

Country:	Laos-3p	USA(1)-3p	El Salvador-3p	Bolivia-3p	MPSEB(1)-3p					
Utility (Date):	EdL (1996)	Benton REC (1997)	NRECA (1997)	?? (1997)	MPSEB (1997)					
Country:	Laos	Washington, U.S.A.	El Salvador	Bolivia	Madhya Pradesh, India					
Average span, voltage:	66 m, 22 kV p-p	100 m, 12.5 kV p-p	120 m, 13.2 kV p-p	110 m, 34.5 kV p-p	80 m, 11 kV p-p					
	Quantity	Cost	Quantity	Cost	Quantity	Cost				
Materials										
Poles (size, type, number/km)	15 @ 12 m, concrete	3,050	10 @ 40', Class 5, wood ^b	3,410	8.6 @ mostly 35', conc.	1,720	9 @ 12 m, concrete	2,480	~13 @ 8 m conc., 140 kg ^c	320
Conductor (size, length)	35 mm ² ACSR, 3,300 m	870	#2 AWG ACSR, 4,000 m	1,870	#2 AWG ACSR, 4080 m	2,370	#4 AWG ACSR, 4,100 m	1,280	30 mm ² ACSR, 3100 m	950
Poletop assembly		2,730		940		1,480		2,570		390
Guy assembly (number/km)	3 ^a	380		140		270	11	710	6 ^a	190
Grounding		0		20		320	5	150		60
Misc.	(undefined)	200		--		--		--		--
Sub-Total		\$ 7,230		\$ 6,380		\$ 6,160		\$ 7,190		\$ 1,910
Labor										
Pole setting		--		3,740		830				
Conductor stringing		--		300		780				
Framing of structures		--		1,890		250				
Guy assembly installation		--		670		160				
Grounding installation		--		340		70				
Misc.	lump sum	480	Materials handling	1,280		--	lump sum ^b , 20% of mat.	1,460	lump sum & supervision ^b	500
Sub-Total		\$ 480		\$ 8,220		\$ 2,090		\$ 1,460		\$ 500
Other										
Clearing		20						350		
Surveying and staking								250		
Transportation and tools		220								80
Fuel		320								
Service		380					"other"	440	storage @ 3%	60
Margin							5%	470	3%	60
Contingency							taxes	280	"T&P" @ 2%	40
Sub-Total		\$ 940		\$ -		\$ -		\$ 1,790		\$ 240
Total		\$ 8,650		\$ 14,600		\$ 8,250		\$ 10,440		\$ 2,650
Notes	Source: Design Standards, Subtransmission and Rural Electrification Project, SwedPower a. Includes 0.5 m3 of concrete at the base of each pole.		Source: Stephen Anderson, Engineering Manager, Benton Rural Electric Association, Washington, U.S.A. a. Includes 2 deadend and 1 angle assembly. b. Extra height for joint usage of pole. Loading on line is 0.25" ice and 40 mph (4 lbs/sq. foot) wind. Sized to accommodate joint-use attachments. c. Labor averages \$37/hour including overhead.		Source: Myk Manon, Project Manager, NRECA/EI Salvador a. About half non-tangent assemblies.		Source: Fernando Haderspock, CRE, Santa Cruz, Bolivia a. Uses 6 suspension insulators per pole. b. Presumably includes transportation.		Source: Ashok Ahuja, New Delhi (from MPSEB Standard Specs) a. Includes boulders for backfilling and concrete for guys and pole base pad. b. Includes 10% for H.O. and general supervision c. Working load. Assumes 12 poles/km plus one double-pole structure every mile.	

Country:	Bangladesh-3p	USA(2)-3p	Philippines(1)-3p	Philippines(2)-3p	Philippines(3)-3p
Utility (Date):	REB (1997)	Mettler (1997)	NEA	Tarelco II	MORESCO I
Country:	Bangladesh-3p	Colorado, U.S.A.	Philippines	Philippines	Philippines
Average span, voltage:	90 m, 11 kV p-p	100 m, 24.9 kV p-p	70 m, ??? kV p-p	50 m, ??? kV p-p	100 m, ??? kV p-p
	Quantity	Quantity	Quantity	Quantity	Quantity
	Cost	Cost	Cost	Cost	Cost
Materials					
Poles (size, type, number/km)	11 @ mostly 35'-5, wood	10 @ mostly 35'-5, wood	15 @ mostly 35'-4, wood	20 @ 35', concrete	35' and 2 ea. @ 40',45'
Conductor (size, length)	4/0+1/0 neu ACSR, 4060 m	#3 ACSR, 4000m	ACSR 1/0 +#2 neu, 4400 m	ACSR #2, 4000 m	ACSR 2/0, 4000 m
Poletop assembly	800	1220	2700	1370	1680
Guy assembly (number/km)	4	2-3	10	8	11
Grounding	2-3	3	14	20	10
Misc.					
Sub-Total	\$ 6,340	\$ 4,340	\$ 9,510	\$ 9,030	\$ 8,860
Labor					
Pole setting	100	1500		270	500
Conductor stringing	190	1980		210	770
Framing of structures	30	470		130	340
Guy assembly installation	30	380		20	140
Grounding installation		90		20	30
Misc.					
Sub-Total	\$ 350	\$ 4,420	\$ 3,130	\$ 650	\$ 1,780
Other					
Clearing					
Surveying and staking					
Transportation and tools					
Fuel					
Service					
Margin					
Contingency					
Sub-Total	\$ -	\$ -	\$ 380	\$ -	\$ -
Total	\$ 6,690	\$ 8,760	\$ 13,020	\$ 9,680	\$ 10,640
Notes	Source: Colin Jack, NRECA/Dhaka	Source: Ron Mettler, Mettler, Inc.	Source: MaeSoriano(NEA) through Gil Medina(NRECA/Manila)	Source: Gil Medina (NRECA/Manila)	Source: Gil Medina (NRECA/Manila)

Exch. Rate/US\$= 28

Exch. Rate/US\$= 40

Exch. Rate/US\$= 40

Country:	Mali-3p	Exch. Rate/US\$= 610	Kenya-3p	Exch. Rate/US\$= 58	Senegal(1)-3p	Exch. Rate/US\$= 550	USA(3)-3p	Exch. Rate/US\$= 580	Senegal(2)-3p	
Utility (Date):	Société Energie du Mali		Kenya		SENELEC Senegal		Rapanhannock EC Virginia, U.S.A.		SENELEC Senegal	
Country:	Mali		100 m, 11 kV		30 kV		110 m, 12.5 kV p-p		150 m, 30 kV	
Average span, voltage:	80 m, ??? kV p-p									
	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost	Quantity	Cost
Materials										
Poles (size, type, number/km)	13 @ 12 m class A conc.	5970	10 @ 11 m medium	790	10 wood and 3 steel @ 12 m ^a	2950	35', 40', and 45' wood ^a	1560	12 m concrete	2820
Conductor (size, length)	Aster 34.4 mm ²	4810	150 mm ² ACSR	2670	ACSR 54.6 mm ² , 3150 m	1770	ACSR #1/0, 4000 m	1970	Almelec148 mm ² , 3200 m	5420
Poletop assembly		4390		1780				940		2570
Guy assembly (number/km)				710			11 ^e	560		
Grounding							9.3 ^b	50		
Misc.				10		3830				
Sub-Total		\$ 15,170		\$ 5,960		\$ 8,550		\$ 5,080		\$ 10,810
Labor										
Pole setting		1120		570		440		3650		690
Conductor stringing		780		970		130		3280		670
Framing of structures				60				920		110
Guy assembly installation				400				1420		
Grounding installation								400		
Misc.		690		20		400				
Sub-Total		\$ 2,590		\$ 2,020		\$ 970		\$ 9,670		\$ 1,470
Other										
Clearing								6750		10
Surveying and staking				1210		590				730
Transportation and tools						540				990
Fuel										
Service										
Margin			"CWS cost"	2210						
Contingency			"T&P"	230						
Sub-Total		\$ 1,310		\$ 4,570		\$ 1,130		Overhead ^d \$ 910.00		Overhead ^d #####
Total		\$ 19,070		\$ 12,550		\$ 10,650		\$ 22,410		\$ 15,960
Notes	Source: "Travaux Neufs" of the Société Energie du Mali, from Ismail Toure via Willem Floor 7/28/98		Source: From rates found in Kenya DCS bid construction units prices 1997, via Robert van der Plas, World Bank		Source: Mr. Cheikhou Cisse of SENELEC/HANN through Eduardo Villagran 5/98 a. Steel pole (1400 daN) at 2.5 times the cost of wood pole (140 daN) b. Cost for guys, insulators, clamps for 10 wood poles is \$1770 and for 3 steel poles is \$2540. c. Transportation cost is \$0.22/tonne/km		Source: Ricky Bywaters, Engineering a. 3.4@35'-5, 3.7@40'-4, and 2.2@45'-3 b. Due to poor ground in service area, a ground rod is used at every pole c. 40' right-of-way, 2.7 km brush + 2.7 km with trees; with trees, \$3.70/m2; without trees, \$0.50/m2 d. 18% of materials cost e. Roughly 35% are each tangent and 30° and 15% each are 60° and 90° poletop assemblies with a few remaining assemblies		Source: SENELEC via Willem Floor; from costs for 80 km line recently bid by three Senegalese companies	