

Electricity Supply Enterprise
Ministry of Electric Power
Republic of the Union of Myanmar

Republic of the Union of Myanmar

Preparatory Survey on
Distribution System Improvement Project
in Main Cities

Final Report
Appendix

July 2015

Japan International Cooperation Agency (JICA)

Chubu Electric Power Co., Inc.
Nippon Koei Co., Ltd.

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JR
15-033

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Appendix 1: Basic Information Sheet (32cities)

Appendix 2: Detailed Results of Demand Forecast

Appendix 1

Basic Information Sheet

(32 cities)

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Hinthada City (Township)

Country	 Myanmar
Region / State	 Ayeyarwady region
District	Hinthada
Township	Hinthada, Zalun, Lemyethna, Myanaung, Kyangin, Ingapu



Photo



General information

(1) Area	981 km ²
(2) Population	297 Thousand People
(3) Household	96 Thousand households
(4) Village	894 Villages

Industry/Facilities

(5) Main Industry	Rice mill
(6) Industrial Zone	1 industrial zone
(7) Special Economic Zone	—
(8) Important Facilities	Local government, Rice mill factory

Transportation Infrastructure

(9) Airport	-
(10) Railway	Pathein-Hinthada line
(11) Main Road	Hinthada-Yangon-Pathein car road

Power demand

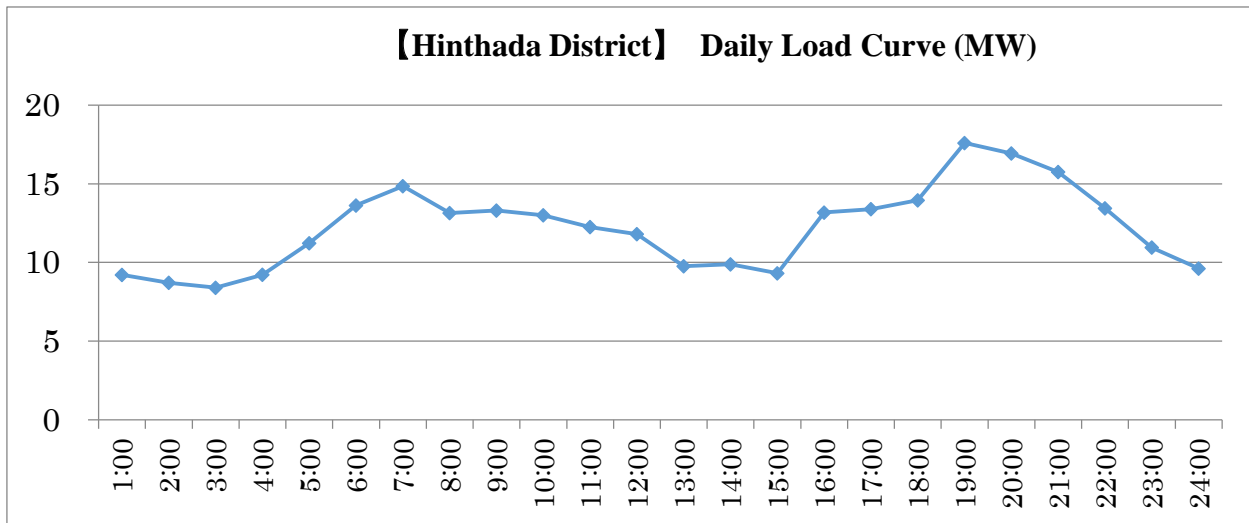
(12) Customer	18,916 customers	2014
(13) Electrified village	92 villages	2014
(14) Number of fixing meter	18,916 Nos.	2014
(15) Electricity Sales	25,500 MWh	Apr.2013 - Mar.2014
(16) Peak demand	5.7 MW	2012
	6.0 MW	2013
	6.5 MW	2014
(17) Capacity utilization rate*	28 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Hinthada City (Township)

(18) Daily Load curve



Power Facilities

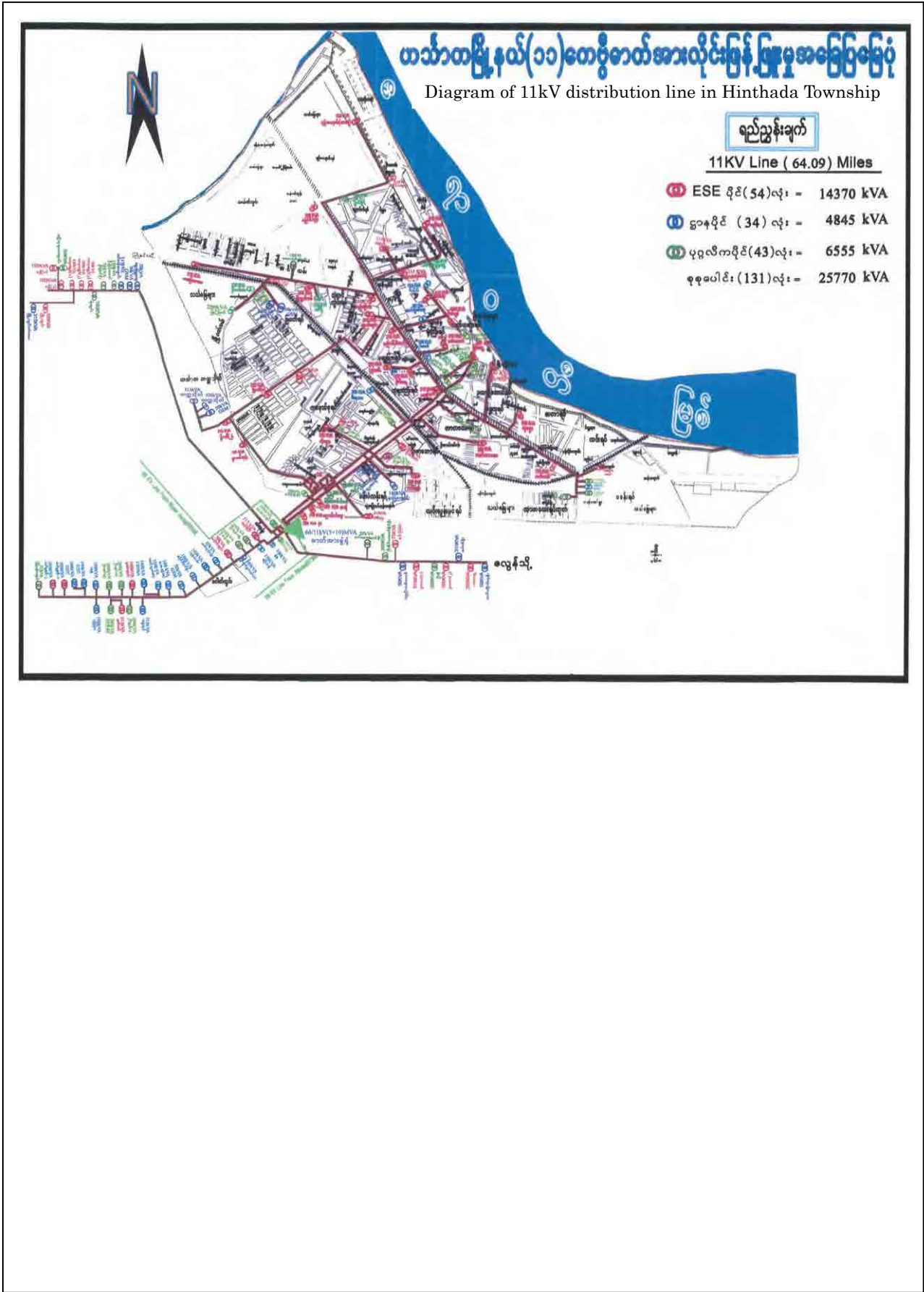
(19) Power Transformer (66/11kV)	20	MVA	2	Nos.	Oct.2014
(20) Power Transformer (33/11kV)	-	MVA	-	Nos.	-
(21) Power Transformer (11/0.4kV)	25.77	MVA	131	Nos.	Oct.2014
(22) Distribution Line (33kV)	-	km	-	Poles	-
(23) Distribution Line (11kV)	113	km	2,019	Poles	Oct.2014
(24) Distribution Line (0.4kV)	143	km	4,238	Poles	Oct.2014
(25) Small Hydropower Generator	0	MW	0	Nos.	-
(26) Diesel Power Generator	0	MW	0	Nos.	-

Distribution Loss Rate

(27) Distribution Loss Rate	34.46 %	2014
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Hinthada City (Township)

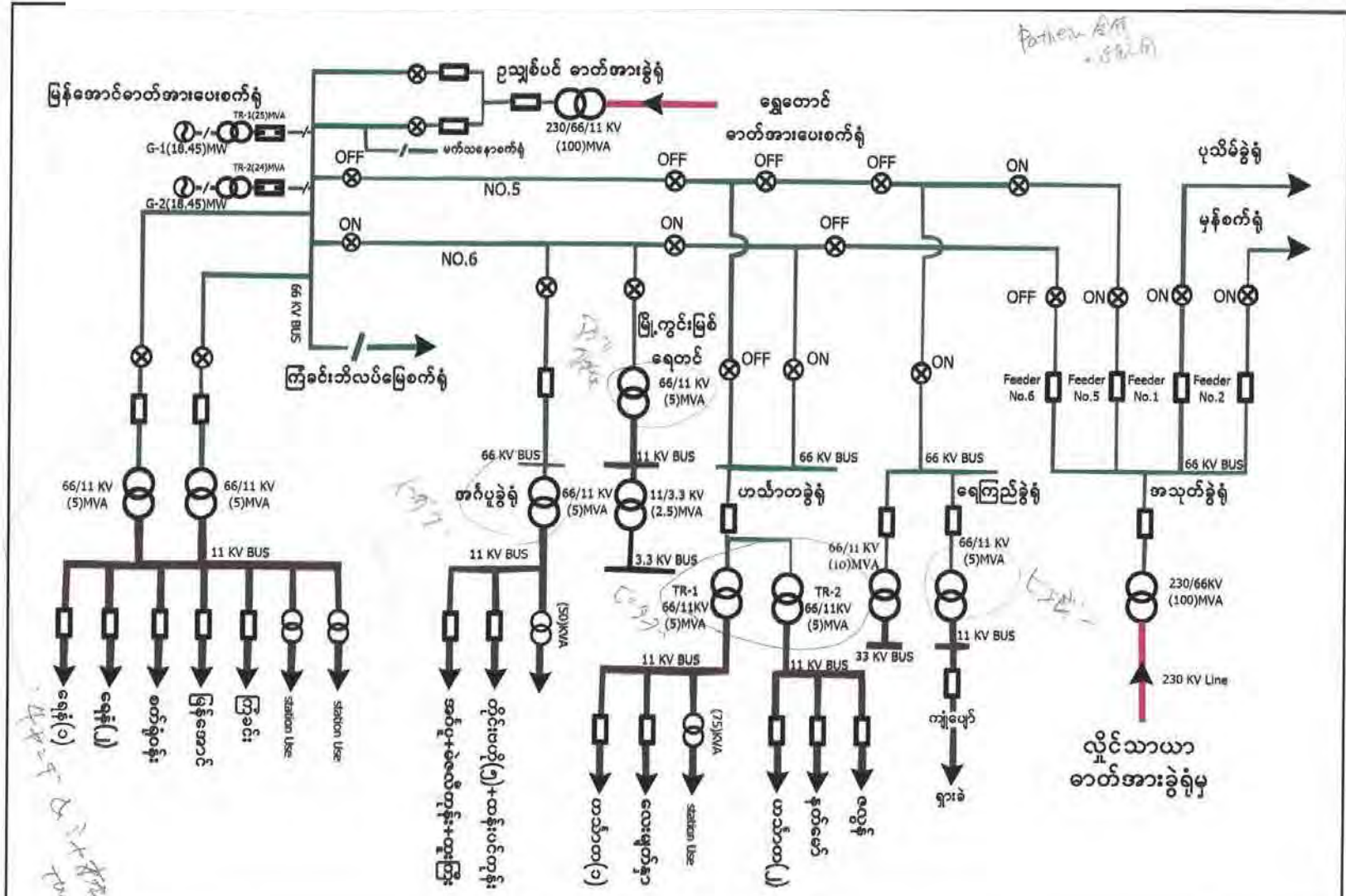
(28) 66,11kV System Diagram (Location Map)



Hinthada City (Township)

(29) 66,11kV System Single Line Diagram

One line diagram of 66kV and 11kV line in Hinthada district ONE LINE DIAGRAM



App1-5

Hinthada City (Township)

(30) Power Facilities

No Photo

Myaungmya City (Township)

Country	 Myanmar
Region / State	 Ayeyarwady region
District	Myaungmya
Township	Myaungmya, Einme, Wakema

No Photo



General information

(1) Area	1,152 km ²
(2) Population	290 Thousand People
(3) Household	62 Thousand households
(4) Village	500 Villages

Industry/Facilities

(5) Main Industry	Rice mill (250 tons)
(6) Industrial Zone	1 industrial zone
(7) Special Economic Zone	—
(8) Important Facilities	Local government, Rice mill factory

Transportation Infrastructure

(9) Airport	-
(10) Railway	-
(11) Main Road	Car road and shipping

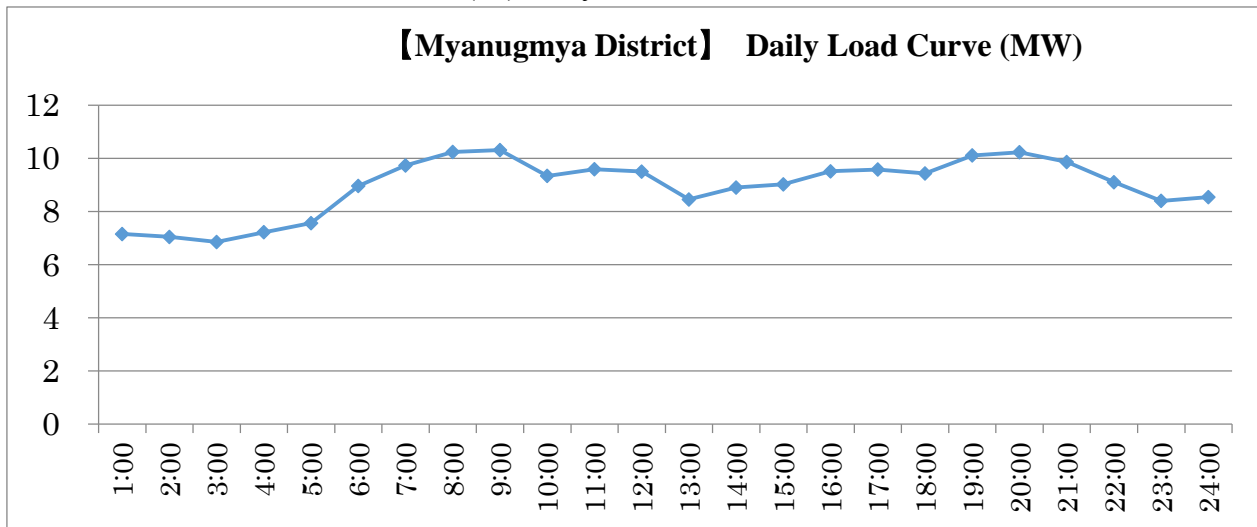
Power demand

(12) Customer	10,689 customers	2014
(13) Electrified village	409 villages	2014
(14) Number of fixing meter	10,689 Nos.	2014
(15) Electricity Sales	23,075 MWh	Apr.2013 - Mar.2014
(16) Peak demand	6.8 MW	2012
	7.0 MW	2013
	7.2 MW	2014
(17) Capacity utilization rate*	25 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

(18) Daily Load curve



Power Facilities

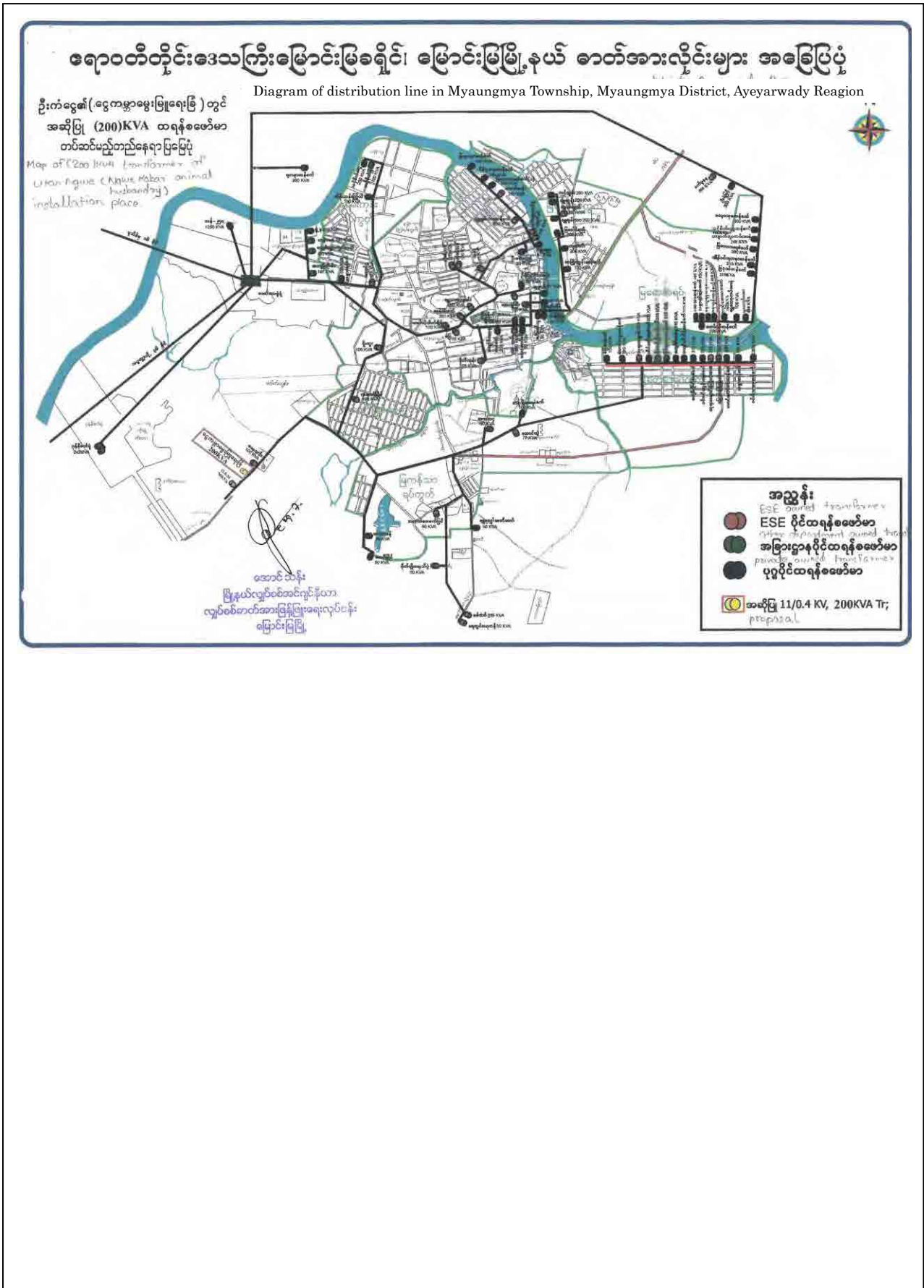
(19) Power Transformer (66/11kV)	13	MVA	3	Nos.	Oct.2014
(20) Power Transformer (33/11kV)	-	MVA	-	Nos.	-
(21) Power Transformer (11/0.4kV)	27.135	MVA	116	Nos.	Oct.2014
(22) Distribution Line (33kV)	-	km	-	Poles	-
(23) Distribution Line (11kV)	70	km	365	Poles	Oct.2014
(24) Distribution Line (0.4kV)	66	km	5,927	Poles	Oct.2014
(25) Small Hydropower Generator	0	MW	0	Nos.	Oct.2014
(26) Diesel Power Generator	0	MW	0	Nos.	Oct.2014

Distribution Loss Rate

(27) Distribution Loss Rate	23 %	2014
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Myaungmya City (Township)

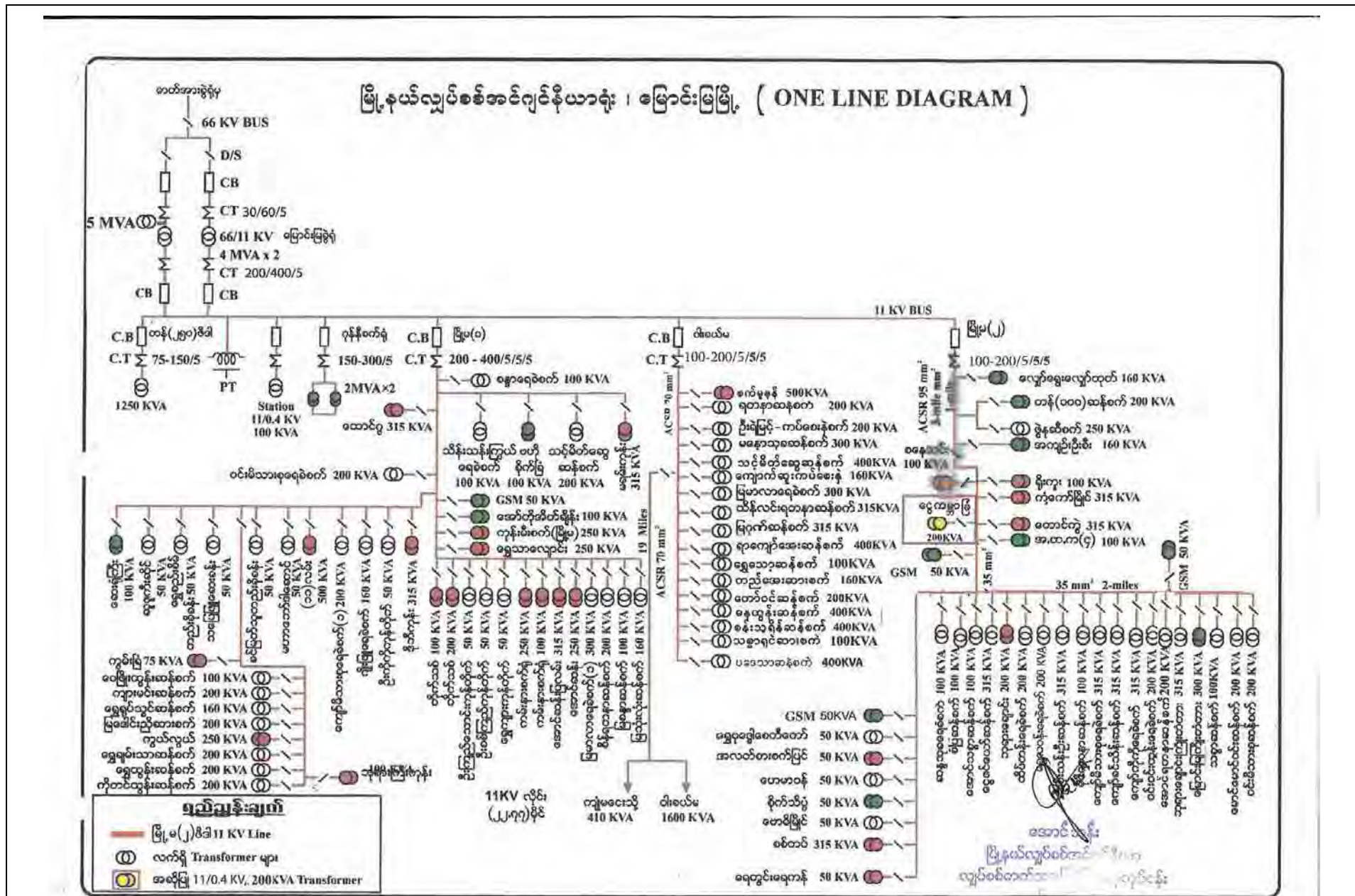
(28) 33kV System Diagram (Location Map)



Myaungmya City (Township)

(29) 33kV System Single Line Diagram

App1-11





Myaungmya City (Township)

Appendix 1

(30) Power Facilities

No Photo

Pathein City (Township)

Country	 Myanmar
Region / State	 Ayeyarwady region
District	Pathein
Township	Pathein, Kangyidaunt, Thabaung, Ngapudaw, Kyonpyaw, Yegy, Kyaunggon



Photo

City Street and a statue in Pathein



Rice field



ESE office in Pathein, Ayeyarwady



Pathein City (Township)

General information

(1) Area	53 km ²
(2) Population	287 Thousand People
(3) Household	113 Thousand households
(4) Village	8 Villages

Industry/Facilities

(5) Main Industry	Rice mill, Fertilizer
(6) Industrial Zone	[Pathein IZ] 3 factories, area 1.2km ²
(7) Special Economic Zone	—
(8) Important Facilities	Hospital, Local government, Rice mill factory, Seafood processing factory

Transportation Infrastructure

(9) Airport	Pathein airport
(10) Railway	Pathein-Hinthada line (Pathein terminal)
(11) Main Road	Pathein-Yangon , Pathein-Monywa car road

Social Environment (search for only candidate cities)

(a) Schools (No.)	274	Primary	Secondary	High	Monastery
		249	17	3	5
(b) University and Colleges (No.)	4	Representative School			
		Pathein University, Education College			
(c) Health Care facilities (No)	66	Government Hospital	Private Hospital	Government dispensary	Private dispensary
		6	2	54	4

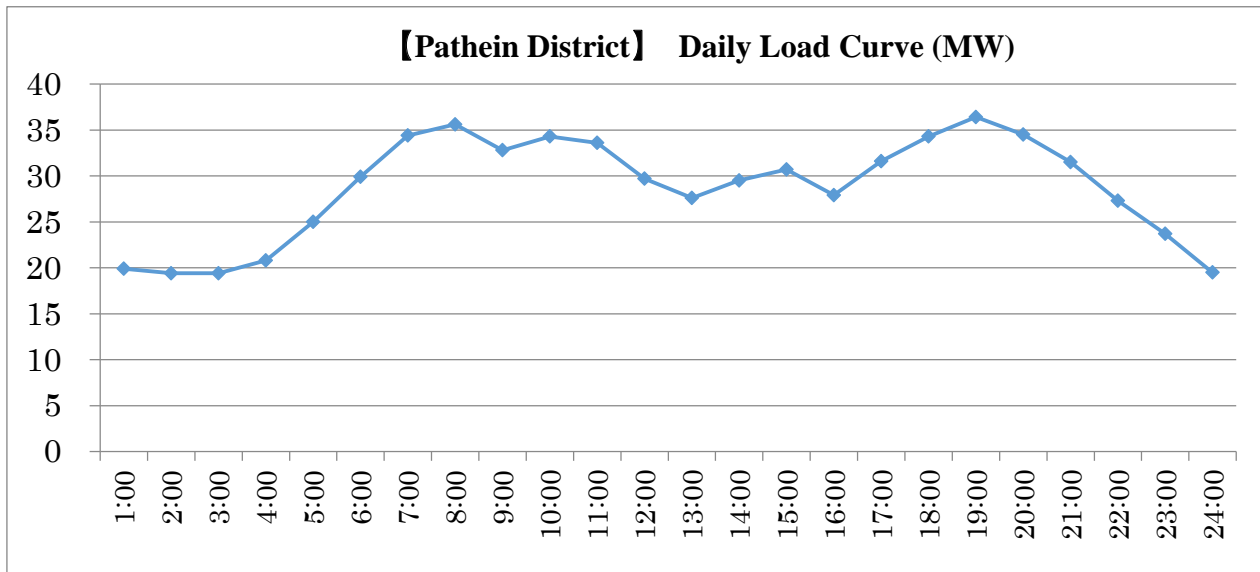
Power demand

(12) Customer	29,428 customers	2014
(13) Electrified village	8 villages	2014
(14) Number of fixing meter	29,428 Nos.	2014
(15) Electricity Sales	117,775 MWh	Apr.2013 - Mar.2014
(16) Peak demand (Pathein District)	23.2 MW	2012
	26.4 MW	2013
	31.9 MW	2014
(17) Capacity utilization rate*	58.3 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

(18) Daily Load curve on 20/1/2015



Power Facilities

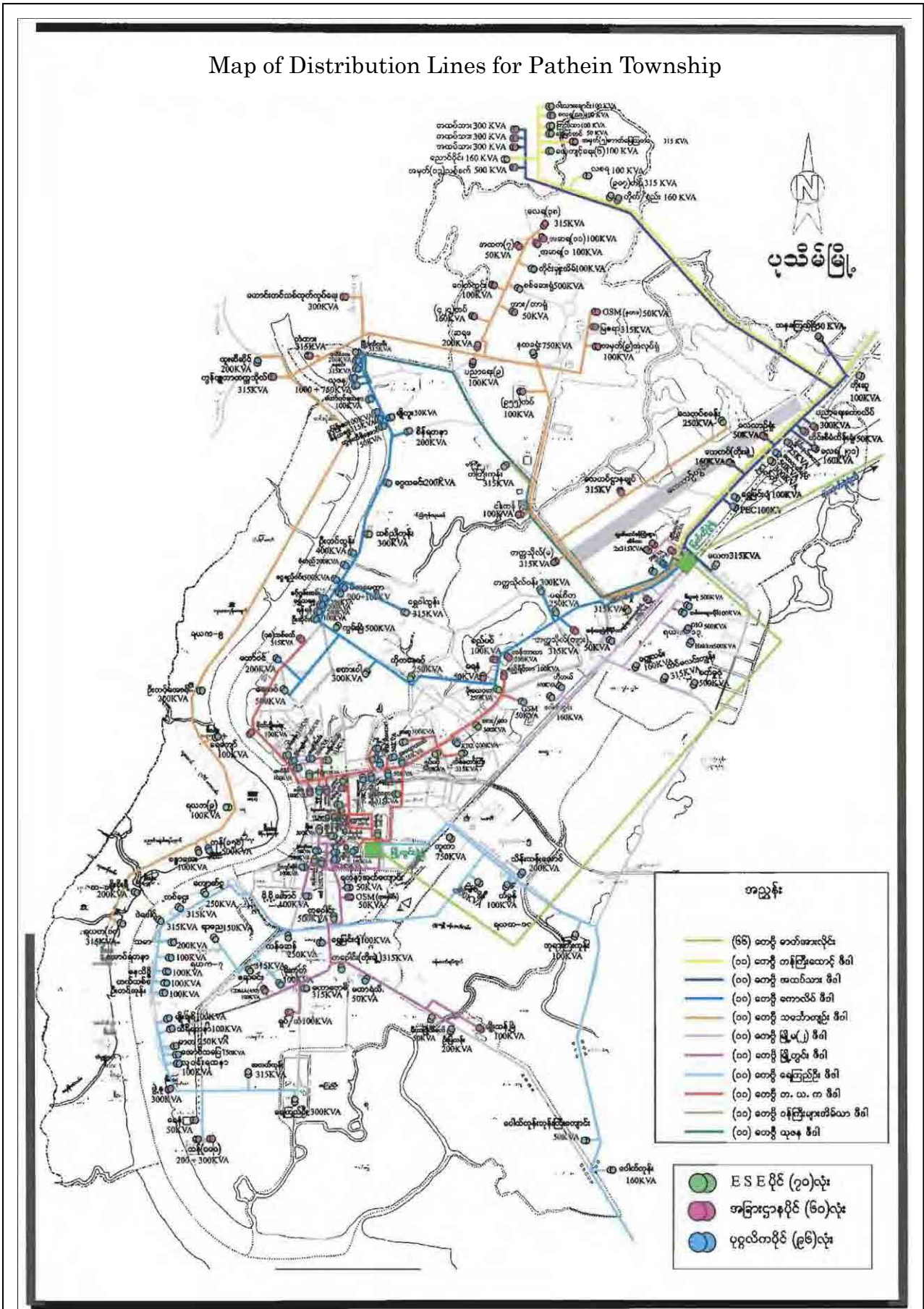
(19) Power Transformer (66/11kV)	40	MVA	3	Nos.	Oct.2014
(20) Power Transformer (33/11kV)	-	MVA	-	Nos.	-
(21) Power Transformer (11/0.4kV)	22.46	MVA	247	Nos.	Oct.2014
(22) Distribution Line (33kV)	-	km	-	Poles	-
(23) Distribution Line (11kV)	114	km	2,626	Poles	Oct.2014
(24) Distribution Line (0.4kV)	103	km	2,355	Poles	Oct.2014
(25) Small Hydropower Generator	0	MW	0	Nos.	Oct.2014
(26) Diesel Power Generator	0	MW	0	Nos.	Oct.2014

Distribution Loss Rate

(27) Distribution Loss Rate	29.5 %	May, 2014
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Patheingyi City (Township)

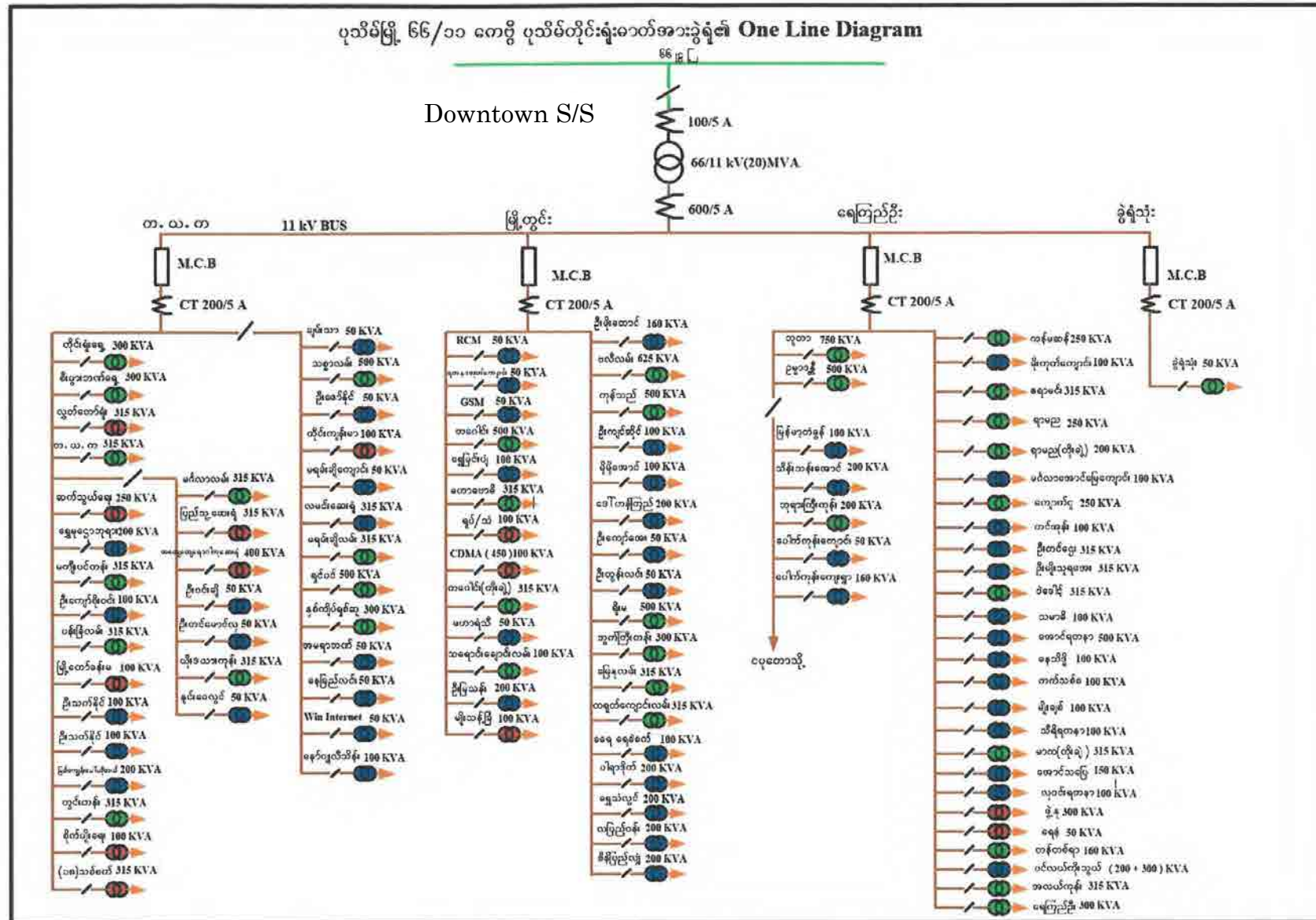
(28) 66,11kV System Diagram (Location Map)



Patheingyi City (Township)

(29-1) 66/11kV System Single Line Diagram

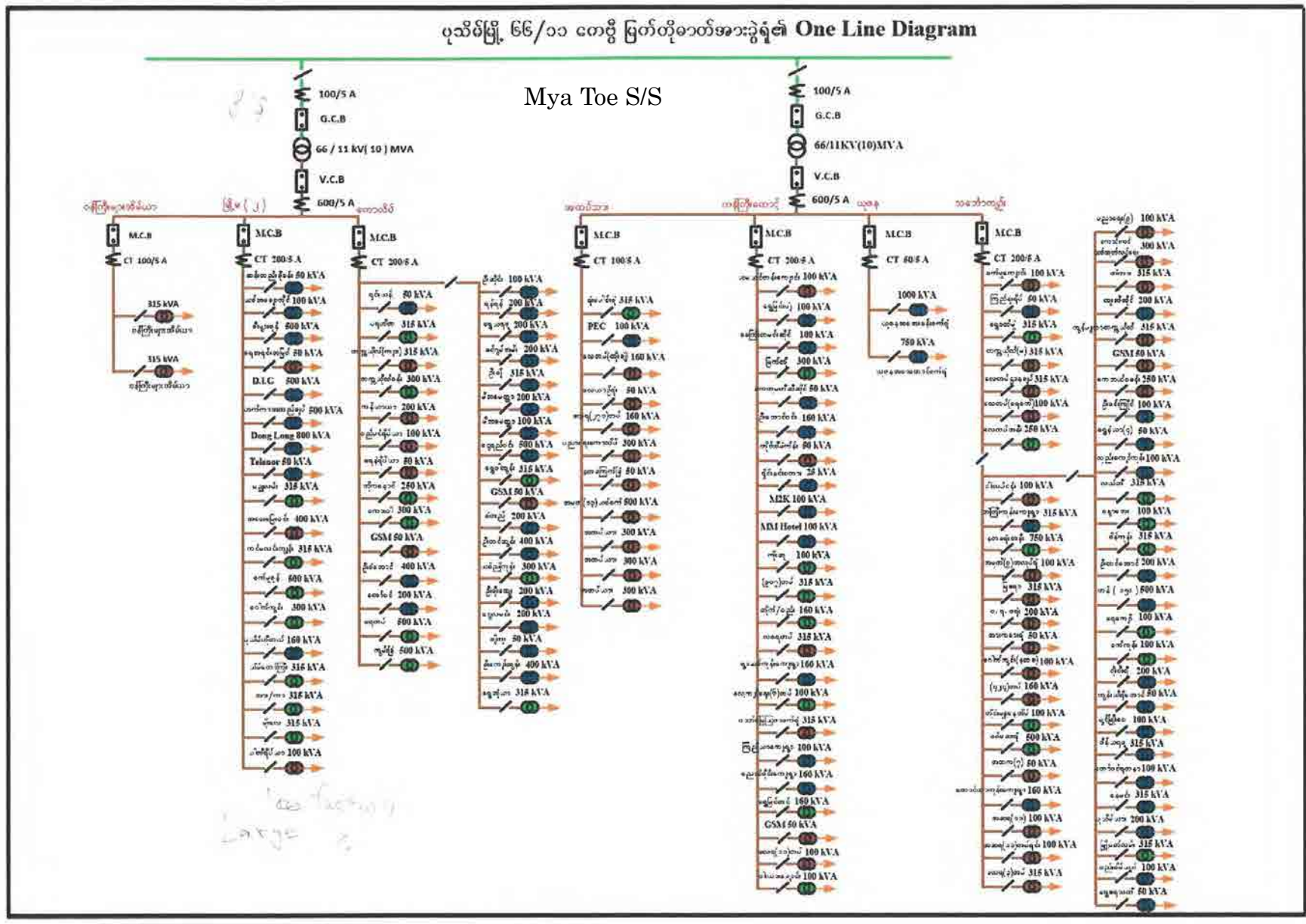
Appendix 1



App1-17

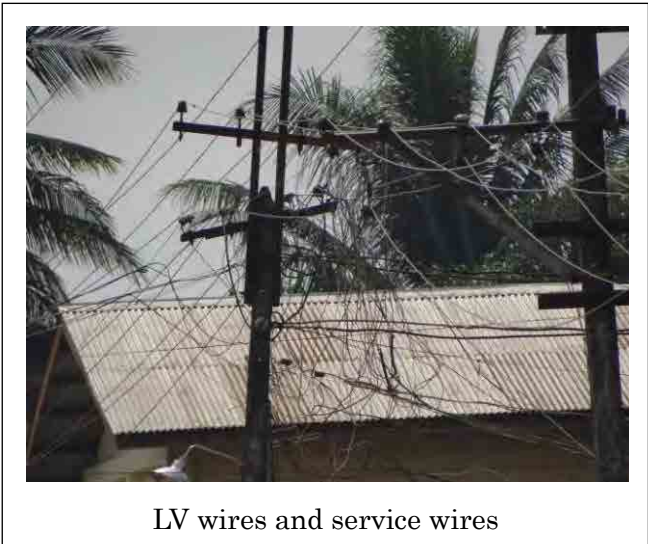
Patheingyi City (Township)

(29-2) 66/11kV System Single Line Diagram





App1-18

(31) Power Facilities

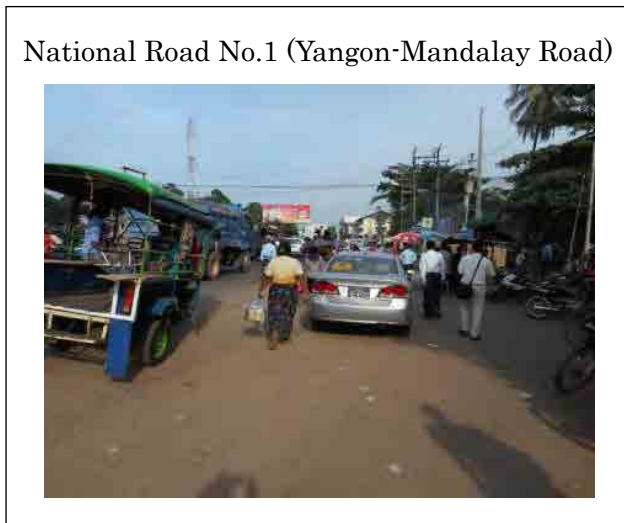
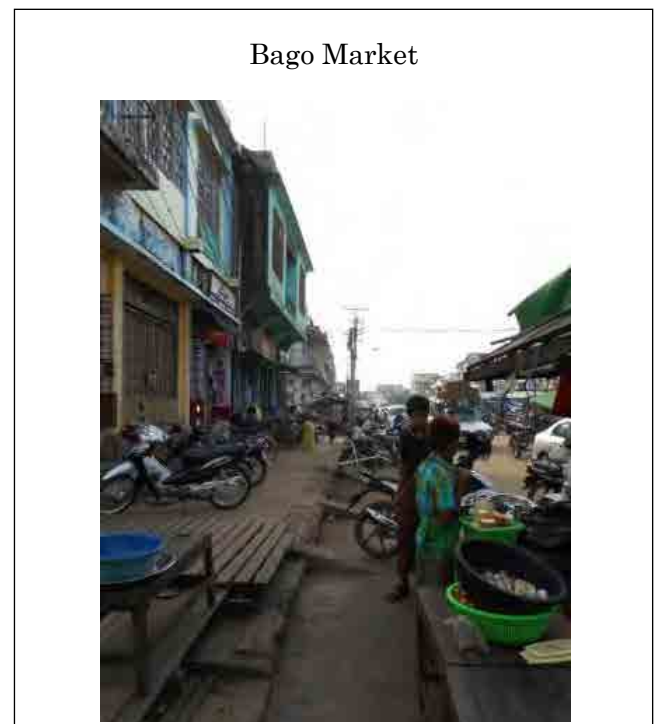
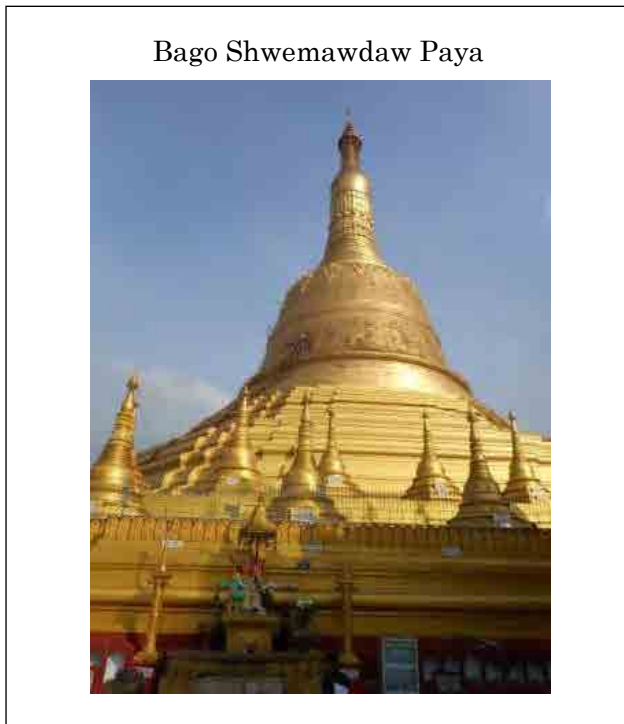


Bago City (Township)

Country	 Myanmar
Region / State	 Bago
District	Bago
Township	Bago, Thanatpin, Kawa. Waw, Nyaunglebin, Kyauktaga, Daik-U, Shwegyin



Photo



Bago City (Township)

General information

(1) Area	491 km ²
(2) Population	261 Thousand People
(3) Household	48 Thousand house holds
(4) Village	59 Villages

Industry/Facilities

(5) Main Industry	Sightseeing, Tobacco
(6) Industrial Zone	—
(7) Special Economic Zone	—
(8) Important Facilities	1 hospital, 1 market

Transportation Infrastructure

(9) Airport	[Under construction] Hanthawaddy International Airport
(10) Railway	Yangon-Mandalay Line (Bago station)
(11) Main Road	Yangon-Mandalay Main Road

Social Environment (search for only candidate cities)

(a) Schools (No.)	239	Primary	Secondary	High	Monastery
		192	13	16	18
(b) University and Colleges (No.)	2	Representative School			
		Bago University, Distance University			
(c) Health Care facilities (No)	134	Government Hospital	Private Hospital	Government dispensary	Private dispensary
		4	3	50	77

Power demand

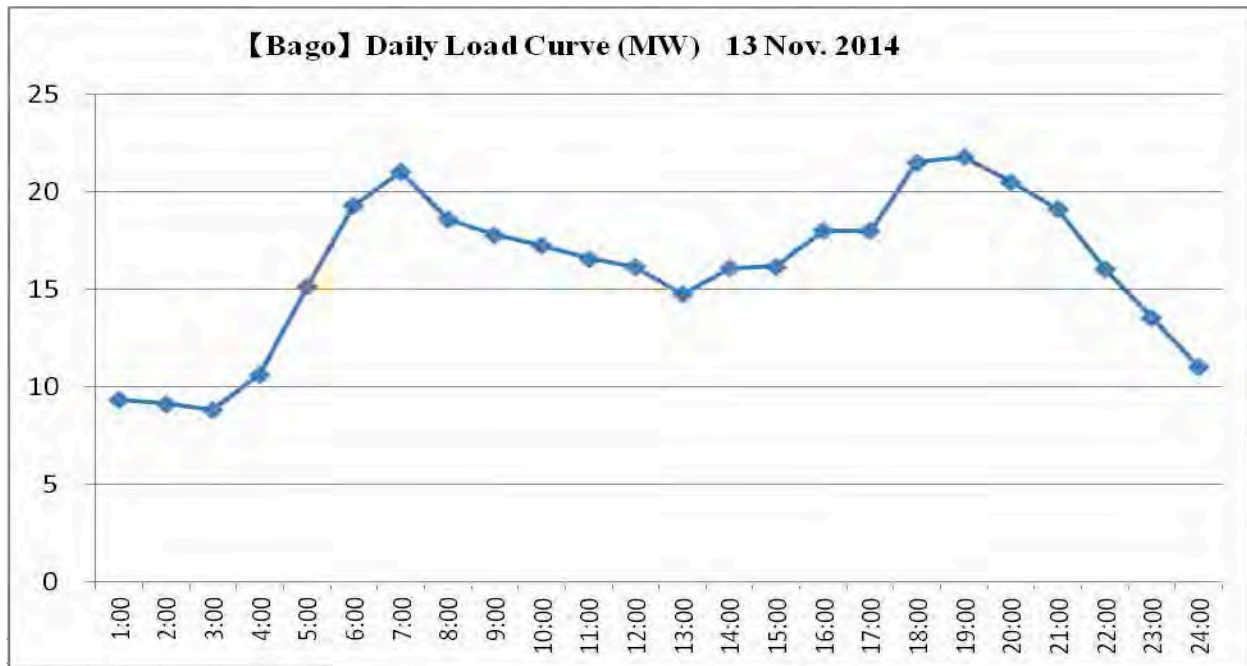
(12) Customer	36,473 customers	Oct.2014
(13) Electrified village	15 villages	Oct.2014
(14) Number of fixing meter	38,051 Nos.	Oct.2014
(15) Electricity Sales	93,618 MWh	Nov.2013 - Oct.2014
(16) Peak demand	17.5 MW	Oct.2012
	19.7 MW	Dec.2013
	21.8 MW	Nov.2014
(17) Capacity utilization rate*	26.4 %	Nov.2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Bago City (Township)

(18) Daily Load curve



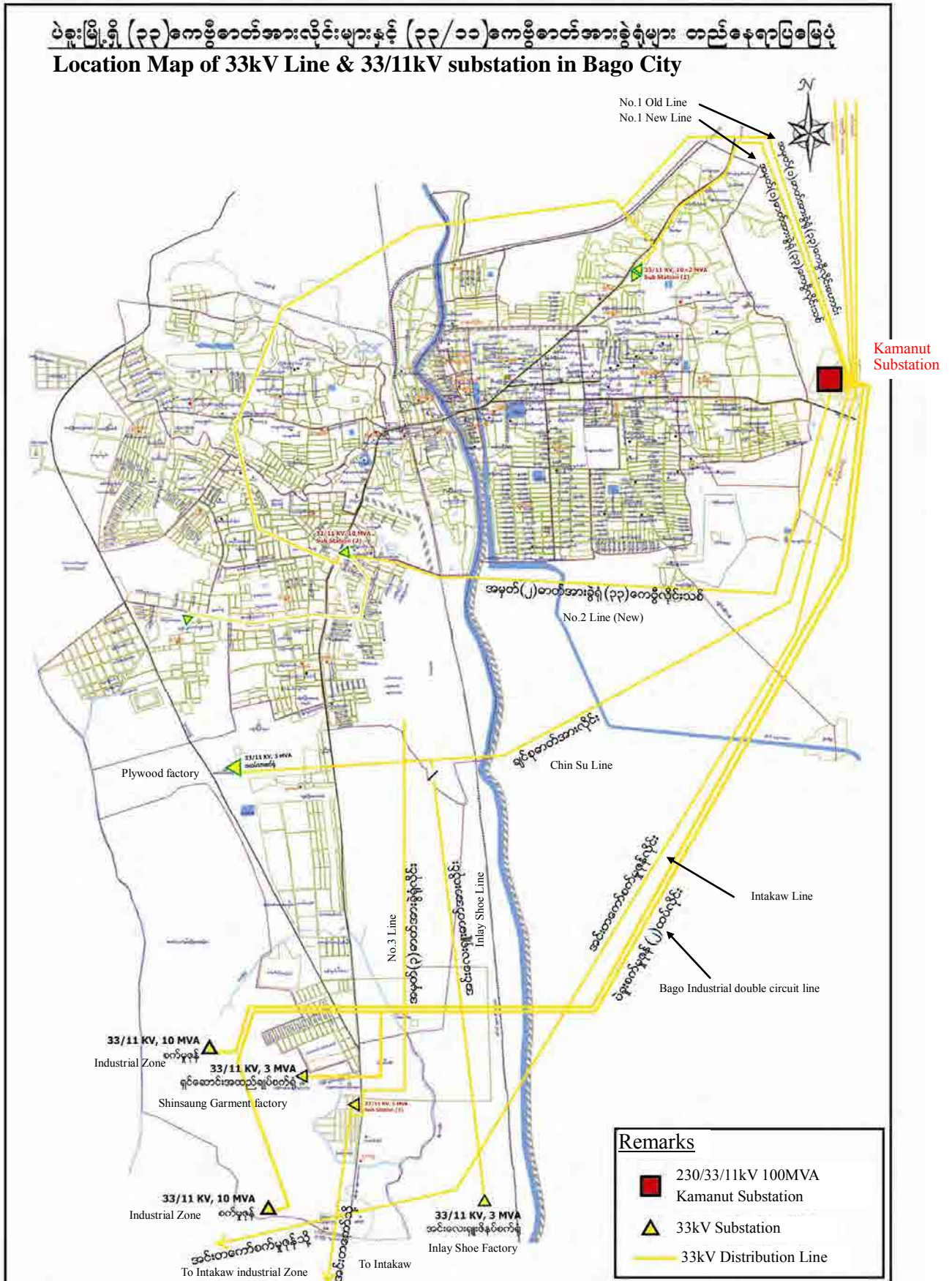
(19) Power Transformer (66/11kV)	—	MVA	—	Nos.	—
(20) Power Transformer (33/11kV)	74.3	MVA	16	Nos.	Oct.2014
(21) Power Transformer (11/0.4kV)	59.5	MVA	299	Nos.	Oct.2014
(22) Distribution Line (33kV)	75	km	2,276	Poles	Oct.2014
(23) Distribution Line (11kV)	129	km	2,853	Poles	Oct.2014
(24) Distribution Line (0.4kV)	492	km	13,441	Poles	Oct.2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

Distribution Loss Rate

(27) Distribution Loss Rate	23.8 %	Apr.2014
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Bago City (Township)

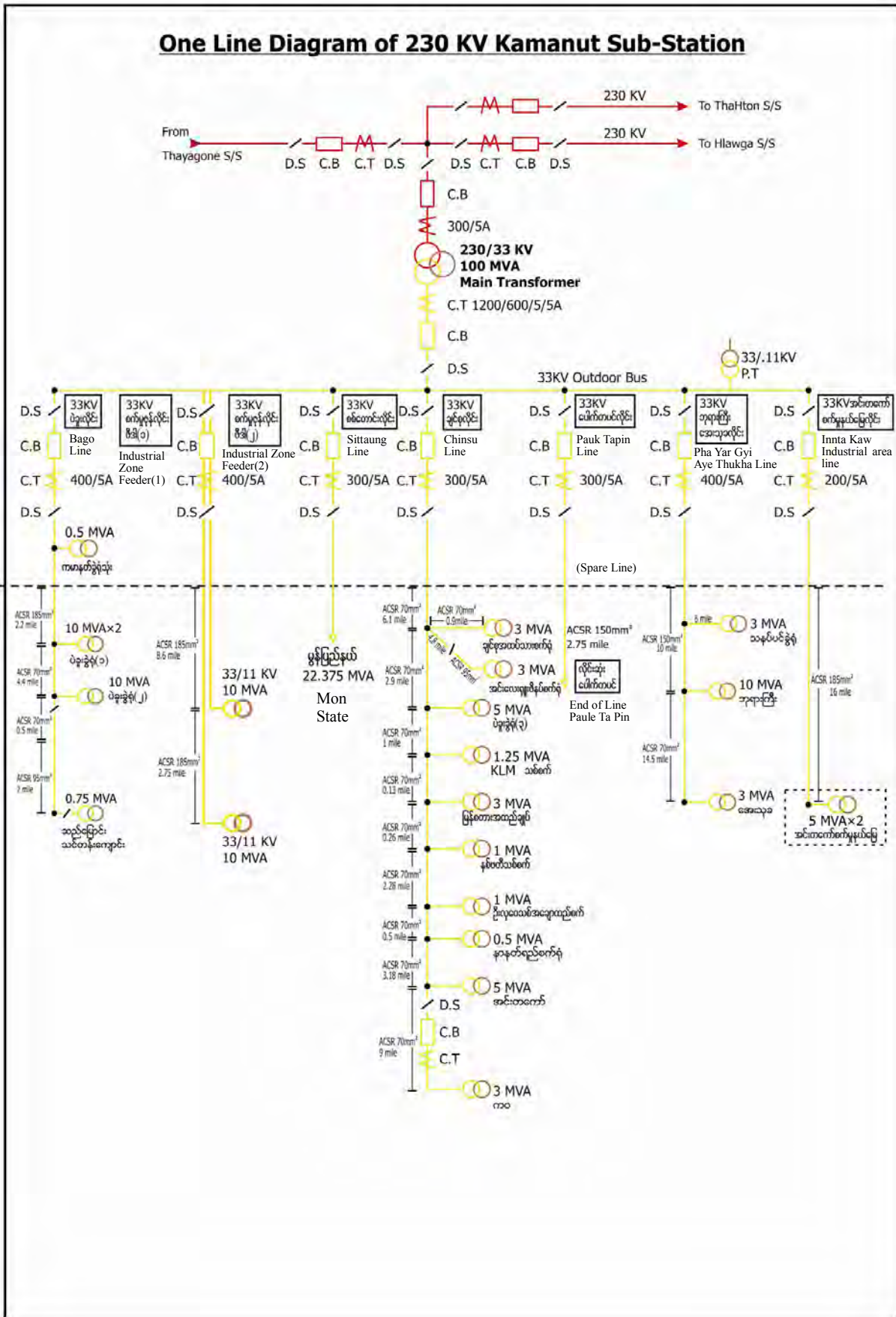
(28) 33kV System Diagram (Location Map)



Bago City (Township)

(29) 33kV System Single Line Diagram

One Line Diagram of 230 KV Kamanut Sub-Station



Bago City (Township)

(30) Power Facilities



230kV/33kV Kamanut Substation



Substation 1 (33/11kV)



Substation 2 (33/11kV)



Substation 3 (33/11kV)





33kV distribution line



11kV and 0.4kV distribution line

Pyay City (Township)

Country	 Myanmar
Region / State	 Bago
District	Pyay
Township	Pyay, Paukkaung, Padaung, Paungde, Thegon, Shwedaung

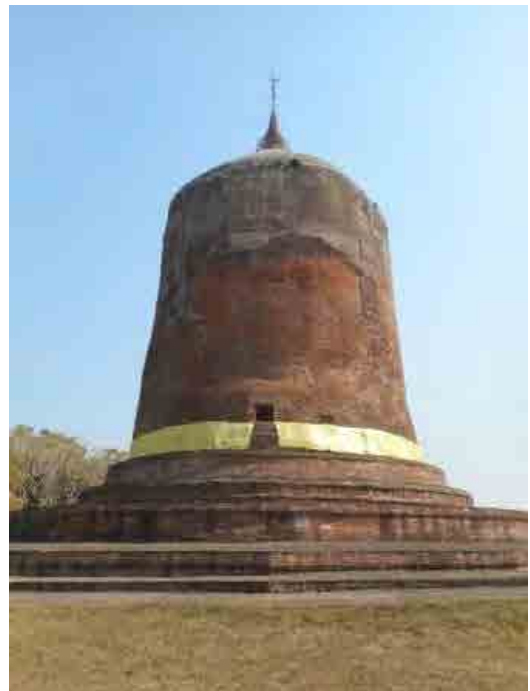


Photo

Pyay Shwesandaw Paya



The ancient Bawbawgyi Paya near Pyay



Pyay City (Township)

General information

(1) Area	487 km ²
(2) Population	225(census 2014) Thousand People
(3) Household	22 Thousand house holds
(4) Village	48 Villages

Industry/Facilities

(5) Main Industry	Sightseeing, Agriculture(rice) , Silk industry(sericulture) [Garment, Rice Mill, Oil(for food) Mill (Products of IZ)]
(6) Industrial Zone	[Gandamar IZ] 140factories, area 0.30km ² [Nawady IZ] 36 factories, area 0.59km ²
(7) Special Economic Zone	—
(8) Important Facilities	7 markets

Transportation Infrastructure

(9) Airport	Pyay airport
(10) Railway	Yangon-Pyay Line (Pyay station)
(11) Main Road	Yangon-Pyay Road (National Road No.2) Pyay-Mandalay Road

Social Environment (search for only candidate cities)

(a) Schools (No.)	196	Primary	Secondary	High	Monastery
		160	14	8	14
(b) University and Colleges (No.)	5	Representative School			
		Pyay University, Education College			
(c) Health Care facilities (No)	52	Government Hospital	Private Hospital	Government dispensary	Private dispensary
		4	6	38	4

Power demand

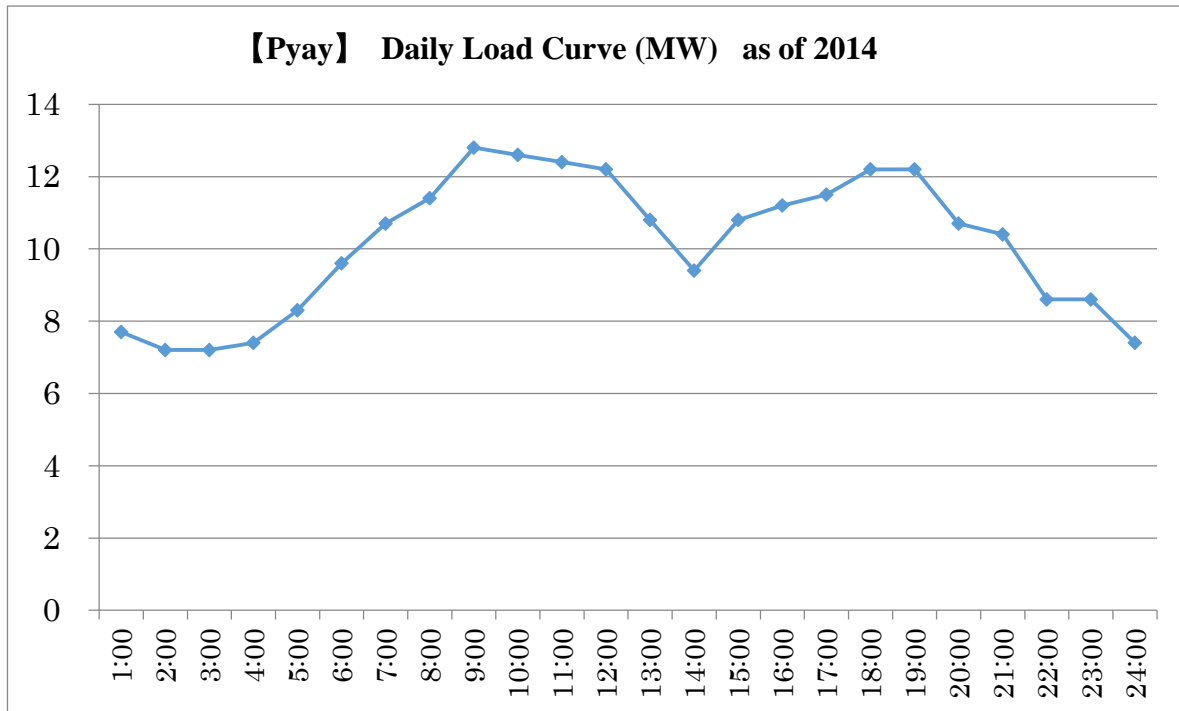
(12) Customer	25,037 customers	Oct.2014
(13) Electrified village	11 villages	Oct.2014
(14) Number of fixing meter	25,124 Nos.	Oct.2014
(15) Electricity Sales	97,506 MWh	Nov.2013 - Oct.2014
(16) Peak demand	9.6 MW	2012
	10.1 MW	2013
	12.2 MW	2014
(17) Capacity utilization rate*	20.0 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Pyay City (Township)

(18) Daily Load curve



Power Facilities

(19) Power Transformer (66/11kV)	55	MVA	3	Nos.	Oct.2014
(20) Power Transformer (33/11kV)	—	MVA	—	Nos.	—
(21) Power Transformer (11/0.4kV)	45.2	MVA	238	Nos.	Oct.2014
(22) Distribution Line (33kV)	—	MVA	—	Nos.	—
(23) Distribution Line (11kV)	92	km	2,595	Poles	Oct.2014
(24) Distribution Line (0.4kV)	135	km	3,212	Poles	Oct.2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

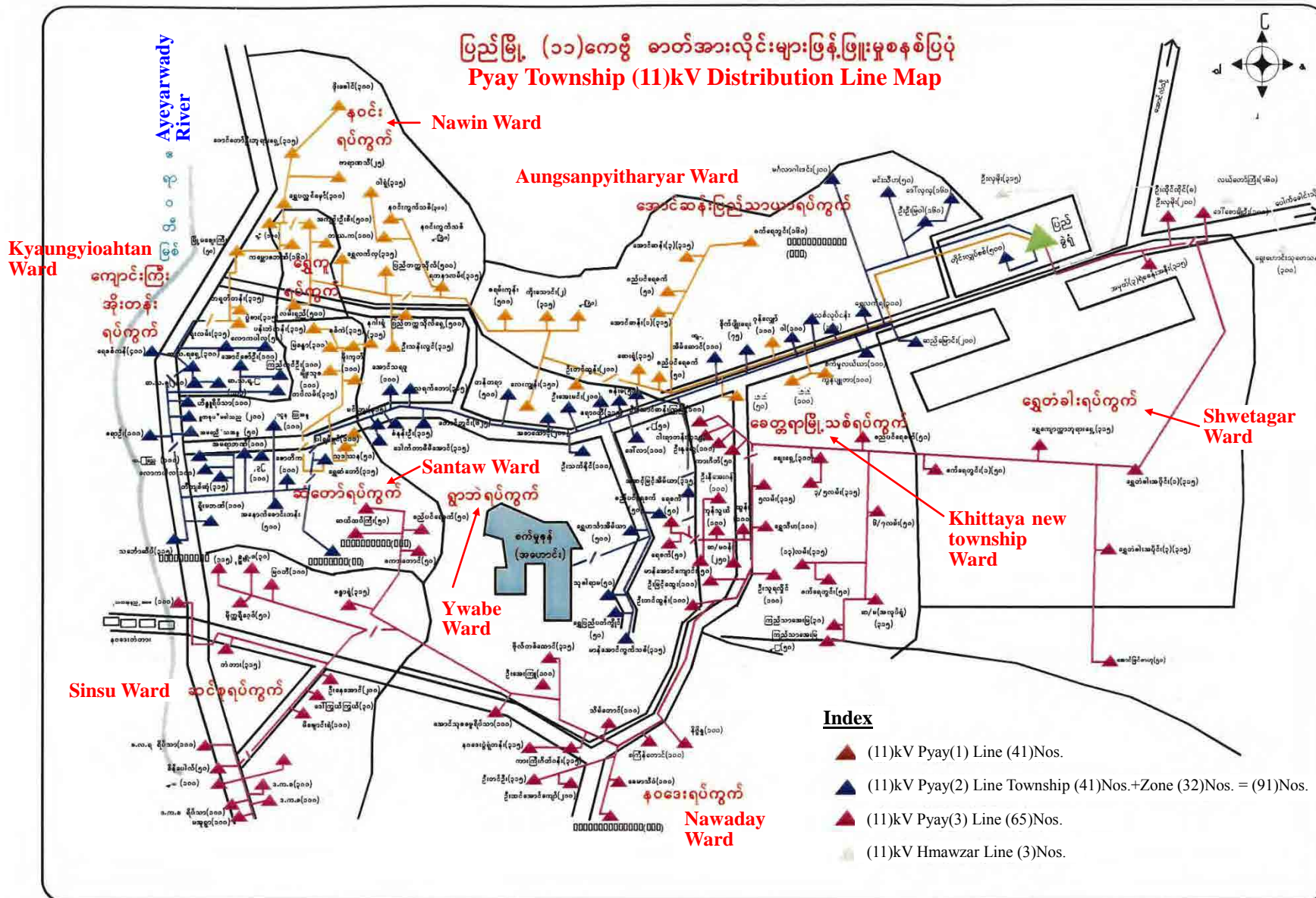
Distribution Loss Rate

(27) Distribution Loss Rate	21.3 %	2014
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Pyay City (Township)

(28) 11kV System Diagram (Location Map)

ပြည်မြို့ (၁၁)ကေဗီ ဓာတ်အားလိုင်းများဖြန့်ဖြူးမှုစနစ်ပြပုံ Pyay Township (11)kV Distribution Line Map

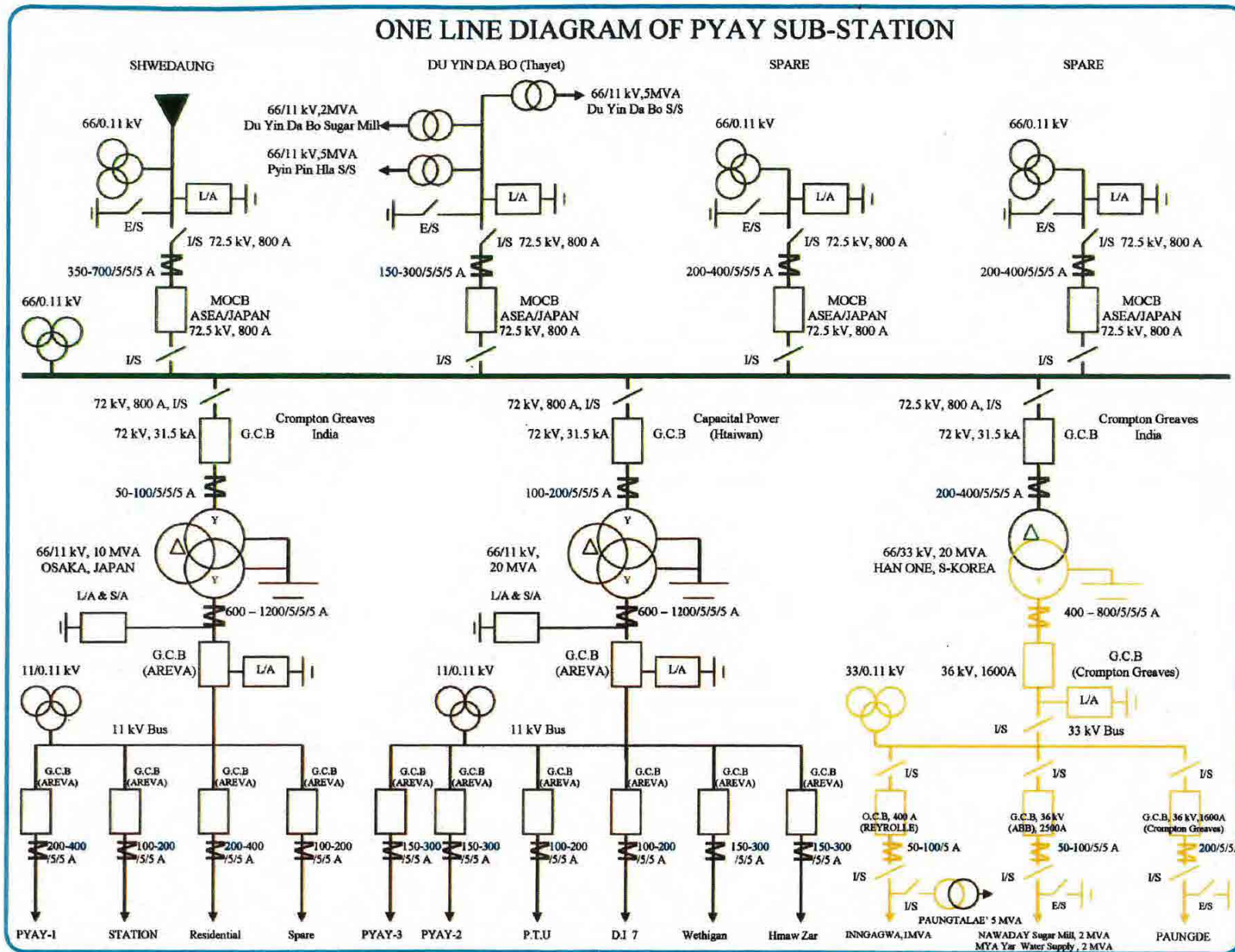


Index

- ▲ (11)kV Pyay(1) Line (41)Nos.
- ▲ (11)kV Pyay(2) Line Township (41)Nos.+Zone (32)Nos. = (91)Nos.
- ▲ (11)kV Pyay(3) Line (65)Nos.
- ▲ (11)kV Hmawzar Line (3)Nos.

Pyay City (Township)

(29) 11kV System Single Line Diagram



App1-30

Pyay City (Township)

(30) Power Facilities



66kV/11kV Pyay Substation



Pyay Substation Transformer No.2



132kV Line and 66kV Line





Steel Tower for 66kV Line over Ayeyarwady River



11kV line to Wettigan

Taungoo City (Township)

Country	 Myanmar
Region / State	 Bago
District	Taungoo
Township	Taungoo, Yedashe, Kyaukkyi, Phyu, Oktwin, Htantabin



Photo

Taungoo Shwesandaw Paya



Taungoo City (Township)

General information

(1) Area	13 km ²
(2) Population	236 Thousand People
(3) Household	46 Thousand house holds
(4) Village	163 Villages

Industry/Facilities

(5) Main Industry	Forestry (Teakwood)
(6) Industrial Zone	—
(7) Special Economic Zone	—
(8) Important Facilities	1 hospital, 1 market

Transportation Infrastructure

(9) Airport	—
(10) Railway	Yangon-Mandalay Line (Taungoo station)
(11) Main Road	Yangon-Mandalay Main Road (National Road No.1, Asian Highway No.1)

Power demand

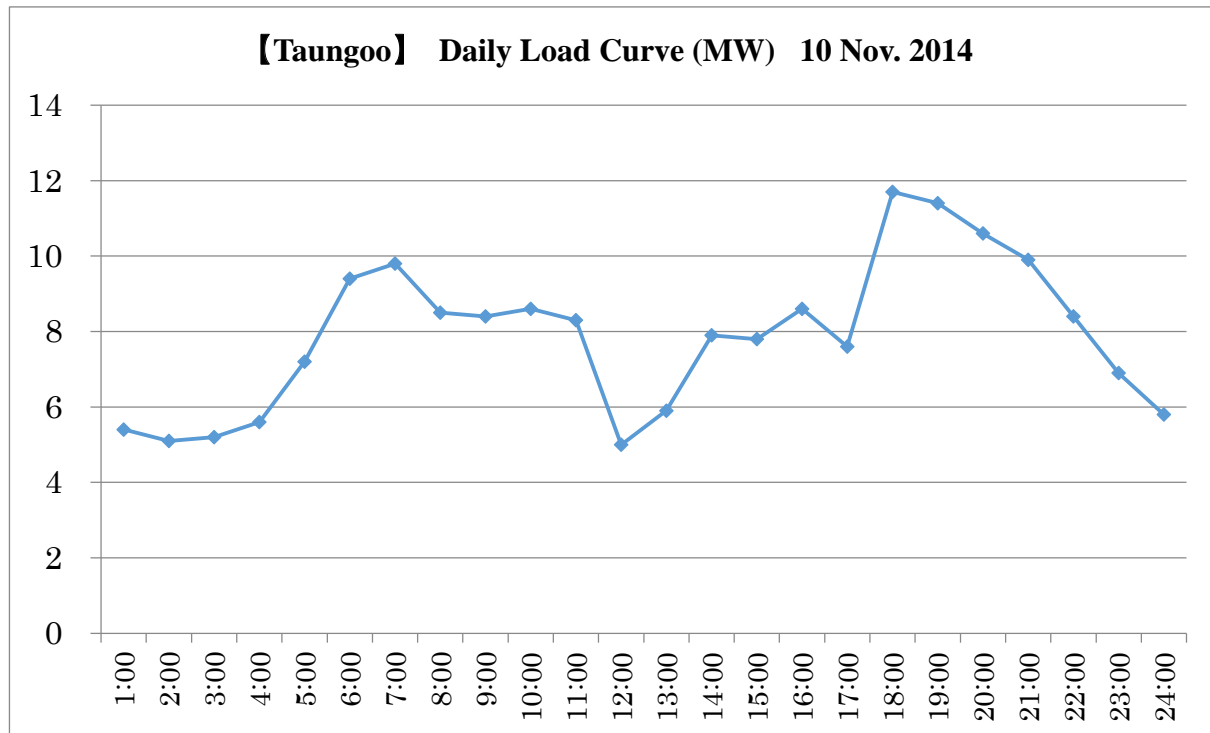
(12) Customer	20,374 customers	Oct.2014
(13) Electrified village	64 villages	Oct.2014
(14) Number of fixing meter	21,212 Nos.	Oct.2014
(15) Electricity Sales	42,609 MWh	Nov.2013 - Oct.2014
(16) Peak demand	10.5 MW	Oct.2012
	11.0 MW	Aug.2013
	11.7 MW	Nov.2014
(17) Capacity utilization rate*	50.1 %	Nov.2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Taungoo City (Township)

(18) Daily Load curve



Power Facilities

(19) Power Transformer (66/11kV)	—	MVA	—	Nos.	—
(20) Power Transformer (33/11kV)	21	MVA	3	Nos.	Oct.2014
(21) Power Transformer (11/0.4kV)	30.8	MVA	166	Nos.	Oct.2014
(22) Distribution Line (33kV)	12	km	98	Poles	Oct.2014
(23) Distribution Line (11kV)	91	km	1,659	Poles	Oct.2014
(24) Distribution Line (0.4kV)	163	km	4,280	Poles	Oct.2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

Distribution Loss Rate

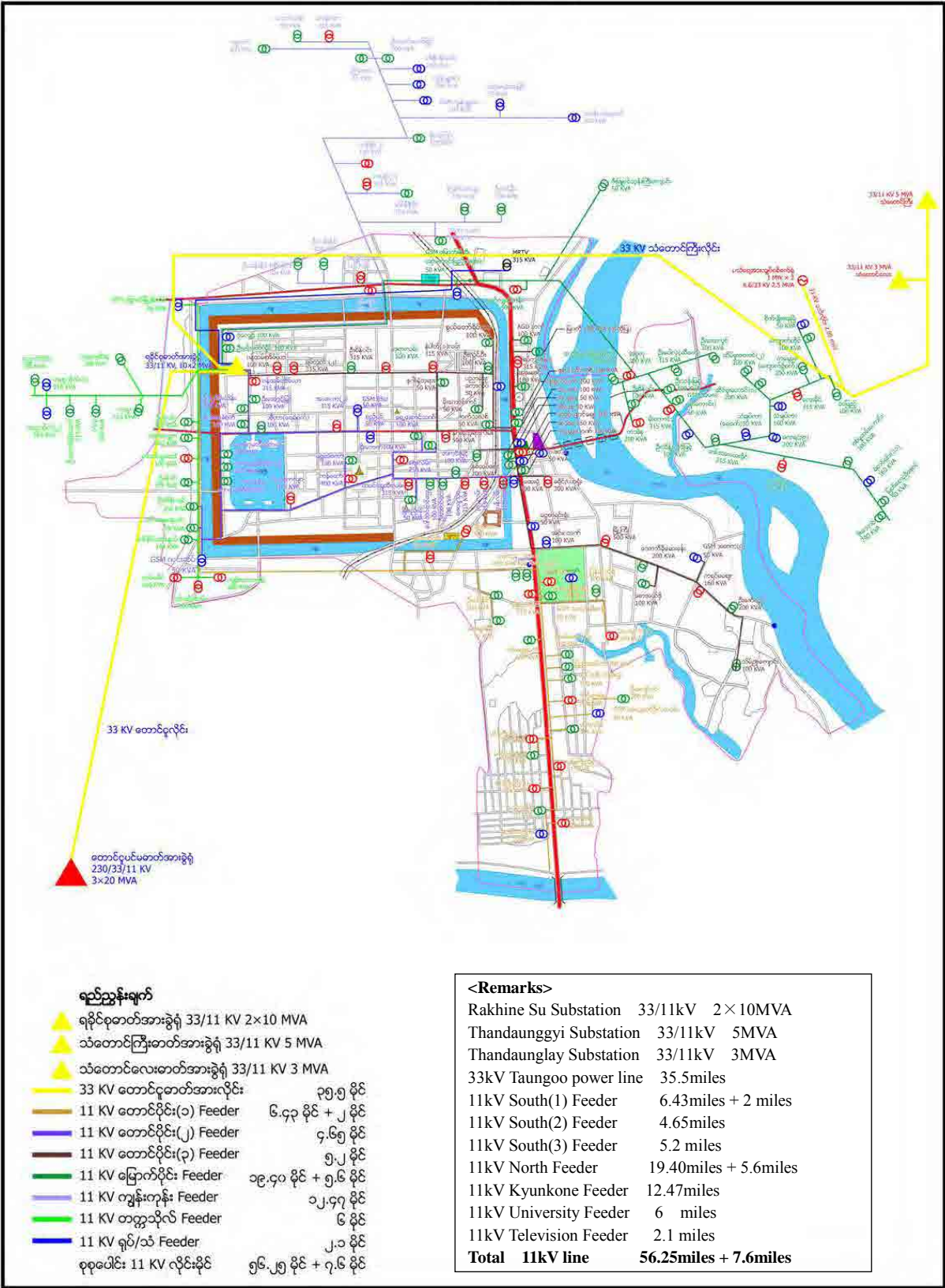
(27) Distribution Loss Rate	22.8 %	Jul.2014
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Taungoo City (Township)

(28) 33kV System Diagram (Location Map)

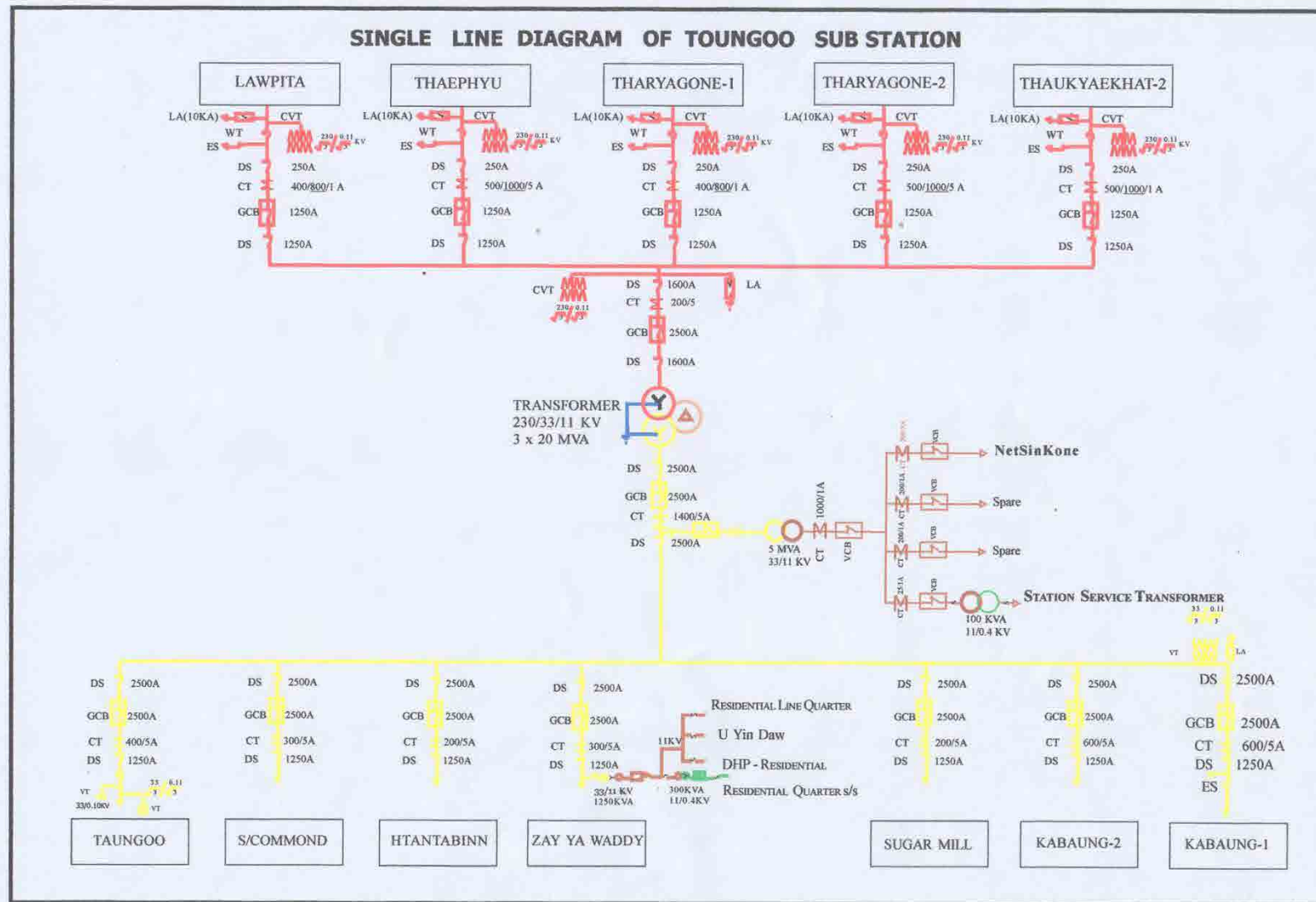
33kV and 11kV Distribution Lines and Transformers Location Map in Taungoo Township

တောင်ငူမြို့နယ်အတွင်း ဓာတ်အားဖြန့်ဖြူးပေးနေသည့် ၃၃ ကေဗီလိုင်း၊ ၁၁ ကေဗီလိုင်း နှင့်
ထရန်စဖော်မာများ အခြေပြမြေပုံ



Taungoo City (Township)

(29) 33kV System Single Line Diagram



(30) Power Facilities



Digital power meter



11kV & 400V distribution line

Hakha City (Township)

Country	 Myanmar
Region / State	 Chin
District	Hakha
Township	Hakha, Tantlang



Photo

Hakha City Landscape



Hakha City (Township)

General information

(1) Area	18 km ²
(2) Population	43 Thousand People
(3) Household	8.4 Thousand house holds
(4) Village	69 Villages

Industry/Facilities

(5) Main Industry	forest industry, burn agriculture
(6) Industrial Zone	—
(7) Special Economic Zone	—
(8) Important Facilities	1 hospital, 1 market

Transportation Infrastructure

(9) Airport	—
(10) Railway	—
(11) Main Road	Pakokku – Gangaw – Hakha Road

Power demand

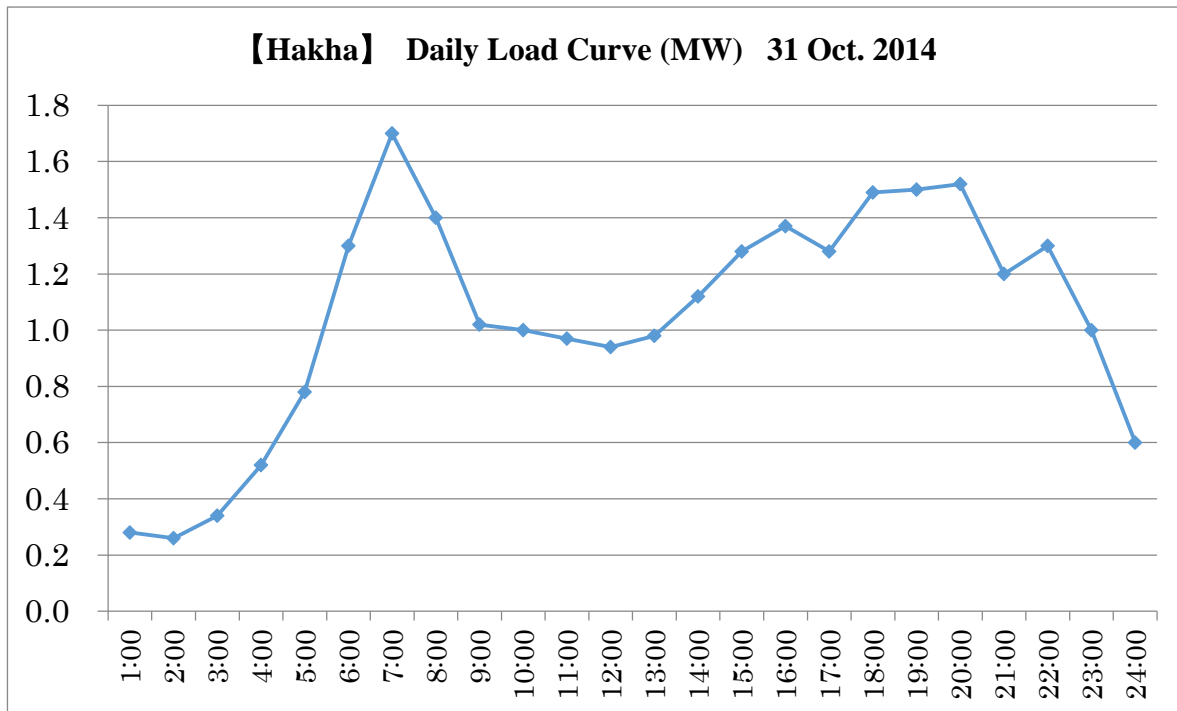
(12) Customer	4,502 customers	Oct.2014
(13) Electrified village	42 villages	Oct.2014
(14) Number of fixing meter	4,448 Nos.	Oct.2014
(15) Electricity Sales	2,676 MWh	Oct.2013 – Oct.2014
(16) Peak demand	1.02 MW	Dec.2012
	1.04 MW	Dec.2013
	1.06 MW	Oct.2014
(17) Capacity utilization rate*	19 %	Nov.2014

Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Hakha City (Township)

(18) Daily Load curve



Power Facilities

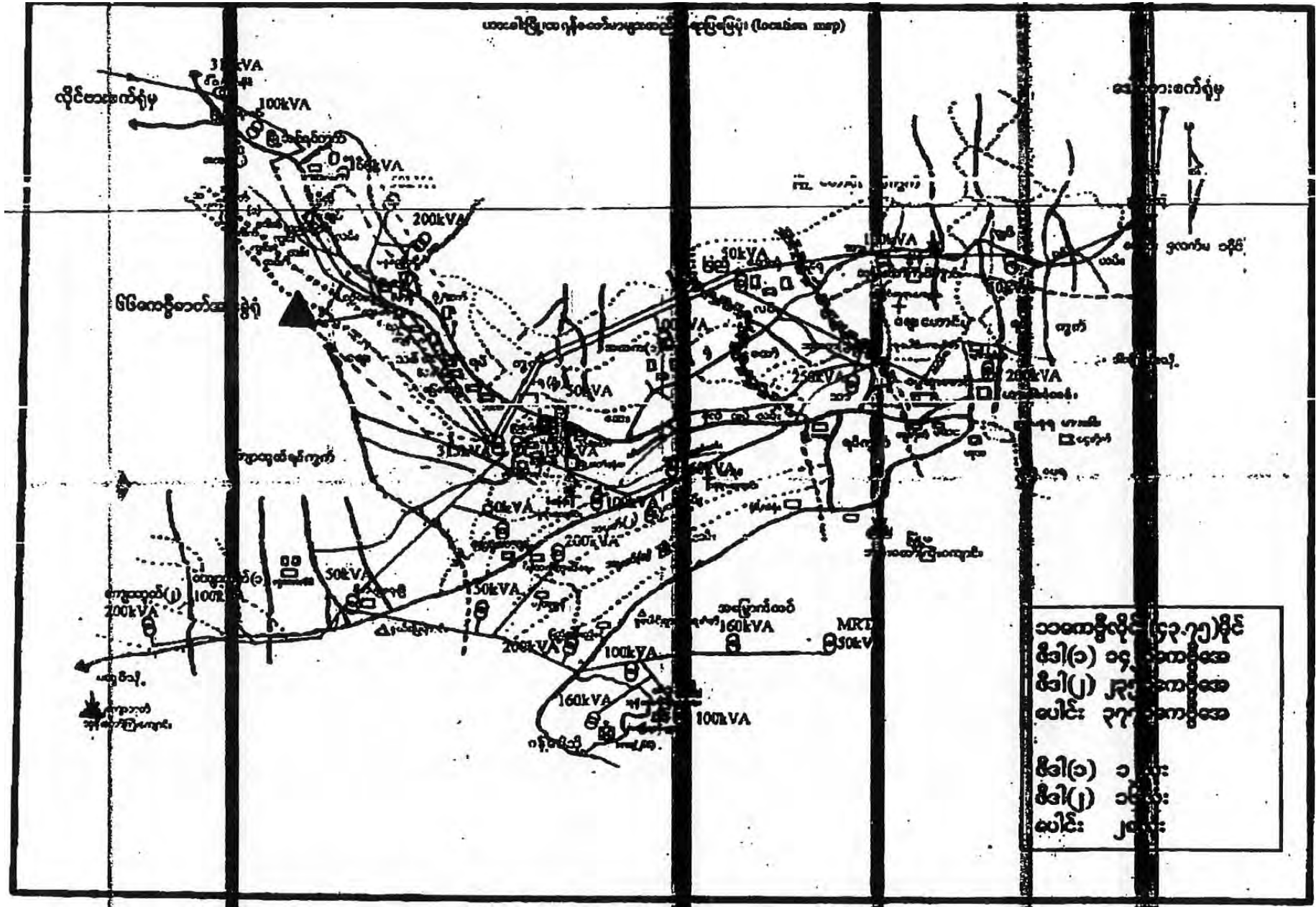
(19) Power Transformer (66/11kV)	5	MVA	1	Nos.	—
(20) Power Transformer (33/11kV)	—	MVA	—	Nos.	—
(21) Power Transformer (11/0.4kV)	3.77	MVA	32	Nos.	Oct.2014
(22) Distribution Line (33kV)	—	km	—	Poles	—
(23) Distribution Line (11kV)	70	km	981	Poles	Oct.2014
(24) Distribution Line (0.4kV)	50	km	1,089	Poles	Oct.2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

Distribution Loss Rate

(27) Distribution Loss Rate	26%	Oct.2014
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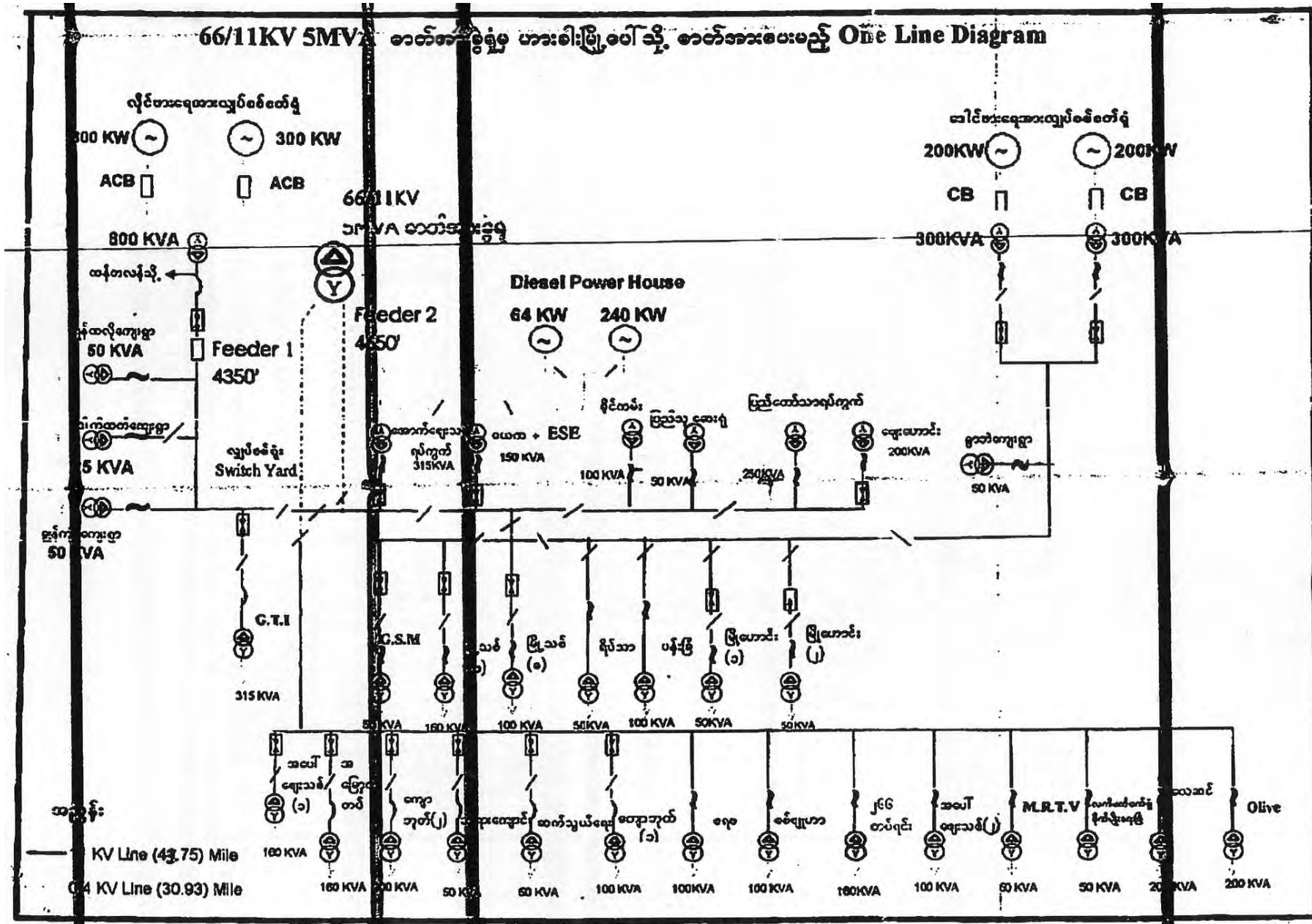
Hakha City (Township)

(28) 11kV System Diagram (Location Map)



Hakha City (Township)

(29) 66kV/11kV System Single Line Diagram





App1-42

Hakha City (Township)

(30) Power Facilities

No Photos

Bhamo City (Township)

Country	 Myanmar
Region / State	 Kachin
District	Bhamo
Township	Bhamo, Shwegu, Momauk, Mansi



Photo

Bhamo downtown



Bhamo Hoospital



Bhamo Downtown Street



Bhamo City (Township)

Appendix 1

General information

(1) Area	15 km ²
(2) Population	59 Thousand People
(3) Household	10 Thousand house holds
(4) Village	67 Villages

Industry/Facilities

(5) Main Industry	Trading(to China)
(6) Industrial Zone	—
(7) Special Economic Zone	—
(8) Important Facilities	1 market

Transportation Infrastructure

(9) Airport	Bhamo airport
(10) Railway	—
(11) Main Road	Mandalay-Lashio-Myikyina

Social Environment (search for only candidate cities)

(a) Schools (No.)	97	Primary	Secondary	High	Monastery
		67	14	11	5
(b) University and Colleges (No.)	6	Representative School			
		Bhamo Technological University, Distance University			
(c) Health Care facilities (No)	46	Government Hospital	Private Hospital	Government dispensary	Private dispensary
		2	3	29	12

Power demand

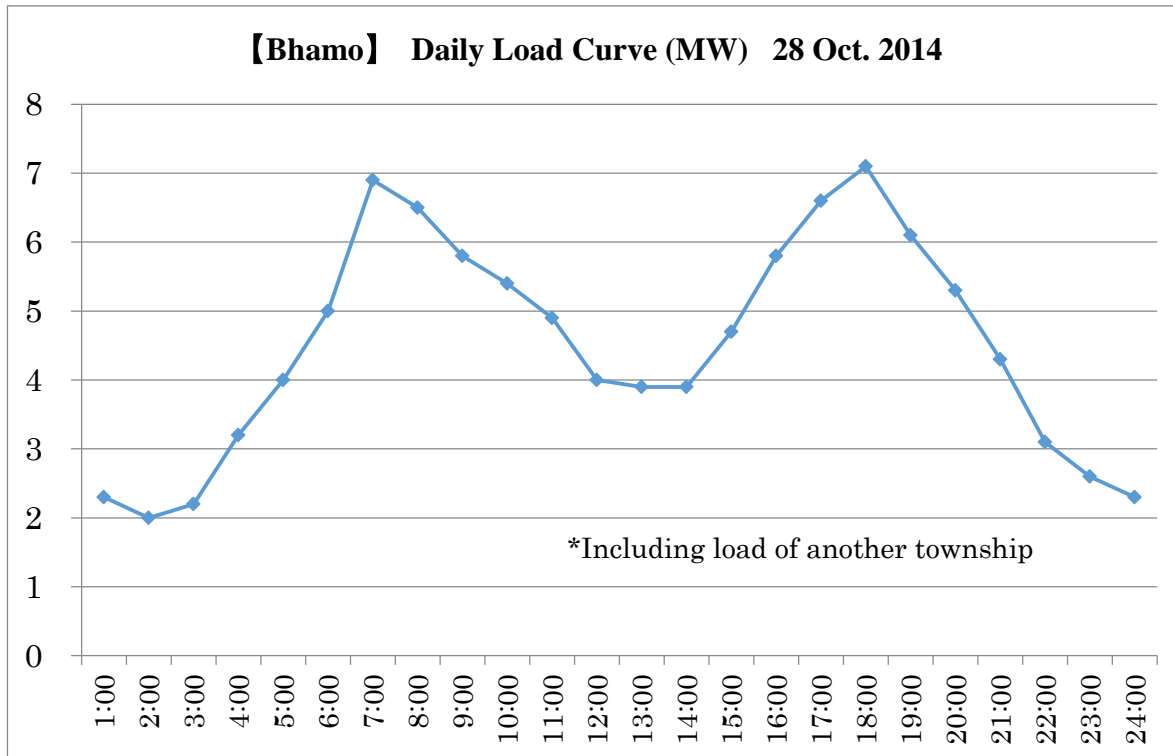
(12) Customer	8,250 customers	Oct.2014
(13) Electrified village	8 villages	Oct.2014
(14) Number of fixing meter	8,466 Nos.	Oct.2014
(15) Electricity Sales	(No data) MWh	Nov.2013 - Oct.2014
(16) Peak demand	- MW	-
	4.1 MW	Sep.2013
	5.3 MW	Oct.2014
(17) Capacity utilization rate*	13 %	Oct.2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Bhamo City (Township)

(18) Daily Load curve



Power Facilities

(19) Power Transformer (66/11kV)	45	MVA	2	Nos.	Oct.2014
(20) Power Transformer (33/11kV)	-	MVA	-	Nos.	-
(21) Power Transformer (11/0.4kV)	16	MVA	92	Nos.	Oct.2014
(22) Distribution Line (33kV)	-	km	-	Poles	-
(23) Distribution Line (11kV)	74	km	1225	Poles	Oct.2014
(24) Distribution Line (0.4kV)	63	km	1750	Poles	Oct.2014
(25) Small Hydropower Generator	-	MW	-	Nos.	-
(26) Diesel Power Generator	-	MW	-	Nos.	-

Distribution Loss Rate

(27) Distribution Loss Rate	22.2 %	Jul.2014
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Appendix 1

Bhamo City (Township)

(28) 33kV System Diagram (Location Map)

2014.11.27

ပန်းမော်မြို့နယ်အားဖြန့်ဖြူးမှု Bhamo Location Map

N
W —+— E
S

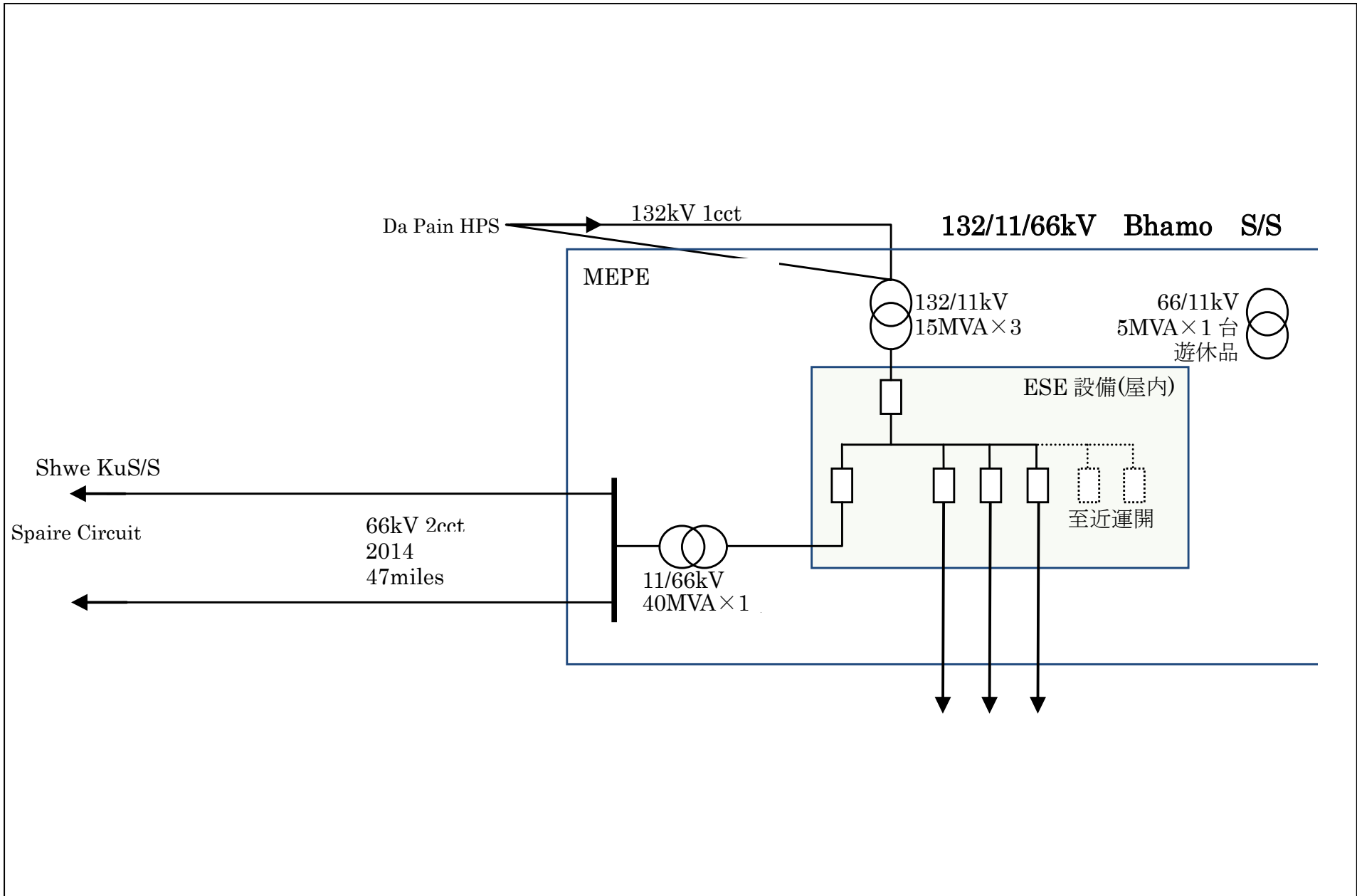
ရည်ညွှန်းချက်

- ▲ 132/11kV Tr
- ▲ 66/11kV Tr
- ▲ 11/0.4 kV Tr
- 132kV Line
- 11kV Line

App1-44

Bhamo City (Township)

(30) 33kV System Single Line Diagram



App1-48

Bhamo City (Township)

(31) Power Facilities



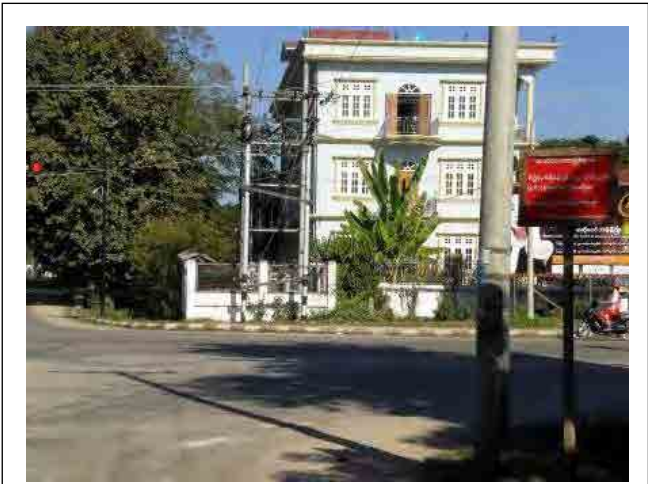
66/11kV Bhamo SS



Bhamo S/S 11kV Feeder





New Bhamo S/S Construction Site



11/0.4kV Transformer

Myitkyina City (Township)

Country	 Myanmar
Region / State	 Kachin
District	Myitkyina
Township	Myitkyina, Waingmaw, Injanyang, Tanai, Chipwi, Tsawlaw

No Photo



Myitkyina City (Township)

General information

(1) Area	58 km ²
(2) Population	31 Thousand People
(3) Household	35 Thousand house holds
(4) Village	34 Villages

Industry/Facilities

(5) Main Industry	-
(6) Industrial Zone	1 industry zone
(7) Special Economic Zone	Man Khane
(8) Important Facilities	8 Hospitals, 5 Markets

Transportation Infrastructure

(9) Airport	Myitkyina Nan Paung
(10) Railway	Myitkyina – Mandalay
(11) Main Road	Mandalay-Lashio-Myikyina

Power demand

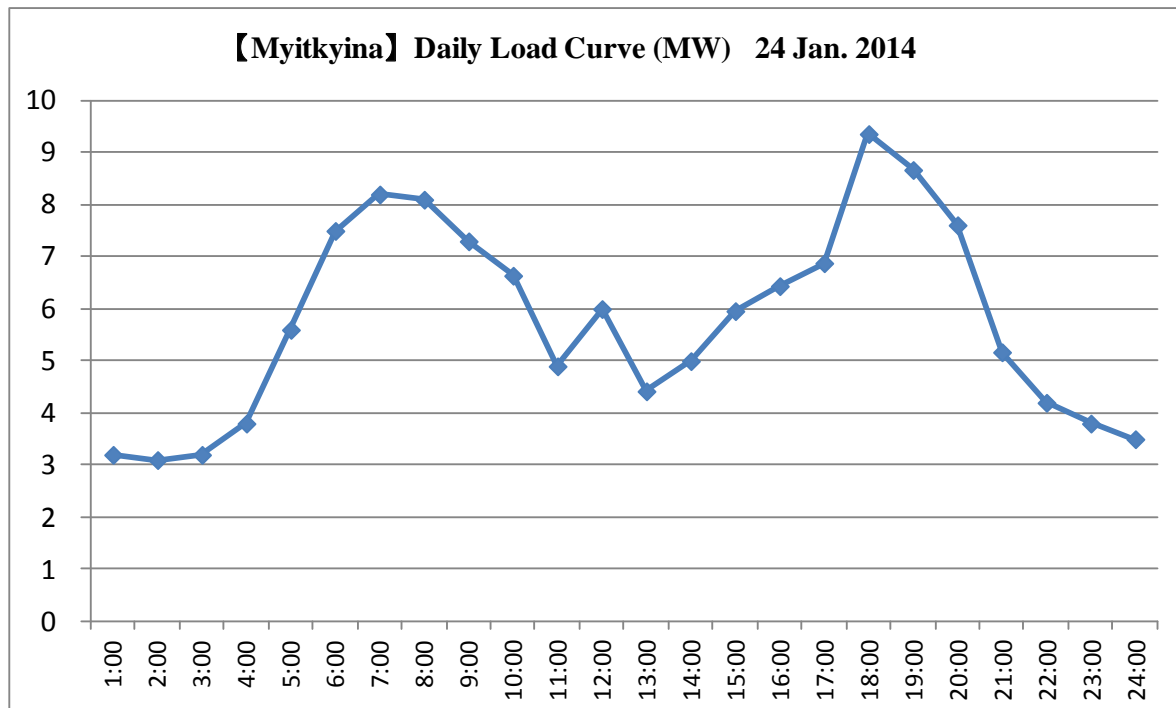
(12) Customer	22,392 customers	Dec.2014
(13) Electrified village	2 villages	Dec.2014
(14) Number of fixing meter	22,392 Nos.	Dec.2014
(15) Electricity Sales	17,331 MWh	Apr.2013-Mar.2014
(16) Peak demand	5.6 MW	Mar.2012
	9.5 MW	Apr.2013
	14.2 MW	Apr.2014
(17) Capacity utilization rate*	34 %	

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Myitkyina City (Township)

(18) Daily Load curve



Power Facilities

(19) Power Transformer (66/11kV)	46	MVA	4	Nos.	Dec.2014
(20) Power Transformer (33/11kV)	-	MVA	-	Nos.	
(21) Power Transformer (11/0.4kV)	25.18	MVA	164	Nos.	Dec.2014
(22) Distribution Line (33kV)	30	km	667	Poles	Nov.2014
(23) Distribution Line (11kV)	114	km	1,418	Poles	Nov.2014
(24) Distribution Line (0.4kV)	184	km	2,161	Poles	Nov.2014
(25) Small Hydropower Generator	-	MW	-	Nos.	-
(26) Diesel Power Generator	-	MW	-	Nos.	-

Distribution Loss Rate

(27) Distribution Loss Rate	22.6%	Dec.2014
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Myitkyina City (Township)

(28) 33kV or 66kV System Diagram (Location Map)

No information



(29) 33kV or 66kV System Single Line Diagram

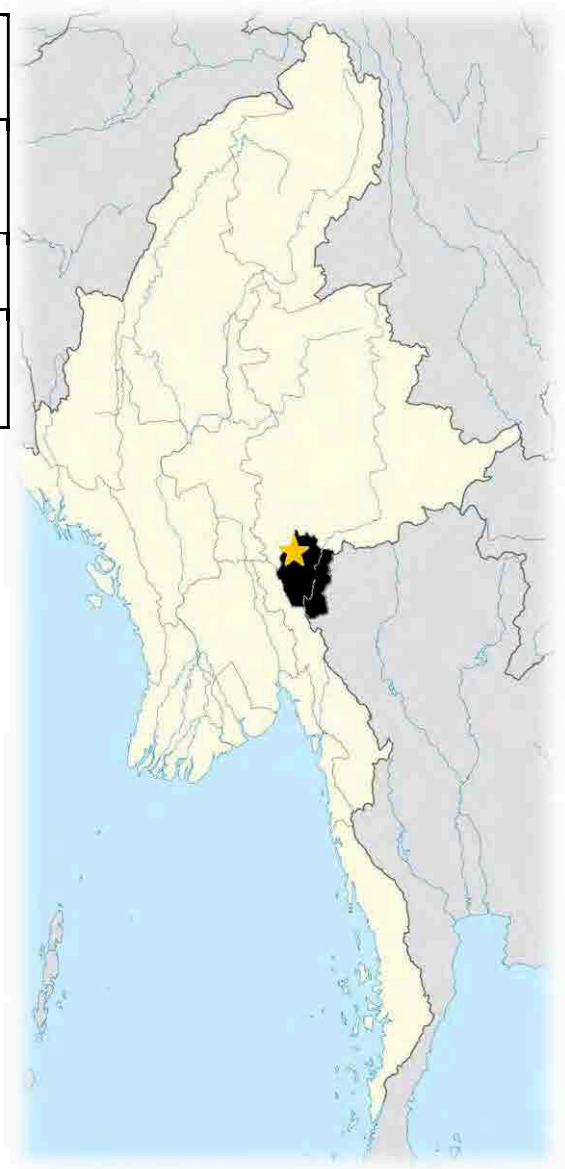
No information

(30) Power Facilities

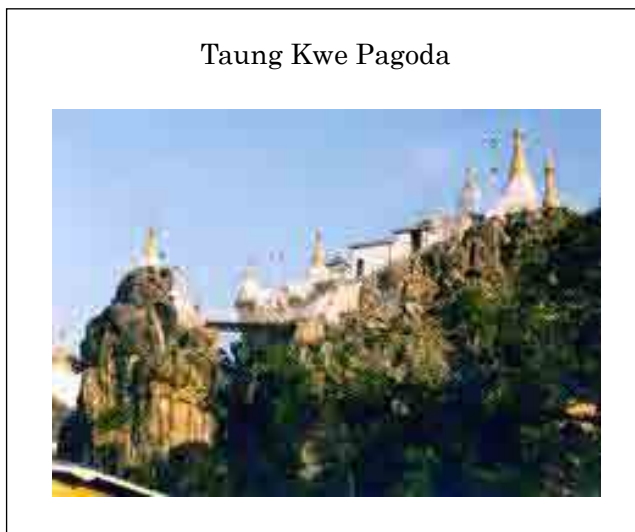
No photo

Loikaw City (Township)

Country	 Myanmar
Region / State	 Kayah state
District	Loikaw
Township	Loikaw, Demoso, Hpruso, Shadaw



Photo



Loikaw City (Township)

General information

(1) Area	47 km ²
(2) Population	63 Thousand People
(3) Household	27 Thousand households
(4) Village	142 Villages

Industry/Facilities

(5) Main Industry	Sightseeing
(6) Industrial Zone	—
(7) Special Economic Zone	—
(8) Important Facilities	1 Hospital, 2 Market

Transportation Infrastructure

(9) Airport	Likaw airport
(10) Railway	Aungban-Pinlong-Loikaw line (Loikaw terminal)
(11) Main Road	National Highway 5 (NR5)

Social Environment (search for only candidate cities)

(a) Schools (No.)	125	Primary	Secondary	High	Monastery
		95	10	15	5
(b) University and Colleges (No.)	2	Representative School			
		Loikaw University, Technological University			
(c) Health Care facilities (No)	66	Government Hospital	Private Hospital	Government dispensary	Private dispensary
		3	0	40	23

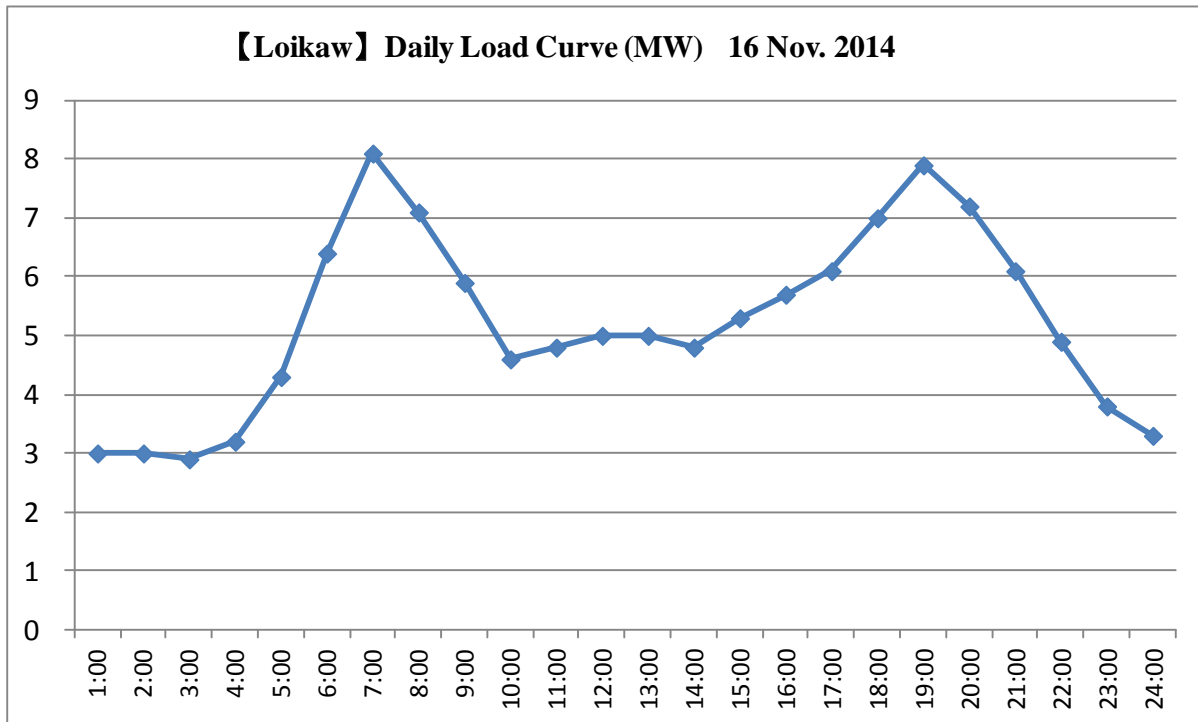
Power demand

(12) Customer	16942 customers	Nov. 2014
(13) Electrified village	51 villages	Nov. 2014
(14) Number of fixing meter	16942 Nos.	Nov. 2014
(15) Electricity Sales	- MWh	Apr.2013 - Mar.2014
(16) Peak demand	6.31 MW	2012
	6.57 MW	2013
	8.11 MW	2014
(17) Capacity utilization rate*	- %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

(18) Daily Load curve



Power Facilities

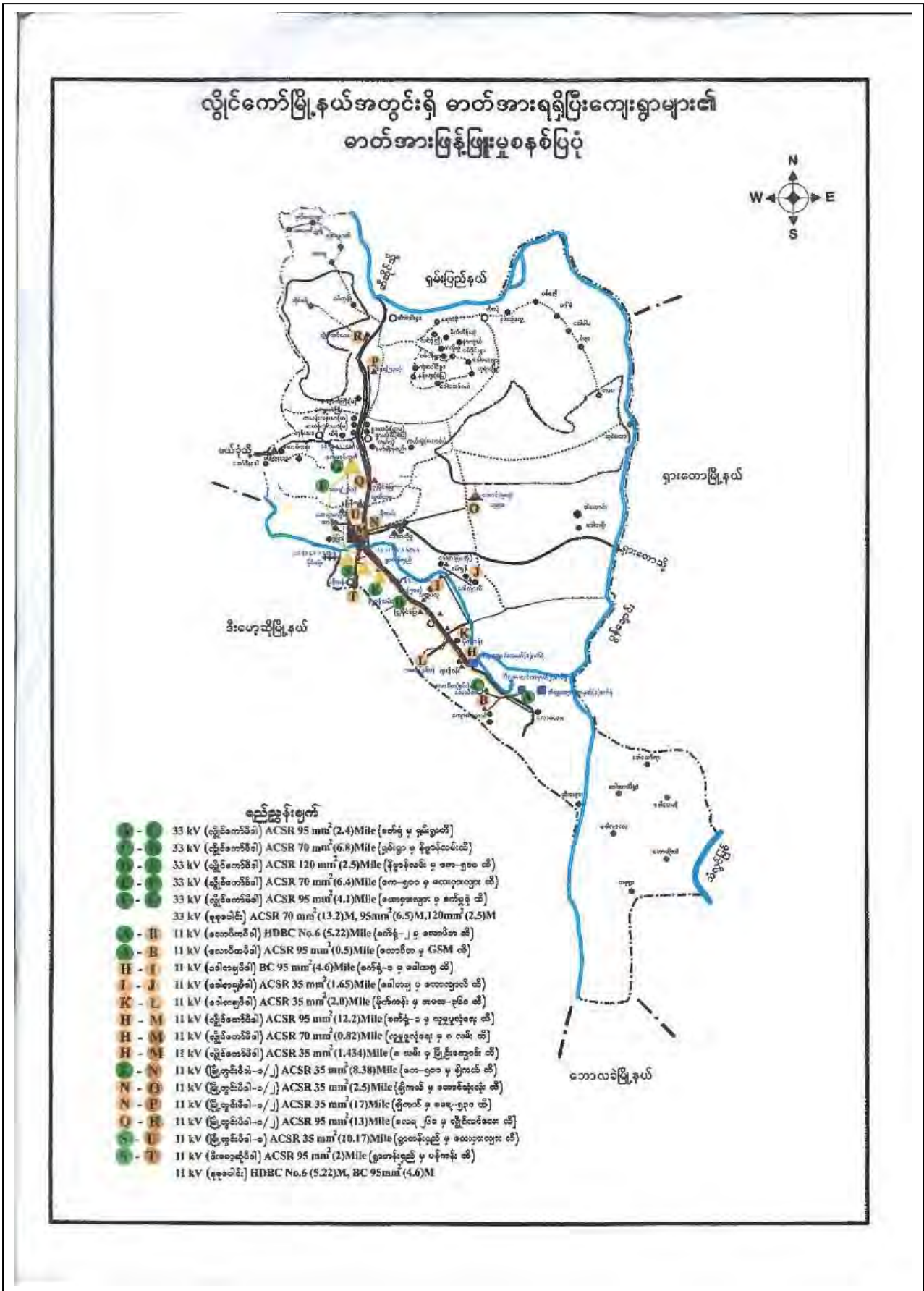
(19) Power Transformer (66/11kV)	- MVA	- Nos.	-
(20) Power Transformer (33/11kV)	16 MVA	4- Nos.	Nov.2014
(21) Power Transformer (11/0.4kV)	24.93 MVA	124 Nos.	Nov. 2014
(22) Distribution Line (33kV)	29 km	818 Poles	Nov. 2014
(23) Distribution Line (11kV)	83 km	1,615 Poles	Nov. 2014
(24) Distribution Line (0.4kV)	97 km	3,8489 Poles	Nov. 2014
(25) Small Hydropower Generator	- MW	- Nos.	Nov. 2014
(26) Diesel Power Generator	- MW	- Nos.	Nov. 2014

Distribution Loss Rate

(27) Distribution Loss Rate	23.1%	2014
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Loikaw City (Township)

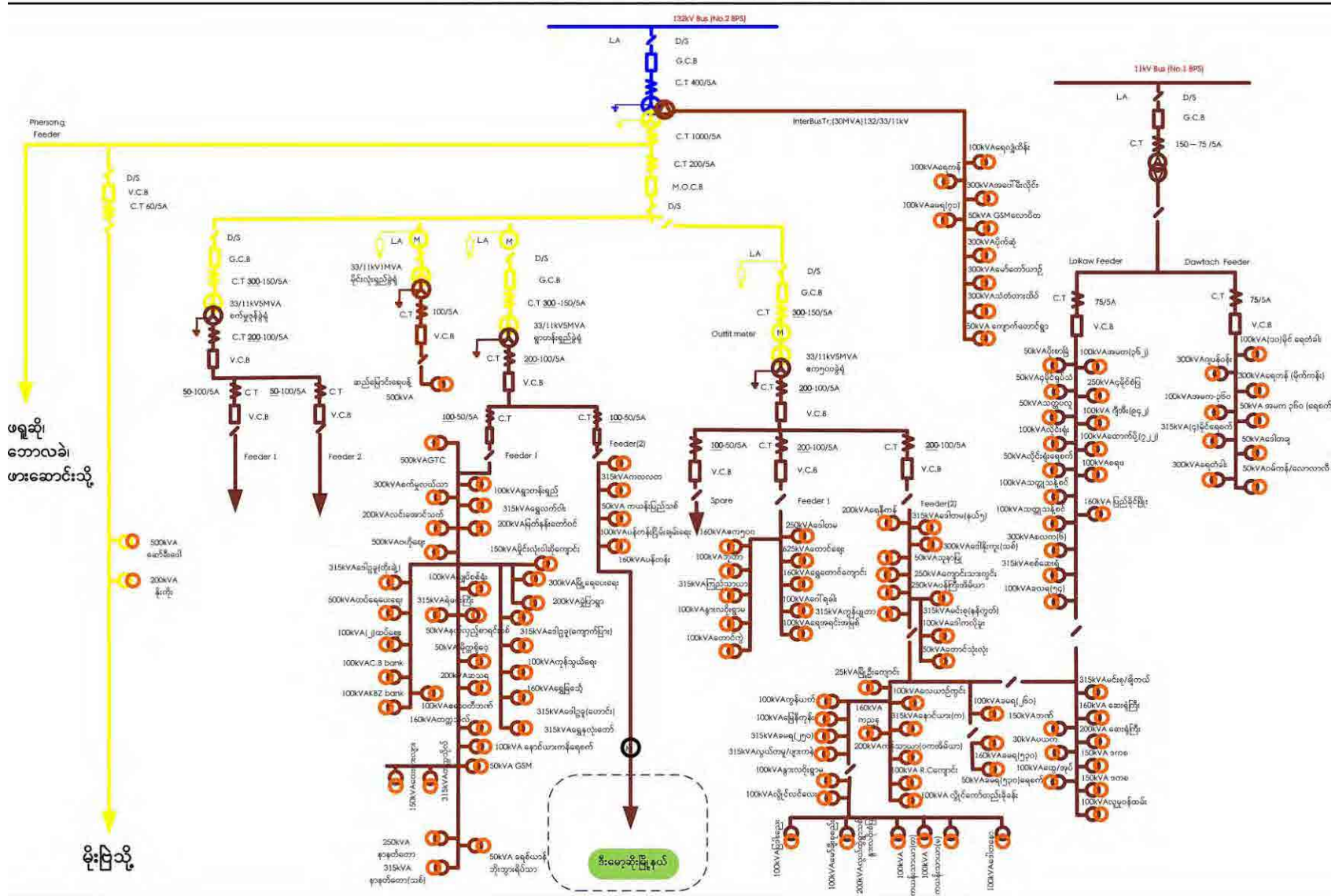
(28) 66,11kV System Diagram (Location Map)



Loikaw City (Township)

(29-1) 66/11kV System Single Line Diagram

လှိုင်ကော်မြို့နယ်၏ ဓာတ်အားဖြန့်ဖြူးမှုပုံ One Line Diagram



App1-58

ဖရူဆို၊
ဘောလခဲ၊
ဖားဆောင်းသို့

မိုးကြည့်

Loikaw City (Township)

(30) Power Facilities



500 Acre Substation (33/11kV, 5MVA)



500 Acre SS 5MVA Transformer



Yawar Tan Shae Substation (33/11kV, 5MVA)



Yawar tan Shae SS 5MVA Transformer





Mai lone Substation (33/11kV, 1MVA)



11/0.4kV Transformer in Loikaw city

Hpa-An City (Township)

Country	 Myanmar
Region / State	 Kayah state
District	Hpa-An
Township	Hpa-An, Hlaingbwe, Thandsunggyi



Photo

Mountain and Road to Mon state



Cement factory



Famous mountain



General information

(1) Area	432 km ²
(2) Population	373 Thousand People
(3) Household	66 Thousand house holds
(4) Village	474 Villages

Industry/Facilities

(5) Main Industry	Cement factory
(6) Industrial Zone	[Hpa-An IZ] 3 factories, area over 4 km ²
(7) Special Economic Zone	—
(8) Important Facilities	Hpa-An hospital, 4 market, Local government agency, Military agency

Transportation Infrastructure

(9) Airport	Hpa-An airport
(10) Railway	Nil
(11) Main Road	Bogyole road

Power demand

(12) Customer	24,967 customers	OCT. 2014
(13) Electrified village	85 villages	OCT. 2014
(14) Number of fixing meter	24,967 Nos.	OCT. 2014
(15) Electricity Sales	168,794 MWh	Apr.2013 - Mar.2014
(16) Peak demand	- (31) MW	2012 (inc. cement fac.)
	- (33) MW	2013 (inc. cement fac.)
	16.4 (35) MW	2014 (inc. cement fac.)
(17) Capacity utilization rate*	34.3 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

(18) Daily Load curve

No information

Power Facilities

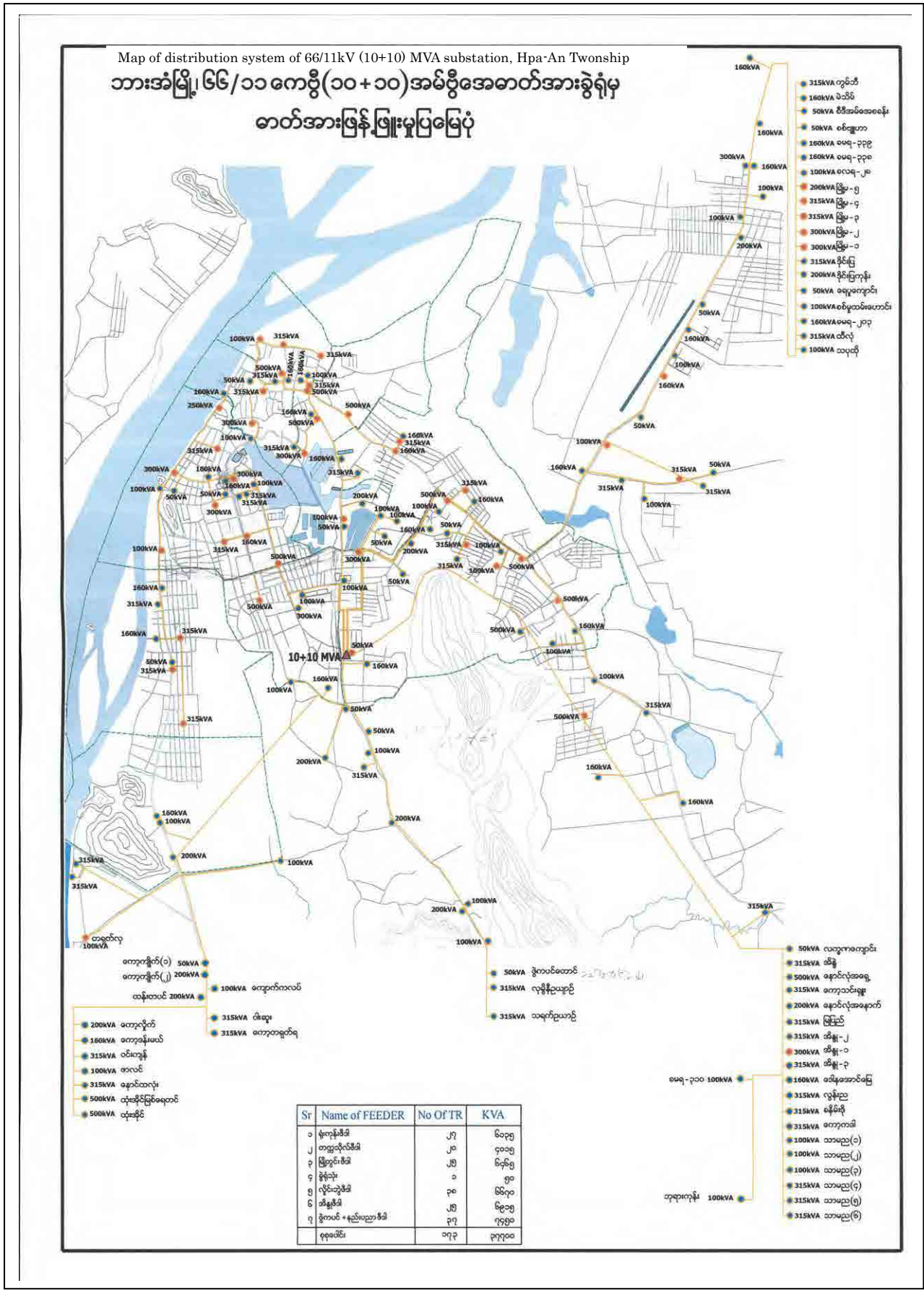
(19) Power Transformer (66/11kV)	90	MVA	6	Nos.	Oct.2014
(20) Power Transformer (33/11kV)	2	MVA	1	Nos.	Oct.2014
(21) Power Transformer (11/0.4kV)	33.39	MVA	176	Nos.	Oct.2014
(22) Distribution Line (33kV)	24	km	453	Poles	Oct.2014
(23) Distribution Line (11kV)	173	km	2,831	Poles	Oct.2014
(24) Distribution Line (0.4kV)	6,336	km	144	Poles	Oct.2014
(25) Small Hydropower Generator	-	MW	-	Nos.	-
(26) Diesel Power Generator	-	MW	-	Nos.	-

Distribution Loss Rate

(27) Distribution Loss Rate	34.3 (17.0) %	2014 (inc. cement fac.)
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Hpa-An City (Township)

(28) 33kV System Diagram (Location Map)

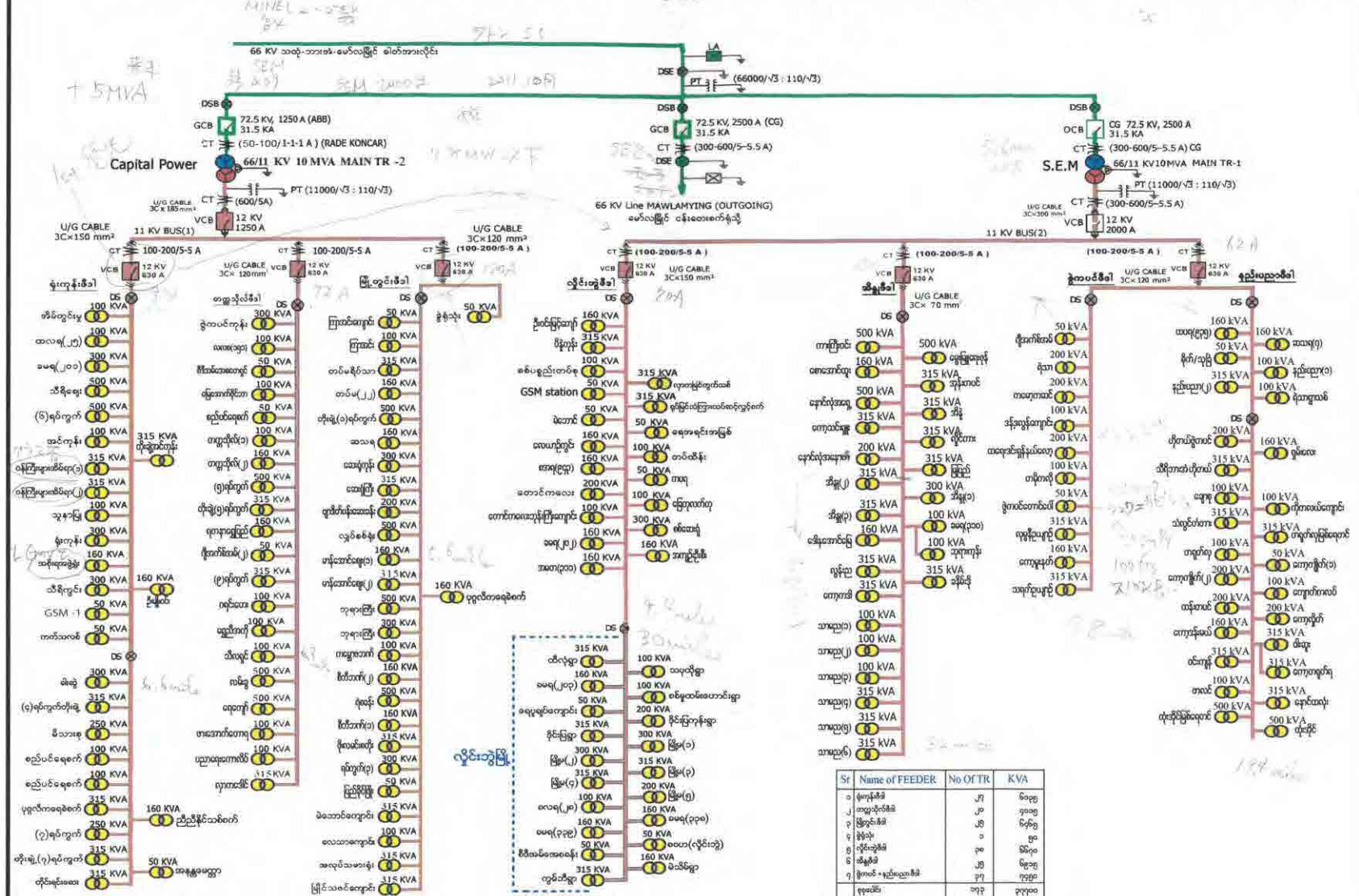


Hpa-An City (Township)

(29) 33kV System Single Line Diagram

One line diagram of distribution system from Hpa-An 66/11kV (10+10) MVA, primary substation

ဘားအံ 66 /11 KV (10 + 10)MVA ပင်မဝါတ်အားခွဲရုံမှ ဝါတ်အားဖြန့်ဖြူးမှုစနစ်ပြပုံ (ONE LINE DIAGRAM)



Sr	Name of FEEDER	No OFTR	KVA
၁	မိုးကုန်းစိမ်း	၂၇	၆၀၀၅
၂	အလှူဒါနစိမ်း	၂၀	၆၀၀၅
၃	မြို့တွင်းစိမ်း	၂၆	၆၀၀၅
၄	ခွဲရုံခဲ	၁	၅၀
၅	လှိုင်လှိုင်စိမ်း	၃၈	၆၀၀၅
၆	အိမ်စိမ်း	၂၅	၆၀၀၅
၇	မြို့တွင်း + ချောင်းလှိုင်စိမ်း	၂၅	၆၀၀၅
၈	ရေကန်စိမ်း	၂၇	၆၀၀၅
၉	ရေကန်စိမ်း	၂၇	၆၀၀၅

App1-64

Hpa-An City (Township)

(31) Power Facilities

66/11kV 10MVA x 2, Hpa-An main SS



Large space in Hpa-An main SS



66/6.6kV 2 MVA, Myaing gale SS



MV Distribution line with





66/11kV 20MVA, Industrial Park SS



Industrial park building and 11kV feeders



Chauk City (Township)

Country	 Myanmar
Region / State	 Magway
District	Magway
Township	Magway, Yenangyaung, Chauk , Taungdwingyi, Myothit, Natmauk

Photo



Chauk City (Township)

General information

(1) Area	7.4 km ²
(2) Population	185 Thousand People
(3) Household	10.4 Thousand house holds
(4) Village	230 Villages

Industry/Facilities

(5) Main Industry	Crude Oil, Oil Refinery, Natural gas
(6) Industrial Zone	—
(7) Special Economic Zone	—
(8) Important Facilities	2 hospitals, 1 market

Transportation Infrastructure

(9) Airport	—
(10) Railway	Branch line of railway toward Bagan (Chauk station)
(11) Main Road	Magway-Chauk - NyaungOo Road (National Road No.2)

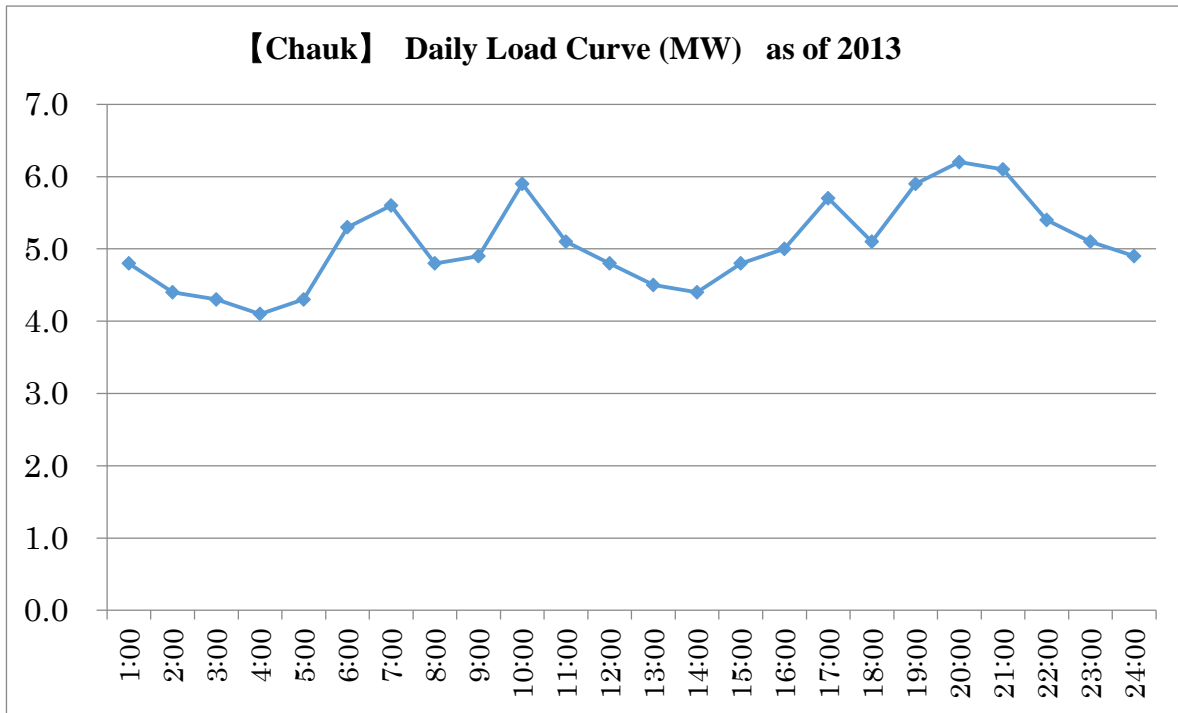
Power demand

(12) Customer	7,182 customers	2014
(13) Electrified village	49 villages	2014
(14) Number of fixing meter	7,488 Nos.	2014
(15) Electricity Sales	27,363 MWh	2013 - 2014
(16) Peak demand	6.2 MW	2012
	5.9 MW	2013
	5.5 MW	2014
(17) Capacity utilization rate*	24 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

(18) Daily Load curve



Power Facilities

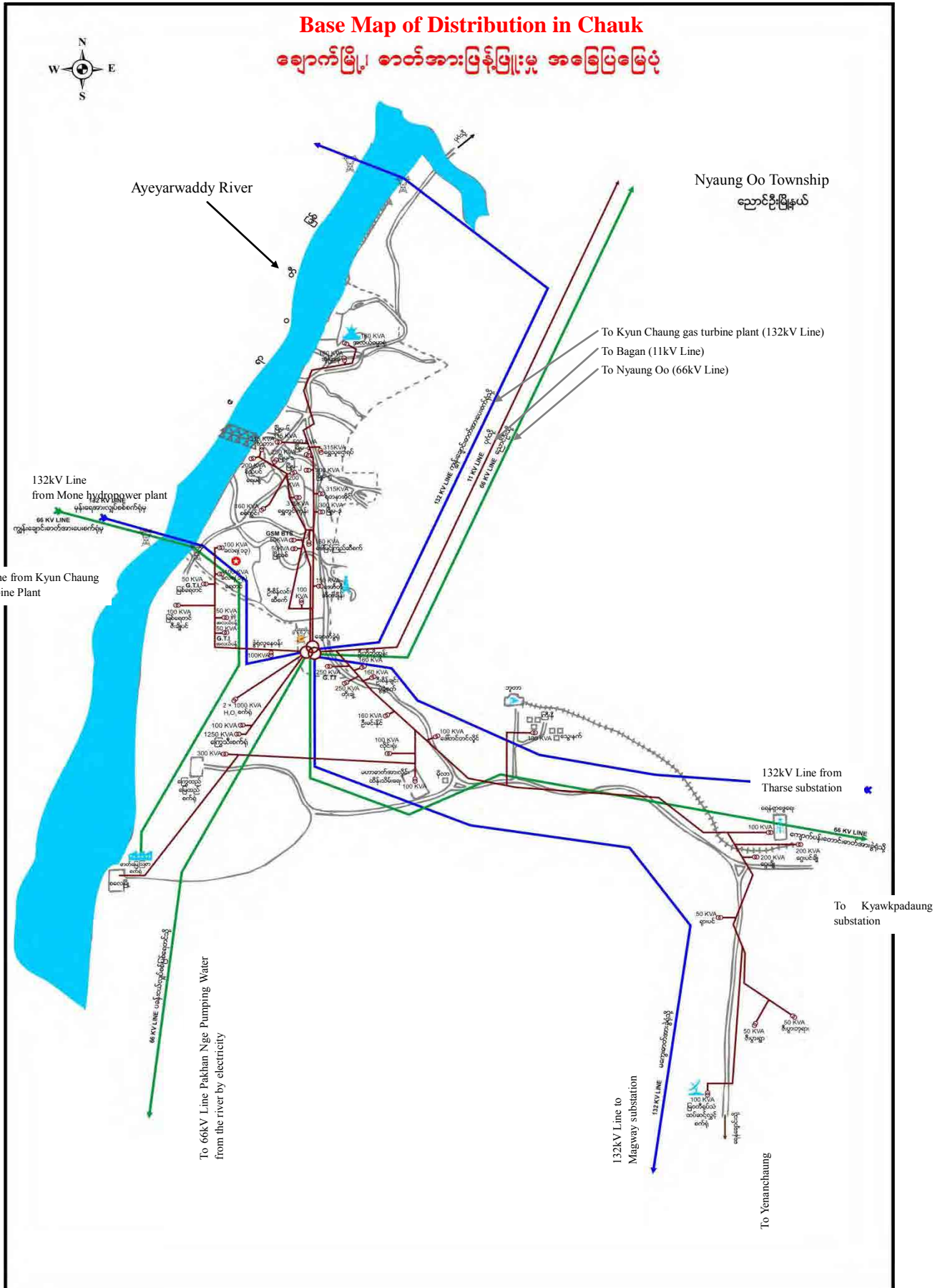
(19) Power Transformer (66/11kV)	40	MVA	1	Nos.	2014
(20) Power Transformer (33/11kV)	—	MVA	—	Nos.	—
(21) Power Transformer (11/0.4kV)	21.9	MVA	53	Nos.	2014
(22) Distribution Line (33kV)	—	km	—	Poles	—
(23) Distribution Line (11kV)	101	km	1,724	Poles	2014
(24) Distribution Line (0.4kV)	52	km	1,407	Poles	2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

Distribution Loss Rate

(27) Distribution Loss Rate	23.9 %	2014
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Chauk City (Township)

(28) 132,66, 11kV System Diagram (Location Map)



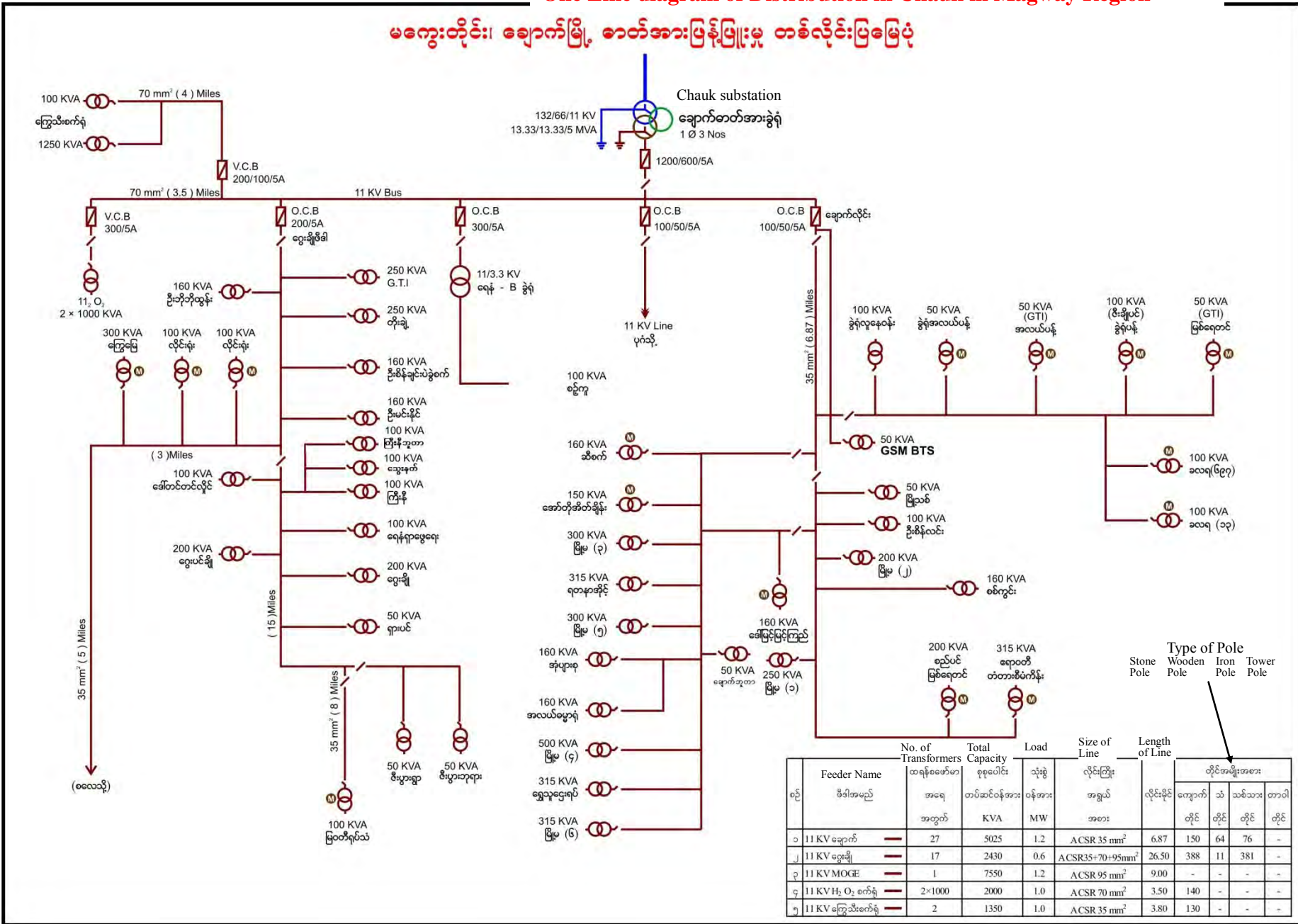
Chauk City (Township)

(29) 66kV and 11kV System Single Line Diagram

One Line diagram of Distribution in Chauk in Magway Region

မကွေးတိုင်း၊ ချောက်မြို့၊ ဓာတ်အားဖြန့်ဖြူးမှု တစ်လှိုင်းပြင်ပုံ

App1-70





စဉ်	Feeder Name မိခင်အမည်	No. of Transformers ထရန်စဖော်မာအရေအတွက်	Total Capacity စုစုပေါင်း တပ်ဆင်ဝန်အား KVA	Load သုံးစွဲ ဝန်အား MW	Size of Line လှိုင်းကြိုးအရွယ်အစား	Length of Line လှိုင်းမိုင်	တိုင်အမျိုးအစား			
							ကျောက်တိုင်	သစ်တိုင်	ဆစ်သစ်တိုင်	တံတိုင်
၁	11 KV ချောက်	27	5025	1.2	ACSR 35 mm ²	6.87	150	64	76	-
၂	11 KV ငွေချို	17	2430	0.6	ACSR35+70+95mm ²	26.50	388	11	381	-
၃	11 KV MOGE	1	7550	1.2	ACSR 95 mm ²	9.00	-	-	-	-
၄	11 KV H ₂ O ₂ စက်ရုံ	2x1000	2000	1.0	ACSR 70 mm ²	3.50	140	-	-	-
၅	11 KV ကြွေးသီးစက်ရုံ	2	1350	1.0	ACSR 35 mm ²	3.80	130	-	-	-

Chauk City (Township)

(30) Power Facilities

No Photos

Magway City (Township)

Country	 Myanmar
Region / State	 Magway
District	Magway
Township	Magway, Yenangyaung, Chauk, Taungdwingyi, Myothit, Natmauk



Photo

Magway Mya Tha Lun Paya



Magway Market



Ayeyarwady River and Magway Bridge to Myeik



Magway City (Township)

General information

(1) Area	20 km ²
(2) Population	253 Thousand People
(3) Household	121 Thousand house holds
(4) Village	216 Villages

Industry/Facilities

(5) Main Industry	Automobile Industry, Agriculture(sesame, nuts) , Sesame oil
(6) Industrial Zone	[Yaenanchaung IZ] 121 factories, area 0.7 km ²
(7) Special Economic Zone	—
(8) Important Facilities	6 markets

Transportation Infrastructure

(9) Airport	Magway Airport (non-commercial)
(10) Railway	Nay Phi Taw - Magway Line (Magway station)
(11) Main Road	Yangon-Magway-Mandalay Road (National Road No.2), Magway-Nay Phi Taw Road

Social Environment (search for only candidate cities)

(a) Schools (No.)	160	Primary	Secondary	High	Monastery
		82	54	9	15
(b) University and Colleges (No.)	8	Representative School			
		Government technological University, Magway College			
(c) Health Care facilities (No)	115	Government Hospital	Private Hospital	Government dispensary	Private dispensary
		5	2	61	47

Power demand

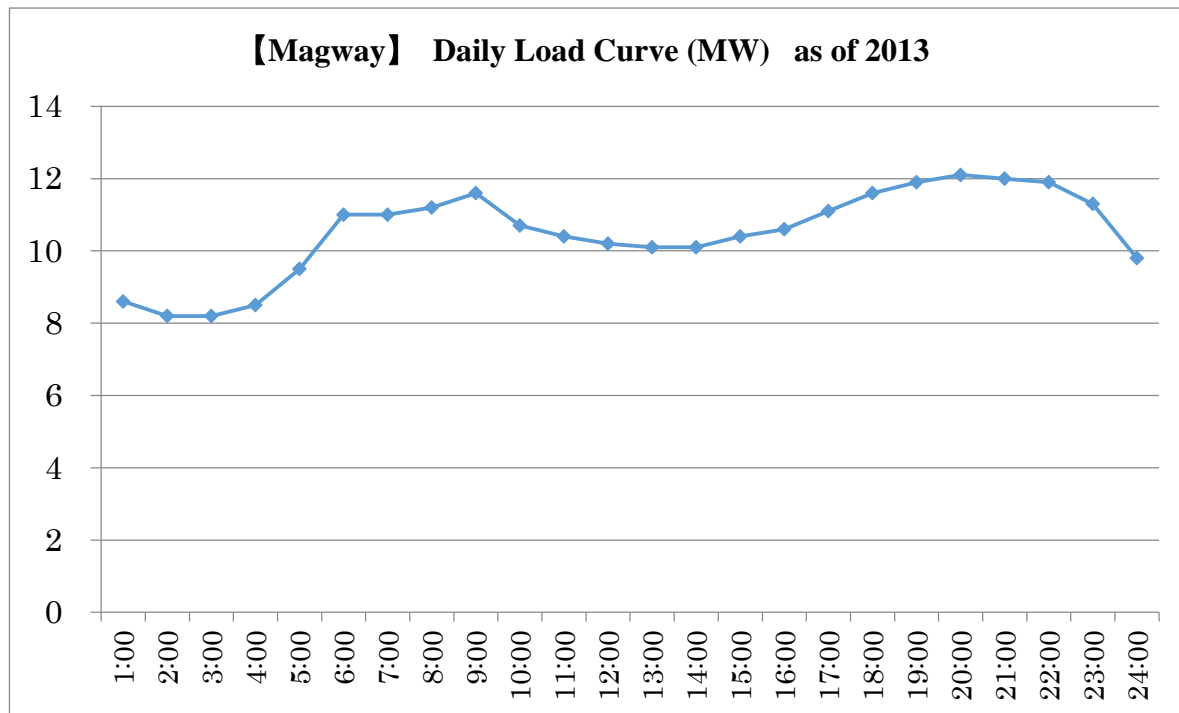
(12) Customer	12,060 customers	2014
(13) Electrified village	124 villages	2014
(14) Number of fixing meter	17,438 Nos.	2014
(15) Electricity Sales	51,614 MWh	2013 - 2014
(16) Peak demand	9.5 MW	2012
	12.1 MW	2013
	13.1 MW	2014
(17) Capacity utilization rate*	65 %	2014

* Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Magway City (Township)

(18) Daily Load curve (2013)



Power Facilities

(19) Power Transformer (66/11kV)	—	MVA	—	Nos.	—
(20) Power Transformer (33/11kV)	21	MVA	3	Nos.	2014
(21) Power Transformer (11/0.4kV)	39.7	MVA	186	Nos.	2014
(22) Distribution Line (33kV)	28	km	722	Poles	2014
(23) Distribution Line (11kV)	75	km	1,765	Poles	2014
(24) Distribution Line (0.4kV)	137	km	2,908	Poles	2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

Distribution Loss Rate

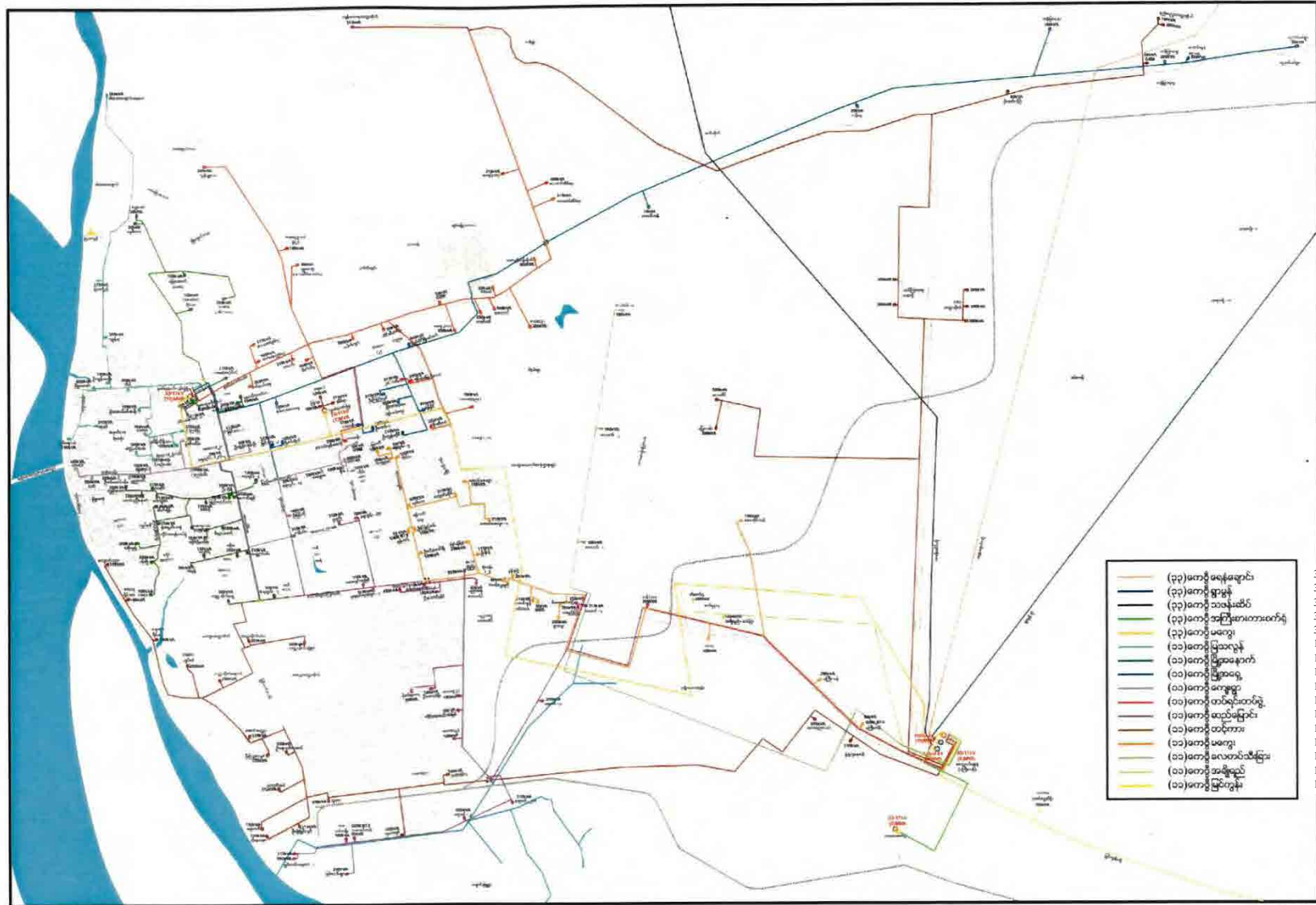
(27) Distribution Loss Rate	30.4 %	2014
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Magway City (Township)

(28) 33kV&11kV System Diagram (Location Map)

Base Map of Distribution in Magway

မကွေးမြို့၊ ဓာတ်အားဖြန့်ဖြူးမှု အခြေပြမြေပုံ Magway



- | | |
|-------------------------------|---------------------------------|
| (၃၃)ကေဗီ မရန်ဆောင်း | 33kV Yaenanchaung |
| (၃၃)ကေဗီ ရွာမုန် | 33kV Yusarmen |
| (၃၃)ကေဗီ သာယာဇီင် | 33kV Thaphansek |
| (၃၃)ကေဗီ တပ်ကားတက်ရုံ | 33kV Large Industry Car Factory |
| (၁၁)ကေဗီ မတော့ | 33kV Magway |
| (၁၁)ကေဗီ မြသလွန် | 11kV MyachanLon |
| (၁၁)ကေဗီ မြသနောင် | 11kV Township West |
| (၁၁)ကေဗီ မြသတောင် | 11kV Township East |
| (၁၁)ကေဗီ မတော့ | 11kV Village |
| (၁၁)ကေဗီ တပ်ရင်းတပ်ရုံ | 11kV Military |
| (၁၁)ကေဗီ တပ်ရင်းမြေပိုင်း | 11kV Irrigation |
| (၁၁)ကေဗီ တပ်ကား | 11kV TinFear |
| (၁၁)ကေဗီ မတော့ | 11kV Magway |
| (၁၁)ကေဗီ မေတောင်စိမ်းမြို့နယ် | 11kV Air Force Separate |
| (၁၁)ကေဗီ အစိုချောင်း | 11kV Soft Drink |
| (၁၁)ကေဗီ မြကွဲရုံ | 11kV Myinkon |

Magway City (Township)

(30) Power Facilities



Makyikan Substation (MEPE)
(132/33kV 15MVA×1, 132/33/11kV 60MVA)



Hluttaw Substation (33/11kV 1MVA×1)



Natmauk Substation (33/11kV 10MVA×1)



Distribution Transformer (315kVA×2)





Cracked wooden pole



0.4kV Distribution Line near Market

Minbu City (Township)

Country	 Myanmar
Region / State	 Magway
District	Minbu
Township	Minbu, Pwintbyu, Ngape, Salin, Sidoktaya

Photo

Minbu Shwe Set Taw Pagoda



The mud volcanoes in Minbu



Minbu City (Township)

General information

(1) Area	3 km ²
(2) Population	70 Thousand People
(3) Household	5.4 Thousand house holds
(4) Village	59 Villages

Industry/Facilities

(5) Main Industry	Agriculture(rice, gram, millet, beans, peas, sesame,tobacco.)
(6) Industrial Zone	—
(7) Special Economic Zone	—
(8) Important Facilities	2 hospitals, 1 market

Transportation Infrastructure

(9) Airport	—
(10) Railway	Minbu-Ann Line (Minbu station)
(11) Main Road	Magway-Minbu Road [Magway bridge over Ayeyarwady river], Minbu-Ann Road

Power demand

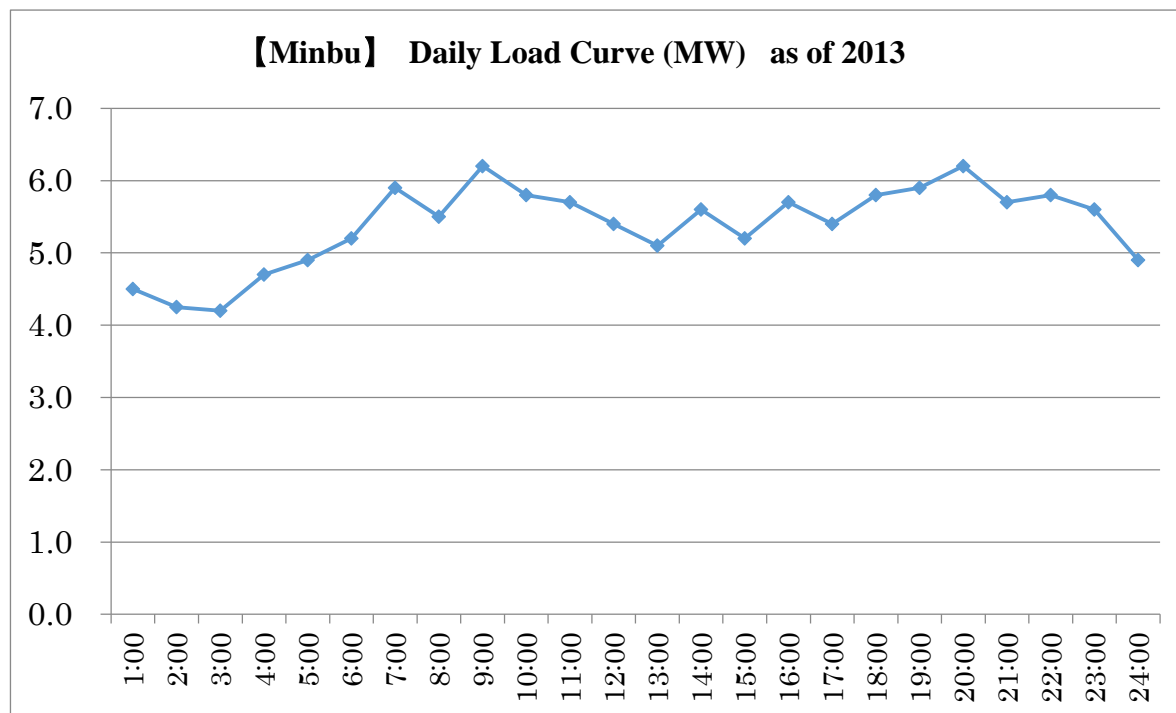
(12) Customer	5,465 customers	2014
(13) Electrified village	52 villages	2014
(14) Number of fixing meter	5,625 Nos.	2014
(15) Electricity Sales	36,297 MWh	2013 - 2014
(16) Peak demand	6.2 MW	2012
	6.0 MW	2013
	5.1 MW	2014
(17) Capacity utilization rate*	46 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Minbu City (Township)

(18) Daily Load curve (2013)



Power Facilities

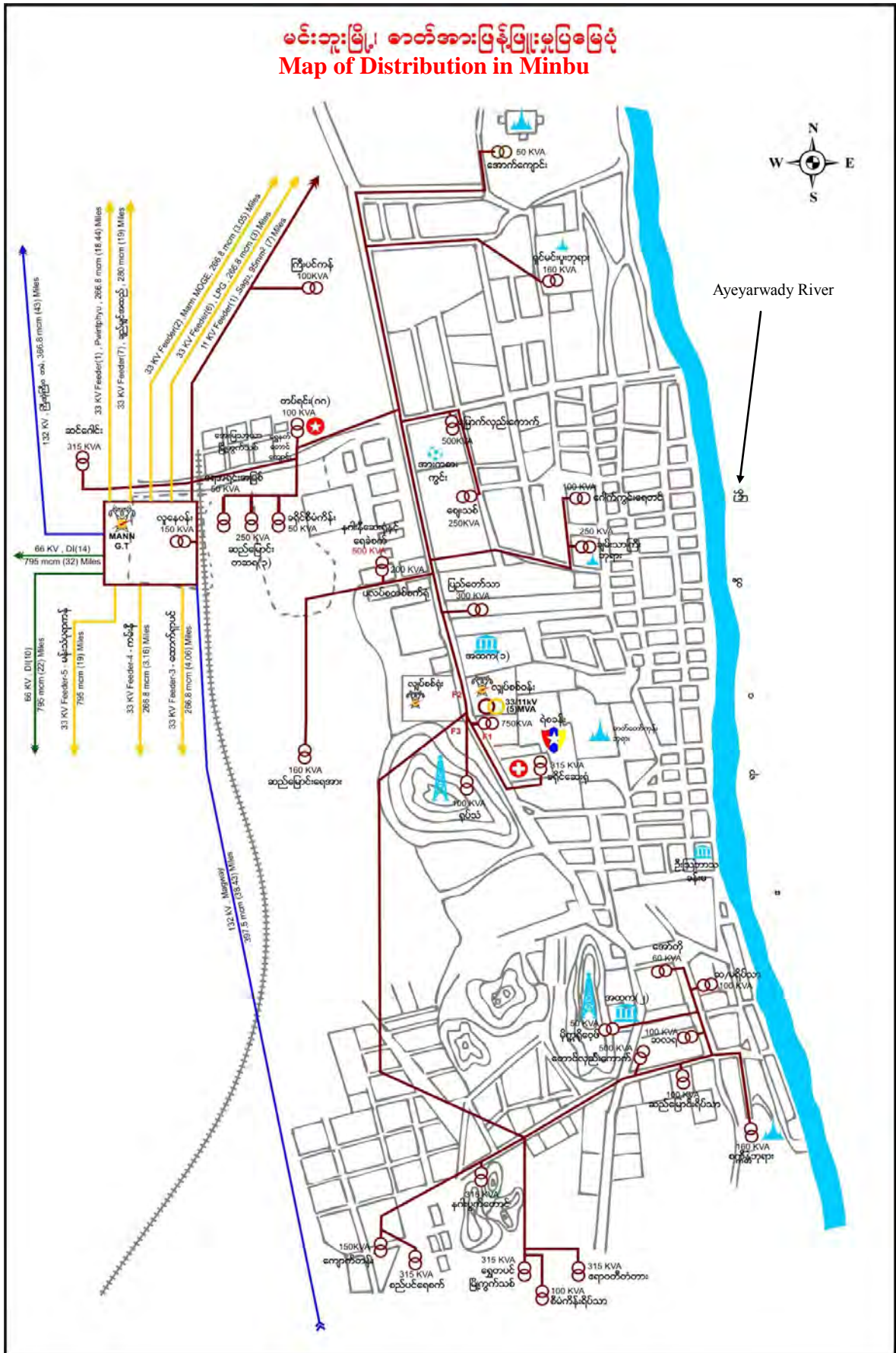
(19) Power Transformer (66/11kV)	—	MVA	—	Nos.	—
(20) Power Transformer (33/11kV)	5	MVA	1	Nos.	2014
(21) Power Transformer (11/0.4kV)	12.3	MVA	59	Nos.	2014
(22) Distribution Line (33kV)	25	km	372	Poles	2014
(23) Distribution Line (11kV)	32	Km	543	Poles	2014
(24) Distribution Line (0.4kV)	50	km	1,049	Poles	2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

Distribution Loss Rate

(27) Distribution Loss Rate	9.6 %	2014
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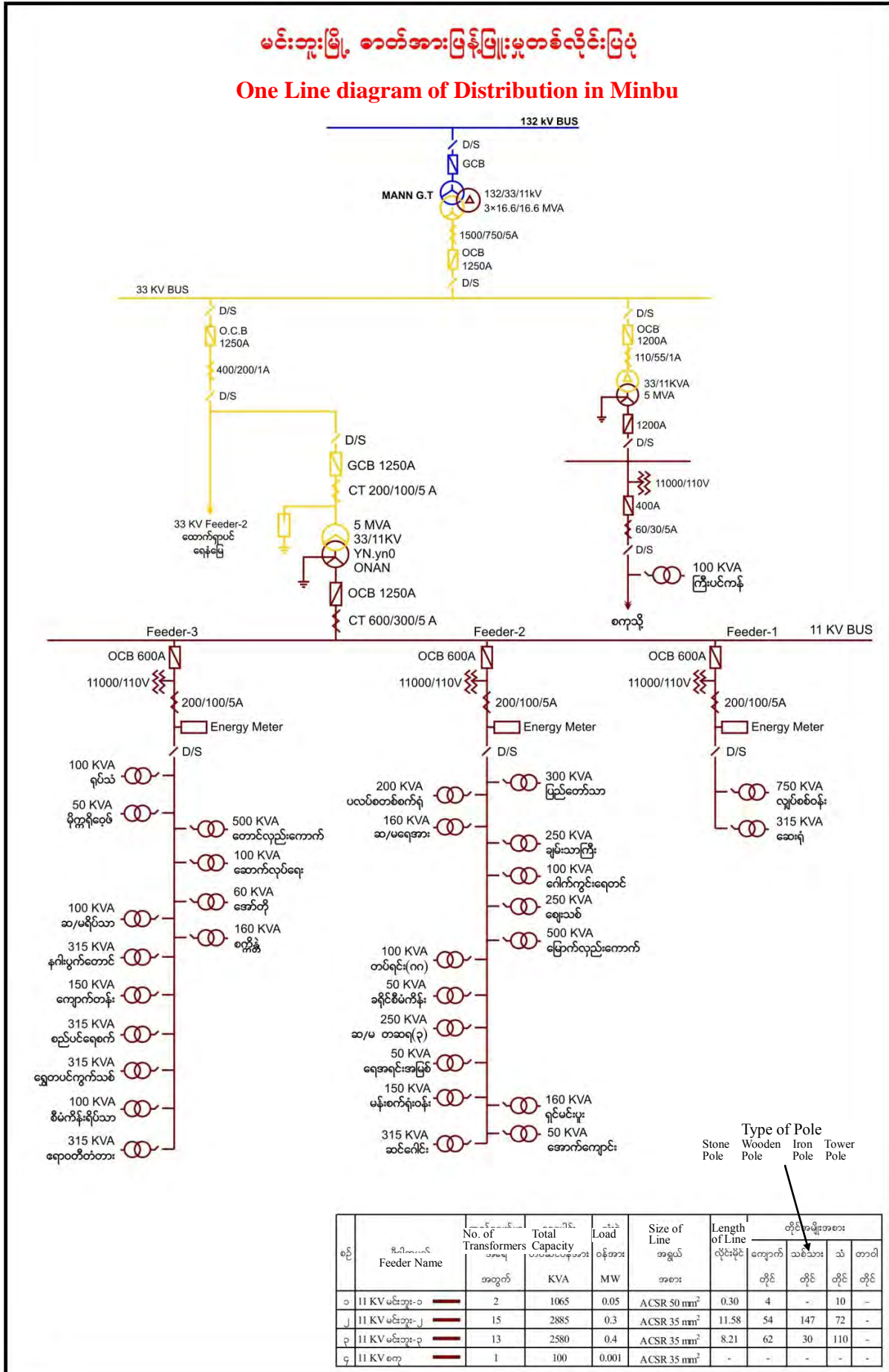
Minbu City (Township)

(28) 33kV&11kV System Diagram (Location Map)



Minbu City (Township)

(29) 33kV and 11kV System Single Line Diagram



(30) Power Facilities





Minbu Substation (33/11kV 5MVA)



Distribution Line from Minbu S/S

Pakokku City (Township)

Country	 Myanmar
Region / State	 Magway
District	Pakokku
Township	Pakokku, Yesagyoo, Myaing, Pauk, Seikphyu

Photo

Pakokku Bridge over Ayeyarwady River



General information

(1) Area	27. km ²
(2) Population	140 Thousand People
(3) Household	14.2 Thousand house holds
(4) Village	264 Villages

Industry/Facilities

(5) Main Industry	River Traffic, Agriculture (tobacco, thanaka)
(6) Industrial Zone	[Pakokku IZ] 281 factories, area 1.5 km ²
(7) Special Economic Zone	—
(8) Important Facilities	2 hospitals, 3 markets

Transportation Infrastructure

(9) Airport	Pakokku Airport
(10) Railway	Pakokku – Kalay line (Pakokku station)
(11) Main Road	Pakokku – Myingyan, Gangaw, Monywa, Nay Phi Taw, Yangon

Power demand

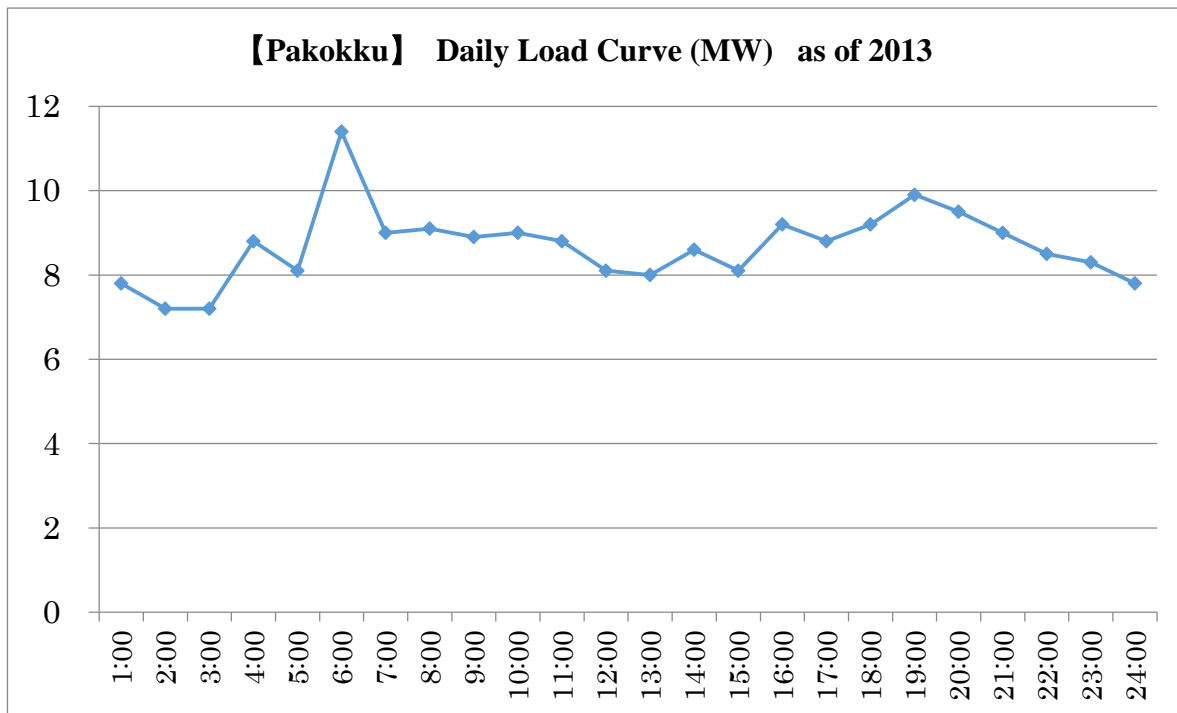
(12) Customer	14,188 customers	2014
(13) Electrified village	122 villages	2014
(14) Number of fixing meter	16,428 Nos.	2014
(15) Electricity Sales	40,951 MWh	2013 - 2014
(16) Peak demand	12.5 MW	2012
	11.4 MW	2013
	9.8 MW	2014
(17) Capacity utilization rate*	59 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Pakokku City (Township)

(18) Daily Load curve



Power Facilities

(19) Power Transformer (66/11kV)	15	MVA	2	Nos.	2014
(20) Power Transformer (33/11kV)	—	MVA	—	Nos.	—
(21) Power Transformer (11/0.4kV)	46.5	MVA	159	Nos.	2014
(22) Distribution Line (33kV)	—	km	—	Poles	—
(23) Distribution Line (11kV)	130	km	1,992	Poles	2014
(24) Distribution Line (0.4kV)	109	km	9,098	Poles	2014
(25) Small Hydropower Generator	—	MW	—	Nos.	—
(26) Diesel Power Generator	—	MW	—	Nos.	—

Distribution Loss Rate

(27) Distribution Loss Rate	16.6 %	2014
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Pakokku City (Township)

(28) 132,66, 11kV System Diagram (Location Map)

ပခုက္ကူမြို့၊ ဓာတ်အားဖြန့်ဖြူးမှု အခြေပြမြေပုံ Base Map of Distribution in Pakokku



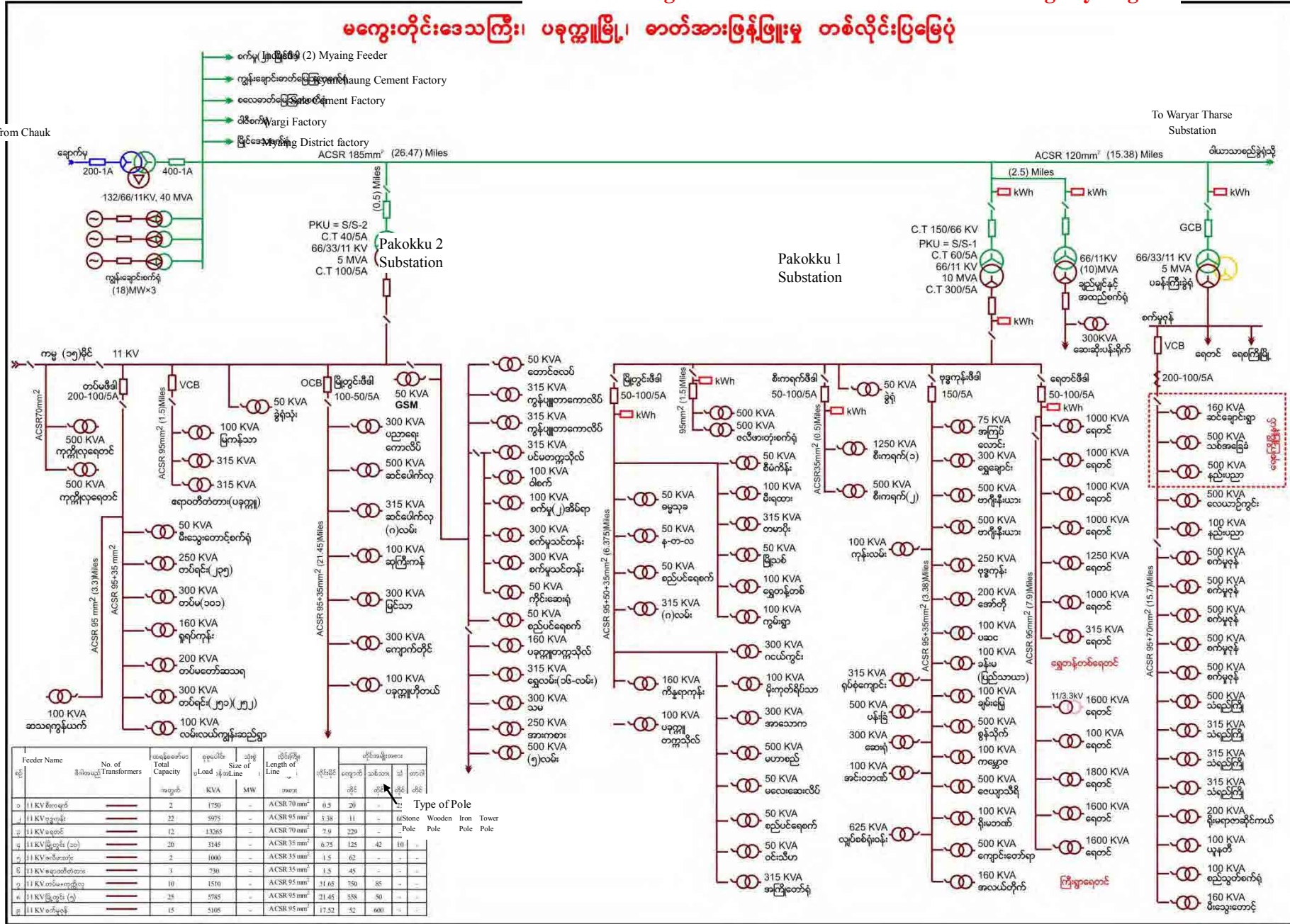
App1-87

Pakokku City (Township)

(29) 33kV and 11kV System Single Line Diagram

One Line Diagram of Distribution in Pakokku in Magway Region

Apl1-88



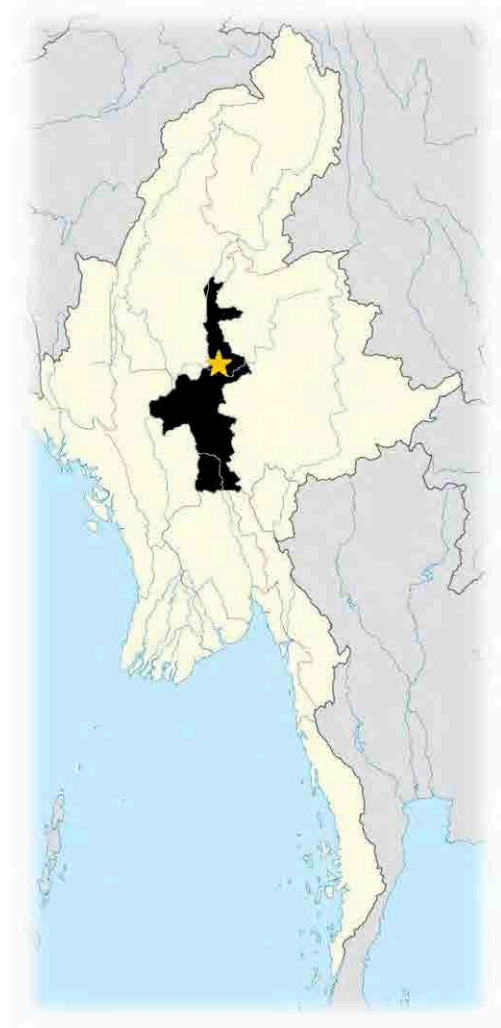
Pakokku City (Township)

(30) Power Facilities

No Photos

Mandalay City (District)

Country	 Myanmar
Region / State	 Mandalay
District	Mandalay
Township	Aungmyayetharzan, Chanayetharzan, Mahaangmye, Chanmyatharzi, Pyigyidagun, Amarapura, Phateingyi



Photo

Mandalay Palace & Mandalay Hill



Mandalay Football Stadium



New Commercial Area



Mandalay City (District)

General information

(1) Area	163 km ²
(2) Population	1,726 Thousand People
(3) Household	324 Thousand house holds
(4) Village	310 Villages

Industry/Facilities

(5) Main Industry	Sightseeing, Trading(industry, agricultural Products)
(6) Industrial Zone	[Mandalay IZ] 1379 factories, area 5 km ²
(7) Special Economic Zone	—
(8) Important Facilities	4 markets

Transportation Infrastructure

(9) Airport	Mandalay international airport
(10) Railway	Mandalay-Yangon, Mandalay-MaDaYar,, Mandalay-Myityina, Bagan Line
(11) Main Road	Road to Yangon(Highway), Myikyina, Lashio, Kyaing Ton, Taonggyi, Loilaw, Magway, HarKhar, Kalay

Social Environment (search for only candidate cities)

(a) Schools (No.)	483	Primary	Secondary	High	Monastery
		323	42	41	77
(b) University and Colleges (No.)	15	Representative School			
		Mandalay University, Yadanarpon University			
(c) Health Care facilities (No)	511	Government Hospital	Private Hospital	Government dispensary	Private dispensary
		18	22	84	387

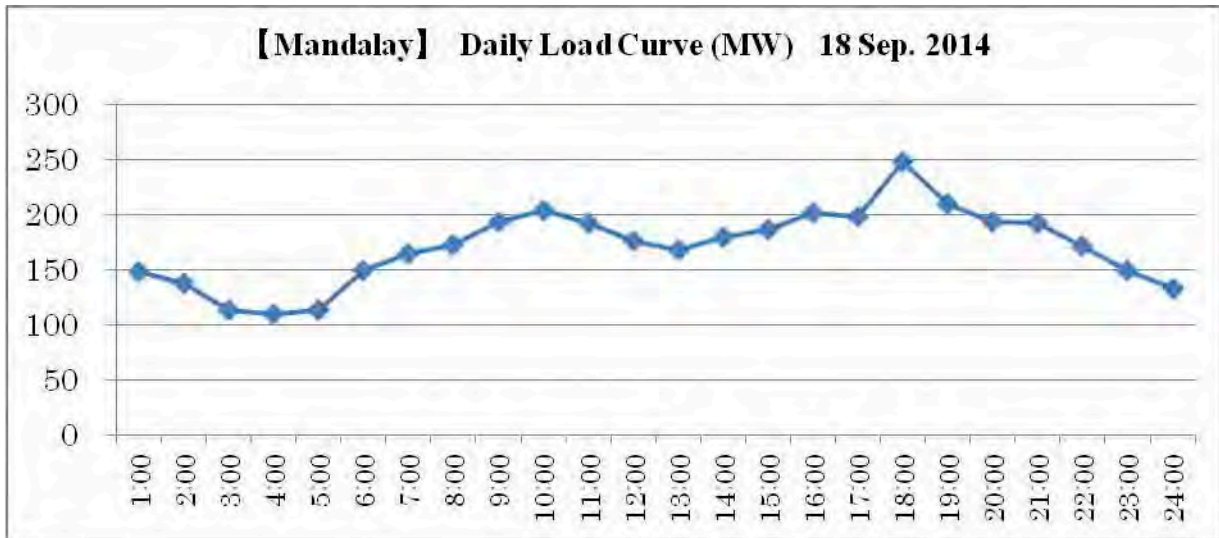
Power demand

(12) Customer	232,065 customers	Oct.2014
(13) Electrified village	251 villages	Oct.2014
(14) Number of fixing meter	232,065 Nos.	Oct.2014
(15) Electricity Sales	1,049,837 MWh	Apr.2013 - Mar.2014
(16) Peak demand	174 MW	Sep.2012
	197 MW	Oct.2013
	248 MW	Aug.2014
(17) Capacity utilization rate*	80.9 %	Aug.2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

(18) Daily Load curve



Power Facilities

(19) Power Transformer (66/11kV)	- MVA	- Nos.	Oct.2014
(20) Power Transformer (33/11kV)	340.5 MVA	20 Nos.	Oct.2014
(21) Power Transformer (11/0.4kV)	760.3 MVA	2,847 Nos.	Oct.2014
(22) Distribution Line (33kV)	384 km	6,060 Poles	Oct.2014
(23) Distribution Line (11kV)	689 km	13,294 Poles	Oct.2014
(24) Distribution Line (0.4kV)	1265 km	24,773 Poles	Oct.2014
(25) Small Hydropower Generator	- MW	- Nos.	Oct.2014
(26) Diesel Power Generator*1	- MW	- Nos.	Oct.2014

*1 excluding emergency generator

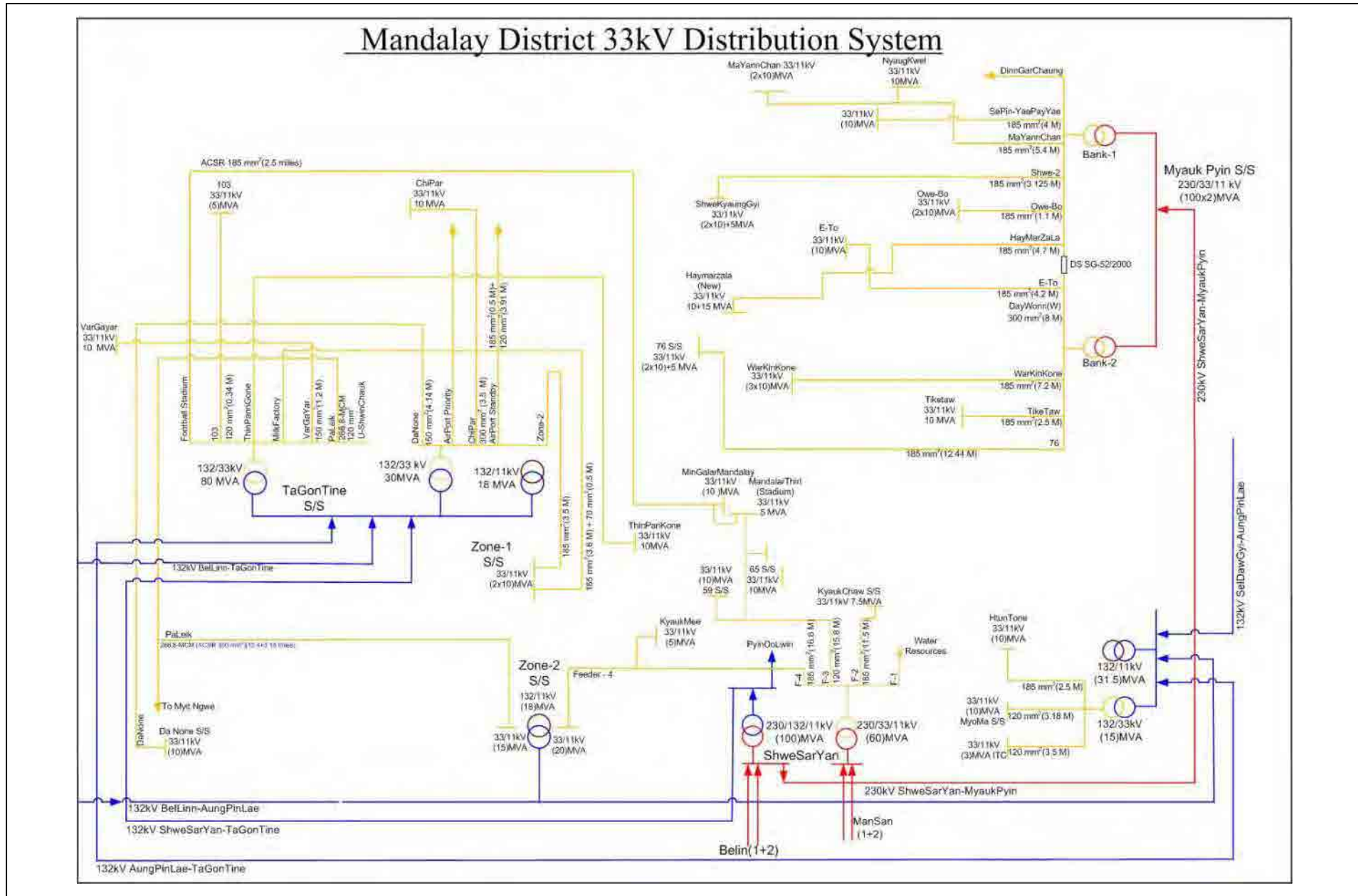
Distribution Loss Rate

(27) Distribution Loss Rate	20.5 %	Jun.2014
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Mandalay City (Example of “Basic Information Sheet”)

(29) 33kV System Single Line Diagram

App1-94



Mandalay City (District)

(30) Power Facilities



33/11kV Chi Pa SS 33kV Transmission Line



33/11kV Chi Pa SS (10MVA×1No.)



33/11kV Chi Pa SS (11kV)



33/11kV 59 street SS(10MVA×1No.)





33/11kV 65St SS (10MVA×1No.)



33kV Distribution line
(Upper circuit, Concrete pole, 1cct)

Meiktila City (Township)

Country	 Myanmar
Region / State	 Mandalay
District	Meiktila
Township	Meiktila, Mahlaing, Thazi, Wundwin



Photo



Meiktila Lake



Meiktila Downtown



Street

Meiktila City (Township)

General information

(1) Area	30 km ²
(2) Population	180 Thousand People
(3) Household	157 Thousand house holds
(4) Village	1093 Villages

Industry/Facilities

(5) Main Industry	Sightseeing
(6) Industrial Zone	1 Industrial zone
(7) Special Economic Zone	-
(8) Important Facilities	17 hospitals, 5 markets

Transportation Infrastructure

(9) Airport	—
(10) Railway	To Thazi, Myingyan
(11) Main Road	To Mandalay, Myingyan, TaungGyi, Kyaukpataung, Yangon

Power demand

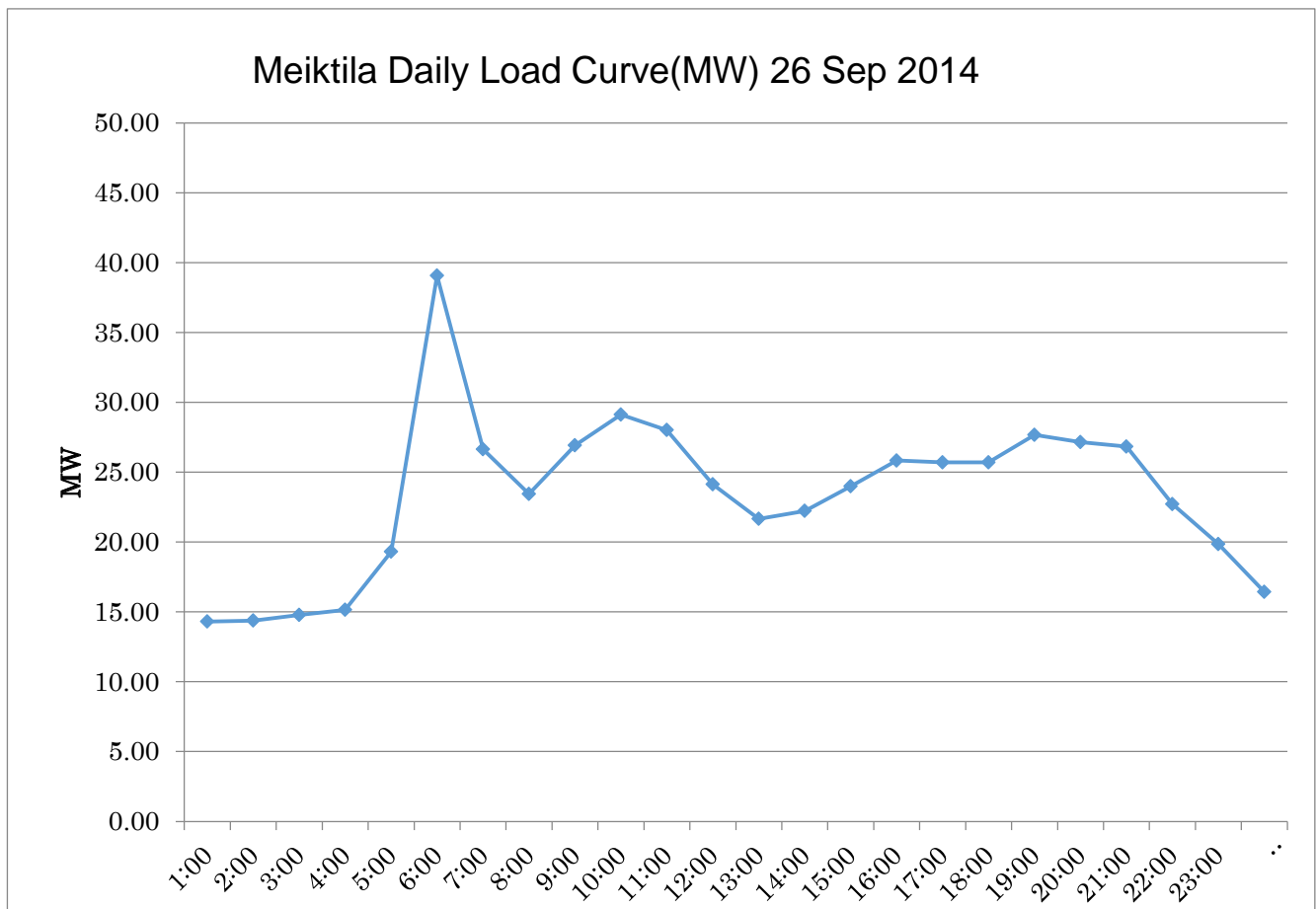
(12) Customer	57,600 customers	Nov.2014
(13) Electrified village	384 villages	Nov.2014
(14) Number of fixing meter	49,401 Nos.	Nov.2014
(15) Electricity Sales	27,247 MWh	Apr2013 - Mar.2014
(16) Peak demand	34 MW	2012
	35 MW	2013
	41 MW	2014
(17) Capacity utilization rate*	35 %	2014

*Capacity utilization rate (%)

$$= [\text{Peak Demand (MW)} / [\text{Power Transformer Capacity (MVA)} * 0.9(\text{Power Factor})]] * 100$$

Meiktila City (Township)

(18) Daily Load curve



Power Facilities

(19) Power Transformer (66/11kV)	-	MVA	-	Nos.	-
(20) Power Transformer (33/11kV)	35	MVA	7	Nos.	Nov.2014
(21) Power Transformer (11/0.4kV)	93	MVA	436	Nos.	Nov.2014
(22) Distribution Line (33kV)	442	km	6,070	Poles	Nov.2014
(23) Distribution Line (11kV)	344	km	7,458	Poles	Nov.2014
(24) Distribution Line (0.4kV)	382	km	11,864	Poles	Nov.2014
(25) Small Hydropower Generator	-	MW	-	Nos.	-
(26) Diesel Power Generator	-	MW	-	Nos.	-

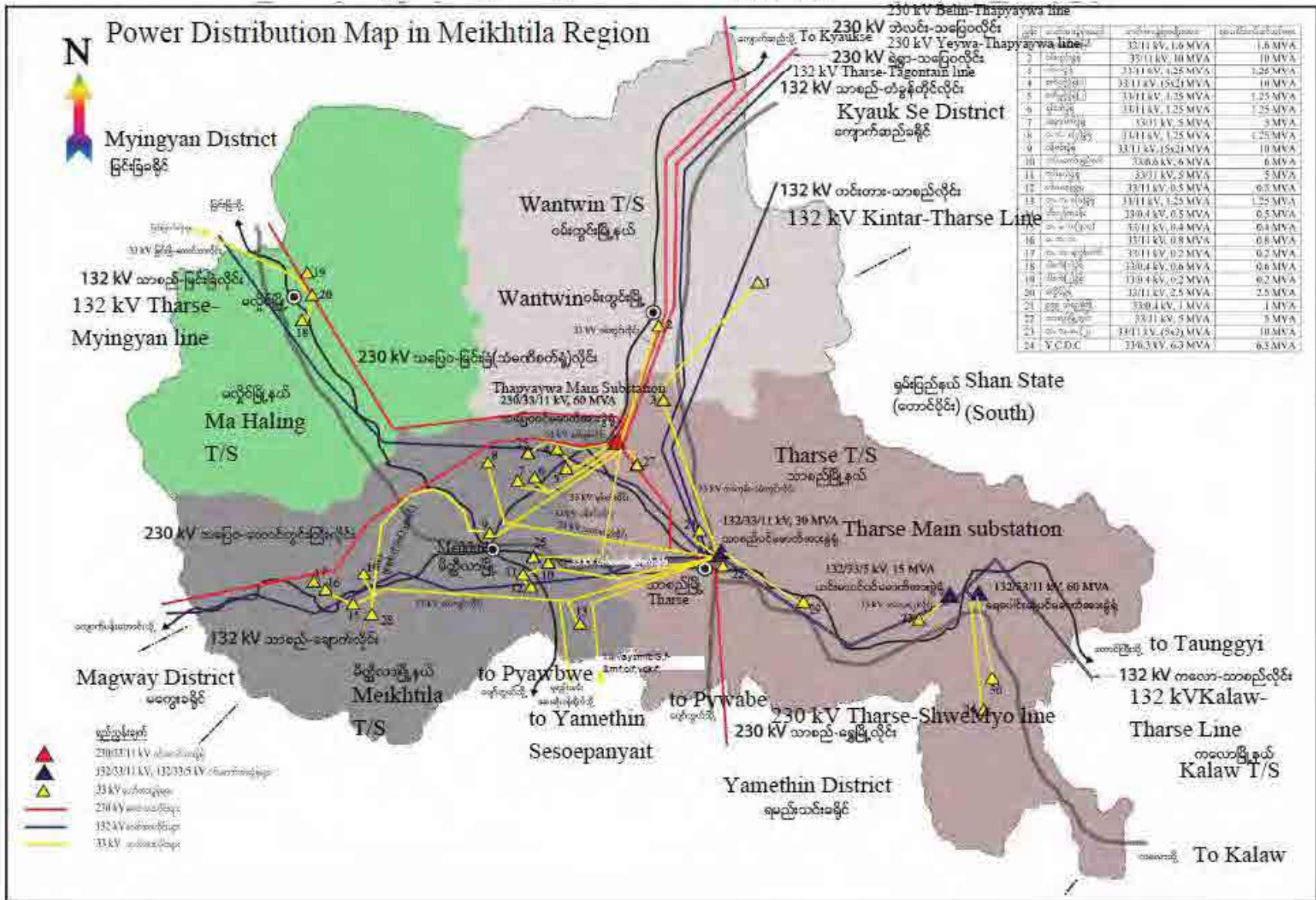
Distribution Loss Rate

(27) Distribution Loss Rate	18.4%	2014
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Meiktila City (Township)

(28) 33kV System Diagram (Location Map)

System Diagram (Location map)



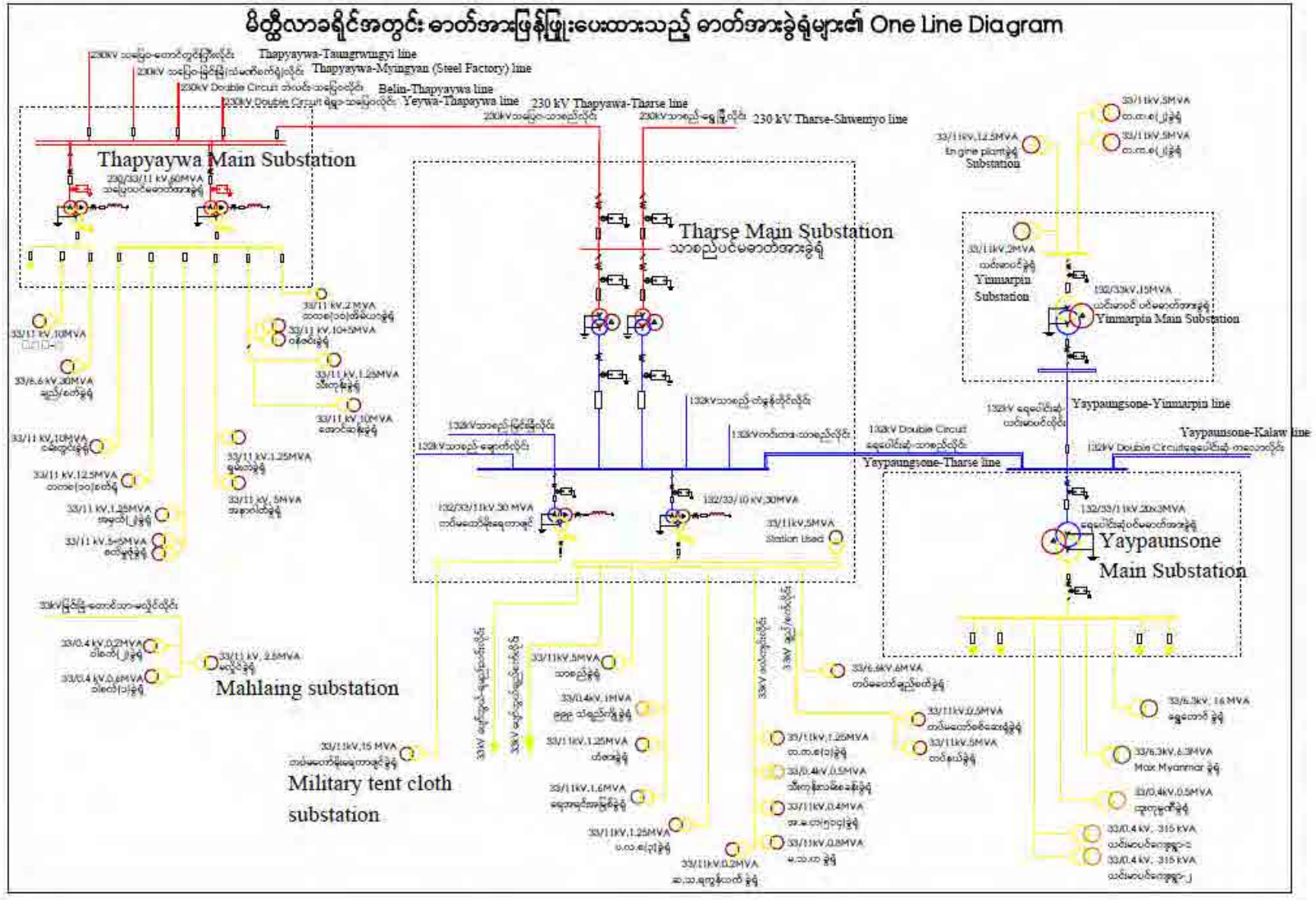
App1-99

Meiktila City (Township)

(29) 33kV System Single Line Diagram

One Line Diagram of Substations which are distributed power in Meikhtila District

မိတ္ထီလာခရိုင်အတွင်း ဓာတ်အားဖြန့်ဖြူးပေးထားသည့် ဓာတ်အားခွဲရုံများ၏ One Line Diagram



App1-100

(30) Power Facilities



11kV Feeder