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#### FEDERAL EXPRESS

January 29, 2010

James J. McNulty, Esquire Pennsylvania Public Utility Commission Commonwealth Keystone Building 400 North Street Harrisburg, Pennsylvania 17120

RECEIVED

JAN 29 2010

PA PUBLIC UTILITY COMMISSION SECRETARY'S BUREAU

#### Re: PPL Electric Utilities Corporation Quarterly Reliability Report for the Period Ended December 31, 2009 Docket No. L-00030161

Dear Mr. McNulty:

Enclosed for filing on behalf of PPL Electric Utilities Corporation ("PPL Electric") are an original and five (5) copies of PPL Electric's Quarterly Reliability Report for the Period Ended December 31, 2009. Also enclosed, in a sealed envelope, is a copy of the report containing competitively sensitive and proprietary information. The Company hereby requests that the Commission treat that information, and the report containing the information, as privileged and confidential. The report is being filed pursuant to the Commission's Final Rulemaking Order adopted May 7, 2004 in the above-captioned docket.

Pursuant to 52 Pa. Code § 1.11, the enclosed document is to be deemed filed on January 29, 2010, which is the date it was deposited with an overnight express delivery service as shown on the delivery receipt attached to the mailing envelope.

In addition, please date and time-stamp the enclosed extra copy of this letter and return it to me in the envelope provided.

If you have any questions regarding this document, please call me or Joseph M. Kleha, PPL Electric's Manager-Regulatory Compliance and Rates at (610) 774-4486.

Very truly yours,

Paul E. Russell

Enclosures

cc: Elizabeth H. Barnes, Esquire Mr. Darren Gill Mr. Daniel Searfoorce



**PPL Electric Utilities** 

# PPL Electric Utilities Corporation Quarterly Reliability Report to the Pennsylvania Public Utility Commission

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PA PUBLIC UTILITY COMMISSION SECRETARY'S BUREAU

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January 2010

1) A description of each major event that occurred during the preceding quarter, including the time and duration of the event, the number of customers affected, the cause of the event and any modified procedures adopted in order to avoid or minimize the impact of similar events in the future.

There were no events during this quarter that met the criteria for a major event.

2) Rolling 12-month reliability index values (SAIFI, CAIDI, SAIDI, and if available, MAIFI) for the EDC's service territory for the preceding quarter. The report shall include the data used in calculating the indices, namely the average number of customers served, the number of sustained customer interruptions, the number of customers affected, and the customer minutes of interruption. If MAIFI values are provided, the report shall also include the number of customer momentary interruptions.

SAIFI (Benchmark = 0.98; Rolling 12-month Std. = 1.18)	0.885
CAIDI (Benchmark = 145; Rolling 12-month Std. = 174)	117
SAIDI (Benchmark = 142; Rolling 12-month Std. = 205)	103
MAIFI	4.994
Average Number of Customers Served <sup>2</sup>	1,384,072
Number of Sustained Customer Interruptions (Trouble Cases)	17,469
Number of Customers Affected <sup>3</sup>	1,225,419
Customer Minutes of Interruptions	143,226,586
Number of Customer Momentary Interruptions	6,912,431

The following table provides data for the 12 months ended December 31, 2009.

During the 4<sup>th</sup> quarter, there were no PUC-reportable storms ( $\geq 2,500$  customers interrupted for  $\geq 6$  hr.) and six (6) storms that were not reportable, but which did require the opening of one or more area emergency centers to manage restoration efforts.

<sup>&</sup>lt;sup>1</sup> MAIFI data is obtained at the substation breaker and does not include momentary interruptions at lower level devices.

 $<sup>^{2}</sup>$  PPL Electric calculates the annual indices using customers served at the end of the period. This is consistent with the method used to calculate PPL Electric's benchmarks.

<sup>&</sup>lt;sup>3</sup> The data reflects the number of customers interrupted for each interruption event summed for all events, also known as customer interruptions. If a customer is affected by three separate cases of trouble, that customer represents three customer interruptions, but only one customer interrupted.

Specifically, during the 12-month reporting period, there were four (4) PUC-reportable storms ( $\geq 2,500$  customers interrupted for  $\geq 6$  hr.) other than major events. This is slightly below the average of 4.2 storms per year during the benchmark years, 1994 through 1998.



In addition, there were sixteen (16) storms that were not reportable, but which did require the opening of one or more area emergency centers to manage restoration efforts. This is 57% higher than the average of 10.2 storms per year for the five years from 2001 through 2005.



3) Rolling 12-month reliability index values (SAIFI, CAIDI, SAIDI, and if available, MAIFI) and other pertinent information such as customers served, number of interruptions, customer minutes interrupted, number of lockouts, and so forth, for the worst performing 5% of the circuits in the system. An explanation of how the EDC defines its worst performing circuits shall be included.

The following table provides reliability index values for the worst performing 5% of the circuits in the system for the 12 months ended at the current quarter<sup>4</sup>. An explanation of how PPL Electric defines its worst performing circuits is included in Appendix  $A^5$ .

WPC	Feeder		 				Cases of	<b>Customer Minutes</b>	
Rank	ID	SAIFI	CAIDI	SAIDI	MAIFI	Customers	Trouble	Interrupted	CPI
1	22402	4.87	133	645	3.15	1,296	30	836,522	889
2	44001	1.77	1,231	2,182	0.00	132	3	287,975	844
3	12501	5.27	51	267	6.30	1,569	9	418,237	747
4	43106	3.69	285	1,052	2.30	351	13	369,308	670
5	66001	4.54	57	257	1.98	1,003	8	257,499	661
6	43101	2.78	376	1,046	6.96	1,410	42	1,474,498	657
7	60902	4.60	62	286	10.91	476	19	136,185	644
8	41002	3.33	249	830	1.01	1,249	55	1,036,307	619
9	58703	7.81	156	1,216	11.29	419	6	509,356	616
10	46602	2.91	263	764	0.02	1,726	81	1,318,997	598
11	22406	3.58	174	624	5.97	943	27	588,023	591
12	<u>4</u> 5502	2.87	251	719	0.00	622	32	447,286	588
13	16006	3.93	65	256	5.87	1,998	34	511,973	581
14	23003	2.36	83	196	3.19	491	8	96,148	578
15	22602	3.31	162	537	8.11	1,506	51	808,646	576
16	46702	2.90	303	879	1.09	1,288	48	1,132,468	561
17	40802	5.86	210	1,233	7.97	986	7	1,215,650	550
18	43705	2.08	337	700	3.67	1,373	28	961,315	536
19	57501	2.76	45	123	3.99	1,818	9	223,900	520
20	<u>25501</u>	4.69	83	388	30.63	1,632	64	633,441	471
21	<u>1</u> 1001	1.65	520	859	4.01	862	20	740,093	466
22	40502	2.59	225	582	2.99	1,919	40	1,117,209	460
23	22002	2.93	168	493	6.01	1,387	49	684,116	460
24	46701	2.39	190	453	1.99	713	26	323,232	459

<sup>&</sup>lt;sup>4</sup> One feeder (51108), which the calculation method identified among the worst performing because of a data error, was deleted from the listing. All customers have been transferred away from the 51108 feeder due to an underground getaway failure last year. The active customer count on the feeder is zero, so the calculated CPI should be zero.

<sup>&</sup>lt;sup>5</sup> The revised CPI calculation, used for the first time in the  $2^{nd}$  quarter of 2007, results in higher absolute CPI values than the formula previously used. As a result, these CPI values may not be compared to those calculated prior to the  $2^{nd}$  quarter of 2007.

WPC	Feeder						Cases of	<b>Customer Minutes</b>	
Rank	ID	SAIFI	CAIDI	SAIDI	MAIFI	Customers	Trouble	Interrupted	CPI
_25	42101	2.58	258	665	1.00	19	5	12,642	456
26	60104	1.90	452	859	0.00	2,063	28	1,772,017	455
27	16402	3.58	105	377	5.05	1,001	46	<u>3</u> 77, <b>21</b> 3	451
28	16802	3.65	105	383	14.18	1,784	53	683,920	443
29	45501	1.65	468	770	0.00	1,426	50	1,098,186	443
30	22601	3.38	119	403	6.64	1,969	46	793,007	442
31	41202	2.43	120	293	5.00	1,420	30	<u>4</u> 16,210	432
32	56501	2.54	13 <u>9</u>	352	9.98	2,373	35	835,612	430
33	26002	3.15	138	434	6.01	1,184	53	514,060	426
34	43102	2.37	248	589	0.00	971	20	<u>5</u> 72,248	426
35	46506	2.92	126	369	7.03	1,595	40	<u>5</u> 89, 166	418
36	12402	2.01	224	451	8.04	612	36	275,771	413
37	26001	2.96	138	409	6.08	1,320	55	540,185	406
38	40602	2.69	142	382	7.98	2,914	49	1,111,713	389
39	43104	1.07	640	682	1.00	578	5	394,287	386
40	16401	2.51	12 <u>8</u>	322	3.00	677	30	217,702	384
41	41701	2.44	205	499	1.03	989	39	<u>4</u> 93,528	375
42	40201	1.52	406	618	13.01	1,618	65	<u>9</u> 99,351	371
43	64802	2.42	166	402	0.00	1,271	36	<u>5</u> 10,882	364
44	64704	5.10	83	423	32.22	419	13	<u>1</u> 77,050	355
45	42401	1.79	23 <u>4</u>	418	2.00	740	18	309,582	353
46	60803	3.32	80	265	19.60	2,017	40	<u>5</u> 34,495	353
47	14007	1.13	49 <u>6</u>	558	0.99	596	10	<u>3</u> 32,768	352
48	46302	3.05	90	275	3.25	1,769	71	485,700	352
49	47403	2.20	271	597	4.68	367	16	<u>2</u> 19,159	351
50	27101	2.33	108	252	8.11	2,697	55	678,824	344
51	28001	3.23	83	269	11.06	1,762	87	474,021	340
52	58302	2.61	144	376	13.09	325	9	122,345	338
53	60406	4.90	123	601	0.99	195	3	117,162	335
54	58401	2.90	116	337	4.25	1,612	53	542,639	331
55	26604	1.68	330	556	2.00	2,453	80	1,364,480	331
56	51804	4.66	119	553	1.00	1,018	14	563,363	325

PPL Electric's Circuit Performance Index ("CPI") is derived from the frequency and duration of service interruptions that occurred during the specified time period. Improving a circuit's CPI depends upon reducing either the service interruption frequency or the duration of interruptions, or both. When a new circuit appears among the 5% worst performing, the first step undertaken is to perform a "circuit outage data analysis." This consists of analyzing the actual service interruptions which occurred during the time span to determine if there are causal patterns or geographic patterns for which corrective actions are feasible that would improve the circuit's CPI.

Rank	Action	n di separa per separa Antonio de la persona per separa p	Status	Due/Comple	te Result	anne anna 2, an seacht ann ann an ann an ann an ann an ann an	
1 Ci	ircuit ID: 22402 MORG	AN 24-02	ar and had a star of gran of the transformation of the second section of the section of	rad od gille the law and strange of the	Location: Scranton	CPI:	889
8/1	4/2007: Install fault indicators		Canceled	8/31/2009	Reduced outage duration. Inaccessible section	n of line being removed	<b>1</b> .
<b>1</b> /1	1/2008: Expanded Operational Revie	₩.	Completed	8/8/2008	Reduced outage risk.		
10/ pre	/8/2008: Circuit outage data analysis eceding qtr. list.	-WPC not on	Completed	11/30/2008	Reduced outage risk. There were three break least 537 customers experienced 4 outages. T due to equipment failure and animal contact ca outages had a CAIDI of over 400 minutes.	er outages on this line. The breaker outages we auses. One of the brea	At ere iker
Adi but	lditional projects are being reviewed f dget to increase reliability.	or inclusion of the	Completed	12/15/2009	Project to relocate an inaccessible section of 3 and will be completed in 2010	phase has been ident	ified
Mo	onitor future performance.		Completed	1/14/2010	Inconclusive. Monitor future performance. The outages and one large OCR outage during isol 2009. The outages were caused by trees from 2009 there has been one breaker outages. The animal contact at the substation. There were a 2009.	re were three breaker lated thunder storms in noutside the ROW. In ( e outage was caused b no major outages in Q4	Q2 Q3 Iy an I
2 Ci	ircuit ID: 44001 W. PEN	N (LOBO) SOU	RCE 40-01		Location: Susquehanna	CPI:	844
1/1 pre	13/2010: Circuit outage data analysis eceding qtr. list.	-WPC not on	Scheduled for	2/28/2010			
3 Ci	ircuit ID: 12501 MINSI	FRAIL 25-01			Location: Bethlehem	CPI:	747
Cir	rcuit outage data analysis - WPC not	on preceding qtr. list.	Completed	11/1 <b>2/</b> 2009	Inconclusive. Monitor future performance. For February and August 2009 caused this circuit it 1,500 customers experienced at least 4 outage a history of frequent breaker outages. This is ties.	IT breaker trips betwee to be on the WPC list. es. This circuit has not a short circuit with mult	n Over had tiple

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#### (4) Specific remedial efforts taken and planned for the worst performing 5% of the circuits identified in paragraph (3).

Rank Action	Status	Due/Comple	te Result	
4 Circuit ID: 43106 SOUTH MILTON 31-0	5	en na "Radi", singe des 2007 fon genetropolitien die er	Location: Sunbury	CPI: 670
Circuit outage data analysis - WPC not on preceding qtr. list. Discuss at WPC Meeting	Completed	11/6/2008	Inconclusive. Monitor future performance. Th as a worst performing circuit due to its contrib and outages exceeding 4 hours in duration. If the highest profile outage was caused by a fai <i>interrupted</i> the breaker for over 4 hours. And off the right-of-way interrupted the breaker for generally not a poor performing circuit and is a within the next quarter or two.	e 31-06 circuit is categorized oution to the System SAIDI During the last 12 months, iled terminator that ther outage caused by trees over 3 hours. This is expected to drop off this list
Relocate inaccessible line. Build accessible tie from adjacent circuit to serve 53 customers in a development that has been interrupted several times in 2008.	Completed	11 <i>1</i> 27/2009	Reduced outage risk.	
Expanded Operational Review. Voltage profile completed. Identified location to install fuse.	Completed	12/1/2009	Reduced outage risk.	
Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	12/1/2009	Reduced outage risk. The South Milton 31-06 Susquehanna Region's WPC meeting on 12/1 categorized as a worst performer due its high breaker outage occurred on April 29 when a tr Eight other outages occurred during an August interruption of the circuit breaker at the substa primary driver for this circuit to be on the WPC initiatives on this line include the relocation of section of line. In 2009, animal guard was inst locations in Milton Boro.	5 feeder was discussed at 1/09. This circuit is contribution to SAIDI. One ransformer fuse failed. t 9 wind storm, including an ation. This single event is the C list. Key improvement an inaccessible, high risk stalled at all transformer
5 Circuit ID: 66001 RHEEMS 60-01			Location: Lancaster	CPI: 661
1/4/2010: Expanded Operational Review.	EOR planned	12/31/2010		

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Rank Action	Status	Due/Complet	e Result	an fan <del>d</del> amaan an an an ar fal af	
6 Circuit ID: 43101 SOUTH MILTON 31-01	all georgenyen yn oneren en ageoldik - no	n e standn hallen, f. Tigt ann e sgar alla Speciella vierte grapherise	Location: Sunbury	CPI:	657
1/1/2008: Expanded Operational Review.	Completed	6/30/2008	Reduced outage risk. CYME study has been completed voltage. Additional sectionalizing will be reviewed and W out.	l with adequa /Rs will be ta	te ken
3/24/2008: Thermographic inspection-OH line. Thermographic inspection of all two phase and three phase overhead line.	Completed	3/21/2008	No hot spots identified during survey		
3/24/2008: Test underground cable, Replace UG cable per Test Recommendations	Completed	12/5/2008	Reduced outage risk.		
8/1/2008: Install fuse(s). 5 new fuses will be installed as a result of the EOR. WR numbers for the fuses are 443125, 443134, 443101, 443105, 443117.	Completed	9/1/2008	Reduced customer count affected by each outage.		
10/8/2008: Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	11/6/2008	Reduced outage risk. South Milton 31-01 - The 31-01 c categorized as a WPC circuit due to customers experier outages and high contribution toward the system SAIDI, reviewed in 2008 as part of the expanded operational re Area. Two improvement projects were identified during additional air break is also planned for this circuit to imp capabilities.	ircuit is noing more th . This circuit views for Sur the review. 7 rove sectiona	an 3 was Ibury An Ilizing
10/15/2008: Relocate inaccessible line.	Scheduled for	4/16/2010			
1/28/2009: Improve sectionalizing capability.	Completed	9/10/2009	Reduced outage duration.		
1/28/2009: Install LBAS(s), Install new Air Break with motor Operator and Telemetrics control for remote operation at 23868N30531.	Completed	9/10/2009	Reduced outage duration.		
1/28/2009: Improve sectionalizing capability. Add automation to two existing Air Breaks.	Completed	9/10/2009	Reduced outage duration.		
7 Circuit ID: 60902 DONEGAL 09-02			Location: Lancaster	CPI:	644
Expanded Operational Review. Reliability Analysis Completed 1/24/08 Voltage Profile completed 11/12/08	Completed	12/31/2008	Reduced outage risk.		
No reliability work requests needed					
2/1/2008: Thermographic inspection-OH line. Thermographic Inspection - 2008	Completed	3/31/2008	Reduced outage risk.		
8 Circuit ID: 41002 LAURELTON 10-02			Location: Sunbury	CPI:	619
3/31/2008: Monitor future performance.	Ongoing		Reduced outage duration.		
Expanded Operational Review. Identified five locations to install animal guards. Identified location to install new OCR to improve sectionalizing.	Completed	12/31/2009	Reduced outage risk.		
Line inspection-equipment.	Completed	4/30/2009	Reduced outage risk. No major items found. 5-10 min issues identified and addressed.	or equipment	t

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Rank	Action	Status	Due/Comple	te Result	la Kummu mana ana kulon na dékata manangan mana na kulon na dékata
9 Ci	rcuit ID: 58703 ROSEMONT 87-03	nan sana na sa	a - a see sentte glineren fannen anweren en geber	Location: West Shore	CPI: 616
7/1 pre	0/2009: Circuit outage data analysis - WPC not on ceding qtr. list.	Completed	8/31/2009	Inconclusive. Monitor future performance. The majority were due to trees, not trimming related.	of the outages
10 Ci	rcuit ID: 46602 LARRYS CREEK 66-02			Location: Susquehanna	CPI: 598
11/	2/2005: Monitor future performance.	Ongoing		PPL will continue to monitor the circuit's performance in	the future.
8/1/ 220	/2008: Install tie. Build tie line to Linden 57-2 along SR ) - USF project	Completed	11/26/2008	Reduced outage duration.	
Exp	banded Operational Review.	Completed	10/30/2009	Reduced outage risk.	
11/	3/2008: Line inspection-equipment.	Completed	12/10/2008	Reduced outage risk. Inspector found 2 locations needli Also found 1 location of energized primary that feeds an that could be cut in clear.	ng tree trimming. abandoned cabin
Cire	cuit outage data analysis - WPC not on preceding qtr. list.	Completed	12/1/2009	Inconclusive. Monitor future performance. The Larry's C was discussed at Susquehanna Region's Quarterly WPC 12/1/09. This circuit is a WPC due to its high SAIDI cor circuit was severely affected by a summer wind storm or Significant wind damage, bring trees down across power numerous large scale and long duration outages. Portio trimmed to reduce the risk for further outages. Other im initiatives were developed for this line (new sectionalizing relocation of inacessible and risk-prone lines, replaceme disconnects on getaway), documented elsewhere in this	reek #2 circuit C meeting on htribution. This August 9. lines resulted in ns of this line was provements g equipment, nt of bridges database.
1/4	/2010: Relocate inaccessible line.	Scheduled for	3/31/2010	Reduced outage risk.	
1/4	/2010: Install 1 phase OCR(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
1/4	v2010: Install fuse(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
1/4	/2010: Install fuse(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
1/4	/2010: Relocate inaccessible line.	Scheduled for	3/31/2010	Reduced outage risk.	
1/4	/2010: Relocate inaccessible line.	Scheduled for	3/31/2010	Reduced outage risk.	
1/4	/2010: Install fuse(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
1/4	/2010: Relocate inaccessible line.	Scheduled for	3/31/2010	Reduced outage risk.	

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Rank Action	and a second second Second Second	Status	Due/Comple	te Result	
11 Circuit ID: 22	406 MORGAN 24-06			Location: Scranton	CPI: 591
1/1/2008: Expanded	Operational Review.	Completed	8/8/2008	Reduced outage risk.	
7/9/2008: Circuit out प्रा. list.	age data analysis - WPC not on preceding	Completed	8/15/2008	Three breaker outages occurred on 3/9/08, 6/2/0 OCR outages created a greater than 3 outages customers on the line.	18, 6/29/08. Additional ituation for many
1/19/2009: Circuit or preceding qtr. list. A inclusion of the budg	utage data analysis - WPC not on dditional projects are being reviewed for et to increase reliability.	Completed	4/27/2009	Inconclusive. Monitor future performance. Proje an inaccessable portion of 2/0 Cu along the road 11/2012.	ct SP51414- Will rebuild 1 with 477 AI. RIS is
4/15/2009: Pole insp block 533N492.	pection of inaccessible line section in grid	Completed	4/30/2009	Section of line is old and in poor condition. Invest Remote Operator Controlled Switches to section section.	stigating the addition of alize the inaccessible
4/16/2009: Investiga guards installed.	te if the substation equipment has animal	Completed	4/30/2009	Animal guards are installed at the substation.	
1/14/2010: Monitor 1	uture performance.	Ongoing		High CPI caused by three breaker outages. Two one due to a vehicle hit and one due to equipme outage occured in Q3 2009 and was caused by substation.	occured during Q2 2009, ent failure. One breaker a animal contact at the
l2 Circuit ID: 45	502 DERRY 55-02			Location: Sunbury	CPI: 588
7/2/2007: Install 3 pl from 29519N31497 t	nase OCR(s). Move existing 3 phase OCR o 29410N31521, WR number is 381379.	Completed	1/31/2008	Reduced customer count affected by each outag	ge.
7/2/2007: Install 1 pl OCRs at grid location 28206N31508 (WR# downstream of new s	nase OCR(s). Install two new single phase of 29422N31506 (WR# 390982) and 396058). Install addional fusing single phase OCRs.	Completed	3/13/2008	Reduced customer count affected by each outag	ge.
12/31/2007: Expand	ed Operational Review.	Completed	12/31/2008	Consider potential new lie to 55-1	
12/31/2007: Thermo Thermographic inspe line.	graphic inspection-OH line. action of all 2 phase and 3 phase overhead	Completed	3/12/2008	Thermovision completed with no major component	ents found.
7/9/2008: Circuit out qtr. list.	age data analysis - WPC not on preceding	Completed	8/12/2008	This circuit was reviewed during Susquehanna's 8/12/08. The Substation CB was interrupted twi once due to trees outside PPL right-of-way and circuit has one tie but conductor size limits its ca conduct a feasibility study of creating another tie	WPC meeting on ce in the past 12 months, once due to vehicles. This apacity. Engineering will e to this circuit.
1/21/2010: Evaluate	potential ties.	Scheduled fo	5/31/2012	Super Project 12812 was initiated to create a tie Watson 33-4. Derry 55-2 has a tie with Derry 55 Danville 62-3. The tie with Watson will provide a flexibility. 55-2 could be transfered to Watson via RIS date of 5/2012.	between Derry 55-1 and 5-1 and another with additional operating a 55-1. SP12812 has an

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Ran	k Action	Status	Due/Complet	e Result	animana animana animana any amin'ny ami
13	Circuit ID: 16006 DORNEYVILLE 60-06		han Baagaanna in saadaan kata aha saadaan	Location: Lehigh	CPI: 581
:	7/10/2009: Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	8/31/2009	Inconclusive. Monitor future performance.	
14	Circuit ID: 23003 SAINT JOHNS 30-03			Location: Central	CPI: 578
1	1/13/2010: Circuit outage data analysis - WPC not on preceding qtr. list.	Scheduled for	2/28/2010		
15	Circuit ID: 22602 KIMBLES 26-02			Location: Pocono	CPI: 576
ł	Investigate relocating poles 71347N49205 and 71358N49195. Both of these poles recieved vehicle hits in 2008 which cause breaker outages.	Completed	4/27/2009	Inconclusive. Monitor future performance. Rel monitor for future pole hits.	ocation is possible, will
1	Install fuse(s). Install 4 - 100k fuses one single and multi spar taps off the main three phase line protected by the circuit breaker	n Completed	5/30/2008	Reduced outage risk.	
:	5/31/2006: Install animal guard(s).	Ongoing	43	These animal guards are installed as needed, will prevent future animal contact related outag	following an outage. This jes.
	Monitor future performance.	Ongoing			
I	1/13/2009: Circuit outage data analysis - WPC not on preceding otr. list.	Completed	2/28/2009	Three breaker outages in 2008 caused by two related outage significantly contributed to the C Customers experiencing more than 3 outages to the CPI.	vehicle hits and one tree CPI for this circuit. was the biggest contributor
I	1/14/2010: Circuit outage data analysis - WPC not on preceding qtr. list.	Scheduled for	3/31/2010	High CPI of this circuit is because of 2 large O trees outside of the right-of-way and a transmi switch (the switch was replaced).	CR outages caused by ssion outage due to a failed

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Rank	Action	Status	Due/Comple	te Result	
16 Cir	cuit ID: 46702 RENOVO 67-02	urtenet, multereneden varant fran ladderte er	transformer transfor gentle sone franzis an d	Location: Susquehanna	CPI: 561
Expa	nded Operational Review.	Completed	12/31/2009	Additional fusing identified. Animal guard on Young Wo Field reviewed circuit for reliability improvements. Perfor Voltage/load/VAR study in CYME. Performed risk analys	iman's Creek. med sis on UG dips.
12/18	3/2008: Line inspection-equipment.	Completed	1/30/2009	Reduced outage risk. Two high priority items found.	
4/8/2 inspe Cree	009: Perform line maintenance identified by line cction. Repair damaged conductor on Young Woman's k Tap (WR 499544)	Completed	5/1/2009	Reduced outage risk.	
7/10, preci	/2009: Circuit outage data analysis - WPC not on eding qtr. list.	Completed	8/25/2009	Inconclusive. Monitor future performance. The Renovo 6 discussed at Susquehanna Region's 2009 Q2 Worst Per meeting on August 25, 2009. This circuit is a worst perfo- high SAIDI contribution. The entire feeder was interrupte the last 4 quarters: in December due to a structure fire (I for firefighter safety) and once in February during a rains August 2009 storm may perpetuate this line being categy There is one area on this circuit that has been subject to interruptions (Young Woman's Creek) and will be consid hazard tree removals.	37-02 circuit was forming Circuits ormer due it its ad twice during ine de-energized storm. The orized as a WPC. a multiple lered in 2010 for
1/4/2	010: Install fuse(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
1/4/2	010: Add Capacitors	Scheduled for	3/31/2010	Voltage Support	
1/4/2	010: Install animal guard(s).	Completed	12/15/2009	Reduced outage risk.	
1/4/2	010: Install fuse(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
1/4/2	1010: Instali fuse(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
1/4/2	010: Install fuse(s).	Scheduled for	3/31/2010	Reduced customer count affected by each outage.	
17 Cir	cuit ID: 40802 EXCHANGE 08-02			Location: Central	CPI: 550
2/13/	2009: Expanded Operational Review.	Completed	6/15/2009	Inconclusive. Monitor future performance. Initiated work fuses and fault indicators at an exisiting sectionalizing at	to install 5 tap r break
6/15/ expo	/2009: Install fuse(s), Install 5 tap fuses to reduce sure risk to substation.	Scheduled for	8/20/2010		
6/15/ on se	/2009: Monitor future performance. Install fault indicators ectionalizing air break.	Scheduled for	<b>4/2/2</b> 010		
7/10. prec	/2009: Circuit outage data analysis - WPC not on eding qtr. list.	Completed	7/10/2009	Inconclusive. Monitor future performance. SAIDI was 62 score. Planned maintenance was scheduled at a neight the majority of the customers were transfered to the Exc While serving all those customer an outage occured on 1 an interruption to all of the 8-2 line and all the customers transfered to the line. This caused the circuit to recieve a value. This is the first time this circuit has ever been on performing circuit list.	?% of the CPI oring substation so thange 8-2 line. the line causing s that were a high SAIDI the worst

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Rank	Action	Status	Due/Comple	te Result	
18 (	Circuit ID: 43705 WILLIAMSPORT 37-0	5	trazifi n'i ¥ un heurente ra com annitaccitaccitaco, can	Location: Susquehanna	CPI: 536
c	ircuit outage data analysis - WPC not on preceding qtr. list.	Completed	12/1/2009	Reduced outage risk. The Williamsport #5 circui Susquehanna Region's Quarterly WPC meeting of is a WPC due to its high SAIDI contribution and of in duration. This circuit was severely affected by August 9. It is generally not a worst performer but initiatives are planned, including a full line and ed 2010 and a new OCR to better sectionalize the ci- entries in database).	t was discussed at on 12/1/09. This circuit xutages longer than 4 hrs a summer wind storm on ut two major improvement quipment inspection in ircuit (see separate
19 (	Circuit ID: 57501 LAWNTON 75-01			Location: Harrisburg	CPI: 520
E 7	xpanded Operational Review. Reliability Review Completed /22/09. Voltage Profile Completed 7/17/09.	Completed	10/30/2009	Inconclusive. Monitor future performance.	
Ir	istall fuse(s). Install new tap fuse	Completed	10/30/2009	Reduced customer count affected by each outag	e.
20 0	Circuit ID: 25501 MADISONVILLE 55-01	l		Location: Pocono	CPI: 471
5 ir ir	/31/2006: Install animal guard(s). Animal guards were Istalled on a single phase tap. Additional animal guards are Istalled as necessary.	Ongoing		Reduced outage risk. Installation of animal guard outages on sections of line.	ds will prevent repeated
1	/1/2008: Expanded Operational Review.	Completed	5/29/2009	Reduced outage risk. Two single phase sections overloads.	will be checked for
1 P	/19/2009: Circuit outage data analysis - WPC not on receding qtr. list.	Completed	2/28/2009	Many long duration outages during storms in Jun December of 2008 significantly contributed to the large customer count outages occured in Q2 200 customer minutes were lost during the storms in	e, October, and ) CPI for this cricuit. Two )8. Over 2.8 million Q4 2008.
7	/13/2009: Monitor future performance.	Ongoing		There was one circuit breaker outage in Q1 2009 has improved in Q1 and Q2 of 2009	. Circuit performance
1	/14/2010: Install tie.	Completed	12/1/2009	Reduced customer count affected by each outag substation went into service early December 200 customers and line length of 2-55-01 (Madisonvil	e. New Jefferson 9 reducing the amount of ile Sub)
1 F	/14/2010: Improve sectionalizing capability. Investigate the ossibility of adding sectionalizing devices to the ckts ie. ROCS nd telemetric OCR's to reduce duration and number of	Scheduled fo	3/31/2010		

customers effected by an outage.

	na manatu ; muun quin - muun usin usin usin usin usin usin usin u	a baar ad sedan ya raas 'a san barasin anay	angelika paranan na sa	de Manander (1996), 1997 - 2 agé sen Barro de Main en ser ser ser en la contraction de la contraction de la con La contraction de la c	n mugh no ver , and a second film	
21	Circuit ID: 11001 EAST GREENVILLE 10	-01		Location: Bethlehem	CPI:	466
	Improve sectionalizing capability. Additional fuses will be added as well.	Scheduled for	2/24/2011	Reduced outage risk. Project being developed to r spots, and add better fusing scheme to limit custor Inaccessible portion of the line will be re-fed from a section.	esectionalize trou ner exposure. a new single phase	ole
	Improve sectionalizing capability. Install new OCR, replace existing OCR with telemetric OCR and install motorized switch at East Greenville 10-1/Macungie 27-1 tie.	Scheduled for	3/31/2010	Reduced outage duration.		
	Reconductor line.	Scheduled for	3/31/2010	Reduced outage risk.		
	4/9/2009: Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	5/31/2009	Inconclusive. Monitor future performance.		
22	Circuit ID: 40502 CRESSONA 05-02			Location: Central	CPI:	460
	8/1/2007: Improve sectionalizing capability. Motorize normal open load break air switch (LBAS) between 05-03 & 05-02 line along with normally closed LBAS along SR 895 near Summit Station.	Completed	3/31/2008	Reduced outage duration.		
	3/7/2008: Install sectionalizers. Install five new single phase tap switches along SR 895 near Summit Station.	Completed	5/2/2008	Reduced customer count affected by each outage.		
	1/13/2009: Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	2/28/2009	Inconclusive. Monitor future performance. Two pro- in the buget to provide transfer capability to this cir the 5-3 line will be reconductored in 2010 and the t will be reconductored in 2011.	pjects have been p cuit. The tie line v ie line with the 59-	laced vith 1 line
	4/2/2009: Expanded Operational Review.	Completed	5/4/2009	Identified several locations to replace failed equipn break, install tap fuses, and install new fault indica performance.	nent, install a new tors to monitor futi	air Ire
	4/7/2009: Install fuse(s). Install fuse to protect exposure to circuit breaker.	Scheduled for	5/31/2010			
	Monitor future performance. Install 2 fault indicators to help improve response time during outages.	Completed	5/8/2009	Reduced outage duration.		
	4/15/2009: Install LBAS(s). Install air break to lower number of customers between sectionalizing devices and allow for more switching opportunities.	Scheduled for	10/22/2010			
	5/4/2009: Perform line maintenance identified by line inspection. Identified several locations to replace failed equipment	Completed	6/12/2009	Reduced outage risk.		

Rank	Action		Status	Due/Comple	te Result	a ser an
23 Ci	rcuit ID: 22002 B	OHEMIA 20-02	e, an andreann dealais cears, mair fearmach à Pard an	nen offinition" in anno aigeraith siù ridanno i	Location: Pocono	CPI: 460
Мо	nitor future performance.		Ongoing			
1/1:	5/2010: Monitor future per	formance.	Scheduled for	3/31/2010	A tree outage on 12/3/09, not related to trimmine ffecting 89 customers. An outage on 12/29/0 switch on the transmission source (Blooming C to Bohemia resulted in 1389 Bohemia custome hr-4 hours.	ng locked out A phase OCR 9 caused by a failed PBAB Grove-West Damascus line) er's being interrupted for 1
24 Ci	rcuit ID: 46701 R	ENOVO 67-01			Location: Susquehanna	CPI: 459
Exp	anded Operational Review	ν.	Completed	12/31/2009	Reduced outage risk.	
12/	18/2008: Line inspection-e	equipment.	Completed	1/30/2009	Reduced outage risk. No maintenance items i	dentified.
Circ	cuit outage data analysis -	WPC not on preceding qtr. list.	Completed	12/1/2009	Inconclusive. Monitor future performance. The discussed at Susquehanna Region's Quarterly This circuit is a WPC due to outages longer the circuit was affected by a summer wind storm of customers experiencing an outage for approxiti was inspected in October and November to ide projects. Several items identified include addii top found burred by equipment damage, and a Susquehanna River crossing to S. Renovo Bo documented individually in this database.	Renovo #1 circuit was WPC meeting on 12/1/09. an 4 hrs in duration. This in August 9 resulting in all mately 5 hours. The circuit entify improvement tional fusing, repair of pole adding redundancy to the rough. These items are
1/4	/2010: Install fuse(s).		Scheduled for	3/31/2010	Reduced customer count affected by each out	age.
1/4	/2010: Install animal guard	l(s).	Scheduled for	3/31/2010	Reduced outage risk.	
25 Ci	ircuit ID: 42101 F	RAILEY 21-01			Location: Central	CPI: 456
2/4	/2008: Expanded Operatio	nal Review.	Completed	10/6/2008	Reduced outage risk.	
2/1: NE BE	9/2008: Tree trimming. C AR GOODSPRINGS TO 1 TWEEN 58-01 & 58-02 LIN	ONVERT RADIAL SECTION 2 KV CREATING A N.O. TIE IES.	Scheduled for	12/25/2010	Reduced outage duration.	
Cire	cuit outage data analysis -	WPC not on preceding qtr. list.	Completed	11/30/2009	Inconclusive. Monitor future performance. The on this feeder. The largest outage is due to an failure. A project has been placed in the budge other surrounding 23kV feeders, to 12kV; a 4- 2011. The conversion will create more 12 kV t	ere are only 19 customers OH pole/arm equipment at to convert this feeder, and part project beginning in ies and transferability

among other feeders.

Ran	ık Action	Status	Due/Comple	te Result	
26	Circuit ID: 60104 COCALICO 01-04	n naparatak sara na Man		Location: Lancaster East	CPI: 455
	5/19/2008: Perform line maintenance identified by line inspection. LMI Inspection performed on 2 phase and 3 phase line - 13 miles total	Completed	4/1/2009	Reduced outage risk.	
	4/9/2009: Circuit outage data analysis - WPC not on preceding qtr. list.	g Completed	7/13/2009	Inconclusive. Monitor future performance. This SAIDI contributing 54% of the total CPI. The se Blainsport Tap OCR is radial with 1,900 custome due to vehicle hits and one outage due to a tree contributed a combined total of over 1.9 million of	circuit is on the list due to ction of line beyond the ers. In 2009, two outages falling across the line customer minutes lost.
	Evaluate potential ties.	Completed	12/31/2009	Reduced customer count affected by each outage feasibility of a tie line or substation project to all the Blainsport Tap, which is radial with 1,900 cu in the budget, which will build a tie between the circuits. Required in-service date is November of 72901 in the budget, which will build a new relial Reinholds. Required in-service date is November	ge. Evaluated the eviate reliability issues with stomers. Placed SP 73516 Cocalico 60104 and 60102 of 2012. Also placed SP bility substation, er of 2014.
	1/4/2010: Expanded Operational Review.	EOR planned	12/31/2010		
<b>2</b> 7	Circuit ID: 16402 MOUNT POCONO 64-	-02		Location: Pocono	CPI: 451
	4/8/2008: Circuit outage data analysis - WPC not on preceding qtr. list.	g Completed	5/31/2008	Two breaker outages and two OCR outages cau experience greater than 3 outages.	used nearly half the line to
	10/8/2008: Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	11/30/2008	Reduced outage risk. Over 400 customers expe outages due to varying reasons, from tree outsic equipment failure to vehicle contact. In addition, had a long duration.	erienced 4 or more de of the right of way to several small outages
	$\ensuremath{\text{4/9/2009}}$ : Circuit outage data analysis - WPC not on preceding tr. list.	g Completed	5/31/2009	Three breaker outages and a large OCR outage the CPI of this circuit	significantly contributed to
	1/14/2010: Circuit outage data analysis.	Scheduled for	3/31/2010	The high CPt of this circuit is due to a breaker of an OCR with 400 customers. The breaker outag tree contact during a windstorm. Four of the OC trees from outside the right-of-way contacting th vehicle hit.	outage and five outages on le in Q1 2009 was due to a R outages were caused by e line and one was a

Rank	Action	Status	Due/Complet	e Result	and a state of the
28 Cir	cuit ID: 16802 WAGNERS 68-02	പ്രത്തേണ്ടെ എന്നാന് നാം മണ്ണാന് പ	Promotion of a conservation of the set of a state of AppL address	time mension of the set of a set in the set of the set	CPI: 443
1/13/ prece	/2009: Circuit outage data analysis - WPC not on eding qtr. list.	Completed	2/28/2009	Two long duration breaker outages during storms in contributed to the CPI of this circuit. Also, there we outages during the October 2008 snowstorm. This of 2008 which will help reduce tree related outages wh of the outages.	Q4 2008 significantly re many long duration circuit was trimmed in ich acounted for 91%
Moni	itor future performance.	Ongoing		There was a breaker outage in Q1 of 2009 due to tr ROW during a wind storm. There was another brea 2009 due to trees from outside the ROW during thu OCR outage occurred in Q4 2009 and was caused in the ROW.	ees from outside the iker outage in Q2 of nderstorms. A large by a tree from outside
1/14/	/2010: Install tie.	Completed	11/4/2009	Reduced customer count affected by each outage, tie to the Lake Harmony 54-3 line, RIS 5/2012, 1000 transferred from 68-2 to 54-3,	SP50718 will create a ) customers will be
1/14/ prece	/2010: Circuit outage data analysis - WPC not on eding qtr. list.	Scheduled for	3/31/2010	A large number of long outages effecting small num greatly contributed to the high CPI of this circuit.	bers of customers
29 Cir	cuit ID: 45501 DERRY 55-01			Location: Sunbury	CPI: 443
3/24/ inspe	/2008: Thermographic inspection-OH line. Thermographic ection of all two phase and three phase overhead line.	Completed	3/12/2008	Reduced outage risk. Thermovision completed, Aw results from Hurley and Associates.	aiting summary of
Expa	anded Operational Review.	Completed	12/31/2009	No longer among 5% worst performing circuits.	
1/6/2 OCR	2009: Line inspection-equipment. Inspect OH line from 23328N34657.	Completed	2/20/2009	Reduced outage risk. Identified locations with anim bad pole tops, and a possible 1 phase relocation.	al guard needed, two
30 Cir	cuit ID: 22601 KIMBLES 26-01			Location: Pocono	CPI: 442
Moni	itor future performance.	Ongoing	8/31/2005	Reduced outage risk. During an abnormally section the Kimbles 26-1 line was tied to a Tafton line, a fau Tafton line. This outage contributed nearly one fifth minutes lost for the past year. In addition to this ev fault left the entire Kimbles substation out of service These two events, combined with number cases of transformers and single phase line resulted in a hig this line.	nalized condition when alt occurred on the of the total customer ent, a transmission line tor nearly two hours. trouble on customer h SAIFI and CAIDI for
31 Cir	cuit ID: 41202 KENMAR 12-02			Location: Susquehanna	CPI: 432
Expa	anded Operational Review.	Completed	12/15/2009	Reduced customer count affected by each outage.	
12/1	8/2009: Install fuse(s).	Scheduled for	3/31/2010		
12/18	8/2009: Install fuse(s). Replace (7) Dead-End Insulators	Scheduled for	3/31/2010		

Rank	Action		Status	Due/Complet	e Result		
32 Circ	uit ID: 56501	ROCKVILLE 65-01			Location: Harrisburg	CPI:	430
Expan 7/22/09	ded Operational Rev 9. Voltage Profile Co	iew. Reliability Review Completed mpleted 6/30/09.	Completed	12/31/2009	Inconclusive. Monitor future performance.		
11/11/	2009: Install fuse(s).	install 3 tap fuses	Scheduled for	12/31/2010	Reduced customer count affected by each outage.		
33 Circ	uit ID: 26002	WEST DAMASCUS 60-0	2		Location: Pocono	CPI:	426
4/9/200 qtr. list	09: Circuit outage da t.	ta analysis - WPC not on preceding	Completed	5/31/2009	There was a long duration breaker outage in Q1 of 2009 of	lue to vehic	le hit.
Instali identifi	sectionalizers. An in ied to reduce custom	telligent switching project has been er minutes lost.	Completed	12/31/2009	Reduced customer count affected by each outage.		
8/11/20	006: Monitor future p	performance.	Ongoing		Reduced outage risk. There was a large OCR outage du outside the ROW in Q2 2009 during a thunderstorm.	e to trees fr	m
8/14/20	007: Tree trimming.		Completed	8/31/2009	Reduced outage risk.		
34 Circ	uit ID: 43102	SOUTH MILTON 31-02			Location: Sunbury	CPI:	426
Expan	ded Operational Rev	ew.	Completed	12/31/2009	Reduced outage risk.		
1/28/20 reclose	009: Install 3 phase er with Telemetrics c	OCR(s). Install new vacuum ontrol for remote operation.	Scheduled for	7/22/2010			
1/28/20 operate	009: Install LBAS(s) or and Telemetrics c	. Install new Air Break with motor ontrol for remote operation.	Scheduled for	8/28/2010			
1/28/20 circuit on taps	009: Install fuse(s). to improve protection s.	Install fusing at 5 locations on of main line from faults occurring	Scheduled for	12/1/2010			
Circuit	outage data analysis	s - WPC not on preceding qtr. list.	Completed	12/1/2009	Inconclusive. Monitor future performance. The South Mill was discussed at Susquehanna Region's WPC meeting of circuit is categorized as a worst performer due to a large customers interrupted for more than 4 hours. This occurn August 9 wind storm. This single event is the sole driver be on the WPC list. Key improvement initiatives on this I installation of automated devices and animal guard at all locations in Milton Boro.	ton 31-02 fe on 12/1/09. number of red during a for this circa ine include transformer	eder This n uit to
35 Circ	uit ID: 46506	LOCK HAVEN 65-06			Location: Susquehanna	CPI:	418
Expan	ded Operational Rev	iew.	Completed	8/5/2008	Inconclusive. Monitor future performance. No voltage or identified.	reliability is:	ues
Therm	ographic inspection-	OH line.	Completed	3/21/2008	Inconclusive. Monitor future performance. No hot-spots i	dentified.	

Rar	nk Action	Status	Due/Comple	zte Result	
36	Circuit ID: 12402 MILFORD 24-(	02		Location: Bethlehem	CPI: 413
	4/8/2008: Circuit outage data analysis - WPC πot o qtr. list.	on preceding Complete	ed 5/7/2008	There were 2 breaker outages in the past yea OCR 65484S40036 which caused many cust outages.	ar. Also two operations of comers to have seen 4
	7/15/2008: Circuit outage data analysis.	Complete	ed 8/15/2008	Inconclusive. Monitor future performance. The breaker outage on 8/20/2007 interrupting 138 outage on 9/20/2007 interrupted 1379 custom 12/16/2007 interrupted 351 customers. A ve interrupted 844 customers. An OCR outage customers.	his circuit experienced a 36 customers. A breaker ners. An OCR outage on hicle hit on 1/28/2008 on 2/1/2008 interrupted 395
	Circuit outage data analysis - WPC not on precedin	ng qtr. list. Complete	ed 2/28/2009	Inconclusive. Monitor future performance.	
	7/10/2009: Circuit outage data analysis - WPC not preceding qtr. list.	on Complete	ed 8/31/2009	Inconclusive. Monitor future performance,	
37	Circuit ID: 26001 WEST DAMASCUS 60-0			Location: Pocono	CPI: 406
	11/22/2005: Monitor future performance.	Ongoin	g 11/30/2009	Reduced outage risk, Circuit has been off WPC for 6 quarters.	
	2/21/2006: Install animal guard(s). Animal guards installed as customers are restored following an ani outage	will be Ongoin imal-related	g	Animat guards will prevent animal contact an interruptions.	d reduce customer
	1/13/2009: Circuit outage data analysis - WPC not preceding qtr. list.	on Complet	ed 2/28/2009	Inconclusive. Monitor future performance. M outages during storms in June and October 2 to the CPI for this circuit. 500,000 customer i of 2008.	lany small long duration 2008 significantly contributed minutes were lost during Q4
	Circuit outage data analysis - WPC not on precedin	ng qtr. list. Complet	ed 11/30/2009	This circuit experienced a circuit breaker out vehicle hitting a pole. This circuit has had m due to the remote location of the circuit.	age during Q3 due to a any long duration outages
38	Circuit ID: 40602 PINE GROVE	06-02		Location: Central	CPI: 389
	Expanded Operational Review.	Complete	ed 9/4/2009	Reduced outage duration. Identified location	is to install fault indicators.
	7/10/2009: Circuit outage data analysis - WPC not preceding qtr. list.	on Complet	ed 8/31/2009	Inconclusive. Monitor future performance. The were due to trees, not trimming related. SAI	ne majority of the outages DI was 37% of the CPI score.
	9/4/2009: Monitor future performance. Initiated wo fault indicators monitoring an inaccessible section a primary underground dip.	rk to install Scheduled and an	d for 6/30/2010		

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Ran	ık Action		Status	Due/Comple	te Result	
39	Circuit ID: 43104	SOUTH MILTON 31-04			Location: Sunbury	CPI: 386
	Expanded Operational Rev	view.	Completed	12/31/2009	Reduced outage risk.	
	Circuit outage data analysi	is - WPC not on preceding qtr. list.	Completed	1 <i>2/1/</i> 2009	The South Milton 31-04 feeder was discussed at WPC meeting on 12/1/09. This circuit is categoridue to a large number of customers interrupted for This occurred during an August 9 wind storm whethe substation was affected. This single event is circuit to be on the WPC list. Key improvement i include evaluating the possibility of installing add devices. In 2009, animal guard was installed at a in Milton Boro.	Susquehanna Region's ized as a worst performer or more than 4 hours. en the circuit breaker at the sole driver for this nitiatives on this line itional sectionalizing all transformer locations
40	Circuit ID: 16401	MOUNT POCONO 64-01			Location: Pocono	CPI: 384
	Continue to monitor future	performance.	Ongoing			
	Circuit outage data analysi	is - WPC not on preceding qtr. list,	Completed	8/31/2009	One breaker outage and several long duration ou 2008 snowstorm greatly contributed to the high C	itages during the October CPI of this circuits
	1/18/2010: Circuit outage preceding qtr. list.	data analysis - WPC not on	Scheduled for	3/31/2010	A breaker outage in Q3 2009 and several single poutages greatly contributed to the high CPI of this	phase taps with multiple s circuit.
41	Circuit ID: 41701	LOGANTON 17-01			Location: Susquehanna	CPI: 375
	3/21/2008: Thermographic	c inspection-OH line.	Completed	3/21/2008	Reduced outage risk, one item found will be care	ed for in Q2
	5/10/2008: Line inspection equipment problems	n-equipment. Patrol line for	Completed	7/10/2008	Reduced outage risk, 15 locations to be cared for	7
	Expanded Operational Rev	view.	Completed	12/31/2009	Reduced outage risk.	
	7/10/2009: Circuit outage preceding qtr. list.	data analysis - WPC not on	Completed	8/25/2009	Reduced outage risk. The Loganton 17-01 circui Susquehanna Region's 2009 Q2 Worst Performi August 25, 2009. This line is a worst performer a customers experiencing an interruption longer th SAIDI contribution. One outage was due to a po interrupting the entire line for nearly 5 hours. Thi ties. This line is not typically a worst performer off the list within 2 quartes, assuming good performer	t was discussed at ng Circuits meeting on due to a large number of an 4 hours and a high le hit by a vehicle is circuit is radial with no and is expected to drop ormance moving forward.

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Rank Action	Status	Due/Comple	te Result	
42 Circuit ID: 40201 BEAR GAP 02-01	n anti-rice annation - 16 hay10 h annat 18 h	i unitalisetis Mittagangali anna Timor kita s	Location: Central	CPI: 371
7/19/2007: Load balancing. Phase swapping to take place to balance load @34408N24524. Balancing single phase off of the two phase @ 34307N24534.	Completed	4/30/2008	Increase power quality.	
7/19/2007: Install a voltage regulator @ 37173N26626.	Completed	4/30/2008	Increase power quality.	
7/19/2007: Install a 100 Fixed Capacitor Bank @ 37116N27251.	Completed	4/30/2008	Reduced outage risk. This is to improve vol	tage on this single phase tap.
1/9/2008: Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	2/28/2008	Majority of outages were due to equipment far related.	ailures and trees, not trimming
3/24/2008: Thermographic inspection-OH line. Thermographic inspection of all two phase and three phase overhead line.	Completed	4/24/2008	No hot spots identified	
Relocate inaccessible portions of single phase tap after the Fisherdale Tap OCR	Completed	9/4/2008	Reduced outage duration.	
5/2/2008: Relocate inaccessible line.	Completed	9/1/2009	Reduced outage risk. Drag-O-Way tap - bui inaccessible through woods.	ld tie along road and remove
2/13/2009: Expanded Operational Review.	Completed	5/27/2009	Initiated work to install fault indicators, tap fu	ises, and an OCR.
4/20/2009: Monitor future performance. Install 7 new fault indicators to help reduce outage durations.	Scheduled for	7/9/2010		
4/20/2009: Install fuse(s). Install tap fuse to reduce customer outages. Fuse installation can reduce customers interrupted from 103 to 18.	Scheduled for	7/16/2010	Inconclusive. Monitor future performance.	
5/27/2009: Install 1 phase OCR(s). Install OCR to replace overloaded tap fuse.	Scheduled for	8/13/2010		
6/15/2009: Relocate inaccessible line. Relocate three phase line to main road and remove inaccessible single-phase tap.	Scheduled for	7/16/2010	Inconclusive Monitor future performance.	
Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	11/30/2009	SAIDI was 50% of the CPI score. The major trees, not trimming related. Last tree trimmin completed on 12/2004.	ity of the outages were due to ng on this feeder was

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 Rank
 Action
 Status
 Due/Complete
 Result

 43
 Circuit ID: 64802
 MOUNT NEBO
 48.02
 Location: Lancaster Fast
 CPI: 364

IJ	CIICURID: 04002 MOUNT NEDO 40-02			Location: Lancaster Last	<b>UI</b> 1.	304
	12/18/2007: Evaluate potential ties. Trevor Siegfried will investigate future fine loadings to help justify potential ties to the Mt Nebo 48-2 line	Completed	2/1/2008	Reduced customer count affected by each outage. further needed	' justificatio	n
	5/19/2008: Line inspection-equipment. LMI Inspection to be performed on 3 phase line - 6.6 miles total	Completed	12/31/2009	Reduced outage risk.		
	Expanded Operational Review. Voltage Profile Completed 4/21/09 Reliability Analysis Completed 4/21/09	Completed	12/31/2009	Reduced outage risk.		
	See subsequent records for reliability work requests					
	4/28/2009: Monitor future performance. Install 150 kVA Regulator n/o 39518s20247 (Node 13),	Scheduled for	3/31/2010	Inconclusive, Monitor future performance.		
	7/10/2009: Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	8/14/2009	Reduced customer count affected by each outage. Discu constructing tie to West Willow and constructing substation to reduce outage duration and customers affected.	ssions aroi n in Martic	und ville
	11/3/2009: Install 3 phase OCR(s). Replace Hydraulic OCR with Telemetric Electronic OCR 40077s20754	Completed	10/29/2009	Reduced outage duration.		
	1/15/2010: Line inspection-equipment, Complete Line Inspection on multiphase line sections - 6.6 miles total	Completed	8/10/2009	Reduced outage risk.		
	1/15/2010: Perform line maintenance identified by line inspection. WR 538735 - Replace Deteriorated xarm	Completed	12/31/2009	Reduced outage risk.		
44	Circuit ID: 64704 LITITZ 47-04			Location: Lancaster East	CPI:	355
	1/13/2010: Circuit outage data analysis - WPC not on preceding otr. list.	Scheduled for	2/28/2010			
45	Circuit ID: 42401 GIRARD MANOR 24-01			Location: Central	CPI:	353
	2/13/2009: Expanded Operational Review.	Completed	5/12/2009	Identified locations to install 5 fault indicators and 1 tap fu	se.	
	5/12/2009: Monitor future performance. Install 5 fault indicators to identify faults in inaccessible portions of the line.	Scheduled for	7/23/2010			
	5/12/2009: Install fuse(s). Install single phase tap fuse to reduce exposure risk.	Scheduled for	5/14/2010			
	Circuit outage data analysis - WPC not on preceding qtr. list.	Completed	11/30/2009	SAIDI was 34% of the CPI score. The majority of the outa trees, not trimming related. Last tree trimming on this feed completed in 2005.	ges were o ler was	lue to

Rank	Action	Status	Due/Comple	te Result	
46 C	Circuit ID: 60803 BUCK 08-03			Location: Lancaster East	CPI: 353
1/ C R	(2/2009: Expanded Operational Review, Voltage Profile ompleted 8/18/09 eliabillity Analysis Completed 8/18/09	EOR initiated	12/31/2009	Reduced outage risk.	
R	eliability work requests under field review				
1, In	/15/2010: Line inspection-equipment. Complete Line spection on multiphase line sections - 15.7 miles total	Completed	1/30/2009	Reduced outage risk.	
1/ in P <sup>e</sup>	/15/2010: Perform line maintenance identified by line spection. Initiated 18 work requests for deteriorated oles/arms/hardware at 40 locations.	Scheduled for	1/29/2010	Reduced outage risk.	
47 C	Circuit ID: 14007 SELLERSVILLE 40-	07		Location: Bethlehem	CPI: 352
1. P	/13/2010: Circuit outage data analysis - WPC not on receding qtr. list.	Scheduled for	2/28/2010		
48 C	Circuit ID: 46302 ROHRSBURG 63-02			Location: Sunbury	CPI: 352
4, іл	/3/2007: Perform line maintenance identified by line spection.	Completed	8/15/2008	Reduced outage risk.	
1	2/31/2007: Expanded Operational Review.	Completed	9/30/2008	No voltage issues, looking at several reliability	projects
1) T IM	2/31/2007: Thermographic inspection-OH line. hermographic inspection of all 2 phase and 3 phase overhi ne.	Completed ead	3/10/2008	No hot spots identified.	
1. q	/9/2008: Circuit outage data analysis - WPC not on preced tr. list.	ling Completed	2/15/2008	WPC Team reviewed circuit for reliability. This remain a WPC due to 11/18-11/20 storm. The improvement projects and additional sectionaliz	circuit will most likely team identified several zing.
3. C fu n	/13/2008: Install 1 phase OCR(s). Replace fuse with 1 ph OCR at 37430N35717, Close NO at 37408N35600. Install Jsing and feed this tap from north to south. Install new NO ear 37420N34855.	ase Scheduled for slot	6/1/2010	Reduced customer count affected by each outa	age.
3 ta	/13/2008: Relocate inaccessible line. Relocate inaccessib aps from fuse 37423N35271 (Savage Hill Rd).	le Scheduled for	6/1/2010	Reduced outage duration.	
7. q	/9/2008: Circuit outage data analysis - WPC not on preced tr. list.	ding Completed	8/15/2008	Reduced outage risk. Reviewed circuit perform meeting on 8/12/08. This circuit has had many outside PPL right of way. One small reliability inaccessible taps has been identified (Savage	nance at SUSQ WPC r interruptions due to trees project to relocate Hill Rd).

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Rai	nk Action		Status	Due/Comple	te Result		***	(free
49	Circuit ID: 474	103 PENNS 74-03		annan an a	Location:	Sunbury	CPI:	351
	3/24/2008: Thermogr	raphic inspection-OH line.	Completed	3/13/2008	Reduced outag results from Hu phase and three	Reduced outage risk. Thermovision completed. Awaiting summary of results from Hurley and Associates. Thermographic inspection of all two phase and three phase overhead line.		
	5/1/2008: Load balancing.		Canceled	6/30/2008	Load Balancing to accomadate line transfer of customers from Middled 42903 to the Penns 47403. Transfering load and customers to better analyze loading issues and flickering light issues in the town of Kream			ileburg er amer.
	5/1/2008: Reconduct	or line.	Completed	9/11/2008	Reduced outag 4/0 cu to 477 A	e risk. Reconnductored appr CSR to increase load capabi	nductored approximately seven spans from use load capability.	
	Install LBAS(s).		Completed	5/1/2009	Installing LBAS from Middlebury customers to be the town of Kre	BAS (21573S53611) to accomadate line transfer of customers eburg 42903 to the Penns 47403. Transfering load and to better analyze loading issues and flickering light issues in Kreamer		omers Is in
	5/1/2008: Install sect	ionalizers. Installed Voltage Regulator	Completed	6/2/2008	Reduced outag 441340 to acco 42903 to the Pe analyze loading Regulator will a Kreamer on Fre	Je risk. Installed Voltage Reg mmodate line transfer of cus enns 47403. Transfering load g issues and flickering light is ussist in regulating voltage for eeburg Road.	ulator (21762S53414) of stomers from Middleburg d and customers to bett sues in the town of Krea r the residence south of	n WR g er amer.
	1/13/2009: Circuit ou preceding qtr. list.	tage data analysis - WPC not on	Completed	2/24/2009	Reduced outag Region's Worst circuit is a Wors experiencing m customers. Th within the past 100 customers pattern of poor typically not be the 3rd Quarter	e risk. The Penns #3 line was t Performing Circuit Meeting of st Performing Circuit because fore than 3 outages. This line e substation circuit breaker w 12 months, along with severa each. These outages have 1 performance is expected to of een a worst performer, and is r of 2008 is dropped from the	as discussed at Susque on February 24, 2009. e of the number of custo e serves about 360 vas interrupted two time al tap fuses impacting a been isolated cases and continue. This circuit he expected drop off the list calculation	hanna This omers s bout d no as st once
	Reconductor line.		Completed	11/30/2009	Reduced outag	je risk.		
50	Circuit ID: 271	01 GREENFIELD 71-01			Location:	Scranton	CPI	: 344
	Circuit outage data ar	nalysis - WPC not on preceding qtr. list.	Completed	1 1/30/2009	Inconclusive. N Q3 2009 due to large OCR outs and one of whit	Aonitor future performance. A o an animal contact at the sul ages, 2 of which were caused ch was caused by a failed ins	A breaker outage occurr bstation. There have be d by trees outside the R sulator.	ed in en 3 OW
	1/14/2010: Relocate inaccessible 3 phase	inaccessible line. Investigate relocating section of line.	Scheduled for	3/31/2010				

Rank	Action	Status	Due/Comple	ete Result	سینی	****
51 Cir	cuit ID: 28001 TAFTON 80-01	ವರ್ಷದು ಮಹಾಳ ಬಂದರೆಂದು ಬಿ ಬಿಂಗೆ? ಕಾರ್ಯ	a ah uk ukanaryan kan andangadh	Location: Pocono	CPI:	340
1/2/2	007: Load balancing.	Completed	5/30/2008	Reduced outage risk. Identified 3 phase swaps w balance current and voltage on the 3 phase line.	rith single phase taps	to
4/8/2 qtr. li	008: Circuit outage data analysis - WPC not on preceding st.	Completed	5/31/2008	Reduced outage risk. A large long duration OCR contributed to the CPI for this circuit.	outage in Q1 2008	
1/13/ prece	2009: Circuit outage data analysis - WPC not on eding qtr. list.	Completed	2/28/2009	This circuit exprienced a long duration breaker ou long duration outages during the October 2008 sn significantly contributed to the CPI for this circuit. customer minutes were lost during this storm.	tage and many small cowstorm which Over 1.9 million	er
4/20/	2009: Monitor future performance.	Ongoing		Inconclusive. Monitor future performance. Circuit in Q1 2009. In Q2 2009 there have been several outages due trees from outside the ROW contact thunderstorms. Circuit performance improved in C	performance improv small long duration ing the line during 23 2009.	ed
52 Cir	cuit ID: 58302 NOTTINGHAM 83-02			Location: West Shore	CPI:	338
1/1/2	008: Thermographic inspection-OH line.	Completed	4/30/2008	Reduced outage risk.		
3/17/ Com Work	2009: Expanded Operational Review. Reliability Review pleted 8/11/09. Voltage Profile Completed 7/09/09. Field (Request Review in Progress.	EOR initiated	12/31/2009			
Circu Cust contr patro	it outage data analysis - WPC not on preceding qtr. list. omers experiencing greater than 3 interruptions major ibuting factor, trees out of the right of way. Forester alled and hot spotted.	Completed	5/31/2009	Reduced outage risk.		
11/1	1/2009: Install fuse(s). Install 2 tap fuses	Scheduled for	12/31/2010	Reduced customer count affected by each outage	e <i>.</i>	
53 Cir	cuit ID: 60406 DILLERVILLE 04-06			Location: Lancaster	CPI:	335
1/2/2 Com Volta	2008: Expanded Operational Review. Reliability Analysis pleted 1/18/08 ige Profile Complete 7/30/08	Completed	7/30/2008	Reduced outage risk.		
No re	eliability work needed					
2/1/2 Inspe	2008: Thermographic inspection-OH line. Thermographic ection - 2008	Completed	3/31/2008	Reduced outage risk.		
54 Cir	cuit ID: 58401 MOUNT ROCK 84-01			Location: West Shore	CPI:	331
1/1/2 Com	2008: Expanded Operational Review. Reliability Review pleted 7/7/08, Voltage Profile Completed 10/29/08.	Completed	11/10/2008	Reduced outage risk.		
1/1/2	2008: Thermographic inspection-OH line.	Completed	4/30/2008	Reduced outage risk.		
insta	ll fuse(s). Install 6 new tap fuses	Completed	11/5/2009	Reduced customer count affected by each outag	e.	

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Rank Action	Status	Due/Comple	te Result	
55 Circuit ID: 26604 BROOKSIDE 66-04	na mana na sana na san	ann - eo se an an an an Anna an Anna seo ann	Location: Scranton	CPI: 331
Expanded Operational Review.	Completed	12/31/2008	Reduced outage risk.	
Tree trimming. Lake Winola portion of the line is being trimmed.	Completed	8/30/2008	Reduced outage risk.	
Improve sectionalizing capability. Sectionalizing is being reviewed for this circuit under the new line arrangement by the field engineer.	Completed	8/30/2008	Reduced outage duration.	
3/20/2008: Relocate inaccessible line. We relocated 54564N51255 away from the line of traffic on SR6. This work is being done on WR 434252.	Completed	5/31/2008	Reduced outage risk.	
1/14/2010: Circuit outage data analysis - WPC not on preceding qtr. list.	Scheduled for	3/31/2010	One large breaker outage in Q2 2009 greatly of this circuit. The outage was caused by a trea and lost over 900,000 customer minutes.	contributed to the high CPI e from outside the ROW
56 Circuit ID: 51804 EBENEZER 18-04			Location: Harrisburg	CPI: 325
1/13/2010: Circuit outage data analysis - WPC not on preceding qtr. list.	Scheduled for	2/28/2010		

5) A rolling 12-month breakdown and analysis of outage causes during the preceding quarter, including the number and percentage of service outages, the number of customers interrupted, and customer interruption minutes categorized by outage cause such as equipment failure, animal contact, tree related, and so forth. Proposed solutions to identified service problems shall be reported.

The following table shows a breakdown of service interruption causes for the 12 months ended at the current quarter. The top three causes (Equipment Failure, Trees – Not Trimming Related, and Animals), which are based on the percentage of cases of trouble, are highlighted in the table. Service interruption definitions are provided in Appendix B. PPL Electric's maintenance programs focus on corrective actions to address controllable interruptions (e.g., trees and equipment failure).

Cause Description	Trouble Cases <sup>6</sup>	Percent of Trouble Cases	Customer Interruptions <sup>7</sup>	Percent of Customer Interruptions	Customer Minutes	Percent of Customer Minutes
Improper Design	0	0.00%	0	0.00%	0	0.00%
Improper Installation	2	0.01%	1,576	0.13%	139,668	0.10%
Improper Operation	1	0.01%	1,342	0.11%	10,749	0.01%
Trees - Inadequate Trimming	630	3.61%	27,832	2.27%	4,181,678	2.92%
Trees - Not Trimming Related	4,262	24.40%	353,734	28.87%	61,132,760	42.68%
Animals	3,904	22.35%	98,734	8.06%	6,297,864	4.40%
Vehicles	699	4.00%	125,318	10.23%	11,537,379	8.06%
Contact/Dig-in	167	0.96%	22,904	1.87%	1,147,492	0.80%
Equipment Failure	5,288	30.27%	422,248	34.46%	43,460,905	30.34%
Directed by Non-PPL Authority	142	0.81%	5,890	0.48%	563,643	0.39%
Other - Controllable	114	0.65%	2,367	0.19%	315,428	0.22%
Nothing Found	1,666	9.54%	94,416	7.70%	7,443,073	5.20%
Other - Public	113	0.65%	10,858	0.89%	902,014	0.63%
Other - Non-Controllable	481	2.75%	58,200	4.75%	6,093,931	4.25%
Total	17,469	100.00%	1,225,419	100.00%	143,226,586	100.00%

<sup>&</sup>lt;sup>6</sup> Trouble cases are the number of sustained customer service interruptions (i.e., service outages).

<sup>&</sup>lt;sup>7</sup> The data reflects the number of customers interrupted for each interruption event summed for all events, also known as customer interruptions. If a customer is affected by three separate cases of trouble, that customer represents three customer interruptions, but only one customer interrupted.

Analysis of causes contributing to the majority of service interruptions:

Weather Conditions: PPL Electric records weather conditions, such as wind or lightning, as contributing factors to service interruptions, but does not code them as direct interruption causes. Therefore, some fluctuations in cause categories, especially tree- and equipment-related causes, are attributable to weather variations. PPL Electric has experienced an elevated level of both reportable and non-reportable storms during this reporting period.

**Trees – Inadequate Trimming:** On January 1, 2010, PPL Electric initiated a prescriptive tree trimming program that moved maintenance trimming cycles to five years for all circuits in PPL Electric's northern territory and four years for all circuits in PPL Electric's southern territory. These cycles are inclusive of both urban and rural circuits and will shorten the overall average trimming cycle for the system.

**Trees – Not Trimming Related:** Although their effect on reliability is significant, tree outages not related to trimming generally are caused by trees falling from outside of PPL Electric's rights-of-way, and generally are not controllable.

**Animals:** Animals accounted for about 22% of PPL Electric's cases of trouble. Although this represents a significant number of cases, the effect on SAIFI and CAIDI is small because nearly 85% of the number of cases of trouble is associated with individual distribution transformers. However, when animal contacts affect substation equipment, the effect may be widespread and potentially can interrupt thousands of customers on multiple circuits. In addition to guarding new distribution transformers, in 2009, PPL Electric initiated distribution and substation animal guarding programs to systematically focus on protecting existing facilities most at risk of incurring animal-caused interruptions.

**Vehicles:** Although vehicles cause a small percentage of the number of cases of trouble, they accounted for a large percentage of customer interruptions and customer minutes, because main distribution lines generally are located along major thoroughfares with higher traffic densities. In addition, vehicle-related cases often result in extended repair times to replace broken poles. Service interruptions due to vehicles are on the rise as a result of an increasing number of drivers and vehicles on the road. PPL Electric has a program to identify and relocate poles that are subject to multiple vehicle hits.

**Equipment Failure:** Equipment failure is one of the largest single contributors to the number of cases of trouble, customer interruptions and customer minutes. However, approximately 46% of the cases of trouble, 50% of the customer interruptions and 58% of the customer minutes attributed to equipment failure were weather-related and, as such, are not considered to be indicators of equipment condition or performance. In 2009, to help reduce the risk of incurring service interruptions due to equipment failures, PPL Electric initiated an Asset Optimization Strategy project to assess equipment health and generate a long-term plan for proactive infrastructure replacement and enhanced maintenance practices. It is anticipated that, over time, this strategy will improve reliability performance as it relates to PPL Electric's distribution, substation and transmission assets.

**Nothing Found:** This description is recorded when the responding crew can find no cause for the interruption. That is, when there is no evidence of equipment failure, damage, or contact after a line patrol is completed. For example, during heavy thunderstorms, when a

line fuse blows or a single-phase OCR locks open and when closed for test, the fuse holds, or the OCR remains closed, and a patrol reveals nothing.

6) Quarterly and year-to-date information on progress toward meeting transmission and distribution inspection and maintenance goals/objectives. (For first, second and third quarter reports only.)

This information will be provided in the Annual Report.

7) Quarterly and year-to-date information on budgeted versus actual transmission and distribution operation and maintenance expenditures in total and detailed by the EDC's own functional account code or FERC account code as available. (For first, second and third quarter reports only.)

This information will be provided in the Annual Report.

8) Quarterly and year-to-date information on budgeted versus actual transmission and distribution capital expenditures in total and detailed by the EDC's own functional account code or FERC account code as available. (For first, second and third quarter reports only.)

This information will be provided in the Annual Report.

# 9) Dedicated staffing levels for transmission and distribution operation and maintenance at the end of the quarter, in total and by specific category (for example, linemen, technician and electrician).

The following table shows the dedicated staffing levels as of the end of the quarter. Job descriptions are provided in Appendix C.

Transmission and Distribution (T&D)		
Lineman Leader	80	
Journeyman Lineman	147	
Journeyman Lineman-Trainee	153	
Helper	30	
Groundhand	16	
Troubleman	54	
T&D Total	480	
Electrical		
Elect Leaders-UG	9	
Elect Leaders-Net	9	
Elect Leaders-Sub	25	
Journeyman Elect-UG	26	
Journeyman Elect-Net	8	
Journeyman Elect-Sub	49	
Journeyman Elect Trainee-UG	10	
Journeyman Elect Trainee-Net	12	
Journeyman Elect Trainee	42	
Helper	15	
Laborer-Network	0	
Laborer-Substation	2	
Electrical Total	207	
Overall Total	687	

## <u>Appendix A</u>

# **PPL Electric Utilities Corporation** Worst Performing Circuit Definition

PPL Electric uses a Circuit Performance Index (CPI) to define the worst performing circuits on its system. The CPI covers about 1,100 feeders across the PPL Electric service area.

The CPI is derived using the following statistics and weighting factors:

- SAIDI 35%
- SAIFI 30%
- Fraction of customers interrupted more than three times 20%
- Fraction of customers with an interruption over four hours 15%

Major Events, momentary interruptions, and planned prearranged jobs are excluded.

The CPI values are obtained by multiplying the individual feeder statistics by coefficients based on the 5-year period, 2001-2005. Average values over this period were:

- SAIDI 121.9 per customer per year
- SAIFI 0.929 per customer per year
- Fraction of customers interrupted more than three times 4% per feeder per year
- Fraction of customers with an interruption over four hours 10% per feeder per year

A hypothetical feeder with the values of SAIDI, SAIFI, and the fraction of customers interrupted more than three times, and the fraction of customers with an interruption over four hours, equal to the 5-year averages would have a CPI value of 100. Any variations in the values of the above criteria would affect the CPI values in accordance with the weighting factors.

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Appendix B

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# **PPL Electric Utilities Corporation** Service Interruption Definitions

<u>**Trouble Definitions:**</u> After field investigations and repairs are complete, PPL Electric linemen report the cause of each case of trouble. This information is electronically recorded as a "cause code" number when the job record is closed. PPL Electric cause codes are subdivided into four general classifications: Controllable, Non-Controllable, Public and Non-PPL. The definitions of the cause codes are:

10 – Improper Design	Controllable	• When an employee or agent of PPL Electric is responsible for an error of commission or omission in the engineering or design of the distribution system. (Facility Records personnel use only)
11 – Improper Installation	Controllable	• When an employee or agent of PPL Electric is responsible for an error of commission or omission in the construction or installation of the distribution system. (Facility Records personnel use only)
12 – Improper Operation	Controllable	• When an employee or agent of PPL Electric is responsible for an error of commission or omission in the operation or maintenance of the distribution system. (Facility Records personnel use only)
30 – Trees – Inadequate Trimming	Controllable	• Outages resulting from the lack of adequate tree trimming (within the Right of Way).
35 – Trees – Not Trimming Related	Non- Controllable	• Outages due to trees, but not related to lack of proper tree trimming maintenance. This includes danger timber blown into PPL Electric facilities, and trees or limbs felled by the public.
40 – Animals	Controllable	• Any outage caused by an animal directly or indirectly coming in contact with PPL Electric facilities. This includes birds, squirrels, raccoons, snakes, cows, etc.
41 – Vehicles	Public	• When cars, trucks or other types of vehicles or their cargoes strike facilities causing a problem.
51 – Contact/Dig-in	Public	<ul> <li>When work in the vicinity of energized overhead facilities results in interruptions due to accidental contact by cranes, shovels, TV antennas, construction equipment (lumber, siding, ladders, scaffolding, roofing, etc.).</li> <li>When contact is made by a non-employee with an underground facility causing interruption</li> </ul>

## Appendix B

60 – Equipment Failure	Controllable	<ul> <li>Outages resulting from equipment failures caused by corrosion or contamination from build-up of materials, such as cement dust or other pollutants.</li> <li>Outages resulting from a component wearing out due to age or exposure, including fuse tearing or breaking.</li> <li>Outages resulting from a component or substance comprising a piece of equipment failing to perform its intended function.</li> <li>Outages resulting from a failure that appears to be the result of a manufacturer's defect or cannot be described by any other code indicating the specific type of failure.</li> </ul>
77 – Non-PPL Problem – Other	Non-PPL	• Where no PPL Electric or customer facilities were affected, and no repair or restoration was carried out on PPL Electric equipment.
78 – Non-PPL Problem – Customer Facility	Non-PPL	• Where no PPL Electric facilities were affected, and no repair or restoration was carried out on PPL Electric equipment.
80 – Scheduled Outage <sup>8</sup>	Controllable	<ul> <li>Interruptions under the control of a PPL Electric switchman or direction of a PPL Electric System Operator for the purpose of performing <u>scheduled</u> maintenance, repairs and capacity replacements for the safety of personnel and the protection of equipment.</li> <li>Includes requests from customers for interruption of PPL Electric facilities</li> </ul>
85 – Directed by Non- PPL Authority	Non- Controllable	<ul> <li>Interruptions under the control of a PPL Electric switchman or direction of a PPL Electric System Operator for the purpose of dropping load or isolating facilities upon request during emergency situations.</li> <li>Interruptions which cannot be postponed or scheduled for a later time, and include situations like load curtailment during system emergencies, and requests of civil authorities such as fire departments, police departments, civil defense, etc. for interruption of PPL Electric facilities.</li> </ul>

<sup>&</sup>lt;sup>8</sup> Interruptions under the control of a PPL Electric switchman or the direction of a PPL Electric System Operator for the purpose of isolating damaged facilities to make repairs are reported using the initial cause of the damage when the interruption is taken <u>immediately</u>, but are reported as scheduled outage when the interruption is <u>postponed</u>.

# <u>Appendix B</u>

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90 – Other – Controllable (Lineman provides explanation)	Controllable	• Interruptions caused by phase to phase or phase to neutral contacts, resulting from sleet or ice dropping off conductors, galloping conductors, or any other phase to phase or phase to neutral contact where weather is a factor.
		• Interruptions resulting from excessive load that cause that facility to fail.
		• When restoration of service to a facility, which had been interrupted for repairs or other reasons, causes an additional interruption to another facility which had not been involved in the initial interruptions.
		• Controllable interruptions or Power Service Problems whose cause is not described by one of the previous controllable cause codes.
96 – Nothing Found	Non-	• When no cause for the interruption can be found.
	Controllable	• When there is no evidence of equipment failure, damage or contact after line patrol is completed. This could be the case during a period of heavy thunder and lightning, when a line fuse blows or a single phase OCR locks open.
		• When closed for test, the fuse holds or the OCR remains closed. A patrol of the tap reveals nothing.
98 – Other Public (Lineman provides explanation)	Public	• All outages resulting from gunfire, civil disorder, objects thrown, or any other act intentionally committed for the purpose of disrupting service or damaging company facilities.
99 – Other – Non- Controllable (Lineman provides explanation)	Non- Controllable	• Any outage occurring because of a fire, flood or a situation that develops as a result of a fire or flood. Do not use when facilities are de-energized at the request of civil authorities.
		• When an interruption is caused by objects other than trees, such as kites, balls, model airplanes, roofing material, or fences, being accidentally blown or thrown into overhead facilities.
		• All problems caused by contact of energized equipment with facilities of other attached companies or by trouble on customer owned equipment.
		• Interruptions or Power Service Problems whose cause is not described by one of the previous non-controllable cause codes, but is not affected by a PPL Electric employee's decisions.

# PPL Electric Utilities Corporation Job Descriptions

### Transmission and Distribution

Groundhand	• Performs manual labor and assists employees in higher job classifications.
Helper	• Performs semi-skilled labor at any work location on de-energized overhead and underground transmission, and distribution facilities to prepare the employee for entrance into the Journeyman Lineman Apprenticeship Program.
Journeyman Lineman	• Works by himself or as part of a crew on the maintenance, operation, and construction activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.
Journeyman Lineman-Trainee	• Works by himself or as part of a crew on the maintenance, operation, and construction activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.
Lineman Leader	• Responsible for completing assigned work by directing one or multiple groups of employees involved in the maintenance, operation, and construction activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.
	• Engage in and perform work along with providing the necessary leadership, all-around knowledge, initiative, judgment, and experience to produce a quality job.
	• Performs all the direct duties of the Journeyman Lineman when not acting as a Lineman Leader.
Troubleman	• Investigates and resolves trouble calls, voltage abnormalities on transmission and distribution systems associated with, but not limited to, PPL Electric facilities.

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PA PUBLIC UTILITY COMMISSION SECRETARY'S BUREAU

# <u>Appendix C</u>

### Electrical

Electrician Leader - Substation - Network - Underground	<ul> <li>Responsible for completing assigned work by directing one or multiple groups of employees involved in the construction and maintenance activities of the transmission and distribution systems associated with, but not limited to, PPL Electric facilities.</li> <li>Engage in and perform work along with providing the necessary leadership, all-around knowledge, initiative, judgment, and experience to produce a quality job.</li> <li>Performs all direct duties of the Journeyman Electrician when not acting as a leader.</li> </ul>
Helper - Substation - Network - Underground	• Performs manual labor at any work location including those areas containing non-exposed energized electrical equipment, and to prepare the employee for entrance into the Apprenticeship Program.
Laborer - Substation - Network - Underground	<ul> <li>Performs manual labor and assists employees in higher job classifications.</li> </ul>
Journeyman Electrician - Substation - Network - Underground	<ul> <li>Normally under limited supervision performs and is responsible for work associated with, but not limited to, PPL Electric facilities involving the highest degree of skill in construction and maintenance work associated with substations, LTN or underground distribution and transmission.</li> <li>Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the Field Services electrical discipline.</li> </ul>
Journeyman Electrician - Trainee - Substation - Network - Underground	<ul> <li>Normally under limited supervision performs and is responsible for work associated with, but not limited to, PPL Electric facilities involving the highest degree of skill in construction and maintenance work associated with substations, LTN or underground distribution and transmission.</li> <li>Uses microprocessor based equipment for troubleshooting and revising relay logic and its control systems related to the Field Services electrical discipline.</li> </ul>



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