OWEN ELECTRIC COOPERATIVE
2010 – 2011 CONSTRUCTION WORK PLAN REPORT

Kentucky 37 Owen

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PURPOSE OF REPORT

This report documents the engineering analysis of, and summarizes the proposed construction for Owen Electric Cooperative (OEC) electric distribution system for the two-year planning period of 2010-2011.

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.

GENERAL BASIS OF STUDY

The summer 2011 and winter 2012 projected total peak system loads were taken from the OEC 2008 Load Forecast (LF) as approved by RUS. Residential and small commercial loads were grown at rates consistent with the LF.

From 2002-2007, the annual average increase in residential energy sales was 4.0%. This rate is projected to be 2.5% over the next two years. Small commercial sales are projected to increase at 3.4% over the next two years. Large Commercial / Industrial energy sales are projected to increase at 3.9% over the next two years.

System analysis models are based on non-coincidental (NC) system peaks that are outlined in the LF. The projected winter 2012 NC peak (based on LF and GFR meeting) is 314,000 kW. The projected summer 2011 NC peak (based on LF and GFR meeting) is 302,000 kW. The system annual load factor is projected to average 50.0% over the next two years.

Existing winter and summer growth models were examined for what is generally a winter-peaking system. The existing summer model was reviewed to ensure that any system deficiencies for the cooling load closely tracked the winter model. In general, this was determined to be the case.

The current OEC 2006 Long Range Plan (LRP) load projections and improvement recommendations were reviewed to make sure that they generally agree with scope of the 2010-2011 construction work plan (CWP) recommendations.

A RUS Operations and Maintenance Survey (FORM 300) has been 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. A copy of the survey is included in the Appendices of this report.

GENERAL BASIS OF STUDY (cont.)

A system analysis using RUS guidelines and the OEC Design Criteria was performed on all of the substations and distribution lines of the system. Milsoft Integrated 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.

SUMMARY - RESULTS OF PROPOSED CONSTRUCTION

Upon completion of the proposed construction, the system will provide adequate and dependable service to 59,272 residential customers as well as 14 industrial/large commercial loads and 2,311 small commercial loads. Average monthly residential usage is projected to be 1,103 kWh. It is estimated that there will be 2,700 idle services.

There will be two additional substations added to the OEC system upon completion of the CWP. The Richwood substation will be a 15MVA, 138-12.5kV substation primarily serving the Triple Crown subdivision in Boone County. The Duro II transformer will be relieved by the Richwood substation allowing it to be reconfigured to serve all feeders presently served by Duro I and II with the exception of the feed to Messier Bugatti USA. Duro I will now serve as a dedicated substation to Messier which has a projected peak demand of 11.5MW.

The second substation that will be added during the CWP is the Belleview substation. The Belleview substation will be an 11.2MVA, 69-12.5kV substation. This substation is primarily intended to serve the Western Regional sewage plant located on the Ohio River in western Boone County. The Belleview substation will also be advantageous in relieving the Bullittsville feeder 802. This feeder serves rock quarries near the Ohio River in northwestern Boone County. Serving this area with the new Belleview substation will improve the reliability and quality of service to the quarries and surrounding area.

The Burlington substation has the potential to become overloaded during the CWP period due to two factors. The first factor being the proposed expansion of Zumbiel and Wagstaff, two large commercial facilities located off Conrad Lane near the city of Burlington. The second factor is that the Burlington substation will serve four locations that have been identified as sites for construction shafts of a new sewage pipeline that extends from the city of Florence to the Ohio River and ties into the Western Regional sewage plant. The construction shafts will be used one location at a time during the pipeline construction and could potentially have a demand load of 2MW maximum at each site. The recommendation in the CWP is to double circuit the three-phase line that serves the Conrad Lane area. By doing so one feed of the double circuit can be offloaded to the Bullittsville substation thereby relieving the Burlington substation. Additionally the Burlington substation will be relieved once the Belleview substation is operational and load transferred to that substation.

SUMMARY - RESULTS OF PROPOSED CONSTRUCTION (cont)

It is anticipated that three substations will potentially require upgrades to components: Boone, Grantslick II, and Griffin (in the event the Pendleton County Landfill co-generator goes offline). See section II-E page 2 for equipments ratings.

The Boone substation serves another construction shaft location for the sewage pipeline; and will also serve a new school and two expanding housing developments. While the Boone transformer has plenty of capacity the high side fuse has a rating limitation of 17,100 kVA. The projected peak of Boone substation with the 2MW maximum sewage shaft load is 18,174 kVA.

The Griffin substation has a cogeneration facility nearby that provides power to the Griffin service territory. In the event that the co-generator was offline the regulator at the Griffin substation could become overloaded during peak summer months. The regulator has a capacity limit of 9,800kVA and the projected summer peak load at Griffin is 9,972 kVA.

While the Granstlick II transformer has plenty of capacity, the high side fuse has a capacity rating of 17,100 kVA and the projected peak winter load for Grantslick II is 18,309 kVA.

25.2 miles of site specific conductor replacement and conversion will take place in the two-year plan period. Additionally, 100 miles of conductor will be selected for aged conductor replacement. These conductor replacement line sections will be selected based on conductor condition, operational experience and the number of customers served.

Owen EC
2008 Load Forecast
Residential Summary

	Customers			*Use Per Customer*			*Class Sales*		
	Annual Average	Annual Change	% Change	Monthly Average (kWh)	Annual Change (kWh)	% Change	Total (MWh)	Annual Change (MWh)	% Change
1990	27,499			947			312,603		
1991	28,760	1,261	4.6	995	48	5.1	343,499	30,896	9.9
1992	30,006	1,246	4.3	951	-44	-4.4	342,536	-962	-0.3
1993	31,319	1,313	4.4	1,008	57	6.0	378,860	36,323	10.6
1994	32,670	1,351	4.3	1,019	11	1.0	399,328	20,468	5.4
1995	33,989	1,319	4.0	1,033	14	1.4	421,304	21,976	5.5
1996	35,416	1,427	4.2	1,064	31	3.0	452,162	30,858	7.3
1997	37,159	1,743	4.9	1,031	-32	-3.0	459,953	7,791	1.7
1998	38,931	1,772	4.8	1,026	-6	-0.6	479,197	19,244	4.2
1999	40,550	1,619	4.2	1,053	27	2.7	512,392	33,194	6.9
2000	42,113	1,563	3.9	1,066	13	1.3	538,817	26,426	5.2
2001	43,799	1,686	4.0	1,073	7	0.6	563,943	25,125	4.7
2002	45,779	1,980	4.5	1,120	47	4.4	615,132	51,189	9.1
2003	47,906	2,127	4.6	1,081	-39	-3.5	621,331	6,199	1.0
2004	49,741	1,835	3.8	1,094	13	1.2	652,706	31,375	5.0
2005	51,461	1,720	3.5	1,127	34	3.1	696,107	43,402	6.6
2006	52,935	1,474	2.9	1,070	-57	-5.0	679,964	-16,143	-2.3
2007	54,003	1,068	2.0	1,152	82	7.7	746,858	66,894	9.8
2008	55,147	1,144	2.1	1,106	-47	-4.0	731,859	-14,999	-2.0
2009	56,471	1,324	2.4	1,113	7	0.6	754,297	22,438	3.1
2010	57,873	1,402	2.5	1,109	-4	-0.4	769,914	15,617	2.1
2011	59,272	1,399	2.4	1,103	-6	-0.5	784,416	14,501	1.9
2012	60,630	1,358	2.3	1,102	0	0.0	802,051	17,635	2.2
2013	61,963	1,333	2.2	1,099	-4	-0.3	817,004	14,953	1.9
2014	63,285	1,322	2.1	1,096	-3	-0.3	832,231	15,227	1.9
2015	64,620	1,335	2.1	1,097	1	0.1	850,555	18,324	2.2
2016	65,954	1,334	2.1	1,099	2	0.2	869,909	19,354	2.3
2017	67,286	1,332	2.0	1,099	0	0.0	887,619	17,711	2.0
2018	68,608	1,322	2.0	1,099	-1	-0.1	904,476	16,857	1.9
2019	69,922	1,314	1.9	1,101	2	0.2	923,540	19,063	2.1
2020	71,246	1,324	1.9	1,104	3	0.3	943,697	20,157	2.2
2021	72,625	1,379	1.9	1,105	1	0.1	962,601	18,904	2.0
2022	73,982	1,357	1.9	1,106	2	0.1	981,964	19,363	2.0
2023	75,338	1,356	1.8	1,108	2	0.1	1,001,369	19,406	2.0
2024	76,684	1,346	1.8	1,109	1	0.1	1,020,503	19,133	1.9
2025	78,056	1,372	1.8	1,110	1	0.1	1,040,149	19,646	1.9
2026	79,408	1,352	1.7	1,112	1	0.1	1,059,529	19,381	1.9
2027	80,758	1,350	1.7	1,113	2	0.1	1,079,054	19,525	1.8

Owen EC
2008 Load Forecast
Small Commercial Summary

	Customers			*Use Per Customer*			*Class Sales*		
	Annual Average	Annual Change	% Change	Annual Average (MWh)	Annual Change (MWh)	% Change	Total (MWh)	Annual Change (MWh)	% Change
1990	654			71			46,235		
1991	745	91	13.9	82	12	16.5	61,339	15,104	32.7
1992	820	75	10.1	75	-7	-8.6	61,727	389	0.6
1993	879	59	7.2	75	0	-0.1	66,082	4,355	7.1
1994	939	60	6.8	77	2	2.5	72,341	6,259	9.5
1995	1,007	68	7.2	92	15	20.0	93,085	20,744	28.7
1996	1,087	80	7.9	85	-7	-7.5	92,937	-148	-0.2
1997	1,165	78	7.2	88	2	2.9	102,512	9,575	10.3
1998	1,264	99	8.5	90	2	2.2	113,645	11,133	10.9
1999	1,373	109	8.6	92	2	1.8	125,681	12,036	10.6
2000	1,510	137	10.0	93	1	1.5	140,359	14,678	11.7
2001	1,625	115	7.6	87	-6	-6.3	141,591	1,232	0.9
2002	1,690	65	4.0	82	-5	-6.1	138,298	-3,293	-2.3
2003	1,753	63	3.7	86	4	5.2	150,927	12,629	9.1
2004	1,791	38	2.2	90	4	4.5	161,106	10,180	6.7
2005	1,853	62	3.5	96	6	6.8	178,068	16,962	10.5
2006	1,930	77	4.2	107	11	11.8	207,408	29,340	16.5
2007	2,016	86	4.5	112	5	4.6	226,685	19,277	9.3
2008	2,092	76	3.8	112	-1	-0.6	233,839	7,153	3.2
2009	2,164	72	3.4	112	0	0.0	241,945	8,106	3.5
2010	2,238	74	3.4	112	0	0.2	250,754	8,809	3.6
2011	2,311	73	3.3	113	0	0.4	260,081	9,327	3.7
2012	2,384	73	3.2	113	1	0.6	269,790	9,709	3.7
2013	2,455	71	3.0	114	1	0.7	279,780	9,990	3.7
2014	2,527	72	2.9	115	1	0.7	289,978	10,198	3.6
2015	2,598	71	2.8	116	1	0.7	300,329	10,351	3.6
2016	2,670	72	2.8	116	1	0.7	310,793	10,464	3.5
2017	2,741	71	2.7	117	1	0.7	321,339	10,547	3.4
2018	2,812	71	2.6	118	1	0.7	331,947	10,608	3.3
2019	2,883	71	2.5	119	1	0.7	342,600	10,653	3.2
2020	2,954	71	2.5	120	1	0.6	353,287	10,686	3.1
2021	3,027	73	2.5	120	1	0.5	363,998	10,711	3.0
2022	3,099	72	2.4	121	1	0.6	374,727	10,729	2.9
2023	3,170	71	2.3	122	1	0.6	385,470	10,742	2.9
2024	3,242	72	2.3	122	1	0.5	396,222	10,752	2.8
2025	3,314	72	2.2	123	1	0.5	406,981	10,760	2.7
2026	3,386	72	2.2	123	1	0.5	417,746	10,765	2.6
2027	3,457	71	2.1	124	1	0.5	428,515	10,769	2.6

Owen EC
2008 Load Forecast
Large Commercial Summary
Excluding Gallatin

	Customers			*Use Per Customer*			*Class Sales*		
	Annual Average	Annual Change	% Change	Annual Average (MWh)	Annual Change (MWh)	% Change	Total (MWh)	Annual Change (MWh)	% Change
1990	2			10,061			20,123		
1991	2	0	0.0	12,404	2,343	23.3	24,809	4,686	23.3
1992	2	0	0.0	12,096	-308	-2.5	24,192	-617	-2.5
1993	2	0	0.0	12,268	172	1.4	24,535	343	1.4
1994	4	2	100.0	6,301	-5,967	-48.6	25,204	669	2.7
1995	6	2	50.0	4,885	-1,416	-22.5	29,310	4,106	16.3
1996	8	2	33.3	4,450	-435	-8.9	35,603	6,293	21.5
1997	10	2	25.0	3,384	-1,067	-24.0	33,835	-1,768	-5.0
1998	12	2	20.0	2,692	-691	-20.4	32,309	-1,527	-4.5
1999	17	5	41.7	2,543	-149	-5.5	43,239	10,930	33.8
2000	20	3	17.6	3,792	1,248	49.1	75,839	32,600	75.4
2001	23	3	15.0	4,239	447	11.8	97,497	21,658	28.6
2002	21	-2	-8.7	5,405	1,166	27.5	113,503	16,006	16.4
2003	28	7	33.3	4,259	-1,146	-21.2	119,256	5,753	5.1
2004	30	2	7.1	4,623	364	8.5	138,685	19,430	16.3
2005	36	6	20.0	4,807	184	4.0	173,061	34,376	24.8
2006	26	-10	-27.8	7,618	2,811	58.5	198,064	25,003	14.4
2007	13	-13	-50.0	14,780	7,162	94.0	192,139	-5,925	-3.0
2008	13	0	0.0	15,113	333	2.3	196,474	4,335	2.3
2009	13	0	0.0	15,431	318	2.1	200,601	4,128	2.1
2010	14	1	7.7	15,100	-331	-2.1	211,397	10,795	5.4
2011	14	0	0.0	15,401	301	2.0	215,616	4,219	2.0
2012	15	1	7.1	15,202	-199	-1.3	228,030	12,414	5.8
2013	15	0	0.0	15,476	274	1.8	232,135	4,105	1.8
2014	16	1	6.7	15,174	-301	-1.9	242,789	10,654	4.6
2015	16	0	0.0	15,431	256	1.7	246,892	4,103	1.7
2016	17	1	6.3	15,150	-280	-1.8	257,558	10,666	4.3
2017	17	0	0.0	15,391	241	1.6	261,647	4,089	1.6
2018	18	1	5.9	15,222	-169	-1.1	273,991	12,344	4.7
2019	18	0	0.0	15,448	226	1.5	278,058	4,067	1.5
2020	19	1	5.6	15,195	-253	-1.6	288,707	10,650	3.8
2021	19	0	0.0	15,414	219	1.4	292,870	4,163	1.4
2022	20	1	5.3	15,178	-236	-1.5	303,563	10,693	3.7
2023	20	0	0.0	15,384	206	1.4	307,679	4,117	1.4
2024	21	1	5.0	15,160	-224	-1.5	318,354	10,674	3.5
2025	21	0	0.0	15,357	197	1.3	322,491	4,138	1.3
2026	22	1	4.8	15,144	-213	-1.4	333,170	10,679	3.3
2027	23	1	4.5	15,023	-121	-0.8	345,535	12,365	3.7

SERVICE AREA

OWEN ELECTIC COOPERATIVE is a RUS-funded electric distribution cooperative. OEC is located in Northern Kentucky. OEC serves portions of Boone, Kenton, Campbell, Grant, Pendleton, Carroll, Scott and Owen Counties. The headquarters are located in Owenton, KY (Owen County). *See Map on following page.*

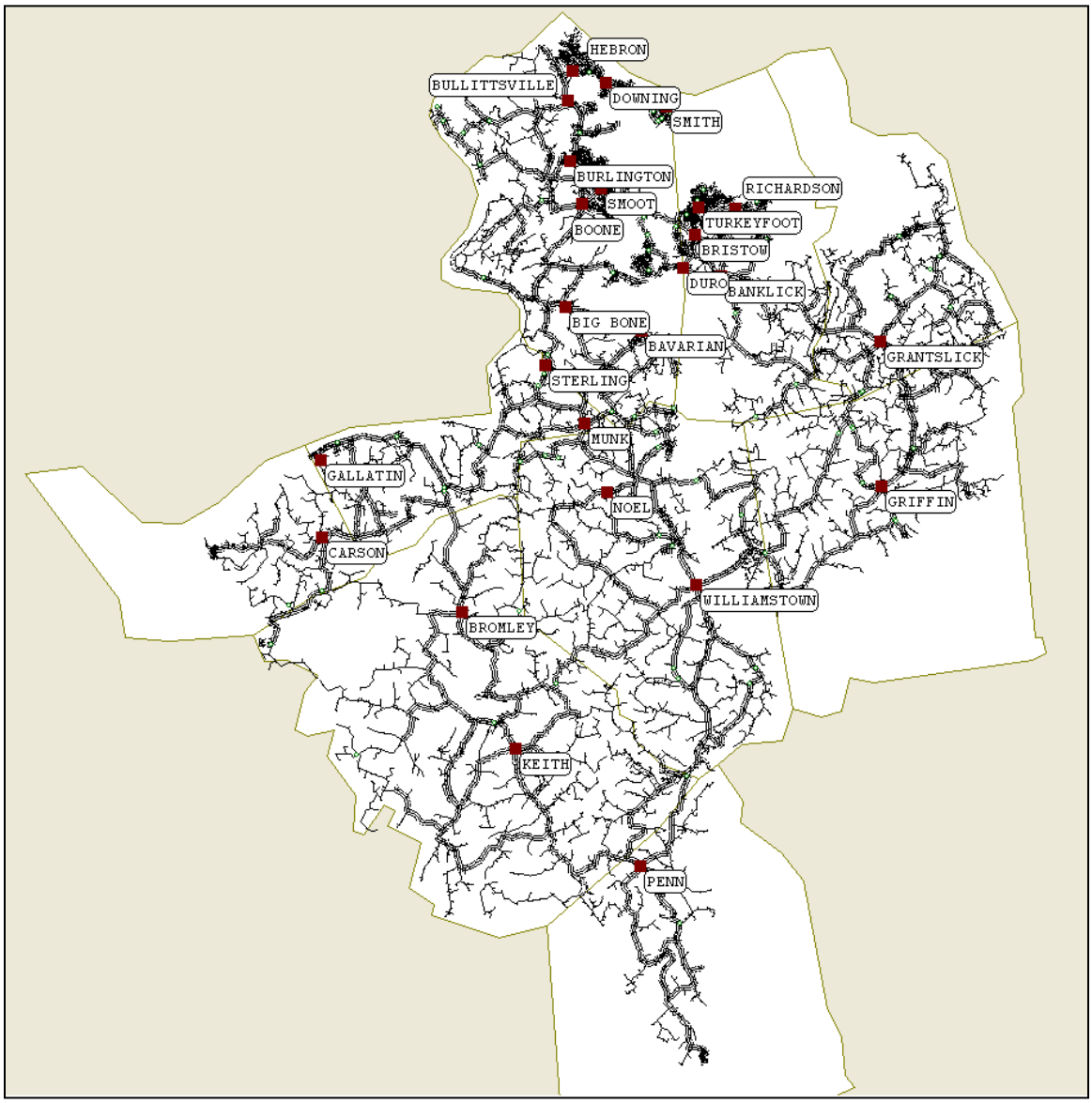
The OEC service area is due south of Cincinnati, Ohio and north of Georgetown, Kentucky. The system has a fine balance of large industrial and commercial customers combined with a very large and growing residential base due to the close proximity to Cincinnati.

The following data is from OEC's 12/08 RUS Form 7:

Total Services in Place	***58,872***
MWH Purchased	***2,199,649***
MWH Sold	***2,146,727***
Maximum MW Demand	***436.6***
Total Utility Plant	***$194,455,948***
Plant Dollars Per Active Member	***$3,303***
Consumers/Mile	***13.2***

OEC operates 25 delivery points and distributes power at a primary voltages of 12.5/7.2 kV and 14.4/25 kV over approximately 4,500 miles of line.

OEC SYSTEM MAP



GENERATION and TRANSMISSION POWER SUPPLIER

East Kentucky Power Cooperative (EKP) provides all power and energy needs to OEC. EKP provides service to twenty-five distribution substations. EKP is located in Winchester, Kentucky.

The 2008 Load Forecast (LF) is a joint effort between OEC and EKP. OEC provides loading data and system growth predictions to EKP for use in the LF growth models.

All new distribution, transmission, and substation construction requirements are considered simultaneously as a "one system" concept - between OEC & EKP - for the orderly and economical development of the total system. All of the recommendations relative to power supply and delivery are discussed with EKP.

SUMMARY OF CONSTRUCTION PROGRAM AND COSTS

Owen Electric's distribution system was analyzed in order to identify the construction requirements needed to adequately serve the projected CWP load of 314 MW. Improvements were identified based on voltage drop, conductor loading, system reliability improvements, 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**	**$5,609,155**
300	**Line Conversion & Replacement**	**$3,049,056**
600	**Misc. Equip. & Poles**	**$14,088,985**
700	**Security Lights, AMR & SCADA H/W & S/W**	**$1,157,600**
	2010-2011 CWP TOTAL	**$23,904,797**

100 – New Construction planned to serve 1,906 new services.

300 – 25.2 miles of conductor upgrading and replacement.

600 - Miscellaneous distribution equipment and pole changes. This includes aged conductor replacement, voltage regulators, switched capacitors, sectionalizing, automated meters, transformers, pole changes and increased service capacity upgrades.

700 – Other Distribution Items - Outdoor lighting, and software and hardware for AMR, and SCADA.

OWEN ELECTRIC 2010-2011 Construction Workplan
COST SUMMARY SPREADSHEET

NEW CONSTRUCTION -- RUS CODE 100

ITEM	RUS CODE		AVE. $/CONSUMER	# CONS.		2010	2011	TOTAL
New Overhead Construction	100		$4,480	540		$1,096,466	$1,322,776	$2,419,242
New Underground Construction	101		$1,946	1,300		$1,143,192	$1,387,073	$2,530,265
New LP Construction	102		$9,995	66		$273,551	$386,097	$659,648
			TOTAL CODE 100:	1,906		$2,513,209	$3,095,947	$5,609,155

LINE CONVERSION / REPLACEMENT - RUS CODE 300

SUB - SECTION	RUS CODE	Original Conductor	INST. COND/#-PH	$/MILES	# OF MILES	2010	2011	TOTAL
Banklick CO35176 to CO35022	301	1 ph #2 ACSR	3 ph 1/0 ACSR	$104,000	0.8	$0	$86,528	$86,528
Belleview Sub to CO26629	302	3 ph 3/0 ACSR	3 ph TCT 336 ACSR	$304,000	0.2	$0	$63,232	$63,232
Bristow CO57275 - CO57271	303	3 ph #2 ACSR	3 ph 336 ACSR	$128,000	0.2	$25,600	$0	$25,600
Bromley CO13730 thru CO13739 to CO14935	304	1 ph 6A CWC	3ph 1/0 ACSR	$104,000	3.0	$0	$324,480	$324,480
Bromley CO9011 to CO8971	305	1 ph 6A CWC	3ph 1/0 ACSR	$104,000	2.6	$0	$281,216	$281,216
Burlington CO23158 to CO23916	306	3 ph 336 ACSR	3 ph DCT 336 ACSR	$216,000	0.4	$86,400	$0	$86,400
Burlington CO24347 to CO24476	307	1 ph #2 ACSR	3 ph 1/0 ACSR	$104,000	0.4	$41,600	$0	$41,600
Downing CO20719-CO20733*	308	1 ph 1/0 URD	2 ph 1/0 URD	$192,000	0.1	$19,200	$0	$19,200
Grantslick CO47875 to CO47725	309	1 ph 6A CWC	3ph 1/0 ACSR	$104,000	0.8	$0	$86,528	$86,528
Griffin Sub to CO38614*	310	1 ph #2 ACSR	3 ph 336 ACSR	$128,000	1.4	$0	$186,368	$186,368
Hebron CO21076 to CO-1674898454	311	3 ph 1/0 ACSR	3 ph 336 ACSR	$128,000	0.4	$0	$53,248	$53,248
Keith CO11887 to CO10838	312	1 ph #2 ACSR	3 ph 336 ACSR	$128,000	2.6	$332,800	$0	$332,800
Keith CO10837 to CO10781	313	1 ph #2 ACSR	3 ph 1/0 ACSR	$104,000	1.5	$156,000	$0	$156,000
Keith CO14621 to CO14386*	314	1 ph 6A CWC	3ph 1/0 ACSR	$104,000	1.6	$166,400	$0	$166,400
Keith CO15467 to CO14423	315	2 & 1 ph #2 ACSR	3 ph #2 ACSR	$88,000	2.3	$202,400	$0	$202,400
Keith CO17918 to CO18641	316	1 ph #2 ACSR	3 ph 1/0 ACSR	$104,000	1.6	$166,400	$0	$166,400
Munk CO-824189517	317	1 ph #2 ACSR	3 ph 1/0 ACSR	$104,000	0.1	$0	$10,816	$10,816
Penn CO-8823837 to CO-173683452	318	1 ph #2 ACSR	2 ph #2 ACSR	$72,000	0.2	$14,400	$0	$14,400
Richwood Getaways	319		3 ph 500 MCM URD	$288,000	0.2	$57,600	$0	$57,600
Richwood Sub to CO31063	320		3 ph DCT 336 ACSR	$216,000	0.6	$129,600	$0	$129,600
Richwood Sub to CO31085	321	3 ph 3/0 ACSR	3 ph DCT 336 ACSR	$216,000	0.5	$108,000	$0	$108,000
Richwood new ckt to CO1101172242	322		3 ph 336 ACSR	$128,000	0.3	$38,400	$0	$38,400
Sterling CO45353 to CO780281109*	323	1 ph #2 ACSR	3 ph 1/0 ACSR	$104,000	0.2	$20,800	$0	$20,800
Wmtown CO4546 to CO4652	324	3 ph & 1ph 6A CWC	3 ph 1/0 ACSR	$104,000	0.9	$0	$97,344	$97,344
Wmtown CO12814 to CO12725	325	1 ph #2 ACSR	3 ph 1/0 ACSR	$104,000	0.5	$0	$54,080	$54,080
Wmtown CO11605 to CO11622	326	1 ph 1/0 ACSR	3 ph 336 ACSR	$128,000	1.8	$0	$239,616	$239,616
			TOTAL CODE 300:		25.2	$1,565,600	$1,483,456	$3,049,056

*Verify with field readings before committing to the project.

OWEN ELECTRIC 2010-2011 Construction Workplan
COST SUMMARY SPREADSHEET CON'T

MISCELLANEOUS DISTRIBUTION EQUIPMENT – RUS CODE 600's

ITEM	RUS CODE		2 YR. AVE. COST	# ITEMS		2010	2011	TOTAL
New Underground Transformers	601		$4,450	217		$435,652	$530,101	$965,754
New 3ph UG Transformers	601		$10,681	66		$292,337	$412,613	$704,951
New Overhead Transformers	601		$1,119	972		$492,967	$594,715	$1,087,682
New Meters	601		$147	1,940		$129,392	$155,500	$284,892
New LP Meters	601		$798	250		$97,851	$101,765	$199,616
Retrofit LP Meters	601		$204	50		$5,000	$5,200	$10,200
Disconnect Collars	601		$255	1,000		$125,000	$130,000	$255,000
Instrument Transformers	601					$15,000	$15,000	$30,000
Service Upgrades	602		$1,795	280		$246,393	$256,249	$502,642
Sectionalizing	603					$500,000	$500,000	$1,000,000
Voltage Regulators	604					$184,000	$199,680	$383,680
Capacitors	605					$10,000	$10,000	$20,000
Pole Changes	606		$2,853	550		$769,241	$800,010	$1,569,251
Miscellaneous - Replacement	607					$325,000	$325,000	$650,000
Conductor Replacement	608					$2,884,960	$3,000,358	$5,885,318
Line Relocates (Road)	610					$60,000	$60,000	$120,000
Line Relocates (Safety)	611					$210,000	$210,000	$420,000
			TOTAL					
			MISC. CODE 600'S:			$6,782,793	$7,306,192	$14,088,985

OTHER DIST. ITEMS - RUS CODE 700

ITEM	RUS CODE		2 YR. AVE. COST	# ITEMS		2010	2011	TOTAL
Outdoor Lighting	701		$1,157	400		$226,765	$235,835	$462,600
SCADA	704					$300,000	$300,000	$600,000
AMR Equipment	705					$47,500	$47,500	$95,000
			TOTAL CODE 700:			$574,265	$583,335	$1,157,600

2010-2011 Kentucky 37 - Owen	**CONSTRUCTION WORK PLAN TOTAL:**	**$23,904,797**

DISTRIBUTION SYSTEM DESIGN CRITERIA

Each of the following criteria items were reviewed and accepted by the RUS General Field Representative on June 12, 2009.

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

2) Primary conductors will be evaluated for replacement, or alternative action, if they exceed 75% of their thermal rating.

3) The following line equipment will not be thermally loaded by more than the percentage shown:

	Winter	Summer
a. ii. Transformers	130%	100%
iii. Voltage Regulators	130%	100%
iv. Step Up / Down Transformers	130%	100%
v. Reclosers / Line Fuses	80%	80%

4) Underground conductors will be considered for replacement based on an as needed basis.

5) Overhead conductors will be considered for replacement based on an as needed basis.

6) New primary construction is to be either overhead, or underground, based on governmental or environmental regulations, local restrictions, favorable economics, developmental requests, or safety concerns.

7) Single-phase lines with more than 45 Amps of load current will be evaluated for multi-phasing.

DISTRIBUTION LINE AND EQUIPMENT COSTS

Construction cost estimates for the two 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
1/0 ACSR	CONV 3-PH	$104,000	$108,160
336.4 ACSR	CONV 3-PH	$128,000	$133,120
336.4 ACSR	DCT 3-PH	$216,000	$224,640
#2 ACSR	REPL 1-PH	$48,000	$49,920
1/0 ACSR	REPL 1-PH	$56,000	$58,240
1/0 ALUG	CONV 1-PH	$128,000	$133,120
1/0 ALUG	CONV 3-PH	$224,000	$232,960

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

DEVICE	TYPE	2010	2011
V.Regulators (3)	150 amp	$68,800	$71,552
V.Regulators (1)	50 amp	$13,600	$14,144

* Dollar amounts reflect material, direct labor costs, and a 60% indirect labor overhead multiplier.

STATUS OF PREVIOUS CWP ITEMS

All projects from the 2008-2009 CWP have been completed except the following:

740 C #	Project Description	Status
304	Golden Circle	Cancelled
308	Duckers Point	Cancelled
314	Conrad Lane	Redefined
315	Circleport	Cancelled
319	Thompson Learning	Cancelled
320	Avation Boulevard	Cancelled
321	Elijah Creek – South	Cancelled
322	Elijah Creek – North	Cancelled

ANALYSIS OF 2006 LONG RANGE PLAN

The 2006 Twenty-Year Long Range Plan (LRP) consists of three load block levels. Load block "A" was a five-year load level, load block "B" represented the 10-year load level, and load block "C" represented the 20 year load level. The Long Range Load Level ("C") system summer 2026 peak is approximately 550 MW (excluding Gallatin Steel). The summer 2011 system peak projected in this CWP is 302 MW.

In **Load Block A**, the LRP recommended four new substation sites and a second transformer added to two existing substation sites. The new substations were Burlington, Sterling, Woolper Creek, and Blanchet. The substations to be expanded were Munk and Banklick.

The Burlington and Sterling substations were added during the 2008-2009 CWP. The Woolper Creek substation will be called the Belleview substation, and will be completed during this 2010-2011 CWP. The Blanchet substation is planned for 2013. Expansion of the Munk substation is currently planned by EKP for 2011 and the Banklick substation expansion is planned for 2015.

A load transfer from the Munk service territory to the Noel substation will push back the need for the Munk expansion during this CWP. Due to space limitations for expansion at the Munk substation site, an alternate location for this substation may be considered. In doing so the planned conversion to 25kV around the city of Crittenden may be eliminated if a site closer to the Crittenden load center is found. Any construction for a 25kV conversion to Crittenden or an alternate 12.5kV substation site will occur in the next CWP.

The Banklick substation expansion may be needed prior to the 2015 planned construction timeline. The LRP calls for a second transformer at Banklick (69-25kV) to serve feeders 203 (presently 25kV) and 202 (presently 12.5kV). If the decision is made to keep the operating voltage of feeder 202 at 12.5kV, then an alternate site for a 12.5kV substation should be considered in lieu of a second 12.5kV transformer at Banklick. Any construction for either of these scenarios will need to take place early in the next CWP.

In **Load Block B**, the LRP recommended three substation expansions, and three new substation sites. These new substations were North Point, Independence, and Toebben. The substations recommended for expansion were Noel, Bullittsville, and Woolper Creek (now called Belleview).

In **Load Block C (Long-Range Level),** the LRP recommended six new substation sites. These substations were Waterloo, Richwood, Alexandria, Lake Williamstown, Sulphur Well, and North Holbrook.

The Richwood substation was expedited due to recent planned expansion in the Duro industrial park area. The Richwood substation will be energized during the course of the 2010-2011 CWP.

ANALYSIS OF 2006 LONG RANGE PLAN –con't

The 2006 LRP recommended numerous distribution upgrades that include aged conductor replacement over the 20-year Long Range Planning period.

The 2010-2011 CWP is in basic agreement with the current LRP. All recommendations in the current LRP were closely analyzed during the updating process.

OPERATIONS & MAINTENANCE SURVEY

The current O&M Survey ("Review Rating Summary") was completed in July 2009. A copy of the survey is included as an Appendix of this report.

OEC will continue to coordinate with other utilities through frequent follow-ups concerning joint use compliance. This will alleviate issues with poles left standing next to electric poles once a line has been changed.

A multitude of wind and ice storms plagued the area over the past two years causing a higher than normal amount of outage hours. Outdoor and ground conditions during these storms have further caused issues in restoring power during these times. Additionally because of the widespread nature of these storms, it was difficult to get additional crews from the surrounding areas to help in more quickly restoring power. If these storm instances were removed from the outage data the outage hours per consumer would be comparable to preceding outage data.

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, Reliability, Coordination, and Protection.

1. Safety – Sectionalizing devices should be able to detect and interrupt 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. 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.

3. 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.

4. 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.

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.

The ongoing, substation-by-substation sectionalizing study will continue after the completion of the CWP report. General sectionalizing 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

NAME	Installed Capability				Existing Winter		2 Year Winter Unimproved		2 Year Winter Improved		Existing Summer		2 Year Summer Unimproved		2 Year Summer Improved		Notes
	Nameplate (kVA)	Cooling	Winter Rating (kVA)	Summer Rating (kVA)	Jan '09 (kVA)	% Load	Jan '12 (kVA)	% Load	Jan '12 (kVA)	% Load	July '08 (kVA)	% Load	July '12 (kVA)	% Load	July '12 (kVA)	% Load	
Bank Lick	14000	OAFA-65C	17,100	13,620	11,002	64.34%	12,066	70.56%	12,106	70.80%	10,768	79.06%	13,274	97.46%	13,315	97.76%	
Bavarian	20000	OAFAFA-65C	14,400	14,400	5,584	38.78%	6,000	41.67%	6,005	41.70%	3,403	23.63%	4,039	28.05%	4,035	28.02%	
Big Bone	14000	OAFA-65C	17,100	13,620	4,436	25.94%	4,840	28.30%	2,833	16.57%	3,997	29.35%	4,894	35.93%	2,793	20.51%	2
Boone Distribution	25000	OAFAFA-65C	17,100	17,100	11,719	68.53%	13,372	78.20%	13,572	79.37%	12,682	74.16%	16,110	94.21%	16,174	94.58%	1, 10
Bristow	14000	OAFA-65C	17,100	13,620	7,456	43.60%	7,517	43.96%	7,517	43.96%	7,144	52.45%	5,984	43.94%	5,983	43.93%	
Bristow II	14000	OAFA-65C	14,400	13,620	7,454	51.76%	8,425	58.51%	8,423	58.49%	6,234	45.77%	8,872	65.14%	8,864	65.08%	
Bromley	14000	OAFA-65C	13,700	13,620	8,831	64.46%	9,648	70.42%	9,821	71.69%	5,576	40.94%	6,821	50.08%	6,823	50.10%	
Bullittsville	14000	OAFA-65C	17,100	13,620	5,983	34.99%	6,274	36.69%	8,847	51.74%	8,849	64.97%	10,055	73.83%	10,640	78.12%	3, 4
Burlington	14400	OAFA-65C	14,400	14,010	10,424	72.39%	15,420	107.08%	8,951	62.16%	11,294	80.61%	17,840	127.34%	10,904	77.83%	3, 4, 10
Carson	11200	OA-65C	13,700	11,070	8,008	58.45%	8,694	63.46%	8839	64.52%	5,638	50.93%	6,848	61.86%	6,974	63.00%	
Downing #1	14000	OAFA-65C	17,100	13,620	7,499	43.85%	7,887	46.12%	7,885	46.11%	9,740	71.51%	10,921	80.18%	10,916	80.15%	
Downing #2	14000	OAFA-65C	14,400	13,620	2,766	19.21%	2,809	19.51%	2,809	19.51%	3,308	24.29%	3,493	25.65%	3,493	25.65%	
Duro #1	14000	OAFA-65C	14,400	13,620	12,999	90.27%	15,926	110.60%	12,151	84.38%	13,757	101.01%	17,038	125.10%	12,819	94.12%	5
Duro #2	14000	OAFA-65C	13,700	13,620	10,166	74.20%	11,042	80.60%	9,119	66.56%	9,677	71.05%	11,532	84.67%	7,900	58.00%	5
Gallatin County #2	20000	OAFAFA-65C	20,700	18,500	6,509	31.44%	6,866	33.17%	6,860	33.14%	7,831	42.33%	8,901	48.11%	8,882	48.01%	
Grants Lick #1	14000	OAFA-65C	14,400	13,620	6,956	48.31%	7,633	53.01%	8,761	60.84%	5,232	38.41%	6,362	46.71%	7,570	55.58%	9
Grants Lick #2	20000	OAFAFA-65C	17,100	17,100	16,983	99.32%	18,309	107.07%	18,309	107.07%	12,363	72.30%	14,788	86.48%	14,788	86.48%	1
Griffin	11200	OA-65C	13,700	9,820	10,951	79.93%	12,061	88.04%	10,753	78.49%	9,589	97.65%	11,290	114.97%	9,972	101.55%	1, 9
Hebron	20000	OAFAFA-65C	23,610	19,200	9,274	39.28%	9,258	39.21%	9,256	39.20%	14,032	73.08%	15,580	81.15%	15,529	80.88%	8
Keith	10000	OA-65C	13,700	8,820	11,476	83.77%	12,938	94.44%	12,347	90.12%	6,731	76.32%	8,603	97.54%	8,372	94.92%	
Keith #2	11200	OA-65C	15,720	11,080	N/A	N/A	4,415	28.09%	4,415	28.09%	N/A	N/A	4,671	42.16%	4,671	42.16%	
Munk	14000	OAFA-65C	17,100	13,620	14,463	84.58%	15,695	91.78%	13,135	76.81%	10,202	74.90%	12,450	91.41%	10,397	76.34%	6
Oakley Noel	11200	OA-65C	13,700	11,070	8,242	60.16%	8,926	65.15%	11,462	83.66%	7,006	63.29%	8,405	75.93%	10,409	94.03%	6
Penn	14000	OAFA-65C	14,400	13,620	11,554	80.24%	12,547	87.13%	12,500	86.81%	9,156	67.22%	11,296	82.94%	11,198	82.22%	
Richardson #1	14000	OAFA-65C	17,100	13,620	10,285	60.15%	11,260	65.85%	9,078	53.09%	9,867	72.44%	11,960	87.81%	10,049	73.78%	7
Richardson #2	11200	OA-65C	14,400	11,070	4,661	32.37%	5,083	35.30%	5,082	35.29%	4,033	36.43%	4,906	44.32%	4,906	44.32%	
Sterling	16000	OAFA-65C	14,400	14,400	7,327	50.88%	7,637	53.03%	7,636	53.03%	7,447	51.72%	8,129	56.45%	8,123	56.41%	
Turkey Foot	14000	OAFA-65C	14,400	13,620	10,821	75.15%	11,634	80.79%	13,804	95.86%	8,153	59.86%	9,433	69.26%	11,310	83.04%	7
W. M. Smith #1	14000	OAFA-65C	14,400	13,620	3,466	24.07%	3,630	25.21%	3,630	25.21%	4,232	31.07%	4,633	34.02%	4,633	34.02%	
W. M. Smith #2	14000	OAFA-65C	14,400	13,620	6,690	46.46%	6,943	48.22%	6,943	48.22%	8,773	64.41%	9,539	70.04%	9,539	70.04%	
W. R. Smoot #1	14000	OA-65C	17,100	13,620	8,676	50.74%	9,454	55.29%	9,219	53.91%	8,138	59.75%	9,824	72.13%	9,634	70.73%	
W. R. Smoot #2	14000	OA-65C	14,400	13,620	9,868	68.53%	10,715	74.41%	10,715	74.41%	9,271	68.07%	11,243	82.55%	11,242	82.54%	
Williamstown	14000	OAFA-65C	17,100	13,620	13,503	78.96%	14,743	86.22%	14,780	86.43%	10,394	76.31%	12,599	92.50%	12,582	92.38%	
Belleview	11200	OA-65C	15,720	11,080	N/A	N/A	N/A	N/A	3,817	24.28%	N/A	N/A	N/A	N/A	5,920	53.43%	
Richwood	12000	OA-65C	16,850	11,870	N/A	N/A	N/A	N/A	7,662	45.47%	N/A	N/A	N/A	N/A	9,805	82.60%	

1. High side fuse or regulator capacity exceeded
2. Offload to Richwood substation
3. Offload to Belleview substation
4. Transfer load of Conrad Lane DCT
5. Duro feeders reconfigured after Richwood substation relief
6. Load transfer Munk to Noel
7. Load transfer Richardson 1 to Turkeyfoot
8. Mauser closed Hebron plant therefore reduction in load
9. Load transfer from Griffin to Grantslick by OEC June 2009
10. 2MW shaft load reflected on Burlington, potentially 2MW could be "shifted" to Boone substation for Shaft location #1

Owen
Distribution Substation Equipment Ratings

Substation Identification			Substation Voltage		Transformer				Regulator				Regulator Tap Changer			High-Side Fuse					Limits			
CoopID	Prefix	MV90 Name	Primary	Secondary	Nameplate	Cooling	Summer	Winter	Nameplate	Cooling	Summer	Winter	Amps	Summer	Winter	Amps	Type	TCC	Summer	Winter	Summer		Winter	
37	N013	BANK LICK	69	12.47	14	OA/FA-65C	13.62	18.14	686	OA-65C	26.3	34.4	900	19.4	19.4	125	SMD1A	153-1	17.1	17.1	13.62	T	17.10	F
37	N070	BAVARIAN	138	12.47	20	OA/FA/FA-65C	19.20	24.84	466	OA-65C	17.9	23.4	668	14.4	14.4	100	SS	PMA	27.4	27.4	14.40	TC	14.40	TC
37	N036	BIG BONE	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	900	19.4	19.4	125	SMD1A	153-1	17.1	17.1	13.62	T	17.10	F
37	N015	BOONE DIST.	69	12.47	25	OA/FA/FA-65C	24.00	31.05	933	OA-65C	35.8	46.8	1093	23.6	23.6	125	SMD1A	153-1	17.1	17.1	17.10	F	17.10	F
37	N047	BRISTOW #1	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	900	19.4	19.4	125	SMD1A	153-1	17.1	17.1	13.62	T	17.10	F
37	N047A	BRISTOW #2	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.4	14.4	125	SMD1A	153-1	17.1	17.1	13.62	T	14.40	TC
37	N073	BROMLEY	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.4	14.4	100	SMD1A	119-1	13.7	13.7	13.62	T	13.70	F
37	N028	BULLITTSVILLE	69	12.47	14	OA/FA-65C	13.62	18.14	686	OA-65C	26.3	34.4	900	19.4	19.4	125	SMD1A	153-1	17.1	17.1	13.62	T	17.10	F
37	N077	BURLINGTON	69	12.47	14.4	OA/FA-65C	14.01	18.66	466	OA-65C	17.9	23.4	668	14.4	14.4	125	SMD1A	153-1	17.1	17.1	14.01	T	14.40	TC
37	N033	CARSON	69	24.94	11.2	OA-65C	11.07	15.72	484	OA-65C	18.5	24.3	480	20.70	20.70	100	SMD1A	119-1	13.7	13.7	11.07	T	13.70	F
37	N062	DOWNING #1	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	900	19.40	19.40	125	SMD2B	153-1	17.1	17.1	13.62	T	17.10	F
37	N062A	DOWNING #2	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD1A	153-1	17.1	17.1	13.62	T	14.40	TC
37	N055	DURO #1	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD1A	153-1	17.1	17.1	13.62	T	14.40	TC
37	N055A	DURO #2	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	100	SMD1A	119-1	13.7	13.7	13.62	T	13.70	F
37	N057A	GALLATIN DIST.	138	24.94	20	OA/FA/FA-65C	19.20	24.84	484	OA-65C	18.5	24.3	480	20.70	20.70	—	—	—	—	—	18.50	R	20.70	TC
37	N012	GRANTS LICK #1	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD1A	119-1	17.1	17.1	13.62	T	14.40	TC
37	N012A	GRANTS LICK #2	69	24.94	20	OA/FA-65C	19.46	25.92	933	OA-65C	35.8	46.8	668	28.80	28.80	125	SMD1A	153-1	17.1	17.1	17.10	F	17.10	F
37	N029	GRIFFIN	69	12.47	11.2	OA-65C	11.07	15.72	333	OA-55C	9.8	15.1	668	14.40	14.40	100	SMD1A	119-1	13.7	13.7	9.80	R	13.70	F
37	N069	HEBRON	138	12.47	20	OA/FA/FA-65C	19.20	24.84	747	OA-65C	28.7	37.5	1093	23.60	23.60	100	SS	PMA	27.4	27.4	19.20	T	23.60	TC
37	N038	KEITH	69	12.47	10	OA-55C	8.82	14.94	333	OA-55C	9.8	15.1	668	14.40	14.40	100	SMD1A	119-1	13.7	13.7	8.82	T	13.70	F
37	N021	MUNK	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	900	19.40	19.40	125	SMD1A	153-1	17.1	17.1	13.62	T	17.10	F
37	N067	OAKLEY NOEL	69	12.47	11.2	OA-65C	11.07	15.72	466	OA-65C	17.9	23.4	668	14.40	14.40	100	SMD2A	119-1	13.7	13.7	11.07	T	13.70	F
37	N008	PENN	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD1A	153-1	17.1	17.1	13.62	T	14.40	TC
37	N058	RICHARDSON #1	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	900	19.40	19.40	125	SMD1A	153-1	17.1	17.1	13.62	T	17.10	F
37	N058A	RICHARDSON #2	69	12.47	11.2	OA-65C	11.07	15.72	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD1A	153-1	17.1	17.1	11.07	T	14.40	TC
37	N078	STERLING	138	12.47	16	OA/FA-65C	15.56	20.73	466	OA-65C	17.9	23.4	668	14.40	14.40	100	SS	PMA	27.4	27.4	14.40	TC	14.40	TC
37	N031	TURKEY FOOT	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD2B	153-1	17.1	17.1	13.62	T	14.40	TC
37	N048	W.M. SMITH #1	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD2B	153-1	17.1	17.1	13.62	T	14.40	TC
37	N048A	W.M. SMITH #2	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD2B	153-1	17.1	17.1	13.62	T	14.40	TC
37	N052	W.R. SMOOT #1	69	24.94	14	OA/FA-65C	13.62	18.14	686	OA-65C	26.3	34.4	900	38.80	38.80	125	SMD1A	119-1	17.1	17.1	13.62	T	17.10	F
37	N052A	W.R. SMOOT #2	69	12.47	14	OA/FA-65C	13.62	18.14	466	OA-65C	17.9	23.4	668	14.40	14.40	125	SMD1A	119-1	17.1	17.1	13.62	T	14.40	TC
37	N016	WILLIAMSTOWN	69	12.47	14	OA/FA-65C	13.62	18.14	747	OA-65C	28.7	37.5	1093	23.60	23.60	125	SMD1A	153-1	17.1	17.1	13.62	T	17.10	F

Updated: 9/23/2008

SERVICE RELIABILITY

The record of OEC's service interruptions for the past five years is shown in Table II-E-2. The five-year average outage hours per consumer is 5.33. This value is higher than typical because of the extreme winds produced by Hurricane Ike in the fall of 2008 which caused widespread damage for utilities throughout the region. With this exception OEC's typical average outage hours are below the minimum level allowed by RUS. Ongoing system improvements and continued feeder sectionalizing studies will help to reduce this value even further.

TABLE II-E-2

	Power Supplier	Extreme Storm	Prearranged	All Other	Total
2004					
OUTAGE HR/CONS	**0.33**	**0.44**	**0.02**	**2.61**	**3.40**
2005					
OUTAGE HR/CONS	**0.14**	**0.18**	**0.06**	**1.91**	**2.29**
2006					
OUTAGE HR/CONS	**0.13**	**0.62**	**0.08**	**1.73**	**2.56**
2007					
OUTAGE HR/CONS	**0.46**	**1.26**	**0.14**	**1.77**	**3.63**
2008					
OUTAGE HR/CONS	**1.11**	**12.01**	**0.05**	**1.62**	**14.79**
FIVE YEAR AVE.					
OUTAGE HR/CONS	**0.43**	**2.90**	**0.07**	**1.93**	**5.33**

NON-FUNDED SYSTEM IMPROVEMENTS

The following recommendations are based upon the review of the projected winter and summer peak systems. These recommendations do not affect the total dollar projections for the CWP, but are recommended for the OEC system to meet the design criteria.

Load Balance

The following feeders would benefit from balancing to alleviate excessive voltage drop or rise due to phase imbalance. Included in the appendix of this report are phase balance recommendations that were generated using Windmil's Load Balance routine which calculates the optimum phase configuration for a feeder based on reducing losses. While all recommendations may not be possible due to field constraints it can be used as a starting point to begin plans for phase balancing.

Substation	Feeder	Issue
Banklick	0202	Voltage drop
Bavarian	2301	Voltage rise
Bavarian	2302	Voltage rise
Bromley	0601	Voltage rise
Bromley	0602	Voltage drop
Bromley	0603	V drop and V rise
Bullittsville	0802	V drop and V rise
Carson	1102	Voltage rise
Carson	1103	Voltage drop
Duro	1706	Voltage rise
Gallatin	1802	Voltage rise
Grantslick	0302	V drop and V rise
Grantslick	0304	Voltage rise
Griffin	0901	Voltage drop
Griffin	0902	V drop and V rise
Griffin	0903	Voltage drop
Hebron	2203	Voltage drop
Keith	1301	V drop and V rise
Keith	1302	Voltage drop
Keith	1303	Voltage drop
Keith	1304	Voltage drop
Munk	0405	Voltage rise
Munk	0407	Voltage rise
Noel	2103	Voltage drop

Penn	0703	Voltage drop
Penn	0704	Voltage drop
Richardson	1902	Voltage drop
Smoot	1603	Voltage rise
Smoot	5304	Voltage rise
Sterling	2503	Voltage rise
Turkeyfoot	1003	Voltage rise
Wmtown	0501	V drop and V rise
Wmtown	0503	Voltage drop
Wmtown	0505	Voltage rise
Wmtown	0506	Voltage drop

Switching recommendations

- Banklick: Backfeed CO33156 from CO33151 and open at CO33188 to relieve the overload on CO35179. This tap is on Rector Road. Note: If this tap is to be multiphased in the future OEC should consider using 336 ACSR if they anticipate a substation being added along Decoursey in lieu of Banklick 2.

- Banklick: Backfeed CO34936 from CO34935 and open at CO32993 to relieve loading on CO33027. This tap is on Old Decoursey Road.

- Banklick: In addition to the load balance recommendations, change the tap beginning at CO30173 to B-phase to relieve voltage drop.

- Big Bone Substation: Backfeed CO29423 from CO29228 (Boone) and open at original load of CO29291 to relieve overload on tap beginning at CO32169. This tap is on East Bend Road.

- Boone Substation: Backfeed CO58408 from CO58409 and open at original load CO58296. This tap is on River Road.

- Bromley: Backfeed CO10371 from CO10370 and open at original load of CO11283 to relieve overload on CO11263. This tap is on Squiresville Road.

- Burlington: Backfeed CO23603 from CO23604 and open at original source of CO24713 to relieve overload on CO24827. This tap is on Wolper Road.

- Burlington: Backfeed CO24312 from CO24538 and open at original load of CO24361 to relieve overload on CO24563. This tap is on Red Stone Drive.

- Grantslick: Backfeed CO49262 from CO49336 and open original source of CO49169. This tap is on Rt 159.

- Griffin: Close switch SW-1942307344 and open at original source of CO35788 to transfer load from Griffin to Grantslick to relieve voltage drop on Griffin feeder 1.

- Griffin: Backfeed CO871424629 from CO366 and open at CO2247. This tap is on Hog Ridge Road.

- Griffin: Backfeed CO152235341 from CO35887 and open at CO35657. This tap serves Pribble (Crane) Road.

- Penn: Backfeed CO18362 from CO18342 and open at CO18903. This tap is on Plummer Road.

- Keith: Close switch SW1919777296 and open at CO9986. This is a block load transfer from feeder 2 to feeder 1 to relieve voltage drop on feeder 2.

- Keith: Backfeed CO15649 from CO15643 and open at CO15559 to relieve the overload on CO15400. This tap serves Greenup Road.

- Munk: Close switch SW3402 and open at CO39278 to transfer the Eagle Creek golf course area from Munk to Noel substation to relieve Munk substation.

- Munk: Backfeed CO48590 from CO48503 and open at CO48522 to relieve loading on CO50485. This tap runs along State Rt. 491.

- Munk: Backfeed CO-688853906 from CO-1662675074 and open at CO-1997368874 to relieve overload on CO-824189517. This tap runs along Liza Lane and Hopewell Road.

- Penn: Backfeed CO-1769947566 from CO15141 and open CO14047 to transfer load from the Penn feeder 3 to Penn feeder 2 to alleviate voltage drop on Penn feeder 3.

- Penn: In addition to the load balance recommendations, change the tap beginning at CO14190 to B-phase to relieve voltage drop.

- Penn: In addition to the load balance recommendations, change the tap beginning at CO12968 to C-phase to relieve voltage drop.

- Richardson: Backfeed CO53584 from CO53588 and open at CO53013 to relieve loading on CO53036. This tap serves Carriage Hill Drive and Delphi Drive.

- Richardson/Turkeyfoot: Close switch SW1833358616 and open at switch SW3569. This will switch the load of Autumn Drive from Richardson substation to Turkeyfoot and will relieve the loading on the 336 ACSR of Richardson feeder 2.

- Williamstown: In addition to the load balance recommendations, change the tap beginning at CO9505 to C-phase to relieve voltage drop.

Additional Recommendations

- Big Bone: Consider changing OCR to a 70L on the tap beginning at CO31387. This tap serves the Lakeview subdivision.

- Bristow: Consider changing OCR to a 70L on the tap beginning at CO-298684046. This tap is on Hogrefee Road.

- Bullittsville Substation: The tap beginning at CO23385 that serves Brookview Drive is heavily loaded and presently 6A CWC with a 70L OCR. A conversion was not called for at this time, but if this conductor is replaced in the future, multi-phasing should be considered for load balancing purposes.

- Munk: Consider changing OCR to a 70L on the tap beginning at CO39440. This tap in on Sugar Creek Road.

- Penn Substation: Monitor feeders 3 and 4 for voltage drop. Feeder 3 will be relieved by Blanchet substation in 2013. Voltage regulators may be needed in interim.

- Penn: Consider changing OCR to a 70L on the tap beginning at CO15938. This tap serves Frogtown and Ray Fork Roads.

- Richardson: Consider changing OCR to a 70L on the tap beginning at CO52561. This tap serves a portion along Hands Pike.

- Richardson: Consider changing OCR to a 70L on the tap beginning at CO52586. This tap serves Hideaway Drive.

- Richardson: Monitor the taps that begin with line sections CO56763 and CO56761 that feed Sylvan Drive during the winter peak.

DATA RESOURCES

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

1. Updated circuit diagram map that indicates substations with present feeder configurations.

2. Monthly substation non-coincident peak (NCP) demands.

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

4. 2008 East Kentucky Power *Load Forecast.*

5. Five Year Outage Summary.

6. RUS Form 7 data.

7. Substation transformer ratings.

8. Substation Data Sheets.

9. Computerized circuit model databases with voltage drop calculations for each primary line section.

BASIC DATA AND ASSUMPTIONS

Design Load – The construction program in the CWP covers a two-year period to serve the 314 MW, January 2012 winter peak and 302 MW, 2011 summer peak. The design load was derived after reviewing the *2008 Load Forecast* with the GFR.

Load Allocation – Individual areas of the system were grown as spot loads based on the potential for growth in that area. The total system design load was attained by allocating each substation's load to its consumers proportional to the kWh consumption of each residential consumer and billed demand for non-residential consumers. Peak summer and peak winter loading were modeled and analyzed. The system is generally winter peaking.

Voltage Drop – For the design load, an eight volt drop past one set of downline voltage regulators was assumed to be the maximum allowable end-of-line voltage drop.

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 levels listed on the substation load data sheet.

Single-Phase Loading – On taps where more than 45 amps are served from a single-phase line, conversion to 3-phase was considered in order to provide greater system reliability and ease of coordination.

Inflation – An annual inflation rate of 4% 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 Milsoft Integrated Solution's Windmil v. 7.3 analysis software. Downloading monthly billing computer data into the Windmil billing file directory was the framework for building the winter and summer models. Residential loads were allocated by the kWh Demand Table method. Commercial and industrial loads were allocated based on their billed kW demand. Projected models were analyzed for Design Criteria violations using an unbalanced voltage drop calculation.

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 general recommendations were generated from the analysis:

1. New overhead single-phase line extensions will be constructed of #2 ACSR. New underground extensions will be constructed of 1/0 ALUG or #2 ALUG. New three-phase underground line extensions will be constructed of 1/0 ALUG or 500 MCM ALUG.
2. Replacements that are to remain single-phase should generally be constructed of #2 ACSR unless unacceptable voltage drop is likely, in which case 1/0 ACSR should be used.
3. Converted 12.5 kV three-phase construction should be of 1/0 ACSR for initial loads up to 1,700 kW except main feeders and major taps; and 336.4 ACSR for initial loads greater than 1,700 kW. Voltage drop and load considerations may lower the initial kW level for the use of 336.4 ACSR.

The data table preceding the analysis graph lists the assumptions that were made in the conductor analysis. This analysis appears in the Appendices of this report.

FINANCIAL DATA

- ***Cost of Capital = 5.0%***
- ***Inflation = 4.0%***
- ***Present Worth Discount Factor = 5.0%***
- ***Depreciation = 4.40%***
- ***O&M = 4.09%***
- ***Tax & Ins = 1.00%***
- ***TOTAL ANNUAL FIXED CHARGE RATE = 14.49%***

TABLE III-B-1 Inflation = 4%
COST SUMMARY DATA
(HISTORICAL DATA & PROJECTIONS - EXCLUDING CODES 300, 603, & 604)

DESCRIPTION	May'07-Apr'09	2010	2011	CWP TOTAL
New OH Construction (100)				
1. New services constructed	631	250	290	540
2. Cost per Customer	$4,217	$4,386	$4,561	
3. Cost of New Customers	$2,661,038	$1,096,466	$1,322,776	$2,419,242
4. Total Footage	202,043	80,049	92,857	172,905
New UG Construction (101)				
1. New services constructed	1763	600	700	1300
2. Cost per Customer	$1,832	$1,905	$1,982	
3. Cost of New Customers	$3,229,884	$1,143,192	$1,387,073	$2,530,265
4. Total Footage	305,825	104,081	121,428	225,509
New LP Construction (102)				
1. New services constructed	72	28	38	66
2. Cost per Customer	$9,394	$9,770	$10,160	
3. Cost of New Customers	$676,362	$273,551	$386,097	$659,648
Padmount Transformers (601)				
1. New transformers added	134	100	117	217
2. Cost per Transformer	$4,189	$4,357	$4,531	
3. Cost of New Transformers	$561,321	$435,652	$530,101	$965,754
3 PH Padmount Transformers (601)				
1. New transformers added	51	28	38	66
2. Cost per Transformer	$10,039	$10,441	$10,858	
3. Cost of New Transformers	$511,992	$292,337	$412,613	$704,951
New Transformers (601)				
1. New transformers added	1162	450	522	972
2. Cost per Transformer	$1,053	$1,095	$1,139	
3. Cost of New Transformers	$1,223,990	$492,967	$594,715	$1,087,682
New Meters (601)				
1. New Meters added	49,908	900	1040	1940
2. Cost per Meter	$138	$144	$150	
3. Cost of New Meters	$6,899,229	$129,392	$155,500	$284,892
New LP Meters (601)				
1. New Meters added	502	125	125	250
2. Cost per Meter	$753	$783	$814	
3. Cost of New Meters	$377,855	$97,851	$101,765	$199,616
Retrofit LP Meters (601)				
1. Retrofit of LP Meters added		25	25	50
2. Cost per Retrofit		$200	$208	
3. Cost of Retrofit LP Meters		$5,000	$5,200	$10,200
Disconnect Collars (601)				
1. New Collars added		500	500	1000
2. Cost per Collar		$250	$260	
3. Cost of New Collar		$125,000	$130,000	$255,000
Instrument Transformers (601)				
1. Cost of New Instrument Transformers		$15,000	$15,000	$30,000

TABLE III-B-1 Inflation = 4%
COST SUMMARY DATA CON'T
(HISTORICAL DATA & PROJECTIONS - EXCLUDING CODES 300, 603, & 604)

DESCRIPTION	May'07-Apr'09	2010	2011	CWP TOTAL
Service Upgrades (602)				
1. Number of Service Upgrades	283	140	140	280
2. Cost per Service Upgrade	$1,692	$1,760	$1,830	
3. Cost of Service Upgrades	$478,910	$246,393	$256,249	$502,642
Pole Changes - Replacement (606)				
1. Poles Changed	630	275	275	550
2. Cost per Pole Change	$2,690	$2,797	$2,909	
3. Cost of Pole Changes	$1,694,481	$769,241	$800,010	$1,569,251
Miscellaneous - Replacement (607)				
1. Cost of Misc. Replacements - historical	$245,520	$125,000	$125,000	$250,000
2. Cost of Misc. Replacements - system hardening		$200,000	$200,000	$400,000
3. Total cost of Misc. Replacements		$325,000	$325,000	$650,000
Conductor Replacement (608)				
1. Miles of small conductor to be replaced		50	50	100
2. Cost per mile	$55,480	$57,699	$60,007	
3. Total cost of small conductor replacement		$2,884,960	$3,000,358	$5,885,318
Line Relocates (610) - Road				
1. Cost of line relocates		$60,000	$60,000	$120,000
Line Relocates (611) - Safety				
1. Cost of line relocates		$210,000	$210,000	$420,000
Outdoor Lighting (701)				
1. New Outdoor Lights Added	510	200	200	400
2. Cost per Outdoor Light	$1,090	$1,134	$1,179	
3. Cost of Outdoor Lights	$556,010	$226,765	$235,835	$462,600
SCADA (704)				
1. SCADA Hardware & Communications		$300,000	$300,000	$600,000
AMR Equipment (705)				
1. Related Software and Hardware		$47,500	$47,500	$95,000

NEW MEMBER EXTENSIONS – RUS CODE 100

A total of 1,906 new services are anticipated – 1,300 of which are underground, 540 are overhead construction, and 66 new services for large powers. The total projected cost for new service construction is $5,609,155.
The average length of service per overhead customer is 320 feet, and 173 feet for underground. The total projected length for the work plan period is approximately 75 miles excluding large power extensions.
Cost history and projections are shown in Table III-B-1.

SYSTEM IMPROVEMENTS – RUS CODE 300

LINE CONVERSION NARRATIVES

Banklick Substation

Code 301

Estimated Cost: $86,528
Year: 2011

Description of Proposed Construction

Sections CO35176 to CO35022 – Convert 0.8 mile of single-phase #2 ACSR to three-phase 1/0 ACSR. These line sections begin at the intersection of Moffett and Rector Roads and run along Moffett Road ending at the split near LOC#71-380-12-7540.

Reason For Proposed Construction

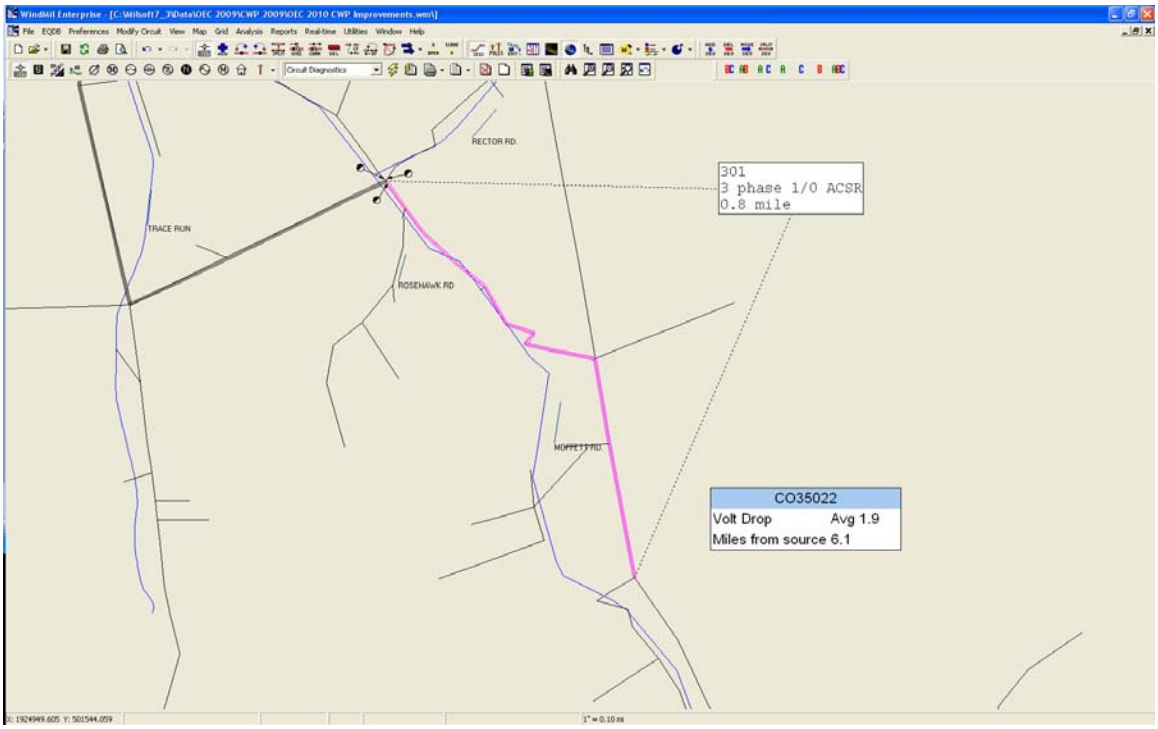
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction

DC Item 7 will be met.

Alternative Corrective Plan Investigated

All possible backfeeds are either already heavily loaded, or have takeoffs far from the source whereby voltage could not be sustained.



SYSTEM IMPROVEMENTS – RUS CODE 300

Belleview Substation

Code 302

Estimated Cost: $63,232
Year: 2011

Description of Proposed Construction

Sections Sub to CO26629 – Convert 0.2 mile of three-phase 3/0 ACSR to three-phase Triple Circuit 336 ACSR. These line sections begin at the new Belleview substation on KY 20 just north of the KY 20 and KY 18 intersection. One feeder will be an express feed to the Western Regional Sewage treatment plant. A second feed will feed north along the existing Burlington feeder 4 tying with Bullittsville feeder 2. The new open point for this feeder will be around LOC#62-482-08-4220. The third of the triple circuits will be an eventual express feed to the rock quarries near Petersburg. In addition to the triple circuit, there will be a fourth circuit coming out of the substation to the south to feed back the existing Burlington feeder 4 with a proposed open point near LOC#62-462-17-0336.

Reason For Proposed Construction

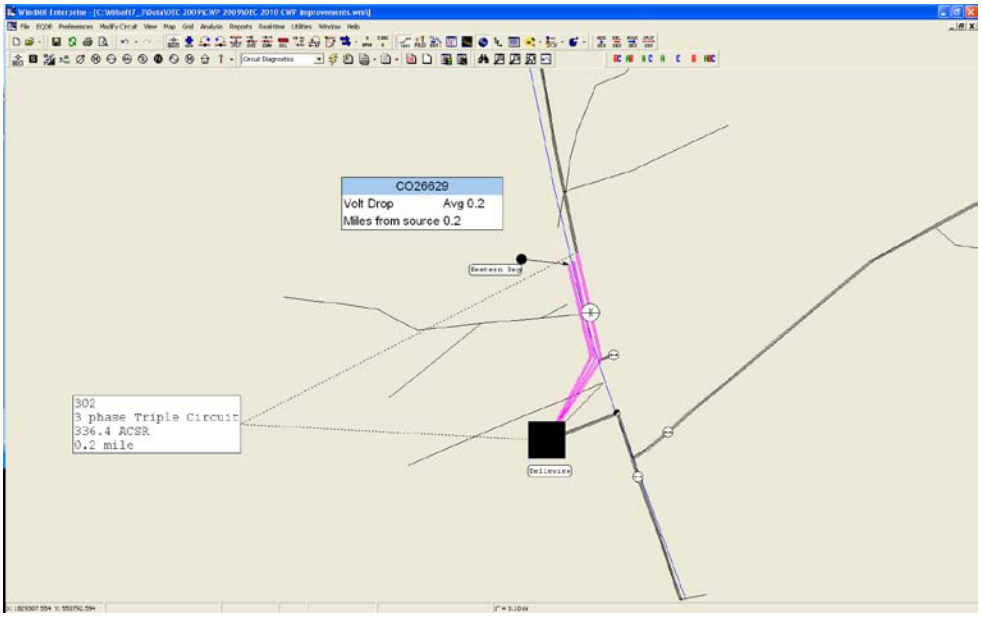
Design Criteria (DC) Item 1 is being violated.

Results of Proposed Construction

DC Item 1 will be met.

Alternative Corrective Plan Investigated

Without the additional express feeder to the sewage plant the existing 3/0 ACSR conductor would be heavily loaded with both the sewage plant and the quarry loads. The eventual express third circuit to the quarries will serve to improve reliability to the area, and planning for this circuit in the initial design would be more cost effective than adding it later.



SYSTEM IMPROVEMENTS – RUS CODE 300

Bristow Substation

Code 303

Estimated Cost: $25,600
Year: 2010

Description of Proposed Construction

Sections CO57275 & CO57271 – Convert 0.2 mile of three-phase #2 ACSR to three-phase 336 ACSR. These line sections begin at LOC#72-438-15-2285 on Mt. Zion Road and end at the intersection of Mt. Zion Road and Sigmon Lane.

Reason For Proposed Construction

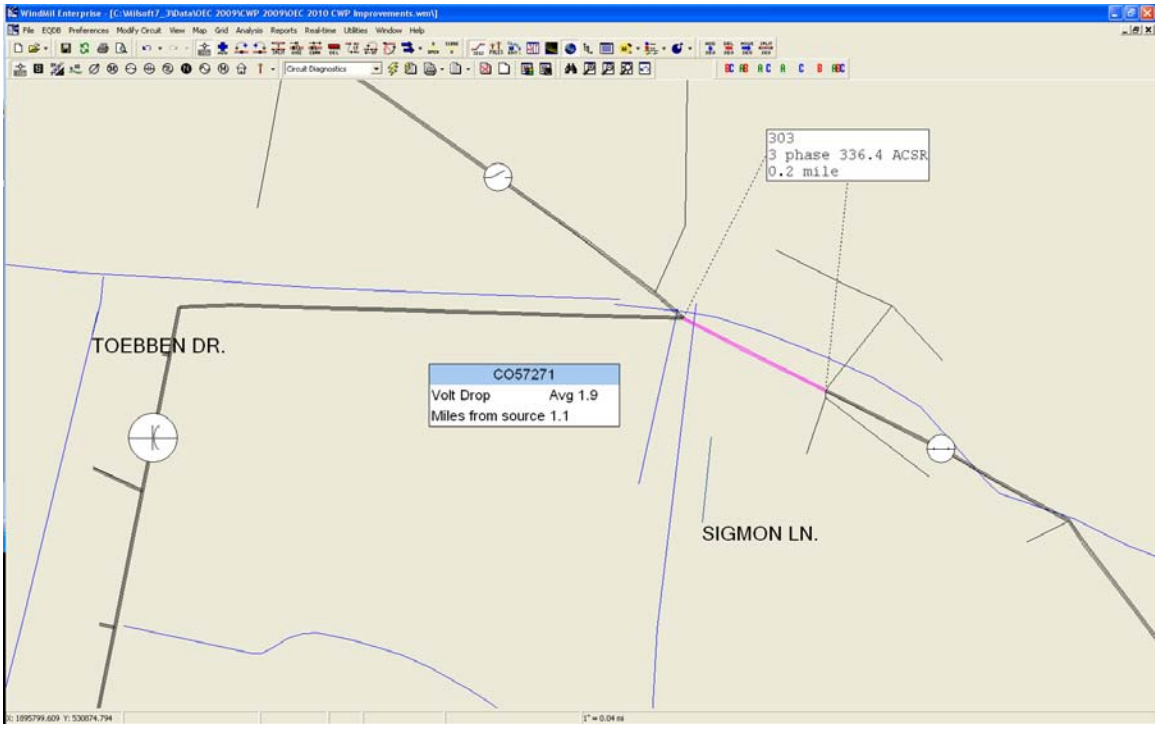
Design Criteria (DC) Item 2 is being violated.

Results of Proposed Construction

DC Item 2 will be met.

Alternative Corrective Plan Investigated

Since this is a mainline 3 phase section feeding an industrial park no viable alternative exists.



SYSTEM IMPROVEMENTS – RUS CODE 300

Bromley Substation

Code 304

Estimated Cost: $324,480
Year: 2011

Description of Proposed Construction

Sections CO13730 through CO13739 to CO14935 – Convert 3.0 miles of single-phase #2 ACSR and 6A CWC to three-phase 1/0 ACSR. These line sections begin at LOC#12-085-00-7956 on Morgan's Lane and end on Gratz Road at LOC#11-073-16-1957. Backfeed CO14902 from CO13739 and open at CO14971. Also Backfeed CO14919 from CO14991 and open at CO13867.

Reason For Proposed Construction

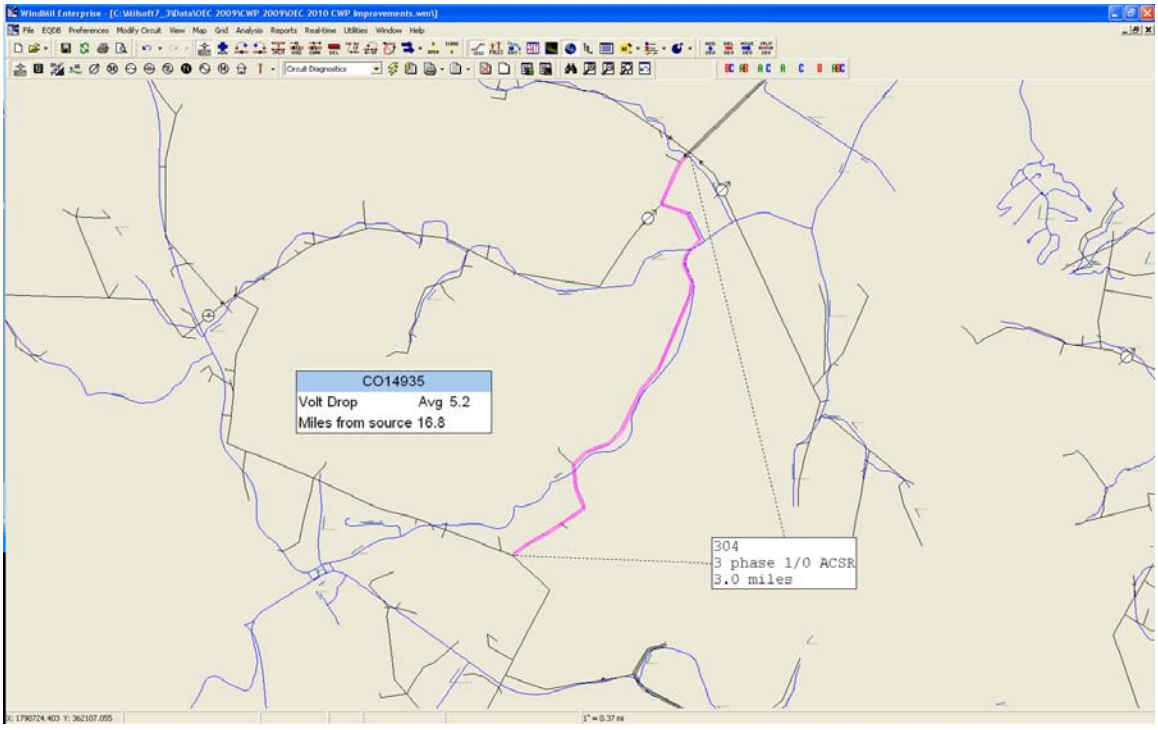
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

The only backfeed is already heavily loaded, therefore no viable backfeed exists to relieve loading.



SYSTEM IMPROVEMENTS – RUS CODE 300

Bromley Substation

Code 305

Estimated Cost: $281,216
Year: 2011

Description of Proposed Construction

Sections CO9011 to CO8971 – Convert 2.6 miles of single-phase #2 ACSR and 6A CWC to three-phase 1/0 ACSR. These line sections begin at LOC#12-144-04-0482 on Jonesville Road south of Handy Lane and end at LOC#12-145-15-9208 on Garnett's Lane. Backfeed CO2015034202 from CO8944 and open at CO10039. This conversion was to relieve the loading on CO10067 and downline voltage drop.

Reason For Proposed Construction

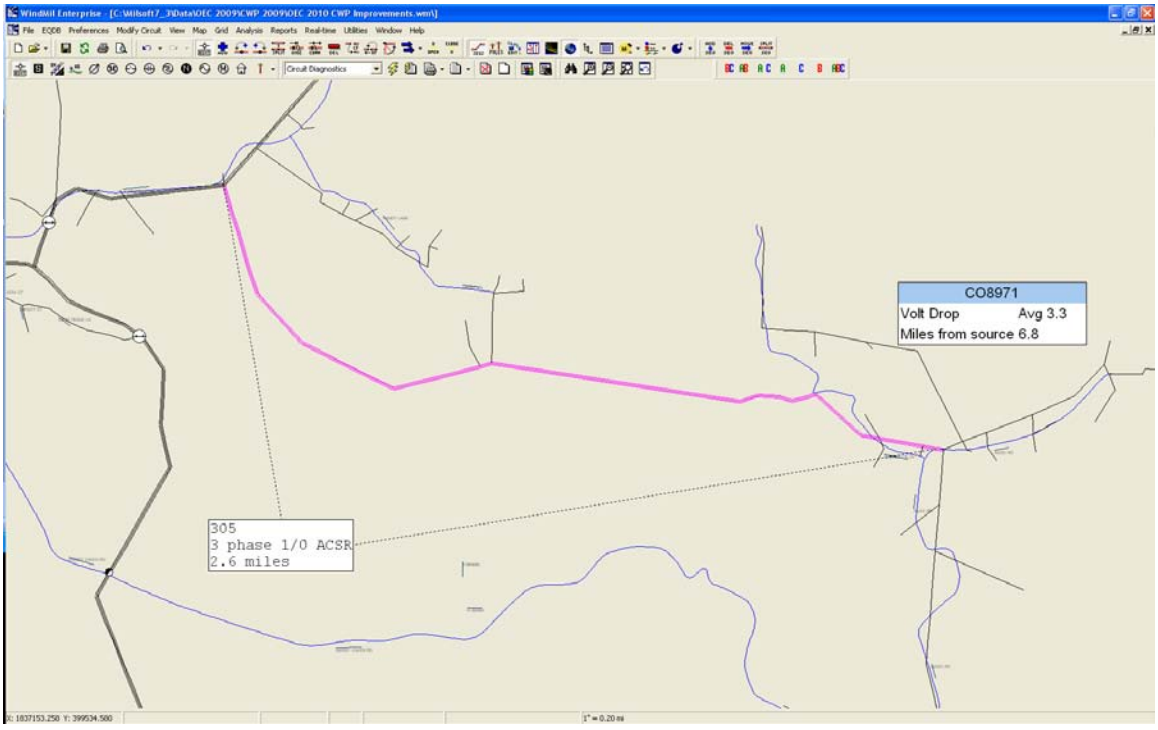
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

The existing feed for this tap could have been multi-phased to relieve the overload condition, but would not have alleviated the voltage levels above the criteria.



SYSTEM IMPROVEMENTS – RUS CODE 300

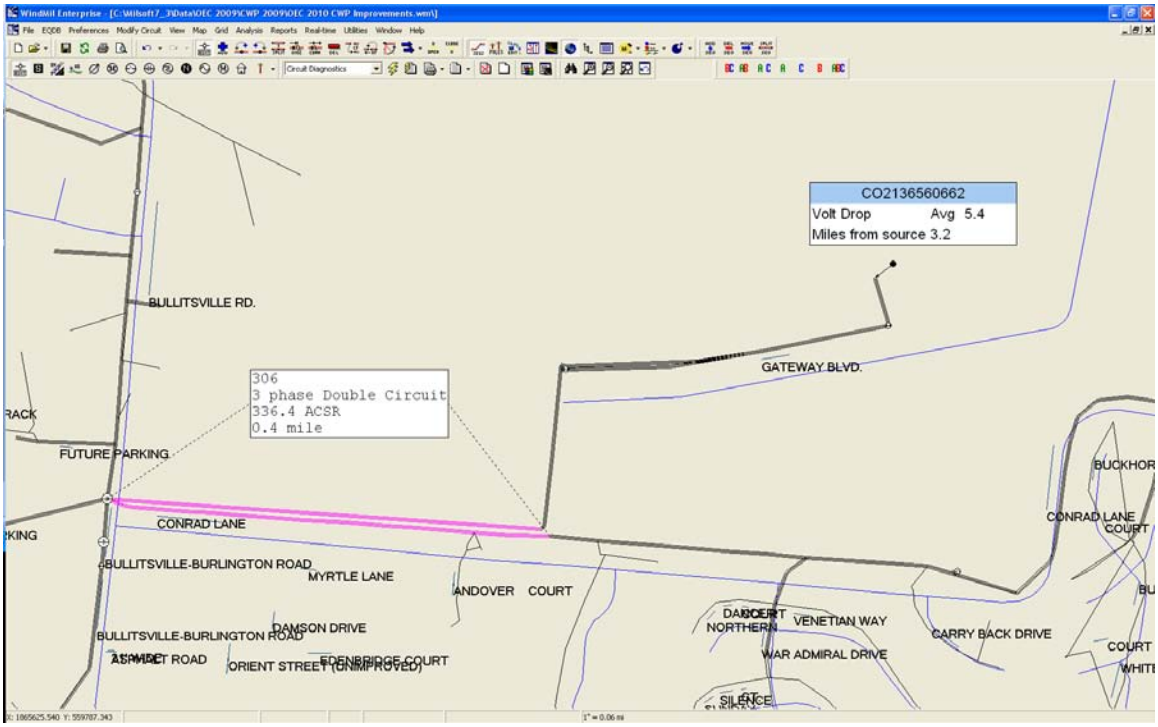
Burlington Substation
Code 306
Estimated Cost: $86,400
Year: 2010

Description of Proposed Construction
Sections CO23158 to CO23916 – Convert 0.4 mile of three-phase 336 ACSR to three-phase DCT 336 ACSR. These line sections begin at the intersection of Bullittsville Road and Conrad Lane and end at LOC#62-485-18-0065. One circuit of the double circuit will be fed from the Bullittsville feeder 1 and will feed Zumbiel. The second circuit will stay on the existing feed from Burlington feeder 3 and serve the remainder of Conrad Lane.

Reason For Proposed Construction
Design Criteria (DC) Items 1, 2, & 3 are being violated.

Results of Proposed Construction
DC Items 1, 2, & 3 will be met.

Alternative Corrective Plan Investigated
Conrad Lane is a radial three-phase tap feeding an industrial area near the airport so there are no existing backfeeds. A new tie line was explored on RT 237, but the amount of new line that would have to be constructed made this alternative cost prohibitive.



SYSTEM IMPROVEMENTS – RUS CODE 300

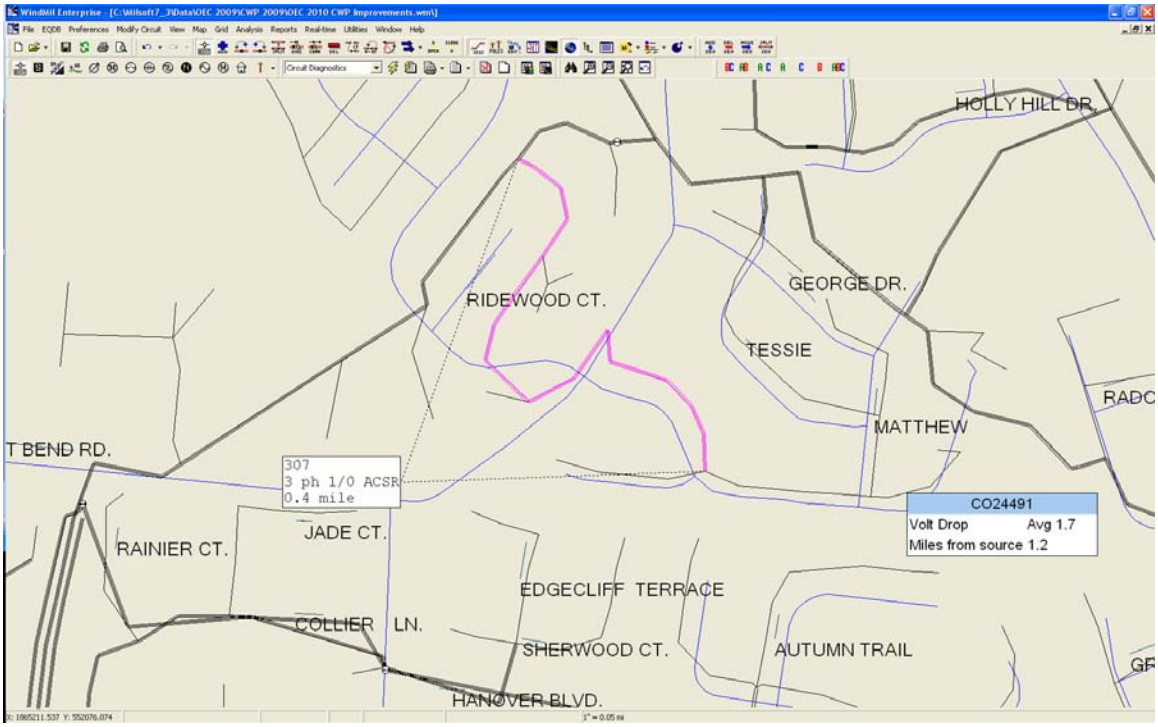
Burlington Substation
Code 307
Estimated Cost: $41,600
Year: 2010

Description of Proposed Construction
Sections CO24347 to CO24476 – Convert 0.4 mile of single-phase #2 ACSR to three-phase 1/0 ACSR. These line sections begin on Featherstone Drive serving Ridewood Court and ends on Douglas Drive. Backfeed CO24541 from CO24429 and open at CO24491. This conversion relieves the overload condition on line section CO24596.

Reason For Proposed Construction
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction
DC Item 1 & 7 will be met.

Alternative Corrective Plan Investigated
The alternative would be to multi-phase the overloaded line sections CO24596 through CO24491. This alternative would include multi-phasing 1/0URD and would therefore be more costly.



SYSTEM IMPROVEMENTS – RUS CODE 300

Downing Substation

Code 308

Estimated Cost: $19,200
Year: 2010

Description of Proposed Construction

Sections CO20719 to CO20733 – Convert 0.1 mile of single-phase 1/0 URD to two-phase 1/0 URD. This line sections begin at the intersection of Brandon and Hawes Drive and ends at Grandview Drive. Field readings should be taken on the tap beginning with CO20719 to verify overload condition.

Reason For Proposed Construction

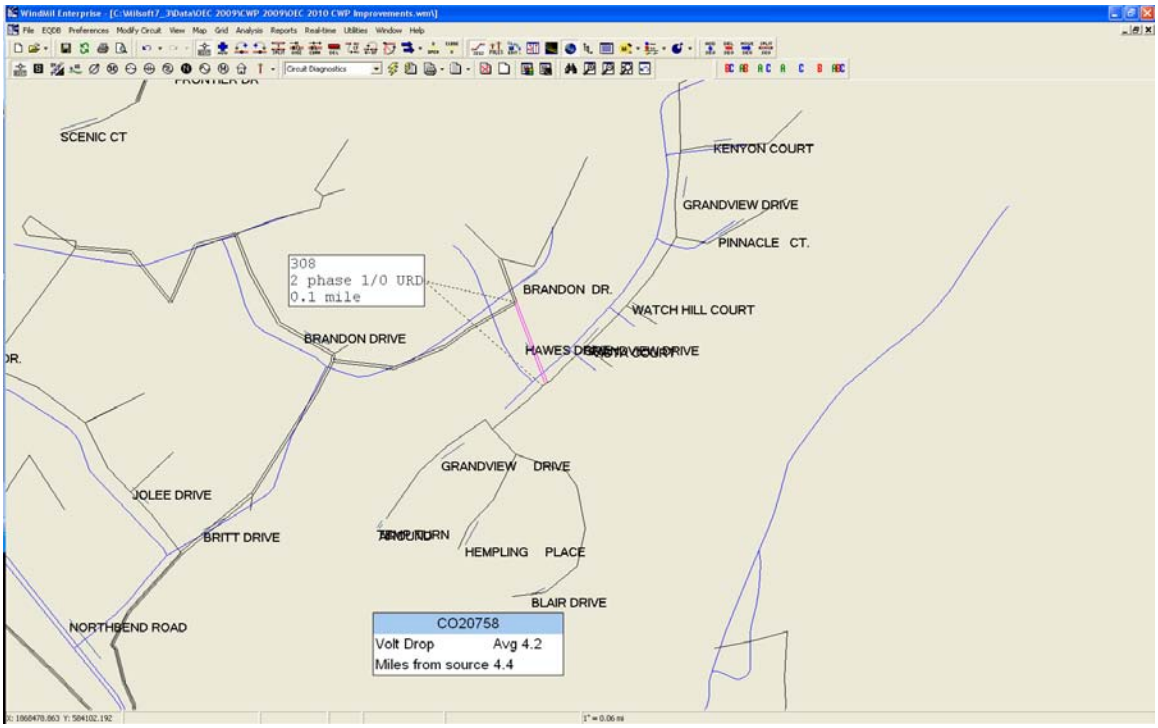
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction

DC Item 7 will be met.

Alternative Corrective Plan Investigated

This is a radial tap, no backfeed to relieve loading exists.



SYSTEM IMPROVEMENTS – RUS CODE 300

Grantslick Substation

Code 309

Estimated Cost: $86,528
Year: 2011

Description of Proposed Construction

Sections CO47875 to CO47725 – Convert 0.8 mile of single-phase 6A CWC to three-phase 1/0 ACSR. Backfeed CO45913 from CO45912 and open at CO45991. The converted line sections begin at the intersection of Aulick and Demossville Road and end at LOC#82-338-04-3971.

Reason For Proposed Construction

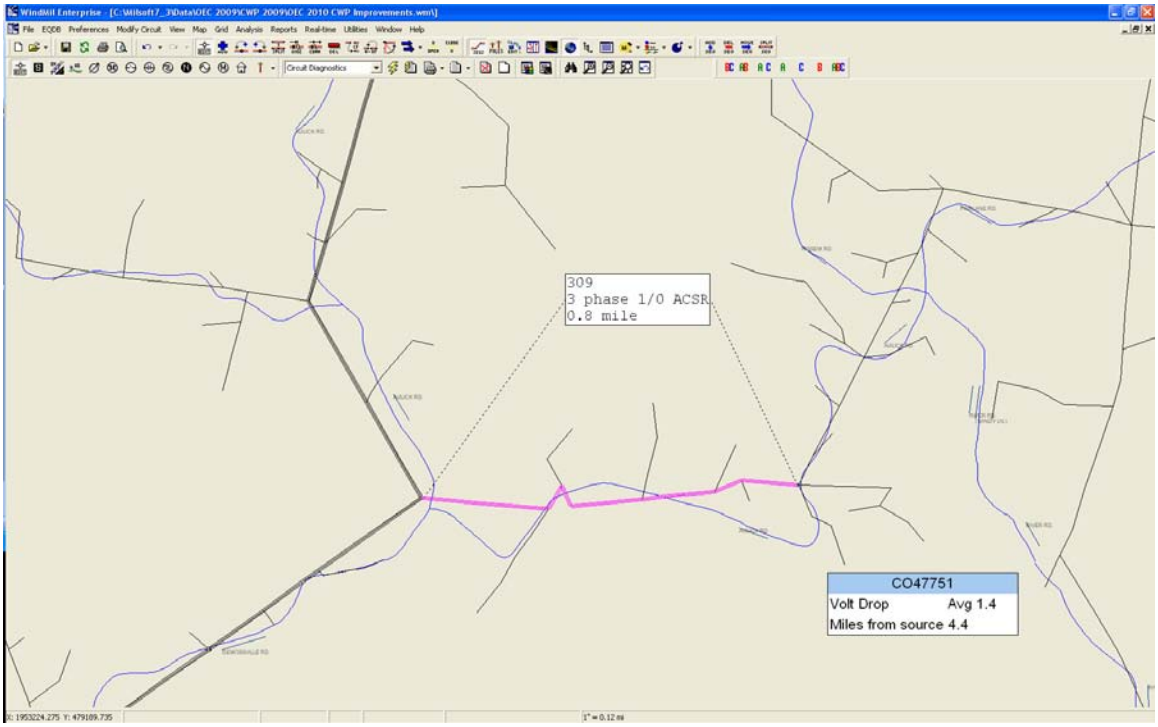
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction

DC Item 7 will be met.

Alternative Corrective Plan Investigated

There are two possible backfeeds to relieve this tap, but both backfeeds would be heavily loaded and consist of aged conductor. Therefore system reliability would not be improved. No viable alternatives exist.



SYSTEM IMPROVEMENTS – RUS CODE 300

Griffin Substation

Code 310

Estimated Cost: $186,368
Year: 2011

Description of Proposed Construction

Sections Sub to CO38614 – Convert 1.4 miles of single-phase #2 ACSR to three-phase 336 ACSR. This will be a new feeder out of the substation. These line sections start at the substation and follow RT 467 ending near Butler Greenwood Road at LOC#31-284-04-2552. Field readings should be taken on the tap beginning with CO38708 to verify overload condition.

Reason For Proposed Construction

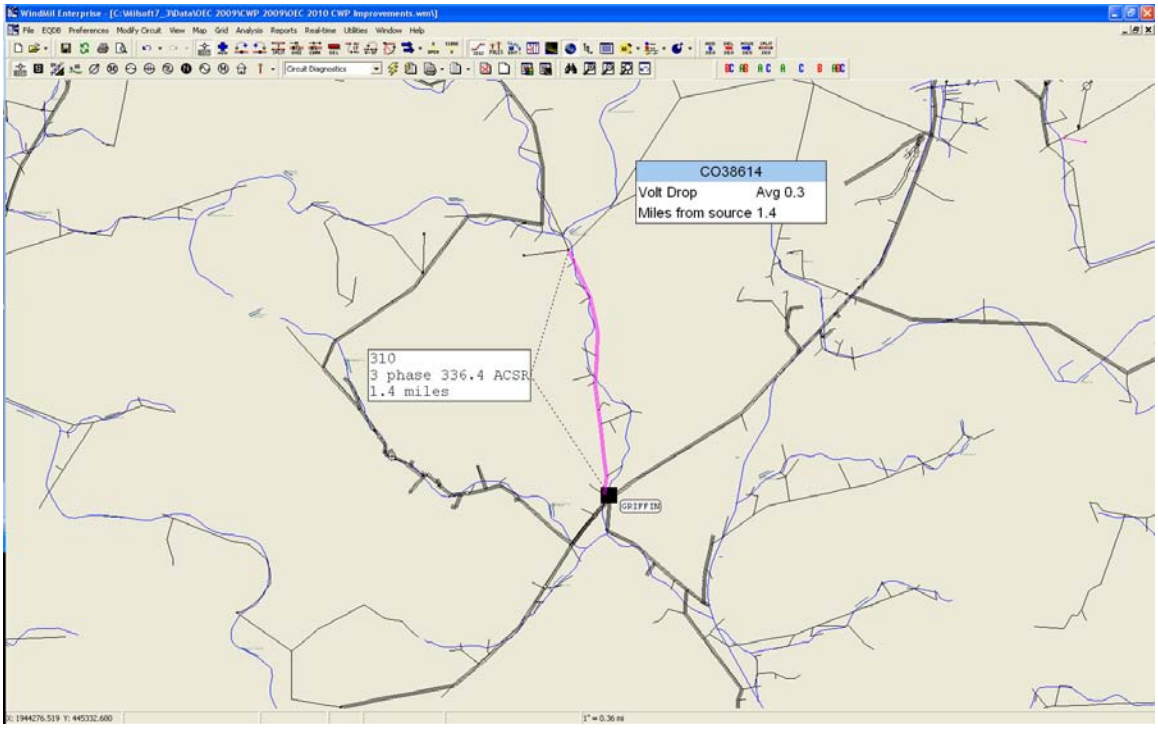
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction

DC Item 7 will be met.

Alternative Corrective Plan Investigated

All other possible backfeeds were explored, but each backfeed was either heavily loaded or could not sustain the voltage or both. Therefore no viable alternatives exist.



SYSTEM IMPROVEMENTS – RUS CODE 300

Hebron Substation

Code 311

Estimated Cost: $53,248
Year: 2011

Description of Proposed Construction

Sections CO21076 to CO-1674898454 – Convert 0.4 mile of three-phase 1/0 ACSR to three-phase 336 ACSR. Backfeed CO-1674898454 from CO969386087 and open at CO58615. The converted line sections intersect Williams Road and will feed into the back of the Thornwilde subdivision. This will better serve the Thornwilde development and new school coming immediately following this CWP period.

Reason For Proposed Construction

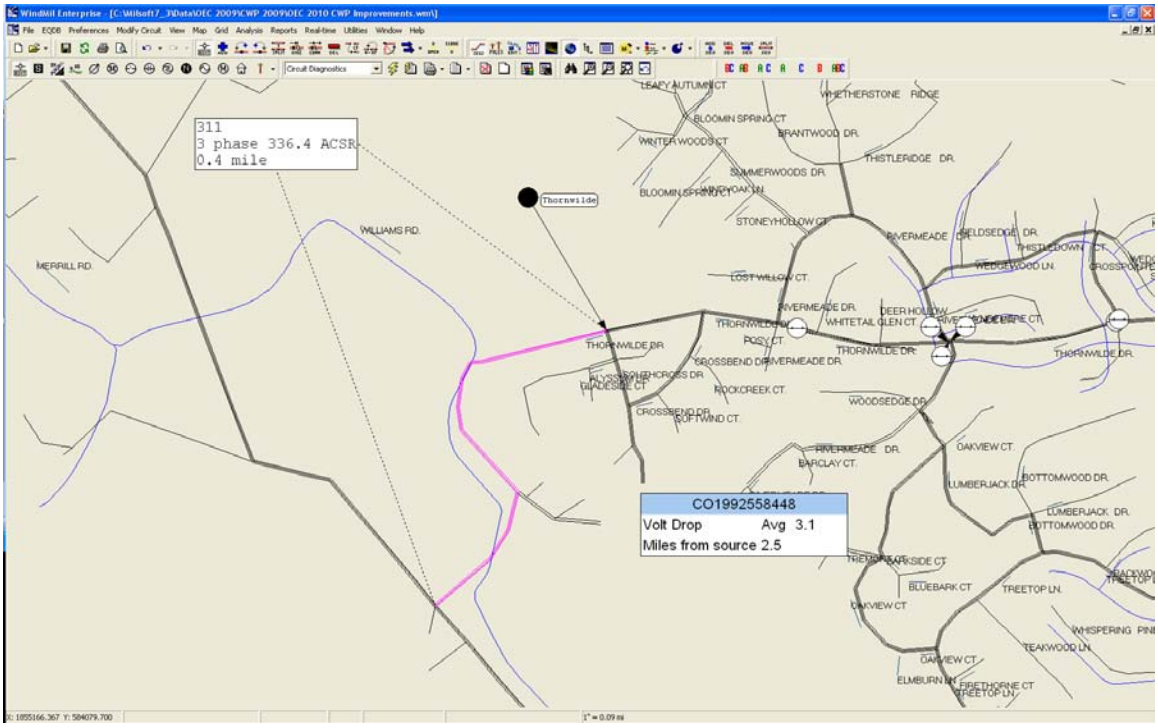
Design Criteria (DC) Item 2 is being violated.

Results of Proposed Construction

DC Item 2 will be met.

Alternative Corrective Plan Investigated

The 336 ACSR of feeder 3 out of Hebron is approaching overload. The other possible feed to the area, feeder 5, consists of 1/0URD which would not be able to handle the growing load of the Thornwilde area. The alternative would consist of an extensive upgrade of the existing feeders which would be costly.



SYSTEM IMPROVEMENTS – RUS CODE 300

Keith Substation

Code 312

Estimated Cost: $332,800
Year: 2010

Description of Proposed Construction

Sections CO11887 to CO10838 – Convert 2.6 miles of single-phase #2 ACSR to three-phase 336 ACSR. These line sections run along RT 330 and end at Keefer Road. This line will serve as an eventual mainline tie between Keith and the future Blanchet substation.

Reason For Proposed Construction

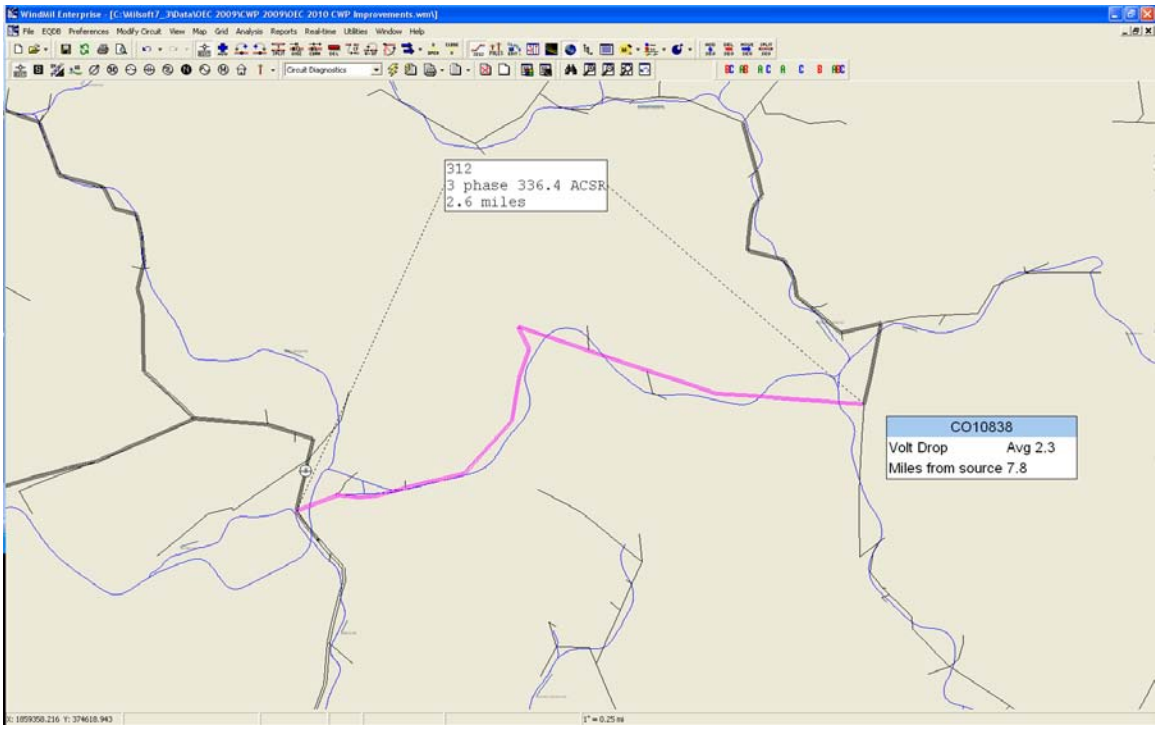
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

The only possible existing backfeed is already heavily loaded. Therefore no viable backfeeds exist to relieve loading.



SYSTEM IMPROVEMENTS – RUS CODE 300

Keith Substation

Code 313

Estimated Cost: $156,000
Year: 2010

Description of Proposed Construction

Sections CO10837 to CO10781 – Convert 1.5 miles of single-phase #2 ACSR to three-phase 1/0 ACSR. These line sections serve Fortner Ridge Road.

Reason For Proposed Construction

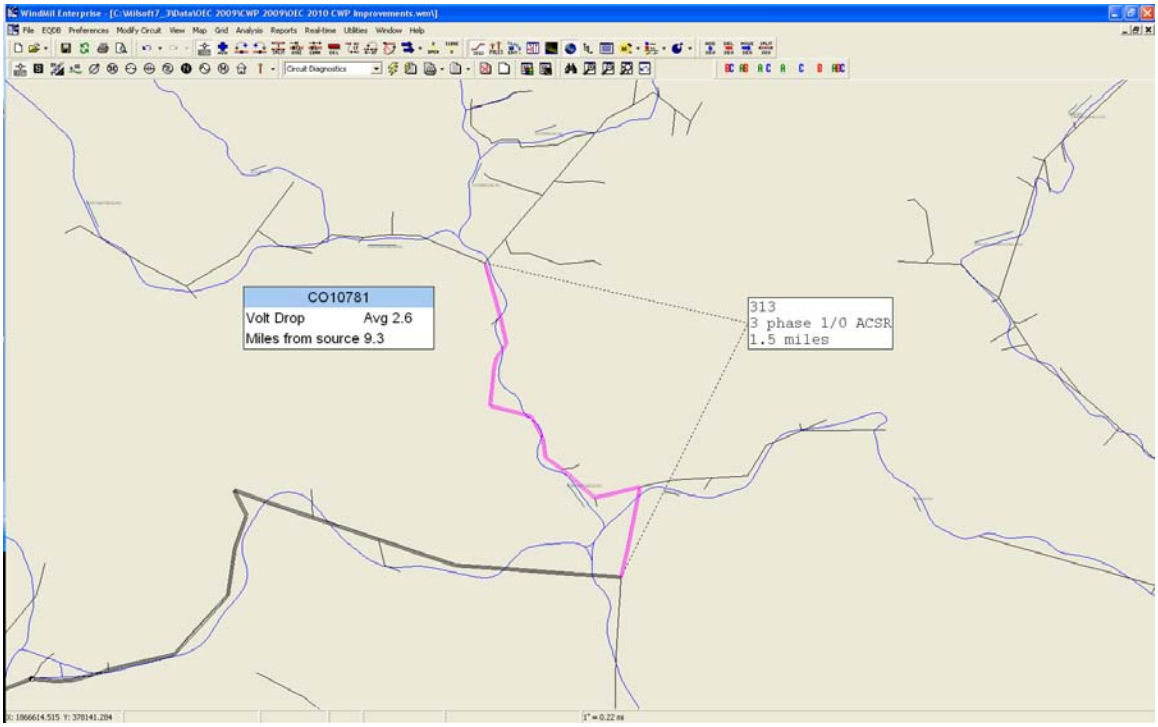
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

This is a radial tap. A possible tie line could be constructed to backfeed from another single phase tap, but that tap consists of aged conductor and would not improve reliability to the area. Therefore no viable backfeeds exist to relieve loading.



SYSTEM IMPROVEMENTS – RUS CODE 300

Keith Substation

Code 314

Estimated Cost: $166,400
Year: 2010

Description of Proposed Construction

Sections CO14621 to CO14386 – Convert 1.6 miles of single-phase 6A CWC to three-phase 1/0 ACSR. Backfeed CO13203 from CO14386 and open at CO13104. The converted line sections are along Breck Road beginning at LOC#12-077-23-7921 and end on the south side of Elk Lake on Lakeshore Drive east of Red Hawk Lane. This is to relieve the overload on CO13330 which is the tap that feeds Elk Lake. Field readings should be taken on the tap beginning with CO13330 to verify overload condition.

Reason For Proposed Construction

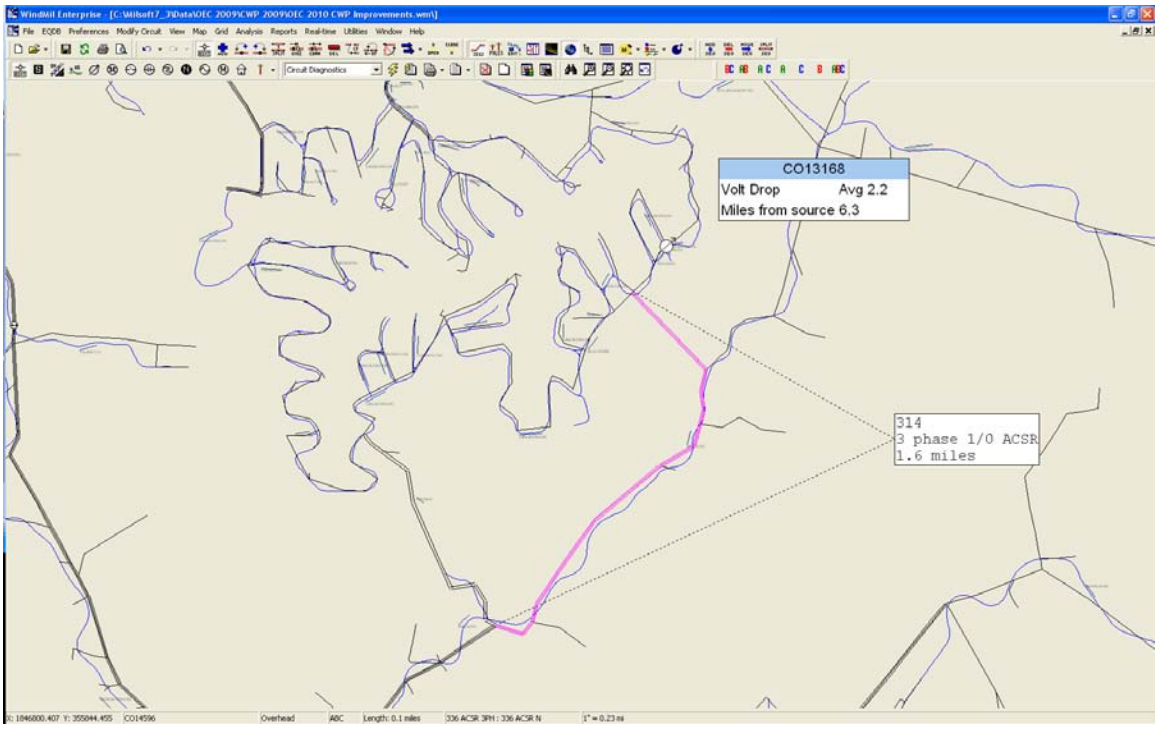
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

All backfeed alternatives to relieve loading were explored, but none could sustain the voltage. The existing tap route could be multi-phased, but it feeds along the lakeshore and would be cost prohibitive for the amount of conversion necessary to meet the criteria.



SYSTEM IMPROVEMENTS – RUS CODE 300

Keith Substation

Code 315

Estimated Cost: $202,400
Year: 2010

Description of Proposed Construction

Sections CO15467 to CO14423 – Convert 2.3 miles of single-phase and two-phase #2 ACSR to three-phase #2 ACSR. These line sections serve Swope Road.

Reason For Proposed Construction

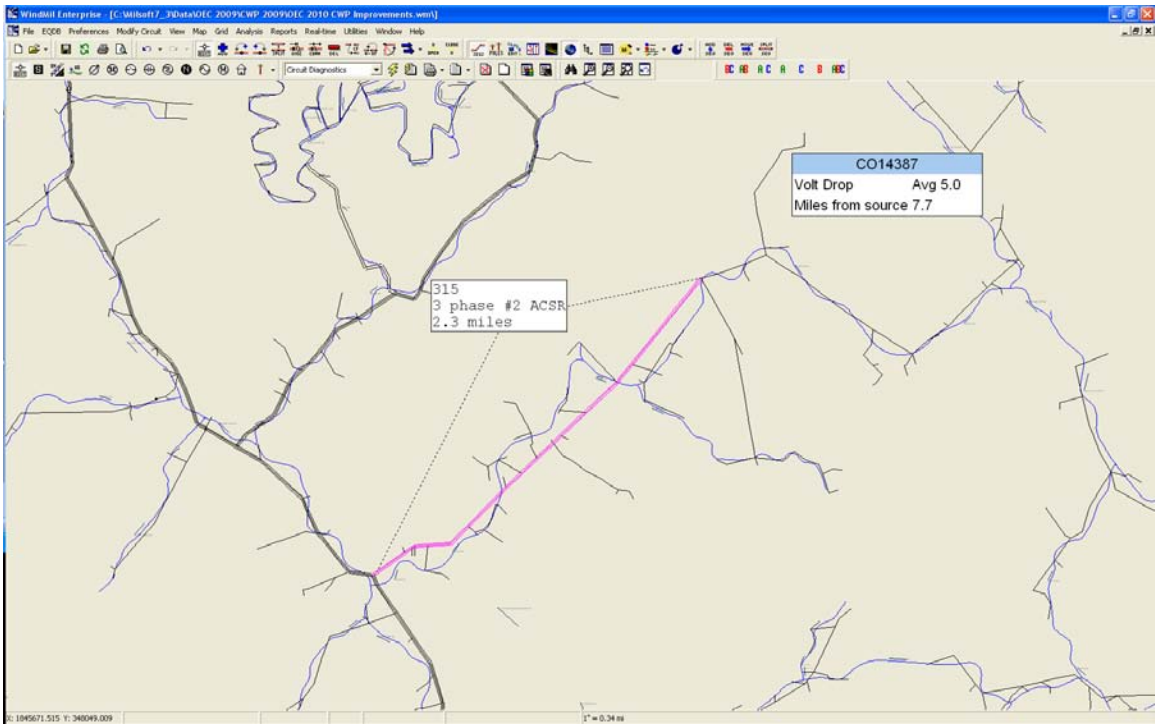
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

This is a radial tap. Any possible backfeeds are aged conductor or too far from the substation to sustain the voltage if a tie line were considered.



SYSTEM IMPROVEMENTS – RUS CODE 300

Keith Substation

Code 316

Estimated Cost: $166,400
Year: 2010

Description of Proposed Construction

Sections CO17918 to CO18641 – Convert 1.6 miles of single-phase to three-phase 1/0 ACSR. Backfeed CO17997 from CO17979 and open at CO17927. Close switch SW3350 and open at CO2095480349. Balance feeder 4 once the changes are made to the system. The converted line sections begin at the intersection of RT 607 and US127 and end at Old Frankfort Pike. This route follows the route of the new express feed to the Kentucky American Water facility. This conversion is to relieve the overload on CO17357 which is the tap that feeds Old Frankfort Pike.

Reason For Proposed Construction

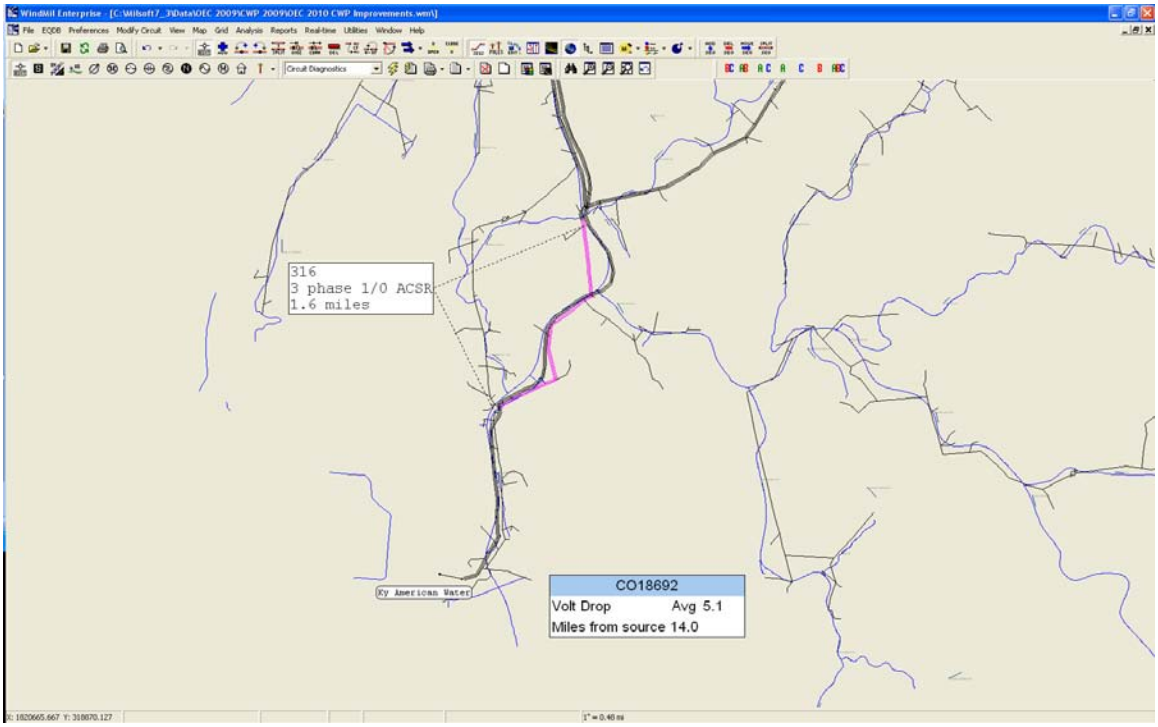
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction

DC Item 7 will be met.

Alternative Corrective Plan Investigated

The alternative would be to convert the existing tap along Old Frankfort Pike, but the conversion would need to be a mile longer to meet the design criteria. This is a radial tap at the edge of the system so no backfeeds exist to relieve loading.



SYSTEM IMPROVEMENTS – RUS CODE 300

Munk Substation

Code 317

Estimated Cost: $10,816
Year: 2011

Description of Proposed Construction

Section CO-824189517 – Convert 0.1 mile of single-phase #2 ACSR to three-phase 1/0 ACSR. Backfeed CO1975058507 from CO742746804 and open at CO50204. The converted line sections are just north of the intersection of Courtney and Hopewell Roads.

Reason For Proposed Construction

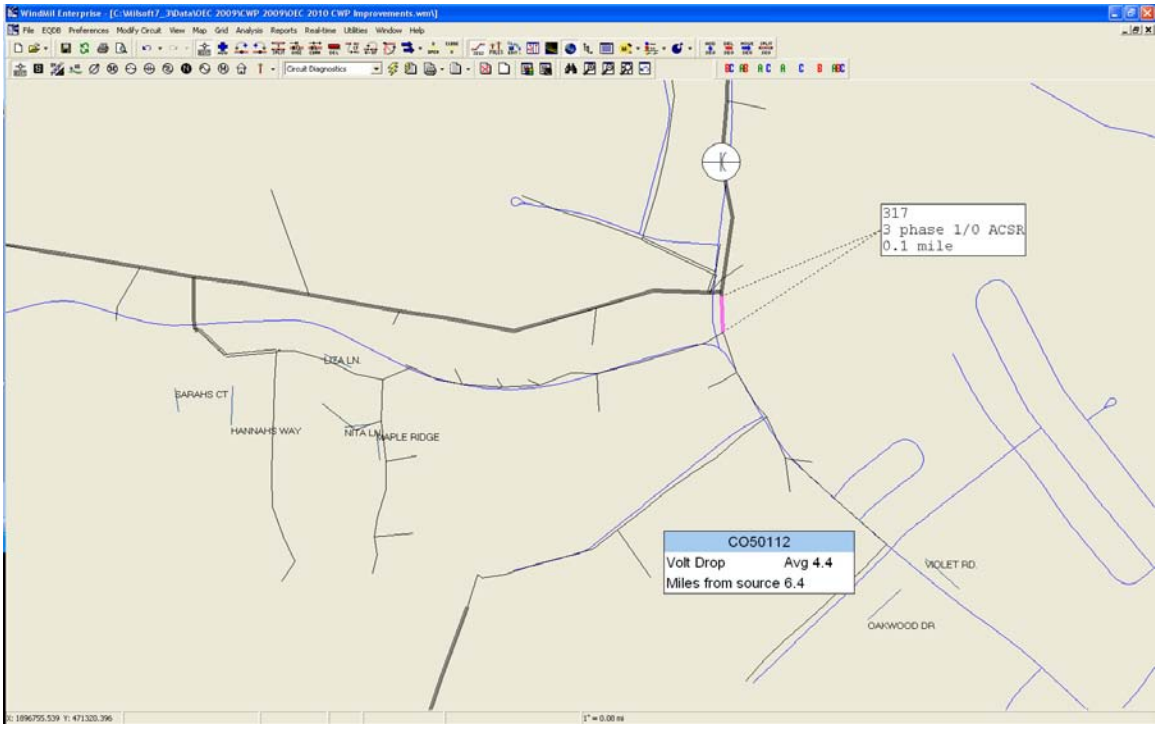
Design Criteria (DC) Items 1 &7 is being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

There are two possible backfeeds to relieve this tap, but both backfeeds are heavily loaded. Conversions of these taps would be more extensive. Without the proposed conversion the load in this area could not be distributed and balanced and therefore relieve the voltage drop.



SYSTEM IMPROVEMENTS – RUS CODE 300

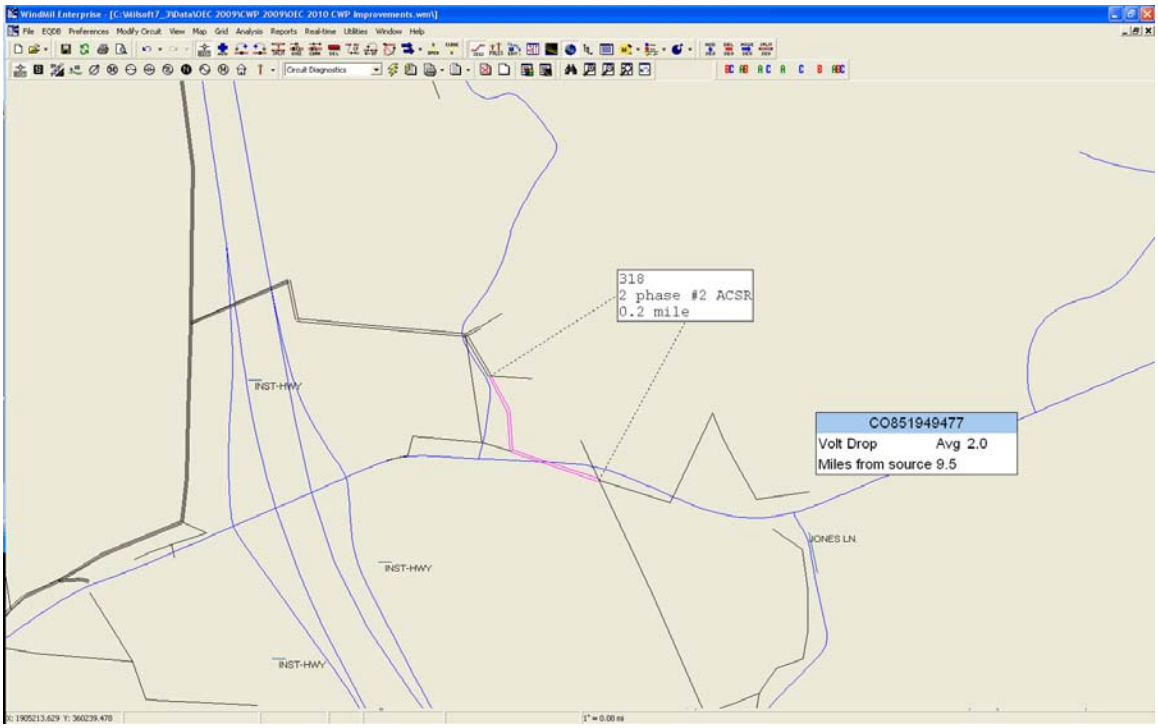
Penn Substation
Code 318
Estimated Cost: $14,400
Year: 2010

Description of Proposed Construction
Sections CO-8823837 to CO-173683452 – Convert 0.2 mile of single-phase #2 ACSR to two-phase #2 ACSR. Change the feed of CO1250314961 from CO-8823837. The converted line sections is just south of Corinth Lake along KY 330.

Reason For Proposed Construction
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction
DC Item 7 will be met.

Alternative Corrective Plan Investigated
This is a radial tap along the edge of the OEC system. No backfeed to relieve loading exists.



SYSTEM IMPROVEMENTS – RUS CODE 300

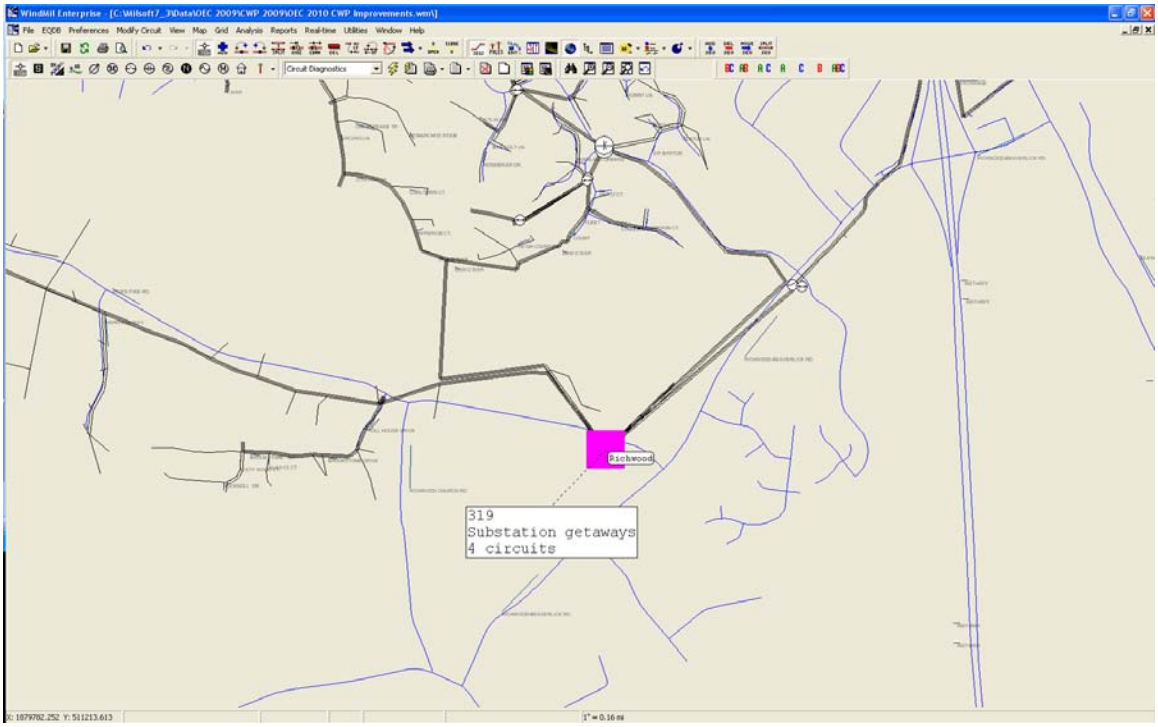
Richwood Substation
Code 319
Estimated Cost: $57,600
Year: 2010

Description of Proposed Construction
Substation getaways – Build 0.2 mile of three-phase 500 MCM URD getaways, totaling 4 feeders along existing right-of-way.

Reason For Proposed Construction
Design Criteria (DC) Items 1, 2, & 3 are being violated.

Results of Proposed Construction
DC Items 1, 2, & 3 will be met.

Alternative Corrective Plan Investigated
Extensive re-conductoring; as well as, an upgrade to the existing Duro substation would be required to alleviate the design criteria violations in serving the Triple Crown subdivision.



SYSTEM IMPROVEMENTS – RUS CODE 300

Richwood Substation

Code 320

Estimated Cost: $129,600
Year: 2010

Description of Proposed Construction

Substation to CO31063 – Build 0.6 mile of three-phase DCT 336 ACSR along Richwood Road along existing right-of-way. One feeder will tie to the existing feed into the Triple Crown subdivision. The second circuit will tie back to the existing Duro circuit 5403. This feeder may eventually be used for a future feed into the east side of Triple Crown if needed in the future.

Reason For Proposed Construction

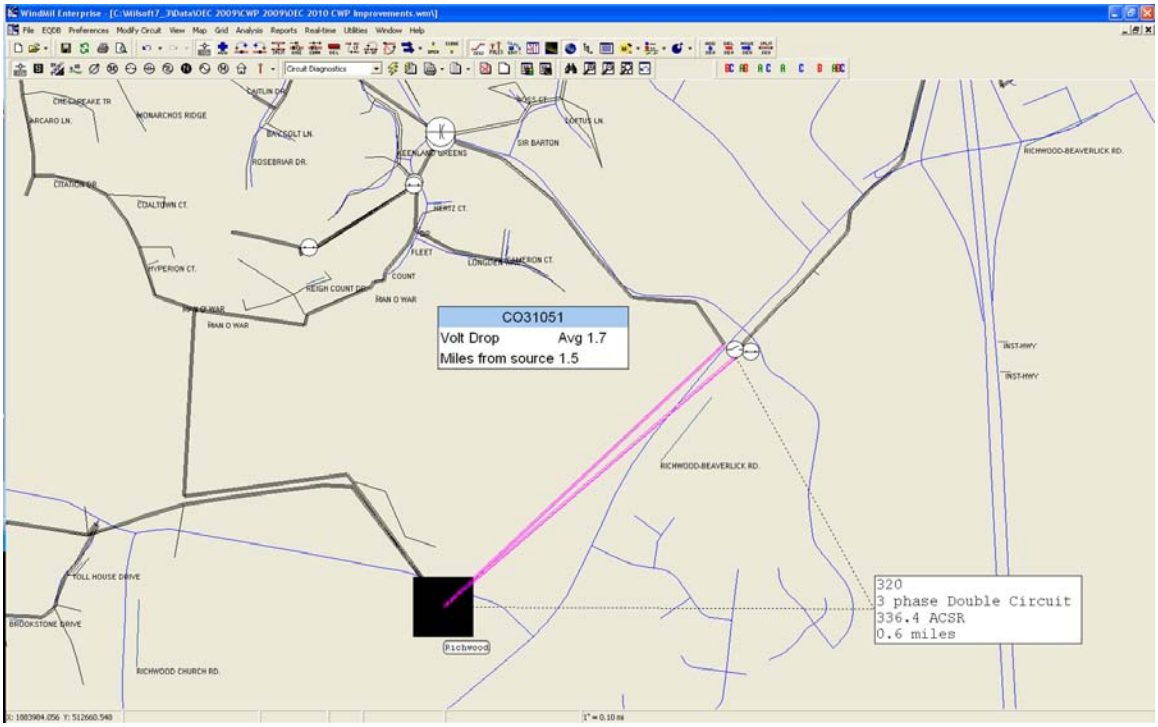
Design Criteria (DC) Items 1, 2, & 3 are being violated.

Results of Proposed Construction

DC Items 1, 2, & 3 will be met.

Alternative Corrective Plan Investigated

Extensive re-conductoring; as well as, an upgrade to the existing Duro substation would be required to alleviate the design criteria violations in serving the Triple Crown subdivision.



SYSTEM IMPROVEMENTS – RUS CODE 300

Richwood Substation

Code 321

Estimated Cost: $108,000
Year: 2010

Description of Proposed Construction

Substation to CO31085 – Convert 0.5 mile of three-phase 336 ACSR to three-phase DCT 336 ACSR along Hicks Pike to the west of the substation. One feeder will provide a feed into the Triple Crown subdivision from the south along Man O' War. The second circuit will tie back to the existing Big Bone circuit 1202.

Reason For Proposed Construction

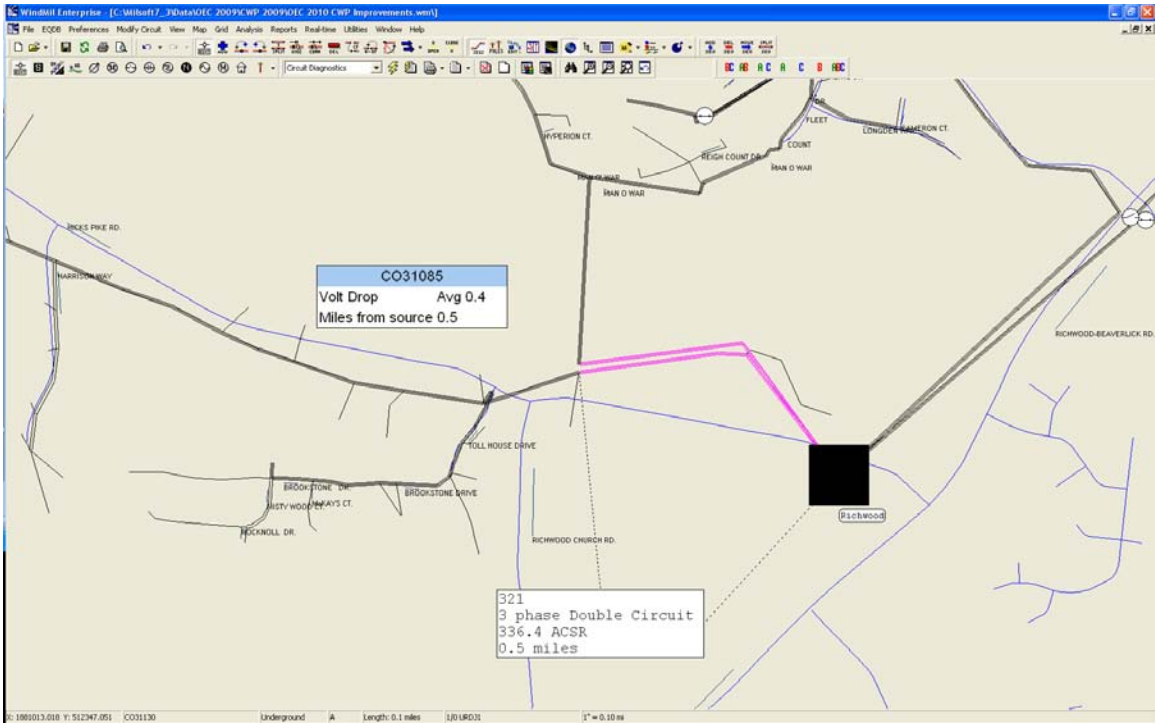
Design Criteria (DC) Items 1, 2, & 3 are being violated.

Results of Proposed Construction

DC Items 1, 2, & 3 will be met.

Alternative Corrective Plan Investigated

Extensive re-conductoring; as well as, an upgrade to the existing Duro substation would be required to alleviate the design criteria violations in serving the Triple Crown subdivision.



SYSTEM IMPROVEMENTS – RUS CODE 300

Richwood Substation

Code 322

Estimated Cost: $38,400
Year: 2010

Description of Proposed Construction

Sections "New ckt" to CO1101172242 – Build 0.3 mile of three-phase 336 ACSR into the Triple Crown subdivision along existing right-of-way. The connection point should be along Man O' War near LOC#61-408-14-7587.

Reason For Proposed Construction

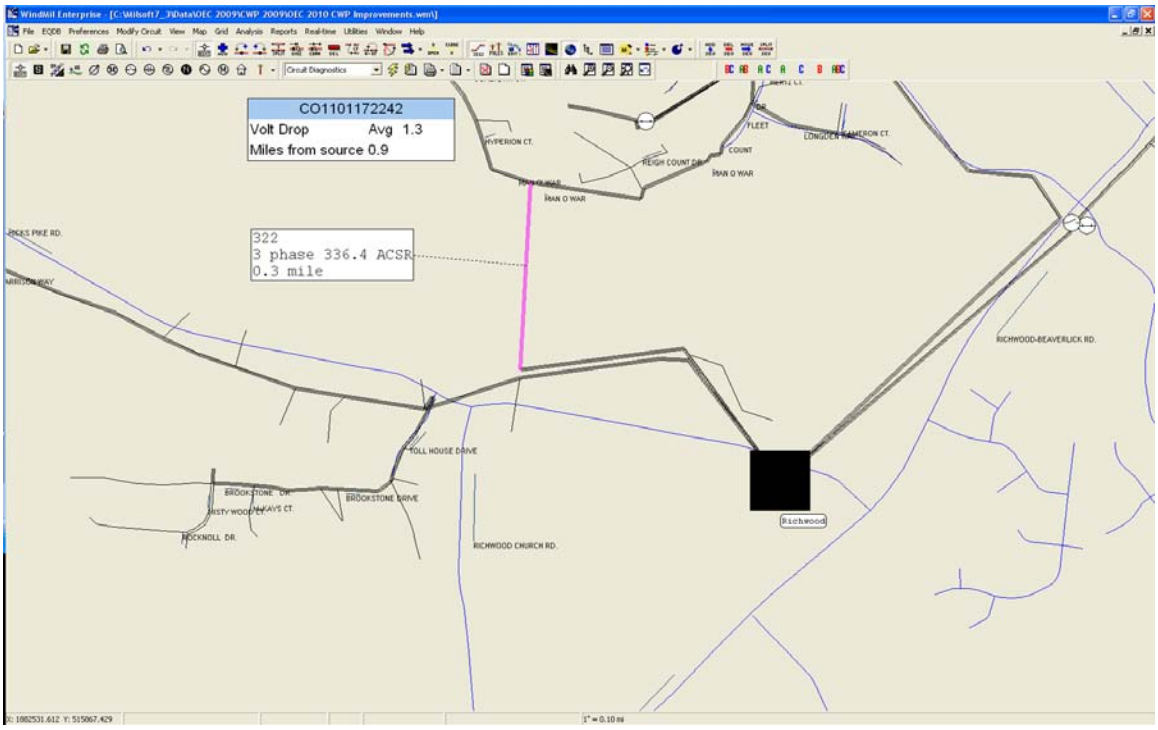
Design Criteria (DC) Items 1, 2, & 3 are being violated.

Results of Proposed Construction

DC Items 1, 2, & 3 will be met.

Alternative Corrective Plan Investigated

Extensive re-conductoring; as well as, an upgrade to the existing Duro substation would be required to alleviate the design criteria violations in serving the Triple Crown subdivision.



SYSTEM IMPROVEMENTS – RUS CODE 300

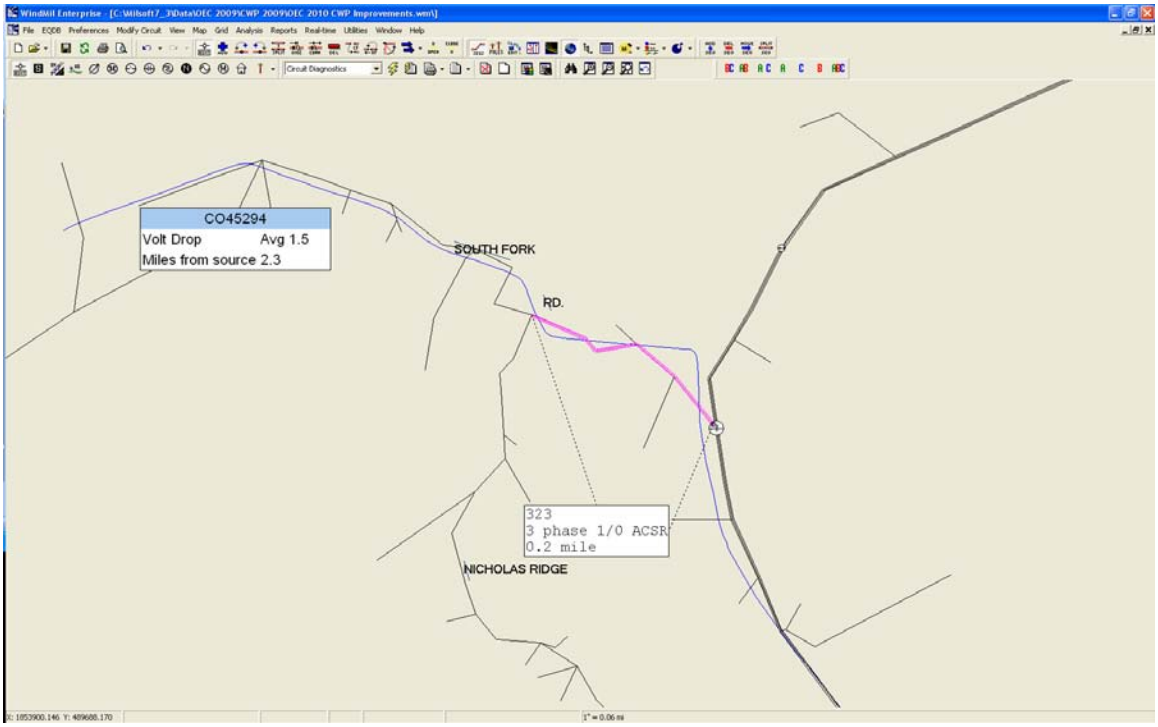
Sterling Substation
Code 323
Estimated Cost: $20,800
Year: 2010

Description of Proposed Construction
Sections CO45353 to CO780281109 – Convert 0.2 mile of single-phase #2 ACSR to three-phase 1/0 ACSR. These line sections are on South Fork Road beginning at LOC#61-359-17-7093 and end at the split at Nicholas Ridge. Field readings should be taken on the tap beginning with CO45353 to verify overload condition.

Reason For Proposed Construction
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction
DC Item 7 will be met.

Alternative Corrective Plan Investigated
The only possible backfeed is too far from the source to maintain adequate voltage.



SYSTEM IMPROVEMENTS – RUS CODE 300

Williamstown Substation

Code 324

Estimated Cost: $97,344
Year: 2011

Description of Proposed Construction

Sections CO4546 to CO4652 – Convert 0.9 mile of three-phase and single-phase 6A CWC to three-phase 1/0 ACSR. These line sections begin at LOC#21-202-03-0944 on Fairview-Knoxville Road and end before Willaveer Lane at LOC#21-202-14-1859.

Reason For Proposed Construction

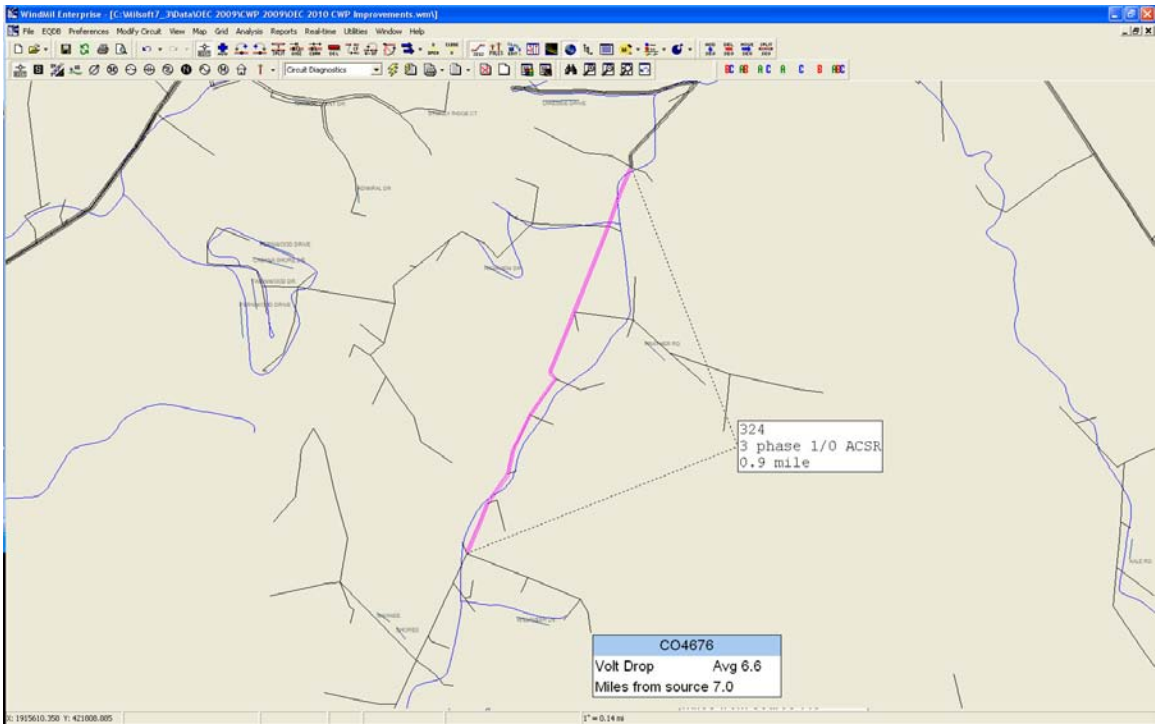
Design Criteria (DC) Items 1 & 7 are being violated.

Results of Proposed Construction

DC Items 1 & 7 will be met.

Alternative Corrective Plan Investigated

This is a radial tap, no backfeed to relieve loading exists. The only possible backfeed is too far from the substation to sustain the voltage if a tie line were considered.



SYSTEM IMPROVEMENTS – RUS CODE 300

Williamstown Substation

Code 325

Estimated Cost: $54,080
Year: 2011

Description of Proposed Construction

Sections CO12814 to CO12725 – Convert 0.5 mile of single-phase #2 ACSR to three-phase 1/0 ACSR. These line sections begin at LOC#21-093-00-2690 on Ragtown Road and ends at LOC#21-093-07-2978 on Corinth Lake Drive.

Reason For Proposed Construction

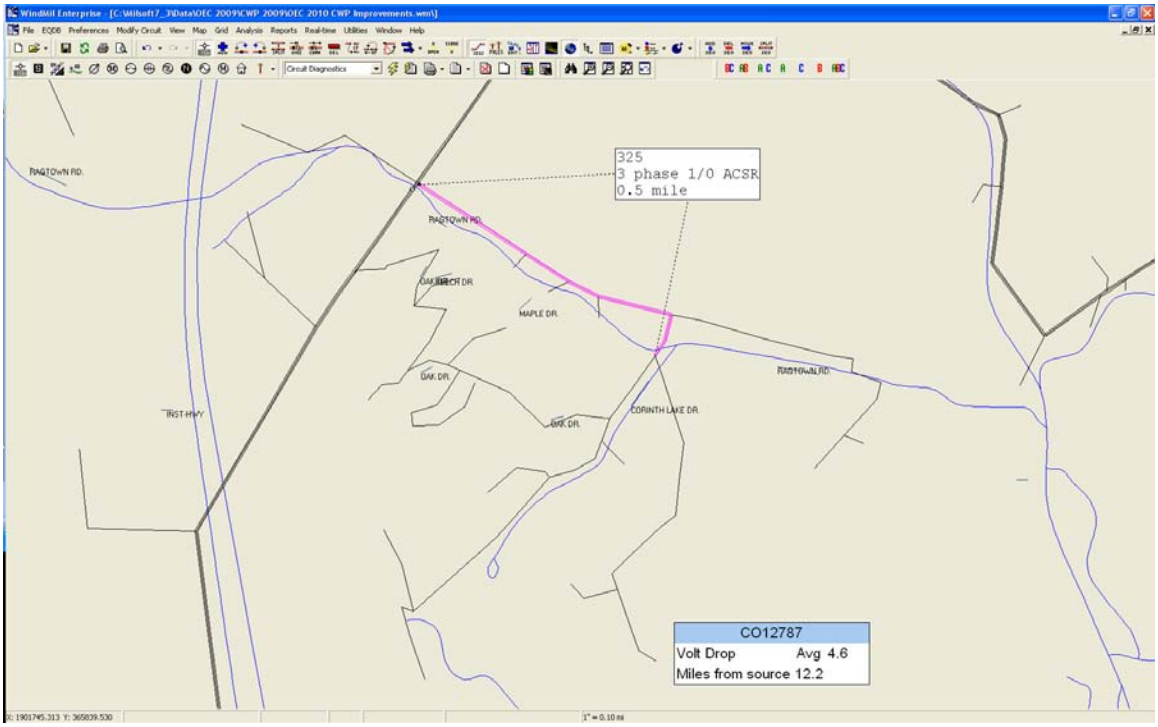
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction

DC Item 7 will be met.

Alternative Corrective Plan Investigated

The only possible backfeed is already heavily loaded. Therefore no viable alternative exists.



SYSTEM IMPROVEMENTS – RUS CODE 300

Williamstown Substation

Code 326

Estimated Cost: $239,616
Year: 2011

Description of Proposed Construction

Sections CO11605 to CO11622 – Convert 1.8 miles of single-phase 1/0 ACSR to three-phase 336 ACSR. Remove Voltage Regulator RG17. These line sections begin at RT 25 and Keefer Road and follow Keefer Road west to the split at Shiloh Road. This line will serve as an eventual mainline tie between Keith and the future Blanchet substations.

Reason For Proposed Construction

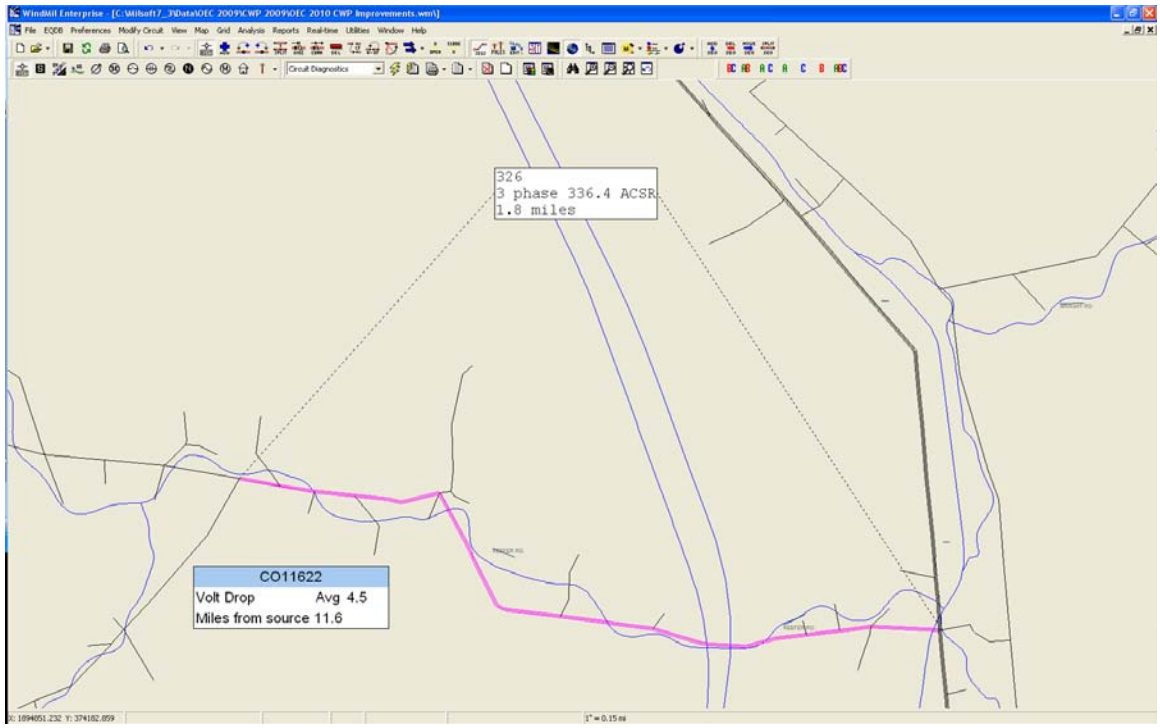
Design Criteria (DC) Item 7 is being violated.

Results of Proposed Construction

DC Item 7 will be met.

Alternative Corrective Plan Investigated

The only possible backfeed is already heavily loaded. Therefore no viable alternative exists.



MISCELLANEOUS DISTRIBUTION EQUIPMENT – RUS CODE 600's

Meters and Transformers – RUS Code 601

217 new underground transformers are projected at a cost of $965,754.
972 new overhead transformers are projected at a cost of $1,087,682.
66 new 3-phase underground transformers are projected at a cost of $704,951.
1,940 new AMI meters are projected at a cost of $284,892.
250 new 3-phase (large power) AMI meters are projected at a cost of $199,616.
50 retrofit kits (AMI) for 3-phase (large power) meters are projected at a cost of $10,200.

An amount of $30,000 is projected for instrument transformers for new large power meters. The cost of the instrument transformers is not included in the per unit cost of the meters.

OEC is starting a program to track purchased quantities for disconnect collars beginning with this CWP. An amount of $255,000 for 1,000 units is projected for the CWP.

Historical data was gathered for meters and transformers and is included in Table III-B-1.

Service Upgrades – RUS Code 602

There are 280 service upgrades projected at a total cost of $502,642. Historical data is included in Table III-B-1.

Sectionalizing – RUS Code 603

Overcurrent analysis is performed on an ongoing basis. Device changeouts, additional substation feeders, conductor multiphasing and load shifts require overcurrent device purchases.

Reclosers, fuses and switches are included in this category. A base cost of $500,000 for each of the two years has been allocated. The total projected cost for sectionalizing is $1,000,000.

MISCELLANEOUS DISTRIBUTION EQUIPMENT – RUS CODE 600's - continued

Voltage Regulators – RUS Code 604

There are several locations where voltage regulators will be added or removed in the CWP. The total cost for voltage regulators is projected to be $383,680.

CFR CODE	SUBSTATION	SECT/RATING	YEAR	COST
604-1	BANKLICK	LD CO33307/(3) 219A	2010	$88,000
604-2	CARSON	SRC CO9363/(1) 50A	2011	$14,144
604-3	GRANTSLICK	SRC CO35847/(3) 150A	2011	$71,552
604-4	GRIFFIN	SRC CO36022/(3) 150A	2010	$68,800
604-5	GRIFFIN	SRC CO4493/(2) 50A	2011	$28,288
604-6	GRIFFIN	SRC CO35871/(1) 50A	2010	$13,600
604-7	KEITH	LD CO11932/(1) 50A	2010	$13,600
604-8	WMTOWN	SRC CO9844/(1) 50A	2011	$14,144
604-9	WMTOWN	SRC CO8381/(3) 150A	2011	$71,552

- 604-1: Add three 219A voltage regulators at the load of CO33307 on Bowman Road.

- 604-2: Add one 50A voltage regulator at the source of CO9363. This is on RT 355 just past Lovebird Lane.

- 604-3 Add three 150A voltage regulators at the source of CO35847. This is on RT 609.

- 604-4 Add three 150A voltage regulators at the souce of CO36022. This is on RT. 17.

- 604-5 Add two 50A voltage regulators at the source of CO4493. This is on Hog Ridge Road just past the intersection of Mt. Carmel and Hog Ridge Roads.

- 604-6 Add one 50A voltage regulator at the source of CO35871. This tap begins on RT 609 and serves Pribble (Crane) Road.

- 604-7 Add one 50A voltage regulator at the load of CO11932. This is on Breck Road just south of Mussel Shores Road.

- 604-8 Add one 50A voltage regulator at the source of CO9844. This tap is on Keefer-Lawrenceville Road just south of the intersection of Lawrenceville Road.

- 604-9 Add three 150A voltage regulators at the source of CO8381. This is located on KY Hwy 36E just north of Ashbrook Road. The regulators RG10 should be removed once these regulators are energized.

Capacitor Banks – RUS Code 605
An amount of $20,000 has been projected in this CWP for capacitor upgrade and replacement as needed.

Pole Changes – RUS Code 606 Including Clearance Poles
There are 550 projected pole changes in the CWP. This includes all maintenance and clearance poles. The cost for the pole changes is projected to be $1,569,251. Historical cost data for pole changes may be found in Table III-B-1.

Miscellaneous Replacements – RUS Code 607
An amount of $650,000 is projected in the CWP for miscellaneous replacements.

The 607 category is broken down into two parts. An amount of $250,000 is included in this CWP for routine maintenance requiring replacement of cross arms, insulators, guys, etc. This amount is based on historical costs and projections as shown in Table III-B-1.

The second part of this category is based on a new system hardening initiative at OEC that will serve to improve the overall reliability of the OEC system. This initiative includes inspecting and replacing, if needed, hardware and cross arms by pole beginning at the start of each feeder. Initially the first several spans of each feeder will be investigated gradually working out each pole line. An amount of $400,000 has been projected for the miscellaneous replacements required for this initiative.

Conductor Replacements – RUS Code 608
An amount of $5,885,318 is projected in the CWP for ordinary conductor replacements. This includes replacement of conductor due to age, deterioration, and operation and maintenance recommendations. Conductor replacement cost history and projections are shown in Table III-B-1.

Line Relocates for Safety and Access – RUS Code 610 and 611
An amount of $540,000 is projected in the CWP for line relocates necessary for safety or to improve access. Line Relocate cost projections are shown in Table III-B-1.

RUS CODE 700

Outdoor Lighting – RUS Code 701

A total of 400 new outdoor lights are anticipated. The projected cost is $462,600.

Outdoor lighting cost history and projections are shown in Table III-B-1.

SCADA Hardware and Communication Equipment – RUS Code 704

The total projected cost for SCADA and communications in this CWP is $600,000. SCADA hardware will be installed at the Richwood, Belleview, and Munk II substations with a projected cost of $60,000. Upgrades to the SCADA systems will be needed at ten substations with a projected cost of $400,000. A License Hop for Folsom to Walton will have a projected cost of $140,000.

SCADA hardware and software cost projections are shown in Table III-B-1.

AMR Equipment – RUS Code 705

An amount of $95,000 is projected for this CWP for AMR equipment at the Richwood, Belleview, and Munk II substations.

AMR equipment cost projections are shown in Table III-B-1.

APPENDIX A
Operation and Maintenance Survey

UNITED STATES DEPARTMENT OF AGRICULTURE
RURAL UTILITIES SERVICE

REVIEW RATING SUMMARY

BORROWER DESIGNATION: KY 37

DATE PREPARED: July 7, 2009

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

PART I. TRANSMISSION and DISTRIBUTION FACILITIES

1. Substations (Transmission and Distribution)	(Rating)
a. Safety, Clearance, Code Compliance	NA
b. Physical Conditions: Structure, Major Equipment, Appearance	NA
c. Inspection Records - Each Substation	NA
d. Oil Spill Prevention	NA
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	3
Other	NA

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	NA
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	NA

7. Service Interruptions

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

PREVIOUS 5 YEARS (Year)	POWER SUPPLIER a.	MAJOR STORM b.	PLANNED c.	ALL OTHER d.	TOTAL e.	(Rating)
2004	0.33	0.44	0.02	2.61	3.40	3
2005	0.14	0.18	0.06	1.91	2.29	3
2006	0.13	0.62	0.08	1.73	2.56	3
2007	0.46	1.26	0.14	1.77	3.63	3
2008	66.60	720.60	3.00	97.20	887.40	2

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	2.31%	3
b. Annual Load Factor	57.4%	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	3
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		
	2007	2008	2009	2010	2011	2012
	Actual $ Thousands	Actual $ Thousands	Budget $ Thousands	Budget $ Thousands	Budget $ Thousands	Budget $ Thousands
Normal Operation	3,938	4,406	4,409	4,541	4,678	4,818
Normal Maintenance	3,214	3,700	3,829	3,944	4,062	4,184
Additional (Deferred) Maintenance						
Total	7,152	8,106	8,238	8,485	8,740	9,002

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

15. Date Discussed with Board of Directors: 7/30/2009 *(Date)*

EXPLANATORY NOTES

ITEM NO.	COMMENTS
3b.	Telephone poles left standing next to electric poles should be removed promptly following line changes. Telephone and cable TV attachments require frequent follow-up to ensure contract compliance

		TITLE	DATE
RATED BY:		VP SYSTEM PLANNING & RELIABILITY	07/07/09
REVIEWED BY:		PRESIDENT AND CEO	07/07/09
REVIEWED BY:	Mike Lon	RUS GFR	07/07/09

APPENDIX B
Economic Conductor Analysis

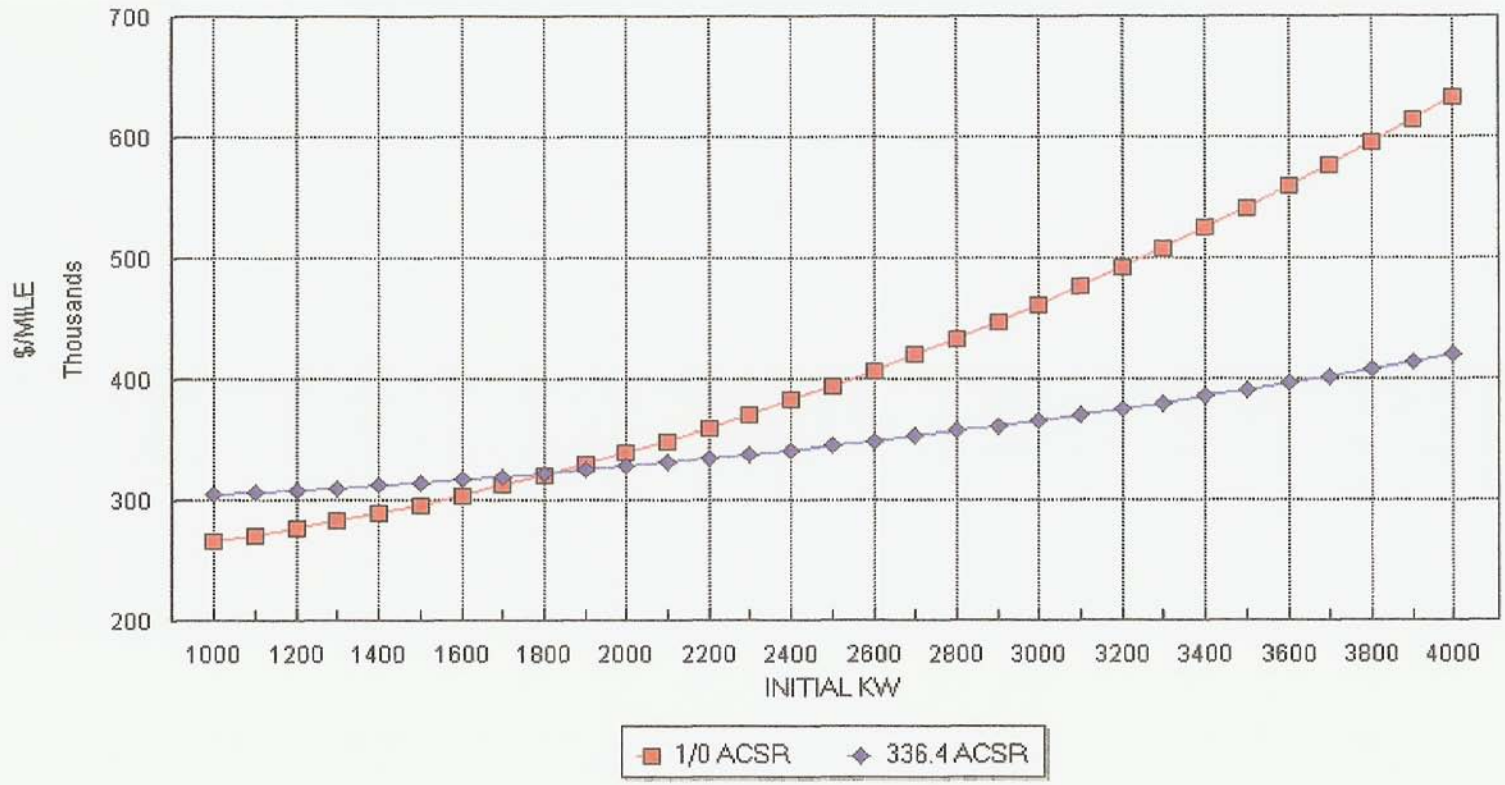
Owen Electric Cooperative
12 kV 3-Phase
ECONOMIC CONDUCTOR CALCULATIONS
CONVERSIONS

O&M	TAX	INS	INT	$/KW	$/KWH	KW
4.09%	0.50%	0.50%	5.00%	6.92	0.035	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**	
49.0%	96.0%	90.0%	0.64	7.2	3	

CONDUCTOR	1/0 ACSR	336.4 ACSR
COST/MI	$104,000	$128,000
OHMS/MI	0.885	0.278
TCOST/MI	$539,538	$616,287
PWCOST/MI	$265,711	$304,586

ECONOMIC CONDUCTOR CALCULATIONS

Owen Electric Cooperative 12 kV 3-Phase Conversion



APPENDIX C
System Loss Calculations

Appendix C – System Loss Calculations

OEC Annual System Losses

Summer Peak	kW losses	Cost of losses at peak		
Existing	4,807	$665,962		
2 yr unimproved	7,172	$993,609	Loss Savings	
2 yr improved	5,846	$809,905	w/ Improvements=	**$183,704**
Winter Peak				
Existing	6,204	$859,502		
2 yr unimproved	7,639	$1,058,307	Loss Savings	
2 yr improved	6,495	$899,817	w/ Improvements=	**$158,490**

Cost of losses*=$138.54
*See below for derivation

Owen Electric Cooperative
Annual Loss Cost Calculations

Month	kWh	kW	kW Loss	Load Fact	Loss Fact	Wh Loss
JANUARY	129,587,633	280,206	1.00	0.62	0.42	315
FEBRUARY	103,426,924	254,323	0.82	0.61	0.40	224
MARCH	94,121,316	235,563	0.71	0.54	0.33	173
APRIL	83,068,617	169,660	0.37	0.68	0.50	131
MAY	84,794,713	169,966	0.37	0.67	0.48	133
JUNE	105,139,210	231,175	0.68	0.63	0.44	214
JULY	115,346,747	235,967	0.71	0.66	0.47	247
AUGUST	111,512,219	225,430	0.65	0.66	0.48	230
SEPTEMBER	96,635,369	234,115	0.70	0.57	0.37	185
OCTOBER	87,060,720	165,028	0.35	0.71	0.54	138
NOVEMBER	97,933,966	194,975	0.48	0.70	0.52	181
DECEMBER	121,213,033	254,045	0.82	0.64	0.45	274
TOTAL	1,229,840,467	2,650,453	7.65	7.69	5.39	2445

KW CHARGE = $6.92/KW **$6.92 x 7.65(KW LOSS)= $52.96**
ENERGY = $0.035/KWH **$0.035x 2445(KWH LOSS)= $85.58**
TOTAL LOSS COST/KW PEAK **$138.54**
"N" = 7.65/12 = 0.64

APPENDIX D
Power Supplier Letter

OWEN Electric

A Touchstone Energy® Cooperative

July 20, 2010

Mr. Tony Campbell
President & CEO
East Kentucky Power Cooperative
4775 Lexington Road
Winchester, Kentucky 40391

Re: Owen Electric Cooperative 2010-2011 Construction Work Plan.

Dear Mr. Campbell:

Owen Electric Cooperative has completed its 2010-2011 Construction Work Plan Report. The plan's load allocation is based on the EKPC 2008 Load Forecast.

The plan's recommended improvements were developed using the one-system concept. There are new substations being considered although the recently-completed Richwood Substation and the October 2011, Belleview Substation will be the only new stations energized prior to the 2012 winter peak. Transformer capacity ratings at the Burlington, Bullittsville and Turkeyfoot Substation are likely to be required during the two year planning period.

Owen Electric Cooperative does request that you reply to this letter with an acknowledgement letter. We intend to work with EKPC step-by-step in the development of existing and future delivery points.

Sincerely,

Mark Stallons
President & CEO
Owen Electric Cooperative

APPENDIX E
Load Balance Report

Load Balance Reports

The following reports show recommended tap changes. These recommendations help to minimize losses and reduce excessive voltage rise created by phase imbalance. The load balance analysis was performed on the projected 2012 winter and 2011 summer peak systems.

Load Balance Report
Source: BANKLICK Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\ALLOCATION REDO.WM\
Title:
Case: 09/21/2009 09:32 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO32836	BC	AB	300.42	286.18	14.24	17.3	45.0
2	CO1039089499	C	A	286.18	282.25	3.93	38.2	
3	CO392719159	A	C	282.25	281.21	1.04	15.9	
4	CO33387	C	B	281.21	280.78	0.43	10.7	
5	CO-1418802724	C	A	280.78	280.49	0.29	5.4	
6	CO35184	B	C	280.49	280.17	0.32	9.3	
7	CO368043919	A	B	280.17	279.88	0.29	4.0	
8	CO1077072363	B	A	279.88	279.76	0.12	1.2	
9	TR23483	A	B	279.76	279.64	0.11	3.6	
10	TR23720	B	A	279.64	279.51	0.13	1.0	
11	CO-73198223	B	C	279.51	279.41	0.10	1.1	

Load Balance Report
Source: BAVARIAN Feeder 1

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\ALLOCATION REDO.WM\
Title:
Case: 09/21/2009 09:49 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO-580526592	BC	AB	94.45	79.33	15.11	18.4	37.5
2	CO44657	AC	AB	79.33	75.99	3.34	24.6	0.5
3	CO-1356780276	C	B	75.99	75.45	0.54	6.8	
4	TR15486	A	C	75.45	75.26	0.18	5.5	

Load Balance Report
Source: BAVARIAN Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 13:38 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO46599	B	A	168.49	157.20	11.29	36.1	
2	TR15456	B	C	157.20	156.96	0.23	5.1	

Load Balance Report
Source: BROMLEY Feeder 1

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 14:42 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO43012	A	B	294.44	283.79	10.64	41.4	
2	CO-39948831	C	A	283.79	281.65	2.14	8.0	
3	CO42346	B	A	281.65	280.84	0.82	12.6	
4	CO3562	A	C	280.84	280.34	0.49	3.0	
5	CO-1808063097	A	C	280.34	280.04	0.30	2.5	
6	CO1084912483	A	B	280.04	279.86	0.18	6.9	
7	CO-1468090601	B	A	279.86	279.63	0.23	1.8	
8	CO1116004922	A	C	279.63	279.44	0.20	1.4	
9	CO42087	C	A	279.44	279.29	0.15	1.3	
10	CO5531	A	C	279.29	279.17	0.12	3.2	

Load Balance Report
Source: BROMLEY Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 14:39 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO9011	B	A	301.44	298.75	2.70	10.5	
2	CO8106	C	A	298.75	297.22	1.53	5.3	
3	CO12484	C	A	297.22	296.43	0.78	6.5	
4	CO-5787823	C	A	296.43	295.82	0.61	3.9	
5	TR3262	B	A	295.82	295.35	0.47	1.9	
6	TR3100	C	A	295.35	295.02	0.33	3.7	
7	TR3280	C	A	295.02	294.73	0.29	1.3	
8	CO779364166	C	A	294.73	294.54	0.18	2.8	
9	CO8245	C	A	294.54	294.44	0.11	5.6	

Load Balance Report
Source: BROMLEY Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 10:38 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO11263	B	C	195.72	183.81	11.91	49.0	
2	CO12273	A	B	183.81	177.73	6.09	7.1	
3	CO13732	A	B	177.73	174.29	3.43	4.2	
4	CO12302	C	B	174.29	172.60	1.69	3.3	
5	CO11221	A	B	172.60	171.24	1.36	6.8	
6	CO12213	C	A	171.24	170.89	0.35	7.5	
7	TR2102	A	B	170.89	170.54	0.34	1.4	
8	CO-1672352554	B	C	170.54	170.32	0.22	12.2	
9	TR2110	A	B	170.32	170.16	0.16	0.5	
10	TR3035	B	A	170.16	170.05	0.10	1.6	
11	CO12269	A	B	170.05	169.94	0.12	0.6	

Load Balance Report
Source: BULLITTSVILLE Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 10:59 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	TR20829	A	C	396.82	372.25	24.57	39.5	
2	CO23831	C	B	372.25	366.77	5.48	14.2	
3	CO23855	C	B	366.77	365.37	1.40	4.4	
4	CO24553	A	B	365.37	365.03	0.34	6.6	
5	TR21328	B	C	365.03	364.88	0.15	1.8	
6	CA107	B	C	364.88	364.74	0.14	-6.3	
7	CO23940	AB	AC	364.74	364.55	0.19	2.9	0.3

Load Balance Report
Source: CARSON Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/23/2009 09:27 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO9298	C	B	262.14	262.01	0.13	1.4	

Load Balance Report
Source: CARSON Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 11:35 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO4293	BC	AC	159.66	155.64	4.02	2.5	11.5
2	CO3984	AB	AC	155.64	153.84	1.79	16.6	5.6
3	CO1938	A	C	153.84	153.39	0.45	8.9	
4	TR-1762412229	B	A	153.39	152.87	0.52	2.7	
5	TR29410	B	A	152.87	152.52	0.35	2.8	
6	TR29310	B	A	152.52	152.30	0.22	1.9	
7	TR29304	B	A	152.30	152.16	0.13	1.4	

Load Balance Report
Source: DURO Feeder 6

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 14:09 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO28766	AC	AB	268.19	265.86	2.33	31.2	50.0
2	CO28778	B	C	265.86	265.32	0.54	18.1	

Load Balance Report
Source: GALLATIN Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 14:13 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO40278	A	B	135.41	121.08	14.33	23.4	
2	CO37664	A	B	121.08	111.53	9.55	28.8	
3	CO40286	A	C	111.53	107.60	3.93	9.1	
4	CO37778	A	B	107.60	106.33	1.27	5.5	
5	CO40434	C	B	106.33	105.59	0.74	5.4	
6	CO38028	A	C	105.59	105.15	0.44	4.1	
7	CO42636	A	C	105.15	104.84	0.31	0.7	
8	CO42625	A	C	104.84	104.58	0.26	0.6	
9	CO1645	A	C	104.58	104.33	0.25	0.5	
10	CO40282	A	C	104.33	104.09	0.24	0.8	
11	CO43058	A	C	104.09	103.90	0.19	1.1	
12	CO40444	A	C	103.90	103.71	0.18	1.0	
13	CO1527	A	C	103.71	103.57	0.15	0.3	
14	CO1647	A	C	103.57	103.46	0.11	0.2	
15	CO37850	A	C	103.46	103.36	0.10	2.2	
16	CO37545	C	B	103.36	103.25	0.10	4.9	
17	CO51424	B	C	103.25	102.84	0.41	5.9	

Load Balance Report
Source: GRANTSLICK Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 14:16 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO43219	B	A	130.11	118.85	11.26	35.4	
2	CO45721	C	A	118.85	114.64	4.21	27.0	
3	CO43239	C	B	114.64	112.85	1.79	9.3	
4	CO47370	B	A	112.85	111.71	1.14	9.9	
5	CO43571	C	B	111.71	110.77	0.94	20.1	
6	CO45702	C	B	110.77	110.54	0.22	10.7	

Load Balance Report
Source: GRANTSLICK Feeder 4

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/23/2009 09:35 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO49158	A	C	116.05	115.92	0.13	7.1	

Load Balance Report
Source: GRIFFIN Feeder 1

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/23/2009 09:51 Page 2

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO38273	C	B	535.88	529.65	6.23	61.2	
2	CO40441	B	C	529.65	521.05	8.59	16.6	
3	CO35818	B	A	521.05	519.13	1.92	23.3	
4	CO38423	B	A	519.13	518.24	0.89	3.9	
5	CO38459	A	C	518.24	518.11	0.13	13.6	
6	CO38313	B	A	518.11	517.80	0.31	1.6	
7	TR9764	B	A	517.80	517.57	0.23	1.4	
8	CO38420	B	A	517.57	517.40	0.17	1.2	
9	CO35955	A	B	517.40	517.27	0.12	2.7	
10	CO1875270825	C	A	517.27	517.17	0.11	4.0	

Load Balance Report
Source: GRIFFIN Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/23/2009 10:03 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO40752	A	B	517.17	505.38	11.78	40.4	
2	CO1285365427	A	C	505.38	500.55	4.83	22.9	
3	CO212	C	B	500.55	499.93	0.62	9.6	
4	CO40772	A	C	499.93	499.31	0.63	13.6	

Load Balance Report
Source: GRIFFIN Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 14:57 Page 2

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO1741332730	C	B	322.78	313.88	8.90	20.1	
2	CA2072583967	A	B	313.88	312.81	1.07	-6.8	
3	CO36076	B	A	312.81	312.25	0.56	3.7	
4	TR9967	B	C	312.25	311.91	0.34	3.2	
5	TR9656	B	A	311.91	311.71	0.20	7.5	
6	CO-631878457	C	A	311.71	311.57	0.14	1.9	

Load Balance Report
Source: HEBRON Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 15:21 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO21284	B	A	297.95	296.38	1.57	38.8	
2	TR21852	A	B	296.38	296.19	0.19	5.1	
3	CO1562361849	C	A	296.19	296.06	0.13	8.8	
4	TR22485	B	C	296.06	295.95	0.11	3.4	

Load Balance Report
Source: KEITH Feeder 1

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 15:34 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO13728	A	B	201.75	192.31	9.44	25.9	
2	CO14778	A	C	192.31	191.92	0.39	5.4	
3	CO11021	C	A	191.92	191.69	0.23	5.0	

Load Balance Report
Source: KEITH Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/23/2009 10:24 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO8908	B	A	550.49	540.86	9.64	16.8	
2	CO10096	C	A	540.86	535.68	5.17	8.3	
3	CO12415	C	A	535.68	533.57	2.12	3.8	
4	TR2844	C	A	533.57	532.20	1.36	3.1	
5	CO13478	C	B	532.20	531.32	0.89	9.4	
6	CO11931	A	C	531.32	530.83	0.49	9.8	
7	CO8887	C	A	530.83	529.04	1.79	12.9	
8	CO10919	C	B	529.04	528.51	0.53	2.6	
9	CO8796	A	C	528.51	528.24	0.27	4.0	
10	CO10097	C	A	528.24	527.59	0.65	2.8	
11	CO11017	C	B	527.59	527.29	0.30	2.3	
12	CA-1554673107	C	B	527.29	526.48	0.81	-6.9	
13	CO13287	A	B	526.48	526.22	0.26	1.6	
14	CO10924	C	B	526.22	526.11	0.11	1.1	
15	CO8879	A	C	526.11	526.01	0.10	1.4	
16	CO10091	C	A	526.01	525.82	0.19	1.7	
17	TR2302	B	C	525.82	525.64	0.18	2.3	
18	TR2671	B	C	525.64	525.49	0.15	0.5	

Load Balance Report
Source: KEITH Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/23/2009 10:32 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO17110	C	B	525.49	519.07	6.42	44.3	
2	CO17275	A	C	519.07	516.76	2.31	4.4	
3	CO16411	A	C	516.76	515.66	1.09	8.5	
4	CO14617	AC	AB	515.66	514.40	1.26	37.6	16.2
5	CO17918	B	C	514.40	512.94	1.46	13.3	
6	CO17322	A	B	512.94	512.23	0.71	1.7	
7	TR307	A	B	512.23	511.63	0.59	1.6	
8	CO-1250205132	A	C	511.63	511.03	0.60	1.7	
9	CO17316	A	B	511.03	510.60	0.43	1.3	
10	CO14657	B	A	510.60	510.40	0.21	16.7	
11	CO17341	A	B	510.40	510.03	0.37	1.1	
12	CO-1906550985	A	B	510.03	509.72	0.31	1.2	
13	CO17095	A	C	509.72	509.33	0.40	2.1	

Load Balance Report
Source: KEITH Feeder 4

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 14:52 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO1780218323	A	C	560.08	552.88	7.20	13.8	
2	CO16555	AB	BC	552.88	551.05	1.84	0.6	12.9
3	CO15672	A	B	551.05	550.81	0.23	3.7	
4	CO-598727241	B	C	550.81	550.70	0.11	2.7	
5	TR552	C	B	550.70	550.60	0.10	2.1	
6	TR790	B	C	550.60	550.49	0.11	1.0	

Load Balance Report
Source: MUNK Feeder 5

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/23/2009 12:32 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO50125	B	A	298.86	294.09	4.77	26.9	
2	CO50514	C	B	294.09	292.31	1.77	15.3	
3	CO-936284570	B	A	292.31	291.36	0.95	7.9	
4	CO215892443	C	B	291.36	290.78	0.58	12.6	
5	CO50139	B	C	290.78	290.67	0.12	5.3	
6	CO48572	C	B	290.67	290.46	0.21	7.1	
7	TR8522	B	A	290.46	290.32	0.14	1.4	

Load Balance Report
Source: MUNK Feeder 7

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 15:51 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO48481	C	B	199.09	195.39	3.70	14.2	
2	CO48444	C	A	195.39	194.03	1.36	8.9	
3	CO494255707	C	A	194.03	193.52	0.51	6.6	
4	CO-686473598	C	B	193.52	193.29	0.23	8.4	

Load Balance Report
Source: NOEL Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 15:58 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO42991	A	C	328.63	323.44	5.18	12.3	
2	CO36470	AB	BC	323.44	320.74	2.70	15.1	7.8
3	CO36366	AC	BC	320.74	320.19	0.55	8.8	3.0
4	CO910	AB	AC	320.19	319.86	0.33	4.6	5.3
5	TR7822	B	A	319.86	319.73	0.12	1.1	

Load Balance Report
Source: PENN Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 16:11 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO1859936780	AC	BC	514.83	503.41	11.42	72.2	45.0
2	CO12968	B	A	503.41	492.05	11.36	24.1	
3	CO-350746281	A	C	492.05	490.14	1.91	17.5	
4	CO16835	B	A	490.14	488.73	1.41	16.3	
5	CO12897	B	A	488.73	487.77	0.96	4.6	
6	CO14311	C	A	487.77	487.47	0.30	4.5	
7	CO495677431	B	C	487.47	487.13	0.34	11.9	

Load Balance Report
Source: PENN Feeder 4

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/21/2009 19:04 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO19860	B	A	484.67	469.31	15.36	15.4	
2	CO19915	B	C	469.31	464.36	4.95	13.3	
3	CA1948946874	A	B	464.36	464.09	0.27	-3.4	

Load Balance Report
Source: RICHARDSON Feeder 2

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 10:58 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO-2145093826	AC	BC	224.67	219.06	5.60	36.9	46.8
2	CO53842	A	C	219.06	218.48	0.59	11.8	
3	CO-1730689660	C	A	218.48	218.18	0.29	11.2	
4	CO-204721320	B	C	218.18	217.91	0.27	10.8	
5	CO53072	C	A	217.91	217.76	0.15	6.3	
6	CO53154	B	C	217.76	217.58	0.18	4.7	
7	TR26209	A	B	217.58	217.47	0.10	5.9	

Load Balance Report
Source: SMOOT Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:18 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO25420	A	B	109.23	107.27	1.96	0.0	

Load Balance Report
Source: SMOOT II Feeder 4

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:20 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO25881	B	C	122.25	121.47	0.78	29.7	
2	CO25558	B	A	121.47	121.14	0.32	14.1	
3	CO25384	B	C	121.14	121.00	0.15	5.2	

Load Balance Report
Source: STERLING Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:22 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO35593	B	C	56.61	53.87	2.75	40.7	

Load Balance Report
Source: TURKEYFOOT Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:26 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO-1112203771	B	A	74.51	74.25	0.26	25.5	
2	CO53953	B	A	74.25	74.14	0.11	6.7	

Load Balance Report
Source: WILLIAMSTOWN Feeder 1

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:35 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO10490	A	C	442.55	432.62	9.93	30.7	
2	CO-1829265099	B	A	432.62	427.48	5.14	19.0	
3	CO7562	C	B	427.48	427.03	0.45	10.3	

Load Balance Report
Source: WILLIAMSTOWN Feeder 3

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:38 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO7742	A	B	427.03	424.83	2.21	11.0	
2	CO2113891678	A	B	424.83	424.01	0.81	6.2	
3	CO6543	C	A	424.01	423.48	0.53	14.6	
4	CO603688570	A	B	423.48	423.34	0.14	5.4	

Load Balance Report
Source: WILLIAMSTOWN Feeder 5

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:34 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	KW Loss After	KW Loss Savings	--After Move Amps-- First Ph	Second Ph
1	CO549124672	A	B	449.17	444.02	5.16	11.8	
2	CO-906272757	C	B	444.02	443.48	0.54	10.9	
3	CO41085	A	C	443.48	443.04	0.44	2.5	
4	CO2683	B	A	443.04	442.71	0.32	7.2	
5	CO41072	A	C	442.71	442.55	0.16	1.3	

Load Balance Report
Source: WILLIAMSTOWN Feeder 6

Database: C:\MILSOFT7_3\DATA\OEC 2009\CWP 2009\IMPROVEMENTS REDO.WM\
Title:
Case: 09/22/2009 11:49 Page 1

Placement Order	Move Tap Beginning with Element	--Configuration-- From	To	KW Loss Before	After	Savings	--After Move Amps-- First Ph	Second Ph
1	CO634	B	C	420.55	409.45	11.09	13.9	
2	CO631	A	C	409.45	408.45	1.01	22.7	
3	CO709	C	A	408.45	407.29	1.16	21.2	
4	CO39014	B	C	407.29	406.72	0.57	2.2	
5	CO1228223217	A	B	406.72	406.38	0.34	5.9	
6	CO43036	B	A	406.38	406.04	0.34	1.2	
7	CO361661695	A	B	406.04	405.86	0.18	2.6	
8	CO38930	B	A	405.86	405.59	0.27	0.8	
9	CO698	A	C	405.59	405.46	0.13	5.0	
10	TR7801	B	A	405.46	405.21	0.26	0.9	
11	CO-1809332217	C	A	405.21	404.91	0.30	1.5	
12	CO262739518	A	B	404.91	404.80	0.11	5.0	
13	CO38953	B	A	404.80	404.61	0.19	0.8	

APPENDIX F
EKPC LRP REVIEW
&
OEC LRP RELIABILITY REVIEW

EKPC 2008-2038 Long Range Plan "Review"

East Kentucky Power Cooperative (EKPC) has recently completed their 30-year Long Range Plan (LRP). The plan specifically covers several items that are included in the present OEC Long Range Plan. The OEC LRP was completed at the end of 2006. At that time, a review meeting was held between OEC and EKPC to discuss the long-term improvement recommendations in detail.

It was from this meeting that EKPC incorporated specific projects in the OEC service into its LRP. A list of these projects and their estimated time of construction is printed here with permission from EKPC.

Several major projects are scheduled within the 2010-2011 CWP period. The new Webster Road 138/69 kV transmission substation is scheduled for May 2011. This substation project will also include a 1.2 mile 69 kV line from Webster Road to the Turkeyfoot and Richardson distribution substations. The new Turkeyfoot Junction switching substation will be completed by August 2011.

A 138/69 kV transmission substation will be in service at Hebron by December 2011. This station will serve a new 2.0 mile, 69 kV line that will travel south and connect the Bullittsville, Burlington, and Boone distribution substations on a 69 kV loop between Boone County transmission substation and this new Hebron transmission substation. This will be a massive improvement to reliability in the heavily-loaded, northern Boone County service area.

The new Richwood distribution substation will be served by a 0.25 mile tap from the Boone-Stanley Parker 138 kV line. This project will be completed by May 2010.
The 69 kV, Burlington-Bullittsville line will serve a 6.6 mile tap to the new Belleview distribution substation. This project will be completed by December 2011.
A second transformer at Munk distribution substation had been scheduled for January 2011. Space requirements at the Munk site have made the addition of a second unit impossible. An alternative site, towards the Crittenden load center is being explored during this CWP period. The Munk transformer has been relieved by backfeeding from the Noel distribution substation for this two-year work plan.

OEC Long Range Plan Reliability "Review"

OEC completed its present LRP in 2006. The plan contained both a loading study and a reliability study. The reliability study focused on how system reliability might be improved on a feeder-by-feeder basis. The study outlined the largest feeders by overhead miles and also by customers. Outage data (reliability indices) was tabulated as an additional factor for consideration.

The data has been updated with the 2008 annual results. For the purpose of this review, the five feeders with the highest of the various parameters were chosen for study. Total miles of overhead line, total miles of three-phase line, greatest number of customers and highest SAIDI were the parameters.

Total Overhead Miles:
Grantslick-5101 = 122.1
Keith 1303 = 98.0
Bromley-0601 = 97.2
Bromley-0603 = 96.5
Noel-2102 = 84.5

Total Overhead 3-ph Miles:
Grantslick-5101 = 23.8
Gallatin-1802 = 21.2
Bromley-0601 = 19.5
Griffin-0901 = 18.5
Grantslick-5106 = 17.7

Greatest Number of Customers
Grantslick-5101 = 1,510
Grantslick-5106 = 1,300
Bromley-0601 = 1,003
Carson-1103 = 972
Boone-0102 = 920

Highest SAIDI
Gallatin-1802 = 7.24
Downing-2001 = 6.06
Noel-2103 = 5.93
Smith-5202 = 5.83
Grantslick-5106 = 4.00

A simple weighting system was developed to "rate" these feeders with relative reliability risk factors. For each category, a 5 was assigned to the highest feeder down to a 1 for the lowest value in each category.

RESULTS

Sub	Score
Boone-0102	**1**
Bromley-0601	**9**
Bromley-0603	**2**
Carson-1103	**2**
Downing-2001	**4**
Gallatin-1802	**9**
Grantslick-5101	**15**
Grantslick-5106	**6**
Griffin-0901	**2**
Keith-1303	**4**
Noel-2102	**1**
Noel-2103	**3**
Smith-5202	**2**

The results for the ratings show that the combined Grantslick-5101 and Grantslick-5106 feeders rank the highest (negatively) in this review. These are long, 25 kV feeders that travel northward from Grantslick to the Alexandria area. They loop and tie towards their respective ends. A new distribution substation in the Alexandria area is greatly needed. The EKPC LRP projects this new substation in the 2018 load level.
It is recommended that OEC request, to EKPC, that this project be moved forward to OEC's 2012-2013 CWP planning period.

Bromley 0601 scored a 9. Munk-0402 and Munk-0403 both tie at the far end of this feeder. A backfeed could reduce the exposure, but the Munk substation is a significant distance away and this would only result in the exposure being "transferred" to the Munk feeders. A future substation should be considered between Munk and Bromley (Glencoe area). Furthermore, the Gallatin 1802 feeder scored a 9. This feeder would also be relieved by the same Glencoe substation. There are no current "Glencoe" sites in either the OEC or EKPC Long Range Plans. An EKPC 69 kV transmission line is in the vicinity to the south and an EKPC 138 kV (Ghent-Boone) transmission line is in the vicinity to the north.