

COMMONWEALTH OF KENTUCKY  
BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

The Application of Kentucky Power Company for: )  
(1) A General Adjustment of Its Rates for Electric )  
Service; (2) An Order Approving Its 2014 ) Case No. 2014-00396  
Environmental Compliance Plan; (3) An Order )  
Approving Its Tariffs and Riders; and (4) An Order )  
Granting All Other Required Approvals and Relief )

KENTUCKY POWER COMPANY'S 2018 DISTRIBUTION  
VEGETATION MANAGEMENT PLAN

September 27, 2017



<b>Table 2: 2017 Projected Plan to Transition to 5 Year Cycle - Funding Requirements</b>							
	2017	2018	2019	2020	2021	2022	2023
Yr 1 Miles			\$21,283,946				
Yr 2 Miles				\$21,472,777			
Yr 3 Miles	\$4,005,000				\$21,688,685		
Yr 4 Miles		\$19,219,118				\$21,881,312	
Yr 5 Miles							\$22,101,559
Yr 6 Miles							
Yr 7 Miles							
Yr 8 Miles	\$23,656,060						
Yr 9 Miles		\$2,419,648					
<b>Program Miles</b>	<b>\$27,661,060</b>	<b>\$21,638,766</b>	<b>\$21,283,946</b>	<b>\$21,472,777</b>	<b>\$21,688,685</b>	<b>\$21,881,312</b>	<b>\$22,101,559</b>
			Task 1 - Initial Re-clear				
			Task 2 - Interim Re-Clear				
			Task 3 - 5 Year Cycle Trim				

**2017 Vegetation Management Activities through August 31, 2017**

As of the end of August 2017, the Company completed 850.4 miles, or approximately 63.8%, of the total 1,334 miles of Task 1 clearance work targeted for completion in 2017. Task 1 O&M expenditures through the first eight months were \$15,590,951, or 66% of the 2017 annual budget (\$23,656,060) for Task 1 work.

During this same time period, the Company completed 228.3 miles or 72.9% of the total 313 miles of Task 2 clearance work targeted for the completion in 2017. Task 2 O&M expenditures through the first eight months of 2017 were \$3,224,357 or 80.5% of the 2017 annual budget (\$4,005,000) for Task 2 work.

The 2017 year-to-date Task 1 and Task 2 work vs. year-end 2017 Task 1 and Task 2 goals for each of the Company’s three districts are shown below in Table 3. Likewise, the 2017 target and year-to-date Task 1 and Task 2 expenditures for each district are set forth below in Table 4.

<b>Table 3: 2017 Plan (YTD August Target vs Actual Mileage) for Task 1 and Task 2</b>						
Districts	2017 Targeted Task 1 Miles	2017 Task 1 Mileage (Jan - Aug)	2017 Task 1 Percent Mileage Complete	2017 Targeted Task 2 Miles	2017 Task 2 Mileage (Jan - Aug)	2017 Task 2 Percent Mileage Complete
Ashland	518	381.9	73.7%	117.4	102.6	87.4%
Hazard	316	170.5	54.0%	181	111	61.3%
Pikeville	499.8	298	59.6%	14.7	14.7	100.0%
<b>Totals</b>	<b>1333.8</b>	<b>850.4</b>	<b>63.8%</b>	<b>313.1</b>	<b>228.3</b>	<b>72.9%</b>

**Table 4: 2017 Plan (Target vs Actual Expenditures)  
for Task 1 and Task 2**

Districts	2017 Targeted Expenditures Year-end (Task 1 & 2)	2017 Expenditures (Jan - Aug Task 1 & 2)	2017 Percent Expenditures Complete (Jan-Aug for Task 1 & 2)
Ashland	\$10,640,223	\$8,231,671.98	77.36%
Hazard	\$6,816,707	\$3,940,817.47	57.81%
Pikeville	\$10,204,130	\$6,642,819.20	65.10%
<b>Totals</b>	<b>\$27,661,060</b>	<b>\$18,815,309</b>	<b>68.02%</b>

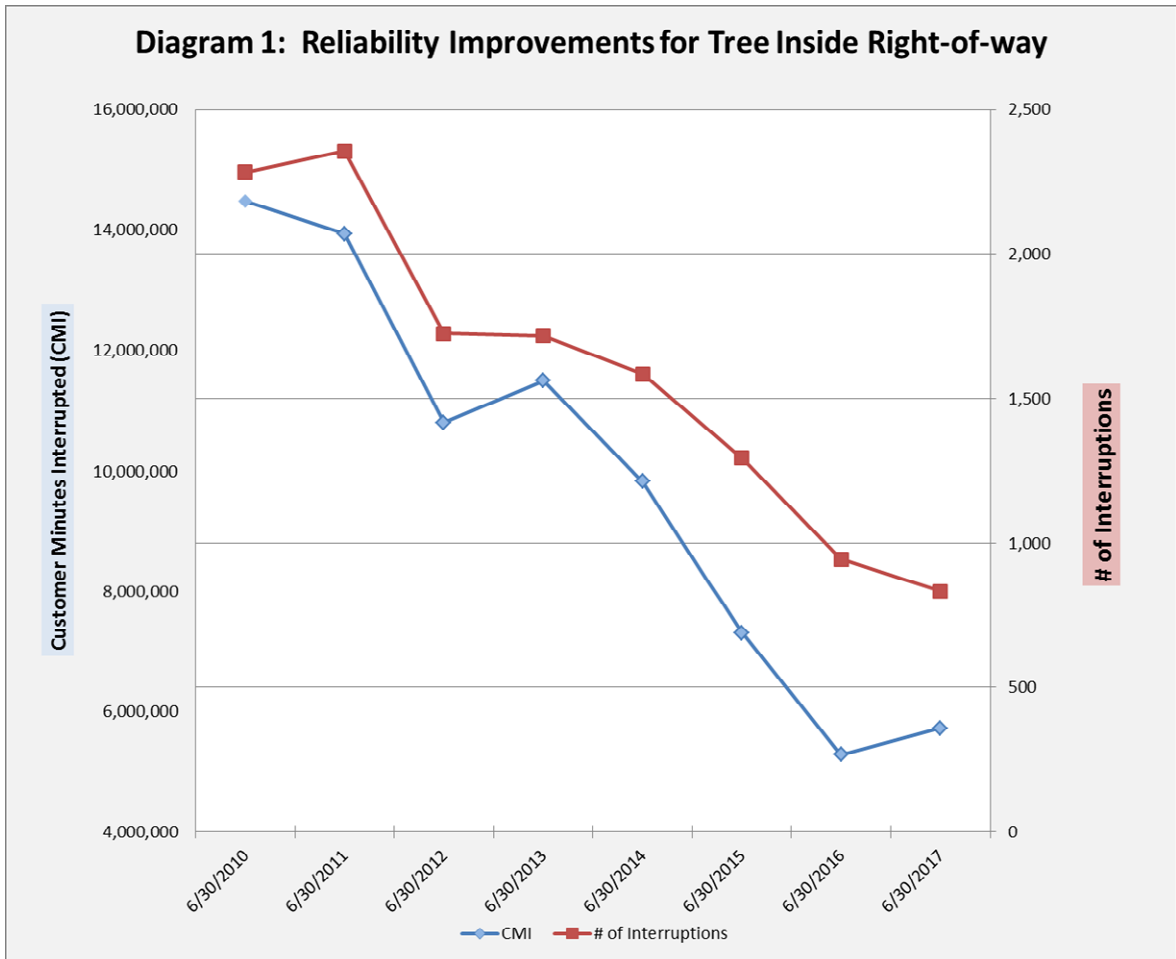
Kentucky Power expects to meet or exceed its 2017 rights-of-way clearing targets, and to limit variation from the 2017 budgeted spending levels within each District, and Company-wide, to less than 10 percent.

**Total Vegetation Management Program Activity (July 1, 2010 to August 31, 2017)**

Kentucky Power’s Vegetation Management Program O&M expenditures have totaled approximately \$148 million over the life of the program. Capital expenditures over the same period totaled \$24.6 million.

From July 1, 2010 through August 31, 2017 the Company’s Vegetation Management Program achieved the following:

- Removed 1,662,692 trees
- Trimmed approximately 558,540 trees
- Cleared 16,778 acres of brush
- Sprayed 18,000 acres to control vegetation.
- Reduced Customer Minutes of Interruption (CMI) for Tree Inside rights-of-way by approximately 68.7% since mid-2010.



- The number of interruptions continued to decline from 946 to 833 during the period July 1, 2016 through June 30, 2017. The number of customer minutes interrupted during the same period increased slightly from 5,280,016 to 5,717,191. The number of interruptions has declined approximately 63.5% since the initiation of the Company’s distribution vegetation management program beginning July 2010, while customer minutes interrupted declined approximately 60.5% over the same period.<sup>2</sup>
- Subsequent data for the 12 months ended August 31, 2017 indicates customer minutes interrupted declined in comparison to past 12-month periods ended August 31. This suggests, when coupled with the continued decline in the number of interruptions, that the small increase in the customer minutes interrupted during the 12 months ended June

<sup>2</sup> Customer minutes interrupted as a result of trees inside the right-of-way declined approximately 68.7% from July 1, 2010 through August 31, 2017.

30, 2017 was related to the specific circumstances of the outages during that period and not a reversal in the declining trend in customer minutes interrupted.

- As of August 31, 2017 initially cleared (Task 1) 7,485 of primary distribution line right-of-way, or 92.2% of the 8,113 current total miles of primary distribution line miles. The Company projects that by December 31, 2017 it will have cleared 7,969 miles of the primary distribution lines, or 98.2% of the 8,113 current total miles of primary distribution line miles.
- Completed 1,373 interim re-clearing miles (Task 2) as of August 31, 2017. The Company projects it will complete 1,458 interim miles by December 31, 2017. Kentucky Power projects it will complete approximately 1,479 miles of Task 2 work in 2018. Doing so will enable Kentucky Power to start the five-year cycle of Task 3 work on January 1, 2019.

### **Operational Developments**

The Company is proposing in Case No. 2017-00179 to reduce the annual vegetation management O&M expense included in base rates by \$6,195,897 from the \$27,661,060 approved in Case No. 2014-00396 to \$21,465,163. The proposed \$21,465,163 revenue requirement reflects the projected three-year average of vegetation management plan O&M expenditures for the years 2018-2020 under the plan that is proposed in the Company's application in Case No. 2017-00179.<sup>3</sup> If approved, this reduction in the Company vegetation management O&M expense revenue requirement would occur approximately 18 months earlier than the reduction provided for in the 2015 vegetation management plan.

Initial estimates provided by Kentucky Power in Case No. 2014-00396 projected that Task 2 and Task 3 work could be completed at approximately 60% of the cost of Task 1 work. The Company used the 60% value for Task 2 and Task 3 work estimate based on the assumption that the cost of Task 2 and Task 3 work on a five-year cycle and would not materially differ from estimates for the same work on a four-year cycle. Based on 26 months of subsequent experience performing Task 2 work, Kentucky Power's best current estimate is that Task 3 work, including any cost increases, can be accomplished at an average cost of 72% of Task 1 work, or \$13,365 per mile. Other factors that contributed to the additional Task 3 expenses were the above average rainfall and the growing customer demand to remove tree debris in unmaintained areas.

The Company in 2017 is accelerating the more expensive Task 1 work to permit Kentucky Power to complete this more expensive work nine months earlier than was projected in

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<sup>3</sup> This filing for 2018 is consistent with and replicates the first year of the Company's vegetation management proposal in Case No. 2017-00179.

Case No. 2014-00396. This acceleration will enable Kentucky Power to reduce its vegetation management-related revenue requirement eighteen months earlier (albeit by a smaller amount) than projected in Case No. 2014-00396. Kentucky Power projects it will complete all Task 1 and Task 2 work during 2018.

### **Kentucky Power Company’s 2018 Distribution Vegetation Management Plan**

Remaining Task 1 work will be scheduled to permit completion by March 31, 2018. Task 2 work will be performed in 2018 on those circuits cleared in late 2011 and 2012. The Company will continue to budget Unscheduled/Reactive funding in the amount of \$340,000 to address reliability issues that develop during the year. This level of funding represents 1.6% of the total Vegetation Management O&M budget.

Kentucky Power’s service territory includes some of the most heavily forested areas in the country. The Company’s spray program is a vital component of the Distribution Vegetation Management Plan. ULV (Ultra Low Volume), high-volume foliar, basal, cut-surface, and aerial application techniques will be utilized depending on the brush conditions. The target is to treat a combined total of 2,825 acres of brush in 2018 as part of Task1 and Task 2 work.

In 2018, the Company projects \$2,259,463 in forestry capital expenditures for Task 1 and Task 2. This funding will be utilized to remove trees larger than 18 inches in diameter, widen rights-of-way, and for Tree Growth Regulator (“TGR”) application.

The 2018 Kentucky Power Distribution Vegetation Management Plan project Task 1 (Table 5) and Task 2 (Table 6) expenditures and planned Task 1 (Table 5) and planned Task 2 (Table 6) miles of work for each of the three districts in its service territory are:

<b>Table 5: 2018 Kentucky Power Distribution Vegetation Management Plan for Task 1 - Initial Clear</b>			
<b>Area</b>	<b>Planned Miles Initial Clear Task 1</b>	<b>Scheduled O&amp;M Funding</b>	<b>Forestry Capital Funding</b>
<b>Ashland</b>	53.7	\$671,250	\$80,550
<b>Hazard</b>	53.0	\$540,600	\$64,872
<b>Pikeville</b>	37.3	\$429,461	\$51,535
<b>Totals</b>	<b>144.0</b>	<b>\$1,641,311</b>	<b>\$196,957</b>

<b>Table 6: 2018 Kentucky Power Distribution Vegetation Management Plan for Task 2 - Interim Re-Clear</b>			
<b>Area</b>	<b>Planned Miles Initial Clear Task 2</b>	<b>Scheduled O&amp;M Funding</b>	<b>Forestry Capital Funding</b>
<b>Ashland</b>	433	\$5,230,830	\$627,700
<b>Hazard</b>	476	\$5,093,252	\$662,123
<b>Pikeville</b>	570	\$6,439,023	\$772,683
<b>Totals</b>	<b>1479</b>	<b>\$16,763,104</b>	<b>\$2,062,505</b>

The balance of the \$21,465,163 in total 2018 Task 1 and Task 2 spending comprise costs that cannot be allocated on a circuit basis, such as internal labor and fleet cost, unscheduled hotspot maintenance, trouble restoration work, tree ticket investigation, ground spray, and aerial based work.

**Exhibit Description**

The following exhibits are attached to and incorporated in this report:

**EXHIBIT 1** – A circuit-level listing of scheduled 2018 Task 1 and Task 2 work. The accompanying projected O&M and associated forestry capital expenditures for each circuit worked as part of the 2018 Distribution Vegetation Management Plan is also provided. Exhibit 1 also includes a Vegetation Management Plan Terminology.

**EXHIBIT 2** – The 2018 planned Spray Plan by district.

**EXHIBIT 3** – Recap by district and type expenditure the Task 1 and Task 2 expenditures planned for 2018.



# EXHIBIT 1

## Task 1 – Initial Re-Clear

2018 Kentucky Power Distribution VM PLAN										
Task 1 Full Circuit Re-Clearing Plan						Costs that are not allocated to a circuit include; internal labor & fleet costs, unscheduled hotspot maintenance, trouble restoration work, tree ticket investigation, ground spray, and aerial based work.				
DISTRICT	STATION NAME	CIRCUIT NAME	CIRCUIT NUMBER	CIRCUIT LINE MILES	MILES PLANNED	PROJECTED O&M COST per MILE	O&M	FORESTRY CAPITAL ASSOCIATED WITH RE-CLEARING	TOTAL COST	COMMENTS
ASH	Hitchens	Willard	3001002	152.0	53.7	\$12,500	\$671,250	\$80,550	\$751,800	Finish Full Circuit Clearing from 2017
<b>Ashland District Totals</b>					<b>53.7</b>		<b>\$671,250</b>	<b>\$80,550</b>	<b>\$751,800</b>	
HAZ	Haddix	Quicksand	3310501	116.0	53.0	\$10,200	\$540,600	\$64,872	\$605,472	Finish Full Circuit Clearing from 2017
<b>Hazard District Totals</b>					<b>53.0</b>		<b>\$540,600</b>	<b>\$64,872</b>	<b>\$605,472</b>	
PKV	Keyser	Stonecoal	3402002	37.3	37.3	\$11,500	\$429,461	\$51,535	\$480,997	Finish Full Circuit Clearing from 2017
<b>Pikeville District Totals</b>					<b>37.3</b>		<b>\$429,461</b>	<b>\$51,535</b>	<b>\$480,997</b>	
<b>FULL-CIRCUIT RECLEARING TOTALS</b>					<b>144.0</b>		<b>\$1,641,311</b>	<b>\$196,957</b>	<b>\$1,838,269</b>	

## Task 2 – Interim Re-Clear

2018 Kentucky Power Distribution VM PLAN						Costs that are not allocated to a circuit include; internal labor & fleet costs, unscheduled hotspot maintenance, trouble restoration work, tree ticket investigation, ground spray, and aerial based work.				
Task 2 Interim Re-Clearing Plan										
DISTRICT	STATION NAME	CIRCUIT NAME	CIRCUIT NUMBER	CIRCUIT LINE MILES	MILES PLANNED	PROJECTED O&M COST per MILE	O&M	FORESTRY CAPITAL ASSOCIATED WITH INTERIM RE-CLEAR	TOTAL COST	COMMENTS
ASH	Big Sandy	Fallsburg/Yatesville	3000201	161.1	57.0	\$12,100	\$689,700	\$75,867	\$765,567	Finish Interim Full Re-clear
ASH	Hayward	Halderman	3000801	117.0	64.3	\$12,100	\$778,030	\$77,803	\$855,833	Begin Interim Re-clear
ASH	Hoods Creek	Summitt	3001101	22.7	22.7	\$12,100	\$274,670	\$27,467	\$302,137	Interim Full Re-clear
ASH	Coalton	US 60 West	3003701	87.5	57.0	\$12,100	\$689,700	\$68,970	\$758,670	Begin Interim Re-clear
ASH	Busseyville	Walbridge	3007906	94.0	47.5	\$12,100	\$574,750	\$57,475	\$632,225	Begin Interim Re-clear
ASH	47th Street	49th Street	3008001	26.0	26.0	\$12,100	\$314,600	\$31,460	\$346,060	Interim Full Re-clear
ASH	Cannonsburg	Route 3	3008702	100.0	84.8	\$12,100	\$1,026,080	\$102,608	\$1,128,688	Finish Interim Full Re-clear
ASH	Russell	Kenwood	3010601	20.7	20.7	\$12,100	\$250,470	\$25,047	\$275,517	Interim Full Re-clear
ASH	Wurtland	Wurtland	3110901	1.5	1.5	\$12,100	\$18,150	\$1,815	\$19,965	Interim Full Re-clear
ASH	Wurtland	Greenup	3110902	50.8	50.8	\$12,100	\$614,680	\$61,468	\$676,148	Interim Full Re-clear
<b>Ashland District (Task 2) Totals</b>					<b>432.3</b>		<b>\$5,230,830</b>	<b>\$529,980</b>	<b>\$5,760,810</b>	
HAZ	Hazard	Kenmont	3302704	20.0	20.0	\$10,700	\$214,000	\$27,820	\$241,820	Interim Full Re-clear
HAZ	Leslie	Hals Fork	3303903	76.0	45.0	\$10,700	\$481,500	\$62,595	\$544,095	Begin Interim Full Re-clear
HAZ	Bulan	Ary Hiner	3307301	54.0	54.0	\$10,700	\$577,800	\$75,114	\$652,914	Interim Full Re-clear
HAZ	Bulan	Ajax Dwarf	3307302	40.0	40.0	\$10,700	\$428,000	\$55,640	\$483,640	Interim Full Re-clear
HAZ	Bulan	Lotts Creek	3307303	2.2	2.2	\$10,700	\$23,540	\$3,060	\$26,600	Interim Full Re-clear
HAZ	Beckham	Carr Creek	3308402	102.0	84.0	\$10,700	\$898,852	\$116,851	\$1,015,703	Finish Interim Full Re-clear
HAZ	Bonnyman	Hazard	3308502	43.4	29.4	\$10,700	\$314,580	\$40,895	\$355,475	Begin Interim Full Re-clear
HAZ	Bonnyman	Big Creek	3308503	84.0	69.0	\$10,700	\$738,300	\$95,979	\$834,279	Finish Interim Full Re-clear
HAZ	Collier	Lower Rockhouse	3309101	66.1	46.1	\$10,700	\$493,270	\$64,125	\$557,395	Finish Interim Full Re-clear
HAZ	Collier	Smoot Creek	3311101	81.0	50.0	\$10,700	\$535,000	\$69,550	\$604,550	Begin Interim Full Re-clear
HAZ	Stinnett	Wendover	3311103	36.3	36.3	\$10,700	\$388,410	\$50,493	\$438,903	Interim Full Re-clear
<b>Hazard District (Task 2) Totals</b>					<b>476.0</b>		<b>\$5,093,252</b>	<b>\$662,123</b>	<b>\$5,755,375</b>	
PKV	Hurley	Race Fork	970603	6.0	6.0	\$11,300	\$67,800	\$7,458	\$75,258	Interim Full Re-clear
PKV	Sprigg	Sprigg	2150103	9.0	9.0	\$11,300	\$101,700	\$11,187	\$112,887	Interim Full Re-clear
PKV	Beckham	Carr Creek	3308402	7.0	7.0	\$11,300	\$79,100	\$8,701	\$87,801	Interim Full Re-clear
PKV	Betsy Layne	Mud Creek	3400301	77.0	77.0	\$11,300	\$870,100	\$95,711	\$965,811	Interim Full Re-clear
PKV	Draffin	Belcher	3400701	21.0	21.0	\$11,300	\$237,300	\$26,103	\$263,403	Interim Full Re-clear
PKV	Draffin	Yellowhill	3400702	12.3	12.3	\$11,300	\$138,990	\$15,289	\$154,279	Interim Full Re-clear
PKV	Salisbury	Printer	3408101	20.0	20.0	\$11,300	\$226,000	\$24,860	\$250,860	Interim Full Re-clear
PKV	Salisbury	Black Diamond	3408102	1.5	1.5	\$11,300	\$16,950	\$1,865	\$18,815	Interim Full Re-clear
PKV	Salisbury	Martin	3408103	46.0	46.0	\$11,300	\$519,800	\$57,178	\$576,978	Interim Full Re-clear
PKV	Burdine	Levisa	3409502	39.4	39.4	\$11,300	\$445,220	\$48,974	\$494,194	Interim Full Re-clear
PKV	South Pikeville	Island Creek	3410502	38.0	38.0	\$11,300	\$429,400	\$47,234	\$476,634	Interim Full Re-clear
PKV	South Pikeville	Hospital	3410503	5.5	5.5	\$11,300	\$62,433	\$6,868	\$69,300	Interim Full Re-clear
PKV	Johns Creek	Meta	3411801	167.0	167.0	\$11,300	\$1,887,100	\$207,581	\$2,094,681	Interim Full Re-clear
PKV	Fords Branch	Shelby	3411901	42.4	42.4	\$11,300	\$479,120	\$52,703	\$531,823	Interim Full Re-clear
PKV	Fords Branch	Robinson Creek	3411902	77.7	77.7	\$11,300	\$878,010	\$96,581	\$974,591	Interim Full Re-clear
<b>Pikeville District (Task 2) Totals</b>					<b>569.8</b>		<b>\$6,439,023</b>	<b>\$708,292</b>	<b>\$7,147,315</b>	
<b>INTERIM TOTALS</b>			<b>Totals</b>	<b>1478.1</b>		<b>\$16,763,104</b>	<b>\$1,900,395</b>	<b>\$18,663,500</b>		

## **Kentucky Power Forestry Plan Terminology**

### **Feeder Breaker Zone**

Synonymous with Station Zone. Segment of line extending from the circuit station breaker to the first operating device. This zone includes unfused taps, but does not include fused taps.

### **Full Circuit Re-clear**

Entire circuit from the station breaker to the end of the circuit.

### **Recloser Zone**

Line segment extending from a specific recloser to the next operating device. This zone includes unfused taps, but does not include fused taps.

### **Partial Re-clear**

A portion of the circuit is planned for re-clearing.

### **BID JOB**

Planned re-clearing work released as an open, lump-sum bid for competing contractors.

### **Finish Full Circuit Re-clear**

Re-clearing scheduled to complete Full Circuit Re-clear that began in the previous year.

### **2<sup>nd</sup> Recloser Zone**

Line segment beginning at the second operating device beyond the station circuit breaker extending to the next operating device. This zone includes unfused taps, but does not include fused taps.

### **Quality-of-Service Work**

Tree trimming or removal work scheduled for a line segment to address reliability issues. This work does not conform to re-clearing specifications (e.g.-Hot-spotting).

### **Cycle Buster Tree**

A tree that has to be revisited before the circuit is due for its next cycle trim.

## Exhibit 2

<b><i>Kentucky Power 2018 Distribution VM SPRAY PLAN for TASKS 1 &amp; 2</i></b>						
<b>DISTRICT</b>	<b>ACRES</b>			<b>O&amp;M BUDGET</b>		
	<b>Task 1</b>	<b>Task 2</b>	<b>Total</b>	<b>Task1</b>	<b>Task 2</b>	<b>Total</b>
<b>Ashland</b>	<b>450</b>	<b>375</b>	<b>825</b>	<b>\$242,100</b>	<b>\$206,250</b>	<b>\$448,350</b>
<b>Hazard</b>	<b>450</b>	<b>550</b>	<b>1000</b>	<b>\$242,100</b>	<b>\$303,600</b>	<b>\$545,700</b>
<b>Pikeville</b>	<b>550</b>	<b>450</b>	<b>1000</b>	<b>\$295,900</b>	<b>\$248,400</b>	<b>\$544,300</b>
<b>Totals</b>	<b>1450</b>	<b>1375</b>	<b>2825</b>	<b>\$780,100</b>	<b>\$758,250</b>	<b>\$1,538,350</b>

## Exhibit 3

Kentucky Power Company 2018 Distribution VM O&M Forestry Plan (Task 1 & Task 2)- Summary					
<i>ACTIVITY</i>	<i>Total O&amp;M</i>	<i>KY Dist. Aerial Saw / Spray</i>	<i>Ashland</i>	<i>Hazard</i>	<i>Pikeville</i>
Total Circuit Re-clearing	\$18,604,416	\$200,000	\$5,902,080	\$5,633,852	\$6,868,484
Total Spray	\$1,638,350	\$100,000	\$448,350	\$545,700	\$544,300
INTERNAL - Existing KY Forestry Staff	\$1,056,000		\$352,000	\$352,000	\$352,000
Unscheduled/Reactive Maintenance	\$340,000		\$80,000	\$130,000	\$130,000
Total O&M	\$21,638,766	\$300,000	\$6,782,430	\$6,661,552	\$7,894,784
Forestry Capital Associated with Clearing	\$2,259,463		\$708,250	\$726,995	\$824,218
Total KYPCO Forestry Budget	\$23,898,229				