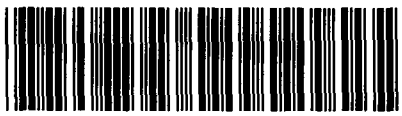

Control Number: 49494

Item Number: 101

Addendum StartPage: 0

SOAH DOCKET NO. 473-19-4421
PUC DOCKET NO. 49494

APPLICATION OF AEP TEXAS INC. FOR AUTHORITY TO CHANGE RATES	§ § §	BEFORE THE STATE OFFICE OF ADMINISTRATIVE HEARINGS

AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUESTS FOR INFORMATION

JUNE 7, 2019

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SOAH DOCKET NO. 473-19-4421
PUC DOCKET NO. 49494

AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-1:

Please refer to the AEP Texas Central Division Schedules' Workpapers WP II-D-1-12 (Distribution OM) and WP II-D-1-13 (Tree Trimming). Are these schedules additive for Federal Energy Regulatory Commission ("FERC") Account No. 593, (i.e., the increase for the AEP Texas Central Division is $6,276,923) or does Schedule 1-12 include capitalized costs that were not included in Schedule 1-13? Please explain and identify any overlap between the two schedules for FERC Account No. 593.

Response No. OPUC 3-1:

Yes, these adjustments are additive. Adjustment 1-12 does not include the capitalized costs included in Adjustment 1-13. Adjustment 1-12 represents an increase in on-going vegetation management O&M costs and is discussed by Mr. Coad in his direct testimony on pages 22 - 25. This adjustment is purely an increase to current vegetation management O&M costs. Adjustment 1-13 represents the amount that AEP Texas capitalized in the test year associated with items such as expanding a right of way. These are on-going activities and if the Commission follows its ruling in Docket No. 46449, the cost of these on-going vegetation management activities would be transferred to O&M because the test year did not include any O&M for these activities since the costs were capitalized. As noted by Mr. Hamlett in his direct testimony, (pages 27, line 18 - 30, line 22), AEP Texas does not agree with the Commission's finding in Docket No. 46449. If the Commission does not follow the decision in Docket No. 46449, Adjustment 1-13 is not needed and should be removed. If the Commission follows the Docket No. 46449 decision, this adjustment is proper and consistent with the Docket No. 46449 decision.

Prepared By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs
Sponsored By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs

SOAH DOCKET NO. 473-19-4421
PUC DOCKET NO. 49494

AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-2:

Please refer to AEP Texas North Division Schedules' Workpapers WP II-D-1-12, (Distribution OM) and WP II-D-1-13 (Tree Trimming). Are these schedules additive for FERC Account No. 593, (i.e., the increase for the AEP Texas North Division is $2,077,394) or does Schedule 1-12 include capitalized costs that were not included in Schedule 1-13? Please explain and identify any overlap between the two schedules for FERC Account No. 593.

Response No. OPUC 3-2:

Please see the response to OPUC 3-1. In summary, there is no overlap between the two adjustments.

Prepared By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs
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SOAH DOCKET NO. 473-19-4421
PUC DOCKET NO. 49494

AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-3:

Mr. Coad's testimony, p. 23, lines 3-5 states:

> AEP Texas is proposing a total annual distribution vegetation management spend of $16.2 million. This is an increase of $5 million over the $11.2 million in vegetation management expenses in the test year.

Please explain why this sentence of Mr. Coad's testimony does not reference the additional $2.762 million (AEP Texas Central Division) and $1.077 million (AEP Texas North Division) requested by the Company on Workpapers II-D-1-13.

Response No. OPUC 3-3:

On these pages, Mr. Coad is specifically discussing distribution vegetation management O&M costs and is not discussing distribution vegetation management costs that are capitalized under AEP's vegetation management capitalization policy. The additional amounts contained on Adjustment 1-13 relate to capitalized vegetation management costs and are discussed in the direct testimony of Randall W. Hamlett. See the response to OPUC 3-1 for additional information regarding these two adjustments. Also, please note that the adjustment for the Central division is $2,726,923.

Prepared By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs
Sponsored By: Thomas M. Coad	Title: VP Dist Region Opers
Sponsored By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs

SOAH DOCKET NO. 473-19-4421
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AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-4:

With references to witness testimony (including page and line number) and/or witness exhibits, please identify where the Company specifically supports the additional $3.839 million in distribution tree-trimming expenses shown on Workpapers II-D-1-13 (AEP Texas Central Division and AEP Texas North Division).

Response No. OPUC 3-4:

Please see the response to OPUC 3-1.

Prepared By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs
Sponsored By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs

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AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-5:

Please explain how the additional $3.839 million referenced in OPUC RFI No. 3-4 is different from the $5 million referenced by Mr. Coad's testimony, and specifically identify incremental improvements resulting from the $3.839 million in distribution tree trimming over that which is identified in Mr. Coad's testimony.

Response No. OPUC 3-5:

Please see the response to OPUC 3-1.

Prepared By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs
Sponsored By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs

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AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-6:

Please provide workpapers and any other documents that were used to divide the spending of $5 million in Mr. Coad's testimony and the $3.839 million in Workpapers II-D-1-13 between AEP Texas Central Division and AEP Texas North Division.

Response No. OPUC 3-6:

See OPUC 3-6 attachment 1 Forestry Ask $5M the far right column for the split of the $5 million ask in Mr. Coad's testimony. The Central and North Divisions have separate project IDs. Please see OPUC Attachment 2 for II-D-1-13 for amounts for the separate projects. Please note that the total adjustment II-D-1-13 is $3,804,317 million.

Prepared By: Charles R. Brower	Title: Dir Distr Engineering
Sponsored By: Thomas M. Coad	Title: VP Dist Region Opers
Sponsored By: Randall W. Hamlett	Title: Dir Regulatory Acctg Svcs

Assumption Information

Total OH Primary Miles	30,337	
Total OH Sec Miles	6,507	(Estimate only 50% of these miles require trimming because some are on same pole as primary wires.)
Cost Per Crew	$279,604	

Cycle Trim (Maintain All Circuits and laterals)

	Annual Line Miles	Cost Per Mile	Cost				Split based on $5.2M	For $5M Use
Abilene	334	$3,556	$1,187,704	$593,852	North	$906,928	$ 1,120,300.05	1
Corpus North	270	$11,955	$3,227,850	$1,613,925				
Corpus South	290	$3,494	$1,013,260	$506,630	Central	$3,277,550	$ 4,048,655.95	4
RGV	418	$1,623	$678,414	$339,207				
Laredo	276	$5,926	$1,635,576	$817,788				
San Angelo	332	$1,886	$626,152	$313,076				
Texas	**1,920**	**$4,740**	**$8,368,956**	$4,184,478		$4,184,478		
# of Crews			**30**					

Hot Spots

Texas			**$4,200,000**
# of Crews			**15**

Total Funding for Forestry Work Plan

Texas	1,920		**$12,568,956**
# of Crews			**45**
Current TY	960		($7,400,000)
Incremental Funding	**960**		**$5,168,956**

OH Line Miles	33,591
Cycle Proposed	17.50
Cycle Now	34.99

SOAH Docket No. 473-19-4421
PUC Docket No. 49494
OPUC's 3rd, Q. # OPUC 3-6
Attachment 1

Texas Central Distribution		Texas North Distribution	
Project #	Capital Amount	Project #	Capital Amount
9181	2,726,923	9179	1,077,394

SOAH DOCKET NO. 473-19-4421
PUC DOCKET NO. 49494

AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-7:

Please provide the number of pole miles of primary overhead distribution lines and primary underground distribution lines in AEP Texas Central Division and AEP Texas North Division.

Response No. OPUC 3-7:

See the response to Cities 4-21.

Prepared By: William M. Romine	Title: Regulatory Consultant Staff
Sponsored By: Thomas M. Coad	Title: VP Dist Region Opers

SOAH DOCKET NO. 473-19-4421
PUC DOCKET NO. 49494

AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-8:

Please provide the following information for each year, by division, from 2006 (first full year after the last rate case filings) through 2018:

a. The number of trees trimmed;

b. The number of trees removed; and

c. To the extent possible, separate these figures into storm damage and other trees.

Response No. OPUC 3-8:

a.

AEP Texas Transmission
Number of Trees Trimmed*
2006 - 2018

Division	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Central	17,417	9,882	12,739	5,255	4,821	1,305	5,090	7,569	14,209	15,832	3,934	5,517	5,726
North	6,614	7,107	6,214	6,171	4,932	2,217	2,741	2,090	6,833	10,100	1,227	1,220	2,783

*Excludes trees trimmed during storm damage activities.

AEP Texas Distribution
Number of Trees Trimmed*
2006-2018

Division	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Central	19,330	22,024	17,572	14,693	10,048	20,202	17,341	26,216	30,284	26,999	21,684	37,945	29,592
North	3,095	3,759	3,128	262	71	4,904	5,254	13,280	22,275	22,041	9,604	10,594	6,552

*Excludes trees trimmed during storm damage activities

b.

AEP Texas Transmission
Number of Trees Removed*
2006 - 2018

Division	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Central	16,625	9,351	12,122	9,072	9,530	5,264	5,802	6,527	14,758	18,390	10,606	14,786	12,557
North	8,814	10,253	5,618	7,338	9,856	3,802	7,430	7,766	14,517	9,811	9,096	9,038	8,211

*Excludes trees trimmed during storm damage activities.

AEP Texas Distribution
Number of Trees Removed*
2006-2018

Division	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Central	11,235	7,391	11,049	9,070	2,374	8,476	7,624	10,188	13,790	12,642	12,191	19,325	12,992
North	945	1,322	1,075	52	0	1,518	1,156	4,365	8,653	6,414	5,808	6,624	6,568

*Excludes trees trimmed during storm damage activities

c. Neither AEP Texas Transmission nor Distribution Forestry captures the number of trees trimmed or removed as a result of storm damage; therefore, the data provided in response to parts (a) and (b) does not include them.

Prepared By: Charles R. Brower — Title: Dir Distr Engineering
Prepared By: Tara D. Beske — Title: Regulatory Consultant Staff

Sponsored By: Thomas M. Coad — Title: VP Dist Region Opers
Sponsored By: Daniel R. Boezio — Title: VP Trans Field Services

SOAH DOCKET NO. 473-19-4421
PUC DOCKET NO. 49494

AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-9:

Please provide other relevant statistics regarding vegetation management operations in AEP Texas by division from 2010-2018, including but not limited to:

a. The number of line miles worked;

b. The amount of growth retardant and herbicide application; and

c. Acres of brush cleared by mowing and brushing or similar techniques

Response No. OPUC 3-9:

a. See table below.

AEP Texas Transmission
Number of Line Miles Worked
2010 - 2018

Division	2010	2011	2012	2013	2014	2015	2016	2017	2018
Central	722	485	539	420	675	569	607	782	650
North	534	390	409	550	660	666	698	353	503
Total	1256	875	947	970	1335	1235	1305	1135	1153

AEP Texas Distribution
Number of Line Miles Worked
2010-2018

Division	2010	2011	2012	2013	2014	2015	2016	2017	2018
Central	449	856	738	932	1,057	866	597	497	689
North	110	194	235	672	746	1,026	390	617	747
Total	559	1,050	973	1,604	1,803	1,892	987	1,114	1,436

b. See table below.

AEP Texas Transmission Gallons of Growth Retardant and Herbicide Applied 2010 - 2018									
Division	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Central	3356	64	288	148	230	61	72	529	880
North	1154	54	2024	62	150	3052	2371	1917	2251
Total	4509	118	2313	210	380	3114	2442	2447	3131

AEP Texas Distribution Gallons of Growth Retardant and Herbicide Applied 2010-2018									
Division	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Central	0	0	3,602	5,995	6,046	6,805	4,967	6,408	7,851
North	0	0	900	1,946	1,512	1,769	1,411	1,779	2,064
Total	0	0	4,502	7,941	7,558	8,574	6,378	8,187	9,915

c. See tables below. AEP Texas distribution does not typically clear Right of Way by spraying.

AEP Texas Distribution Acres of brush cleared by cutting 2010-2018									
Division	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Central	0	0	188	118	290	278	208	712	339
North	0	0	57	187	89	69	94	416	571
Total	0	0	245	305	379	347	301	1,127	910

AEP Texas Transmission Acres of Brush Cleared by Cutting 2010 - 2018									
Division	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Central	716	297	478	661	1220	1076	810	1860	707
North	849	344	610	828	1908	1364	430	1977	2333
Total	1565	641	1089	1489	3127	2440	1240	3837	3040

AEP Texas Transmission Acres of Brush Cleared by Spraying 2010 - 2018									
Division	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**
Central	100	134	63	106	96	62	102	113	165
North	63	28	33	96	93	129	342	909	249
Total	163	162	97	202	189	191	444	1022	414

Prepared By: Charles R. Brower — Title: Dir Distr Engineering
Prepared By: Tara D. Beske — Title: Regulatory Consultant Staff

Sponsored By: Daniel R. Boezio — Title: VP Trans Field Services
Sponsored By: Thomas M. Coad — Title: VP Dist Region Opers

SOAH DOCKET NO. 473-19-4421
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AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-10:

Please provide the amount spent on distribution vegetation management in each year from 2006 through 2018 in AEP Texas, by division, divided into expensed and capitalized costs. To the extent possible, please divide these costs into storm damage and other spending. Separately, please also divide these costs into tree trimming, tree removal, mowing and brush cutting, and application of herbicides and growth retardant.

Response No. OPUC 3-10:

See OPUC attachment 1 Distribution Veg Mgmt Spend.pdf.

The amounts provided include vegetation management activities related to new construction and rebuilding of distribution lines as well as trimming for line clearance and reliability purposes.

Prepared By: Charles R. Brower	Title: Dir Distr Engineering
Sponsored By: Thomas M. Coad	Title: VP Dist Region Opers

Distribution Vegetation Management Spending 2006 - 2018

	Expense	Capital	Storm	Trimming	Removal	Mowing/Brush Cutting	Herbicide	Tree Growth Regulator
2006								
Central	$ 2,445,887.88	$ 652,794.03	$ 68,551.06	$ 2,445,887.88	$ 652,794.03	$ -	$ -	$ -
North	$ 433,874.28	$ 17,441.59	$ -	$ 433,874.28	$ 17,441.59	$ -	$ -	$ -
2007								
Central	$ 2,291,754.94	$ 604,410.86	$ 34,714.21	$ 2,291,754.94	$ 604,410.86	$ -	$ -	$ -
North	$ 4,991.30	$ 61,892.21	$ -	$ -	$ 61,892.21	$ -	$ 4,991.30	$ -
2008								
Central	$ 2,012,859.85	$ 780,789.60	$ 30,681.32	$ 2,012,859.85	$ 730,286.00	$ -	$ 50,503.60	$ -
North	$ 379,256.23	$ 61,389.13	$ -	$ 305,642.48	$ 36,080.32	$ -	$ 98,922.56	$ -
2009								
Central	$ 2,013,550.60	$ 871,729.81	$ 19,257.33	$ 2,011,252.26	$ 871,729.81	$ -	$ 2,298.34	$ -
North	$ 52,846.12	$ 23,127.17	$ -	$ 52,846.12	$ 23,127.17	$ -	$ -	$ -
2010								
Central	$ 1,071,966.64	$ 308,311.37	$ 1,967.70	$ 1,071,966.64	$ 308,311.37	$ -	$ -	$ -
North	$ 22,938.90	$ -	$ -	$ 22,938.90	$ -	$ -	$ -	$ -
2011								
Central	$ 2,744,442.07	$ 333,642.19	$ 3,675.67	$ 2,718,446.52	$ 333,642.19	$ -	$ 25,995.55	$ -
North	$ 534,933.46	$ -	$ -	$ 534,933.46	$ -	$ -	$ -	$ -
2012								
Central	$ 2,719,807.01	$ 605,646.96	$ 12,307.94	$ 2,719,807.01	$ 605,647.07	$ -	$ -	$ -
North	$ 920,032.32	$ 148,455.03	$ -	$ 857,047.32	$ 72,021.54	$ -	$ 139,418.49	$ -
2013								
Central	$ 3,850,343.75	$ 3,363,086.39	$ 80,839.59	$ 4,146,989.99	$ 2,661,594.84	$ -	$ 190,050.68	$ 240,510.69
North	$ 1,303,055.02	$ 1,375,210.71	$ 176,463.04	$ 1,475,880.96	$ 1,028,464.20	$ -	$ 938.60	$ 147,265.92

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2014								
Central	$ 6,814,937.22	$ 2,216,938.60	$ 209,271.15	$ 6,502,509.47	$ 1,829,537.06	$ 142,279.02	$ 104,799.84	$ 453,523.26
North	$ 2,952,212.29	$ 377,156.15	$ 12,844.47	$ 2,880,364.26	$ 280,808.04	$ 98,911.54	$ 39,354.29	$ 29,157.48
2015								
Central	$ 5,763,086.01	$ 1,592,733.47	$ 712,842.00	$ 5,477,107.15	$ 1,232,480.45	$ 185,874.83	$ 49,773.36	$ 410,583.69
North	$ 2,716,723.28	$ 282,026.13	$ 129,225.48	$ 2,603,411.76	$ 168,162.83	$ 62,549.73	$ 98,591.19	$ 66,033.90
2016								
Central	$ 4,989,153.04	$ 1,490,581.95	$ 376,128.40	$ 4,646,046.85	$ 1,294,364.59	$ 175,259.32	$ 152,430.06	$ 240,999.30
North	$ 1,135,745.08	$ 508,629.94	$ 890.05	$ 1,007,943.95	$ 386,113.00	$ 84,393.67	$ 29,682.92	$ 106,876.35
2017								
Central	$ 8,858,027.21	$ 1,456,021.35	$ 289,839.95	$ 8,586,248.16	$ 773,345.45	$ 409,718.71	$ 120,065.47	$ 423,442.04
North	$ 1,656,155.99	$ 1,053,148.06	$ 55,552.18	$ 1,601,206.81	$ 295,859.71	$ 434,416.72	$ 333,248.72	$ 45,800.82
2018								
Central	$ 7,807,796.37	$ 3,097,611.28	$ 370,613.37	$ 7,680,181.23	$ 2,040,147.45	$ 628,936.69	$ 62,682.38	$ 474,574.27
North	$ 1,657,893.47	$ 2,771,587.44	$ 133,489.66	$ 1,629,817.99	$ 606,360.72	$ 1,470,822.05	$ 635,018.06	$ 106,347.70

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AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-11:

Please provide spending on transmission vegetation management in each year from 2006 through 2018 in AEP Texas, by division, divided into expensed and capitalized costs. To the extent possible, please divide these costs into storm damage and other spending. Separately, please also divide these costs into tree trimming, tree removal, mowing and brush cutting, and application of herbicides and growth retardant.

Response No. OPUC 3-11:

Please see OPUC 3-11 Attachment 1, for the AEP Texas Transmission vegetation management spending by division, divided into total expensed and capitalized costs for the period 2006 through 2018. The Company does not record the total cost for vegetation management spending at the additional level of detail requested.

Prepared By: Tara D. Beske	Title: Regulatory Consultant Staff
Sponsored By: Daniel R. Boezio	Title: VP Trans Field Services
Sponsored By: Wayman L. Smith	Title: Dir Trans Planning

AEP Texas Transmission
Forestry Spending for the Period
2006 - 2018

Division	Budget Category	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
North	O&M	1,953,471	1,699,025	1,403,909	1,537,216	1,451,827	956,858	1,320,695	1,656,185	2,946,103	3,260,797	2,351,559	1,651,575	6,487,949
	Capital	16,644	337,291	336,571	51,843	321,462	184,976	302,889	277,761	708,592	264,948	159,942	39,833	205,893
Central	O&M	2,623,339	2,158,667	2,002,933	1,646,563	1,614,938	977,161	1,293,999	1,783,663	2,974,039	4,093,566	2,935,589	2,526,338	4,894,691
	Capital	103,499	262,528	227,161	113,680	474,143	187,026	364,155	369,079	400,029	507,402	478,270	258,599	348,028
Total		4,696,952	4,457,510	3,970,574	3,349,302	3,862,370	2,306,020	3,281,738	4,086,688	7,028,763	8,126,712	5,925,359	4,476,345	11,936,561

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AEP TEXAS INC.'S RESPONSE TO OFFICE OF PUBLIC UTILITY COUNSEL'S THIRD REQUEST FOR INFORMATION

Question No. OPUC 3-12:

Please provide any manuals or other documents regarding AEP Texas's current distribution tree trimming practices, by division, if different for AEP Texas Central Division and AEP Texas North Division (e.g., required clearance from power lines, standard practices in distance trimmed from power lines, any differences in required trims between primary lines, secondary lines, and services). Please provide any previous manuals, or other documents no longer in force, that had been in force at any time since January 1, 2006.

Response No. OPUC 3-12:

See OPUC 3-12 attachment 1 EUVLC.pdf for current practice. Previous documents are included as OPUC 3-12 attachment 2 2012 EUVLC.pdf, OPUC 3-12 attachment 3 2009 EUVLC.pdf, and OPUC 3-12 attachment 4 2008 EUVLC.pdf

Prepared By: Charles R. Brower	Title: Dir Distr Engineering
Sponsored By: Thomas M. Coad	Title: VP Dist Region Opers

TEXAS®

A unit of American Electric Power

Electric Utility Vegetation Line Clearance

Goals, Procedures & Guidelines for Distribution Operations

AEP Texas
2017
(Updated Jan, 2017)

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AEP System Forestry Guidelines

Foreword

A. Introduction

The purpose of these Guidelines is to document and inform AEP employees and contractors about important guidelines pertaining to AEP's System Forestry Program. AEP incorporates these Guidelines into each tree service contract; **a copy shall be kept in all tree service Contractor vehicles**. These guidelines are for the sole and exclusive use of the contractor and are to be read consistently with other contract documents by and between AEP and the Contractor.

B. Definitions

Brush: Woody stem vegetation (small trees) less than four inches in diameter (0 to 3.9) at stump height (3" above ground line)

Brush Cut: The removal of brush by hand. Production is measured in square feet (500sqft = 1 unit of work).

Clearing: The physical cutting and/or removal of woody stem vegetation within the right-of-way.

Cyclebuster – Any fast growing species of tree which will not hold to maintain a 4yr cycle from primary line.

DAS Work Type - Distribution **O&M** Aerial Spray. This work type code is for Ultra Low Volume Spray Trimming and is only to be used by crews doing this type work.

DAX Work Type – Distribution **Capital** basal spray. This work type code is for trees and brush outside the R-O-W.

DBH: (Diameter at Breast Height). The diameter of a tree measured at the height of 4-1/2 feet above the ground on the uphill side.

DGC Work Type - Distribution **O&M** Growth Control. This work type code is for Tree Growth Regulator (TGR) applications on trees that have been treated before. Use this code if a tree already has a TGR tag.

DGR Work Type – Distribution **O&M** Basal Spray. This work type code is for trees under 10' tall and brush in the R-O-W.

DGS Work Type - Distribution **O&M** Foliar Spray. This work type code is for High Volume herbicide application to small trees & brush inside the designated easements. In urban settings do not apply to trees taller than 10ft. see pg 21.

DHS Work Type - Distribution Tier 4 **O&M** Hot Spot. The intent of a DHS job is to resolve an isolated safety hazard or a repeated outage situation where evidence supports the probability of continued outages or personal property damage. Any DHS job is considered Off Schedule and must be inspected by designated forester, or appointee, to determine if work is necessary now or can wait. Do Not Claim any miles in annual work plan. Keep all DHS jobs to a minimum amount of work. Trim only is preferred. Remove trees only by designated forester's approval.

DMC Work Type - Distribution **O&M** Maintenance TIER 3 type circuit work. The intent of the DMC Maintenance work type code is to track vegetation work done on a circuit or circuit segment designated by district need. All veg should be addressed and tree work provide at least 4 years clearance. DMC is considered scheduled maintenance and all miles worked must be recorded in annual work plan. All work will be directed by a designated forester and completed work will be inspected and follow final inspection protocol.

DMX Work Type - Distribution **O&M** Maintenance TIER 1 & 2 type circuit work. The intent of the DMX Maintenance work type code is to track work done on 4 Year Cycle Breaker Zones & designated Essential Customers ONLY. Work done should provide 4 years clearance. DMX is considered scheduled maintenance and all miles worked must be recorded in annual work plan. All work will be directed by a designated forester and completed work will be inspected and follow final inspection protocol.

DMJ Work Type - Distribution Major Storm. Any tree work requested to restore power during sever weather determined by AEP as being a major storm.

DMS Work Type – Distribution Minor Storm. Any tree work requested to restore power during normal day to day operations or isolated severe weather.

DNS Work Type – Distribution Non-storm. **O&M** Spend. Brush clean up.

DQS Work Type - Distribution Quality of Service, **O&M** Spend. The intent of a DQS job is to track forestry dollars spent on DWX projects that did not have O&M dollars built into their projects. All miles worked must be recorded in annual work plan. All work will be directed by a designated forester and completed work will be inspected and follow final inspection protocol.

DTC Work Type - Distribution "Incremental" **O&M** Spend. The intent of DTC is to track work done to spend extra dollars. This work type code will only be used when designated by an AEP TX Forester. Miles will be claimed toward AEP TX Forestry annual work plan.

DWO Work Type - Distribution "New ROW" **Capital** Work Order. The intent of a DWO job is to assist AEP TX Engineering and Construction with an external customer request for power. Also, DWO applies when new ROW is obtained alongside of an existing ROW. This type work is billed to the requesting work group and requires a specific work order number before tree work can begin. Forester will need documentation from ROW agent for the new distance of the ROW. No miles are claimed toward AEP TX Forestry annual work plan.

DWX Work Type - Distribution "Reliability" **Capital** Work Order. The intent of a DWX job is to assist with the AEP TX Reliability plan for system improvements. This DWX work type is to be used in conjunction with electrical equipment and hardware replacements. Do not use DWX for projects that are just tree trimming without equipment change outs. DMC or DQS should be used for those type projects. This type work is billed to the requesting work group and requires a specific work order number before tree work can begin. Miles worked should be turned into designated forester and claimed for annual work plan.

- ✓ Work order numbers start with either DCP (TCC area) or DWT (TNC area). This is followed by one zero for TCC and two zeros for TNC.
- ✓ When trees are removed outside of the R-O-W the first zero needs to be changed to a seven.
- ✓ All other work is considered **O&M.** The first zero should be changed to the letter M.

IVP Work Type - Distribution **O&M** "Completed Work" Inspection. The intent of the IVP work type is to track time spent by CUFs, Work Planner "A" or "B" doing completed work inspection. This work process must be assigned by an AEP TX forester before starting.

IVX Work Type – Distribution **Capital** "Completed Work" Inspection. The intent of the IVX work type is to track time spent by CUF's, Work Planner "A" or "B" doing completed work inspections on Capital work. This work process must be assigned by an AEP TX forester before starting.

- ✓ Work order numbers start with either DCP (TCC area) or DWT (TNC area). This is followed by one zero for TCC and two zeros for TNC.
- ✓ When trees are removed outside of the R-O-W the first zero needs to be changed to a seven.
- ✓ All other work is considered **O&M.** The first zero should be changed to the letter M.

MIS Work Type – Distribution **O&M** Miscellaneous Service. This work type code is for meetings, training and travel. This work type code should only be used with AEP TX forester approval.

SMT Work Type - Distribution **O&M** Mowing. The intent of a SMT job is to clear vegetation access issues from the distribution easement utilizing a mowing machine. This type work is billed to the Forestry budget and must be authorized by forester or designated AEP representative. Miles should be tracked and reported toward AEP TX Forestry annual work plan.

SRT Work Type - Distribution "Reliability" Mowing. The intent of an SRT job is to assist a Reliability Work Order (DWX) to clear vegetation access issues from the distribution easement utilize a mowing machine. Only use this code when the work order has O&M dollars designated. This work type is billed to the Reliability Project work order number and must be authorized by forester or designated AEP representative. Miles should be tracked and reported toward AEP TX Forestry annual work plan.

- ✓ Work order numbers start with either DCP (TCC area) or DWT (TNC area). This is followed by one zero for TCC and two zeros for TNC.
- ✓ When trees are removed outside of the R-O-W the first zero needs to be changed to a seven.
- ✓ All other work is considered **O&M.** The first zero should be changed to the letter M.

Danger Tree: A tree considered a potential hazard to AEP's facilities growing outside of the normally cleared right-of-way.

Debris: Non-vegetative material (trash) such as pop bottles, cans, wire, paper and old tires.

Fallen Tree: A tree lying on the ground not cut by the Contractor.

Hangers: A limb or limbs cut by contractor that is left hanging in tree, on lines or fence.

Hardware Pole: Anything other than cross arm and insulators, (fuse, transformer, recloser, lightning arrestor, etc).

Hazard Tree: A tree considered a potential threat to the safety and reliability of AEP's facilities growing within the normally maintained right-of-way.

Log: The merchantable portion of a tree as designated by AEP.

Lopping: The cutting of limbs and slash so that they lie in contact with the ground or as otherwise designated by AEP.

Mowing: The mechanical cutting of woody stem vegetation within the right-of-way.

Prescription: The plan prepared for each circuit or unit of work. It designates the vegetation to be maintained, the method(s) of maintenance, and who will perform the work.

Property Owner: Party from whom easements have been secured, their successors or assigns.

Removal: The complete cutting down of trees at or near the ground line. AEP shall specify the disposal method. Each tree removed, 4" or larger, is 1 removal unit. For brush cut 500 sqft is 1 removal unit.

Rolled Back: The reduction of a pruned tree's crown in a manner that provides increased conductor clearance by pruning to shape the upper crown area away from the conductors.

Slash: The un-merchantable portion of a tree (debris) left after trimming often called brush, not to be confused with small trees less than 4" dhh as stated above.

TGR: Tree Growth Regulator – a chemical applied to the soil at the base of a tree to slow the growth of branches. Typically applied before trimming to reduce re-growth.

Tree: Woody stemmed vegetation with a DBH four inches (4") or greater.

Tree Density: Light –35 trees or less per mile, or 0-25% of line section requires clearing.
Medium – Between 36 and 70 trees per mile, or 26-50% of line section requires clearing.
Heavy – Between 71 and 140 trees per mile, or 51-75% of line section requires clearing.
Very Heavy – Greater than 140 trees per mile, or 76-100% of line section requires clearing.

I. General Guidelines

A. Safety

1. The safety of both contractors and the public is of utmost importance to AEP Texas. Contractors shall regard safety as their first priority. Contractors and their employees will recognize and follow all laws, rules and regulations regarding public and worker safety. **Any** personal injury **accidents** that occur on the job **must be reported to** designated forester as soon as possible.

2. Safety audits will be conducted on a regular basis. See Appendix, Table 4 pg 26 for a copy of an audit form.

B. Personnel

1. If required by state or local laws and regulations the contractor shall have an ISA Certified Arborist available.

2. No private work may be solicited or worked by Contractor employees while on AEP time. Contractors shall not receive compensation from anyone except AEP for tree work that is a part of AEP's line clearance program. The consequences will be crew and/or contractor disciplinary action.

C. Equipment

1. Contractors shall provide **sufficient equipment in working order** to complete assigned tasks such as trucks, chippers, chain saws, pole pruners, hand saws,

ropes, saddles, etc. Specialty equipment not regularly used in day to day operations can be billed to AEP with approval.

2. The minimum number of chain saws on the job shall equal the number of personnel on the crew, or as per contract agreement. Chainsaws shall not be billed separately unless approved by designated forester.

3. Each climber shall be provided with a complete set of equipment including: rope, saddle, chainsaw, pruner and handsaw.

4. The use of spurs/climbers is to be avoided. Where their use is required (as in the removal of specified trees or climbing difficult trees) only qualified persons shall be permitted to use them upon approval by designated forester.

D. Outages

1. **All outages or operations caused by contract crews shall be reported to the appropriate AEP Dispatch center and designated forester immediately. Any line contact on transmission shall be reported to the appropriate dispatch center and designated forester immediately.**

2. Use the following dispatch numbers to phone in crew caused outages:

Abilene & San Angelo	– (800) 756-7332
Corpus North	– (800) 714-9312
Corpus South	– (800) 727-3635
Laredo	– (800) 241-4189
San Benito - East	– (866) 296-1935
San Benito – West	- (800) 568-5214

3. Costs to restore contractor caused outages due to negligence May Be billed to Contractor if negligence is determined.

E. Working Hours (Drive time, Overtime, PD & Meals, etc.)

1. **Drive time** in the morning and evenings, chip dumping times and any other non productive time **must be discussed** with designated forester **before work** on assigned tasks **begin**.

2. **Overtime** is billable for work performed outside the scope of the normal work schedule. The **preferred work week** is Monday through Thursday if working 4x10 or Monday through Friday if working 5x8. **Work planners are encouraged to adjust hours in order to catch people at home.**

3. A **make up day** should only be used in the event crews are shut down due to inclement weather or AEP approved training. In no event should one crew (person) be allowed a make up day due to personal reasons **without prior AEP approval**.

4. Breaks shall be taken as needed during the daily routine. Breaks should not last any longer than 10 minutes. Workers should not take breaks together.

5. **Per Diem Rates**

   a. A Per Diem request must be submitted for approval when a contractor employee is sent by the Owner's designated representative to a work site that is 80 miles or greater (one way) from that individual's normal reporting site.
   See Table 5 pgs 27-29 for further instructions and PD Template.

F. Work Procedures (Work Plan & Refusals, etc.)

1. The Contractor will be responsible for developing a written work plan for each work assignment. Each work plan should include: Circuit name and number, job authorization number if work is unit price, a time line of when work is to be started and expected completion, type of equipment and man power to be used, and a list of any suspected issues or concerns that may be encountered while working on the circuit. The plan must be submitted to the appropriate designated forester for approval before work begins.

2. The **work plan must be performed in a systematic way.** It is recommended to break large projects into smaller, more manageable work steps in order to facilitate thorough completion and inspection. A typical work step is usually 1 mile or less. The preferred method is to work all "Zone One" areas first to insure quick reliability impact for AEP. For example: Begin work at substations and following circuit to protective devices. Complete work in one step before moving to another. **Skipping around to complete easiest work first is not acceptable.** Care must be taken to follow entire circuit or circuit segment to prevent skipping a section of line. Circuit maps will be provided where available. Contractor should work what is indicated on the map as the circuit. Please report any portions of a circuit that are found in the field that are not on the map.

3. It is the Contractor's responsibility to ensure that the work plan is followed. It is important to regularly communicate with designated forester about work progress, if work is staying on track with time estimates given in the work plan.

4. **Contractor shall provide daily work locations to AEP**, including changes to these locations. The **locations must be as accurate as possible** to insure safety.

5. Each crew shall have a planned worksheet present at all times, except in the case of emergency work.

6. The Contractor's daily association with their crews and customers will allow **planned outages and refusals to be worked on a progressive basis. Contractor shall provide a written list of such areas that have not been worked**, including reasons, to their designated forester within a reasonable time (within 24 hours of when work was determined hazardous or refused). This information can be sent as a text, but an email would be preferred. See section H Refusals, pg 9.

7. The Contractor will notify AEP of any hazardous conditions found during the performance of work under this contract. This is to include danger trees, soil erosion, or any attachment to AEP's facilities, deteriorated, damaged or broken facilities and any other abnormal conditions.

8. AEP Texas designated forester will conduct clearance and work quality audits of contractor's work on a regular basis. See Appendix, Table 4 (pg 26 for audit document. **When an assigned task (circuit) is nearing completion the contractor must notify their designated forester** to establish a written schedule, with dates, **for final inspection.** Inspection should be started **within two weeks of completion.** If schedule is not established designated forester should notify contractor and can begin final inspection two weeks after next circuit is started by contractor's crews. Designated forester can schedule the inspection with a contractor representative if desired. Customer refusal addresses should be documented in written inspection schedule with time line of expected completion. Designated forester has 30 days from work completion to conclude final inspection. Upon inspection **undocumented skips or incomplete work will be worked at the Contractor's expense.** If designated forester fails to inspect circuit within 30 days the cost of working any

skips found will be negotiated. See Appendix, Table 3, pg 26 for example of a circuit completion document.

9. All requested Non Maintenance tree work, whether **DHS, DQS** or **DWO**, is to be first inspected for necessity by designated forester. Periodic inspection of completed work will be conducted to verify accuracy of work type determination & adherence to species clearance and work quality guidelines.

G. Public Relations

1. Public relations are important to AEP. Proper notification can eliminate most property owner issues before they arise. Advanced notification provides the property owner with an opportunity to voice concerns. Properly communicating the extent of work to be completed is a must.

2. An attempt will be made by contractor to contact property owners through personal notification and or door hangers. Once property owners are contacted **every effort must be made to communicate the extent of tree work to be performed** on their property. Do not assume they understand what you are talking about – show them. Explain the clearances. Time spent here can prevent future complaints and claims. AEP can assist with news releases, certified letters, etc. if determined these avenues are needed. AEP will attempt to contact an absentee landowner only if the resident provides AEP with a method to contact the property owner.
3. During normal, day to day, operations the Contractor will knock on each property owner's door announcing the arrival of the crew for work.

4. At no time while working on AEP assigned tasks should Contractor's employees use property or possessions of land owners without owners written consent. Such as using picnic tables, patio chairs, lawn furniture, etc. during lunch break.

5. During emergency work, Contractor will make an attempt to notify the property owner of the crew's arrival. Discretion should be used during late night or early morning work. If no property owner contact is made, a door card should be left to explain work performed. When brush and debris is left, a card detailing AEP's Storm restoration Policy will be left.
6. Contractor will document all locations where door cards were left, including address and date. A monitored local or toll-free telephone number to reach the contractors should be on each card. In the event a property owner complaint or claim results from lack of notification and the contractor can not produce documents to verify notification the contractor will resolve claim at their expense.

7. Customer notification must be conducted prior to any DHS, DQS or DWO work starting. Strict enforcement of items 2 and 4 above are to be followed while conducting DHS or DQS work.

H. Refusals

1. **A "Refusal" is** considered to be **any resident or property owner refusing to allow** or permit the **contractor to clear vegetation as specified** within the scope of, and according to, these guidelines and specifications.

2. **Refusals will not be accepted** by AEP unless both work planner and GF have verbally spoken with property owner and have documented reasons for refusal. Documentation may include property owners signature but must include planners and GF signature verifying they have done all they can to resolve issues.

3. The contractor will document a refusal/complaint on work plan with pertinent property owner information such as phone number and best time to catch at home.

4. Undocumented refusals will be worked at the Contractor's expense.

5. If the contractor is unable to resolve the refusal within one week of working on circuit, the refusal shall be turned over to their designated forester.

6. All refusals will be communicated and signed off by designated forester.

I. Damage Claims and Complaints

1. The Contractor shall be responsible for all damage claims and complaints due to their negligence. AEP shall be notified within one business day of all claims and complaints. For cases involving livestock or domestic animals, AEP may choose to have a veterinarian investigate the situation.

2. An on-site investigation with the resident or property owner shall be made as soon as possible. This meeting, or telephone arrangements for the investigation, shall be made within twenty-four (24) hours of receipt of the complaint. Designated forester may accompany the Contractor during this initial investigation.

3. All valid claims resulting from the Contractor's negligence are to be settled within thirty (30) days by the Contractor, or the Contractor will provide evidence they are trying to reach a reasonable settlement.

4. The Contractor shall keep AEP informed of the status of all complaints. When a settlement is reached, a written release for both AEP and the Contractor shall be obtained from the property owner.

5. If a settlement cannot be reached, the Contractor will confirm in writing to AEP the final settlement offer and briefly summarize events pertaining to the offer.

6. After thirty (30) days, if a Contractor fails to resolve a claim, does not continue attempts to resolve the claim or keep AEP fully informed, AEP may settle the claim and bill the Contractor

II. Clearance & Work Quality Guidelines

A. Removals

- *AEP Tree Removal Philosophy*: **Tree removal is a very important** part of AEP's line clearance program. In residential areas, authorization of the property owner (in writing), AEP TX Forestry, or appropriate government agency is required for the removal of a tree.

- Stumps should be cut as close to the ground as possible (where safety is not a question no more than three inch maximum height is acceptable) and treated with an approved herbicide, unless stated otherwise by designated forester.

- Tree removal shall be completed in one operation. If this is not practical, hazardous conditions Shall Not be left while the work is not actively in progress. Trees shall be removed in a manner to protect yards, fences, houses, electric lines and other facilities.

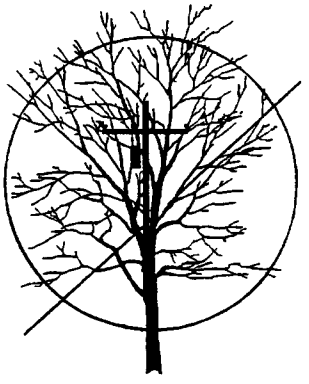
- **Targets for saw crew removal are:**
  - ANY fast growing tree species 14 inches OR LESS at stump diameter (4"-14.0") closer than **10ft** to primary & any medium or slow growing tree species closer than **6ft** to primary. See Species list in Table 1, pg 19 & Tree Selection diagrams in Table 2, pg 20-24.
  - ANY brush or tree <14" @ stump, closer than 5ft from open wire secondary.
  - ANY brush or tree <14" @ stump, closer than 5ft around a utility pole with electrical hardware such as transformers, fuses, etc. Clear around pole for distance of 5ft. See definition for brush pg 3.
  - Trees where adequate clearance cannot be obtained using proper pruning practices. For example - branches trimmed back to trunk and trunk is less than needed clearance for species.
  - Mature trees where more than 50% of the crown must be removed to obtain clearance.
  - Palms where trunk is closer than ½ of the crown diameter to the conductor.

- Trees that are *Not Good Removal Candidates* for saw crew are:

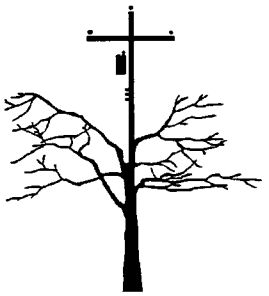
- Trees in landscaped areas where property owners refuse removal.

Brush that is not closer than 5ft from open wire secondary or is not around a pole with electrical hardware. See Tree Selection & Clearance diagrams in Table 2, pg 20-24.

- Trees larger than 14" @ stump diameter without valid reason approved by designated forester.
- Trees that would take more than 2.5 times longer to remove than to trim for proper clearance and at least 50% of the crown would be left intact.
- Slow-growing tree species farther than 6ft from the primary.
- Small trees around non hardware poles where herbicide can be applied to control.



Tall Maturing/Fast Growing targeted removal



Short Maturing/Slow Growing targeted trim

- Deciduous stumps will be treated with an AEP approved herbicide to prevent regrowth unless the situation prevents application according to label instructions, or there is a documented customer refusal or the designated forester directs otherwise.
- Diseased, dying, or dead trees which could threaten conductors will be made safe allowing for removal by the property owner or private arborist. All brush and wood generated by this activity should be left on site unless specified by designated forester.

B. Pruning

1. AEP Pruning Standards and Philosophy

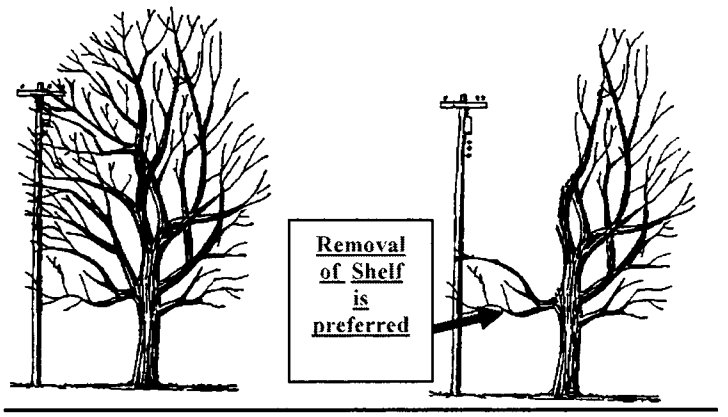
All tree pruning shall be governed by approved principles of modern arboriculture and shall adhere to Tree Care Industry Association (TCIA) and International Society of Arboriculture (ISA) standards. AEP Forestry personnel **(designated forester)** may grant exceptions to these pruning standards where mechanical trimming equipment is used such as bomb trimmers and aerial saws. Pruning shall be done in a manner that protects current tree health and with regard for future growth and development. Pruning shall provide at least the minimum specified clearance from electrical conductors as set forth in this Section.

The process used to determine which trees to be trimmed should follow the Tree Selection diagrams. See Tree Selection & Clearance diagrams in Table 2, pg 20-24.
Care shall be exercised to prevent the spreading of insects or diseases from one tree to another. Contractors trimming oak trees in the state of Texas will follow proper **Oak Wilt prevention steps** as directed by AEP Texas. For example – all cuts 2" & larger will be coated with paint.

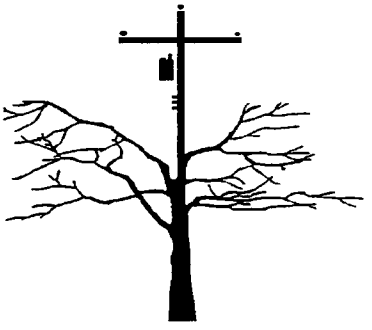
Wild cherry, black walnut and other toxic vegetation which has been cut or damaged, shall be removed from areas accessible to livestock as appropriate.

2. Directional Pruning

It is AEP's practice to prune trees in a manner that will direct regrowth away from electrical conductors as much as possible, thus reducing the amount of pruning necessary in the future. Trees growing to the side of conductors should have their horizontal growth removed back to a lateral or the parent stem and the vertical growth left rolled back. **AEP would prefer to have the shelf removed.**



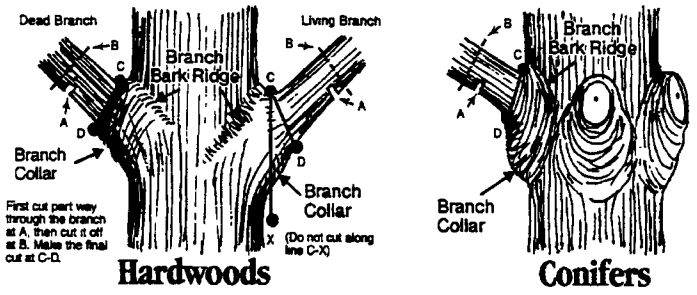
Trees closer than the 10ft or 6ft specified on page 20 should be pruned using the "natural" or "drop crotch" method of top pruning. **Do not trim mature trees larger than 28"at dbh without designated forester approval**. It is AEP's preference to remove the horizontal shelf under the power lines. However, in sensitive customer areas the horizontal shelf can be left with designated forester approval. Special Note for Re-Clearing Breaker Zones: See specs on page 22



Note: Trees left in this condition near a pole with hardware are good candidates for removals. If trees are trimmed they should be TGR'd.

3. **Collar Cuts**

The position and manner of making cuts is of the utmost importance. The most important single item in tree pruning is the "collar cut" (see diagram below).



When properly made, collar cuts reduce the pruning wound surface area (compared to flush cuts) and allow the tree's chemical protective zones to aid in callus growth and eventual wound coverage. Collar cuts also reduce re-sprouting and re-growth of limbs into conductors.

a. All limbs will be cut back to laterals at least one-third (1/3) the size of the limb being removed.

b. Care shall be taken to avoid damage to the cambium layer, or loosening or stripping of the bark.

c. The three (3) cut method to remove large limbs will be used to eliminate bark peels.

d. Improper collar cuts and peels will be looked for during work quality audits.
e. Make sure all cuts 2" and larger on all Oak trees are painted to help prevent Oak Wilt.

f. On trees along streets or in sensitive customer areas, all cuts larger than 2" should be painted on all tree species.

4. **Tree Shape**

a. Trees should be **pruned to provide the required clearance** from electrical conductors. After that job is accomplished, the shape of the tree can be taken into consideration.

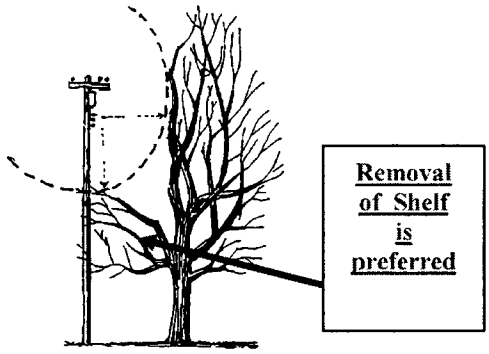
b. When poorly shaped trees must be left, Contractor is empowered to do cosmetic pruning to satisfy the customer, using approved methods within a period of time that does not exceed the time spent on the original line clearance pruning. Rounding over is *not* an approved practice.

5. **Clearance - Distribution**

Minimum clearance for distribution power lines is that distance that will prevent regrowth into conductors for at least 4 years. The species, site conditions, limb and conductor sag and sway during windy conditions, plus the effect of electrical load, should all be considered when determining the clearance requirement. **Insufficient clearance will be addressed during clearance audits.**
See tree species and clearances listed in Table 1, pg 19 & diagrams pgs 20-24 for regular and re-clear.

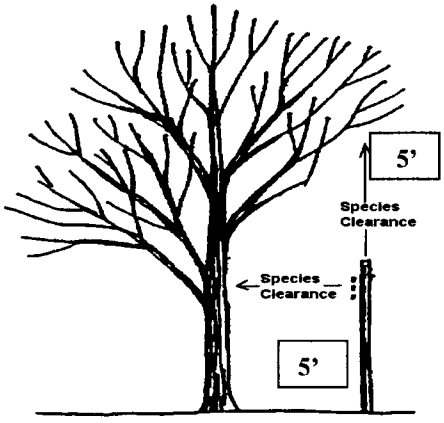
Primary – Trees should be trimmed for a **minimum of 4 years clearance**. Overhanging limbs should be removed. Top of tree should be rolled back unless

prior arrangements have been made with AEP. AEP may adjust overhang clearance on Single phase primary as situation warrants.



Reduced clearance can be considered on trees that have had a resent TGR application. See Table 1, pg 19

Neutral Wire & Open Wire Secondary – When a neutral wire is the only wire below primary wires treat the neutral as an Open Wire Secondary. If trees are closer than 5ft to the neutral or open wire secondary trim for at least 5ft feet of clearance. When Open Wire Secondary is the only wires in a span (as pictured below) Do Not Remove overhanging branches unless otherwise specified by AEP.



Twisted or Cabled Secondary, Service Drops & Street Lights – DO NOT trim trees near twisted or cabled secondary service drops and street light wires unless limbs are applying heavy pressure to the line. DO NOT prune for street light illumination except under the specific direction by designated forester.

Poles – Poles with hardware (anything other than a cross arm and insulators) **will be cleared** of all volunteer trees, brush, and slash to obtain a minimum of a **five (5) foot** of clearance **around the pole**. All hardware poles that do not have this clearance must be documented as a documented skip with reason why not cleared, otherwise contractor will work at their expense. See section I General Guidelines point F8. Brush around **poles without** hardware can be cleared around using herbicide. **Guy Wires – Guy Wires supporting poles with hardware must be cleared** the same as a pole with hardware. Down guys and Overhead Guy wires on non hardware poles should only be pruned of heavy limbs applying pressure on the wires. Herbicide can be used to spray brush around non hardware down guys.

Vines - Should be cut and treated with an herbicide to prevent re-growth. Do not try to remove by pulling off pole. Cut a visible gap between the stumps and hanging vine.

6. Clearance - Transmission

Minimum clearance from transmission conductors should be species clearance plus a climber safety zone of OSHA required "separation" for various transmission voltages and is based on maximum sag of conductors.

7. **Hangers and Clean Up**

a. All hangers shall be removed from the tree before leaving the job site.

b. Work sites shall be left in a neat and orderly condition. If a customer complaint arises due to incomplete clean up and upon investigation determine was **contractor's negligence** resolution will be at **contractor's expense.**

c. **A minimum amount of clean up work should be done when performing a property owner generated request for tree removal. Unless otherwise** designated forester**, wood shall not be cut up or hauled away.** Where directed by designated forester chipping the brush, cutting wood into lengths that can be handled and raking the site is the maximum clean up that should be performed.

d. All streams and/or drainage ditches shall be kept open while working in the area and shall be cleaned out after Contractor's operation is completed in the area.

C. Clearing and reclearing

a. AEP will provide the width of the right-of-way to be cleared.

b. All woody plants that have the potential to grow into the lines should be controlled, either by mechanical removal, herbicide treatment or a combination of both. Those woody plants within the right-of-way that at mature size normally would not threaten lines or interfere with access to AEP's facilities should be left undisturbed in the right-of-way whenever possible.

c. Any tree, brush, and existing **stump** left within the right-of-way shall be cut as close to the ground as safely practical. The preferred standard is **not to exceed three inches in height** above the ground line. Where possible, the cut shall be parallel to the slope and promptly treated with an approved herbicide, unless otherwise directed by designated forester.

d. Trees shall be felled to avoid damage to crops, fences and other facilities. Any trees felled into crops, ditches, streams, roads or across fences shall be promptly removed. No trees shall be felled in such a manner as to endanger AEP's facilities or the property of third parties, or hinder access along the right-of-way.

e. Trees, brush and slash shall be lopped as directed by designated forester.

f. Danger trees outside easement shall be removed or pruned to eliminate the hazard. When cut, danger trees shall be cut as low as is practical. The logs and slash shall be left as felled, unless otherwise directed by designated forester.

g. Stumps of trees growing in fences may be cut at fence post height, where directed by designated forester.

h. Logs may be left in tree lengths or as directed by designated forester. The merchantable value of logs shall be preserved as much as possible.

i. In remote areas, brush and logs may be piled at the edge of the ROW for wildlife habitat. Logs may be left in large sections rather than cut to firewood length.

j. Brush should not be left in managed agricultural areas or other maintained areas unless directed by designated forester.

D. Herbicide Applications

1. Tree and brush species in the designated easement or ROW that have the potential of growing into the lines, should be controlled. Tree and brush species that will not grow up into the lines or interfere with access to AEP's facilities should be left untreated whenever possible. Appropriate use of herbicides will be looked for during the ROW clearance audit. **Urban spray height –**

   DO NOT spray brush over 10' tall in residential & retail business areas. Any brush skipped must be documented and reported to AEP. Follow Tree Work Selection Diagram, pg 20-24,
   All first time herbicide application used to remove trees / brush to <u>widen</u> designated easement must be counted as DWO.

2. All herbicides shall be applied according to label instructions.

3. Herbicide application shall be done in accordance with Federal, State and local laws. Contractors are required to maintain accurate and up to date records of all herbicide applications and are required to abide by all Federal, State, and Local laws concerning licensing, record keeping and product handling.

4. Contractors shall attain 100% coverage and 95% control of treated vegetation. Results from application not meeting 95% control will be re-worked at contractor's expense.

5. Designated forester will make vegetation management prescriptions in consultation with contractors.

6. It is always appropriate and preferred to make landowners notification before any herbicide treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger.

7. Managers of public rights-of-way involved in the treatment area shall be notified, where appropriate.

8. Contractor shall be responsible for training of herbicide applicators.

9. Unless specifically prohibited, by property owners or AEP, cut stumps will be treated with an approved herbicide treatment.

10. Follow all directives and protocol for Ultra Low Volume Spray Trimming. See attachment for details.

E. Tree Growth Regulator Application

1. Landowners should be notified before any TGR treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger. Two attempts of different methods are to be used before application in sensitive landowner areas.

2. All trees shall be inspected by the Contractor for health and vigor prior to treatment. Trees found in an excessive state of decline shall not be treated unless directed by AEP.

3. Trees designated for tree growth regulation shall be treated with an approved tree growth regulator (TGR) in accordance with label instructions.

4. Tree selection is based on species growth rates (fast, medium or slow) and distance existing branches are from the primary or secondary wires. Follow Tree Work Selection Diagram, pg 20-24, to determine which trees should be treated.

5. Special care must be taken when making a TGR application near off target plants (trees, shrubs, vines, flowers, grass, gardens, etc.). Basal drench may be used rather than soil injection to restrict off target impact.

6. Proper documentation and record keeping is required. Copies of such records should be available upon request by AEP. Application refusals must be documented and reported to AEP as work progresses on a given circuit.

F. Cycle-Buster Process:

1. Fast growing species of trees with significant re-growth thru the conductors should be considered for removal.

2. All plan sheets with trees that fit cycle-buster status should be marked and reported to forester. The forester will then decide the appropriate course of action.

APPENDIX

Table 1. Tree Species & Clearances for AEP Texas (TCC & TNC)

These growth rates and clearance distances are a guideline for the minimum distance required to provide four years of no wire contact from branches. These distances are not absolute rules and should serve as ***minimum clearance*** requirements on the distribution system. The minimum clearance requirements on the transmission system are these distances plus an additional seven foot climber safety zone. **Trees with recent TGR application can be considered for less clearance. The fast species can be considered medium and the medium can be considered slow. Ten feet is the minimum trim distance for any species for any reason.**

Species Re-Growth Rates & Minimum Clearances

Species with Fast Re-growth
Trim for a *minimum* clearance of **15 feet** *from conductors.*

Anaqua	Ash species	Ailanthus
Australian pine	Chinaberry	Box Elder
Cottonwood (Poplar species)	Eucalyptus	
Golden Rain Tree	Hackberry	
Mulberry	Pecan	
Salt Cedar	Sycamore	
Tallow	Tepejahe	
Western Soapberry	Willow	

Species with Medium Re-growth
Trim for a *minimum* clearance of **12 feet** *from conductors*

Cypress	Elm species
Ficus	Fruit trees (Oranges, etc.)
Huisache	Young vigorous Live Oak species
Locust	Young vigorous Mesquite
Ornamental Pear	Red Oak species (leaves w/ pointed lobes)
Catalpa	Bois d'arc (Osage Orange, Hedge tree)

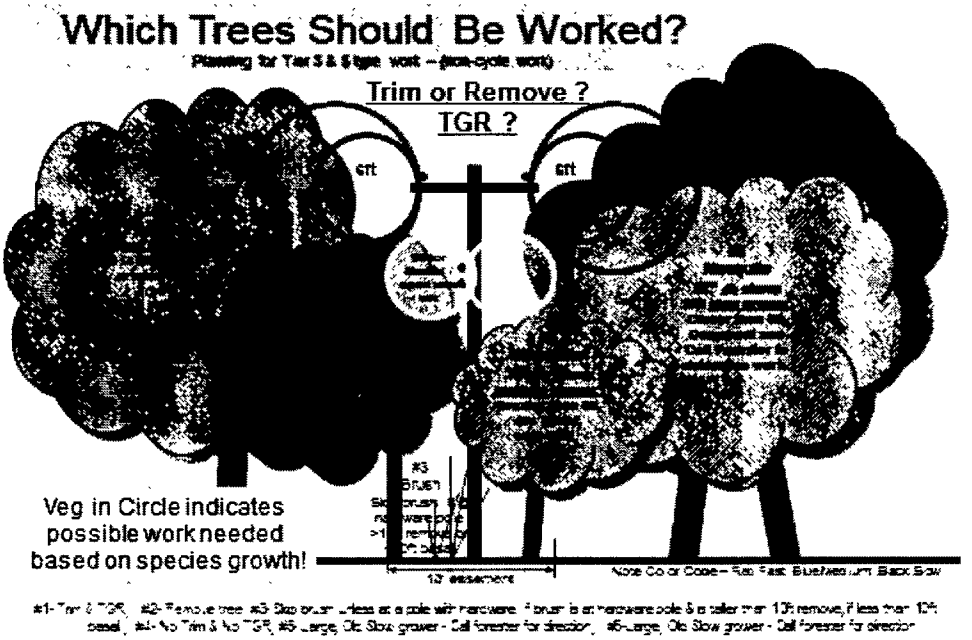
Species with Slow Re-growth
Trim for a *minimum* clearance of **10 feet** *from conductors,* based on ANSI safety standards.

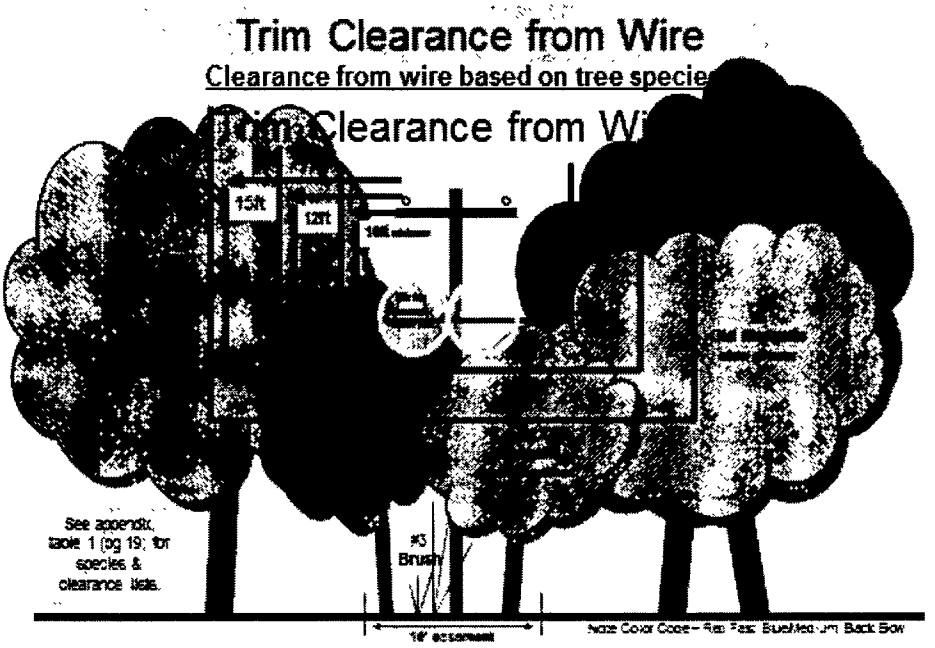
Avocado	Ebony
Magnolia species	Orchid species
Pine species	Older mature Live Oaks
Retama	Older mature Mesquite
Red Cedar (juniper)	Royal Poiciana

Small ornamental species (redbud, dogwood, crabapple, crepe myrtle, ligustrum, etc.)
White Oak species (leaves with rounded lobes)

The species and the site, limb and conductor sag, and sway during windy conditions and times of heavy electrical load should all be considered when determining clearance requirement. Tree with recent TGR application can have adjusted clearances as stated at top of page.

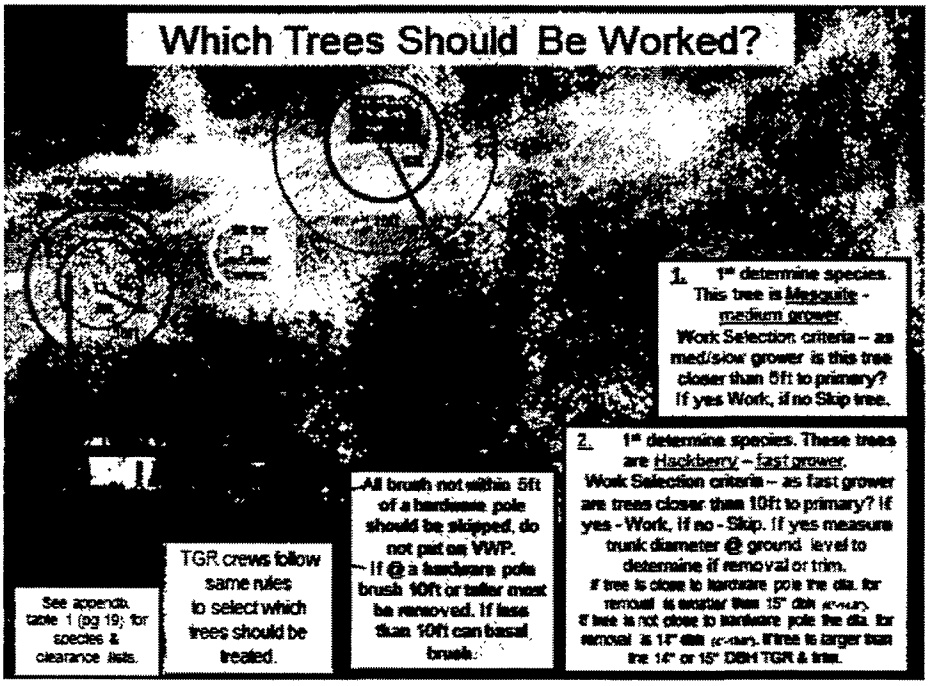
Table 2. Tree Selection for Trim, TGR & Spray Trim Clearance.

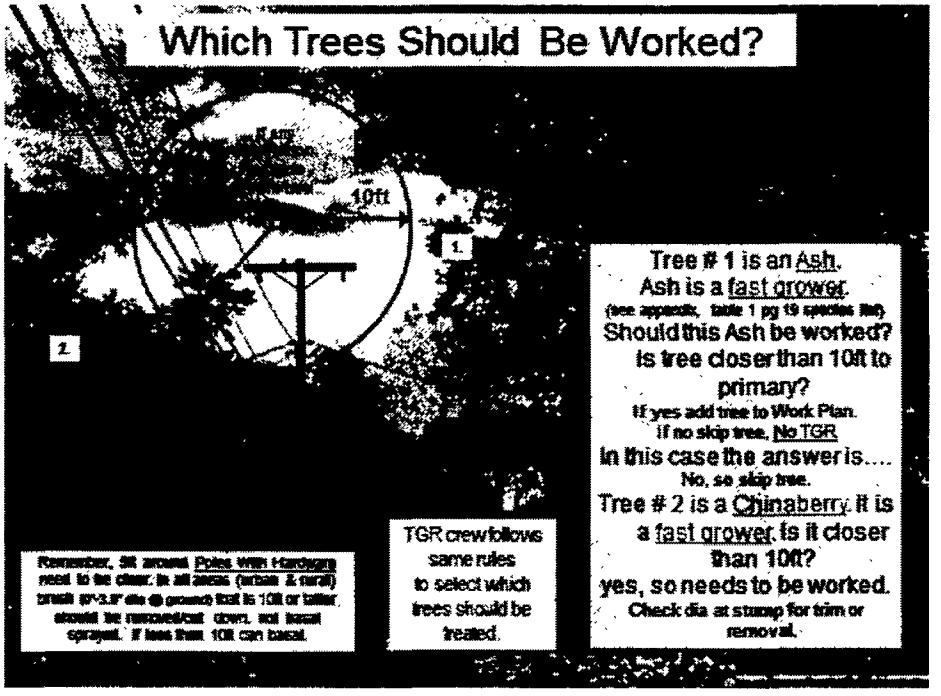




Trim clearance from wires is based on growth rates of tree species.
Fast grower -15ft, **Medium -12ft, & Slow – 10ft.** For old over mature trees Contact forester.
See appendix table 1 (pg 19) for species in each growth rate.

Table 2. Tree Selection for Trim, TGR & Spray Trim Clearance.





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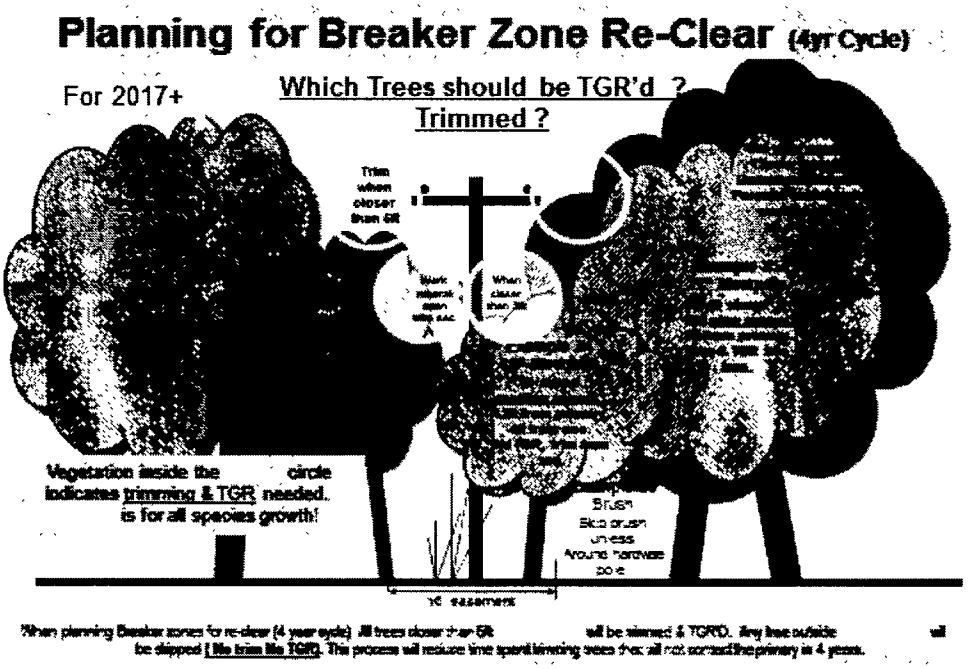

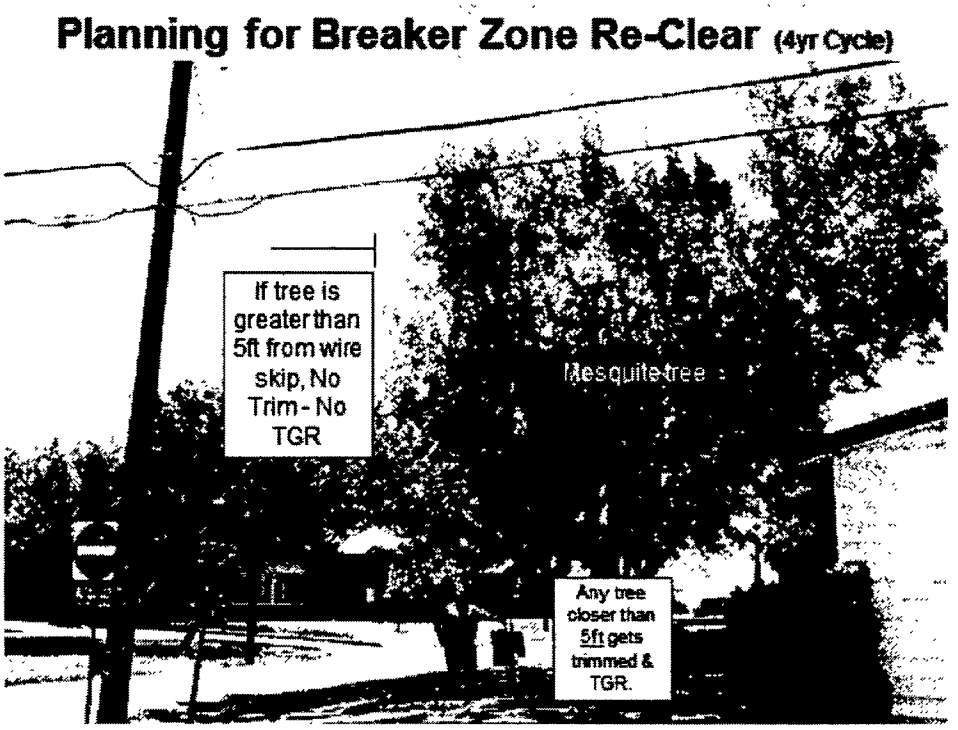

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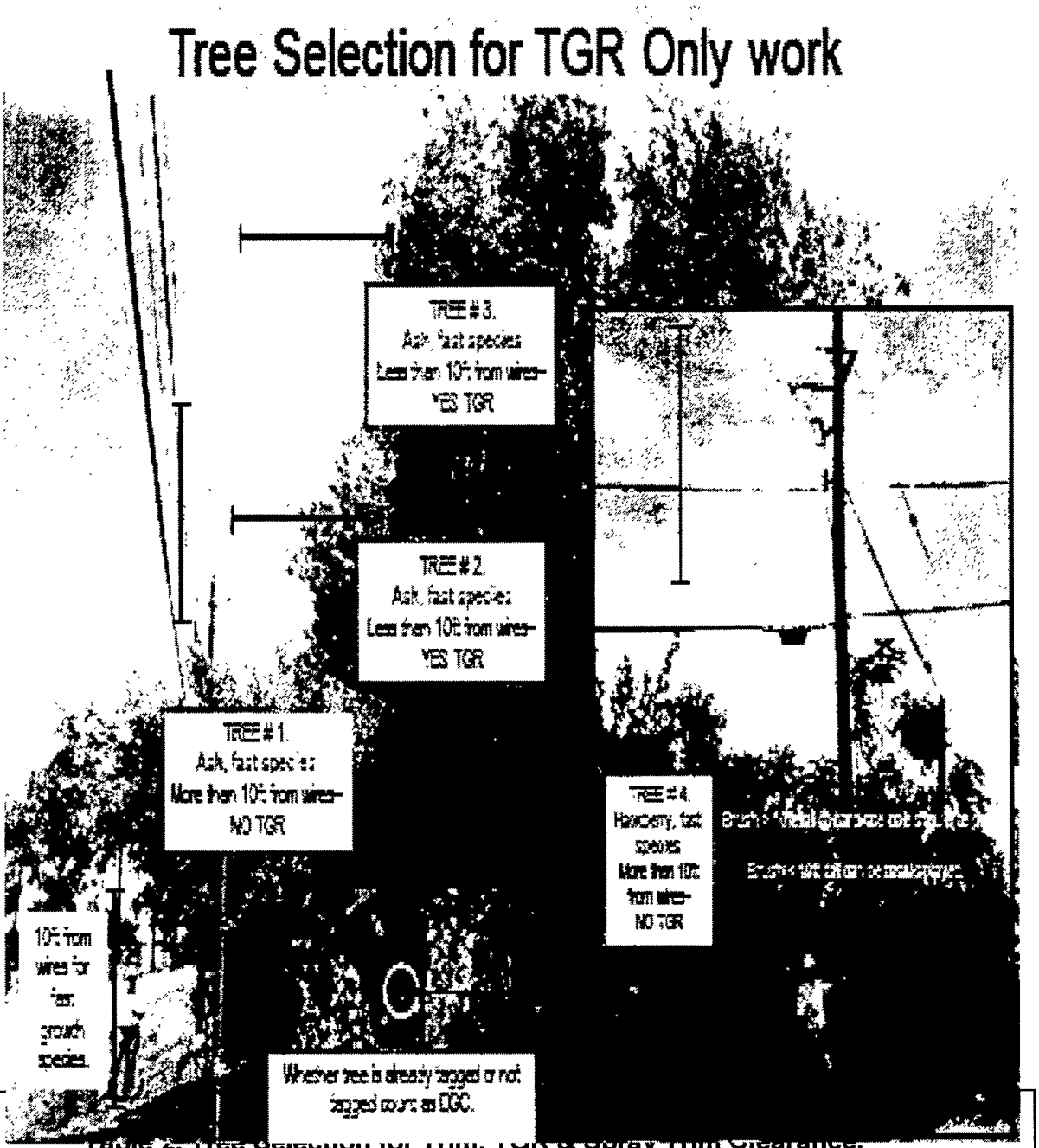
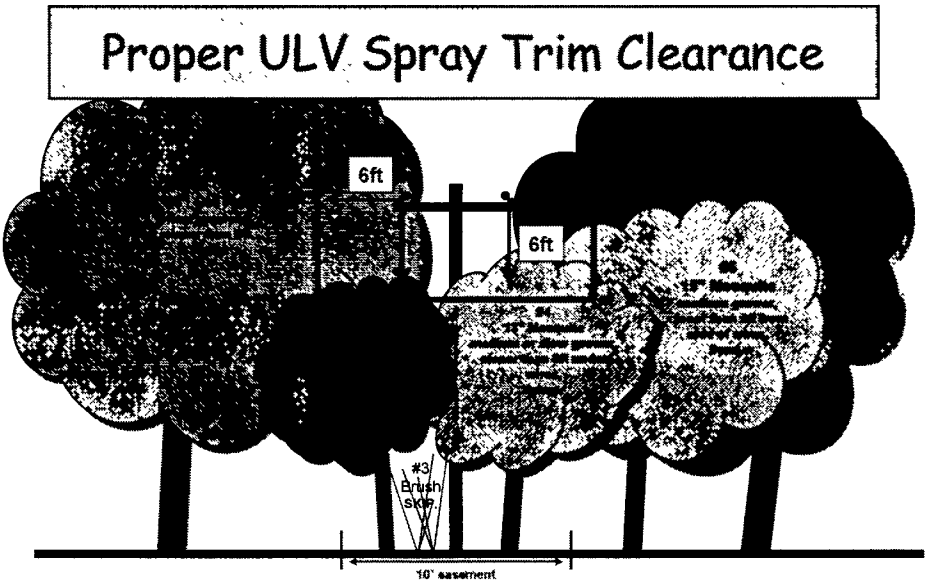


Table 2. Tree Selection for Trim, TGR & Spray Trim Clearance.



#1 - Spray, #2 - Skip, #3 - Skip, #4 - Spray, #5 - Spray, #6 - Spray.

6ft clearance after Spray Trim application

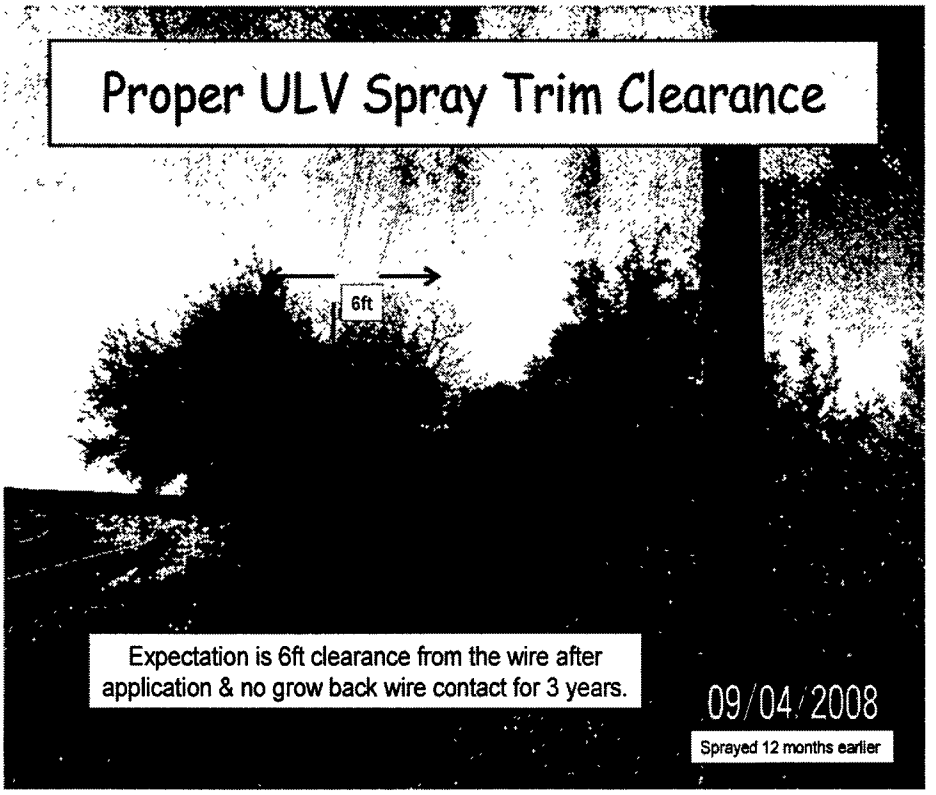


Table 3. Example of Written Circuit Completion Document

AEP Texas Forestry Operations

Completed Circuit Inspection Schedule

Circuit Name & Location: _____

* Expected Date for Inspection to Begin: _____

Date the Initial Inspection is Completed: _____

Date Final Inspection is Completed: _____

Upon completion of Initial Circuit Inspection list below issues discovered during inspection that need correction in order for circuit to pass Final Inspection.

Check box to the left when listed item is re-inspected and accepted as complete.

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

Comments: _____

_____

_____

_____ signature of inspecting AEP Texas representative

_____ signature of Contractor representative

* Note - See page 9 of the AEP Texas Forestry Guidelines for details of circuit inspection process.

Table 4. Crew Audit Example

AEP FORESTRY CONTRACT (KPI) CREW AUDITS No. 094626

Audit Date: ____/____/____ Audit Quarter 1 2 3 4 (circle one) Operating Co.: _____

Auditor Name: _____ State: _____

Crew Number: _____ District: _____ Forestry Region Number: _____

Circuit #: _____ Foreman/ General Foreman: _____

Circuit Name: _____ Pole Number _____

Forestry Contract Crew Safety (KPI) Audit CHECK ONE PASS ☐ FAIL ☐

Failure ratings for any single item will result in failure of the audit.
Failure must be documented in comments fields and will require random periodic follow up observation

		PASS	FAIL	COMMENTS
1	Personal Protective Equipment- Shall be worn as required. Includes but not limited to hard hats, safety glasses, ear protection, proper footwear	☐	☐	
2	Properly Maintained Safety Equipment- Fully stocked, removable first aid kit, fire extinguisher and wheel chocks	☐	☐	
3	Traffic Control Devices- Approved and placed in accordance with applicable State and Federal regulations	☐	☐	
4	Proper Fall Protection Procedures- All climbing practices must be in accordance with OSHA and ANSI Z -133 standards	☐	☐	
5	Properly Barricade Work Areas- Barricade material obtainable and used in accordance with safety rules	☐	☐	
6	Properly Maintain and Store Work Tools	☐	☐	
7	Follow Proper Approach Distances- Follow OSHA 1910.269 minimum distances for All Live Work Minimum Approach Distance	☐	☐	

Acceptable/Unacceptable on items below

An Unacceptable ratings may result in failure of this audit dependent on magnitude and frequency of the violation
Any item found to be Unacceptable must be documented in the comments fields and will require random periodic follow up observation

	ACCEPTABLE	UNACCEPTABLE	COMMENTS
1 Hazardous material properly stored, labeled and documented	☐	☐	
2 MSDS and Herbicide Label information available	☐	☐	
3 Jobsite Housekeeping	☐	☐	

Forestry Clearance (KPI) Audit CHECK ONE PASS ☐ FAIL ☐

Pass / Fail	PASS	FAIL		PASS	FAIL	COMMENTS
Conductor Clearance	☐	☐	Danger Trees	☐	☐	
ROW Width	☐	☐				

Forestry Work Quality (KPI) Audits CHECK ONE PASS ☐ FAIL ☐

	PASS	FAIL		PASS	FAIL		PASS	FAIL	COMMENTS
Collar Cuts	☐	☐	Stump Height	☐	☐	Peels/Tears	☐	☐	
Directional Pruning	☐	☐	Hangers	☐	☐	Cleanup/Brush Disposal	☐	☐	
Drop Crotch Selection	☐	☐	Clearing around poles	☐	☐	Regard for property	☐	☐	

Reporting Accuracy (KPI) Audit

Week ending date: ____/____/____

	Timesheet Date		Audit Data		Variance	
	Cap	O&M	Cap	O&M	Cap	O&M
Number of trees trimmed						
Number of trees removed						
Footage/ Units/ Acres Re-cleared						
Footage/ Units/ Acres Ground Sprayed						

Watering: YES ☐ NO ☐

Non - KPI Crew Audit Items

Equipment & Personnel	PASS	FAIL		PASS	FAIL		PASS	FAIL		PASS	FAIL
Truck Appearance/ID	☐	☐	Professional appearance	☐	☐	Crew Properly Equipped	☐	☐	Tree Knowledge	☐	☐
Number of Working Saws	☐	☐	Manpower utilization	☐	☐	Herbicide Equipment	☐	☐	Planning	☐	☐
ROW Equipment/Chipper	☐	☐	Customer Relations	☐	☐	AEP Guidelines	☐	☐	Use of Forms	☐	☐

ADDITIONAL COMMENTS: _____

Table 5. Per Diem Instructions

A. Per Diem will not be paid if lodging and meals are provided by Owner.

B. Contractor shall submit documentation with their invoice specifying the distance between home address of record or reporting site and work site for each individual claiming Per Diem on each submitted invoice. Contractor will submit to OPCO the employees due per diem using the template on pg. 29.

C. Owner's designated representative may authorize the payment of per diems to "outsource" or "Off System" contractor employees brought onto Owner's property on a temporary basis.

D. The per diem rate is defined in the applicable contract rate sheets and includes lodging and meals.

E. Contractor shall maintain employee home address of record information and make available to Owner's designated representative (s) upon request.

F. Owner's designated representative may require contractor employees to remain in a work area overnight during emergency assistance, work flow driven (LEAN) or crew cohesion, regardless of the distance a contractor employee is from their home address of record or reporting site. In these instances, Owner's designated representative will require the contractor to clearly document on the weekly time sheet that the individuals were held over by writing in the time sheet comment field the words "Emergency Assistance or Work Flow Driven (LEAN) or Crew Cohesion" followed by the Forester's name authorizing the request. In turn, the forester or contractor will be responsible for writing in the invoice comment field "Emergency Assistance or Work Flow Driven (LEAN) or Crew Cohesion" followed by the Forester's name authorizing the request. The per diem request is approved by the Owner's designated representative and contractor once the invoice is approved in CAMPS.

G. Definitions

- **Crew Cohesion** – The need of a crew member to stay overnight with a per diem eligible crew when that crew member may be within the mileage threshold but travel to the overnight stay location in a company vehicle.

- **Emergency Assistance** – Owner's designated representative will have the authority to hold contractor crews in an area during storm or other situations deemed an emergency when the mileage is less than in Bullet #1. If held in the area the contractor employee affected will be eligible for per diem if such charges would normally be incurred. All parties should understand this action is auditable and the time sheet and invoice must have the words Emergency Assistance and the Forester's name authorizing the per diem in the time sheet and invoice comment field or the per diems shall be subject to refund to Owner.

- **Home Address** – The contract employee's legal address of record for tax purposes.

- **Owner's Designated Representative** – Owner designated representative for daily forestry operations will be the OPCO/transmission region forester or OPCO/transmission forestry supervisor.

Table 5. Per Diem Instructions

- **Outsource or Off System** – Contractor employees that do not normally or exclusively work on the Owner's property and whose home address of record is 80 miles or more from the reporting site and is acceptable to Owner's designated representative.

- **Per Diem** – Daily allowance for expenses that include housing and meals to cover expenses when traveling for work and agreed upon by the contractor and the Owner's designated representative.

- **Reporting Site** – A contractor designated location acceptable to the Owner's designated representative where the contractor's trucks/equipment is parked and the employees go to get the trucks/equipment to travel to the work site. (In some regions called a show up location.) If a crew is stating its billable time at a reporting site, travel time to the work site shall not be more than thirty (30) minutes, via the most direct route, unless authorized by Owner's designated representative.

- **Work Flow Driven (LEAN)** – Owner designated representative will have the authority to instruct crews to stay overnight when the mileage is less than Bullet #1. There are times when it is cost effective to have the crews stay overnight instead of returning to the home address of record or reporting site. For example, crew is working 45 miles from the reporting site and the next work location is in the same direction but is 85 miles from the reporting site. In this situation the forester will have the authority to authorize an overnight stay that would require a per diem payment since staying overnight is more productive that to return to the reporting site or home address of record. All parties should understand this action is auditable for work efficiencies and productivity and the time sheet and invoice must have the words Work Flow Driven (LEAN) and the forester's name authorizing the per diem in the time sheet and invoice comment field or the per diems shall be subject to refund to owner.

- **Work Site** – The day's starting location for the performance of services ex, work site should be associated with vegetation management activities on the company's rights-of-way.

H. When held over at the request of the Owner on regularly scheduled work days, crew members shall be eligible for a meal if held over for two hours or more after normal quitting time. Owner shall reimburse contractor $12.00 per meal for each crew member entitled to a meal unless meals are provided by Owner.

I. For contractor employees entitled to a meal in accordance with the supplementary terms, Section2, Item 2.8: Contractor personnel shall be off the clock for meal breaks. Owner shall reimburse contractor $12.00 per meal for each employee entitled to a meal unless meals are provided by owner. Contractor personnel shall be on the clock for meals if they do not stop work to eat. Not stopping work to eat means eating on-the-fly at the jobsite (personnel spend less than 10 minutes eating) or while traveling from jobsite to jobsite. Owner shall not reimburse contractor for breakfast or lunch meals if contractor personnel return to their homes at night.

Table 5. Per Diem Template

AEPTX / KYPCO / PSO

Contractor Name:	
General Foreman:	
[illegible] Foreman:	
Contract Number:	
W/E Date:	
[illegible]	

Invoice #	Days of PD

	Employee Name	Home Address (City, State) or Reporting Site	Mileage to Site	Per Diem (Y/N)	Days Requested	Eligibility Number
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						

Per Diem Eligibility:

1. A Per Diem request can be submitted for approval when a Contractor employee is sent by the Owner's Designated Representative to a work site that is [illegible] miles or greater (one way) from that individual's normal reporting site.

2. Owner's Designated Representative may authorize the payment of Per Diems to "Outsource" or "Off System" Contractor employees [illegible] Owner's property on a temporary basis.

3. Owner's Designated Representative may require Contractor employees to remain at a work site overnight during [illegible] Assistance, Work Flow Driven(LEAN) or Crew Cohesion, regardless of the distance a Contractor employee [illegible] home [illegible] or reporting site. In these instances, Owner's Designated Representative [illegible] on the weekly time sheet that the individuals were [illegible] over by [illegible] the [illegible] Emergency Assistance, Work Flow Driven(LEAN) or Crew Cohesion) followed by [illegible] request. In turn, [illegible] contractor will be responsible [illegible] Assistance, Work [illegible](LEAN) or Crew Cohesion [illegible]. The Per Diem [illegible] approved by the Owner's Designated Representative [illegible] in CMMS.

[illegible]

TEXAS®

A unit of American Electric Power

Electric Utility Vegetation Line Clearance

Goals, Procedures & Guidelines for Distribution Operations

AEP Texas
2011 to date
(revised Feb-2012)

TABLE OF CONTENTS

AEP System Forestry Guidelines

Foreword

A. Introduction

The purpose of these Guidelines is to document and inform AEP employees and contractors about important guidelines pertaining to AEP's System Forestry Program. AEP incorporates these Guidelines into each tree service contract; **a copy shall be kept in all tree service Contractor vehicles**. These guidelines are for the sole and exclusive use of the contractor and are to be read consistently with other contract documents by and between AEP and the Contractor.

B. Definitions

Brush: Woody stem vegetation (small trees) less than four inches in diameter (0 to 3.9) at stump height (3" above ground line)

Brush Cut: The removal of brush by hand. Production is measured in square feet (500sqft = 1 unit of work).

Clearing: The physical cutting and/or removal of woody stem vegetation within the right-of-way.

DBH: (Diameter at Breast Height). The diameter of a tree measured at the height of 4-1/2 feet above the ground on the uphill side.

DBX: Trees in the easement that are 18" or larger, at the stump, that are removed, and any size brush, see above, or trees removed outside the easement.

DHS Work Type - Distribution Hot Spot. The intent of a DHS job is to resolve an isolated safety hazard or resolve a repeated outage situation where evidence supports the probability of continued outages or personal property damage. Any DHS job is considered Off Schedule and must be inspected by designated forester, or appointee, to determine if work is necessary now or can wait. Do Not Claim any miles in annual work plan. Keep all DHS jobs to a minimum amount of work. Trim only is preferred. Remove trees only by designated forester's approval.

DQS Work Type - Distribution Quality of Service. The intent of a DQS job is to help resolve a reliability concern or prevent a PUCT complaint on a designated circuit segment (a few spans). DQS work is considered Off Schedule and must be inspected by designated forester, or appointee, to determine if it is necessary before working. All completed work will be inspected and will follow final inspection protocol.

- ✓ If DQS work results in three years clearance on all veg in planned work on circuit segment then completed miles Should Be Claimed as part of annual plan.
- ✓ If DQS work results in limited clearance on selected veg but not all veg on circuit segment then Do Not Claim miles on work plan.

DMS Work Type – Distribution Minor Storm, Any tree work requested to restore power during normal day to day operations or isolated sever weather.

DMJ Work Type - Distribution Major Storm, Any tree work requested to restore power during sever weather determined by AEP as being a major storm.
DWO Work Type - Distribution Work Order. The intent of a DWO job is to assist an AEP engineering or support group in order for other AEP work to be complete a capital

improvement project . This type work is billed to the requesting work group and requires a specific work order number before tree work can begin.

DMC Work Type - Distribution Maintenance. The intent of a DMC job is to provide system reliability on a selected circuit or circuit segment. All veg should be addressed and tree work provide at least 3 years clearance. DMC is considered scheduled maintenance and all miles worked must be recorded in annual work plan. All work will be directed by a designated forester and completed work will be inspected and follow final inspection protocol.

Danger Tree: A tree considered a potential hazard to AEP's facilities growing outside of the normally cleared right-of-way.

Debris: Non-vegetative material (trash) such as pop bottles, cans, wire, paper and old tires.

Fallen Tree: A tree lying on the ground not cut by the Contractor.

Hangers: A limb or limbs cut by contractor that is left hanging in tree, on lines or fence.

Hardware Pole: Anything other than cross arm and insulators, (fuse, transformer, recloser, lightning arrestor, etc).

Hazard Tree: A tree considered a potential threat to the safety and reliability of AEP's facilities growing within the normally maintained right-of-way.

Log: The merchantable portion of a tree as designated by AEP.

Lopping: The cutting of limbs and slash so that they lie in contact with the ground or as otherwise designated by AEP.

Mowing: The mechanical cutting of woody stem vegetation within the right-of-way.

Prescription: The plan prepared for each circuit or unit of work. It designates the vegetation to be maintained, the method(s) of maintenance, and who will perform the work.

Property Owner: Party from whom easements have been secured, their successors or assigns.

Removal: The complete cutting down of trees at or near the ground line. AEP shall specify the disposal method. Each tree removed, 4" or larger, is 1 removal unit. For brush cut 500 sqft is 1 removal unit.

Rolled Back: The reduction of a pruned tree's crown in a manner that provides increased conductor clearance by pruning to shape the upper crown area away from the conductors.

Slash: The un-merchantable portion of a tree (debris) left after trimming often called brush, not to be confused with small trees less than 4" dhh as stated above.

TGR: Tree Growth Regulator – a chemical applied to the soil at the base of a tree to slow the growth of branches. Typically applied before trimming to reduce re-growth.

Tree: Woody stemmed vegetation with a DBH four inches (4") or greater.

Tree Density: Light –35 trees or less per mile, or 0-25% of line section requires clearing.
Medium – Between 36 and 70 trees per mile, or 26-50% of line section requires clearing.
Heavy – Between 71 and 140 trees per mile, or 51-75% of line section requires clearing.

Very Heavy – Greater than 140 trees per mile, or 76-100% of line section requires clearing.

I. General Guidelines

A. Safety

1. The safety of both contractors and the public is of utmost importance to AEP Texas. Contractors shall regard safety as their first priority. Contractors and their employees will recognize and follow all laws, rules and regulations regarding public and worker safety. **Any** personal injury **accidents** that occur on the job **must be reported to** designated forester as soon as possible.

2. Safety audits will be conducted on a regular basis. See Appendix, Table 4 pg 21 for a copy of an audit form.

B. Personnel

1. If required by state or local laws and regulations the contractor shall have an ISA Certified Arborist available.

2. No private work may be solicited or worked by Contractor employees while on AEP time. Contractors shall not receive compensation from anyone except AEP for tree work that is a part of AEP's line clearance program. The consequences will be crew and/or contractor disciplinary action.

C. Equipment

1. Contractors shall provide **sufficient equipment in working order** to complete assigned tasks such as trucks, chippers, chain saws, pole pruners, hand saws, ropes, saddles, etc. Specialty equipment not regularly used in day to day operations can be billed to AEP with approval.

2. The minimum number of chain saws on the job shall equal the number of personnel on the crew, or as per contract agreement. Chainsaws shall not be billed separately unless approved by designated forester.

3. Each climber shall be provided with a complete set of equipment including: rope, saddle, chainsaw, pruner and handsaw.

4. The use of spurs/climbers is to be avoided. Where their use is required (as in the removal of specified trees or climbing difficult trees) only qualified persons shall be permitted to use them upon approval by designated forester.

D. Outages

1. **All outages or operations caused by contract crews shall be reported to the appropriate AEP Dispatch center and designated forester immediately. Any line contact on transmission shall be reported to the appropriate dispatch center and designated forester immediately.**

2. Use the following dispatch numbers to phone in crew caused outages:

Abilene & San Angelo	– (800) 756-7332
Corpus North	– (800) 714-9312
Corpus South	– (800) 727-3635
Laredo	– (800) 241-4189
San Benito - East	– (866) 296-1935
San Benito – West	- (800) 568-5214

3. Costs to restore contractor caused outages due to negligence May Be billed to Contractor if negligence is determined.

E. Working Hours (Drive time, Overtime, PD & Meals, etc.)

1. **Drive time** in the morning and evenings, chip dumping times and any other non productive time **must be discussed** with designated forester **before work** on assigned tasks **begin**.

2. **Overtime** is billable for work performed outside the scope of the normal work schedule. The **preferred work week** is Monday through Thursday if working 4x10 or Monday through Friday if working 5x8. **Work planners are encouraged to adjust hours in order to catch people at home.**

3. A **make up day** should only be used in the event crews are shut down due to inclement weather or AEP approved training. In no event should one crew (person) be allowed a make up day due to personal reasons **without prior AEP approval**.

4. Breaks shall be taken as needed during the daily routine. Breaks should not last any longer than 10 minutes. Workers should not take breaks together.

5. Traveling crews working after hours and storm response crews should receive special consideration for housing (per diem vs. submitted hotel receipts) & meals according to guidelines. See appendix Table 5, pg 22.

F. Work Procedures (Work Plan & Refusals, etc.)

1. The Contractor will be responsible for developing a written work plan for each work assignment. Each work plan should include: Circuit name and number, job authorization number if work is unit price, a time line of when work is to be started and expected completion, type of equipment and man power to be used, and a list of any suspected issues or concerns that may be encountered while working on the circuit. The plan must be submitted to the appropriate designated forester for approval before work begins.

2. The **work plan must be performed in a systematic way.** It is recommended to break large projects into smaller, more manageable work steps in order to facilitate thorough completion and inspection. A typical work step is usually 1 mile or less. The preferred method is to work all "Zone One" areas first to insure quick reliability impact for AEP. For example: Begin work at substations and following circuit to protective devices. Complete work in one step before moving to another. **Skipping around to complete easiest work first is not acceptable.** Care must be taken to follow entire circuit or circuit segment to prevent skipping a section of line. Circuit maps will be provided where available. Contractor should work what is indicated on the map as the circuit. Please report any portions of a circuit that are found in the field that are not on the map.

3. It is the Contractor's responsibility to ensure that the work plan is followed. It is important to regularly communicate with designated forester about work progress, if work is staying on track with time estimates given in the work plan.

4. **Contractor shall provide daily work locations to AEP**, including changes to these locations. The **locations must be as accurate as possible** to insure safety.

5. Each crew shall have a planned worksheet present at all times, except in the case of emergency work.

6. The Contractor's daily association with their crews and customers will allow **planned outages and refusals to be worked on a progressive basis**. **Contractor shall**

provide a written list of such areas that have not been worked, including reasons, to their designated forester within a reasonable time (within 24 hours of when work was determined hazardous or refused). See section H Refusals, pg8.

7. The Contractor will notify AEP of any hazardous conditions found during the performance of work under this contract. This is to include danger trees, soil erosion, or any attachment to AEP's facilities, deteriorated, damaged or broken facilities and any other abnormal conditions.

8. AEP Texas designated forester will conduct clearance and work quality audits of contractor's work on a regular basis. See Appendix, Table 4 (pg 21 for audit document. **When an assigned task (circuit) is nearing completion the contractor must notify their designated forester** to establish a written schedule, with dates, **for final inspection.** Inspection should be started **within two weeks of completion.** If schedule is not established designated forester should notify contractor and can begin final inspection two weeks after next circuit is started by contractor's crews. Designated forester can schedule the inspection with a contractor representative if desired. Customer refusal addresses should be documented in written inspection schedule with time line of expected completion. Designated forester has 30 days from work completion to conclude final inspection. Upon inspection **undocumented skips or incomplete work will be worked at the Contractor's expense.** If designated forester fails to inspect circuit within 30 days the cost of working any skips found will be negotiated. See Appendix, Table 3, pg 20 for example of a circuit completion document.

9. All requested Non Maintenance tree work, whether **DHS, DQS** or **DWO**, is to be first inspected for necessity by designated forester. Periodic inspection of completed work will be conducted to verify accuracy of work type determination & adherence to species clearance and work quality guidelines.

G. Public Relations

1. Public relations are important to AEP. Proper notification can eliminate most property owner issues before they arise. Advanced notification provides the property owner with an opportunity to voice concerns. Properly communicating the extent of work to be completed is a must.

2. An attempt will be made by contractor to contact property owners through personal notification and or door hangers. Once property owners are contacted **every effort must be made to communicate the extent of tree work to be performed** on their property. Do not assume they understand what you are talking about – show them. Explain the clearances. Time spent here can prevent future complaints and claims. AEP can assist with news releases, certified letters, etc. if determined these avenues are needed. AEP will attempt to contact an absentee landowner only if the resident provides AEP with a method to contact the property owner.

3. During normal, day to day, operations the Contractor will knock on each property owner's door announcing the arrival of the crew for work.

4. At no time while working on AEP assigned tasks should Contractor's employees use property or possessions of land owners without owners consent. Such as using picnic tables, patio chairs, lawn furniture, etc. during lunch break.

5. During emergency work, Contractor will make an attempt to notify the property owner of the crew's arrival. Discretion should be used during late night or early morning work. If no property owner contact is made, a door card should be left to explain work performed.

6. Contractor will document all locations where door cards were left, including address and date. A monitored local or toll-free telephone number to reach the contractors should be on each card. In the event a property owner complaint or claim results from lack of notification and the contractor can not produce documents to verify notification the contractor will resolve claim at their expense.

7. Customer notification must be conducted prior to any DHS, DQS or DWO work starting. Strict enforcement of items 2 and 4 above are to be followed while conducting DHS or DQS work.

H. Refusals

1. **A "Refusal" is** considered to be **any resident or property owner refusing to allow** or permit the **contractor to clear vegetation as specified** within the scope of, and according to, these guidelines and specifications.

2. **Refusals will not be accepted** by AEP unless both work planner and GF have verbally spoken with property owner and have documented reasons for refusal. Documentation may include property owners signature but must include planners and GF signature verifying they have done all they can to resolve issues.

3. The contractor will document a refusal/complaint on work plan with pertinent property owner information such as phone number and best time to catch at home.

4. Undocumented refusals will be worked at the Contractor's expense.

5. If the contractor is unable to resolve the refusal within one week of working on circuit, the refusal shall be turned over to their designated forester.

6. All refusals will be communicated and signed off by designated forester.

I. Damage Claims and Complaints

1. The Contractor shall be responsible for all damage claims and complaints due to their negligence. AEP shall be notified within one business day of all claims and complaints. For cases involving livestock or domestic animals, AEP may choose to have a veterinarian investigate the situation.

2. An on-site investigation with the resident or property owner shall be made as soon as possible. This meeting, or telephone arrangements for the investigation, shall be made within twenty-four (24) hours of receipt of the complaint. Designated forester may accompany the Contractor during this initial investigation.

3. All valid claims resulting from the Contractor's negligence are to be settled within thirty (30) days by the Contractor, or the Contractor will provide evidence they are trying to reach a reasonable settlement.

4. The Contractor shall keep AEP informed of the status of all complaints. When a settlement is reached, a written release for both AEP and the Contractor shall be obtained from the property owner.

5. If a settlement cannot be reached, the Contractor will confirm in writing to AEP the final settlement offer and briefly summarize events pertaining to the offer.

6. After thirty (30) days, if a Contractor fails to resolve a claim, does not continue attempts to resolve the claim or keep AEP fully informed, AEP may settle the claim and bill the Contractor.

II. Clearance & Work Quality Guidelines

A. Removals

- *AEP Tree Removal Philosophy*: **Tree removal is a very important** part of AEP's line clearance program. In residential areas, authorization of the property owner (in writing), AEP TX Forestry, or appropriate government agency is required for the removal of a tree.

- All trees removed outside the easement should be counted as capital (**DBX,TBX**).

- Stumps should be cut as close to the ground as possible (where safety is not a question no more than three inch maximum height is acceptable) and treated with an approved herbicide, unless stated otherwise by designated forester.

- Tree removal shall be completed in one operation. If this is not practical, hazardous conditions Shall Not be left while the work is not actively in progress. Trees shall be removed in a manner to protect yards, fences, houses, electric lines and other facilities.

- **Targets for saw crew removal are:**

  - ANY fast growing tree species 14 inches OR LESS at stump diameter (4"-14.0") closer than **10ft** to primary & any medium or slow growing tree species closer than **6ft** to primary. See Species list in Table 1, pg 17 & Tree Selection diagrams in Table 2, pg18 & 19.

  - ANY brush or tree <14" @ stump, closer than 5ft from open wire secondary.

  - ANY brush or tree <14" @ stump, closer than 5ft around a utility pole with electrical hardware such as transformers, fuses, etc. Clear around pole for distance of 5ft. See definition for brush pg 3.

  - Trees where adequate clearance cannot be obtained using proper pruning practices. For example - branches trimmed back to trunk and trunk is less than needed clearance for species.

  - Mature trees where more than 50% of the crown must be removed to obtain clearance.

  - Palms where trunk is closer than ½ of the crown diameter to the conductor.

- Trees that are *Not Good Removal Candidates* for saw crew are:

  - Trees in landscaped areas where property owners refuse removal.

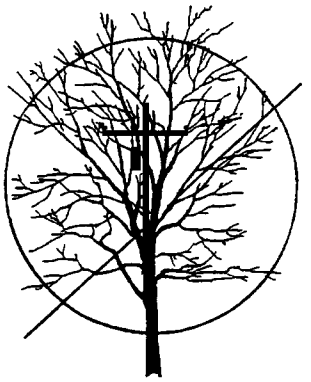
Brush that is not closer than 5ft from open wire secondary or is not around a pole with electrical hardware. See Tree Selection & Clearance diagrams in Table 2, pg18 & 19.

  - Trees larger than 14" @ stump diameter without valid reason approved by designated forester.

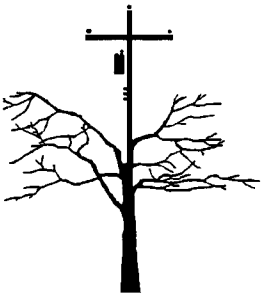
  - Trees that would take more than 2.5 times longer to remove than to trim for proper clearance and at least 50% of the crown would be left intact.

  - Slow-growing tree species farther than 6ft from the primary.

- Small trees around non hardware poles where herbicide can be applied to control.



Tall Maturing/Fast Growing targeted removal



Short Maturing/Slow Growing targeted trim

- Deciduous stumps will be treated with an AEP approved herbicide to prevent regrowth unless the situation prevents application according to label instructions, or there is a documented customer refusal or the designated forester directs otherwise.

- Diseased, dying, or dead trees which could threaten conductors will be made safe allowing for removal by the property owner or private arborist. All brush and wood generated by this activity should be left on site unless specified by designated forester.

Remember - Removal of any trees in the easement larger than 18" @ the stump, or any brush or trees outside the easement should be counted as Capital (DBX).

B. Pruning

1. **AEP Pruning Standards and Philosophy**

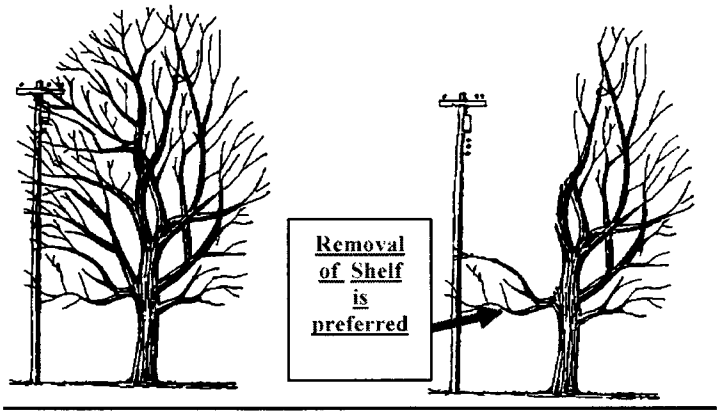
All tree pruning shall be governed by approved principles of modern arboriculture and shall adhere to Tree Care Industry Association (TCIA) and International Society of Arboriculture (ISA) standards. AEP Forestry personnel **(designated forester)** may grant exceptions to these pruning standards where mechanical trimming equipment is used such as bomb trimmers and aerial saws. Pruning shall be done in a manner that protects current tree health and with regard for future growth and development. Pruning shall provide at least the minimum specified clearance from electrical conductors as set forth in this Section.

The process used to determine which trees to be trimmed should follow the Tree.
See Tree Selection & Clearance diagrams in Table 2, pg18 & 19.
Care shall be exercised to prevent the spreading of insects or diseases from one tree to another. Contractors trimming oak trees in the state of Texas will follow proper **Oak Wilt prevention steps** as directed by AEP Texas. For example – all cuts 2" & larger will be coated with paint.

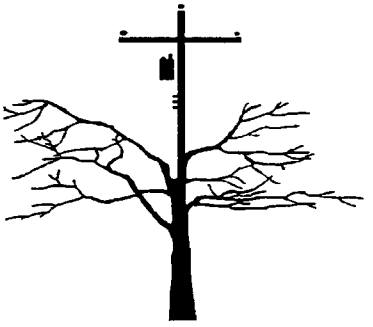
Wild cherry, black walnut and other toxic vegetation which has been cut or damaged, shall be removed from areas accessible to livestock as appropriate.

2. **Directional Pruning**

It is AEP's practice to prune trees in a manner that will direct regrowth away from electrical conductors as much as possible, thus reducing the amount of pruning necessary in the future. Trees growing to the side of conductors should have their horizontal growth removed back to a lateral or the parent stem and the vertical growth left rolled back. **AEP would prefer to have the shelf removed.**



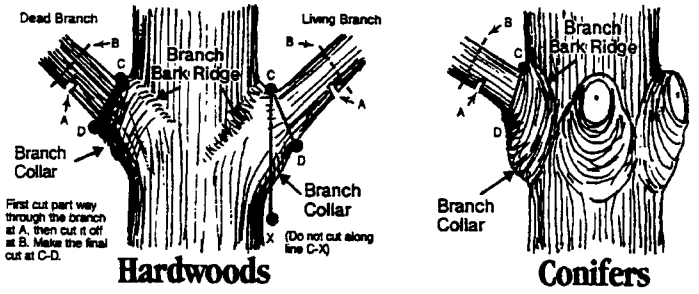
Trees closer than the 10ft or 6ft specified on page 18 should be pruned using the "natural" or "drop crotch" method of top pruning. **Do not trim mature trees larger than 28"at dbh without designated forester approval.** It is AEP's preference to remove the horizontal shelf under the power lines. However, in sensitive customer areas the horizontal shelf can be left with designated forester approval.



Note: Trees left in this condition near a pole with hardware are good candidates for removals. If trees are trimmed they should be TGR'd.

3. **Collar Cuts**

The position and manner of making cuts is of the utmost importance. The most important single item in tree pruning is the "collar cut" (see diagram below).



When properly made, collar cuts reduce the pruning wound surface area (compared to flush cuts) and allow the tree's chemical protective zones to aid in callus growth and eventual wound coverage. Collar cuts also reduce re-sprouting and re-growth of limbs into conductors.

a. All limbs will be cut back to laterals at least one-third (1/3) the size of the limb being removed.

b. Care shall be taken to avoid damage to the cambium layer, or loosening or stripping of the bark.

c. The three (3) cut method to remove large limbs will be used to eliminate bark peels.

d. Improper collar cuts and peels will be looked for during work quality audits.

e. Make sure all cuts 2" and larger on all Oak trees are painted to help prevent Oak Wilt.

f. On trees along streets or in sensitive customer areas, all cuts larger than 2" should be painted on all tree species.

4. **Tree Shape**

a. Trees should be **pruned to provide the required clearance** from electrical conductors. After that job is accomplished, the shape of the tree can be taken into consideration.

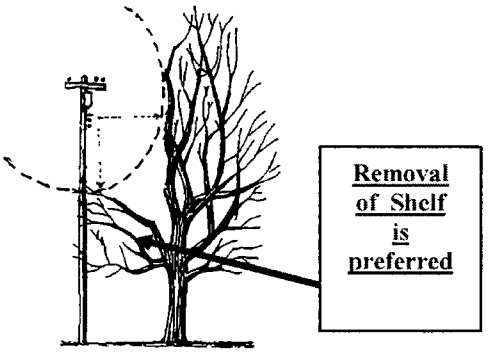
b. When poorly shaped trees must be left, Contractor is empowered to do cosmetic pruning to satisfy the customer, using approved methods within a period of time that does not exceed the time spent on the original line clearance pruning. Rounding over is *not* an approved practice.

5. **Clearance - Distribution**

Minimum clearance for distribution power lines is that distance that will prevent regrowth into conductors for at least 3 **years.** The species, site conditions, limb and conductor sag and sway during windy conditions, plus the effect of electrical load, should all be considered when determining the clearance requirement. **Insufficient clearance will be addressed during clearance audits.**
See tree species and clearances listed in Table 1, pg 17.

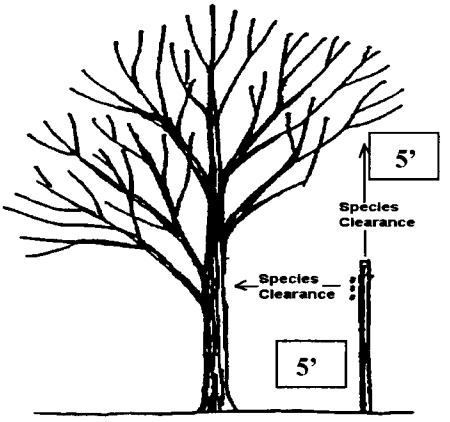
Primary – Trees should be trimmed for a **minimum** of 3 years clearance. Overhanging limbs should be removed. Top of tree should be rolled back unless

prior arrangements have been made with AEP. AEP may adjust overhang clearance on Single phase primary as situation warrants.



Reduced clearance can be considered on trees that have had a resent TGR application. See Table 1, pg 17.

Open Wire Secondary – Trees that are closer than 5ft to the wires should be trimmed for at least 5ft feet of clearance. Do not remove overhanging branches unless otherwise specified by AEP.



Twisted or Cabled Secondary, Service Drops & Street Lights – DO NOT trim trees near twisted or cabled secondary service drops and street light wires unless limbs are applying heavy pressure to the line. DO NOT prune for street light illumination except under the specific direction by designated forester.

Poles – Poles with hardware will be cleared of all volunteer trees, brush, and slash to obtain a minimum of a **five (5) foot radius** of clearance **around the pole**. All Poles that do not have this clearance as explained must be documented with reason as a documented skip otherwise contractor will work at their expense. See section I General Guidelines point F8.
Brush around **poles without** hardware can be cleared around using herbicide.

Guy Wires – Guy Wires supporting poles with hardware must be cleared the same as a pole with hardware. Down guys and Overhead Guy wires on non hardware poles should only be pruned of heavy limbs applying pressure on the wires. Herbicide can be used to spray brush around non hardware down guys.

Vines - Should be cut and treated with an herbicide to prevent re-growth. Do not try to remove by pulling off pole. Cut a visible gap between the stumps and hanging vine.

6. **Clearance - Transmission**

Minimum clearance from transmission conductors should be species clearance plus a climber safety zone of OSHA required "separation" for various transmission voltages and is based on maximum sag of conductors.

7. **Hangers and Clean Up**

a. All hangers shall be removed from the tree before leaving the job site.

b. Work sites shall be left in a neat and orderly condition. If a customer complaint arises due to incomplete clean up and upon investigation determine was **contractor's negligence** resolution will be at **contractor's expense.**

c. **A minimum amount of clean up work should be done when performing a property owner generated request for tree removal. Unless otherwise** designated forester**, wood shall not be cut up or hauled away.** Where directed by designated forester chipping the brush, cutting wood into lengths that can be handled and raking the site is the maximum clean up that should be performed.

d. All streams and/or drainage ditches shall be kept open while working in the area and shall be cleaned out after Contractor's operation is completed in the area.

C. Clearing and reclearing

a. AEP will provide the width of the right-of-way to be cleared.

b. All woody plants that have the potential to grow into the lines should be controlled, either by mechanical removal, herbicide treatment or a combination of both. Those woody plants within the right-of-way that at mature size normally would not threaten lines or interfere with access to AEP's facilities should be left undisturbed in the right-of-way whenever possible.

c. Any tree, brush, and existing **stump** left within the right-of-way shall be cut as close to the ground as safely practical. The preferred standard is **not to exceed three inches in height** above the ground line. Where possible, the cut shall be parallel to the slope and promptly treated with an approved herbicide, unless otherwise directed by designated forester.

d. Trees shall be felled to avoid damage to crops, fences and other facilities. Any trees felled into crops, ditches, streams, roads or across fences shall be promptly removed. No trees shall be felled in such a manner as to endanger AEP's facilities or the property of third parties, or hinder access along the right-of-way.

e. Trees, brush and slash shall be lopped as directed by designated forester.

f. Danger trees outside easement shall be removed or pruned to eliminate the hazard. When cut, danger trees shall be cut as low as is practical. The logs and slash shall be left as felled, unless otherwise directed by designated forester.

Again, **danger trees are typically outside the easement. Working these trees should be counted as Capital (DBX).**

g. Stumps of trees growing in fences may be cut at fence post height, where directed by designated forester.

h. Logs may be left in tree lengths or as directed by designated forester. The merchantable value of logs shall be preserved as much as possible.

i. In remote areas, brush and logs may be piled at the edge of the ROW for wildlife habitat. Logs may be left in large sections rather than cut to firewood length.

j. Brush should not be left in managed agricultural areas or other maintained areas unless directed by designated forester.

D. Herbicide Applications

1. Tree and brush species in the designated easement or ROW that have the potential of growing into the lines, should be controlled. Tree and brush species that will not grow up into the lines or interfere with access to AEP's facilities should be left untreated whenever possible. Appropriate use of herbicides will be looked for during the ROW clearance audit. **Urban spray height –**

   DO NOT spray brush over 10' tall in residential & retail business areas. Any brush skipped must be documented and reported to AEP. Follow Tree Work Selection Diagram, pg 20,

   All first time herbicide application used to remove trees / brush to <u>widen</u> designated easement must be counted as capital (DBX).

2. All herbicides shall be applied according to label instructions.

3. Herbicide application shall be done in accordance with Federal, State and local laws. Contractors are required to maintain accurate and up to date records of all herbicide applications and are required to abide by all Federal, State, and Local laws concerning licensing, record keeping and product handling.

4. Contractors shall attain 100% coverage and 95% control of treated vegetation. Results from application not meeting 95% control will be re-worked at contractor's expense.

5. Designated forester will make vegetation management prescriptions in consultation with contractors.

6. It is always appropriate and preferred to make landowners notification before any herbicide treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger.

7. Managers of public rights-of-way involved in the treatment area shall be notified, where appropriate.
8. Contractor shall be responsible for training of herbicide applicators.
9. Unless specifically prohibited, by property owners or AEP, cut stumps will be treated with an approved herbicide treatment.

10. Follow all directives and protocol for Ultra Low Volume Spray Trimming. See attachment for details.

E. Tree Growth Regulator Application

1. Landowners should be notified before any TGR treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger. Two attempts of different methods are to be used before application in sensitive landowner areas.

2. All trees shall be inspected by the Contractor for health and vigor prior to treatment. Trees found in an excessive state of decline shall not be treated unless directed by AEP.

3. Trees designated for tree growth regulation shall be treated with an approved tree growth regulator (TGR) in accordance with label instructions.

4. Tree selection is based on species growth rates (fast, medium or slow) and distance existing branches are from the primary or secondary wires. Follow Tree Work Selection Diagram, pg 18,19 & 20, to determine which trees should be treated.

5. **All trees treated with TGR for the first (1st) time (no treatment tags showing date last treated found on tree) must be counted as capital (DBX). It does not matter what the diameter is or if the tree is inside or outside the easement. All repeat applications (trees with tags) are counted as O&M (DGC).**

6. Special care must be taken when making a TGR application near off target plants (trees, shrubs, vines, flowers, grass, gardens, etc.). Basal drench may be used rather than soil injection to restrict off target impact.

7. Proper documentation and record keeping is required. Copies of such records should be available upon request by AEP. Application refusals must be documented and reported to AEP as work progresses on a given circuit.

APPENDIX

Table 1. Tree Species & Clearances for AEP Texas (TCC & TNC)

These growth rates and clearance distances are a guideline for the minimum clearances required for three years of clearance from the conductors. These distances are not static and should serve as ***minimum clearance*** requirements on the distribution system. The minimum clearance requirements on the transmission system are these distances plus an additional seven foot climber safety zone. **Trees with recent TGR application can be considered for less clearance. The fast species can be considered medium and the medium can be considered slow. Ten feet should be the minimum for any reason.**

Species Re-Growth Rates & Minimum Clearances

Species with Fast Re-growth
Trim for a *minimum* clearance of **15 feet** *from conductors.*

Anaqua	Ash species
Australian pine	Chinaberry
Cottonwood (Poplar species)	Eucalyptus
Golden Rain Tree	Hackberry
Mulberry	Pecan
Salt Cedar	Sycamore
Tallow	Tepejahe
Western Soapberry	Willow

Species with Medium Re-growth
Trim for a *minimum* clearance of **12 feet** *from conductors*

Cypress	Elm species
Ficus	Fruit trees (Oranges, etc.)
Huisache	Young vigorous Live Oak species
Locust	Young vigorous Mesquite
Ornamental Pear	Red Oak species (leaves w/ pointed lobes)

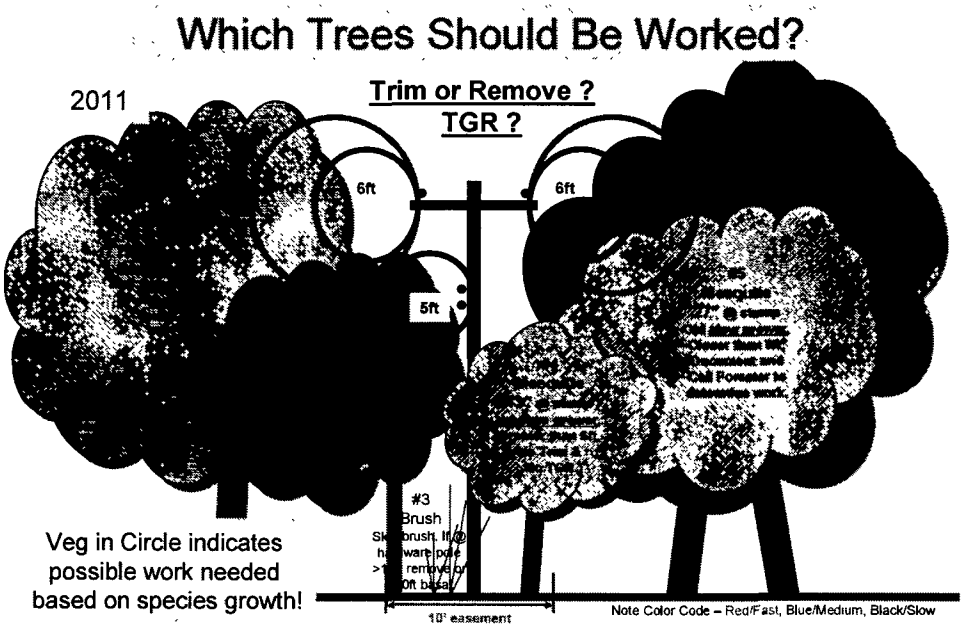
Species with Slow Re-growth
Trim for a *minimum* clearance of **10 feet** *from conductors*

Avocado	Ebony
Magnolia species	Orchid species
Pine species	Older mature Live Oaks
Retama	Older mature Mesquite
Red Cedar (juniper)	Royal Poiciana

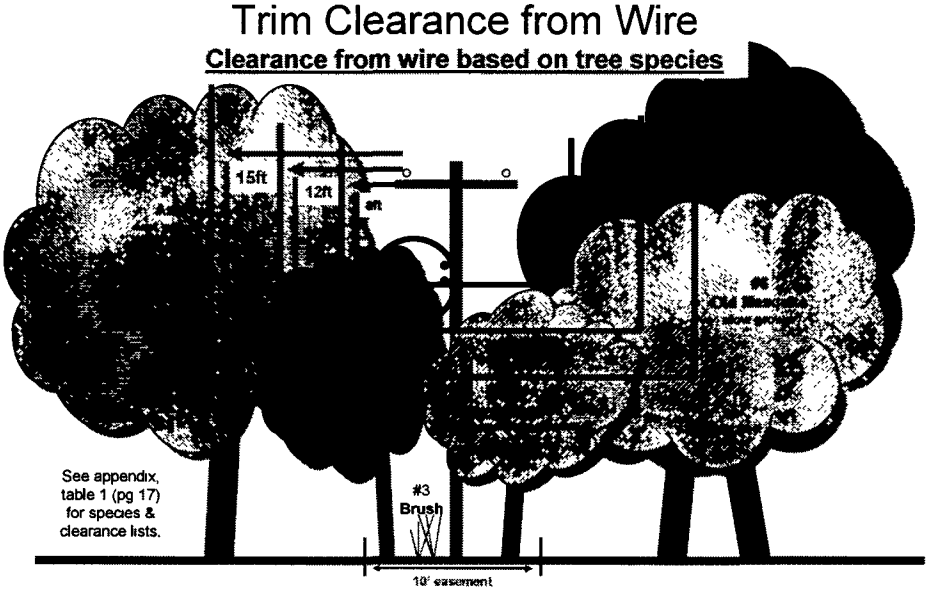
Small ornamental species (redbud, dogwood, crabapple, crepe myrtle, ligustrum, etc.)
White Oak species (leaves with rounded lobes)

The species and the site, limb and conductor sag, and sway during windy conditions and times of heavy electrical load should all be considered when determining clearance requirement. Tree with recent TGR application can have adjusted clearances as stated at top of page.

Table 2. Tree Selection for Trim, TGR & Spray Trim Clearance.

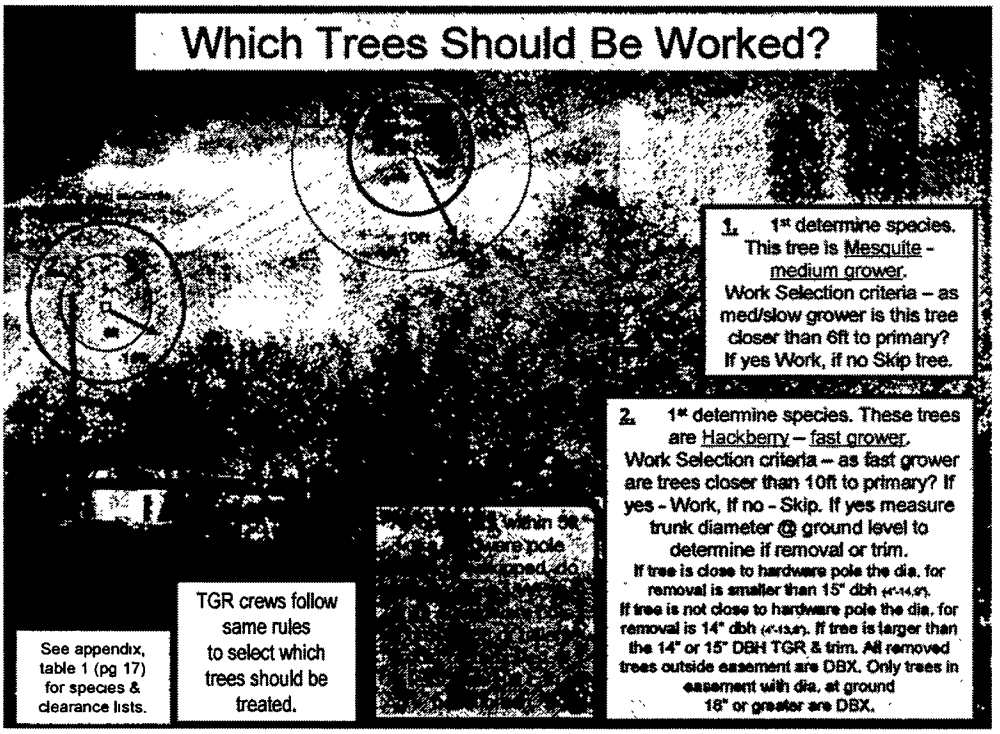


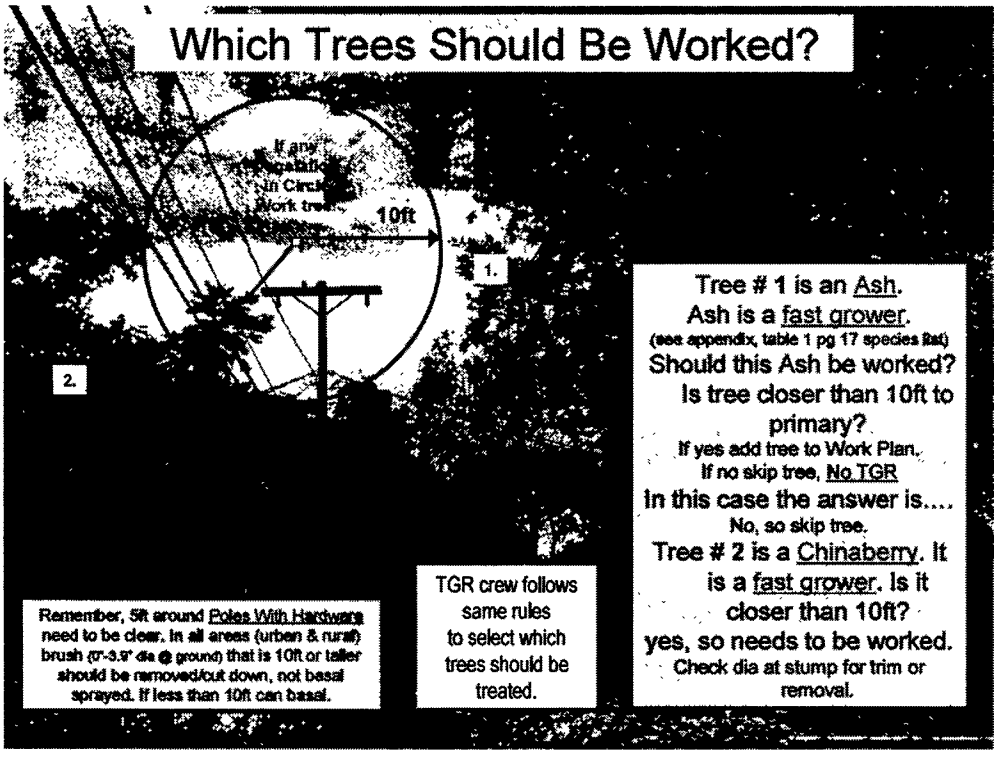
#1- Trim & TGR #2- Remove tree & Check diameter inside easement for DBX, If outside easement any s ze co nts as DBX, #3- Skp brush unless at a pole with hardware If brush is at hardware pole & is taller than 10ft remove, if less than 10ft basal., #4- No Trim & No TGR, #5- Large, Old Slow grower - Call forester for direction, #6-Large, Old Slow grower - Call forester for direction.



Trim clearance from wires is based on growth rates of tree species.
Fast grower -15ft, Medium -12ft, & Slow – 8ft. For old over mature trees Contact forester.
See appendix, table 1 (pg 17) for species in each growth rate

Table 2. Tree Selection for Trim, TGR & Spray Trim Clearance.





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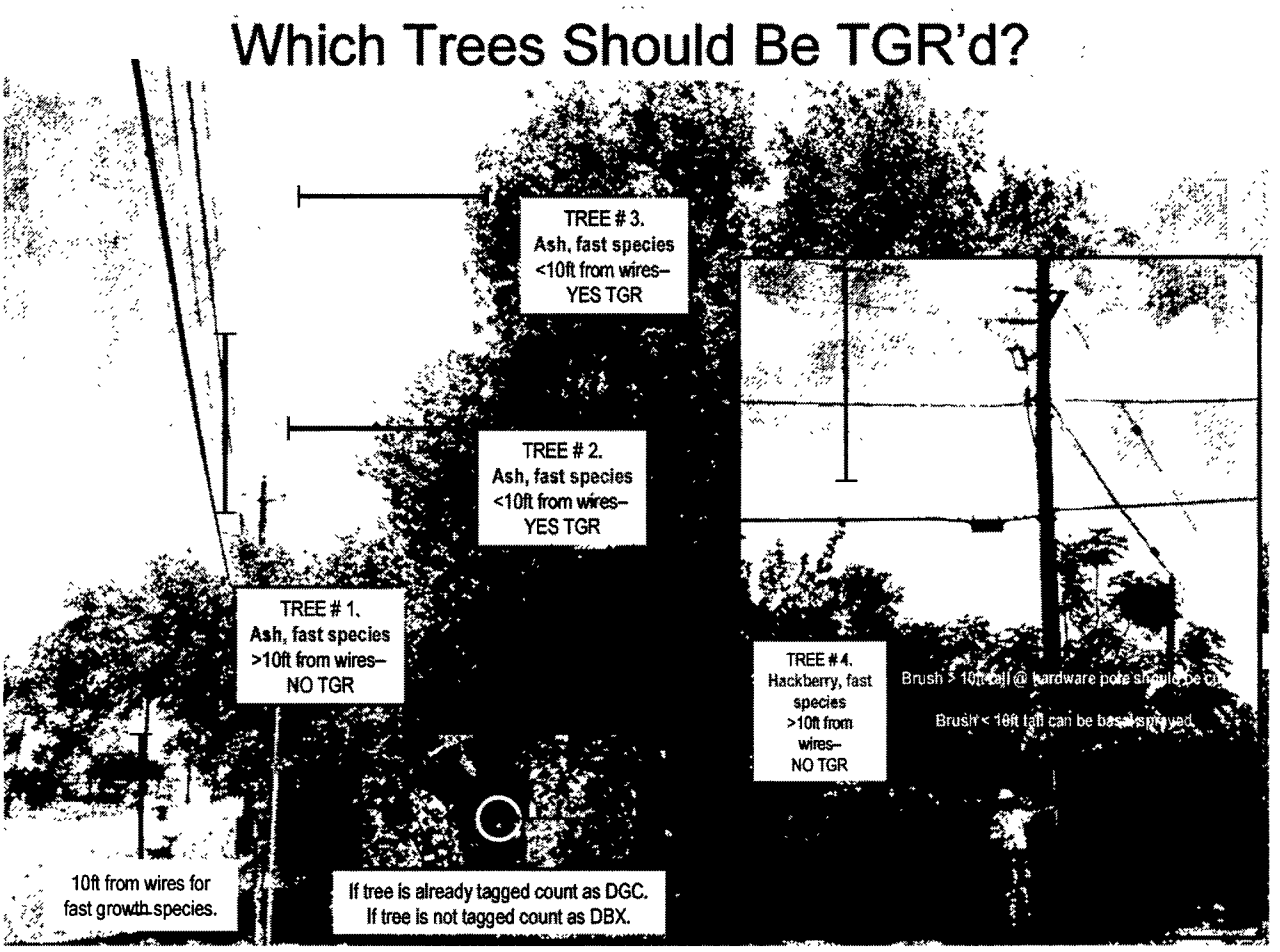

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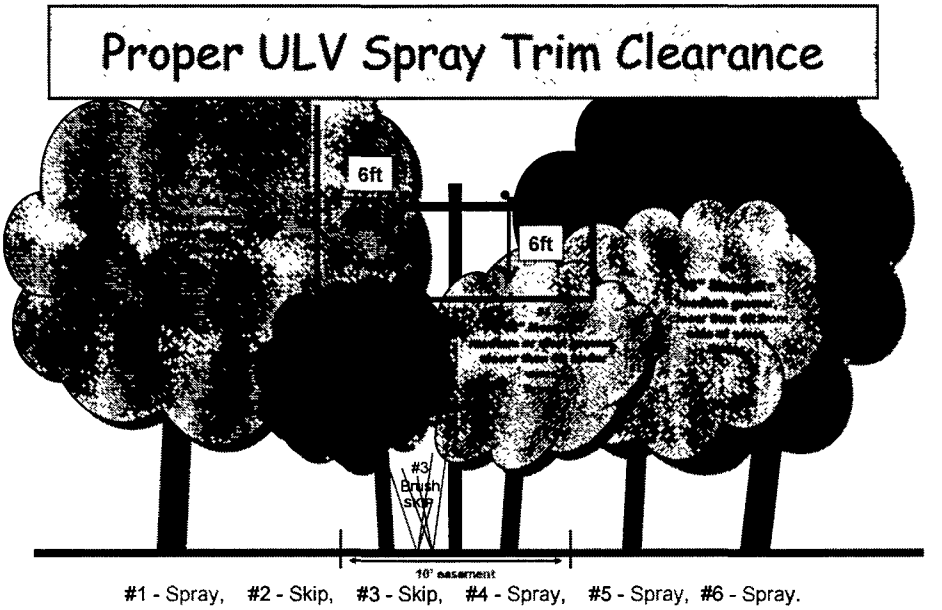

#1 - Spray, #2 - Skip, #3 - Skip, #4 - Spray, #5 - Spray, #6 - Spray.

6ft clearance after Spray Trim application

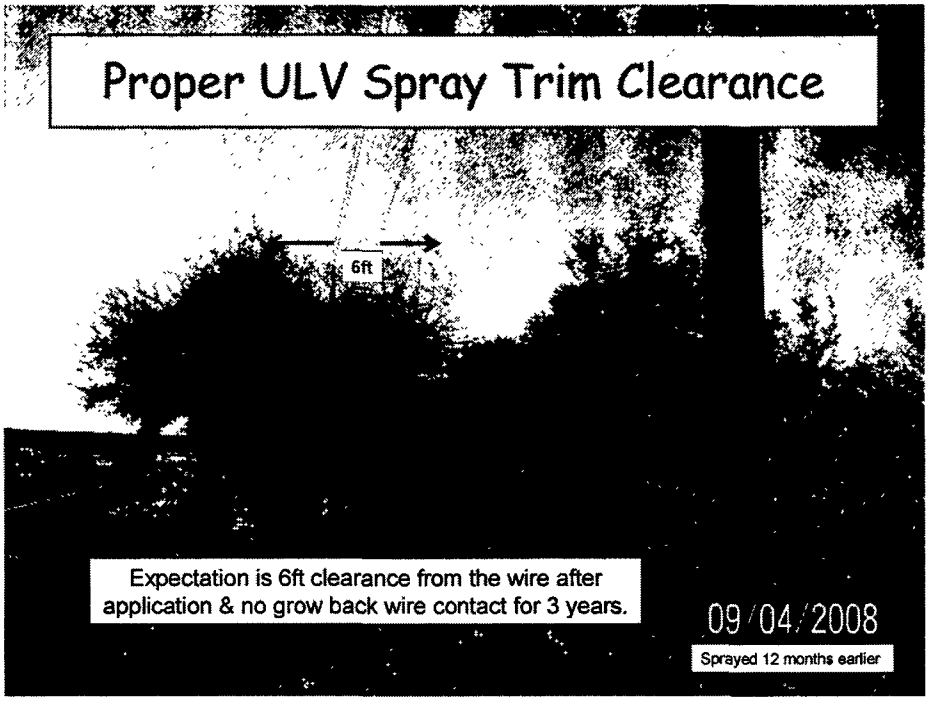

Table 3. Example of Written Circuit Completion Document

AEP Texas Forestry Operations

Completed Circuit Inspection Schedule

Circuit Name & Location: _____

* Expected Date for Inspection to Begin: _____

Date the Initial Inspection is Completed: _____

Date Final Inspection is Completed: _____

Upon completion of Initial Circuit Inspection list below issues discovered during inspection that need correction in order for circuit to pass Final Inspection.

Check box to the left when listed item is re-inspected and accepted as complete.

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

Comments: _____

_____

_____

_____ _____

signature of inspecting AEP Texas representative signature of Contractor representative

* Note - See page 6 of the AEP Texas Forestry Guidelines for details of circuit inspection process.

Table 4. Crew Audit Example

AEP FORESTRY CONTRACT (KPI) CREW AUDITS No. 094626

Audit Date: ___/___/___ Audit Quarter 1 2 3 4 (circle one) Operating Co.: _____

Auditor Name: _____ State: _____

Crew Number: _____ District: _____ Forestry Region Number: _____

Circuit # _____ Foreman/ General Foreman: _____

Circuit Name: _____ Pole Number _____

Forestry Contract Crew Safety (KPI) Audit CHECK ONE PASS ☐ FAIL ☐

Failure ratings for any single item will result in failure of this audit.
Failure must be documented in comments fields and will require random periodic follow up observation

		PASS	FAIL	COMMENTS
1	Personal Protective Equipment- Shall be worn as required. Includes but not limited to hard hats, safety glasses, ear protection, proper footwear	☐	☐	
2	Properly Maintained Safety Equipment- Fully stocked, removable first aid kit, are extinguisher and wheel chocks	☐	☐	
3	Traffic Control Devices- Approved and placed in accordance with applicable State and Federal regulations	☐	☐	
4	Proper Fall Protection Procedures- All climbing practices must be in accordance with OSHA and ANSI Z -133 standards	☐	☐	
5	Properly Barricade Work Areas- Barricade material available and used in accordance with safety rules	☐	☐	
6	Properly Maintain and Store Work Tools	☐	☐	
7	Follow Proper Approach Distances- Follow OSHA 1910.269 minimum distances for All Live Work Minimum Approach Distances	☐	☐	

Acceptable/Unacceptable on items below
An Unacceptable ratings may result in failure of the audit dependent on magnitude and frequency of the violation
Any item found to be Unacceptable must be documented in the comments fields and will require random, periodic follow up observation

	ACCEPTABLE	UNACCEPTABLE	COMMENTS
1 Hazardous material properly stored, labeled and documented	☐	☐	
2 MSDS and Herbicide Label information available	☐	☐	
3 Jobsite Housekeeping	☐	☐	

Forestry Clearance (KPI) Audit CHECK ONE PASS ☐ FAIL ☐

Pass / Fail	PASS	FAIL		PASS	FAIL	COMMENTS
Conductor Clearance	☐	☐	Danger Trees	☐	☐	
ROW Width	☐	☐				

Forestry Work Quality (KPI) Audits CHECK ONE PASS ☐ FAIL ☐

	PASS	FAIL		PASS	FAIL		PASS	FAIL	COMMENTS
Collar Cuts	☐	☐	Stump Height	☐	☐	Peels/Tears	☐	☐	
Directional Pruning	☐	☐	Hangers	☐	☐	Cleanup/Brush Disposal	☐	☐	
Drop Crotch Selection	☐	☐	Clearing around poles	☐	☐	Regard for property	☐	☐	

Reporting Accuracy (KPI) Audit

Week ending date: ___/___/___

	Timesheet Data Cap	Timesheet Data O&M	Audit Data Cap	Audit Data O&M	Variance Cap	Variance O&M
Number of trees trimmed						
Number of trees removed						
Footage/ Units/ Acres Re-cleared						
Footage/ Units/ Acres Ground Sprayed						

Watering YES ☐ NO ☐

Non - KP Crew Audit Items

Equipment & Personnel	PASS	FAIL		PASS	FAIL		PASS	FAIL		PASS	FAIL
Truck Appearance/ID	☐	☐	Professional appearance	☐	☐	Crew Properly Equipped	☐	☐	Tree Knowledge	☐	☐
Number of Working Saws	☐	☐	Manpower utilization	☐	☐	Herbicide Equipment	☐	☐	Planning	☐	☐
ROW Equipment/Chipper	☐	☐	Customer Relations	☐	☐	AEP Guidelines	☐	☐	Use of Forms	☐	☐

ADDITIONAL COMMENTS: _____

Table 5. Claiming Meals on timesheet Guidelines for AEP TX

Guidelines for Processing Small Storm Meals and After Hours Meals.

There are four (4) types of situations that contract tree crews could warrant receiving pay for meals. Each type of situation is listed below with an explanation and example of the meals to be paid.

Type 1 – Home Base (HB) crews (tree crew workers in their designated home area/district, who work small local storm recovery past normal working hours
or are asked by AEP to work overtime past normal working hours (2 hours or more past normal quitting time) are eligible for one (1) meal equaling contracted rate added to their daily time sheet. Since home base crews are allowed to go home at night only the evening meal will be eligible for payment.

AEP should leave meal to contractor GF to buy. GF is responsible for adding one (1) meal per person to crew time sheets. No meal receipts are required by AEP when claiming meals.

Example: Home Base crews working storm recovery in San Benito District who also live in the San Benito District could be eligible for one (1) meal each day they worked 2 hours past quitting time .

Type 2 – HB crews working outside their designated home area yet working in their region. While HB crews are working in their region but away from their home area they will receive Per Diem per person, per day. If these crews work small local storm recovery while away from home they are eligible for one (1) meal if they work past normal quitting time.
The Per Diem payment is expected to cover earlier meals, if working in same area as maintenance while working storm. If crews have to move to storm area and spend the night, GF is responsible to get hotel and send in receipts for hotel with time sheets.

AEP should leave meals and hotel for small storm recovery to contractor GF to buy. GF can buy up to 3 meals per day for crews. GF is responsible for sending in hotel receipts and adding meals to time sheets. No meal receipts are required by AEP when claiming meals.

Example: Corpus Christi North Home Base crews working regular maintenance work in George West, TX then asked to help with small storm recovery in Kenedy, TX (still part of CCN District). These crews will have possible hotel bill plus eligible for 3 meals per day while working storm recovery.

Type 3 – One district's crews asked to work in another district for small storm recovery.
GF will provide hotel rooms plus up to 3 meals per day.

AEP should leave meals and hotel for small storm recovery to contractor GF to buy. GF can buy up to 3 meals per day for crews. GF is responsible for sending in hotel receipts and adding meals to time sheets. No meal receipts are required by AEP when claiming meals.

Example: San Benito District crews asked to help with storm recovery in Corpus South District. These time sheets should show up to 3 meals per day per person if the GF provided meals.

Type 4 – Off System crews (other utility/coop crews) called to help with AEP TX storm recovery or to work extra projects.

AEP should leave meals and hotel for small storm recovery to contractor GF to buy. GF can buy up to 3 meals per day per person. GF is responsible for sending in hotel receipts and adding meals to time sheets. No meal receipts are required by AEP when claiming meals.

Example: San Patricio Coop crews brought to Corpus to help with storm recovery. These time sheets should show up to 3 meals per day per person if the GF provided meals.

TEXAS®

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System Forestry

Goals, Procedures & Guidelines for Distribution and Transmission Line Clearance Operations

AEP Texas
2009
(revised Feb-09)

TABLE OF CONTENTS

Note: Red page numbers indicate a revision from previous version.

AEP System Forestry Guidelines

Foreword

A. Introduction

The purpose of these Guidelines is to document and inform AEP employees and contractors about important guidelines pertaining to AEP's System Forestry Program. AEP incorporates these Guidelines into each tree service contract; **a copy shall be kept in all tree service Contractor vehicles**. These guidelines are for the sole and exclusive use of the contractor and are to be read consistently with other contract documents by and between AEP and the Contractor.

B. Definitions

Brush: Woody stem vegetation (small trees) less than four inches in diameter (0 to 3.9) at stump height (3" above ground line)

Brush Cut: The removal of brush by hand. Production is measured in square feet (500sqft = 1 unit of work).

Clearing: The physical cutting and/or removal of woody stem vegetation within the right-of-way.

DBH: (Diameter at Breast Height). The diameter of a tree measured at the height of 4-1/2 feet above the ground on the uphill side.

DBX: Trees in the easement that are 18" or larger, at the stump, that are removed, and any size brush or trees removed outside the easement.

DHS Work Type - Distribution Hot Spot. Any off scheduled tree work that has been requested and has been inspected by an authorized AEP Texas Forestry representative and tree work is determined to be necessary. The reason for doing DHS work is to resolve a safety hazard or resolve a situation where an outage or repeated outages have occurred, or reasonable evidence supports the probability of outages and personal property damage. The necessary tree work should only include no more than two addresses (typically back to back or side to side) and have only a few trees or less and take no more than a day and a half or less to complete. The intent of a DHS job is to help resolve an isolated customer's safety or reliability concern.

DQS Work Type - Distribution Quality of Service. Any off scheduled tree work that has been requested and inspected by an authorized AEP Texas Forestry representative and determined to be necessary. The estimated work must be at least 1 mile or 10% of the circuit before it can be counted as DQS. The **target** time frame should be no more than two to four weeks to complete. DQS work must be authorized by an AEP Texas Forester before work starts. The intent is to help resolve a reliability concern or prevent a PUCT complaint on a small section of a circuit. DQS work should be added to the annual circuit plan and completed miles recorded. DQS work should not be used to resolve what otherwise should be counted as a DHS.

DMS Work Type – Distribution Minor Storm, Any tree work requested to restore power during normal day to day operations or isolated sever weather.

DMJ Work Type - Distribution Major Storm, Any tree work requested to restore power during sever weather determined by AEP as being a major storm.

DWO Work Type - Distribution Work Order. Any necessary tree work requested by an AEP engineering or support group in order for other AEP work to be completed. This type work is billed to the requesting work group and requires a specific work order number before tree work can begin.

DMC Work Type - Distribution Maintenance. Tree work designated by AEP Texas Forestry to be conducted on identified circuits to clear easements and rights of ways. If a particular circuit has several DQS locations DMC work should be strongly considered rather than several DQS locations. All DMC work shall be added to the annual circuit plan and completed miles recorded.

Danger Tree: A tree considered a potential hazard to AEP's facilities growing outside of the normally cleared right-of-way.

Debris: Non-vegetative material (trash) such as pop bottles, cans, wire, paper and old tires.

Fallen Tree: A tree lying on the ground not cut by the Contractor.

Hangers: A limb or limbs cut by contractor that is left hanging in tree, on lines or fence.

Hazard Tree: A tree considered a potential threat to the safety and reliability of AEP's facilities growing within the normally maintained right-of-way.

Log: The merchantable portion of a tree as designated by AEP.

Lopping: The cutting of limbs and slash so that they lie in contact with the ground or as otherwise designated by AEP.

Mowing: The mechanical cutting of woody stem vegetation within the right-of-way.

Prescription: The plan prepared for each circuit or unit of work. It designates the vegetation to be maintained, the method(s) of maintenance, and who will perform the work.

Property Owner: Party from whom easements have been secured, their successors or assigns.

Removal: The complete cutting down of trees at or near the ground line. AEP shall specify the disposal method. Each tree removed, 4" or larger, is 1 removal unit. For brush cut 500 sqft is 1 removal unit.

Rolled Back: The reduction of a pruned tree's crown in a manner that provides increased conductor clearance by pruning to shape the upper crown area away from the conductors.

Slash: The un-merchantable portion of a tree as designated by AEP.

TGR: Tree Growth Regulator – a chemical applied to the soil at the base of a tree to slow the growth of branches. Typically applied before trimming to reduce re-growth.

Tree: Woody stemmed vegetation with a DBH four inches (4") or greater.

Tree Density: Light –35 trees or less per mile, or 0-25% of line section requires clearing.
Medium – Between 36 and 70 trees per mile, or 26-50% of line section requires clearing.

Heavy – Between 71 and 140 trees per mile, or 51-75% of line section requires clearing.
Very Heavy – Greater than 140 trees per mile, or 76-100% of line section requires clearing.

I. General Guidelines

A. Safety

1. The safety of both contractors and the public is of utmost importance to AEP Texas. Contractors shall regard safety as their first priority. Contractors and their employees will recognize and follow all laws, rules and regulations regarding public and worker safety. **Any** personal injury **accidents** that occur on the job **must be reported to** an **AEP** System Forestry representative as soon as possible.

2. Safety audits will be conducted on a regular basis. In appendix table 2 (pg 18) is a copy of the audit form.

B. Personnel

1. If required by state or local laws and regulations the contractor shall have an ISA Certified Arborist available.

2. No private work may be solicited or worked by Contractor employees while on AEP time. Contractors shall not receive compensation from anyone except AEP for tree work that is a part of AEP's System Forestry program. The consequences will be crew and/or contractor disciplinary action.

C. Equipment

1. Contractors shall provide **sufficient equipment in working order** to complete assigned tasks such as trucks, chippers, chain saws, pole pruners, hand saws, ropes, saddles, etc. Specialty equipment not regularly used in day to day operations can be billed to AEP with approval.

2. The minimum number of chain saws on the job shall equal the number of personnel on the crew, or as per contract agreement. Chainsaws shall not be billed separately unless approved by AEP.

3. Each climber shall be provided with a complete set of equipment including: rope, saddle, chainsaw, pruner and handsaw.

4. The use of spurs/climbers is to be avoided. Where their use is required (as in the removal of specified trees or climbing difficult trees) only qualified persons shall be permitted to use them upon approval by an AEP representative.

D. Outages

1. **All outages or operations caused by contract crews shall be reported to the appropriate AEP Dispatch center and AEP Texas Forestry representative immediately. Any line contact on transmission shall be reported to the appropriate dispatch center and AEP Texas Forestry immediately.**

2. Use the following dispatch numbers to phone in crew caused outages:
Abilene & San Angelo – (800) 756-7332;
Corpus North – (800) 727-3635;
Corpus South – (800) 714-9312;

Laredo – (800) 241-4189;
San Benito – (800) 568-5214

3. Costs to restore contractor caused outages due to negligence may be billed to Contractor as determined by AEP.

E. Working Hours (Drive time, Overtime, etc.)

1. **Drive time** in the morning and evenings, chip dumping times and any other non productive time **must be discussed** with AEP Forestry representative **before work** on assigned tasks **begin**.

2. **Overtime** is billable for work performed outside the scope of the normal work schedule. The **preferred work week** is Monday through Thursday if working 4x10 or Monday through Friday if working 5x8. **Work planners are encouraged to adjust hours in order to catch people at home.**

3. A **make up day** should only be used in the event crews are shut down due to inclement weather or AEP approved training. In no event should one crew be allowed a make up day due to personal reasons without prior AEP approval.

4. Breaks shall be taken as needed during the daily routine. Breaks should not last any longer than 10 minutes. Workers should not take breaks together.

F. Work Procedures

1. The contractor will be responsible for developing a written work plan for each work assignment. Each work plan should include: Circuit name and number, Job Authorization number if work is unit price, A time line of when work is to be started and expected completion, Type of equipment and man power to be used, and a list of any suspected issues or concerns that may be encountered while working on the circuit. The plan must be submitted to the appropriate AEP representative for approval before work begins.

2. The **work plan must be performed in a systematic way.** It is recommended to break large projects into smaller, more manageable work steps in order to facilitate thorough completion and inspection. A typical work step is usually 1 mile or less. The preferred method is to work all "Zone One" areas first to insure quick reliability impact for AEP. For example: Begin work at substations and following circuit to protective devices. Complete work in one step before moving to another. **Skipping around to complete easiest work first is not acceptable.** Care must be taken to follow entire circuit. Circuit maps will be provided were available. Contractor should work what is indicated on the map as the circuit. Please report any portions of a circuit that are found in the field that are not on the map.

3. It is the Contractor's responsibility to ensure that the work plan is followed. It is important to regularly communicate with AEP representative about work progress, if work is staying on track with time estimates given in the work plan.

4. **Contractor shall provide daily work locations to AEP**, including changes to these locations. The **locations must be as accurate as possible** to insure safety.

5. Each crew shall have a planned worksheet present at all times, except in the case of emergency work.

6. The Contractor's daily association with their crews and customers will allow planned **outages and refusals to be worked on a progressive basis. Contractor shall provide a written list of such areas that have not been worked**, including reasons, to their AEP representative within a reasonable time (within 24 hours of when work was determined hazardous or refused). See Refusals section H.

7. The Contractor will notify AEP of any hazardous conditions found during the performance of work under this contract. This is to include danger trees, soil erosion, or any attachment to AEP's facilities, deteriorated, damaged or broken facilities and any other abnormal conditions.

8. AEP Texas designated personnel will conduct clearance and work quality audits of contractor's work on a regular basis. See Appendix table 2 (pg 18) for audit document. **When an assigned task (circuit) is nearing completion the contractor must notify their AEP representative** to establish a written schedule, with dates, **for final inspection.** Inspection should be started **within two weeks of completion.** If schedule is not established AEP representative should notify contractor and can begin final inspection two weeks after next circuit is started by contractor's crews. AEP representative can schedule the inspection with a contractor representative if desired. Customer refusal addresses should be documented in written inspection schedule with time line of expected completion. AEP representative has 30 days to complete final inspection. Upon inspection **undocumented skips or incomplete work will be worked at the Contractor's expense.** If AEP representative fails to inspect circuit until after the established 30 day inspection date the cost of working any skips found will be negotiated. In appendix table 3 (pg 19) is an example of a circuit completion document.

9. All requested Non Maintenance tree work, whether **DHS, DQS** or **DWO**, is to be first inspected for necessity by an AEP Texas Forestry designated representative. Work prescriptions must be determined by following work type specifications, as explained in the definitions section (pages 3,4), to determine appropriate work type. Periodic AEP inspections of completed work will be conducted to verify accuracy of work type determination as well as adherence to clearance and work quality guidelines.

G. Public Relations

1. Public relations are important to AEP. Proper notification can eliminate most property owner issues before they arise. Advanced notification provides the property owner with an opportunity to voice concerns. Properly communicating the extent of work to be completed is a must.

2. An attempt will be made by contractor to contact property owners through personal notification and or door hangers. Once property owners are contacted **every effort must be made to communicate the extent of tree work to be performed** on their property. Do not assume they understand what you are talking about – show them. Explain the clearances. Time spent here can prevent future complaints and claims. AEP can assist with news releases, certified letters, etc. if determined these avenues are needed. AEP will attempt to contact an absentee landowner only if the resident provides AEP with a method to contact the property owner.

3. During normal, day to day, operations the Contractor will knock on each property owner's door announcing the arrival of the crew for work.

4. At no time while working on AEP assigned tasks should Contractor's employees use property or possessions of land owners without owners consent. Such as using picnic tables, patio chairs, lawn furniture, etc. during lunch break.

5. During emergency work, Contractor will make an attempt to notify the property owner of the crew's arrival. Discretion should be used during late night or early morning work. If no property owner contact is made, a door card should be left to explain work performed.

6. Contractor will document all locations where door cards were left, including address and date. A monitored local or toll-free telephone number to reach the contractors should be on each card. In the event a property owner complaint or claim results from lack of notification and the contractor can not produce documents to verify notification the contractor will resolve claim at their expense.

7. Customer notification must be conducted prior to any DHS, DQS or DWO work starting. Strict enforcement of items 2 and 4 above are to be followed while conducting DHS or DQS work.

H. Refusals

1. **A "Refusal" is** considered to be **any resident or property owner refusing to allow** or permit the **contractor to clear vegetation as specified** within the scope of, and according to, these guidelines and specifications.

2. **Refusals will not be accepted** by AEP unless both work planner and GF have verbally spoken with property owner and have documented reasons for refusal. Documentation may include property owners signature but must include planners and GF signature verifying they have done all they can to resolve issues.

3. The contractor will document a refusal/complaint on work plan with pertinent property owner information such as phone number and best time to catch at home.

4. If the contractor is unable to resolve the refusal within one week of working on circuit, the refusal shall be turned over to their AEP representative.

5. Undocumented refusals will be worked at the Contractor's expense. See section I.H.8, pg 7.

6. All refusals will be communicated and signed off by AEP representative.

I. Damage Claims and Complaints

1. The Contractor shall be responsible for all damage claims and complaints due to their negligence. AEP shall be notified within one business day of all claims and complaints. For cases involving livestock or domestic animals, AEP may choose to have a veterinarian investigate the situation.

2. An on-site investigation with the resident or property owner shall be made as soon as possible. This meeting, or telephone arrangements for the investigation, shall be made within twenty-four (24) hours of receipt of the complaint. AEP's representative may accompany the Contractor during this initial investigation.

3. All valid claims resulting from the Contractor's negligence are to be settled within thirty (30) days by the Contractor, or the Contractor will provide evidence they are trying to reach a reasonable settlement.
4. The Contractor shall keep AEP informed of the status of all complaints. When a settlement is reached, a written release for both AEP and the Contractor shall be obtained from the property owner.
5. If a settlement cannot be reached, the Contractor will confirm in writing to AEP the final settlement offer and briefly summarize events pertaining to the offer.
6. After thirty (30) days, if a Contractor fails to resolve a claim, does not continue attempts to resolve the claim or keep AEP fully informed, AEP may settle the claim and bill the Contractor.

II. Clearance & Work Quality Guidelines

A. Removals

- *AEP Tree Removal Philosophy*: **Tree removal is a very important** part of AEP's line clearance program. In residential areas, authorization of the property owner (in writing), AEP System Forestry, or appropriate government agency is required for the removal of a tree.

- All trees removed outside the easement should be counted as capital (**DBX**,**TBX**).

- Stumps should be cut as close to the ground as possible (where safety is not a question no more than three inch maximum height is acceptable) and treated with an approved herbicide, unless designated otherwise by AEP.

- Tree removal shall be completed in one operation. If this is not practical, hazardous conditions shall not be left while the work is not actively in progress. Trees shall be removed in a manner to protect yards, fences, houses, electric lines and other facilities.

- **Targets for saw crew removal are:**

    - Any fast regrowth tree species closer than 10ft to primary and any medium and slow regrowth tree species closer than 6ft to primary that is less than 14" (4"-13.9")DBH and not impacting a pole with hardware. If identified tree is impacting a pole with hardware DBH for removal goes up to less than 15" (4"-14.9"). (Refer to species list, table 1, pg 17 and the Tree Work Selection Diagram, table 2, pg18).

    - Any tree or brush closer than 5ft from open wire secondary.

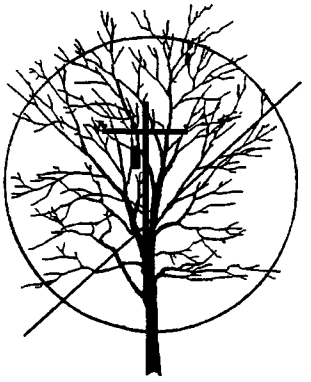
    - Any tree or brush closer than 5ft around a utility pole with electrical hardware such as transformers, fuses, etc. Clear around pole for distance of 5ft. See definition for brush (page 3).

    - On Distribution at AEP Texas a size limit for removals is set at less than 14" (4"-13.9")DBH for trees not impacting hardware poles. Trees 14" or larger should be trimmed. Consult with AEP before removing larger trees.

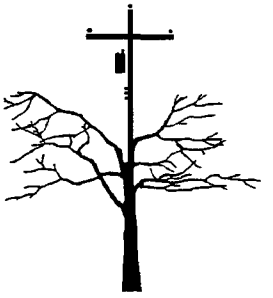
    - Trees where adequate clearance cannot be obtained using proper pruning practices.

    - Mature trees where more than 50% of the crown must be removed to obtain clearance.
    - Palms where trunk is closer than ½ of the crown diameter to the conductor.

- **Trees that <u>are *Not Good Candidates*</u> for saw crew removal are:**
  - Trees in landscaped areas where property owners refuse removal.
  - <u>Brush</u> that does not follow the Tree Work Selection diagram pg 18, or is not around a pole with electrical hardware.
  - Trees 14" or larger without valid reason approved by AEP.
  - Trees that would take more than 2.5 times longer to remove than to trim for proper clearance and at least 50% of the crown would be left intact.
  - Slow-growing tree species farther than 6ft from the primary.
  - Small trees around non hardware poles where herbicide can be applied to control.



Tall Maturing/Fast Growing



Short Maturing/Slow Growing

- Deciduous stumps will be treated with an AEP approved herbicide to prevent regrowth unless the situation prevents application according to label instructions, there is a documented customer refusal or an AEP representative directs otherwise.
- Diseased, dying, or dead trees which could threaten conductors will be made safe allowing for removal by the customer or private arborist. All brush and wood generated by this activity should be left on site unless specified by AEP.

<u>Remember</u> - Removal of any trees in the easement larger than 18" @, the stump, or any brush or trees outside the easement should be counted as Capital (DBX).

B. Pruning

1. AEP Pruning Standards and Philosophy

All tree pruning shall be governed by approved principles of modern arboriculture and shall adhere to Tree Care Industry Association (TCIA) and International Society of Arboriculture (ISA) standards. AEP System Forestry personnel may grant exceptions to these pruning standards where mechanical trimming equipment is used such as bomb trimmers and aerial saws. Pruning shall be done in a manner that protects current tree health and with regard for future growth and development. <u>Pruning shall provide at least the minimum specified clearance</u> from electrical conductors as set forth in this Section.

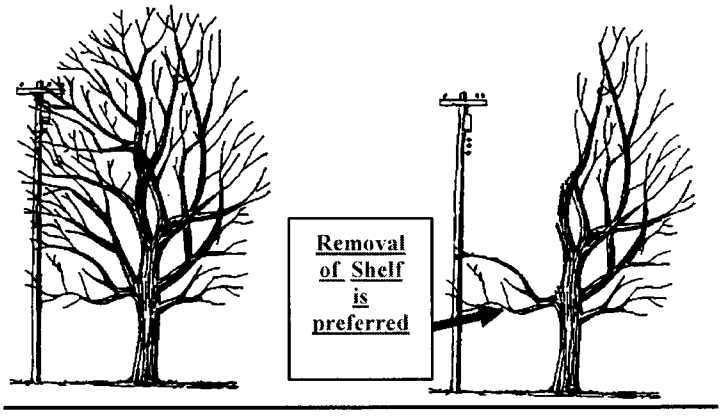
The process used to determine which trees to be trimmed should follow the Tree Work Selection Diagrams pg18, table 2.

Care shall be exercised to prevent the spreading of insects or diseases from one tree to another. Contractors trimming oak trees in the state of Texas will follow proper **Oak Wilt prevention steps** as directed by AEP Texas.

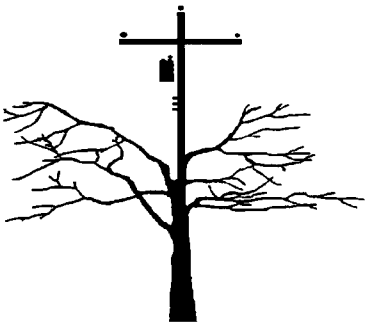
Wild cherry, black walnut and other toxic vegetation which has been cut or damaged, shall be removed from areas accessible to livestock as appropriate.

2. **Directional Pruning**

It is AEP's practice to prune trees in a manner that will direct growth away from electrical conductors, thus reducing the amount of pruning necessary in the future. Trees growing to the side of conductors should have their horizontal growth removed back to a lateral or the parent stem and the vertical growth left rolled back. AEP would prefer to have the shelf removed.



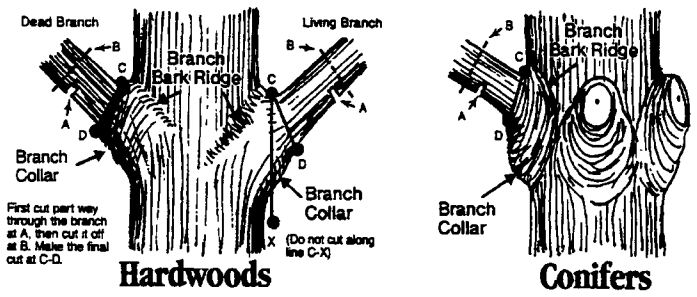
Trees closer than the 10ft or 6ft specified on page 18 should be pruned using the "natural" or "drop crotch" method of top pruning. In sensitive customer areas Vertical growth should be removed and horizontal growth (Shelf) can be left.



Note: Trees left in this condition near a pole with hardware are good candidates for removals. If trees are trimmed they should be TGR'd.

3. **Collar Cuts**

The position and manner of making cuts is of the utmost importance. The most important single item in tree pruning is the "collar cut" (see diagram below).



When properly made, collar cuts reduce the pruning wound surface area (compared to flush cuts) and allow the tree's chemical protective zones to aid in callus growth and eventual wound coverage. Collar cuts also reduce re-sprouting and re-growth of limbs into conductors.

a. All limbs will be cut back to laterals at least one-third (1/3) the size of the limb being removed.

b. Care shall be taken to avoid damage to the cambium layer, or loosening or stripping of the bark.

c. The three (3) cut method to remove large limbs will be used to eliminate bark peels.

d. Improper collar cuts and peels will be looked for during work quality audits.

e. Make sure all cuts 3" and larger on all Oak trees are painted to help prevent Oak Wilt.

f. On trees along streets or in sensitive customer areas, all cuts larger than 3" should be painted on all tree species.

4. **Tree Shape**

a. Trees should be **pruned to provide the required clearance** from electrical conductors. After that job is accomplished, the shape of the tree can be taken into consideration.

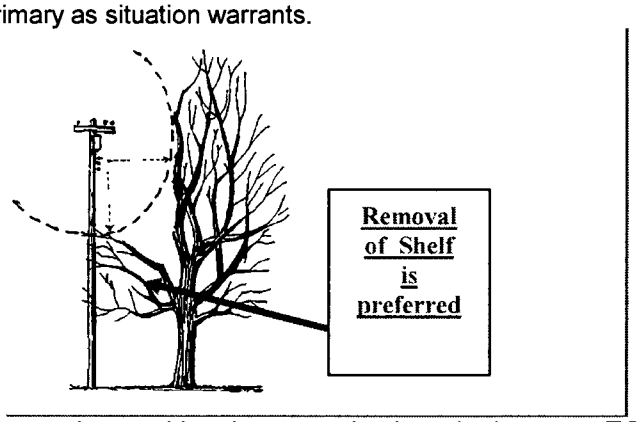
b. When poorly shaped trees must be left, Contractor is empowered to do cosmetic pruning to satisfy the customer, using approved methods within a period of time that does not exceed the time spent on the original line clearance pruning. Rounding over is *not* an approved practice.

5. **Clearance - Distribution**

Minimum clearance for distribution system lines is that distance that will prevent regrowth into conductors for a minimum of 3 **years.** The species, site conditions, limb and conductor sag and sway during windy conditions and the effect of electrical load should all be considered when determining the clearance requirement. Insufficient species clearance will be looked for during clearance audits. Tree species and clearances are listed on pg 17, table 1.

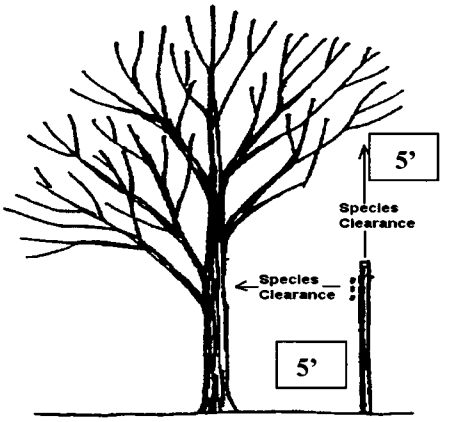
Primary – Trees should be trimmed for a **minimum** of 3 years clearance. Overhanging limbs should be removed. Top of tree should be rolled back unless

prior arrangements have been made with AEP. AEP may adjust overhang clearance on Single phase primary as situation warrants.



Reduced clearance can be considered on trees that have had a resent TGR application. **See pg 17, table 1.**

Open Wire Secondary – Trees that are closer than 5ft to the wires should be trimmed for at least 5ft feet of clearance. Do not remove overhanging branches unless otherwise specified by AEP.



Twisted or Cabled Secondary, Service Drops & Street Lights – Trees near twisted or cabled secondary service drops and street light wires will not be pruned unless limbs are applying pressure to the line. Do not prune for street light illumination except under the specific direction by AEP.

Poles – <u>Poles with hardware</u> **(transformers, reclosures, etc.) will be cleared** of all volunteer trees, brush, and slash to obtain a minimum of a <u>**five (5) foot radius**</u> of clearance **around the pole**. Poles without hardware can be cleared around using herbicide. All Poles that do not have this clearance as explained must be documented with reason as a documented skip otherwise contractor will work at their expense. (see section I.F8.)
Guy Wires – Guy Wires supporting poles with hardware must be cleared the same as a pole with hardware. Down guys and Overhead Guy wires on non hardware poles should only be pruned of heavy limbs applying pressure on the wires. Herbicide can be used to spray brush around non hardware down guys.
Vines - Should be cut and treated with an herbicide to prevent re-growth. Do not try to remove by pulling off pole. Cut a visible gap between the stumps and hanging vine.

6. Clearance - Transmission

Minimum clearance from transmission conductors should be species clearance plus a climber safety zone of OSHA required "separation" for various transmission voltages and is based on maximum sag of conductors.

7. **Hangers and Clean Up**

a. All hangers shall be removed from the tree before leaving the job site.

b. Work sites shall be left in a neat and orderly condition. If a customer complaint arises due to incomplete clean up and upon investigation determine was **contractor's negligence** resolution will be at **contractor's expense.**

c. A minimum amount of clean up work should be performed when performing a property owner generated request for tree removal. Unless otherwise designated by AEP, wood shall not be cut up or hauled away. Where designated by AEP, chipping the brush, cutting wood into lengths that can be handled and raking the site is the maximum clean up that should be performed.

d. All streams and/or drainage ditches shall be kept open while working in the area and shall be cleaned out after Contractor's operation is completed in the area.

C. Clearing and reclearing

a. AEP will provide the width of the right-of-way to be cleared.

b. All woody plants that have the potential to grow into the lines should be controlled, either by mechanical removal, herbicide treatment or a combination of both. Those woody plants within the right-of-way that at mature size normally would not threaten lines or interfere with access to AEP's facilities should be left undisturbed in the right-of-way whenever possible.

c. Trees, brush, and existing **stumps** within the right-of-way shall be cut as close to the ground as safely practical. The preferred standard is **not to exceed three inches in height** above the ground line. Where possible, the cut shall be parallel to the slope and promptly treated with an approved herbicide, unless otherwise directed by AEP.

d. Trees shall be felled to avoid damage to crops, fences and other facilities. Any trees felled into crops, ditches, streams, roads or across fences shall be promptly removed. No trees shall be felled in such a manner as to endanger AEP's facilities or the property of third parties, or hinder access along the right-of-way.

e. Trees, brush and slash shall be lopped as designated by AEP.

f. Danger trees shall be removed or pruned to eliminate the hazard. When cut, danger trees shall be cut as low as practicable, but not to exceed eight inches in height above the ground line. The logs and slash shall be left as felled, unless otherwise designated by AEP. **Danger trees are typically outside the easement. Working these trees should be counted as Capital (DBX).**

g. Stumps of trees growing in fences may be cut at fence post height, where designated by AEP.

h. Logs may be left in tree lengths or as designated by AEP. The merchantable value of logs shall be preserved as much as possible.

i. In remote areas, brush and logs may be piled at the edge of the ROW for wildlife habitat. Logs may be left in large sections rather than cut to firewood length.

j. Brush should not be left in managed agricultural areas or other maintained areas unless designated by AEP.

D. Herbicide Applications

1. Tree and brush species in the designated easement or ROW that have the potential of growing into the lines, should be controlled. Tree and brush species that will not grow up into the lines or interfere with access to AEP's facilities should be left untreated whenever possible. Appropriate use of herbicides will be looked for during the ROW clearance audit. **Urban spray height - (in residential & retail business areas) DO NOT spray brush over 10' tall. Any brush skipped must be documented and reported to AEP.**

   All first time herbicide application used to remove trees / brush to widen designated easement must be counted as capital (DBX).

2. All herbicides shall be applied according to label instructions.

3. Herbicide application shall be done in accordance with Federal, State and local laws. Contractors are required to maintain accurate and up to date records of all herbicide applications and are required to abide by all Federal, State, and Local laws concerning licensing, record keeping and product handling.

4. Contractors shall attain 100% coverage and 95% control of treated vegetation. Results from application not meeting 95% control will be re-worked at contractor's expense.

5. AEP System Forestry will make vegetation management prescriptions in consultation with contractors.

6. Whenever possible landowners should be notified before any herbicide treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger.

7. Managers of public rights-of-way involved in the treatment area shall be notified, where appropriate.
8. Contractor shall be responsible for training of herbicide applicators.

9. Unless specifically prohibited, by property owners or AEP, cut stumps will be treated with an approved herbicide treatment.

E. Tree Growth Regulator Application

1. Trees designated for tree growth regulation shall be treated with an approved tree growth regulator (TGR) in accordance with label instructions.

2. **All first (1st) time TGR application of trees inside or outside the easement must be counted as capital (DBX).**

3. Follow Tree Work Selection Diagrams pg18 to determine which trees should have TGR application. The diagrams show two possible work situations – TGR & Trim or TGR Only.

4. All trees shall be inspected by the Contractor for health and vigor prior to treatment. Trees found in an excessive state of decline shall not be treated unless directed by AEP.

5. Special care must be taken when making a TGR application near off target plants (trees, shrubs, vines, flowers, grass, gardens, etc.). Basal drench may be used rather than soil injection to restrict off target impact.

6. Landowners should be notified before any TGR treatments occur. There are several acceptable methods of notification such as personal contact, letter, or door hanger. Two attempts of different methods are to be used before application in sensitive landowner areas.

7. Proper documentation and record keeping is required. Copies of such records should be available upon request by AEP. Application refusals must be documented and reported to AEP as work progresses on a given circuit.

APPENDIX

Table 1. Tree Species & Clearances for AEP Texas (TCC & TNC)

These growth rates and clearance distances are a guideline for the minimum clearances required for three years of clearance from the conductors. These distances are not static and should serve as ***minimum clearance*** requirements on the distribution system. The minimum clearance requirements on the transmission system are these distances plus an additional seven foot climber safety zone. **Trees with recent TGR application can be considered for less clearance. The fast species can be considered medium and the medium can be considered slow. Eight feet should be the minimum for any reason.**

Species Re-Growth Rates & Minimum Clearances

Species with Fast Re-growth
Trim for a *minimum* clearance of **15 feet** *from conductors.*

Anaqua	Ash species
Australian pine	Chinaberry
Cottonwood (Poplar species)	Eucalyptus
Golden Rain Tree	Hackberry
Mulberry	Pecan
Salt Cedar	Sycamore
Tallow	Tepejahe
Western Soapberry	Willow

Species with Medium Re-growth
Trim for a *minimum* clearance of **12 feet** *from conductors*

Cypress	Elm species
Ficus	Fruit trees (Oranges, etc.)
Huisache	Young vigorous Live Oak species
Locust	Young vigorous Mesquite
Ornamental Pear	Red Oak species (leaves w/ pointed lobes)

Species with Slow Re-growth
Trim for a *minimum* clearance of **8 feet** *from conductors*

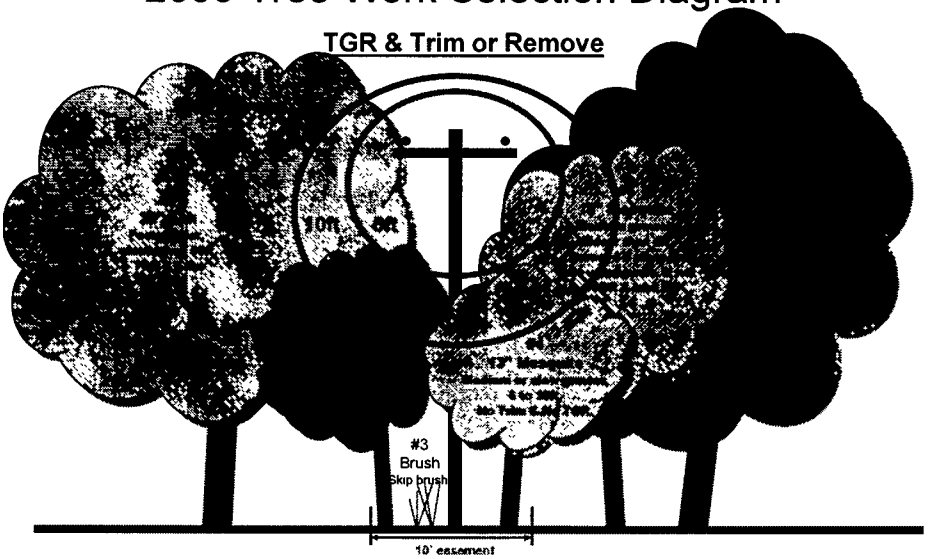
Avocado	Ebony
Magnolia species	Orchid species
Pine species	Older mature Live Oaks
Retama	Older mature Mesquite
Red Cedar (juniper)	Royal Poiciana

Small ornamental species (redbud, dogwood, crabapple, crepe myrtle, ligustrum, etc.)
White Oak species (leaves with rounded lobes)

The species and the site, limb and conductor sag, and sway during windy conditions and times of heavy electrical load should all be considered when determining clearance requirement.

Table 2. Tree Work Selection Diagram.

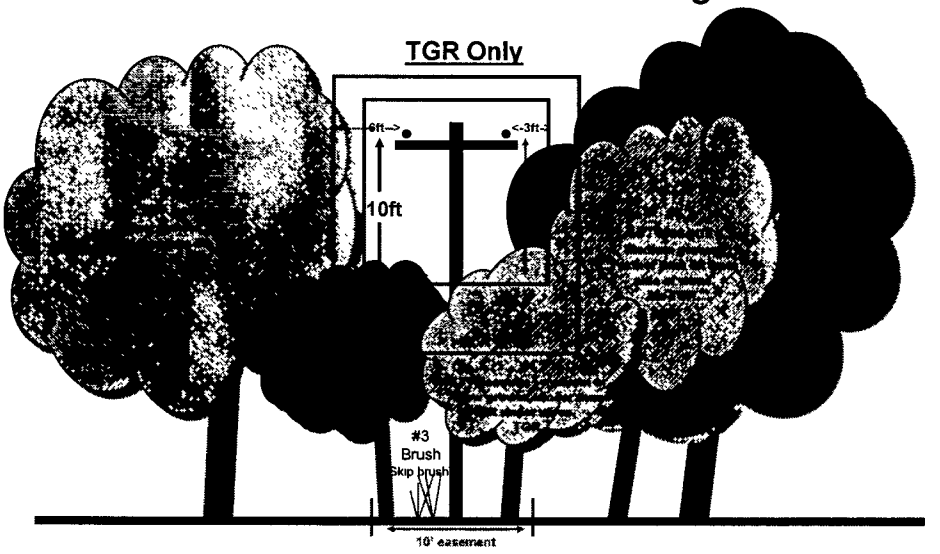
2009 Tree Work Selection Diagram



#1- TGR & Trim, #2- No TGR-Remove tree & check diameter. If 18"@ ground count as DBX, #3- Skip brush unless at a pole with hardware, #4- No TGR & No Trim, #5- If tree is close to pole w/hardware remove, if not then TGR & Trim, #6-Large, Old Slow species-Skip & Contact forester.

Notes If #3 were brush at hardware pole it would be target for removal, #5 if removed would be counted as dbx out of easmt, if stump were 18" or larger in easmt.

2009 Tree Work Selection Diagram



#1-TGR, #2-TGR, #3-Skip brush, #4- TGR, #5-No TGR, #6-Large, Old Slow species-Skip & Contact forester.

Table 3. Example of Written Circuit Completion Document

AEP Texas Forestry Operations

Completed Circuit Inspection Schedule

Circuit Name & Location: _____

* Expected Date for Inspection to Begin: _____

Date the Initial Inspection is Completed: _____

Date Final Inspection is Completed: _____

Upon completion of Initial Circuit Inspection list below issues discovered during inspection that need correction in order for circuit to pass Final Inspection.

Check box to the left when listed item is re-inspected and accepted as complete.

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

☐ _____

Comments: _____

_____

_____

_____ signature of inspecting AEP Texas representative

_____ signature of Contractor representative

* Note - See page 6 of the AEP Texas Forestry Guidelines for details of circuit inspection process.

Table 4. Crew Audit Example

AEP FORESTRY CONTRACT (KPI) CREW AUDITS **No.** 094626

Audit Date: ____/____/____ Audit Quarter 1 2 3 4 (circle one) Operating Co.: ____

Auditor Name: ____ State: ____

Crew Number: ____ District: ____ Forestry Region Number ____

Circuit # ____ Foreman/ General Foreman: ____

Circuit Name: ____ Pole Number: ____

Forestry Contract Crew Safety (KPI) Audit CHECK ONE PASS ☐ FAIL ☐

Failure ratings for any single item will result in failure of the audit.
Failure must be documented in comments fields and will require random periodic follow up observation

		PASS	FAIL	COMMENTS
1	Personal Protective Equipment- Shall be worn as required. Includes but not limited to hard hats, safety glasses, ear protection, proper footwear.	☐	☐	
2	Properly Maintained Safety Equipment- Fully stocked, removable first aid kit, fire extinguisher and wheel chocks	☐	☐	
3	Traffic Control Devices- Approved and placed in accordance with applicable State and Federal regulations	☐	☐	
4	Proper Fall Protection Procedures- All climbing practices must be in accordance with OSHA and ANSI Z-133 standards	☐	☐	
5	Properly Barricade Work Areas- Barricade material available and used in accordance with safety rules	☐	☐	
6	Properly Maintain and Store Work Tools	☐	☐	
7	Follow Proper Approach Distances- Follow OSHA 1910.269 distance clearances for AC Live Work Minimum Approach Distances	☐	☐	

Acceptable/Unacceptable on items below
An Unacceptable ratings may result in failure of the audit dependent on magnitude and frequency of the violation
Any item found to be Unacceptable must be documented in the comments fields and will require random periodic follow up observation

	ACCEPTABLE	UNACCEPTABLE	COMMENTS
1 Hazardous material properly stored, labeled and documented	☐	☐	
2 MSDS and Herbicide Label information available	☐	☐	
3 Jobsite Housekeeping	☐	☐	

Forestry Clearance (KPI) Audit CHECK ONE PASS ☐ FAIL ☐

Pass / Fail	PASS	FAIL		PASS	FAIL	COMMENTS
Conductor Clearance	☐	☐	Danger Trees	☐	☐	
ROW Width	☐	☐				

Forestry Work Quality "KPI) Audits CHECK ONE PASS ☐ FAIL ☐

	PASS	FAIL		PASS	FAIL		PASS	FAIL	COMMENTS
Collar Cuts	☐	☐	Stump Height	☐	☐	Peels/Tears	☐	☐	
Directional Pruning	☐	☐	Hangers	☐	☐	Cleanup/Brush Disposal	☐	☐	
Drop Crotch Selection	☐	☐	Clearing around poles	☐	☐	Regard for property	☐	☐	

Reporting Accuracy (KPI) Audit

Week ending date: ____/____/____

	Timesheet Data Cap	Timesheet Data O&M	Audit Data Cap	Audit Data O&M	Variance Cap	Variance O&M
Number of trees trimmed						
Number of trees removed						
Footage/ Units/ Acres Re-cleared						
Footage/ Units/ Acres Ground Sprayed						

Watering: YES ☐ NO ☐

Non - KPI Crew Audit Items

Equipment & Personnel	PASS	FAIL		PASS	FAIL		PASS	FAIL		PASS	FAIL
Truck Appearance/ID	☐	☐	Professional appearance	☐	☐	Crew Properly Equipped	☐	☐	Tree Knowledge	☐	☐
Number of Working Saws	☐	☐	Manpower utilization	☐	☐	Herbicide Equipment	☐	☐	Planning	☐	☐
ROW Equipment/Chipper	☐	☐	Customer Relations	☐	☐	AEP Guidelines	☐	☐	Use of Forms	☐	☐

ADDITIONAL COMMENTS: ____

TEXAS®

A unit of American Electric Power

System Forestry

Goals, Procedures & Guidelines for Distribution and Transmission Line Clearance Operations

AEP Texas
2008
(revised 05-08)

TABLE OF CONTENTS

Note: Red page numbers indicate a revision from previous version.

AEP System Forestry Guidelines

Foreword

A. Introduction

The purpose of these Guidelines is to document and inform AEP employees and contractors about important guidelines pertaining to AEP's System Forestry Program. AEP incorporates these Guidelines into each tree service contract; **a copy shall be kept in all tree service Contractor vehicles**. These guidelines are for the sole and exclusive use of the contractor and are to be read consistently with other contract documents by and between AEP and the Contractor.

B. Definitions

Brush: Woody stem vegetation (small trees) less than four inches in diameter (0 to 3.9) at stump height (3" above ground line)

Brush Cut: The removal of brush by hand. Production is measured in square feet (500sqft = 1 unit of work).

Clearing: The physical cutting and/or removal of woody stem vegetation within the right-of-way.

DBH: (Diameter at Breast Height). The diameter of a tree measured at the height of 4-1/2 feet above the ground on the uphill side.

DBX: Trees in the easement that are 18" or larger, at the stump, that are removed, and any size brush or trees removed outside the easement.

DHS Work Type - Distribution Hot Spot. Any off scheduled tree work that has been requested and has been inspected by an authorized AEP Texas Forestry representative and tree work is determined to be necessary. The reason for doing DHS work is to resolve a safety hazard or resolve a situation where an outage or repeated outages have occurred, or reasonable evidence supports the probability of outages and personal property damage. The necessary tree work should only include no more than two addresses (typically back to back or side to side) and have only a few trees or less and take no more than a day and a half or less to complete. The intent of a DHS job is to help resolve an isolated customer's safety or reliability concern.

DQS Work Type - Distribution Quality of Service. Any off scheduled tree work that has been requested and inspected by an authorized AEP Texas Forestry representative and determined to be necessary. The estimated work must be at least 1 mile or 10% of the circuit before it can be counted as DQS. The **target** time frame should be no more than two to four weeks to complete. DQS work must be authorized by an AEP Texas Forester before work starts. The intent is to help resolve a reliability concern or prevent a PUCT complaint on a small section of a circuit. DQS work should be added to the annual circuit plan and completed miles recorded. DQS work should not be used to resolve what otherwise should be counted as a DHS.

DMS Work Type – Distribution Minor Storm, Any tree work requested to restore power during normal day to day operations or isolated sever weather.