



**Annual Report  
2011 Vegetation Management Report  
4 CSR 240-23.030  
April 1, 2012**

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## **2011 Vegetation Management Report**

### **6(C).**

#### **Summary of the information required in subsection 6(B)..**

Currently, Empire contracts with seven contractors to assist in maintaining the vegetation on the system. They include:

- 12 ACRT utility foresters planned and inspected the work performed.
- 80 Wright Tree Service employees under the supervision of Jeff East, Project Manager. 31 two-man bucket/manual crews, 3 mower crews, 3 Jarraff crews, and 1 grapple truck.
- 17 Shade Tree Service employees supervised by Nathan McCullough. 8 two-man bucket crews; and an additional mini bucket to provide assistance as needed.
- Application Specialties performs herbicide and TGR application. Jim Clark is owner and manages 8 employees.
- Mid Central Contractors, Kenny Singer Construction, and N-D Mand, LLC who operate special mechanical clearing on select right-of-way situations.

There were no incidents of safety hazards or accidents resulting in death or serious injury in 2010.

### **6(C)1.**

#### **Expenditures for vegetation management in the preceding year of 2011:**

\$13,052,634.87.

### **6(C)2.**

#### **Vegetation management budget for the current year of 2012:**

\$13,507,526.86.

### **6(C)3.**

#### **Circuits, completion dates and miles trimmed in the preceding year.**

See Exhibit A and Exhibit B, which depicts completion schedules for 2011. Details are documented through work plans, weekly timesheets and invoices. Empire will furnish any copies upon request.

### **6(C)4.**

#### **Circuits, miles scheduled for the current year:**

See Exhibit C and Exhibit D, which depicts schedules for 2012.

**6(C)5.**

**Total Distribution miles for the system and corresponding classification between rural and urban:** The total distribution miles on EDE's system is 5,584; classified as 1,655 Urban Miles and 3,929 Rural Miles .

**8(A,B,C).Highlights of Empire's public education and outreach program for 2010 consisted of :**

- Continue to maintain and increase tree related information on the website.
- Encourage volunteerism among Empire employees by assisting Habitat for Humanities with site vegetation clearing and tree recommendation on their projects as a means of showing the Right Tree Right Place concept.
- Participated with five communities in their Arbor Day Celebration. Ideal events to use handouts for proper placement and care of trees.
- Ran commercial in regards to Empire's commitment to safety and reliability.
- Assisted a local Cub Scout troop get their urban forestry badge by supplying two presentations on the Urban Forest and supplying trees and assisting with the planting of 20 trees in a local park.
- Empire has maintained our Tree Line USA certification for the second year. This is a designation that we will strive to keep with on-going involvement in public and employee education.
- Planners are delivering ISA (International Society of Arboriculture) brochure on the *Benefits of Trees* in conjunction with their door cards.

**4(F)2.** A copy of our current specification is attached. Section 2.8 (page 12) addresses the standard procedures for removal of debris caused by storms. Our standards remain the same as the previous years.

**4(F)5.** Vegetation management had no filings of its transmission lines with the FERC, a regional reliability organization, or the NERC.

## EXHIBIT A

## 6 (B) and (C). Summary of Information for Vegetation Management Plan 2011

- Vegetation Management Plan 2011								Conventional				Completion Date		
Circuit ID	Area	Sub	Sub Name	State	Maint Schedule	2011 Scheduled Miles	2011 Completed Miles	Conventional Completion Date	Trims	Removals	Brush	Mech	Foliar/Basal	TGR
3313	209	331	Branson - North	MO	4	5.4	5.3	11/30/2011	•	•	•	11/30/2011	9/6/2011	
3874	209	387	Hollister - East	MO	4	2.7	2.7	3/19/2011	•	•	•	n/a	n/a	
4102	209	410	Forsyth - North	MO	4	15.5	15.6	11/22/2011	•	•	•	10/1/2011	10/3/2011	
4131	209	413	Branson Southwest	MO	4	6.0	6.6	8/24/2011	•	•	•	1/22/2011	12/10/2010	1/16/2012
4133	209	413	Branson - Southwest	MO	4	6.1	6.1	9/17/2011	•	•	•	9/17/2011	8/23/2011	
4134	209	413	Branson Southwest	MO	4	8.2	8.2	11/3/2011	•	•	•	10/1/2011	12/10/2010	
4135	209	413	Branson Southwest	MO	4		1.3	n/a				12/19/2011	8/23/2011	
4138	209	413	Branson - Southwest	MO	4	10.9	10.9	11/19/2011	•	•	•	12/19/2011	9/6/2011	
4331	209	433	Gretna	MO	4	8.3	8.3	12/7/2011	•	•	•	11/21/2011	9/6/2011	
4332	209	433	Gretna	MO	4	3.5	3.5	11/5/2011	•	•	•	11/28/2011	8/23/2011	
4333	209	433	Gretna	MO	4	5.4	5.4	11/30/2011	•	•	•	10/10/2011	12/3/2010	
4381	209	438	Riverside	MO	4	15.1	10.7	12/29/2011	•	•	•	10/28/2011	1/10/2012	
1243	211	124	Aurora HT	MO	4	34.7	26.7	3/9/2011	•	•	•	9/9/2011	3/9/2011	6/7/2011
2051	211	205	Wentworth - West	MO	6		17.4	3/5/2011	•	•	•	4/5/2011	3/13/2011	6/13/2011
2052	211	205	Wentworth - West	MO	6	18.6	18.6	3/5/2011	•	•	•	4/1/2011	n/a	6/13/2011
3551	211	355	Aurora - West	MO	4	10.3	10.3	3/31/2011	•	•	•	9/20/2011	3/9/2011	8/8/2011
3552	211	355	Aurora - West	MO	6	17.3	17.3	12/10/2011	•	•	•	9/10/2011	1/4/2011	2012
3553	211	355	Aurora - West	MO	6	49.4	49.4	7/26/2011	•	•	•	4/2/2011	10/11/2011	11/15/2011
3591	211	359	Republic - East	MO	4	15.8	15.7	6/2/2011	•	•	•	4/9/2011	5/9/2011	8/23/2011
4511	211	451	Hines St.	MO	4	15.2	15.2	6/29/2011	•	•	•	4/2/2011		9/12/2011
4512	211	451	Hines St. - Breaker	MO	4	3.2	3.2	6/7/2011	•	•	•	4/9/2011		8/6/2011
4513	211	451	Hines St.	MO	4	3.8	3.8	6/7/2011		•	•	4/2/2011		7/8/2011
2824	212	282	Columbus - Tennessee Street	KS	6	16.6	16.6	3/11/2011	•	•	•	1/31/2011	10/3/2011	
3631	212	363	Fairland - West	OK	4	62.4	54.4	12/10/2011	•	•	•	n/a	12/15/2011	
4251	212	425	Sherman City - Southeast	KS	6	35.8	35.8	1/15/2011	•	•	•	8/21/2010	1/20/2011	5/10/2011
4281	212	428	Fairland - Southwest	OK	4		1.6	n/a				2/27/2012	12/5/2011	n/a
4282	212	428	Fairland	OK	4		8.7	11/16/2011	•	•	•	n/a	12/15/2011	
2171	213	217	Fair Play - East	MO	6	31.2	31.5	10/5/2011	•	•	•	7/9/2011		
2172	213	217	Fair Play - East	MO	6	34.5	34.6	11/3/2011	•	•	•	8/13/2011		
2501	213	250	Arcola - North	MO	6	4.2	4.2	11/30/2011	•	•	•	n/a	n/a	9/12/2011
3671	213	367	Bolivar - Southeast	MO	4	14.1	14.1	11/5/2011	•	•	•	6/4/2011	4/9/2011	7/31/2011
3672	213	367	Bolivar - Southeast	MO	4	1.8	1.8	4/30/2011	•	•	•	n/a	7/6/2011	7/6/2011
4092	213	409	Buffalo - North	MO	6	27.0	27.1	5/16/2011	•	•	•	9/17/2011	1/2/2012	11/25/2011
4311	213	431	Bolivar - South	MO	4	8.9	9.0	4/2/2011	•	•	•	n/a	3/19/2011	7/14/2011

# EXHIBIT A

- Vegetation Management Plan 2011								Conventional							Completion Date	
Circuit ID	Area	Sub	Sub Name	State	Maint Schedule	2011 Scheduled Miles	2011 Completed Miles	Conventional Completion Date	Trims	Removals	Brush	Mech	Foliar/Basal	TGR		
6022	213	602	Bolivar Plant	MO	4	4.5	4.5	7/28/2011	•	•	•	n/a	3/19/2011	7/14/2011		
6143	213	614	Greenfield	MO	4	8.8	8.8	6/9/2011	•	•	•	7/6/2011	10/11/2011	2/12/2012		
6144	213	614	Greenfield	MO	4	7.0	7.0	6/6/2011	•	•	•	7/23/2011	10/11/2011	2/3/2012		
401	214	64	Joplin - 10th Street	MO	4	0.7	0.7	3/26/2011	•	•	•	n/a	1/6/2011	6/29/2011		
402	214	64	Joplin - 10th Street	MO	4	1.9	1.9	3/26/2011	•	•	•	n/a	1/7/2011	6/29/2011		
403	214	64	Joplin - 10th Street	MO	4	2.7	2.7	3/26/2011	•	•	•	n/a	1/8/2011	6/29/2011		
404	214	64	Joplin - 10th Street	MO	4	1.2	1.2	3/11/2011	•	•	•	n/a	1/9/2011	6/29/2011		
405	214	64	Joplin - 10th Street	MO	4	0.5	0.5	3/11/2011	•	•	•	n/a	12/7/2010	6/29/2011		
406	214	64	Joplin - 10th Street	MO	4	0.7	0.7	3/11/2011	•	•	•	n/a	1/6/2010	6/9/2011		
407	214	64	Joplin - 10th Street	MO	4	0.9	0.9	3/11/2011	•	•	•	n/a	1/6/2010	6/29/2011		
432	214	100	Joplin - Second Street	MO	4	1.0	1.0	3/21/2011	•	•	•	n/a	n/a	6/29/2011		
433	214	100	Joplin - Second Street	MO	4	0.6	0.6	3/11/2011	•	•	•	n/a	n/a	n/a		
434	214	100	Joplin - Second Street	MO	4	0.7	0.7	3/11/2011	•	•	•	n/a	n/a	6/29/2011		
1226	214	59	Joplin - 26th Street	MO	4	3.7	3.6	5/20/2011	•	•	•	n/a	12/17/2010	12/1/2011		
1230	214	372	Joplin - 2nd & Division	MO	4	12.4	11.9	4/30/2011	•	•	•	n/a	3/16/2011	7/30/2011		
1232	214	372	Joplin - 2nd & Division	MO	4	14.5	14.5	4/9/2011	•	•	•	n/a	2/13/2011	6/27/2011		
1233	214	372	Joplin - 2nd & Division	MO	4	4.9	4.9	4/30/2011	•	•	•	n/a	12/5/2011	8/25/2011		
1262	214	258	Gateway Drive	MO	4	5.4	5.4	4/11/2011	•	•	•	n/a	12/17/2010	12/1/2011		
1265	214	258	Gateway Drive	MO	4	10.1	10.1	9/14/2011	•	•	•	n/a	12/17/2010	6/23/2011		
1267	214	258	Gateway Drive	MO	4	3.4	3.4	8/23/2011	•	•	•	3/6/2011		1/6/2011		
1274	214	341	Joplin - Northwest	MO	4	2.0	2.0	12/31/2010	•	•	•	n/a	n/a	4/20/2011		
1281	214	360	Joplin - Northeast	MO	4	1.9	1.9	12/31/2010	•	•	•	1/8/2011	n/a	4/20/2011		
1283	214	360	Joplin - Northeast	MO	4	1.8	1.8	12/30/2010	•	•	•	1/8/2011	n/a	4/20/2011		
1286	214	360	Joplin - Northeast	MO	4	1.3	1.3	12/31/2010	•	•	•	1/8/2011	n/a	4/20/2011		
1451	214	145	Joplin - West 7th Street	MO	4	11.2	11.4	3/11/2011	•	•	•	n/a	1/27/2011	7/8/2011		
1454	214	145	Joplin - West 7th Street	MO	4	14.2	14.3	10/29/2011	•	•	•	n/a	1/6/2011	12/15/2011		
1455	214	145	Joplin - West 7th Street	MO	4	8.1	8.1	10/15/2011	•	•	•	n/a	1/6/2011	1/13/2012		
3891	214	389	Joplin - Southwest	MO	6	25.1	25.1	3/19/2011	•	•	•	3/11/2011	8/23/2011	9/27/2011		
3912	214	391	Joplin - Southeast	MO	4	15.8	15.8	8/4/2011	•	•	•	2/11/2011	n/a	10/11/2011		
<b>3914</b>	<b>214</b>	<b>391</b>	<b>Joplin - Southeast</b>	<b>MO</b>	<b>4</b>		<b>35.7</b>	8/16/2011	•	•	•	6/14/2011	10/11/2011	10/26/2011		
4221	214	422	Joplin - 24th Street	MO	6	31.5	31.4	3/16/2011	•	•	•	2/12/2011	6/29/2011	6/13/2011		
4222	214	422	Joplin - 24th Street	MO	4	12.0	12.0	3/4/2011	•	•	•	n/a	n/a	10/18/2011		
4224	214	422	Joplin - 24th Street	MO	4	7.3	7.3	6/29/2011	•	•	•	n/a	8/23/2011	7/26/2011		
<b>4302</b>	<b>214</b>	<b>430</b>	<b>Joplin - 32nd &amp; Oliver</b>	<b>MO</b>	<b>4</b>		<b>10.3</b>	6/25/2011	•	•	•	6/26/2011	n/a	10/26/2011		
1092	215	109	Joplin - Atlas Junction	MO	6	38.0	38.2	5/21/2011	•	•	•	3/12/2011	1/6/2011	7/1/2011		
<b>1093</b>	<b>215</b>	<b>109</b>	<b>Joplin - Atlas Junction</b>	<b>MO</b>	<b>6</b>		<b>8.1</b>	5/21/2011	•	•	•	7/2/2011	6/23/2011	7/26/2011		
1094	215	109	Joplin -	MO	4	24.9	25.0	11/12/2011	•	•	•	12/21/2010	3/8/2011	12/29/2011		
<b>2492</b>	<b>215</b>	<b>249</b>	<b>Boston - East</b>	<b>MO</b>	<b>6</b>		<b>6.5</b>	5/21/2011	•	•	•	8/6/2011	n/a	7/26/2011		
3661	215	366	Carl Junction - Northeast	MO	4	20.6	20.7	10/8/2011	•	•	•	8/6/2011	6/7/2011	6/7/2011		
3952	215	395	Carthage - Southwest	MO	6	34.3	34.3	10/8/2011	•	•	•	5/29/2011	8/2/2011	12/1/2011		

## EXHIBIT A

- Vegetation Management Plan 2011								Conventional					Completion Date		
Circuit ID	Area	Sub	Sub Name	State	Maint Schedule	2011 Scheduled Miles	2011 Completed Miles	Conventional Completion Date	Trims	Removals	Brush		Mech	Foliar/Basal	TGR
4031	215	403	Jasper - West	MO	6	22.7	28.8	5/21/2011	.•	.•	.•		n/a	1/6/2011	12/1/2011
4324	215	432	Oakalnd - North	MO	4	17.4	17.4	9/17/2011	.•	.•	.•		9/6/2011	2/17/2011	
4361	215	436	Webb City - Cardinal	MO	4	29.7	29.9	6/4/2011	.•	.•	.•		9/12/2011	5/19/2011	10/16/2011
4363	215	436	Webb City - Cardinal	MO	4	13.4	13.4	11/12/2011	.•	.•	.•		11/14/2011	12/10/2010	1/23/2012
2962	216	296	Neosho - Rocketdyne 69 KV	MO	4	6.8	6.8	12/5/2011	.•	.•	.•		7/20/2011	8/13.2011	1/18/2012
5602	216	56	Neosho - West	MO	4	10.4	10.4	12/5/2011	.•	.•	.•		6/25/2011	3/22/2011	1/30/2012
5603	216	56	Neosho - West	MO	6	41.5	41.5	12/15/2011	.•	.•	.•		7/2/2011	3/30/2011	1/26/2012
5601	216	56	Neosho - West	MO	4	0	2.9	12/5/2011	.•	.•	.•		n/a	12/27/2011	
5641	216	56	Neosho - West	MO	4	0.0	3.2	12/5/2011	.•	.•	.•		n/a	12/27/2011	2/1/2012
5642	216	56	Neosho - West	MO	4	0.0	1.8	11/26/2011	.•	.•	.•		n/a	12/27/2011	2/1/2012
7002	216	700	Gravette	AR	6	28.3	0.0						7/18/2011	4/9/2011	
3304	217	330	Ozark - Northwest	MO	4	10.5	10.5	6/15/2011	.•	.•	.•		12/31/2010	4/20/2011	3/5/2012
3701	217	370	Strafford	MO	6	22.2	22.2	3/31/2011	.•	.•	.•		3/12/2011	1/20/2011	6/30/2011
3702	217	370	Strafford	MO	4	11.9	11.9	4/27/2011	.•	.•	.•		3/18/2011	3/16/2011	6/29/2011
4151	217	415	Black Hawk Junction	MO	4	23.0	23.0	7/28/2011	.•	.•	.•		10/24/2011	4/20/2011	3/5/212
4154	217	415	Black Hawk Junction	MO	4	6.8	6.8	10/29/2011	.•	.•	.•		n/a	30-Oct	6/13/2010
4342	217	434	Ozark - Southeast	MO	4	27.4	27.4	10/29/2011	.•	.•	.•		10/1/2011	11/25/2011	
						1099.3	1155.5								
Bold Black Circuits were moved up into 2011 because of a reliability issue.															
Red Circuits reflect a change in the mileage amount.															
Herbicide work is typically the final step and may or may not occur in the same year and therefore is not reflected as part of the scheduled miles.															

## 6 (B) and (C). Summary of Information for Vegetation Management Plan 2011

Transmission System -- Vegetation Management Plan 2011								
Line #	NERC	KV	State	From -- Expanded	To -- Expanded	2011 Scheduled Miles	2011 Completed Miles	Date Completed
01-0		69	K	SUB 94 - COLUMBUS SOUTHEAST	SUB 167 - RIVERTON	7.2	7.2	3/5/2011
01-0		69	K	SUB 282 - COLUMBUS TENNESSEE ST.	SUB 94 - COLUMBUS SOUTHEAST	2.0	2	3/5/2011
01-1		69	K	SUB 282 - COLUMBUS TENNESSEE ST.	SUB 282 - COLUMBUS TENNESSEE ST.	1.8	1.8	12/10/2011
01-0		69	K	SUB SEKAN	SUB 425 - SHERMAN CITY	7.2	7.2	3/5/2011
01-0		69	K	SUB 94 - COLUMBUS SOUTHEAST	SUB SEKAN	6.3	6.27	3/5/2011
01-2		69	K	SUB SEKAN	SUB SEKAN	1.0	1	3/5/2011
01-3		69	K	SUB SEKAN	SUB 444 - SHERWIN CITY	2.5	2.46	3/5/2011
<b>06-0</b>		<b>69</b>	<b>K</b>	<b>SUB 291 - BAXTER SPRINGS 12TH ST.</b>	<b>SUB 406 - RIVERTON SOUTH</b>		<b>2.8</b>	<b>12/17/2011</b>
<b>06-0</b>		<b>69</b>	<b>K</b>	<b>SUB 167 - RIVERTSON</b>	<b>SUB 406 - RIVERTON SOUTH</b>		<b>0.4</b>	<b>12/17/2011</b>
<b>06-1</b>		<b>69</b>	<b>K</b>	<b>SUB 291 - BAXTER SPRINGS 12TH ST.</b>	<b>SUB 291 - BAXTER SPRINGS 12TH ST.</b>		<b>2.94</b>	<b>8/1/2011</b>
27-0		69	K	SUB 66 - SCAMMON SOUTH	SUB 94 - COLUMBUS SOUTHEAST	10.3	10.3	12/10/2011
33-0		69	M	SUB 108 - CARTHAGE NORTHWEST	SUB 436 - WEBB CITY CARDINAL	11.2	11.2	10/15/2011
33-0		69	M	SUB 108 - CARTHAGE NORTHWEST	SUB 344 - JASPER SOUTH	8.8	8.8	10/15/2011
33-0		69	M	SUB 436 - WEBB CITY CARDINAL	SUB 110 - ORONOGO JCT.	4.1	4.06	10/15/2011
33-1		69	M	SUB 403 - JASPER WEST TAP	SUB 403 - JASPER WEST TAP	1.0	1.02	10/15/2011
35-0		69	M	SUB 59 - JOPLIN 26TH ST.	SUB 430 - JOPLIN 32ND & OLIVER	1.6	1.6	10/29/2011
35-0		69	M	SUB 389 - JOPLIN SOUTHWEST	SUB 430 - JOPLIN 32ND & OLIVER	3.2	3.2	10/29/2011
38-0		69	M	SUB 243 - BUFFALO SHELL	SUB 333 - FAIRGROVE CHEROKEE	10.3	10.3	10/1/2011
38-0		69	M	SUB 243 - BUFFALO SHELL	SUB 243 - BUFFALO SHELL	0.2	0.21	10/1/2011
38-0		69	M	SUB 333 - FAIRGROVE CHEROKEE	SUB 397 - FAIRGROVE SOUTH	24.0	9.2	10/2/2011
38-0		69	M	SUB 370 - STRAFFORD	SUB 397 - FAIRGROVE SOUTH	5.6	5.6	10/3/2011
38-0		69	M	SUB KAMO-STRAFFORD	SUB 370 - STRAFFORD	3.7	3.7	10/4/2011
38-0		69	M	SUB KAMO-STRAFFORD	SUB 415 - BLACKHAWK JCT.	16.9	16.9	10/5/2011
38-2		69	M	SUB 73 - BOLIVAR BURNS	SUB 342 - BUFFALO SOUTH	10.0	10	6/25/2011
38-2		69	M	SUB 243 - BUFFALO SHELL	SUB 342 - BUFFALO SOUTH	4.5	4.51	6/25/2011
38-3		69	M	SUB 409 - BUFFALO SOUTH	SUB 342 - BUFFALO SOUTH	5.2	5.24	6/26/2011
40-0		69	M	SUB 332 - NEOSHO CHEROKEE	SUB 398 - NEOSHO NORTHEAST	6.4	6.4	3/19/2011
40-0		69	M	SUB 296 - NEOSHO SOUTHEAST (ROCKET	SUB 398 - NEOSHO NORTHEAST	6.4	6.4	3/19/2011
40-0		69	M	SUB 292 - TIPTON FORD	SUB 332 - NEOSHO CHEROKEE	4.4	4.4	3/19/2011
40-0		69	M	SUB 292 - TIPTON FORD	SUB 393 - REINMILLER	4.0	4	3/19/2011
81-0		161	K	NEOSHO 161 KV	SUB 94 - COLUMBUS SOUTHEAST	18.1	18.09	11/19/2011
81-0		161	K	SUB 94 - COLUMBUS SOUTHEAST	SUB 452 - RIVERTON	7.7	7.7	11/19/2011
<b>83-0</b>		<b>161</b>	<b>M</b>	<b>SUB 432 - JOPLIN OAKLAND NORTH</b>	<b>SUB 109 - ATLAS JCT</b>		<b>2.62</b>	<b>11/26/2011</b>
<b>83-0</b>		<b>161</b>	<b>M</b>	<b>SUB 110 - ORONOGO JCT.</b>	<b>SIB 432 - JOPLIN OAKLAND NORTH</b>		<b>1.8</b>	<b>11/26/2011</b>
92-0		161	M	NEOSHO	SUB 184 - NEOSHO SOUTH JCT.	1.7	1.7	5/14/2011
92-0		161	M	NEOSHO	SUB 292 - TIPTON FORD	10.6	10.6	5/14/2011
92-0		161	M	SUB 292 - TIPTON FORD	SUB 393 - REINMILLER	4.0	4	5/14/20

<b>Empire District Electric Company</b>						
<b>Distribution System - Vegetation Management Plan 2012</b>						
<b>Circuit ID</b>	<b>Area</b>	<b>Sub</b>	<b>Sub name</b>	<b>State</b>	<b>Maint. Schedule</b>	<b>2011 Scheduled Miles</b>
3771	212	377	Quapaw - Eagle Picher	OK	4	67.9
3772	212	377	Quapaw - Eagle Picher	OK	4	1.5
3773	212	377	Quapaw - Eagle Picher	OK	4	16.7
6601	212	66	Scammon - South	KS	6	49.5
2781	212	278	Galena - Northeast	KS	6	0.6
2782	212	278	Galena - Northeast	KS	6	54.1
2913	212	291	Baxter Springs - 12th Street	KS	6	12.6
4441	212	444	Sherwin	KS	6	0.4
1227	214	59	Joplin - 26th Street	MO	4	19.3
1261	214	258	Gateway	MO	4	4.0
1263	214	258	Gateway Drive	MO	4	15.3
1264	214	258	Gateway Drive	MO	4	3.9
4301	214	430	Joplin - 32nd & Oliver	MO	4	4.5
4304	214	430	Joplin - 32nd & Oliver	MO	4	1.3
4471	214	447	Pillsbury	MO	4	0.8
4472	214	447	Pillsbury	MO	4	0.0
3892	214	389	Joplin - Southwest	MO	6	10.1
3893	214	389	Joplin - Southwest	MO	6	37.0
1102	215	110	Joplin - Oronogo Junction	MO	4	12.3
4173	215	417	Joplin - Fir Road	MO	4	5.5
4321	215	432	Oakalnd - North	MO	4	0.6
4322	215	432	Oakalnd - North	MO	4	2.0
4323	215	432	Oakalnd - North - Breaker	MO	4	0.0
4362	215	436	Webb City - Cardinal	MO	4	7.3
3662	215	366	Carl Junction - Northeast	MO	6	59.5
3663	215	366	Carl Junction - Northeast	MO	6	29.1
4172	215	417	Joplin - Fir Road	MO	6	53.2
2963	216	296	Neosho - Rocketdyne 69 KV	MO	4	0.3
3752	216	375	Seneca - East	OK	4	21.4
4142	216	414	Southwest City	MO	4	15.8
1312	216	131	Diamond - H.T.	MO	6	49.3
3221	216	322	Anderson - Southwest	MO	6	33.7
3981	216	398	Neosho - East	MO	6	74.0
3991	216	399	Wanda - South	MO	6	55.4
7002	216	700	Gravette	AR		28.4
3121	209	312	Ozark Dam - Powersite	MO	4	16.6
3872	209	387	Hollister - East	MO	4	12.0
4101	209	410	Forsyth - North	MO	4	13.2
4136	209	413	Branson - Southwest	MO	4	2.5
4137	209	413	Branson - Southwest	MO	4	10.1
4334	209	433	Gretna	MO	4	4.7
4383	209	438	Riverside	MO	4	6.2
4385	209	438	Riverside	MO	4	6.9
4386	209	438	Riverside	MO	4	3.0
2952	209	295	Reeds Spring - 161 KV	MO	6	8.5
3122	209	312	Ozark Dam - Powersite	MO	6	29.6
2211	211	221	Billings - Northeast	MO	4	19.9
1241	211	124	Aurora - H.T.	MO	6	28.8
1522	211	152	Monett - H.T.	MO	6	15.8
1523	211	152	Monett - H.T.	MO	6	54.2
2622	211	262	Albatross	MO	6	11.9
4372	211	437	Marionville - North	MO	6	41.3
2491	213	249	Boston - East	MO	6	14.5
3041	213	304	Caplinger	MO	6	3.2
3232	213	323	Brighton - East	MO	6	19.1
1141	217	114	Nixa - North	MO	4	12.1
3302	217	330	Ozark - Northwest	MO	4	10.7
3693	217	369	Willard	MO	6	6.2
3971	217	397	Fair Grove - South	MO	6	19.1
						1118.1



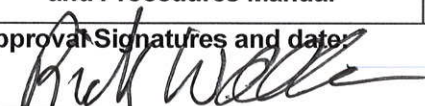

## Empire District Electric Company

### Transmission System -- Vegetation Management Plan 2012

Line #	NERC	KV	State	From -- Expanded	To -- Expanded	2012 Scheduled Miles
06-0		69	K	SUB 271 - BAXTER SPRINGS WEST	SUB 291 - BAXTER SPRINGS 12TH ST.	5.60
06-0		69	KO	SUB 271 - BAXTER SPRINGS WEST	SUB 404 - HOCKERVILLE	4.00
06-0		69	O	SUB 428 - FAIRLAND SOUTHWEST	SUB 363 - FAIRLAND WEST	1.70
06-0		69	O	SUB 377 - QUAPAW (EAGLE PICHER)	SUB 404 - HOCKERVILLE	2.40
06-0		69	K	SUB 377 - QUAPAW (EAGLE PICHER)	SUB 363 - FAIRLAND WEST	19.10
06-2		69	O	SUB 381 - COMMERCE NORTH	SUB 381 - COMMERCE NORTH	3.60
25-0		69	M	SUB 59 - JOPLIN 26TH ST.	SUB 64 - JOPLIN 10TH ST.	1.60
26-0		69	M	SUB 262 - ALBATROSS	SUB 338 - HEATONVILLE CHEROKEE	4.80
26-0		69	M	SUB 262 - ALBATROSS	SUB 351 - MOUNT VERNON EAST	5.60
26-0		69	M	SUB 121 - ASH GROVE H.T.	SUB 260 - LAWRENCEBURG SHELL	11.60
26-0		69	M	SUB 121 - ASH GROVE H.T.	SUB 445 - WILLARD	6.68
26-0		69	M	SUB 355 - AURORA WEST	SUB 420 - MT. VERNON EAST	10.00
26-0		69	M	SUB 260 - LAWRENCEBURG SHELL	SUB 338 - HEATONVILLE CHEROKEE	6.80
26-0		69	M	SUB 351 - MOUNT VERNON EAST	SUB 420 - MT. VERNON EAST	0.80
26-2		69	M	SUB 364 - RESCUE EXPLORER	SUB 262 - ALBATROSS	7.20
27-1		69	K	SUB 94 - COLUMBUS SOUTHEAST	SUB 271 - BAXTER SPRINGS WEST	7.20
30-6		69	M	SUB 376 - MONETT CITY SOUTH J2	SUB 383 - MONETT	9.20
30-7		69	M	SUB 311 - MONETT CITY	SUB 376 - MONETT CITY SOUTH J2	0.38
30-7		69	M	SUB 311 - MONETT CITY	SUB 311 - MONETT CITY	0.40
30-7		69	M	SUB 352 - MONETT CITY NORTH	SUB 352 - MONETT CITY NORTH	0.40
30-7		69	M	SUB 352 - MONETT CITY NORTH	SUB 311 - MONETT CITY	1.20
30-7		69	M	SUB 352 - MONETT CITY NORTH	SUB 383 - MONETT	2.80
30-7		69	M	SUB 376 - MONETT CITY SOUTH J2	SUB 376 - MONETT CITY SOUTH	0.40
30-7		69	M	SUB 376 - MONETT CITY SOUTH J2	SUB 416 - MONETT CITY EAST	1.20
30-7		69	M	SUB 416 - MONETT CITY EAST	SUB 390 - PURDY SOUTH	8.80
30-8		69	M	SUB 416 - MONETT CITY EAST	SUB 416 - MONETT CITY EAST	0.40
36-0		69	K	SUB 167 - RIVERTON	SUB 339 - GULF JAYHAWK	2.16
39-0		69	M	SUB 114 - NIXA NORTH	SUB 170 - NICHOLS ST.	13.60
39-0		69	M	SUB 114 - NIXA NORTH	SUB 415 - BLACKHAWK JCT.	4.80
39-0		69	M	SUB 312 - POWERSITE	SUB 410 - FORSYTH NORTH	3.20
39-0		69	M	SUB 410 FORSYTH NORTH	SUB 434 - OZARK SOUTHEAST	26.00
39-0		69	M	SUB 330 - OZARK NORTHWEST	SUB 415 - BLACKHAWK JCT.	2.40
39-0		69	M	SUB 330 - OZARK NORTHWEST	SUB 434 - OZARK SOUTHEAST	2.00
79-0		161	M	SUB 124 - AURORA H.T.	SUB 383 - MONETT	11.50
82-0		161	MK	SUB 110 - ORONOGO JCT.	SUB 452 - RIVERTON	13.40
83-0		161	M	CARTHAGE	SUB 109 - ATLAS JCT.	8.20
92-0		161	M	SUB 389 - JOPLIN SOUTHWEST	SUB 422 - JOPLIN 24TH & CONNECTICUT	7.16
92-0		161	M	SUB 391 - JOPLIN SOUTHEAST	SUB 422 - JOPLIN 24TH & CONNECTICUT	2.80
<b>Total miles</b>						<b>221.08</b>



**SERVICES YOU COUNT ON**

Title: Distribution System Vegetation Management Policy and Procedures Manual		Revision: C	Author: Scott Mackey 3/15/2012
Approval Signatures and date: <div style="text-align: center;">               _____              Director of System Performance                _____              Vice President of Commercial Operations              Applicable Standards: Missouri PSC Rules effective Aug 9, 2008           </div>			
Revision	Date	Changes	Approved By
A	8/9/2008	Formalized existing documentation	McGarrah, Palmer
B	3/1/2009	Review in conjunction with our new tree trimming contracts. See letter dated Jan 30, 2009.	McGarrah, Palmer
C	3/15/2012	Review – no changes.	Wallace, Penning

These policies and procedures apply to all overhead Empire District Electric Company distribution power lines, from 120V to 25kV.

This manual supersedes all previous manuals, specifications and guidelines for line clearance and vegetation management work at Empire District Electric Company March 1, 2009.

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# Safety Policy

## Section 1.0

All crews performing vegetation management work on or near Empire District Electric Company facilities or rights-of-way shall follow approved safety guidelines and procedures. All contractors performing work for Empire District Electric Company shall comply with all applicable governmental safety and health regulations and the safety and health provisions of their contract.

*All contractors must also, at all times, be aware of the nature and characteristics of Empire District Electric Company's electric facilities before work begins. Contractors need to understand that electric facilities must remain energized during the performance of work unless special arrangements are made with an authorized Empire District Electric Company representative.*

The following procedures pertain to contractors performing vegetation management work for Empire District Electric Company:

- The contractor shall obtain from Empire District Electric Company full information as to the voltage of its circuits before starting the work.
- The contractor shall at all times conduct work in a manner to safeguard the public from injury and property from damage.
- The contractor must use all necessary protection for its employees and the public and guard against interference with normal operation of the circuits. If, in the judgment of the contractor's general foreman/supervisor, it is hazardous to prune or remove trees with the circuits energized, the contractor must contact an authorized Empire District Electric Company representative(s). If appropriate, Empire District Electric Company will provide the necessary protective materials or de-energize circuits to ensure the safe pruning or removal of the tree(s).
- Should the contractor knock down or come into contact with Empire District Electric Company conductors (power lines), the contractor must notify Empire District Electric Company immediately and take the necessary protective measures. All contractor-caused electric service interruptions are subject to repair at the contractor's expense. This would include any damage to customers' property, including any electrical damage.
- In the event a contractor becomes aware of any dangerous, broken, loose or faulty Empire District Electric Company line facilities in the normal course of its line clearance performance, the contractor shall promptly advise Empire District Electric Company as to the exact pole location(s) and nature of the condition found.

# General Guidelines

## Section 2.0

### 2.1 – EXPLANATIONS OF TERMS AND METHODS

#### 2.1.1 Qualified Line Clearance Tree Trimmer:

Personnel who meet the qualifications of “line clearance tree trimmer and/or trimmer trainee” as defined by OSHA 1910.269, ANSI Z133.1 and any other applicable federal, state or local, laws, codes, or regulations.

#### 2.1.2 Distribution ( $\leq 25\text{kV}$ ) Pruning Cycle:

Empire District Electric Company uses a scheduled pruning cycle to prune trees on lines in rural and urban areas. The company will schedule certain critical feeder lines as often as necessary to ensure its reliability.

#### 2.1.3 Trimming Around Primary and Secondary Wires:

Empire District Electric Company will identify and schedule for maintenance, any trees that are a hazard or potential hazard to the supply or reliability of primary or secondary power lines. Qualified line clearance tree trimmers under direction of Empire District Electric Company or its agents are to perform selective tree-branch removal to prevent or correct hazardous situations that may result in outages or endanger life or property. They are to make field judgment as to what amount of clearance is necessary to obtain reliability. They are to look for obvious situations such as deflected wires, branches rubbing insulated wires and broken or hanging tree branches.

#### 2.1.4 Pole-to-House and Street Light Service Wires:

Pole-to-house and street light service wires should only be pruned if a branch is significantly pushing against or is lying on the wire.

#### 2.1.5 General Guidelines for Tree/Conductor Clearance:

The exact amount of clearance needed to maintain reliability depends on the type of tree, its location and condition, and the type of power line and its voltage, as well as many other factors. Empire District Electric Company and its contractors will consider all factors when deciding how much clearance is necessary.

Empire District Electric Company and its contractors will use their professional judgment in determining what these clearances will be in each situation, based on the proposed maintenance cycle for the area in which they are working. The maintenance cycle is dependent upon electric reliability requirements of the system.

#### 2.1.6 Circuit Prioritization and Scheduling:

During a year, circuits are prioritized based on the following factors:

- Reliability – The circuits due to be trimmed for any given year are ranked based on customer minutes interrupted by tree-related causes. Circuits that have the highest number of customer minutes interrupted by tree growth outages are scheduled first.
- Last Trim Date – Circuits are scheduled based on the last trim date. The oldest are weighted over the earliest.
- Customers Affected – Circuits are ranked by customer count. Circuits with high numbers of customers or circuits with critical customers are ranked higher.
- Current Vegetation Conditions – The current vegetation conditions on a circuit will be used to prioritize it. Customer requests for tree trimming are also taken in to consideration when determining the current vegetation conditions of a circuit.
- Other – Other factors that are considered when scheduling are circuit load, customer complaints and political issues.

Circuits are first scored based on reliability data, last trim date and the current vegetation conditions. Then other factors are considered to refine the rankings. Prioritization of a circuit may change based on any of these factors. For scheduling strategy, see Appendix 6.

#### 2.1.7 Pruning

Tree pruning is the selective removal of branches that are not an adequate distance from the power lines, or that will grow too close to the power lines within the next maintenance cycle.

Trees are pruned to provide adequate clearance from Empire District Electric Company facilities. As a general rule, trees should be pruned to improve or re-establish the clearance provided from all previous tree maintenance performed.

Some factors to consider before pruning include:

- The growth rate of the tree species (how fast the branches grow back);
- The wood strength of the tree species (what is the chance of the branch breaking under the load of strong wind, snow, or ice);
- The voltage conducted by the line (the hazard presented by the branch contacting the line; the higher the voltage, the greater the hazard);
- Tree removal considerations. In some cases, it may be preferable to remove the tree. For example, when repeated severe pruning is necessary or when the tree is declining and unsafe;
- Limbs overhanging Empire District Electric Company facilities. Remove or shorten dangerous limbs – those overhanging limbs with a high potential for breaking or bending into Empire District Electric Company conductors due to ice, snow or wind loading (be aware of included bark at the branch bark ridge);
- ANSI-A300 procedures and techniques will be followed



## 2.1.8 – Manual/Mechanical Removal of Vegetation

### **2.1.8.1 -- Removal Considerations** for trees where ownership can be determined

- Remove all tall-growing trees within the width of the right-of-way.
- Remove all tall-growing brush that has the potential to grow closer than the minimum clearance specified for a specific voltage line.
- Remove all brush and vines around poles and other EMPIRE equipment.
- All trees and brush should be cut as close to the ground as practical.
- Remove all fast-growing and undesirable tree species.
- Remove all second growth from stumps cut on previous pruning cycles.
- Remove all trees that present an obvious or potential hazard to Empire District Electric Company facilities.

### **2.1.8.2 -- Removal Considerations** for trees where ownership cannot be determined and are either 6"-1 1.9" DBH trees with original crown or Trees that have been topped or otherwise improperly pruned as defined by ANSI A-300 (Part 1)-2001 Pruning

- All considerations on section 2.1.8.1.
- Unmarketable fencerow trees that currently lack ability to be beneficial shade.
- Trees located in such a manner that ANSI A-300 (Part 1)-2001 Pruning cannot be followed while attaining clearances set in this documents Appendix 2
- Edge trees of no market value that yield no additional benefit due to adjacent or otherwise available shade to livestock.
- Trees located in areas not manicured, accessible and inaccessible alleys in town, or not associated with a residence.

Stumps should be treated with herbicide to prevent re-sprouting.

## 2.1.9. Hazard Trees

Trees that are located beyond the edge of the right-of-way, have a high probability of failure and are of sufficient height to contact the conductors and/or structures and guy wires, if they were to fall in that direction, are classified as danger trees, and should be considered for removal.

Conditions could include but are not limited to the following:

Dead, dying or leaning trees

Weak branches

Shallow root system

Root failure

Internal decay

Canker or canker root

## 2.1.10 – Right-of-way Screens

Right-of-way screens are strips or areas of trees and brush purposely left on the right-of-way in certain areas where it is required by federal, state and/or local laws or regulations

and/or it is desirable to reduce the visual impact of the cleared right-of-way to the general public. Along certain roads and other areas frequented by the public, screens of trees may be left on the right-of-way so the natural tree line is not interrupted by the cleared right-of-way, and to reduce the “corridor” appearance of a cleared right-of-way. Screens should be composed of low-growing trees and shrubs that will not normally grow to conductor height..

## **2.2 - EMPIRE DISTRICT ELECTRIC COMPANY SCHEDULED TREE PRUNING**

### 2.2.1 Procedure

Empire District Electric Company or its agents will inspect trees near power lines scheduled for pruning and determine which trees should be pruned or removed. Attempts will be made to notify homeowners or residents before pruning is done.

### 2.2.2 Limb and Branch Disposal

Empire District Electric Company/Empire District Electric Company contract crews will dispose of all debris resulting from their tree and pruning operations that are small enough to be fed through a chipper unless different arrangements have been made with the homeowner or resident. Wood too large to be chipped shall be cut and stacked at the site unless the homeowner requests the wood be removed.

### 2.2.3 Brush Removal

Brush is defined as a tall-growing tree stem that is less than 6 inches in diameter at breast height. Brush should normally be removed rather than pruned.

## **2.3 - EMPIRE DISTRICT ELECTRIC COMPANY SCHEDULED TREE REMOVAL**

### 2.3.1 Removal Procedure

Empire District Electric Company and its agents will inspect the trees near power lines scheduled for maintenance and determine which trees should be removed. If a tree is a candidate for removal, the homeowner or resident will be contacted and asked to authorize Empire District Electric Company and its contractors to remove the tree as low to the ground line as possible (See Section 2.10, Customer Contact).

### 2.3.2 Tree Disposal

Empire District Electric Company/Empire District Electric Company contract crews will dispose of all debris small enough to feed through a chipper resulting from their tree removal and pruning operations unless different arrangements have been made with the homeowner or resident. Wood too large to be chipped shall be cut and stacked at the site unless the homeowner requests the wood be removed.

### 2.3.3 Stumps

Empire District Electric Company and its contract crews will NOT grind out stumps, unless special arrangements have been agreed upon. All stumps shall be treated with an

approved herbicide unless a property owner has requested that the stump not be treated or if the herbicide label warns against treatment of stumps in particular situations.

## **2.4 – CUSTOMER REQUESTED TREE PRUNING POLICY**

Empire District Electric Company will promptly respond to legitimate request related to tree/right-of-way maintenance, assign a priority level for scheduling and inform the property owner of the results of the investigation. All requests are legitimate to the customer. Empire District Electric Company will decide if the work requested will benefit the overall safety and reliability of the electric system and its customers and the general public.

Empire District Electric Company Utilities should follow the following guidelines:

- Document all request using a standard Customer Request Form.
- Screen all request by phone by asking questions such as:
  - Do you have power?
  - Do your lights blink?
- Field inspect the request that cannot be resolved by phone and ask the same questions as above. If no one is home when the field inspection occurs, provide door-hanger that notifies customer of the decision that was made and if the work will be completed, deferred or denied. This practice can increase efficiency for field investigations that are completed when property owners are not at home.

### **2.4.1 Procedure**

When a customer requests Empire District Electric Company to prune a tree away from pole-to-pole lines, the company will send out a representative to make a determination of any potential hazards that exist.

If it is determined that a potential hazard does exist, Empire District Electric Company will schedule a crew to perform all necessary pruning and/or removal.

If the tree is not a potential hazard, Empire District Electric Company will inform the customer that the tree will be re-evaluated when that particular area is scheduled for maintenance.

### **2.4.2 Limb and Branch Disposal**

If it is determined that a potential hazard does exist, Empire District Electric Company/Empire District Electric Company contract crews will dispose of all debris small enough to feed through a chipper resulting from their tree removal and pruning operations unless different arrangements have been made with the homeowner or resident. Wood too large to be chipped shall be cut and stacked at the site unless the homeowner requests the wood be removed. If the tree is not a potential hazard and pruning and/or removal is still agreed to, the disposal of the debris is the responsibility of the property owner unless otherwise agreed to in writing.

## **2.5 – CUSTOMER TREE REMOVAL**

### 2.5.1 Procedure

When a customer wants to remove a tree and Empire District Electric Company's facilities make it hazardous for the customer or customer's agent to accomplish the work, Empire District Electric Company will do one of the following:

- Temporarily drop the conductors while the customer or customer's agent performs the work. To make arrangements, call the Empire District Electric Company Customer Service Center at (800) 206-2300
- Prune or remove the portion of the tree that is contributing to the hazard.
- A Empire District representative will inspect the request within five working days

Note: Empire District Electric Company will not remove trees to clear house (pole-to-house), or street light service wires.

### 2.5.2 Tree Disposal

When Empire District Electric Company prunes or removes trees at the customers' request, the disposal of the debris is the responsibility of the property owner unless otherwise agreed to in writing.

## **2.6 –CUSTOMER PRUNING WITH EMPIRE DISTRICT ELECTRIC COMPANY ASSISTANCE**

### 2.6.1 Procedure

When a customer desires to prune a tree close to Empire District Electric Company lines for reasons other than line clearance, and it is hazardous to complete the work, Empire District Electric Company will do one of the following after customer notification: Temporarily drop the conductors while the customer or customer's agent performs the work. To make arrangements, call the Empire District Electric Company Customer Service Center.

Prune or remove the portion of the tree that is creating the hazard.

Note: In all cases, the decision on which course of action to take will be determined by a Empire District Electric Company representative after consultation with the customer.

### 2.6.2 Limb and Branch Disposal

When Empire District Electric Company assists the customer to prunes or removes trees at a customer's request, the disposal of the debris is the responsibility of the property owner unless otherwise agreed to in writing.

## **2.7 – CUSTOMER PRUNING NEAR EMPIRE DISTRICT ELECTRIC COMPANY FACILITIES**

### **2.7.1 Procedure**

When a customer desires to prune trees near Empire District Electric Company lines, the following conditions must be met:

Only qualified line-clearance tree trimmers and/or trimmer trainees are allowed within 10 feet of any energized conductors (OSHA 19 10.269 and ANSI ZI33.1 and any other applicable federal, state or local laws, codes or regulations). Qualified line-clearance tree trimmers will do all pruning around Empire District Electric Company facilities. Empire District Electric Company must be notified in advance of the customer's agent performing the work.

### **2.7.2 Limb and Branch Disposal**

Clean up and disposal of all limbs, branches and debris resulting from this clearing operation are the responsibility of the property owner.

## **2.8 – TREE PRUNING AND REMOVAL DURING STORMS**

### **2.8.1 Procedure**

When trees fail or branches break during storms, and they make contact with or cause failure of Empire District Electric Company facilities, Empire District Electric Company will do the necessary pruning or removal to clear its facilities and restore power.

Note: Due to the emergency conditions that exist during storms, Empire District Electric Company and its contract crews may not be able to contact all customers before pruning or cutting trees. Crews may make a courtesy knock on the customer's door to let them know that work will be performed at that location.

### **2.8.2 Disposal**

If Empire District Electric Company and its contract crews prune or remove trees following storm emergencies, all limbs and logs will be left on the customer's premises. The disposal of limbs and/or logs is the responsibility of the property owner.

## **2.9 – PRUNING AND REMOVAL OF DISEASED TREES**

### **2.9.1 Pruning**

Where trees are encountered that are suspected of being diseased (Dutch elm disease, oak wilt, etc.) the customer should be notified and a determination made as to whether the tree should be pruned. If the customer is not willing to agree the tree is diseased, Empire District Electric Company will refrain temporarily from pruning the tree, if possible, until symptoms are more visible or the hazard is too great. Contract crews should report the matter to their supervisor.

### 2.9.2 Removal

When diseased trees are near Empire District Electric Company lines, Empire District Electric Company and its contract crews will do one of the following:

Prune the trees to clear Empire District Electric Company facilities;

Temporarily drop the conductors while the customer or customer's agent removes the tree. For a temporary line drop, customers should contact Empire District Electric Company Customer Service Center.

### 2.9.3 Disposal

Should a tree be condemned by a municipal jurisdiction as having Dutch elm disease, oak wilt or another tree disorder, Empire District Electric Company has no responsibility for the removal or disposal of the tree except when the tree is located on property owned by Empire District Electric Company. Removal and disposal of diseased trees is the responsibility of the property owner.

## **2.10 – CUSTOMER CONTACT POLICY**

### 2.10.1 – Scheduled Pruning/Removal

An Empire District Electric Company agent or Empire District Electric Company representative will attempt to contact each customer/homeowner whenever possible before pruning any trees or in accordance with any pending special conditions mandated by an appropriate regulatory body.

#### **For normal pruning:**

An Empire District Electric Company representative or agent will knock on the door to talk with the homeowner and explain the necessary pruning. If no one is home, a notice will be left on the door.

If the homeowner does not contact Empire District Electric Company, the contract trimming crew will do the necessary pruning. Before starting the line clearance work, the contract trimming crew will attempt a courtesy contact with the property owner by knocking on the door.

If the pruning is necessary and the homeowner refuses permission, the crew will turn the matter over to the work planner. If the planner is unable to develop concurrence with the customer regarding the necessary pruning, the planner will notify appropriate Empire District Electric Company representative.

#### **Pruning on public property:**

When pruning involves trees on public property or rights-of-way, it is recommended that the Empire District Electric Company representative or agent contact the appropriate public agency to discuss any special concerns. (Example: Contact a city forester or parks department before pruning boulevard trees). It is the line clearance trimming contractor's responsibility to acquire any licensing required by municipalities for the pruning of trees.

**For tree removal:**

Before removing a tree, homeowners will be contacted and informed of the necessary work. Empire District Electric Company representative or agent will secure a signed permit before starting the work unless otherwise approved by Empire District Electric Company. When property ownership cannot be determined the approved agents assigned by EDE will be allowed to authorize by signature removal of trees defined in section 2.1.8.2 for that site to the utility line clearance contractor.

**2.10.2 – Customer-Requested Pruning/Removal**

Emergency and hazardous conditions will be addressed immediately.

If the pruning has been agreed to over the phone, (for normal pruning) the crew will make a courtesy knock on the door before starting the work.

If the work requires written permission (tree removal), the crew will follow the same procedure as outlined for scheduled work.

**2.10.3 – Storm Work**

Due to emergency conditions that occur during a storm, Empire District Electric Company and its contractors will prune and remove trees necessary to restore power without contacting every homeowner.

A courtesy knock will be made at each customer site to inform them of the work being done, however, *the work will proceed even if the customer is not home.*

# **Herbicide Use Policy (Distribution)**

## **Section 3.0**

### **3.1 – SAFETY AND REGULATIONS**

All herbicides shall be applied in strict compliance with all federal, state and local laws and regulations. This includes, but is not limited to: transporting, handling and chemical container disposal.

All herbicide and treatment methods used by the contractor shall have prior approval by Empire District Electric Company.

Any crewmember applying herbicides must be supplied with the appropriate protective gear, current label and Material Safety Data Sheet (MSDS) for the product being applied. It is the contractor's responsibility to provide all necessary materials, including chemicals and safety gear, unless specifically indicated as being provided by Empire District Electric Company.

The contractor is responsible for the proper disposal or recycling of all herbicide containers.

A reasonable attempt to notify homeowners adjacent to the application area of necessary work should be made by the contractor performing the applications. An Empire District Electric Company representative or agent may attempt to contact homeowners before starting the work when ownership can be determined during planning. If ownership cannot be determined without property research work will be performed as planned.

### **3.2 – APPLICATION OF HERBICIDE**

#### **3.2.1 Requirements and Precautions**

- Do not apply herbicides outside the easement right-of-way boundaries except in cases where no right-of-way width has been established in the easement.
- All herbicide treatment shall be performed in a responsible manner that will reflect the best interests of the property owner and Empire District Electric Company. If a property owner should object to any of the herbicide treatments, the operation shall immediately be discontinued on that property until any differences are resolved.
- Cut off all vines ascending all poles and guy wires at the height of reach.
- Herbicide may be applied to foliage of brush under 10 feet tall.
- Herbicide may be applied to foliage of trees over 10 feet tall as approved and directed by the assigned Empire District Electric Co. employee or representing agent.
- The Contractor shall furnish all mixing materials and application equipment and shall be responsible for transporting, handling, mixing, and application of chemicals used in the immediate operation unless other wise directed by the Manager of Vegetation Control.
- The Contractor shall comply with all State and Federal Laws and Regulations pertaining to Herbicide Applications and any other licensing or regulatory requirements.



- The Contractor shall only use herbicide solutions that contain dye according to label recommendations for basal and stump applications.
- The Contractor shall guarantee a minimum ninety percent (90%) stump control per span, as determined during the growing season following the treatment. Spans not meeting these specifications shall be re-treated by the Contractor at the Contractor's expense to achieve the proper mortality. The Contractor shall guarantee a minimum of ninety-five percent (95%) mortality of brush stems per span for all foliage or basal applications. Mortality must be achieved within two hundred seventy (270) days following treatment. Spans not meeting these specifications shall be retreated at the Contractor's expense to achieve the proper mortality.

In chemical application work, the Contractor shall have the right to skip any portion of a line when, in the opinion of the Contractor, damage to crops, orchards, or ornamental plantings may result from drift. Any skips shall be reported to the appropriate inspector or supervisor.

### **3.3 – REPORTING PESTICIDE INCIDENTS**

When a spill is reported the contractor general foreman should determine the type of chemical and amount of spillage along with the containment efforts that were made. Then the general foreman should notify the proper state or federal agencies if necessary. Any spill, leak, fire or other accident involving pesticides *must be reported immediately* to the proper line clearance supervisor. All damage from such leaks or spills are the responsibility of the contractor.

# Tree Replacement

## Section 4.0

### 4.1 – GENERAL GUIDELINES

Repeated pruning of unmanageable trees can lead to increased utility rates for Empire customers. It may be preferable to remove and replace certain trees that pose a particular hazard to the power lines. Fast-growing, tall trees directly under primary wires are an example. They grow back quickly into the wires and can cause repeated outages. Poplars, elms, willows and silver maples are some fast-growing trees that need frequent pruning near power lines.

#### **Communities**

Empire District Electric Company is willing to cooperate with communities in applying for tree-planting grants from the state and federal government. Empire District Electric Company may provide funds to purchase trees, or labor to remove existing trees, or both depending on the circumstances.

#### **Property Owners**

Empire District Electric Company works with homeowners to identify trees that are good candidates for replacement. The tree must be near Empire District Electric Company power lines and must require repeated pruning to keep the lines clear. The power line must be at least a primary circuit. Empire District Electric Company will remove the existing tree and provide assistance in replacing the tree. The planting and care of the new tree are the responsibility of the property owner, unless other arrangements are made.

Empire District Electric Company reserves the right to decide under what circumstances trees will be replaced (at the expense of Empire District Electric Company). The replacement tree must be a low-growing variety, or it must be planted a sufficient distance away from power lines as to not require future line clearance pruning, if it is a tall-growing variety.

# Appendices

1. Major Tree Species and Growth Rates
2. Guideline for Line Clearances
3. Annual Growth Rates
4. Natural Pruning
5. What is a Tree
6. Scheduling Strategies
7. Plant the right tree in the right place
8. Definitions

# Appendix 1

**Table 1:**  
**MAJOR TREE SPECIES AND GROWTH RATES**

<b>Common Name</b>	<b>Scientific Name</b>	<b>Growth Rate</b>
Eastern Redcedar	<i>Juniperus virginiana</i>	S
Elm	<i>Ulmus spp.</i>	F
Green Ash	<i>Fraxinus pennsylvanica</i>	F
Hackberry	<i>Celtis occidentalis</i>	F
Honeylocust	<i>Gleditsia triacanthos</i>	F
Mulberry	<i>Morus spp.</i>	F
Pin Oak	<i>Quercus palustris</i>	F
Pine	<i>Pinus spp.</i>	S
Post Oak	<i>Quercus stellata</i>	S
Red Oak	<i>Quercus rubra</i>	F
Silver Maple	<i>Acer saccharinum</i>	F
Sycamore	<i>Platanus occidentalis</i>	F
Black Walnut	<i>Juglans Nigra</i>	F

## Appendix 2

The following guidelines (TABLE 1) for tree clearances may apply at the time of line clearance tree maintenance to protect the wires under normal operating conditions. Special clearances may be needed at times because of field conditions. Additional allowance should be made for wires that will sag due to hot weather or swing sideways in strong winds.

**Table 1.**

**Recommended Line Clearances (in feet)**

<b>Clearance From Trees</b>	<b>Rate of Growth</b>	<b>Secondary Cable (120-480 V)</b>	<b>Open Wire Secondary (120-480 V)</b>	<b>Primary Voltage Single-Phase</b>	<b>Primary Voltage Three-Phase</b>
SIDE	Slow	2 (c)	2 (c)	8 (c)	10(c)
	Fast	4(c)	6(c)	12(c)	15(c)
OVER	Slow	2	2	15 (a)	Remove all overhang
	Fast	4	6	15 (a)	
UNDER	Slow	3	8	8	10
	Fast	4	10	12	14

**Site Considerations:**

(a) Remove all hazardous overhang, and all overhang within 15 feet of the conductors that could contact them if weakened or broken. Remove all overhang over 3-phase lines.

(b) Remove all trees that could grow into, or fall into the lines.

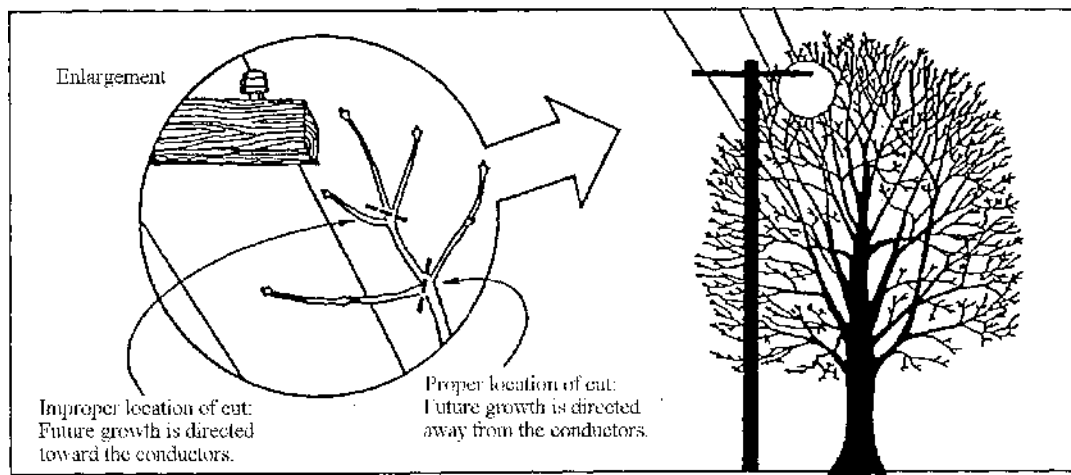
(c) Large tree trunks or major limbs of established trees may be allowed to remain as close as 4 feet from the conductors if all of the following are true:

- Movement of either the conductor or the tree will not result in contact between the tree and the conductor.
- The tree is not easily or readily climbed without the use of ladders or specialized climbing equipment.
- There is no evidence of re-growth or sprouting from the tree trunk toward the line.

## Appendix 3

### Annual Growth Rates

This table intentionally left blank. Current Empire study is in progress.



## Appendix 4

### Natural Pruning (to direct growth away from wires)

Natural pruning is a method by which branches are cut at a suitable parent limb back toward the center of the tree. The cut should be made as close as possible to the branch collar at the branch base, however the branch collar should not be injured or removed. Every branch has a branch bark ridge that separates the branch from the main stem. The cut should be made on the outer side of the ridge. If the cut is made on the inner side of the branch bark ridge, a “larger” wound will result that may inhibit the trees ability to naturally compartmentalize the wound, increasing wound closure time and the risk of entry for microorganisms. This method of pruning is sometimes called “drop-crotching”, “direction trimming” or “lateral trimming.” Large branches should be removed to laterals at least one-third the diameter of the branch being removed. Natural pruning is especially adapted to the topping of large trees where a great deal of wood must be removed.

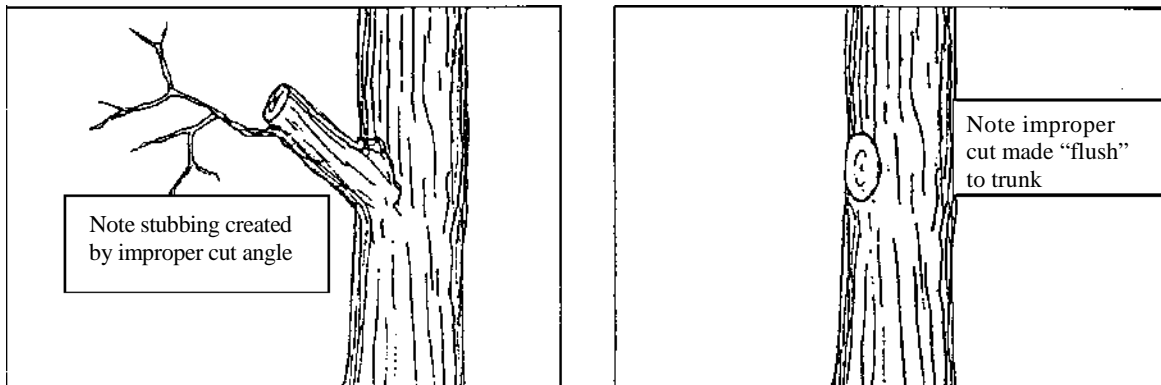
In natural pruning, almost all cuts are made with a saw, and very little pole pruning works is required. This results in a natural looking tree when finished, even if a large amount of wood has been removed. However, a hydraulic or manual pole pruner is required to trim those smaller laterals that cannot be properly trimmed using the pole saw and each crew shall be equipped with the necessary hydraulic pruners for lift crews and manual pruners for climbing crews.

Natural pruning is also directional pruning, since it tends to guide the growth of the tree away from the wires. Stubbing or pole-clip clearance, on the other hand, tends to promote rapid sucker growth right back into the conductors. It is important to remember is that natural pruning does work, and that two or three trimming cycles done in this manner will bring about an ideal situation for both the utility and the tree owner. Most shade trees lend themselves easily to this type of pruning.

Natural pruning techniques should be used for top pruning, side pruning, under pruning, and combinations as described on the following pages.

## Natural Pruning Details

### Improper Trimming Techniques

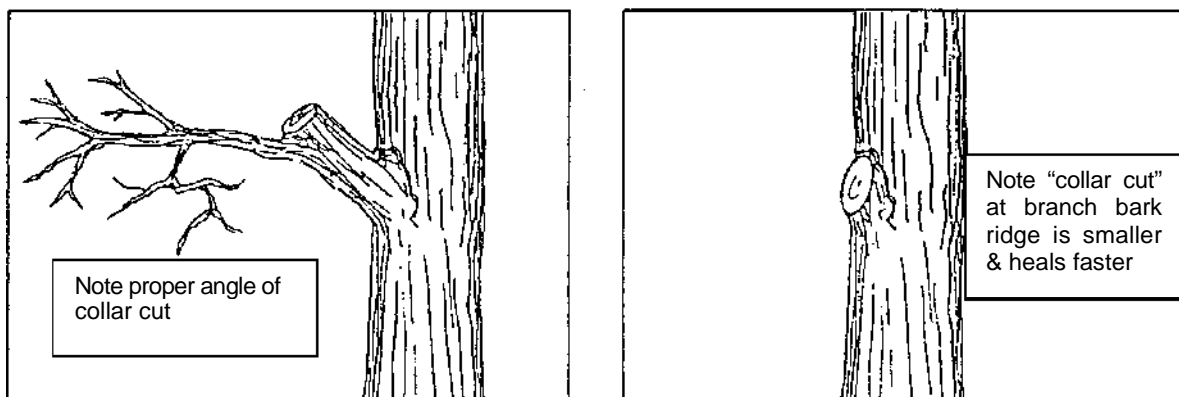


Details of improper trimming and proper natural pruning techniques are shown here. The branch at left above was cut back to a lateral that is too small. Branches should be cut back to a lateral that is at least one-third the size of the branch being removed as shown at left below. If a proper lateral is not available, the branch should be cut back to the trunk. Note that the remaining limb should be trimmed in a manner that meets the minimum clearance requirements while "training" it to grow away from the conductors. When limbs growing toward the conductors cannot be trimmed to meet these requirements, they should be removed back to the truck of the tree.

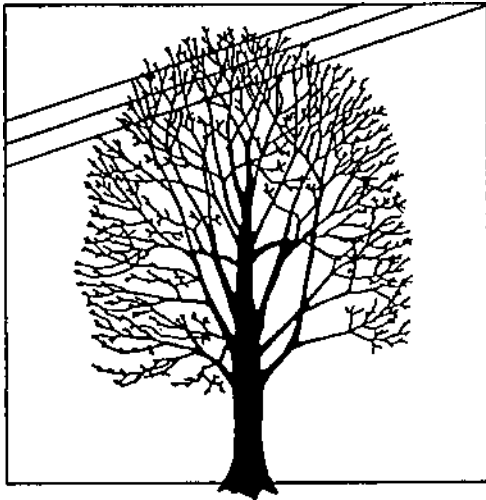
The cut shown at right above is an improper flush cut where the branch collar was removed. The cut at right below shows the proper method to remove the branch at the trunk, leaving the branch collar but not a stub.

The CONTRACTOR shall remove all past stubbing, correctly trimming these limbs back to a lateral one third the size of the parent limb, or removing them back to the trunk of the tree, to promote proper healing. Removal back the truck will be the preferred method when it would create a "cleaner" appearance and minimize future re-growth and trimming.

### Proper Pruning Techniques

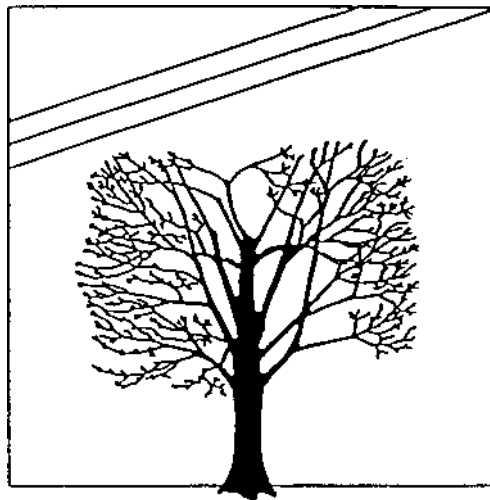






**Before Top Pruning**

**After Top Pruning**



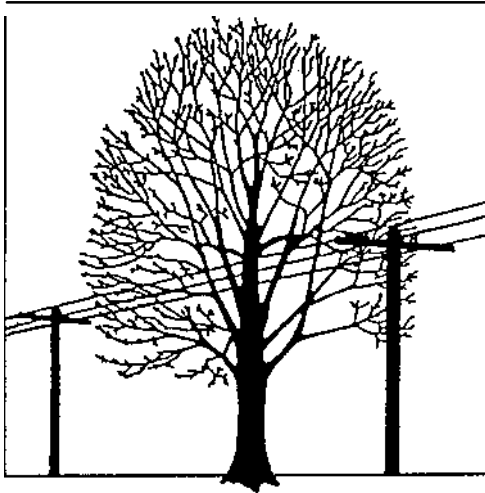
## **1 TOP PRUNING**

Top pruning involves cutting back large portions of the upper crown of the tree. Top pruning is often required where a tree is located directly beneath a line. The main leader or leaders are cut back to a suitable lateral. (The lateral should be at least one-third the diameter of the limb being removed.) While most cuts should be made with a saw; a hydraulic or manual pole pruner is still required to properly prune the small lateral limbs that cannot be properly pruned using a pole saw.

For the sake of appearance and to limit the amount of regrowth, it is best not to remove more than one-fourth of the crown when top pruning. In certain species, removal of too much of the crown may result in death of the tree.

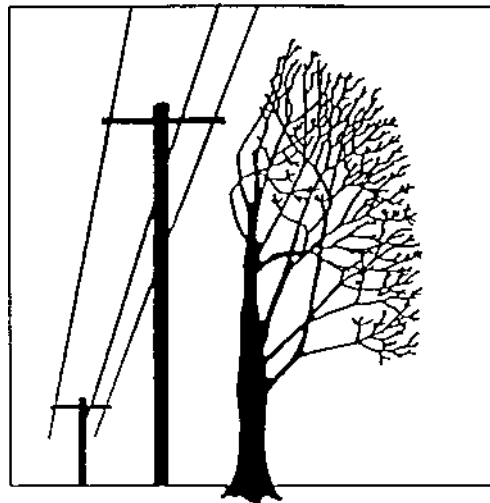
Top trimming is generally required to address the situation where a tall growing tree has been planted or grown underneath the lines. Top trimming should NOT be used on those trees that are located partially under the line, where part of the tree could be

trained to grow away from and/or beside the line, specifically required by the property owner. Side trimming is discussed in the next section.



**Before Side Pruning**

**After Side Pruning  
Rural – R/W areas**



## **2. SIDE PRUNING IN NON-RESIDENTIAL R/W AREAS**

In non-residential or rural right-of-way situations side pruning consists of cutting back or removing the side branches that are threatening the conductors from ground to sky. Side pruning is required where trees are growing adjacent to utility lines. Limbs should be removed at a lateral branch or the main trunk wherever possible to minimize future re-growth. All branches beneath the conductors should be removed to prevent them from growing up into the lines. Avoid unsightly notches in the tree, if possible.

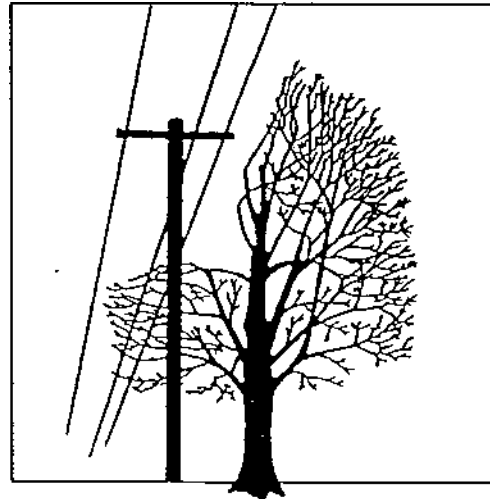
## **3. SIDE PRUNING IN RESIDENTIAL AREAS**

In residential situations, where the tree to be trimmed is part of a lawn or landscape setting it is often necessary to leave a “shelf” of branches below the phone cable level, or at least 10 – 12 feet below the primary level. While this is NOT a preferred trimming

methods, it is commonly required in residential areas in order to maintain as much of the natural appearance, screening and shade value of the tree as possible. Trees that would require excessive trimming or create serious visual impacts for the property owner should be candidates for removal.

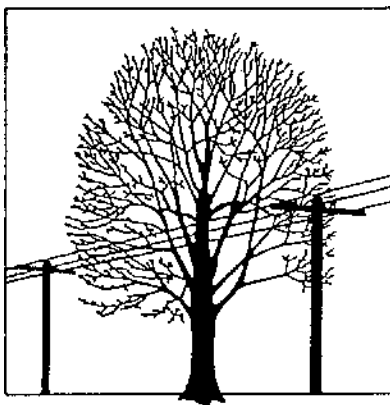
When shelf trimming is performed the remaining branches shall be trimmed so as to train them to grow out flat, or down and away from the conductors. Branches growing up, toward the overhead conductors should be removed or trimmed to laterals growing away from the wires.

**After Side Pruning  
Residential Areas**

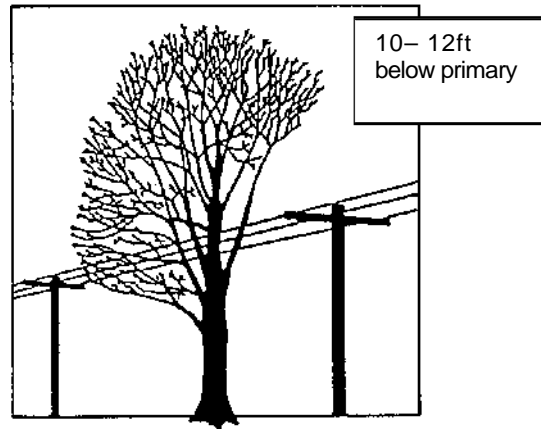


#### **4. UNDER PRUNING**

Under pruning involves removing the lower limbs of the tree to allow wires to pass below the tree crown. All cuts should be made as close as possible to the branch bark ridge at the branch collar, to avoid leaving unsightly stubs. The natural shape of the tree is retained in this type of pruning, and the tree can continue its normal growth. Overhangs shall be trimmed as required by this specification in Exhibit C Table 1, the species of tree, location. All dead branches above the wires shall be removed, regardless of height, since this dead wood could easily break off and cause an interruption.



**Before Under Pruning**



**After Under Pruning**

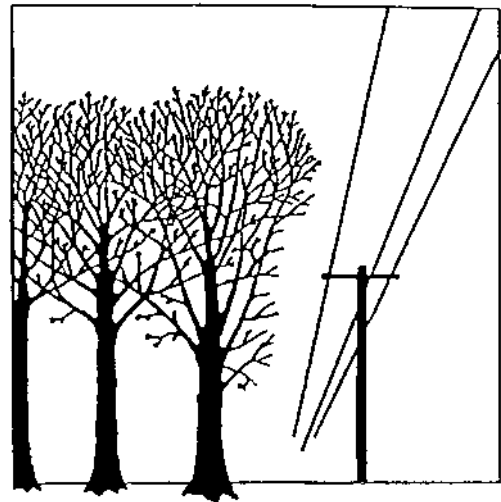
## **5 COMBINATIONS**

It may be necessary to combine several pruning types in order to achieve a good-looking job and to obtain adequate clearances.

### **Improper Trimming Methods**

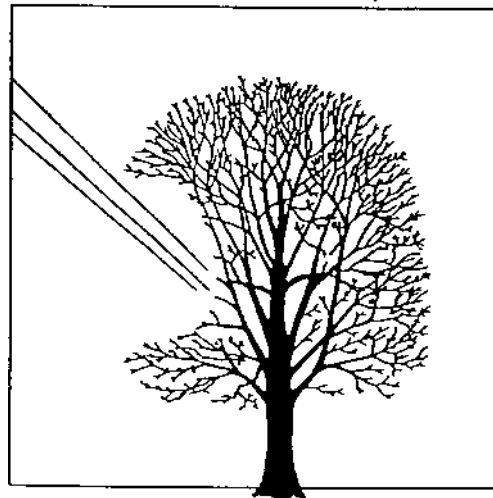
#### **6. SIDE TRIM STUBBING**

This is done by stubbing off portions of limbs along the side of the tree to obtain clearance. Cutting off portions of limbs (leaving stubs) to obtain clearance creates many fast-growing suckers that become a serious line clearance problem. Corrective pruning will be required to eliminate and repair past stubbing practices when they are encountered.



#### **7. "SHAPING" AROUND LINES**

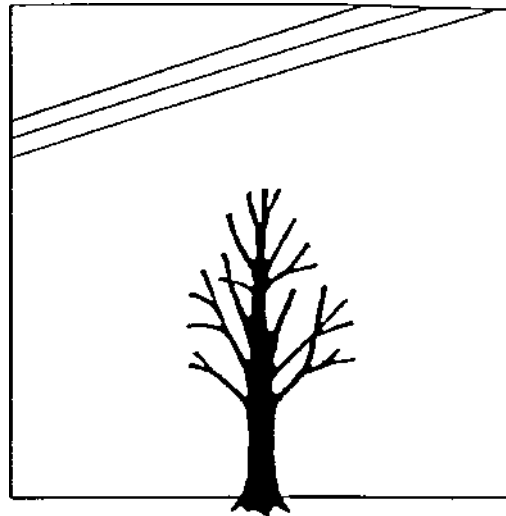
This is done by trimming limbs in an arc to obtain clearance. This unsightly method of trimming leaves branches above the conductors that could bend or break.



## 8. POLLARDING

This is done by stubbing off major limbs to greatly reduce the size of the tree crown. The result is not only unsightly, but promotes a multitude of fast-growing suckers that sprout from the stubs. The combination of stubbing and re-sprouting leads to weak limb attachments, disease and decay, which then lead to a serious reliability and line clearance problem.

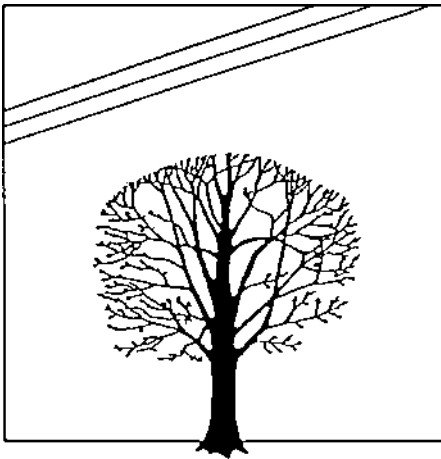
Pollarding is unacceptable.



## 9. ROUNDING OVER

Rounding over (or shearing) is done by making many small cuts so that the tree top is sheared in a uniform line. This creates an unhealthy tree condition and results in rapid regrowth of suckers directly toward the electric conductors.

When a round over is done using a pole saw the trimmer usually leaves numerous stubs, rather than following drop crotch and directional trimming principles. This stubbing commonly leads to decay, disease and rapid re-growth. This condition is unacceptable, except when mandated by customer requirements, and even then should be a last resort.



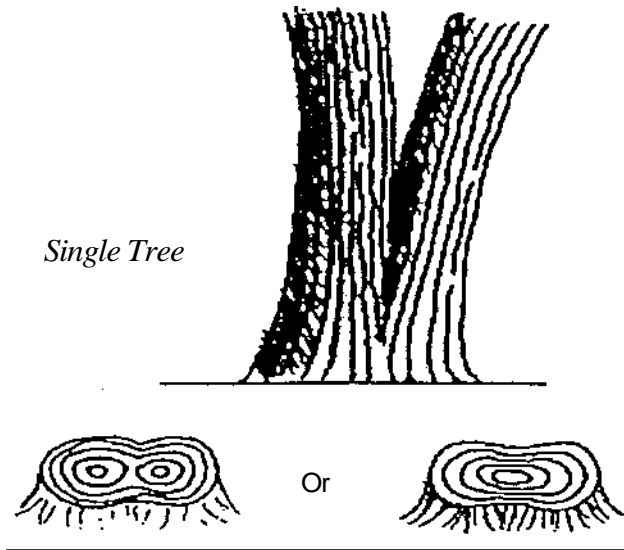
When a round over must be done, it shall be completed using the proper hydraulic or manual pruning tools,

following the proper collar cut procedures. Stubbing is unacceptable. The Owner's Representative shall be notified before a round over is performed

# Appendix 5

## What is a Tree

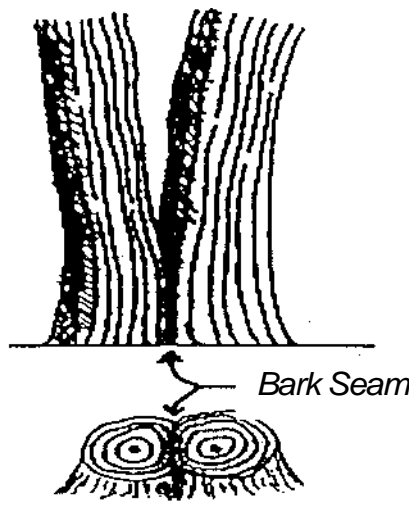
*Single Tree*



### 1. SINGLE-STEM TREE IDENTIFICATION

A tree that splits above ground line and has a visible included bark seam down to the ground line is considered a single tree.

*Separate Trees*



### 2. MULTI-STEM TREE IDENTIFICATION

A tree that splits at ground line is considered multiple trees. A tree that splits above ground line, but has a visible included bark seam down to the ground line is considered separate trees.

# Appendix 6

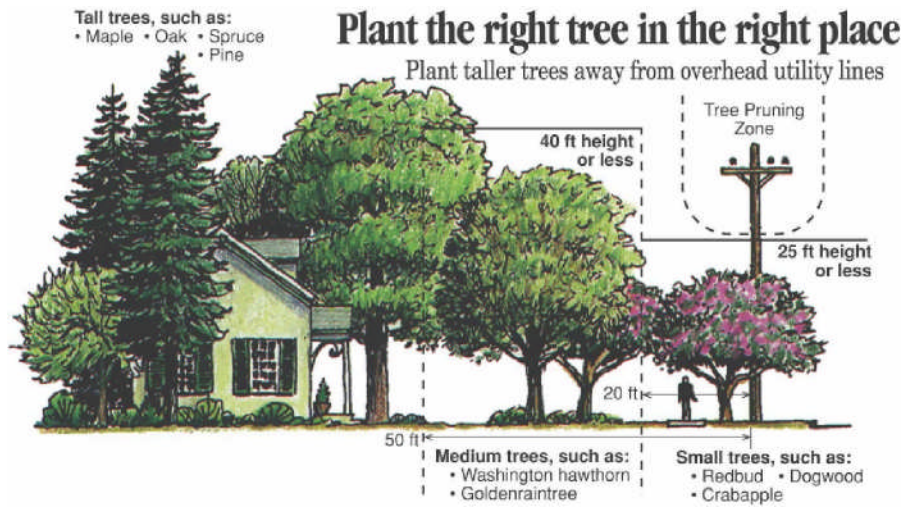
## Empire Line Clearance Scheduling Strategy

The following table summarizes the Empire line clearance scheduling strategy. Individual circuits may be accelerated or deferred based on assessment of field conditions and operating performance.

<b>Feeder Description</b>	<b>Primary Cycle Length (Years)</b>	<b>Mid-cycle Inspection/selective Tree Maintenance (Years)</b>
Residential Feeder Multi-phase	4	2
Rural Feeders	6	3

\* The above schedule will be utilized unless otherwise directed by the appropriate regulatory body

# Appendix 7





# Appendix 8

## DEFINITIONS

*The following words and phrases shall have the definitions set forth below when used in these specifications:*

**basal treatment** - Herbicide application covering the entire stem to approximately 18 inches above the soil

**brush** - a woody plant that is manageable by herbicide application due to setting or tree species less than 6 inches DBH, that is not part of an existing tree, and that may reach the conductor at maturity.

**brush unit** - one square foot of brush-covered ground. A 1,000 square foot pricing unit of brush may consist of partial units scattered throughout the electrical corridor. Brush area shall be measured at the drip line.

**brush work** – trimming, clearing brush and applying a herbicide to the cut stems, or only applying herbicide to brush.

**clearance** - the distance between the nearest portion of a tree or other vegetation and the conductors.

**coniferous** - any of the cone-bearing trees or shrubs, mostly evergreens.

**DBH** - "diameter at breast height" – the diameter of individual tree trunks or individual stems of brush measured at a point 4.5 feet above the ground.

**deciduous** - any perennial plant that sheds its leaves annually at the end of a growing season.

**demand tree trimming** - trimming or removing trees on a customer requested or emergency basis. Also may include tree work associated with line construction projects. This is typically required when trees have grown into the conductors, or are close to the conductors, and have created a potentially dangerous situation. This may also include special trimming or chipping work when requested by EMPIRE. Only EMPIRE authorized representatives may assign customer requested, demand tree work.

**directional pruning** - a form of natural pruning used to encourage tree regrowth away from the conductor. It is accomplished by removing limbs growing toward the conductors entirely at the branch collar near the trunk of the tree, or by pruning to lateral branches that are at least one-third the diameter of the limb being cut and are growing away from the conductor. (References: Dr. Alex Shigo and/or ANSI A300)

**drop-crotching** - is a crown reduction technique in which a tree trimmer makes proper pruning cuts at crotches, removing the larger limb and favoring the smaller. For electric line clearance, the trimmer would remove limbs growing toward the conductors and favor those growing away from the conductors. This usually results in a "V" shaped appearance of the tree crown and is frequently referred to as "V-trimming". See definition of "natural pruning" for further description.

**evergreen** - any plant that retains its leaves/needles year-round.

**foliar herbicide application** - the application of a herbicide to the leaves or needles of a target plant.

**hazard trees** - trees that are located off the right of way, have a high probability for failure and are of sufficient height to contact the conductors and/or structures and guy wires if they were to fall in that direction, and should be cleared. Conditions could include but are not limited to the following: Dead, dying or diseased, leaning trees, weak branches, shallow root system, root failure, internal decay, canker or canker root.

**herbicide** - a chemical pesticide used to control, suppress, or kill plants.

**Make-safes** – the practice of cutting only the portion of a tree that encroaches beyond air insulation distance as required by NESC for work to be performed by companies not line clearance certified. This work does not include the chipping or removal of the resulting debris and will be performed at the direction of EMPIRE personnel.

**mechanical per lineal foot, one side** – A pricing unit used to describe pruning solid side wall of trees, on one side of the lines, where it is not practical to designate individual trees and is practical and appropriate to use mechanical tree trimming equipment.

**natural pruning** - a method by which branches are cut to the branch collar at a suitable parent limb, the trunk of the tree, or an appropriately sized lateral branch. This method of pruning is sometimes called "drop-crotching", "proper pruning", the "Shigo method" or "lateral trimming."

**non-mechanical per lineal foot, one side** – A pricing unit used to describe pruning solid side wall of trees, on one side of the lines, where it is not practical to designate individual trees and is not practical or appropriate to use mechanical tree trimming equipment.

**preventative maintenance** - trimming or removing vegetation on a systematic basis typically by, but not limited to, circuit or grid, and in a manner intended to achieve system reliability.

**pruning** - the removal of dead, dying, diseased, interfering, objectionable, and/or weak branches of trees or shrubs using proper arboricultural techniques.

**removal** - completely cutting to the ground or as close to the ground as obstructions do not inhibit an entire tree and applying herbicide to the cut stump.

**right-of-way** - a distribution right-of-way, an easement, a EMPIRE easement, or any other corridor of land paralleling, on both sides, an overhead distribution line, and in respect of which EMPIRE has certain rights.

**rounding over** - the making of many small cuts so that a tree underneath the conductors is rounded over in a uniform curve. This creates an unhealthy tree condition and results in rapid regrowth directly back toward the electrical conductors. This is not an acceptable practice.

**safety zone work** – removing all overhang and cutting back limbs to a minimum clearance of 10 feet from the energized conductor.

**selective herbicide** - a herbicide that, when applied to a mixed population of plants, will control specific species without injury to others.

**shearing** - the making of many small cuts so that a tree adjacent to the conductors is sheared in a uniform line. This is not a generally acceptable practice.

**show-up site** – site where CONTRACTOR crews receive work assignments.

**side pruning** - using natural pruning methods to cut back or removing side branches that are threatening the conductors; required where trees are growing adjacent to conductors.

**stump treatment** - applying an approved herbicide to the outer ring (cambium) portion of the stump to reduce or eliminate re-growth.

**sucker growth** - the re-growth within the tree that originates near the cuts made during the previous trimming.

**the property** - any work site associated with this contract.

**topping** - cutting back the upper crown of a tree to a uniform horizontal line, leaving multiple stubs. This is an improper and unacceptable trimming technique except where specified to reduce a hazard. Usually applies to make-safes and top and spray applications.

**tree** - a perennial plant with a woody trunk measuring at least six (6) inches DBH, and having one set of annual rings at ground level or more than one set of annual rings not separated by included bark. Trees that grow adjacent to one another and share an apparent common base completely separated by "included bark" are considered to be distinct trees. "Included bark" is bark that is included within the wood of a tree, or between the woody stems of separate trees, creating a physical separation between the trees.

**tree size classifications** - tree diameter as measured at breast height (DBH): 6" to 11.9", 12" to 17.9", 18" to 23.9", and 24" and greater

**tree crown** - the upper portion of the tree; the branches or leaf area.

**trimming** - cutting back tree branches or shrubs to shape or reduce the size of the tree or shrub.


**V-trim** - using natural pruning methods to cut back large portions of the upper crown of a tree. This is required when trees are located directly beneath a conductor. Also known as crown reduction pruning or drop crotching.

**vegetation** - all the plant (flora) life in a particular region; a plant community, assemblage, or aggregation with distinguishable characteristics.

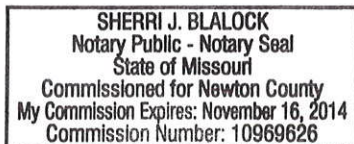
## AFFIDAVIT


State of Missouri    )  
                              )ss  
County of Jasper    )

I, Martin O. Penning, having been duly sworn upon my oath, state that I am the Vice President of Commercial Operation of The Empire District Electric Company (Empire), that I am duly authorized to make this affidavit on behalf of Empire, and that the matters and things stated in the foregoing are true and correct to the best of my information, knowledge and belief.

  
\_\_\_\_\_  
Vice President of Commercial Operation

Subscribed and sworn before me this 28<sup>th</sup> day of March, 2012



  
\_\_\_\_\_  
Notary Public