total cost of $60,000. Three of these will be used at the location where a 25 kV conversion is to be done. The other 3 will be used in order to provide backfeed to two circuits, one of which serves a hospital, nursing home and schools.

L. SECURITY LIGHTING – CODE 701

SKRECC has an excellent lighting program that offers a variety of lights to all customers, including both the traditional open bottomed globe type and the newer directional floodlights. Homeowner associations and cities also have a choice of various fixtures for street lighting and decorative purposes. Based upon the historical data, SKRECC projects that it will add approximately 3,500 lights over the CWP period for a total capital expenditure of $1,609,650.

M. SCADA – CODE 702

South Kentucky RECC will need 1 additional RTU at a cost of $7500.

N. SUBSTATION AND METER POINTS ADDITIONS AND CHANGES

While we will not require any new substations during the CWP period, we will begin Power Supply Studies on the substations approaching their ratings during the work plan period.

IV. CONCLUSIONS

The recommendations set forth in this construction work plan will enable South Kentucky RECC to serve the membership of the cooperative at the projected, extreme winter peak conditions of 2013/2014. The recommendations contained herein are in accordance with established RUS guidelines and other criteria established by SKRECC's Long Range System Study, approved load forecast, and other related studies. Any questions or comments regarding this report should be directed to Kevin Newton, Engineering Team Leader at knewton@skrecc.com or at (606) 678-4121.