

負 荷 分 担 計 算

負荷分担の計算は、次のように行う。

1. 各変電所の理想的供給区域を決める。

(単に、地理的制約条件のみを考慮して、各メッシュを最も近い変電所に所属させる。)

2. もし、理想的供給区域内の負荷が、変電所(例図のC変電所)の供給容量より大きい場合は、次の計算を行う。

(1) 供給余力のある隣接変電所(例図のB変電所)を探し出し、C変電所から供給されている各メッシュについて次の計算を行う。

$$L_{di} = 1L_{ij} - L_{ic1}$$

ここで L_{ij} …… i メッシュと隣接 j 変電所(B or D変電所)との間の距離

L_{ic} …… i メッシュとC変電所間の距離

(2) 次に L_{di} の値が最小となる場合の i メッシュと j 変電所をみつけ、 i メッシュを j 変電所の供給区域へ移す。

(3) 上記計算は、隣接 j 変電所がfull loadになるまで繰返される。

(4) 理想的供給区域が決められた後、供給が不足する変電所が複数ある場合、これらの変電所の供給区域のすべてのメッシュについて上記計算が行われる。

3. 2.において、どの隣接変電所にも供給余力がない場合、次の計算を行う。

(1) 供給余力のある最も近い変電所(例図のA変電所)をみつける。

(2) C変電所からA変電所の方向をみて(※注1)、C変電所に最も近い他の変電所(例図のB変電所)をみつける。

(B変電所は、供給余力なし)

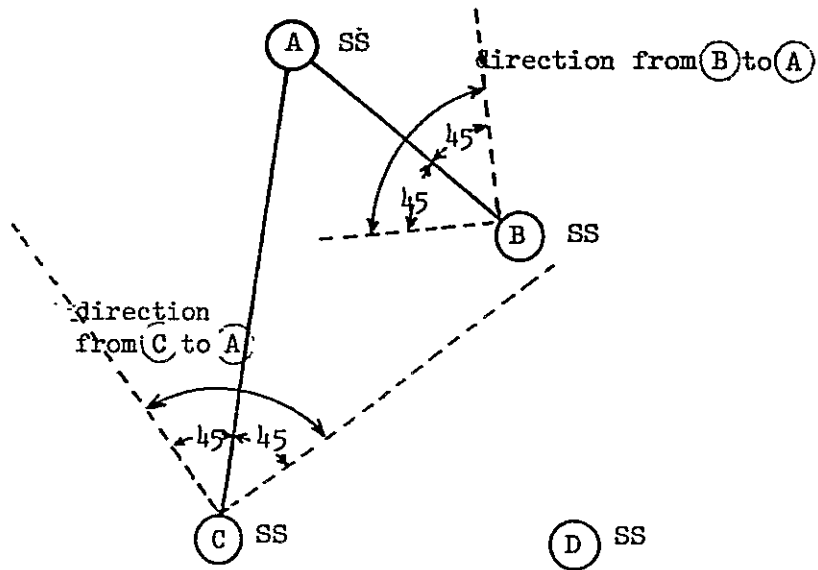
(3) C変電所の、負荷 P_m をB変電所に移す。(上記2項と同じ方法で) P_m は、A変電所の供給余力とC変電所の不足容量と比べ、小さい方の値と同じとする。

(4) 次にB変電所からA変電所の方向をみて、最も近い変電所(このケースではA変電所)をみつける。

変電所の負荷 P をA変電所に移す。ここで P は、 P_m と同じ値である。

(5) 以上の過程を供給力が不足する変電所がなくなるまで繰返す。

(注) ※1 “方向”の定義(Definition of “direction”)



Appendix 5 Distribution Substation Expansion Program of Each Cases

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Cont. 2)

Unit : No. x MVA

Block No.	Substation	Exis.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL
10	North BKK	1x40																					1x40
	Klongkred	1x20																					1x20
20	Bangkok Noi	2x20				+1x20										new 2x20							1x40 2x20 2x20
	16232																						2x40 1x40 2x20
	Bangvekhon	2x40																					2x40
	Feekasen	3x20			+1x40 -1x20																		2x20 2x20
	North BKK	2x20																					2x20
	Rasburana	2x40											+1x40										3x40
	Thonburi	2x40											+1x40										3x40
	Taksin	2x40																					3x40
	Fran Hok																						2x40
	Somay																						3x40
	29272																						2x40
	32231																						2x40
	30224																						2x40
	Klong Sapsasmit	2x20																					2x20
	Prapradan	2x40																					2x40
	Bangben																						2x40
	Suketwad																						2x40
	Bangkrejao	2x10																					2x10
30	Rangsit	2x40																					3x40
	4356h																						3x20
	Klong Rangsit	1x40																					3x40
40	Bangpood	2x20																					3x20
	43491																						2x40
	Domuang	2x40																					2x40
	Hontaburi	2x20																					3x40
	Prachacuen	2x40																					3x40
	40402																						2x40
	Bangkapi	2x40																					3x40
	Bangae	1x10																					3x40
	Klong Jan	2x40																					3x40
	Mochit	2x40																					3x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 2)

Bloc No.	Substation	Exist.	Unit No. x MVA																					
			'92	'93	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL	
40	Prakong	2x40																						2x40
	Cansen	2x40																						2x40
	Sansab	2x40																						3x40
	Sukhumvit	1x40	+1x40																					2x40
	Fahai/otion		new 1x40	+1x40																				2x40
	Lardprao																							2x40
	44301																							3x40
	Lumpini	2x40																						2x40
	Makasan	2x40																						4x40
	Sapandom	4x40																						3x40
	Fathumvan	2x40																						2x40
	Silom	2x40																						2x40
	Watlieb	2x40																						3x40
	Yothee	2x40																						2x40
	Sipreya		new 1x40	+1x40																				2x40
	Chidlom		new 1x40																					2x40
	Klongtoey		new 2x40																					2x40
	Visuckasat																							2x40
	Mahamek	2x40																						3x40
	Satupradit	1x40	+1x40																					3x40
	32243																							2x40
	Bangna	2x40																						2x40
	Plywood	1x20																						2x40
	Sanrong	2x40																						2x40
	South BQX	1x20																						1x40
	Tangkang	2x40																						3x40
	44233																							2x40
	44183																							2x40
	30154																							3x40
50	Ramintra	2x40																						2x40
	Leimlakao	1x40																						1x40
	Minburi																							2x20
	54352																							2x20
	Bangplee	1x40																						2x40
	Juntaj	2x40																						2x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM

Unit: No. x kVA

Block No.	Substation	Exist.	Year													TTL								
			'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94		'95	'96	'97	'98	'99	2000	2001	
10	North	1x40																						1x40
	Along Road	1x20																						
20	Bangkok Noi	2x20																						2x20
	19251																							1x20
	16264																							2x20
	16232																							1x20
	Bangyekan	2x40																						2x40
	Pechakas	3x20																						2x40
	North BKK	2x20																						1x40
	Sasurana	2x40																						2x20
	Phonburi	2x40																						2x20
	Tukain	2x40																						3x40
	Pran Nok																							2x40
	Jamruy																							1x40
	30321																							2x40
	28272																							1x40
	30231																							2x40
	30224																							1x40
	28274																							1x40
	30292																							1x40
	2x244																							1x40
	Klong Sanpaomdi	1x20																						2x20
	Prapraday	2x40																						2x40
	Bangwon																							2x40
	Suksamad																							1x40
	Bang Rajao	2x10																						2x10
30	Rangsit	2x40																						2x40
	44564																							1x40
	43564																							1x20
	45710																							1x20
	Klongransit	1x40																						3x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 1)

Unit . No. x I/V

Sl. No.	Substation	Exist.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL	
40	Bangpood	2x0																						3x20 2x40
	43491			new 1x40																				2x40 2x40 1x40 2x20
	Donmuang	2x0																						1x40 1x40
	Montaburi	2x0																						1x40 1x40
	Prachaeuen	2x0																						1x40 1x40
	40402																							1x40 1x40
	31424																							2x40 1x40 1x10
	38394	2x0																						2x40 1x40 1x10
	Bangkapi	1x0																						2x40 2x40
	Bangue	2x0																						2x40 2x40
	Klong Jan	2x0																						2x40 2x40
	Mochit	2x0																						2x40 2x40
	Prakanong	2x0																						2x40 2x40
	Sansen	2x0																						2x40 2x40
	Sansab	2x0																						2x40 2x40
	Sukhuavit	1x0	new 1x40																					2x40 2x40
	Faholyotin		new 1x40	+1x40																				1x40 1x40
	Lardprao																							1x40 1x40
	Klongton																							2x40 2x40
	Set Siri																							1x40 2x40
	47313																							1x40 2x40
	44341																							2x40 2x40
	40263																							2x40 2x40
	41282																							1x40 1x40
	Lumpini	2x0																						2x40 2x40
	Makasan	2x0																						1x40 2x40
	Sapaniam	1x0																						2x40 2x40
	Fathumvan	2x0																						2x40 2x40
	Silom	2x0																						2x40 2x40
	Watlieb	2x0																						2x40 2x40
	Yothee	2x0																						2x40 2x40
	Sirayn		new 1x40	+1x40																				2x40 2x40
	Chidlom		new 2x40																					2x40 2x40
	Klongtoey		new 2x40																					2x40 1x40
	Vitukabat																							1x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (usc)

Unit: No. x MVA

Loc No.	Substation	Exist.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL
40	Elitosa 2																				1x40		1x40
	34274																				new 1x40		1x40
	31291																						1x40
	31304																						1x40
	Naharek	2x40																					2x40
	Satupradit	1x40	+1x40																				2x40
	32243																						1x40
	32251																						new 1x40
	34251																						1x40
	Bangka	2x40																					2x40
	Plywood	1x20																					1x40
	Surrom	2x40																					2x40
	South HKK	1x2																					1x20
	Tanglung	2x40																					2x40
	41233																						2x40
	39192																						1x40
	41193																						3x40
	39194																						1x40
	44181																						1x40
50	Ramintra	2x40																					2x40
	Ladpakno	1x40																					1x40
	Binbur.																						1x20
	47411																						1x20
	51352																						1x20
	65371																						2x40
	Tanglies	1x40																					2x40
	Omud	2x40																					3x20
	51264																						2x40
	Paknam	2x40																					2x40
	Enggu	2x40																					3x20
	Tangping																						2x40
	Bangler																						1x40
	44021																						3x40
	46043																						3x20

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 4)

Unit : No. x MVA

Slac No.	Substation	Exis.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TPL
10	North BKK	1x40																					1x40
	Klongkred	1x20																					1x20
20	Bangyekhan	2x40																					2x40
	Klong Sumpasmit	2x20																					2x20
	Pechkaem	3x20		+1x40 -1x20																			1x40 2x20 2x40
	North BKK	2x20																					2x40
	Prapraden	2x40																					2x40
	Rasburana	2x40																					2x40
	Thonburi	2x40																					2x40
	Takain	2x40																					2x40
	Bangkok Noi	2x20																					2x20
	Bangkrasno	2x10																					2x10
	Bangbon		new 1x40		+1x40																		2x40
	Pran Nok		new 1x40										+1x40										2x40
	Suksavud																						2x40
	Somray																						2x40
	28272									new 2x40													2x40
	32231																						2x40
	30224																						2x40
	28234																						2x40
	16264																						2x40
	16232																						2x20
	24244																						2x40
30	Rangsit	2x40																					2x40
	Klong Ransit	1x40																					3x40
	43564																						2x20
	44710																						2x20
40	Lumpini	2x40																					2x40
	Makasan	2x40																					2x40
	Sapandun	4x40																					4x40
	Pathumwan	2x40																					2x40
	Silom	2x40																					2x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 4)

Unit : No. x MVA

Block No.	Substation	Exist.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL
40	Watlieb	2x40																					2x40
	Yothee	2x40																					2x40
	Bangkapi	2x40																					2x40
	Bangna	2x40																					2x40
	Bangsu	1x40																					2x40
	Donmuang	2x40																					2x40
	Wong Jan	2x40																					2x40
	Mahamek	2x40																					2x40
	Mochit	2x40																					2x40
	Montaburi	2x20																					2x40
	Plywood	1x20																					2x40
	Prachuen	2x40																					2x40
	Prakanong	2x40																					2x40
	Sarsen	2x40																					2x40
	Samrong	2x40																					2x40
	Sansab	2x40																					2x40
	Satupradit	1x40	+1x40																				2x40
	South BKK	1x20																					2x40
	Tungkang	2x40																					2x40
	Wangpood	2x20																					2x20
	Sukhumvit	1x40	+1x40																				2x40
	Sipraya		new 1x40	+1x40																			2x40
	Chidlom		new 2x40																				2x40
	Paholyotin		new 1x40	+1x40																			2x40
	Klongtoey		new 2x40																				2x40
	Visutkasat																						2x40
	Lardprao																						2x40
	Setsi-1																						2x40
	55+62																						2x20
	33291																						2x40
	31304																						2x40
	40402																						2x40
	47313																						2x40
	30243																						2x40
	31424																						2x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 4)

Unit: MVA x 100

Bloc. no.	Substation	Exist.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL
40	44233																			new 2x40			2x40
	44341															new 2x40							2x40
	40263																			new 2x40			2x40
	41183																						2x40
	39184																						2x40
	44181																					new 2x40	2x40
	43491																					new 2x40	2x40
	34251																					new 2x40	2x40
50	Paknam	2x40																					2x40
	Bongpu	2x40																					2x40
	Bangploe	1x40																					2x40
	Onnuj	2x40																					2x40
	Ramintra	2x40																					1x40
	Ladplakao	1x40																					2x40
	Bangpings																						2x20
	Miraburi																						2x20
	Bangbor																						2x20
	44091																						2x40
	46063																						2x20
	54264																						2x20
	54352																						2x20
	51221																						2x20
	50141																						2x20
	57134																						2x20
	67042																						2x20
	Number of substation	46	+2	+4	+1	+2	+5	+5	+4	+1	+1	+8	+8	+2	+3	+2	+3	+2	+3	+6	+5	+5	+46
	Total capacity (MVA)	2,990	3,150	3,470	3,610	3,690	3,690	3,810	3,890	3,970	3,970	3,970	4,120	4,370	4,580	4,720	4,960	5,180	5,460	5,880	6,200	6,600	
	Total load (MVA)	1,366	1,448	1,541	1,636	1,737	1,835	1,946	2,064	2,176	2,299	2,432	2,573	2,720	2,877	3,039	3,210	3,395	3,592	3,822	4,024	4,261	
	Utilizing factor (%)	45.7	46.0	44.4	49.3	47.1	49.7	51.1	53.1	54.8	57.9	61.3	61.7	62.2	62.8	64.4	64.7	65.5	65.8	64.7	64.9	64.6	

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 5)

Bloc no.	Substation	Exist.	Unit - No. x IVA																					
			'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL	
10	North BKK	1x40																						1x40
	Klongkred	1x20																						1x20
20	Bangyethan	2x40																						2x40
	Klong Sompasemit	2x20																						2x20
	Pechkasom	3x20																						1x40
	North BKK	2x20																						2x20
	Propradaen	2x40																						2x40
	Rasuburana	2x40																						2x40
	Thonburi	2x40																						2x40
	Taksin	2x40																						2x40
	Bangkok Noi	2x20																						2x20
	Bangkrasiao	2x10																						2x10
	Phangbon																							2x40
	Phan Nok																							1x40
	Sukswad																							1x40
	Saroy																							2x40
	30321																							1x40
	28272																							2x40
	32231																							2x40
	30224																							2x40
	28231																							1x40
	30292																							2x40
	19251																							1x20
	16264																							2x20
	16232																							1x20
	24244																							1x40
30	Rangsit	2x40																						2x40
	Klong Rangsit	1x40																						1x40
	44564																							1x20
	43564																							1x20
	45710																							1x20

Bloc No.	Substation	Exist.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL
40	Lumpini	2x40																					2x40
	Makasan	2x40																					2x40
	Sapanda	4x40																					4x40
	Pathumwan	2x40																					2x40
	Silom	2x40																					2x40
	Matieb	2x40																					2x40
	Yothee	2x40																					2x40
	Bangkapi	2x40																					2x40
	Bangna	2x40																					2x40
	Bangse	1x10																					1x10
	Donmuang	2x40																					2x40
	Klong Jan	2x40																					2x40
	Mahaack	2x40																					2x40
	Mochit	2x40																					2x40
	Hontaburi	2x20																					2x20
	Plywood	1x20																					1x20
	Prachaeuen	2x40																					2x40
	Prakanong	2x40																					2x40
	Samsen	2x40																					2x40
	Sarong	2x40																					2x40
	Sansub	2x40																					2x40
	Satpradit	1x40																					1x40
	South BKK	1x20																					1x20
	Tangkung	2x40																					2x40
	Bangsood	2x20																					2x20
	Sukhumit	1x40																					1x40
	Sipraya																						2x40
	Chidlom																						2x40
	Paholyotin																						2x40
	Klongtoey																						2x40
	Visutkasat																						1x40
	Silom 2																						1x40
	Lajprao																						2x40
	Alongton																						1x40
	Setsiri																						2x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 5)

Unit : No. x kVA

Loc. No.	Substation	Exis.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL	
10	Janggrana																				new 1x20			1x20
	34274																		new 1x40			new 1x40		1x40
	33291																		new 1x40					1x40
	31304																			new 1x40				1x40
	40402																			new 1x40				2x40
	47313																			new 1x40				1x40
	32243																							1x40
	31424																			new 1x40				1x40
	44233																				new 1x40			2x40
	30394																						new 1x40	1x40
	39192																							2x40
	44341																							2x40
	35251																							2x40
	40263																							1x40
	41183																							1x40
	39184																							2x40
	44181																							2x40
	43491																							1x40
	41282																							1x40
	34251																							1x40
50	Paknam																							2x40
	Bangpu																							2x40
	Bangplee																							2x40
	Danu																							2x40
	Ramintra																							2x40
	South Bangplee																							1x40
	Ladplakao																							1x40
	Bangping																							1x40
	Minburi																							1x20
	Bangbor																							2x20
	44091																							2x40
	46003																							2x20
	54264																							2x20
	47411																							1x20

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 6)

Unit: No. x MVA

Block No.	Substation	Exis.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'99	2000	2001	TTL
10	North BKK	1x40																				1x40
	Klongkred	1x20																				1x20
20	BangYekhan	2x40																				2x40
	Klong Sanpasamit	2x20																				2x20
	Pechkasem	3x20																				1x40 2x20
	North BKK	2x20																				2x20
	Prapradaen	2x40																				2x40
	Rasburana	2x40																				1x30 2x40
	Thonburi	2x40																				1x30 2x40
	Taksin	2x40																				2x40
	Bangkok Noi	2x20																				3x20
	Bangkrasao	2x10																				2x10
	Bangboon																					2x40 1x40
	Pran Nok																					1x40
	Suysawad																					2x30
	Sarany																					2x30
	28272																					2x30
	32231																					2x30
	30224																					3x30
	26234																					2x30
	30292																					2x30
	16232																					2x30
	24244																					2x30
30	Bangsit	2x40																				1x40 2x40
	Klong Ronsit	1x40																				3x40
	43564																					3x20
40	Lumpini	2x40																				1x30 2x40
	Makasan	2x40																				2x40
	Sapandun	4x40																				1x30 2x40
	Pachumwan	2x40																				1x30 2x40
	Silom	2x40																				2x40
	Watlieb	2x40																				2x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case C)

Alloc. No.	Substation	Exist.	Unit (kV)																							
			'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL			
40	Yothee	2x40																							2x40	
	Bangkrapi	2x40																								2x40
	Bangna	2x40																								2x40
	Bang Sue	1x10																								2x30
	Donmuang	2x40																								2x40
	Klong Jan	2x40																								1x30
	Mahaack	2x40																								2x40
	Mochit	2x40																								1x30
	Montaburi	2x20																								2x30
	Plywood	1x20																								1x30
	Prachuen	2x40																								2x40
	Prakanong	2x40																								2x40
	Samsen	2x40																								2x40
	Sarong	2x40																								2x40
	Sansab	2x40																								2x40
	Sat. Pradit	1x40	+1x40																							1x30
	South BKK	1x20																								2x30
	Tungkang	2x40																								2x40
	Bangpoed	2x20																								3x20
	Surhumvit	1x40	+1x40																							2x40
	Sipraya		new 1x40																							2x40
	Chilom		new 2x40																							2x40
	Faholyotin		new 1x40																							2x40
	Klongtoey		new 2x40																							2x30
	Visutkasat																									2x30
	Lar. Prao																									2x30
	Klongton																									2x30
	Setiiri																									2x30
	33291																									2x30
	40402																									3x30
	47313																									2x30
	32243																									2x30
	44233																									3x30
	44341																									2x30
	40263																									3x30

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 6)

Loc No.	Substation	Exist.	Unit No. x MVA														TTL								
			'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95		'96	'97	'98	'99	2000	2001		
40	41183																							3x30	
	39184																			+1x30				3x30	
	43491				new 2x30														+1x30				3x30		
50	Paknam	2x40																					2x40		
	Bangpu	2x40																					2x40		
	Bangplee	1x40																		+1x30			1x30		
	Onnuj	2x40																					2x40		
	Ramintra	2x40																					2x40		
	Leoplakao	1x40																					1x40		
	Minburj																						2x20		
	Banghor				new 2x20																		2x20		
	44091																						3x30		
	46063																						3x20		
	54264																						3x20		
	54352																						2x20		
	54221																						2x20		
	50141																						3x20		
	57134																						3x20		
	67042																						2x20		
	Number of substation	46	+2 48 52	+1 53	+1 54	+3 54	+3 54	+3 54	+1 58	+1 58	+2 61	+6 63	+5 66	+1 67	+3 70	+3 73	+3 75	+6 81				+2 83	+3 86	+40 86	
	Total capacity (MVA)	2,990	3,150	3,470	3,520	3,650	3,670	3,870	3,930	3,930	4,150	4,310	4,510	4,620	4,670	5,080	5,310	5,840	6,060	6,380					
	Total (MVA)		1,143	1,541	1,636	1,737	1,835	1,946	2,064	2,176	2,299	2,432	2,573	2,720	2,870	3,039	3,210	3,395	3,502	3,802	4,024	4,261			
	Utilizing factor (%)		46.0	44.4	45.6	47.6	50.3	53.0	53.3	55.4	58.5	60.5	62.0	63.8	65.8	66.8	67.6	65.1	66.4	66.8					

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 7)

Bloc No.	Substation	Exist.	Unit : No. x MVA																					
			'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL	
10	North BKK	1x40																						1x40
	Klongkred	1x20																						1x20
20	Bangrekhan	2x40																						2x40
	Klong Sompasani	2x20																						2x20
	Pechkasem	3x20																						1x40
	North BKK	2x20																						2x20
	Prapradaen	2x40																						2x40
	Rachurana	2x40																						2x40
	Thonburi	2x40																						2x40
	Taksin	2x40																						2x40
	Bangkok Noi	2x20																						2x20
	Bangkrasiao	2x10																						2x10
	Bangbon																							1x20
	Pran Nok																							1x30
	Suksavud																							2x30
	Souray																							1x30
	30321																							2x30
	28272																							2x30
	32231																							3x30
	30224																							2x30
	28334																							2x30
	30292																							2x30
	19251																							1x20
	16264																							2x20
	16232																							1x20
	2x244																							2x30
30	Rangsit	2x40																						2x40
	Klong Rangsit	1x40																						3x40
	44564																							1x30
	43564																							1x20
	45710																							1x20

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 7)

Alloc No.	Substation	Exis.	Unit : No. xMVA																					
			'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL	
40	Lumpini	2x40																						2x40
	Na Kasan	2x40																						2x40
	Sapanda	4x40																						4x40
	Pathumwan	2x40																						2x40
	Sal.m	2x40																						2x40
	Watlieb	2x40																						2x40
	Yothee	2x40																						2x40
	Bangkepi	2x40																						2x40
	Bangna	2x40																						2x40
	Bangsu	1x10																						1x10
	Donmuang	2x40																						2x40
	Klong Jan	2x40																						2x40
	Waharek	2x40																						2x40
	Hochit	2x40																						2x40
	Montaburi	2x20																						2x20
	Plywood	1x20																						1x20
	Prachaeuen	2x40																						2x40
	Frankarong	2x40																						2x40
	Samsen	2x40																						2x40
	Samrong	2x40																						2x40
	Sarsab	2x40																						2x40
	Satupradit	1x40																						1x40
	South 2KK	1x20																						1x20
	Tangkung	2x40																						2x40
	Bangfood	2x20																						2x20
	Sukhumvit	1x40																						1x40
	Sirpraya																							2x40
	Childon																							2x40
	Paholyotin																							2x40
	Klongtoey																							2x40
	Pooljea																							2x40
	Visutkasat																							2x40
	Silom 2																							1x30
	Lardprao																							1x30
	Klongton																							1x30

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 7)

Unit : No. x kVA

Sl. No.	Substation	Exist.	'62	'63	'64	'65	'66	'67	'68	'69	'70	'71	'72	'73	'74	'75	'76	'77	'78	'79	2000	2001	TTL
40	Setefiri																						2x30
	34274																						1x30
	33291																						1x30
	31304																						1x30
	31293																						1x30
	43212																						1x30
	40402																						2x30
	47313																						2x30
	32243																						2x30
	31424																						1x30
	44233																						2x30
	38394																						2x30
	38192																						2x30
	44304																						1x30
	44341																						2x30
	35251																						1x30
	40253																						2x30
	41183																						3x30
	39184																						1x30
	44181																						2x30
	43491																						3x30
	41282																						1x30
	35303																						1x30
	34251																						1x30
50	Paknan	2x40																					2x40
	Bangpu	2x40																					2x40
	Bangplie	1x40																					1x40
	Omnuj	2x40																					2x40
	Ramintra	2x40																					2x40
	Ladplakao	1x40																					1x40
	Bangping																						1x30
	Minburi																						1x30
	Bangbor																						3x20
	44091																						3x30

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 7)

Block No.	Substation	Exist.	Unit No. x MVA														TTL								
			'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95		'96	'97	'98	'99	2000	2001		
50	46063																								3x20
	51264																								3x20
	47411																								1x20
	54352																								1x20
	65371																								1x20
	51221																								1x20
	50141																								3x20
	5713h																								3x20
	67042																								1x20
	Number of substation	46	+2	-3	+4	-1	+1	+2	-1	+1	+2	+2	+2	+1	+1	+2	+2	+2	+2	+2	+1	+1	+1	+1	+63
	Total capacity (MVA)	2,990	3,156	3,470	3,566	3,606	3,636	3,670	3,710	3,860	3,970	4,080	4,223	4,400	4,650	4,770	5,030	5,270	5,710	5,970	6,300				
	Total load (MVA)		1,448	1,541	1,636	1,737	1,835	1,946	2,064	2,176	2,299	2,432	2,573	2,720	2,877	3,032	3,210	3,395	3,592	4,024	4,261				
	Utilizing factor (%)		46.2	44.4	45.9	48.2	50.5	53.0	55.2	56.4	59.1	61.3	63.1	64.5	65.4	66.6	67.3	68.2	66.6	67.4	67.6				

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 8)

Unit: 100 kVA

Block No.	Substation	Capacity	Year												TTL										
			'52	'53	'54	'55	'56	'57	'58	'59	'60	'61	'62	'63		'64	'65	'66	'67	'68	'69	'70	'71		
10	North BKK	1x40																						1x40	
	Klongkred	1x20																							1x20
20	Bangyokhan	2x40																							2x40
	Klong Samsanath	2x20																							2x20
	Pechakusen	3x20																							3x20
	North BKK	2x20																							2x20
	Prepradaen	2x40																							2x40
	Rasburana	2x40																							2x40
	Thonburi	2x40																							2x40
	Taksin	2x40																							2x40
	Bangkok Noi	2x20																							2x20
	Bangkrasiao	2x10																							2x10
	Bangbon																								2x40
	Pran Nok																								2x40
	Suksavud																								2x40
	Samray																								2x40
	28272																								2x40
	32231																								2x40
	30224																								2x20
	16264																								2x20
	16232																								2x20
30	Rangsit	2x40																							2x40
	Klong Rangsit	1x40																							1x40
	13564																								2x20
40	Lumpini	2x40																							2x40
	Makasan	2x40																							2x40
	Sapandam	4x40																							4x40
	Pathumwan	2x40																							2x40
	Silom	2x40																							2x40
	Watlieb	2x40																							2x40
	Yottee	2x40																							2x40
	Bangkrabi	2x40																							2x40

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 8)

Unit : No. x MVA

Loc. No.	Substation	Exist.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL
40	Bangna	2x40																					2x40
	Bang Sue	1x10											+1x40	+1x40				+1x40					3x40
	Donmuang	2x40																					2x40
	Klong Jan	2x40													+1x40								3x40
	Mahamek	2x40																					3x40
	Noelit	2x40												+1x40									3x40
	Montaburi	2x20										+1x20	+1x20	+1x40									3x40
	Plywood	1x20													+1x40			+1x40					2x40
	Frachacuen	2x40												+1x40									3x40
	Prakanong	2x40																					2x40
	Samsen	2x40																					2x40
	Samsong	2x40																					2x40
	Samsab	2x40																	+1x40				3x40
	Satupradit	1x40	+1x40													+1x40							3x40
	South PKK	1x20																				+1x40	2x40
	Tungkung	2x40																					3x40
	Bangpoed	2x20																					3x20
	Subhuavit	1x40	+1x40																				2x40
	Sipraya	new	1x40	+1x40																			2x40
	Chidlen	new	2x40																				2x40
	Paholyotin	new	1x40	+1x40																			2x40
	Klongtoey	new	2x40																				2x40
	Visutkasat																						2x40
	Lardprao																						2x40
	Setsiri																						2x40
	33291																						2x40
	31304																						2x40
	10402																						2x40
	32213																						2x40
	44233																						2x40
	44341																						2x40
	40263																						2x40
	41183																						2x40
	39184																						3x40
	43491																						3x40

Appendix

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case B)

Unit - No. x MVA

Block No.	Substation	Exis.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL		
50	Paknam	2x40																						2x40	
	Bangpu	2x40																						2x40	
	Bangplee	1x40																1x40						2x40	
	Onnuj	2x40																						2x40	
	Ramintra	2x40																						2x40	
	Ladplakao	1x40																						1x40	
	Bangping																							2x40	
	Minburi																							3x20	
	Bangbor																							3x20	
	44091																							3x40	
	46063																							3x20	
	54264																							3x20	
	54352																							3x20	
	51221																							2x20	
	50141																							2x20	
	57134																							3x20	
	67042																							2x20	
	Number of substation	46	48	52	54	54	54	55	56	57	57	60	60	62	63	65	67	70	73	76	81	84	84	84	
	Total capacity (MVA)	2,990	3,470	3,470	3,650	3,670	3,670	3,810	3,910	3,990	3,990	4,250	4,370	4,600	4,760	5,140	5,420	5,780	6,220	6,580	6,950	7,320	7,320		
	Total load (MVA)	1,463	1,560	1,664	1,778	1,894	2,026	2,159	2,302	2,454	2,621	2,796	2,983	3,185	3,399	3,624	3,865	4,126	4,404	4,697	5,006	5,329	5,677	5,677	
	Utilizing factor	0.465	0.450	0.456	0.484	0.516	0.532	0.532	0.577	0.577	0.616	0.617	0.640	0.649	0.669	0.661	0.669	0.669	0.663	0.669	0.669	0.669	0.679	0.679	

DISTRIBUTION SUBSTATION EXPANSION PROGRAM (Case 9)

Unit : No. x MVA

Slac No.	Substation	Exist.	'82	'83	'84	'85	'86	'87	'88	'89	'90	'91	'92	'93	'94	'95	'96	'97	'98	'99	2000	2001	TTL
10	North BKK	1x40																					1x40
	Klongkred	1x20																					1x20
20	Bangyekhan	2x40																					2x40
	Klong Sompasam	2x20																					2x20
	Peehkasem	3x20																					1x40 2x20
	North BKK	2x20																					2x20
	Prapadaen	2x40																					2x40
	Rasburana	2x40																					3x40
	Thonburi	2x40																					3x40
	Taksin	2x40																					3x40
	Bangkok Noi	2x20																					1x40 2x20
	Bangkrasiao	2x10																					2x10
	Bangbon																						2x40
	Pan Nok																						2x40
	Samrey																						2x40
	32231																						3x40
	16232																						2x20
30	Rangsit	2x40																					2x40
	Klong Ransit	1x40																					3x40
	43564																						2x20
40	Lumpini	2x40																					2x40
	Makasan	2x40																					2x40
	Sapanda	4x40																					4x40
	Pathumwan	2x40																					2x40
	Silem	2x40																					2x40
	Matieb	2x40																					2x40
	Yothee	2x40																					2x40
	BangKapi	2x40																					2x40
	Bangna	2x40																					2x40
	Bangsue	1x10																					2x40
	Donmuang	2x40																					2x40
	Klong Jan	2x40																					3x40

Appendix 6 Amount of Investment & Expense of Each Cases

Annual Investment (Case 2)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula- total
1982	86.3	608.5	165.4	52.0	912.2	912.2
1983	62.0	742.4	279.4	57.8	1141.6	2053.8
1984	58.2	706.8	206.1	64.4	1035.5	3089.3
1985	102.0	719.9	190.2	71.7	1083.8	4173.1
1986	59.9	755.9	125.5	79.5	1020.8	5193.9
1987	25.9	850.5	169.9	88.6	1134.9	6328.8
1988	161.6	1051.3	396.5	98.6	1708.0	8036.8
1989	141.5	1085.7	257.9	109.7	1594.8	9631.6
1990	48.9	1101.2	179.6	121.9	1451.6	11083.2
1991	580.1	1304.9	368.1	135.8	2388.9	13472.1
1992	874.2	1647.9	751.4	151.0	3424.5	16896.6
1993	872.7	1809.2	728.5	168.2	3578.6	20475.2
1994	91.3	2068.5	486.3	186.7	2832.8	23308.0
1995	810.1	2212.7	730.0	208.2	3961.0	27269.0
1996	872.1	2484.0	824.5	231.3	4411.9	31680.9
1997	1215.0	3196.8	1219.2	257.2	5888.2	37569.1
1998	288.9	3184.0	711.6	286.4	4470.9	42040.0
1999	441.8	3872.6	1365.7	318.3	5998.4	48038.4
2000	348.2	4380.7	1077.2	353.6	6159.7	54198.1
2001	469.8	5141.9	1635.8	393.9	7641.4	61839.5
Total	7610.5	38925.4	11868.8	3434.8	61839.5	

(Case 2)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	79.6	561.0	152.5	47.9	841.0	841.0
1983	52.6	630.3	237.2	49.1	969.2	1810.2
1984	45.6	553.4	161.4	50.4	810.8	2621.0
1985	73.6	519.8	137.3	51.8	782.5	3403.5
1986	39.8	502.7	83.5	52.9	678.9	4082.4
1987	15.9	521.4	104.1	54.3	695.7	4778.1
1988	91.3	594.0	224.0	55.7	965.0	5743.1
1989	73.7	565.6	134.4	57.2	830.9	6574.0
1990	23.5	528.6	86.2	58.5	696.8	7270.8
1991	256.4	576.8	162.7	60.0	1055.9	8326.7
1992	356.7	672.3	306.6	61.6	1397.2	9723.9
1993	328.1	680.3	273.9	63.2	1345.5	11069.4
1994	31.6	715.7	168.3	64.6	980.2	12049.6
1995	258.4	705.9	232.9	66.4	1263.6	13313.2
1996	256.4	730.3	242.4	68.0	1297.1	14610.3
1997	329.3	866.3	330.4	69.7	1595.7	16206.0
1998	72.2	796.0	177.9	71.6	1117.7	17323.7
1999	101.6	890.7	314.1	73.2	1379.6	18703.3
2000	73.8	928.7	228.4	75.0	1305.9	20009.2
2001	92.1	1007.8	320.6	77.2	1497.7	21506.9
Total	2652.2	13547.6	4078.8	1228.3	21506.9	

Annual expense

(Case 2)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu- losses	Total
1982	11.2	95.2	25.0	11.5	48.9	191.8
1983	19.3	211.4	67.3	24.3	56.1	378.4
1984	26.8	322.0	98.4	38.6	66.7	552.5
1985	40.1	434.7	127.2	54.4	79.8	736.2
1986	47.9	553.0	146.1	72.0	91.4	910.4
1987	51.2	686.1	171.8	91.7	108.6	1109.4
1988	72.2	850.6	231.8	113.5	120.3	1388.4
1989	90.6	1020.5	270.8	137.8	131.6	1651.3
1990	96.9	1192.9	297.9	164.8	156.4	1908.9
1991	172.3	1397.1	353.6	194.8	183.7	2301.5
1992	285.9	1655.0	467.2	228.3	204.1	2840.5
1993	399.2	1938.1	577.4	265.5	232.2	3412.4
1994	411.1	2261.8	650.9	306.8	261.4	3892.0
1995	516.3	2608.1	761.3	352.9	301.9	4540.5
1996	629.6	2996.9	885.9	404.1	342.1	5258.6
1997	787.4	3497.2	1070.3	461.1	370.8	6186.8
1998	825.0	3995.5	1177.9	524.5	436.3	6959.2
1999	882.3	4601.5	1384.4	595.0	493.9	7957.1
2000	927.6	5287.1	1547.2	673.3	552.8	8988.0
2001	988.6	6091.8	1794.6	760.5	618.9	10254.4
Total	7281.5	41696.5	12107.0	5475.4	4857.9	71418.3

(Case 2)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu- losses	Total
1982	10.3	87.8	23.1	10.6	45.1	176.9
1983	16.4	179.5	57.1	20.6	47.8	321.4
1984	21.0	252.1	77.0	30.2	52.2	432.5
1985	29.0	313.9	91.8	39.3	56.8	530.8
1986	31.9	367.7	97.2	47.9	60.7	605.4
1987	31.4	420.6	105.3	56.2	66.5	680.0
1988	40.8	480.6	131.0	64.1	67.9	784.4
1989	47.2	531.7	141.1	71.8	68.5	860.3
1990	46.5	572.6	143.0	79.1	75.1	916.3
1991	76.2	617.5	156.3	86.1	81.2	1017.3
1992	116.6	675.2	190.6	93.1	83.3	1158.8
1993	150.1	728.7	217.1	99.8	87.3	1283.0
1994	142.2	782.6	225.2	106.2	90.6	1346.8
1995	164.7	832.0	242.9	112.6	96.3	1448.5
1996	185.1	881.1	260.5	118.8	100.5	1546.0
1997	213.4	947.7	290.1	125.0	100.5	1676.7
1998	206.3	998.9	294.5	131.1	109.0	1739.8
1999	202.9	1058.3	318.4	136.9	113.6	1830.1
2000	196.7	1120.9	328.0	142.7	117.3	1905.6
2001	193.8	1194.0	351.7	149.1	121.0	2009.6
Total	2122.5	13043.4	3741.9	1721.2	1641.2	22270.2

Annual Investment (Case 3)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	101.9	608.5	165.4	52.0	927.8	927.8
1983	62.0	742.4	279.4	57.8	1141.6	2069.4
1984	83.3	689.2	193.4	64.4	1030.3	3099.7
1985	126.4	709.9	214.6	71.7	1122.6	4222.3
1986	130.9	757.5	210.6	79.5	1178.5	5400.8
1987	25.9	843.5	158.6	88.6	1116.6	6517.4
1988	80.0	999.1	330.9	98.6	1508.6	8026.0
1989	121.9	1045.0	240.8	109.7	1517.4	9543.4
1990	53.1	1185.8	320.0	121.9	1680.8	11224.2
1991	643.6	1359.1	546.5	135.8	2685.0	13909.2
1992	1014.6	1556.7	766.4	151.0	3488.7	17397.9
1993	788.4	1801.0	957.6	168.2	3715.2	21113.1
1994	138.6	2026.5	617.4	186.7	2969.2	24082.3
1995	852.2	2219.6	1076.8	208.2	4356.8	28439.1
1996	1151.8	2499.6	1394.3	231.3	5277.0	33716.1
1997	1244.5	2889.2	1341.0	257.2	5731.9	39448.0
1998	472.4	3339.0	1130.7	286.4	5228.5	44676.5
1999	477.7	3900.1	1576.7	318.3	6272.8	50949.3
2000	544.5	4330.6	1207.1	353.6	6435.8	57385.1
2001	507.9	4659.5	1730.4	393.9	7291.7	64676.8
Total	8621.6	38161.8	14458.6	3434.8	64676.8	

(Case 3)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	94.0	561.0	152.5	47.9	855.4	855.4
1983	52.6	630.3	237.2	49.1	969.2	1824.6
1984	65.2	539.6	151.4	50.4	806.6	2631.2
1985	91.3	512.5	154.9	51.8	810.5	3441.7
1986	87.0	503.7	140.0	52.9	783.6	4225.3
1987	15.9	517.1	97.2	54.3	684.5	4909.8
1988	45.2	564.5	187.0	55.7	852.4	5762.2
1989	63.5	544.4	125.5	57.2	790.6	6552.8
1990	25.5	569.2	153.6	58.5	806.8	7359.6
1991	284.5	600.7	241.6	60.0	1186.8	8546.4
1992	414.0	635.1	312.7	61.6	1423.4	9969.8
1993	296.4	677.2	360.1	63.2	1396.9	11366.7
1994	48.0	701.2	213.6	64.6	1027.4	12394.1
1995	271.9	708.1	343.5	66.4	1389.9	13784.0
1996	338.6	734.9	409.9	68.0	1551.4	15335.4
1997	337.3	783.0	363.4	69.7	1553.4	16888.8
1998	118.1	834.8	282.7	71.6	1307.2	18196.0
1999	109.9	897.0	362.6	73.2	1442.7	19638.7
2000	115.4	918.1	255.9	75.0	1364.4	21003.1
2001	99.5	913.3	339.2	77.2	1429.2	22432.3
Total	2973.8	13345.7	4884.5	1228.3	22432.3	

(Case 3)

Annual expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	13.2	95.2	25.0	11.5	48.9	193.8
1983	21.3	211.4	67.3	24.3	56.1	380.4
1984	32.1	319.3	96.5	38.6	66.7	553.2
1985	48.5	430.4	128.9	54.4	76.3	738.5
1986	65.5	548.9	160.8	72.0	88.8	936.0
1987	68.9	680.9	184.8	91.7	105.8	1132.1
1988	79.3	837.3	234.8	113.5	119.4	1384.3
1989	95.1	1000.8	271.2	137.8	135.6	1640.5
1990	102.0	1186.4	319.6	164.8	152.9	1925.7
1991	185.6	1399.1	402.2	194.8	174.8	2356.5
1992	317.4	1642.7	518.1	228.3	199.5	2906.0
1993	419.8	1924.6	662.9	265.5	219.2	3492.0
1994	437.8	2241.7	756.2	306.8	252.9	3995.4
1995	548.5	2589.1	919.1	352.9	277.6	4687.2
1996	698.2	2980.3	1129.9	404.1	306.6	5519.1
1997	859.8	3432.5	1332.6	461.1	337.1	6423.1
1998	921.2	3955.0	1503.6	524.5	375.2	7279.5
1999	983.2	4565.4	1742.0	595.0	409.7	8295.3
2000	1054.0	5243.1	1924.5	673.3	455.0	9349.9
2001	1119.9	5972.3	2186.1	760.5	521.1	10559.9
Total	8071.3	41256.4	14566.1	5475.4	4379.2	73748.4

(Case 3)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu- losses	Total
1982	12.2	87.8	23.1	10.6	45.1	178.8
1983	18.1	179.5	57.1	20.6	47.8	323.1
1984	25.1	250.0	75.6	30.2	52.2	433.1
1985	35.0	310.7	93.1	39.3	55.0	533.1
1986	43.6	365.0	106.9	47.9	59.0	622.4
1987	42.2	417.4	113.3	56.2	64.8	693.9
1988	44.8	473.1	132.7	64.1	67.3	782.0
1989	49.5	521.4	141.3	71.8	70.5	854.5
1990	49.0	569.5	153.4	79.1	73.4	924.4
1991	82.0	618.4	177.8	86.1	77.2	1041.5
1992	129.5	670.2	211.4	93.1	81.3	1185.5
1993	157.8	723.6	249.3	99.8	82.5	1313.0
1994	151.5	775.6	261.6	106.2	87.6	1382.5
1995	175.0	825.9	293.2	112.6	88.7	1495.4
1996	205.3	876.2	332.2	118.8	90.2	1622.7
1997	233.0	930.2	361.1	125.0	91.3	1740.6
1998	230.3	988.8	375.9	131.1	93.7	1819.8
1999	226.1	1050.0	400.7	136.9	94.3	1908.0
2000	223.4	1111.5	408.0	142.7	96.4	1982.0
2001	219.5	1170.6	428.5	149.1	101.9	2069.6
Total	2352.9	12915.4	4396.2	1721.2	1520.2	22905.9

Annual Investment (Case 4)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	91.8	607.2	165.4	52.0	916.4	916.4
1983	62.0	740.5	275.5	57.8	1135.8	2052.2
1984	58.2	690.9	201.8	64.4	1015.3	3067.5
1985	126.4	716.6	234.0	71.7	1148.7	4216.2
1986	59.9	751.7	127.7	79.5	1018.8	5235.0
1987	102.5	847.1	261.7	88.6	1299.9	6534.9
1988	79.0	987.4	302.7	98.6	1467.7	8002.6
1989	211.9	1073.1	296.4	109.7	1691.1	9693.7
1990	48.9	1088.6	182.6	121.9	1442.0	11135.7
1991	580.1	1287.8	371.4	135.8	2375.1	13510.8
1992	806.5	1655.9	803.6	151.0	3417.0	16927.8
1993	863.3	1758.3	701.5	168.2	3491.3	20419.1
1994	184.9	2089.7	687.1	186.7	3148.4	23567.5
1995	774.1	2157.8	795.2	208.2	3935.3	27502.8
1996	947.3	2550.7	1120.7	231.3	4850.0	32352.8
1997	1144.6	2882.6	982.9	257.2	5267.3	37620.1
1998	387.6	3251.8	991.2	286.4	4917.0	42537.1
1999	640.0	3879.5	1718.5	318.3	6556.3	49093.4
2000	831.1	4305.4	1559.8	353.6	7049.9	56143.3
2001	386.7	5093.0	1700.7	393.9	7574.3	63717.6
Total	8386.8	38415.6	13480.4	3434.8	63717.6	

(Case 4)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	84.6	559.8	152.5	47.9	844.8	844.8
1983	52.6	628.7	233.9	49.1	964.3	1809.1
1984	45.6	541.0	158.0	50.4	795.0	2604.1
1985	91.3	517.4	168.9	51.8	829.4	3433.5
1986	39.8	499.9	84.9	52.9	677.5	4111.0
1987	62.8	519.3	160.4	54.3	796.8	4907.8
1988	44.6	557.9	171.0	55.7	829.2	5737.0
1989	110.4	559.1	154.4	57.2	881.1	6618.1
1990	23.5	522.5	87.6	58.5	692.1	7310.2
1991	256.4	569.2	164.2	60.0	1049.8	8360.0
1992	329.1	675.6	327.9	61.6	1394.2	9754.2
1993	324.6	661.1	263.8	63.2	1312.7	11066.9
1994	64.0	723.0	237.7	64.6	1089.3	12156.2
1995	246.9	688.3	253.7	66.4	1255.3	13411.5
1996	278.5	749.9	329.5	68.0	1425.9	14837.4
1997	310.2	781.2	266.4	69.7	1427.5	16264.9
1998	96.9	813.0	247.8	71.6	1229.3	17494.2
1999	147.2	892.3	395.3	73.2	1508.0	19002.2
2000	176.2	912.7	330.7	75.0	1494.6	20496.8
2001	75.8	998.2	333.3	77.2	1484.5	21981.3
Total	2861.0	13370.1	4521.9	1228.3	21981.3	

Annual expense

(Case 4)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.9	95.0	25.0	11.5	48.9	192.3
1983	20.0	210.9	66.7	24.3	56.1	378.0
1984	27.5	319.0	97.2	38.6	66.7	549.0
1985	44.0	431.2	132.6	54.4	77.2	739.4
1986	51.7	548.8	151.9	72.0	89.4	913.8
1987	65.1	681.4	191.4	91.7	104.0	1133.6
1988	75.3	835.9	237.2	113.5	119.5	1381.4
1989	102.8	1003.9	282.0	137.8	131.9	1658.4
1990	109.2	1174.2	309.6	164.8	154.9	1912.7
1991	184.5	1375.8	365.8	194.8	183.3	2304.2
1992	289.3	1634.9	487.3	228.3	199.7	2839.5
1993	401.5	1910.1	593.4	265.5	225.9	3396.4
1994	425.5	2257.1	697.2	306.8	248.2	3914.8
1995	526.0	2574.8	817.5	352.9	288.1	4559.3
1996	649.1	2974.0	986.9	404.1	313.1	5327.2
1997	797.8	3425.1	1135.5	461.1	358.0	6177.5
1998	848.1	3934.1	1285.4	524.5	405.9	6998.0
1999	931.3	4541.2	1545.2	595.0	455.1	8067.8
2000	1039.2	5215.0	1781.1	673.3	518.4	9227.0
2001	1089.4	6012.0	2038.2	760.5	587.1	10487.2
Total	7689.2	41134.4	13227.1	5475.4	4631.4	72157.5

(Case 4)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.0	87.6	23.1	10.6	45.1	177.4
1983	17.0	179.1	56.6	20.6	47.8	321.1
1984	21.5	249.8	76.1	30.2	52.2	429.8
1985	31.8	311.3	95.7	39.3	55.6	533.7
1986	34.4	365.0	101.0	47.9	59.4	607.7
1987	39.9	417.7	117.3	56.2	63.7	694.8
1988	42.5	472.3	134.0	64.1	67.5	780.4
1989	53.6	523.0	146.9	71.8	68.7	864.0
1990	52.4	563.6	148.6	79.1	74.3	918.0
1991	81.5	608.1	161.7	86.1	81.0	1018.4
1992	118.0	667.0	198.8	93.1	81.5	1158.4
1993	151.0	718.2	223.1	99.8	84.8	1276.9
1994	147.2	774.0	241.2	106.2	86.0	1354.6
1995	167.8	821.4	260.8	112.6	91.9	1454.5
1996	190.8	874.4	290.1	118.8	92.0	1566.1
1997	216.2	928.2	307.7	125.0	97.0	1674.1
1998	212.0	983.5	321.4	131.1	101.5	1749.5
1999	214.2	1044.5	355.4	136.9	104.7	1855.7
2000	220.3	1105.6	377.6	142.7	109.9	1956.1
2001	213.5	1178.4	399.5	149.1	114.9	2055.4
Total	2236.6	12872.7	4036.6	1721.2	1579.5	22446.6

Annual Investment (Case 5)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula- total
1982	91.8	607.2	165.4	52.0	916.4	916.4
1983	62.0	740.5	275.5	57.8	1135.8	2052.2
1984	58.2	676.5	189.1	64.4	988.2	3040.4
1985	126.4	706.4	209.1	71.7	1113.6	4154.0
1986	130.9	753.7	205.7	79.5	1169.8	5323.8
1987	25.9	830.4	158.6	88.6	1103.5	6427.3
1988	97.4	969.7	321.6	98.6	1487.3	7914.6
1989	141.5	1025.8	234.6	109.7	1511.6	9426.2
1990	69.7	1170.2	317.2	121.9	1679.0	11105.2
1991	617.1	1342.0	517.1	135.8	2612.0	13717.2
1992	1001.0	1573.3	832.9	151.0	3558.2	17275.4
1993	926.2	1766.9	978.3	168.2	3839.6	21115.0
1994	175.8	1989.4	703.8	186.7	3055.7	24170.7
1995	852.2	2187.4	1072.6	208.2	4320.4	28491.1
1996	1131.4	2452.9	1161.1	231.3	4976.7	33467.8
1997	1163.4	2910.2	1269.4	257.2	5600.2	39068.0
1998	437.8	3248.7	1210.1	286.4	5183.0	44251.0
1999	625.9	3789.8	1610.3	318.3	6344.3	50595.3
2000	831.5	4225.7	1591.4	353.6	7002.2	57597.5
2001	325.8	4719.0	1409.6	393.9	6848.3	64445.8
Total	8891.9	37685.7	14433.4	3434.8	64445.8	

(Case 5)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula- total
1982	84.6	559.8	152.5	47.9	844.8	844.8
1983	52.6	628.7	233.9	49.1	964.3	1809.1
1984	45.6	529.7	148.1	50.4	773.8	2582.9
1985	91.3	510.0	151.0	51.8	804.1	3387.0
1986	87.0	501.2	136.8	52.9	777.9	4164.9
1987	15.9	509.0	97.2	54.3	676.4	4841.3
1988	55.0	547.9	181.7	55.7	840.3	5681.6
1989	73.7	534.4	122.2	57.2	787.5	6469.1
1990	33.5	561.7	152.3	58.5	806.0	7275.1
1991	272.8	593.2	228.6	60.0	1154.6	8429.7
1992	408.4	641.9	339.8	61.6	1451.7	9881.4
1993	348.3	664.4	367.8	63.2	1443.7	11325.1
1994	60.8	688.3	243.5	64.6	1057.2	12382.3
1995	271.9	697.8	342.2	66.4	1378.3	13760.6
1996	332.6	721.2	341.4	68.0	1463.2	15223.8
1997	315.3	788.7	344.0	69.7	1517.7	16741.5
1998	109.5	812.2	302.5	71.6	1295.8	18037.3
1999	144.0	871.7	370.4	73.2	1459.3	19496.6
2000	176.3	895.8	337.4	75.0	1484.5	20981.1
2001	63.9	924.9	276.3	77.2	1342.3	22323.4
Total	3043.0	13182.5	4869.6	1228.3	22323.4	

Annual expense

(Case 5)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.9	95.0	25.0	11.5	48.9	192.3
1983	20.0	210.9	66.7	24.3	56.1	378.0
1984	27.5	316.8	95.3	38.6	66.7	544.9
1985	44.0	427.3	126.9	54.4	76.3	728.9
1986	61.0	545.3	158.0	72.0	88.8	925.1
1987	64.3	675.3	182.0	91.7	105.8	1119.1
1988	77.0	827.0	230.6	113.5	119.4	1367.5
1989	95.4	987.5	266.1	137.8	135.6	1622.4
1990	104.4	1170.7	314.0	164.8	155.7	1909.6
1991	184.6	1380.7	392.2	194.8	179.0	2331.3
1992	314.6	1626.9	518.1	228.3	205.1	2893.0
1993	434.9	1903.4	666.1	265.5	220.8	3490.7
1994	457.8	2214.8	772.5	306.8	251.2	4003.1
1995	568.5	2557.1	934.6	352.9	271.8	4684.9
1996	715.4	2941.0	1110.2	404.1	305.9	5476.6
1997	866.5	3396.4	1302.1	461.1	338.5	6364.6
1998	923.4	3904.9	1485.1	524.5	379.6	7217.5
1999	1004.7	4498.0	1728.6	595.0	422.9	8249.2
2000	1112.7	5159.3	1969.2	673.3	470.3	9384.8
2001	1155.1	5897.8	2182.3	760.5	537.3	10533.0
Total	8243.7	40736.1	14525.6	5475.4	4435.7	73416.5

(Case 5)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.0	87.6	23.1	10.6	45.1	177.4
1983	17.0	179.1	56.6	20.6	47.8	321.1
1984	21.5	248.1	74.6	30.2	52.2	426.6
1985	31.8	308.5	91.6	39.3	55.0	526.2
1986	40.6	362.6	105.1	47.9	59.0	615.2
1987	39.4	414.0	111.6	56.2	64.8	686.0
1988	43.5	467.3	130.3	64.1	67.3	772.5
1989	49.7	514.5	138.6	71.8	70.5	845.1
1990	50.1	561.9	150.7	79.1	74.7	916.5
1991	81.6	610.3	173.4	86.1	79.1	1030.5
1992	128.4	663.8	211.4	93.1	83.6	1180.3
1993	163.5	715.7	250.5	99.8	83.0	1312.5
1994	158.4	766.3	267.3	106.2	87.0	1385.2
1995	181.4	815.7	298.1	112.6	86.7	1494.5
1996	210.3	864.7	326.4	118.8	90.0	1610.2
1997	234.8	920.4	352.9	125.0	91.8	1724.9
1998	230.9	976.2	371.3	131.1	94.8	1804.3
1999	231.1	1034.5	397.6	136.9	97.3	1897.4
2000	235.9	1093.8	417.5	142.7	99.7	1989.6
2001	226.4	1156.0	427.7	149.1	105.1	2064.3
Total	2387.3	12761.0	4376.3	1721.2	1534.5	22780.3

Annual Investment (Case 6)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	91.8	610.0	165.4	52.0	919.2	919.2
1983	62.0	742.3	279.4	57.8	1141.5	2060.7
1984	58.2	696.8	200.9	64.4	1020.3	3081.0
1985	102.0	710.1	190.2	71.7	1074.0	4155.0
1986	59.9	755.9	125.5	79.5	1020.8	5175.8
1987	25.9	850.5	169.9	88.6	1134.9	6310.7
1988	192.6	1054.1	489.5	98.6	1834.8	8145.5
1989	211.9	1058.9	293.2	109.7	1673.7	9819.2
1990	48.9	1101.0	182.6	121.9	1454.4	11273.6
1991	669.2	1406.1	527.4	135.8	2738.5	14012.1
1992	817.9	1569.9	650.0	151.0	3188.8	17200.9
1993	866.5	1740.2	691.3	168.2	3466.2	20667.1
1994	151.0	2133.0	725.3	186.7	3196.0	23863.1
1995	723.0	2166.1	767.5	208.2	3864.8	27727.9
1996	889.9	2632.1	1125.8	231.3	4879.1	32607.0
1997	1190.6	2886.9	1122.7	257.2	5457.4	38064.4
1998	403.7	3214.2	900.7	286.4	4805.0	42869.4
1999	580.3	4205.1	1740.9	318.3	6844.6	49714.0
2000	361.3	4306.6	1090.5	353.6	6112.0	55826.0
2001	772.8	4803.1	1522.9	393.9	7492.7	63318.7
Total	8279.4	38642.9	12961.6	3434.8	63318.7	

(Case 6)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula- total
1982	84.6	562.4	152.5	47.9	847.4	847.4
1983	52.6	630.2	237.2	49.1	969.1	1816.5
1984	45.6	545.6	157.3	50.4	798.9	2615.4
1985	73.6	512.7	137.3	51.8	775.4	3390.8
1986	39.8	502.7	83.5	52.9	678.9	4069.7
1987	15.9	521.4	104.1	54.3	695.7	4765.4
1988	108.8	595.6	276.6	55.7	1036.7	5802.1
1989	110.4	551.7	152.8	57.2	872.1	6674.2
1990	23.5	528.5	87.6	58.5	698.1	7372.3
1991	295.8	621.5	233.1	60.0	1210.4	8582.7
1992	333.7	640.5	265.2	61.6	1301.0	9883.7
1993	325.8	654.3	259.9	63.2	1303.2	11186.9
1994	52.2	738.0	251.0	64.6	1105.8	12292.7
1995	230.6	691.0	244.8	66.4	1232.8	13525.5
1996	261.6	773.8	331.0	68.0	1434.4	14959.9
1997	322.7	782.3	304.3	69.7	1479.0	16438.9
1998	100.9	803.6	225.2	71.6	1201.3	17640.2
1999	133.5	967.2	400.4	73.2	1574.3	19214.5
2000	76.6	913.0	231.2	75.0	1295.8	20510.3
2001	151.5	941.4	298.5	77.2	1468.6	21978.9
Total	2839.7	13477.4	4433.5	1228.3	21978.9	

Annual expense

(Case 6)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.9	95.5	25.0	11.5	48.9	192.8
1983	20.0	211.6	67.3	24.3	56.1	379.3
1984	27.5	320.7	97.6	38.6	66.7	551.1
1985	40.8	431.8	126.4	54.4	78.9	732.3
1986	48.6	550.1	145.4	72.0	91.4	907.5
1987	51.9	683.2	171.1	91.7	108.6	1106.5
1988	77.0	848.2	245.1	113.5	117.4	1401.2
1989	104.5	1013.9	289.4	137.8	129.4	1675.0
1990	110.8	1186.2	317.0	164.8	154.9	1933.7
1991	197.8	1406.3	396.7	194.8	177.1	2372.7
1992	304.0	1652.0	495.0	228.3	199.3	2878.6
1993	416.6	1924.3	599.6	265.5	227.9	3433.9
1994	436.2	2258.1	709.2	306.8	245.4	3955.7
1995	530.1	2597.1	825.3	352.9	280.8	4586.2
1996	645.7	3009.0	995.5	404.1	317.1	5371.4
1997	800.4	3460.8	1165.2	461.1	356.8	6244.3
1998	852.8	3963.8	1301.4	524.5	408.5	7051.0
1999	928.2	4621.9	1564.6	595.0	459.5	8169.2
2000	975.1	5295.9	1729.5	673.3	528.1	9201.9
2001	1075.5	6047.6	1959.8	760.5	599.3	10442.7
Total	7655.4	41578.0	13226.1	5475.4	4652.1	72587.0

(Case 6)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.0	88.1	23.1	10.6	45.1	177.9
1983	17.0	179.6	57.1	20.6	47.8	322.1
1984	21.5	251.1	76.4	30.2	52.2	431.4
1985	29.5	311.8	91.3	39.3	56.8	528.7
1986	32.3	365.8	96.7	47.9	60.7	603.4
1987	31.8	418.8	104.9	56.2	66.5	678.2
1988	43.5	479.2	138.5	64.1	66.2	791.5
1989	54.4	528.2	150.8	71.8	67.3	872.5
1990	53.2	569.4	152.2	79.1	74.4	928.3
1991	87.4	621.6	175.3	86.1	78.3	1048.7
1992	124.0	674.0	202.0	93.1	81.4	1174.5
1993	156.6	723.5	225.4	99.8	85.6	1290.9
1994	150.9	781.3	245.4	106.2	85.0	1368.8
1995	169.1	828.5	263.3	112.6	89.6	1463.1
1996	189.8	884.6	292.7	118.8	93.1	1579.0
1997	216.9	937.9	315.8	125.0	96.6	1692.2
1998	213.2	991.0	325.4	131.1	102.1	1762.8
1999	213.5	1063.0	359.9	136.9	105.8	1879.1
2000	206.7	1122.7	366.7	142.7	112.0	1950.8
2001	210.8	1185.3	384.1	149.1	117.3	2046.6
Total	2233.1	13005.4	4047.0	1721.2	1583.8	22590.5

Annual Investment (Case 7)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula- total
1982	91.8	610.0	165.4	52.0	919.2	919.2
1983	62.0	742.3	279.4	57.8	1141.5	2060.7
1984	58.2	673.8	189.7	64.4	986.1	3046.8
1985	126.4	709.9	214.6	71.7	1122.6	4169.4
1986	130.9	757.0	206.6	79.5	1174.0	5343.4
1987	25.9	843.5	158.6	88.6	1116.6	6460.0
1988	97.4	975.1	325.3	98.6	1496.4	7956.4
1989	160.7	1122.0	373.0	109.7	1765.4	9721.8
1990	83.2	1130.8	258.1	121.9	1594.0	11315.8
1991	606.1	1348.1	636.2	135.8	2726.2	14042.0
1992	974.1	1551.1	789.7	151.0	3465.9	17507.9
1993	943.8	1706.6	903.1	168.2	3721.7	21229.6
1994	287.1	1996.6	900.2	186.7	3370.6	24600.2
1995	998.9	2177.3	1189.0	208.2	4573.4	29173.6
1996	996.1	2528.7	1202.5	231.3	4958.6	34132.2
1997	1270.1	2867.6	1344.2	257.2	5739.1	39871.3
1998	357.5	3279.7	1049.6	286.4	4973.2	44844.5
1999	557.9	4055.4	1867.9	318.3	6799.5	51644.0
2000	402.6	4330.1	1123.0	353.6	6209.3	57853.3
2001	740.7	4862.8	2063.4	393.9	8060.8	65914.1
Total	8971.4	38268.4	15239.5	3434.8	65914.1	

(Case 7)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	84.6	562.4	152.5	47.9	847.4	847.4
1983	52.6	630.2	237.2	49.1	969.1	1816.5
1984	45.6	527.6	148.5	50.4	772.1	2588.6
1985	91.3	512.5	154.9	51.8	810.5	3399.1
1986	87.0	503.4	137.4	52.9	780.7	4179.8
1987	15.9	517.1	97.2	54.3	684.5	4864.3
1988	55.0	550.9	183.8	55.7	845.4	5709.7
1989	83.7	584.6	194.3	57.2	919.8	6629.5
1990	39.9	542.8	123.9	58.5	765.1	7394.6
1991	267.9	595.9	281.2	60.0	1205.0	8599.6
1992	397.4	632.8	322.2	61.6	1414.0	10013.6
1993	354.9	641.7	339.6	63.2	1399.4	11413.0
1994	99.3	690.8	311.5	64.6	1166.2	12579.2
1995	318.6	694.6	379.3	66.4	1458.9	14038.1
1996	292.9	743.4	353.5	68.0	1457.8	15495.9
1997	344.2	777.1	364.3	69.7	1555.3	17051.2
1998	89.4	819.9	262.4	71.6	1243.3	18294.5
1999	128.3	932.7	429.6	73.2	1563.8	19858.3
2000	85.4	918.0	238.1	75.0	1316.5	21174.8
2001	145.2	953.1	404.4	77.2	1579.9	22754.7
Total	3079.1	13331.5	5115.8	1228.3	22754.7	

Annual expense

(Case 7)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.9	95.5	25.0	11.5	48.9	192.8
1983	20.0	211.6	67.3	24.3	56.1	379.3
1984	27.5	317.1	95.9	38.6	66.7	545.8
1985	44.0	428.2	128.4	54.4	76.3	731.3
1986	61.0	546.7	159.6	72.0	88.5	927.8
1987	64.3	678.7	183.6	91.7	105.6	1123.9
1988	77.0	831.3	232.8	113.5	120.4	1375.0
1989	97.9	1006.9	289.2	137.8	136.7	1668.5
1990	108.7	1185.8	328.2	164.8	156.7	1942.2
1991	187.4	1394.8	424.4	194.8	176.7	2378.1
1992	313.9	1637.6	543.8	228.3	198.9	2922.5
1993	436.5	1904.6	680.4	265.5	225.7	3512.7
1994	473.8	2217.1	816.5	306.8	250.1	4064.3
1995	603.6	2557.9	996.2	352.9	273.9	4784.5
1996	733.0	2953.6	1178.1	404.1	302.8	5571.6
1997	898.0	3402.4	1381.3	461.1	331.9	6474.7
1998	944.4	3915.6	1540.0	524.5	375.5	7300.0
1999	1016.9	4550.3	1822.4	595.0	413.7	8398.3
2000	1069.2	5228.0	1992.2	673.3	475.6	9438.3
2001	1165.4	5989.0	2304.2	760.5	532.6	10751.7
Total	8354.4	41050.7	15189.5	5475.4	4413.3	74483.3

(Case 7)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.0	88.1	23.1	10.6	45.1	177.9
1983	17.0	179.6	57.1	20.6	47.8	322.1
1984	21.5	248.3	75.1	30.2	52.2	427.3
1985	31.8	309.2	92.7	39.3	55.0	528.0
1986	40.6	363.6	106.1	47.9	58.8	617.0
1987	39.4	416.0	112.5	56.2	64.7	688.8
1988	43.5	469.7	131.5	64.1	67.9	776.7
1989	51.0	524.6	150.7	71.8	71.0	869.1
1990	52.2	568.2	157.5	79.1	75.2	932.2
1991	82.8	616.5	187.6	86.1	78.1	1051.1
1992	128.1	668.1	221.9	93.1	81.1	1192.3
1993	164.1	716.1	255.8	99.8	84.8	1320.6
1994	163.9	767.1	282.5	106.2	86.7	1406.4
1995	192.5	816.0	317.8	112.6	87.4	1526.3
1996	215.5	868.4	346.4	118.8	89.0	1638.1
1997	243.4	922.1	374.3	125.0	90.0	1754.8
1998	236.1	978.9	385.0	131.1	93.7	1824.8
1999	233.9	1046.6	419.2	136.9	95.2	1931.8
2000	226.7	1108.3	422.3	142.7	101.0	2001.0
2001	228.4	1173.8	451.6	149.1	104.2	2107.1
Total	2423.4	12849.2	4570.7	1721.2	1528.9	23093.4

Annual Investment (Case 8)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula- total
1982	86.3	586.1	187.9	52.0	912.3	912.3
1983	64.0	785.5	261.6	57.8	1168.9	2081.2
1984	144.9	802.9	208.5	64.4	1220.7	3301.9
1985	12.1	738.2	139.3	71.7	961.3	4263.2
1986	73.0	830.5	168.2	79.5	1151.2	5414.4
1987	63.1	972.7	291.5	88.6	1415.9	6830.3
1988	131.2	1097.3	270.2	98.6	1597.3	8427.6
1989	656.2	1187.1	451.2	109.7	2404.2	10831.8
1990	580.6	1220.4	410.2	121.9	2333.1	13164.9
1991	759.9	1799.1	746.0	135.8	3440.8	16605.7
1992	252.8	1680.4	462.0	151.0	2546.2	19151.9
1993	751.0	2109.7	814.1	168.2	3843.0	22994.9
1994	740.9	2278.1	755.5	186.7	3961.2	26956.1
1995	952.3	2741.5	1130.3	208.2	5032.3	31988.4
1996	249.1	3060.0	748.9	231.3	4289.3	36277.7
1997	427.7	3682.1	1026.9	257.2	5393.9	41671.6
1998	449.5	4213.7	1242.6	286.4	6192.2	47863.8
1999	336.9	4663.9	1238.1	318.3	6557.2	54421.0
2000	914.5	5477.4	1456.6	353.6	8202.1	62623.1
2001	592.9	5908.1	1611.4	393.9	8506.3	71129.4
Total	8238.9	45834.7	13621.0	3434.8	71129.4	

(Case 8)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula- total
1982	79.6	540.4	173.2	47.9	841.1	841.1
1983	54.3	666.9	222.1	49.1	992.4	1833.5
1984	113.5	628.7	163.3	50.4	955.9	2789.4
1985	8.7	533.0	100.6	51.8	694.1	3483.5
1986	48.5	552.3	111.9	52.9	765.6	4249.1
1987	38.7	596.3	178.7	54.3	868.0	5117.1
1988	74.1	620.0	152.7	55.7	902.5	6019.6
1989	341.9	618.5	235.1	57.2	1252.7	7272.3
1990	278.7	585.8	196.9	58.5	1119.9	8392.2
1991	335.9	795.2	329.7	60.0	1520.8	9913.0
1992	103.1	685.6	188.5	61.6	1038.8	10951.8
1993	282.4	793.2	306.1	63.2	1444.9	12396.7
1994	256.4	788.2	261.4	64.6	1370.6	13767.3
1995	303.8	874.5	360.6	66.4	1605.3	15372.6
1996	73.2	899.6	220.2	68.0	1261.0	16633.6
1997	115.9	997.8	278.3	69.7	1461.7	18095.3
1998	112.4	1053.4	310.7	71.6	1548.1	19643.4
1999	77.5	1072.7	284.8	73.2	1508.2	21151.6
2000	193.9	1161.2	308.8	75.0	1738.9	22890.5
2001	116.2	1158.0	315.8	77.2	1667.2	24557.7
Total	3008.7	15621.3	4699.4	1228.3	24557.7	

(Case 8)

Annual expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.2	91.7	28.4	11.5	48.9	191.7
1983	19.5	214.7	68.0	24.3	56.6	383.1
1984	38.3	340.3	99.5	38.6	66.7	583.4
1985	39.9	455.8	120.6	54.4	80.9	751.6
1986	49.4	585.8	146.0	72.0	94.5	947.7
1987	57.6	738.0	190.1	91.7	108.7	1186.1
1988	74.6	909.8	230.9	113.5	125.9	1454.7
1989	159.9	1095.5	299.1	137.8	141.5	1833.8
1990	235.3	1286.5	361.2	164.8	168.9	2216.7
1991	334.0	1568.1	474.0	194.8	186.9	2757.8
1992	366.9	1831.1	543.8	228.3	219.9	3190.0
1993	464.4	2161.2	666.9	265.5	245.9	3803.9
1994	560.6	2517.8	781.1	306.8	284.5	4450.8
1995	684.4	2946.8	952.0	352.9	319.7	5255.8
1996	716.7	3425.7	1065.3	404.1	370.5	5982.3
1997	772.3	4002.0	1220.5	461.1	428.1	6884.0
1998	830.7	4661.4	1408.4	524.5	471.1	7896.1
1999	874.4	5391.3	1595.6	595.0	547.7	9004.0
2000	993.2	6248.5	1815.9	673.3	614.5	10345.4
2001	1070.2	7173.1	2059.5	760.5	714.3	11777.6
Total	8353.5	47645.1	14126.8	5475.4	5295.7	80896.5

(Case 8)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu- losses	Total
1982	10.3	84.5	26.2	10.6	45.1	176.7
1983	16.6	182.3	57.7	20.6	48.2	325.4
1984	30.0	266.5	77.9	30.2	52.2	456.8
1985	28.8	329.1	87.1	39.3	58.3	542.6
1986	32.9	389.6	97.1	47.9	62.8	630.3
1987	35.3	452.4	116.5	56.2	66.6	727.0
1988	42.1	514.0	130.5	64.1	71.1	821.8
1989	83.3	570.8	155.8	71.8	73.7	955.4
1990	112.9	617.5	173.4	79.1	81.0	1063.9
1991	147.6	693.1	209.5	86.1	82.7	1219.0
1992	149.7	747.1	221.9	93.1	89.7	1301.5
1993	174.6	812.6	250.8	99.8	92.5	1430.3
1994	194.0	871.2	270.3	106.2	98.5	1540.2
1995	218.3	940.0	303.7	112.6	101.9	1676.5
1996	210.7	1007.2	313.2	118.8	109.0	1758.9
1997	209.3	1084.5	330.8	125.0	116.1	1865.7
1998	207.7	1165.4	352.1	131.1	117.7	1974.0
1999	201.1	1240.0	367.0	136.9	126.1	2071.1
2000	210.6	1324.7	385.0	142.7	130.5	2193.5
2001	209.8	1405.9	403.7	149.1	139.7	2308.2
Total	2525.6	14698.4	4330.2	1721.2	1763.4	25038.8

Annual Investment (Case 9)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	86.3	608.6	165.4	52.0	912.3	912.3
1983	56.0	665.8	278.9	57.8	1058.5	1970.8
1984	51.4	620.7	205.6	64.4	942.1	2912.9
1985	99.6	622.2	189.6	71.7	983.1	3896.0
1986	51.5	678.8	124.3	79.5	934.1	4830.1
1987	20.2	695.8	134.6	88.6	939.2	5769.3
1988	32.8	844.6	195.2	98.6	1171.2	6940.5
1989	231.9	1024.2	415.0	109.7	1780.8	8721.3
1990	40.1	1011.7	179.7	121.9	1353.4	10074.7
1991	38.0	1227.3	299.4	135.8	1700.5	11775.2
1992	105.3	1272.0	213.1	151.0	1741.4	13516.6
1993	734.1	1478.9	596.2	168.2	2977.4	16494.0
1994	904.9	1737.5	825.9	186.7	3655.0	20149.0
1995	942.0	1914.1	706.7	208.2	3771.0	23920.0
1996	122.8	2237.9	574.5	231.3	3166.5	27086.5
1997	172.4	2456.7	578.7	257.2	3465.0	30551.5
1998	174.9	2630.2	630.1	286.4	3721.6	34273.1
1999	1133.8	3118.2	990.2	318.3	5560.5	39833.6
2000	1284.7	3439.1	1307.5	353.6	6384.9	46218.5
2001	1624.2	3959.5	1476.1	393.9	7453.7	53672.2
Total	7906.9	32243.8	10086.7	3434.8	53672.2	

(Case 9)

Present Value of Annual Investment

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Total	Cumula. total
1982	79.6	561.1	152.5	47.9	841.1	841.1
1983	47.5	565.3	236.8	49.1	898.7	1739.8
1984	40.2	486.0	161.0	50.4	737.6	2477.4
1985	71.9	449.2	136.9	51.8	709.8	3187.2
1986	34.2	451.4	82.7	52.9	621.2	3808.4
1987	12.4	426.5	82.5	54.3	575.7	4384.1
1988	18.5	477.2	110.3	55.7	661.7	5045.8
1989	120.8	533.6	216.2	57.2	927.8	5973.6
1990	19.2	485.6	86.3	58.5	649.6	6623.2
1991	16.8	542.5	132.3	60.0	751.6	7374.8
1992	43.0	519.0	86.9	61.6	710.5	8085.3
1993	276.0	556.1	224.2	63.2	1119.5	9204.8
1994	313.1	601.2	285.8	64.6	1264.7	10469.5
1995	300.5	610.6	225.4	66.4	1202.9	11672.4
1996	36.1	657.9	168.9	68.0	930.9	12603.3
1997	46.7	665.8	156.8	69.7	939.0	13542.3
1998	43.7	657.6	157.5	71.6	930.4	14472.7
1999	260.8	717.2	227.7	73.2	1278.9	15751.6
2000	272.4	729.1	277.2	75.0	1353.7	17105.3
2001	318.3	776.1	289.3	77.2	1460.9	18566.2
Total	2371.7	11469.0	3497.2	1228.3	18566.2	

Annual expense

(Case 9)

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu. losses	Total
1982	11.2	95.2	25.0	11.5	48.9	191.8
1983	18.5	199.4	67.2	24.3	55.0	364.4
1984	25.2	296.6	98.3	38.6	63.9	522.6
1985	38.1	394.0	126.9	54.4	74.0	687.4
1986	44.8	500.2	145.7	72.0	85.9	848.6
1987	47.4	609.1	166.1	91.7	100.0	1014.3
1988	51.7	741.3	195.6	113.5	115.1	1217.2
1989	81.8	901.5	258.3	137.8	126.4	1505.8
1990	87.0	1059.9	285.5	164.8	147.8	1745.0
1991	91.9	1252.0	330.8	194.8	161.4	2030.9
1992	105.6	1451.0	363.0	228.3	186.6	2334.5
1993	201.0	1682.5	453.1	265.5	212.5	2814.6
1994	318.5	1954.4	578.0	306.8	236.3	3394.0
1995	440.9	2253.9	684.9	352.9	271.3	4003.9
1996	456.8	2604.2	771.7	404.1	301.1	4537.9
1997	479.2	2988.6	859.2	461.1	344.0	5132.1
1998	502.0	3400.3	954.5	524.5	388.7	5770.0
1999	649.2	3888.3	1104.2	595.0	438.1	6674.8
2000	816.1	4426.5	1301.9	673.3	491.3	7709.1
2001	1027.1	5046.2	1525.1	760.5	553.4	8912.3
Total	5494.0	35745.1	10295.0	5475.4	4401.7	61411.2

(Case 9)

Present Value of Annual Expense

Unit : Million Baht

Year	Trans- mission	Distri- bution	Substation	Vehicle & equipment	Distribu- losses	Total
1982	10.3	87.8	23.1	10.6	45.1	176.9
1983	15.7	169.3	57.1	20.6	46.8	309.5
1984	19.7	232.2	77.0	30.2	50.1	409.2
1985	27.5	284.5	91.6	39.3	53.4	496.3
1986	29.8	332.6	96.9	47.9	57.1	564.3
1987	29.1	373.4	101.8	56.2	61.3	621.8
1988	29.2	418.8	110.5	64.1	65.0	687.6
1989	42.6	469.7	134.6	71.8	65.8	784.5
1990	41.8	508.8	137.0	79.1	70.9	837.6
1991	40.6	553.4	146.2	86.1	71.2	897.5
1992	43.1	592.0	148.1	93.1	76.1	952.4
1993	75.6	632.6	170.4	99.8	79.8	1058.2
1994	110.2	676.2	200.0	106.2	81.7	1174.3
1995	140.6	719.0	218.5	112.6	86.3	1277.0
1996	134.3	765.6	226.9	118.8	88.3	1333.9
1997	129.9	809.9	232.8	125.0	93.0	1390.6
1998	125.5	850.1	238.6	131.1	96.7	1442.0
1999	149.3	894.3	254.0	136.9	100.6	1535.1
2000	173.0	938.4	276.0	142.7	103.9	1634.0
2001	201.3	989.1	298.9	149.1	107.8	1746.2
Total	1569.1	11297.7	3240.0	1721.2	1500.9	19328.9

Appendix 7 Details of Investment of Each Cases

Amount of Investment
(Detail)

(Case 2)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	89.2	0.0	76.2	68.7	0.0	17.6	111.7	483.8	13.0
'83	193.6	0.0	85.8	33.4	0.0	28.6	175.8	556.2	10.3
'84	105.6	0.0	100.5	27.3	0.0	30.9	94.1	608.6	4.1
'85	71.9	0.0	118.3	90.9	0.0	11.1	33.8	682.1	4.0
'86	4.1	0.0	121.4	0.0	0.0	59.9	31.5	716.5	7.9
'87	34.5	0.0	135.4	0.0	0.0	25.9	76.6	764.1	9.8
'88	246.1	0.0	150.4	119.6	0.0	42.0	170.7	862.0	18.6
'89	98.9	0.0	159.0	20.5	0.0	121.0	148.9	920.2	16.6
'90	4.8	0.0	174.8	0.0	0.0	48.9	45.2	1,046.2	9.8
'91	12.0	167.1	189.0	0.0	562.5	17.6	89.5	1,197.0	18.4
'92	302.6	232.0	216.2	133.8	607.1	133.3	265.1	1,351.8	31.0
'93	244.0	250.8	233.7	154.8	656.2	61.7	289.8	1,496.5	22.9
'94	221.3	0.0	265.0	24.7	0.0	66.6	312.0	1,711.8	44.7
'95	227.5	227.4	275.1	104.9	681.2	24.0	286.1	1,900.2	26.4
'96	260.2	245.3	318.9	59.6	734.8	77.7	313.6	2,134.9	35.5
'97	605.2	265.2	348.8	308.6	794.4	112.0	681.6	2,464.0	51.2
'98	336.6	0.0	375.0	107.5	0.0	181.4	356.1	2,790.7	37.2
'99	912.3	0.0	453.4	278.7	0.0	163.1	667.0	3,154.8	50.8
2000	607.4	0.0	469.8	101.7	0.0	246.5	759.1	3,576.3	45.3
2001	1,108.7	0.0	527.1	317.5	0.0	152.3	1,020.6	4,058.2	63.1
TTL	5,686.5	1,387.8	4,793.8	1,952.2	4,036.2	1,622.1	5,928.8	32,475.9	520.6

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment

(Case 2)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	82.2	0.0	70.3	63.3	0.0	16.2	103.0	446.1	12.0
'83	164.4	0.0	72.8	28.4	0.0	24.3	149.3	472.2	8.7
'84	82.7	0.0	78.7	21.4	0.0	24.2	73.7	476.5	3.2
'85	51.9	0.0	85.4	65.6	0.0	8.0	24.4	492.5	2.9
'86	2.7	0.0	80.7	0.0	0.0	39.8	20.9	476.5	5.3
'87	21.1	0.0	83.0	0.0	0.0	15.9	47.0	468.4	6.0
'88	139.0	0.0	85.0	67.6	0.0	23.7	96.4	487.0	10.5
'89	51.5	0.0	82.8	10.7	0.0	63.0	77.6	479.4	8.6
'90	2.3	0.0	83.9	0.0	0.0	23.5	21.7	502.2	4.7
'91	5.3	73.9	83.5	0.0	248.6	7.8	39.6	529.1	8.1
'92	123.5	94.7	88.2	54.6	247.7	54.4	108.2	551.5	12.6
'93	91.7	94.3	87.9	58.2	246.7	23.2	109.0	562.7	8.6
'94	76.6	0.0	91.7	8.5	0.0	23.0	108.0	592.3	15.5
'95	72.6	72.5	87.8	33.5	217.3	7.7	91.3	606.2	8.4
'96	76.5	72.1	93.8	17.5	216.0	22.8	92.2	627.7	10.4
'97	164.0	71.9	94.5	83.6	215.3	30.4	184.7	667.7	13.9
'98	84.2	0.0	93.8	26.9	0.0	45.4	89.0	697.7	9.3
'99	209.8	0.0	104.3	64.1	0.0	37.5	153.4	725.6	11.7
2000	128.8	0.0	99.6	21.6	0.0	52.3	160.9	758.2	9.6
2001	217.3	0.0	103.3	62.2	0.0	29.9	200.0	795.4	12.4
TTL	1,848.1	479.4	1,751.0	687.7	1,391.6	573.0	1,950.3	11,414.9	182.4

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Amount of Investment
(Detail)

(Case 3)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	89.2	0.0	76.2	84.3	0.0	17.6	111.7	483.8	13.0
'83	193.6	0.0	85.8	33.4	0.0	28.6	175.8	556.2	10.3
'84	92.9	0.0	100.5	52.4	0.0	30.9	76.5	608.6	4.1
'85	100.3	0.0	114.3	115.3	0.0	11.1	23.8	682.1	4.0
'86	83.7	0.0	126.9	71.0	0.0	59.9	33.1	716.5	7.9
'87	22.3	0.0	136.3	0.0	0.0	25.9	69.6	764.1	9.8
'88	179.1	0.0	151.8	38.8	0.0	42.0	118.5	862.0	18.6
'89	76.0	0.0	164.8	0.9	0.0	121.0	108.2	920.2	16.6
'90	134.1	0.0	185.9	4.2	0.0	48.9	129.8	1,046.2	9.8
'91	127.9	215.0	203.6	63.5	562.5	17.6	143.7	1,197.0	18.4
'92	310.3	232.0	224.1	274.2	607.1	133.3	173.9	1,351.8	31.0
'93	503.1	194.9	259.6	70.5	656.2	61.7	281.6	1,496.5	22.9
'94	316.2	0.0	301.2	72.0	0.0	66.6	270.0	1,711.8	44.7
'95	524.6	227.4	324.8	147.0	681.2	24.0	293.0	1,900.2	26.4
'96	770.8	245.3	378.1	339.3	734.8	77.7	329.2	2,134.9	35.5
'97	618.6	265.2	457.2	338.1	794.4	112.0	374.0	2,464.0	51.2
'98	627.0	0.0	503.7	291.0	0.0	181.4	511.1	2,790.7	37.2
'99	994.7	0.0	582.0	314.6	0.0	163.1	694.5	3,154.8	50.8
2000	567.8	0.0	639.3	298.0	0.0	246.5	709.0	3,576.3	45.3
2001	1,017.7	0.0	713.2	355.6	0.0	152.3	538.2	4,058.2	63.1
TTL	7,349.9	1,379.8	5,729.3	2,964.1	4,036.2	1,622.1	5,165.2	32,475.9	520.6

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment
(Detail)

(Case 3)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	82.2	0.0	70.3	77.7	0.0	16.2	103.0	446.1	12.0
'83	164.4	0.0	72.8	28.4	0.0	24.3	149.3	472.2	8.7
'84	72.7	0.0	78.7	41.0	0.0	24.2	59.9	476.5	3.2
'85	72.4	0.0	82.5	83.2	0.0	8.0	17.2	492.5	2.9
'86	55.7	0.0	84.4	47.2	0.0	39.8	22.0	476.5	5.3
'87	13.7	0.0	83.6	0.0	0.0	15.9	42.7	468.4	6.0
'88	101.2	0.0	85.8	21.9	0.0	23.7	67.0	487.0	10.5
'89	39.6	0.0	85.9	0.5	0.0	63.0	56.4	479.4	8.6
'90	64.4	0.0	89.2	2.0	0.0	23.5	62.3	502.2	4.7
'91	56.5	95.0	90.0	28.1	248.6	7.8	63.5	529.1	8.1
'92	126.6	94.7	91.4	111.9	247.7	54.4	71.0	551.5	12.6
'93	189.2	73.7	97.6	26.5	246.7	23.2	105.9	562.7	8.6
'94	109.4	0.0	104.2	24.9	0.0	23.0	93.4	592.3	15.5
'95	167.3	72.5	103.6	46.9	217.3	7.7	93.5	606.2	8.4
'96	226.6	72.1	111.2	99.8	216.0	22.8	96.8	627.7	10.4
'97	167.6	71.9	123.9	91.6	215.3	30.4	101.4	667.7	13.9
'98	156.8	0.0	125.9	72.8	0.0	45.4	127.8	697.7	9.3
'99	228.8	0.0	133.9	72.4	0.0	37.5	159.7	725.6	11.7
2000	120.4	0.0	135.5	63.2	0.0	52.3	150.3	758.2	9.6
2001	199.5	0.0	139.8	69.7	0.0	29.9	105.5	795.4	12.4
TTL	2,415.0	479.5	1,990.2	1,009.7	1,391.6	573.0	1,748.6	11,414.9	182.4

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Amount of Investment
(Detail)

(Case 4)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	89.2	0.0	76.2	74.2	0.0	17.6	110.4	483.8	13.0
'83	189.7	0.0	85.8	33.4	0.0	28.6	173.9	556.2	10.3
'84	101.3	0.0	100.5	27.3	0.0	30.9	78.2	608.6	4.1
'85	115.7	0.0	118.3	115.3	0.0	11.1	30.5	682.1	4.0
'86	4.1	0.0	123.6	0.0	0.0	59.9	27.3	716.5	7.9
'87	120.2	0.0	141.5	76.6	0.0	25.9	73.2	764.1	9.8
'88	117.3	38.0	147.4	37.0	0.0	42.0	106.8	862.0	18.6
'89	93.4	41.0	162.0	90.9	0.0	121.0	136.3	920.2	16.6
'90	4.8	0.0	177.8	0.0	0.0	48.9	32.6	1,046.2	9.8
'91	12.0	167.1	192.3	0.0	562.5	17.6	72.4	1,197.0	18.4
'92	390.4	180.3	232.8	66.1	607.1	133.3	273.1	1,351.8	31.0
'93	270.8	194.9	235.8	145.4	656.2	61.7	238.9	1,496.5	22.9
'94	409.4	0.0	277.7	118.3	0.0	66.6	333.2	1,711.8	44.7
'95	270.1	227.4	297.7	68.9	681.2	24.0	231.2	1,900.2	26.4
'96	527.2	245.3	348.2	134.8	734.8	77.7	380.3	2,134.9	35.5
'97	336.5	265.2	381.2	238.2	794.4	112.0	367.4	2,464.0	51.2
'98	556.2	0.0	435.0	206.3	0.0	181.4	423.9	2,790.7	37.2
'99	1,212.4	0.0	506.1	476.9	0.0	163.1	673.9	3,154.8	50.8
2000	1,017.6	0.0	542.2	584.6	0.0	246.5	683.8	3,576.3	45.3
2001	1,078.4	0.0	622.3	234.4	0.0	152.3	971.7	4,058.2	63.1
TTL	6,916.7	1,359.2	5,204.4	2,728.6	4,036.2	1,622.1	5,419.0	32,475.9	520.6

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment
(Detail)

(Case 4)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	82.2	0.0	70.3	68.4	0.0	16.2	101.8	446.1	12.0
'83	161.1	0.0	72.8	28.4	0.0	24.3	147.6	472.2	8.7
'84	79.3	0.0	78.7	21.4	0.0	24.2	61.2	476.5	3.2
'85	83.5	0.0	85.4	83.2	0.0	8.0	22.0	492.5	2.9
'86	2.7	0.0	82.2	0.0	0.0	39.8	18.2	476.5	5.3
'87	73.7	0.0	86.7	47.0	0.0	15.9	44.9	468.4	6.0
'88	66.3	21.5	83.3	20.9	0.0	23.7	60.3	487.0	10.5
'89	48.7	21.4	84.4	47.4	0.0	63.0	71.0	479.4	8.6
'90	2.3	0.0	85.3	0.0	0.0	23.5	15.6	502.2	4.7
'91	5.3	73.9	85.0	0.0	248.6	7.8	32.0	529.1	8.1
'92	159.3	73.6	95.0	27.0	247.7	54.4	111.4	551.5	12.6
'93	101.8	73.3	88.7	54.7	246.7	23.2	89.8	562.7	8.6
'94	141.7	0.0	96.1	40.9	0.0	23.0	115.3	592.3	15.5
'95	86.2	72.5	95.0	22.0	217.3	7.7	73.8	606.2	8.4
'96	155.0	72.1	102.4	39.6	216.0	22.8	111.8	627.7	10.4
'97	91.2	71.9	103.3	64.6	215.3	30.4	99.6	667.7	13.9
'98	139.1	0.0	108.8	51.6	0.0	45.4	106.0	697.7	9.3
'99	278.9	0.0	116.4	109.7	0.0	37.5	155.0	725.6	11.7
2000	215.7	0.0	114.9	123.9	0.0	52.3	145.0	758.2	9.6
2001	211.4	0.0	122.0	45.9	0.0	29.9	190.5	795.4	12.4
TTL	2,185.4	480.2	1,856.7	896.6	1,391.6	573.0	1,722.8	11,414.9	182.4

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Amount of Investment
(Detail)

(Case 5)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	89.2	0.0	76.2	74.2	0.0	17.6	110.4	483.8	13.0
'83	189.7	0.0	85.8	33.4	0.0	28.6	173.9	556.2	10.3
'84	88.6	0.0	100.5	27.3	0.0	30.9	63.8	608.6	4.1
'85	94.8	0.0	114.3	115.3	0.0	11.1	20.3	682.1	4.0
'86	78.8	0.0	126.9	71.0	0.0	59.9	29.3	716.5	7.9
'87	22.3	0.0	136.3	0.0	0.0	25.9	56.5	764.1	9.8
'88	169.8	0.0	151.8	55.4	0.0	42.0	89.1	862.0	18.6
'89	69.8	0.0	164.8	20.5	0.0	121.0	89.0	920.2	16.6
'90	132.0	0.0	185.2	20.8	0.0	48.9	114.2	1,046.2	9.8
'91	103.3	215.0	198.8	37.0	562.5	17.6	126.6	1,197.0	18.4
'92	370.8	232.0	230.1	260.6	607.1	133.3	190.5	1,351.8	31.0
'93	532.0	194.9	251.4	208.3	656.2	61.7	247.5	1,496.5	22.9
'94	393.8	0.0	310.0	109.2	0.0	66.6	232.9	1,711.8	44.7
'95	491.9	227.4	353.3	147.0	681.2	24.0	260.8	1,900.2	26.4
'96	523.2	245.3	392.6	318.9	734.8	77.7	282.5	2,134.9	35.5
'97	551.0	265.2	453.2	257.0	794.4	112.0	395.0	2,464.0	51.2
'98	698.2	0.0	511.9	256.4	0.0	181.4	420.8	2,790.7	37.2
'99	1,042.2	0.0	568.1	462.8	0.0	163.1	584.2	3,154.8	50.8
2000	940.0	0.0	651.4	585.0	0.0	246.5	604.1	3,576.3	45.3
2001	655.6	0.0	754.0	173.5	0.0	152.3	597.7	4,058.2	63.1
TTL	7,237.0	1,379.8	5,816.6	3,233.6	4,036.2	1,622.1	4,689.1	32,475.9	520.6

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment

(Case 5)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	82.2	0.0	70.3	68.4	0.0	16.2	101.8	446.1	12.0
'83	161.1	0.0	72.8	28.4	0.0	24.3	147.6	472.2	8.7
'84	69.4	0.0	78.7	21.4	0.0	24.2	50.0	476.5	3.2
'85	68.4	0.0	82.5	83.2	0.0	8.0	14.7	492.5	2.9
'86	52.4	0.0	84.4	47.2	0.0	39.8	19.5	476.5	5.3
'87	13.7	0.0	83.6	0.0	0.0	15.9	34.6	468.4	6.0
'88	95.9	0.0	85.8	31.3	0.0	23.7	50.3	487.0	10.5
'89	36.4	0.0	85.9	10.7	0.0	63.0	46.4	479.4	8.6
'90	63.4	0.0	88.9	10.0	0.0	23.5	54.8	502.2	4.7
'91	45.7	95.0	87.9	16.4	248.6	7.8	56.0	529.1	8.1
'92	151.3	94.7	93.9	106.3	247.7	54.4	77.7	551.5	12.6
'93	200.0	73.3	94.5	78.3	246.7	23.2	93.1	562.7	8.6
'94	136.3	0.0	107.3	37.8	0.0	23.0	80.6	592.3	15.5
'95	156.9	72.5	112.7	46.9	217.3	7.7	83.2	606.2	8.4
'96	153.8	72.1	115.4	93.8	216.0	22.8	83.1	627.7	10.4
'97	149.3	71.9	122.8	69.6	215.3	30.4	107.0	667.7	13.9
'98	174.6	0.0	128.0	64.1	0.0	45.4	105.2	697.7	9.3
'99	239.7	0.0	130.7	106.4	0.0	37.5	134.4	725.6	11.7
2000	199.3	0.0	138.1	124.0	0.0	52.3	128.1	758.2	9.6
2001	128.5	0.0	147.8	34.0	0.0	29.9	117.1	795.4	12.4
TTL	2,378.3	479.5	2,012.0	1,078.2	1,391.6	573.0	1,585.2	11,414.9	182.4

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Amount of Investment

(Case 6)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	89.2	0.0	76.2	74.2	0.0	17.6	113.2	483.8	13.0
'83	193.6	0.0	85.8	33.4	0.0	28.6	175.7	556.2	10.3
'84	100.4	0.0	100.5	27.3	0.0	30.9	84.1	608.6	4.1
'85	71.9	0.0	118.3	90.9	0.0	11.1	24.0	682.1	4.0
'86	4.1	0.0	121.4	0.0	0.0	59.9	31.5	716.5	7.9
'87	34.5	0.0	135.4	0.0	0.0	25.9	76.6	764.1	9.8
'88	295.3	38.0	156.2	150.6	0.0	42.0	173.5	862.0	18.6
'89	90.2	41.0	162.0	90.9	0.0	121.0	122.1	920.2	16.6
'90	4.8	0.0	177.8	0.0	0.0	48.9	45.0	1046.2	9.8
'91	168.0	167.1	192.3	89.1	562.5	17.6	190.7	1197.0	18.4
'92	240.4	180.3	229.3	77.5	607.1	133.3	187.1	1351.8	31.0
'93	260.6	194.9	235.8	148.6	656.2	61.7	220.8	1496.5	22.9
'94	432.7	0.0	292.6	84.4	0.0	66.6	376.5	1711.8	44.7
'95	242.4	227.4	297.7	17.8	681.2	24.0	239.5	1900.2	26.4
'96	546.4	245.3	334.1	77.4	734.8	77.7	461.7	2134.9	35.5
'97	480.3	265.2	377.2	284.2	794.4	112.0	371.7	2464.0	51.2
'98	465.7	0.0	435.0	222.3	0.0	181.4	386.3	2790.7	37.2
'99	1239.9	0.0	501.0	417.2	0.0	163.1	999.5	3154.8	50.8
2000	554.8	0.0	535.7	114.8	0.0	246.5	685.0	3576.3	45.3
2001	903.3	0.0	619.6	620.5	0.0	152.3	681.8	4058.2	63.1
TTL	6418.5	1359.2	5183.9	2621.1	4036.2	1622.1	5646.3	32475.9	520.6

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment

(Case 6)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	82.2	0.0	70.3	68.4	0.0	16.2	104.4	446.1	12.0
'83	164.4	0.0	72.8	28.4	0.0	24.3	149.2	472.2	8.7
'84	78.6	0.0	78.7	21.4	0.0	24.2	65.9	476.5	3.2
'85	51.9	0.0	85.4	65.6	0.0	8.0	17.3	492.5	2.9
'86	2.7	0.0	80.7	0.0	0.0	39.8	20.9	476.5	5.3
'87	21.1	0.0	83.0	0.0	0.0	15.9	47.0	468.4	6.0
'88	166.8	21.5	88.3	85.1	0.0	23.7	98.0	487.0	10.5
'89	47.0	21.4	84.4	47.4	0.0	63.0	63.6	479.4	8.6
'90	2.3	0.0	85.3	0.0	0.0	23.5	21.6	502.2	4.7
'91	74.3	73.9	85.0	39.4	248.6	7.8	84.3	529.1	8.1
'92	98.1	73.6	93.6	31.6	247.7	54.4	76.3	551.5	12.6
'93	98.0	73.3	88.7	55.9	246.7	23.2	83.0	562.7	8.6
'94	149.7	0.0	101.2	29.2	0.0	23.0	130.3	592.3	15.5
'95	77.3	72.5	95.0	5.7	217.3	7.7	76.4	606.2	8.4
'96	160.6	72.1	98.2	22.8	216.0	22.8	135.7	627.7	10.4
'97	130.2	71.9	102.2	77.0	215.3	30.4	100.7	667.7	13.9
'98	116.4	0.0	108.8	55.6	0.0	45.4	96.6	697.7	9.3
'99	285.2	0.0	115.2	96.0	0.0	37.5	229.9	725.6	11.7
2000	117.6	0.0	113.6	24.3	0.0	52.3	145.2	758.2	9.6
2001	177.0	0.0	121.4	121.6	0.0	29.9	133.6	795.4	12.4
TTL	2101.4	480.2	1851.8	875.4	1391.6	573.0	1879.9	11414.9	182.4

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Amount of Investment

(Case 7)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	89.2	0.0	76.2	74.2	0.0	17.6	113.2	483.8	13.0
'83	193.6	0.0	85.8	33.4	0.0	28.6	175.7	556.2	10.3
'84	89.2	0.0	100.5	27.3	0.0	30.9	61.1	608.6	4.1
'85	100.3	0.0	114.3	115.3	0.0	11.1	23.8	682.1	4.0
'86	79.5	0.0	127.1	71.0	0.0	59.9	32.6	716.5	7.9
'87	22.3	0.0	136.3	0.0	0.0	25.9	69.6	764.1	9.8
'88	173.5	0.0	151.8	55.4	0.0	42.0	94.5	862.0	18.6
'89	203.9	0.0	169.1	39.7	0.0	121.0	185.2	920.2	16.6
'90	74.3	0.0	183.8	34.3	0.0	48.9	74.8	1046.2	9.8
'91	213.6	215.0	207.6	26.2	562.5	17.6	132.7	1197.0	18.4
'92	320.8	232.0	236.9	233.7	607.1	133.3	168.3	1351.8	31.0
'93	453.0	194.9	255.2	225.9	656.2	61.7	187.2	1496.5	22.9
'94	590.2	0.0	310.0	220.5	0.0	66.6	240.1	1711.8	44.7
'95	606.6	227.4	355.0	293.7	681.2	24.0	250.7	1900.2	26.4
'96	550.2	245.3	407.0	183.6	734.8	77.7	358.3	2134.9	35.5
'97	586.2	265.2	492.8	363.7	794.4	112.0	352.4	2464.0	51.2
'98	517.4	0.0	532.2	176.1	0.0	181.4	451.8	2790.7	37.2
'99	1262.1	0.0	605.8	394.8	0.0	163.1	849.8	3154.8	50.8
2000	455.0	0.0	668.0	156.1	0.0	246.5	708.5	3576.3	45.3
2001	1298.5	0.0	764.9	588.4	0.0	152.3	741.5	4058.2	63.1
TTL	7879.4	1379.8	5980.3	3313.3	4036.2	1622.1	5271.8	32475.9	520.6

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment

(Case 7)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	82.2	0.0	70.3	68.4	0.0	16.2	104.4	446.1	12.0
'83	164.4	0.0	72.8	28.4	0.0	24.3	149.2	472.2	8.7
'84	69.8	0.0	78.7	21.4	0.0	24.2	47.8	476.5	3.2
'85	72.4	0.0	82.5	83.2	0.0	8.0	17.2	492.5	2.9
'86	52.9	0.0	84.5	47.2	0.0	39.8	21.7	476.5	5.3
'87	13.7	0.0	83.6	0.0	0.0	15.9	42.7	468.4	6.0
'88	98.0	0.0	85.8	31.3	0.0	23.7	53.4	487.0	10.5
'89	106.2	0.0	88.1	20.7	0.0	63.0	96.5	479.4	8.6
'90	35.7	0.0	88.2	16.5	0.0	23.5	35.9	502.2	4.7
'91	94.4	95.0	91.8	11.6	248.6	7.8	58.7	529.1	8.1
'92	130.9	94.7	96.7	95.3	247.7	54.4	68.7	551.5	12.6
'93	170.3	73.3	96.0	84.9	246.7	23.2	70.4	562.7	8.6
'94	204.2	0.0	107.3	76.3	0.0	23.0	83.1	592.3	15.5
'95	193.5	72.5	113.2	93.7	217.3	7.7	80.0	606.2	8.4
'96	161.8	72.1	119.7	54.0	216.0	22.8	105.3	627.7	10.4
'97	158.9	71.9	133.5	98.6	215.3	30.4	95.5	667.7	13.9
'98	129.4	0.0	133.1	44.0	0.0	45.4	113.0	697.7	9.3
'99	290.3	0.0	139.3	90.8	0.0	37.5	195.5	725.6	11.7
2000	96.5	0.0	141.6	33.1	0.0	52.3	150.2	758.2	9.6
2001	254.5	0.0	149.9	115.3	0.0	29.9	145.3	795.4	12.4
TTL	2580.0	479.5	2056.6	1114.7	1391.6	573.0	1734.5	11414.9	182.4

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Amount of Investment

(Case 8)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	111.7	0.0	76.2	68.7	0.0	17.6	89.2	484.0	13.0
'83	175.8	0.0	85.8	33.4	0.0	30.6	193.6	580.9	11.0
'84	101.0	0.0	107.5	111.5	0.0	33.4	160.4	638.1	4.4
'85	26.4	0.0	112.9	0.0	0.0	12.1	12.7	721.2	4.3
'86	46.8	0.0	121.4	0.0	0.0	73.0	7.0	814.0	9.6
'87	156.1	0.0	135.4	34.1	0.0	29.0	142.2	819.6	10.9
'88	117.2	0.0	153.0	82.8	0.0	48.4	133.9	942.0	21.4
'89	148.8	143.2	159.2	20.5	482.1	153.6	97.4	1068.6	21.2
'90	81.0	154.5	174.8	0.0	520.1	60.6	11.1	1197.2	12.1
'91	330.2	215.0	200.8	175.8	562.5	21.7	408.6	1367.9	22.7
'92	190.5	51.7	219.8	87.4	0.0	165.4	88.1	1553.9	38.4
'93	373.4	194.9	245.8	89.2	583.9	77.9	343.9	1737.0	28.8
'94	272.1	210.2	273.3	27.3	629.6	84.0	227.4	1994.2	56.4
'95	603.5	227.4	299.4	239.9	681.2	31.2	445.1	2262.1	34.3
'96	432.5	0.0	316.4	146.6	0.0	102.5	441.9	2571.1	47.0
'97	629.3	0.0	397.6	283.3	0.0	144.4	686.5	2929.6	66.0
'98	844.7	0.0	397.9	211.9	0.0	237.6	806.5	3358.4	48.8
'99	780.5	0.0	457.6	123.0	0.0	213.9	791.9	3805.4	66.6
2000	918.9	0.0	537.7	591.6	0.0	322.9	1094.8	4323.3	59.4
2001	1009.2	0.0	602.2	391.6	0.0	201.3	882.1	4942.8	83.2
TTL	7349.6	1196.9	5074.7	2718.6	3459.4	2061.1	7064.3	38111.3	659.5

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment

(Case 8)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	103.0	0.0	70.3	63.3	0.0	16.2	82.2	446.2	12.0
'83	149.3	0.0	72.8	28.4	0.0	26.0	164.4	493.2	9.3
'84	79.1	0.0	84.2	87.3	0.0	26.2	125.6	499.6	3.4
'85	19.1	0.0	81.5	0.0	0.0	8.7	9.2	520.7	3.1
'86	31.1	0.0	80.7	0.0	0.0	48.5	4.7	541.3	6.4
'87	95.7	0.0	83.0	20.9	0.0	17.8	87.2	502.4	6.7
'88	66.2	0.0	86.4	46.8	0.0	27.3	75.7	532.2	12.1
'89	77.5	74.6	82.9	10.7	251.2	80.0	50.7	556.7	11.0
'90	38.9	74.2	83.9	0.0	249.6	29.1	5.3	574.7	5.8
'91	145.9	95.0	88.8	77.7	248.6	9.6	180.6	604.6	10.0
'92	77.7	21.1	89.7	35.7	0.0	67.5	35.9	634.0	15.7
'93	140.4	73.3	92.4	33.5	219.5	29.3	129.3	653.1	10.8
'94	94.1	72.7	94.6	9.4	217.8	29.1	78.7	690.0	19.5
'95	192.5	72.5	95.5	76.5	217.3	10.0	142.0	721.6	10.9
'96	127.2	0.0	93.0	43.1	0.0	30.1	129.9	755.9	13.8
'97	170.5	0.0	107.7	76.8	0.0	39.1	186.0	793.9	17.9
'98	211.2	0.0	99.5	53.0	0.0	59.4	201.6	839.6	12.2
'99	179.5	0.0	105.2	28.3	0.0	49.2	182.1	875.2	15.3
2000	194.8	0.0	114.0	125.4	0.0	68.5	232.1	916.5	12.6
2001	197.8	0.0	118.0	76.8	0.0	39.5	172.9	968.8	16.3
TTL	2391.5	483.4	1824.1	893.6	1404.0	711.1	2276.1	13120.2	224.8

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Amount of Investment

(Case 9)

(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	89.2	0.0	76.2	68.7	0.0	17.6	111.7	484.0	13.0
'83	193.1	0.0	85.8	33.4	0.0	22.6	173.3	484.3	8.2
'84	105.1	0.0	100.5	27.3	0.0	24.1	91.4	526.1	3.2
'85	71.3	0.0	118.3	90.9	0.0	8.7	32.6	586.4	3.2
'86	2.9	0.0	121.4	0.0	0.0	51.5	17.7	654.2	6.8
'87	3.2	0.0	131.4	0.0	0.0	20.2	25.4	662.9	7.6
'88	48.8	0.0	146.4	0.0	0.0	32.8	82.8	747.2	14.6
'89	252.6	0.0	162.4	129.1	0.0	102.8	171.2	838.7	14.3
'90	8.0	0.0	171.7	0.0	0.0	40.1	72.0	931.8	7.9
'91	113.7	0.0	185.7	23.9	0.0	14.1	162.3	1050.3	14.6
'92	9.1	0.0	204.0	0.0	0.0	105.3	72.5	1175.0	24.5
'93	180.8	194.9	220.5	29.7	656.2	48.2	170.0	1291.0	17.9
'94	298.7	270.4	256.8	145.4	707.5	52.0	228.9	1473.7	34.9
'95	137.0	292.6	277.1	157.6	765.6	18.9	244.7	1648.5	20.9
'96	265.2	0.0	309.3	61.4	0.0	61.4	360.9	1848.9	28.1
'97	257.9	0.0	320.8	87.2	0.0	85.2	339.1	2078.8	38.8
'98	257.7	0.0	372.4	37.1	0.0	137.8	253.8	2348.4	28.1
'99	284.7	309.0	396.6	85.8	925.5	122.6	449.4	2630.6	38.2
2000	550.5	333.5	423.5	105.7	999.0	180.1	478.4	2927.5	33.2
2001	607.3	360.7	508.1	432.8	1080.4	111.0	597.6	3315.7	46.2
TTL	3736.8	1761.1	4588.9	1516.0	5134.2	1257.0	4135.7	27704.0	404.2

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

Present Value of Amount of Investment

(Case 9)

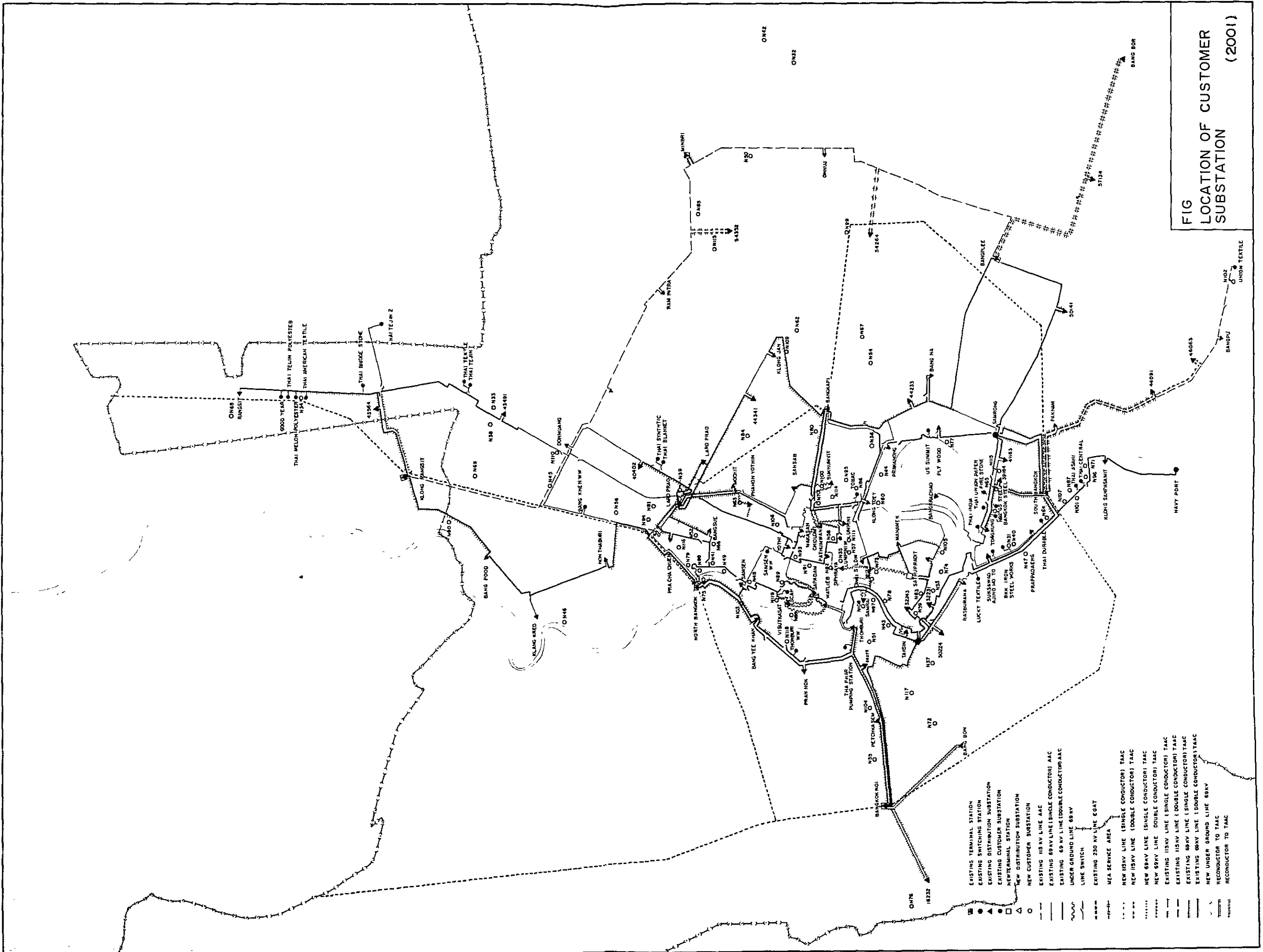
(Detail)

	Substation			Transmission line			Distribution line		
	Distribution SS	Upper system	Others	Sub-TL	Upper system	Others	High V DL	Lower system	Semi-insulated DL
'82	82.2	0.0	70.3	63.3	0.0	16.2	103.0	446.2	12.0
'83	163.9	0.0	72.8	28.4	0.0	19.2	147.1	411.2	7.0
'84	82.3	0.0	78.7	21.4	0.0	18.9	71.6	411.9	2.5
'85	51.5	0.0	85.4	65.6	0.0	6.3	23.5	423.4	2.3
'86	1.9	0.0	80.7	0.0	0.0	34.2	11.8	435.0	4.5
'87	2.0	0.0	80.5	0.0	0.0	12.4	15.6	406.4	4.7
'88	27.6	0.0	82.7	0.0	0.0	18.5	46.8	422.2	8.2
'89	131.6	0.0	84.6	67.3	0.0	53.6	89.2	437.0	7.5
'90	3.8	0.0	82.4	0.0	0.0	19.2	34.6	447.3	3.8
'91	50.3	0.0	82.1	10.6	0.0	6.2	71.7	464.2	6.5
'92	3.7	0.0	83.2	0.0	0.0	43.0	29.6	479.4	10.0
'93	68.0	73.3	82.9	11.2	246.7	18.1	63.9	485.4	6.7
'94	103.4	93.6	88.9	50.3	244.8	18.0	79.2	509.9	12.1
'95	43.7	93.3	88.4	50.3	244.2	6.0	78.1	525.9	6.7
'96	78.0	0.0	90.9	18.1	0.0	18.1	106.1	543.6	8.3
'97	69.9	0.0	86.9	23.6	0.0	23.1	91.9	563.4	10.5
'98	64.4	0.0	93.1	9.3	0.0	34.5	63.5	587.1	7.0
'99	65.5	71.1	91.2	19.7	212.9	28.2	103.4	605.1	8.8
2000	116.7	70.7	89.8	22.4	211.8	38.2	101.4	620.6	7.0
2001	119.0	70.7	99.6	84.8	211.8	21.8	117.1	649.9	9.1
TTL	1329.4	472.7	1695.1	546.3	1372.2	453.7	1449.1	9875.0	145.2

(Note) SS : Substation, TL : Transmission line, DL : Distribution line

Others : Renewal of function

FIG LOCATION OF CUSTOMER SUBSTATION (2001)



- EXISTING TERMINAL STATION
- EXISTING SWITCHING STATION
- EXISTING DISTRIBUTION SUBSTATION
- EXISTING CUSTOMER SUBSTATION
- NEW TERMINAL STATION
- NEW DISTRIBUTION SUBSTATION
- NEW CUSTOMER SUBSTATION
- EXISTING 115 KV LINE AAC
- EXISTING 69KV LINE (SINGLE CONDUCTOR) AAC
- EXISTING 69 KV LINE (DOUBLE CONDUCTOR) AAC
- UNDERGROUND LINE 69 KV
- LINE SWITCH
- EXISTING 230 KV LINE E/GAT
- SEA SERVICE AREA
- NEW 115KV LINE (SINGLE CONDUCTOR) TAAC
- NEW 115KV LINE (DOUBLE CONDUCTOR) TAAC
- NEW 69KV LINE (SINGLE CONDUCTOR) TAAC
- NEW 69KV LINE (DOUBLE CONDUCTOR) TAAC
- EXISTING 115KV LINE (SINGLE CONDUCTOR) TAAC
- EXISTING 115KV LINE (DOUBLE CONDUCTOR) TAAC
- EXISTING 69KV LINE (SINGLE CONDUCTOR) TAAC
- EXISTING 69KV LINE (DOUBLE CONDUCTOR) TAAC
- NEW UNDERGROUND LINE 69KV
- RECONDUCTOR TO TAAC
- RECONDUCTOR TO AAC

JICA