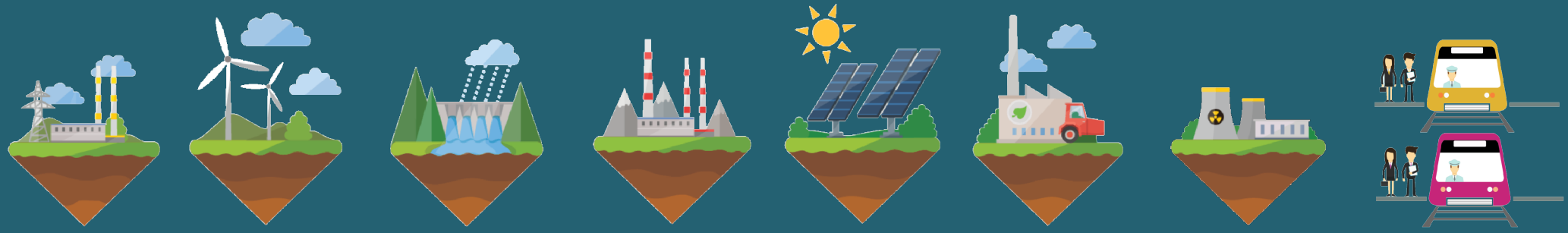
RATCH

RATCHABURI ELECTRICITY GENERATING HOLDING PCL.

Analyst Meeting 3Q2017

27 November 2017



Agenda

- Highlights
- RATCH Overview
- Operating Performance
- Financial Performance
- Appendix

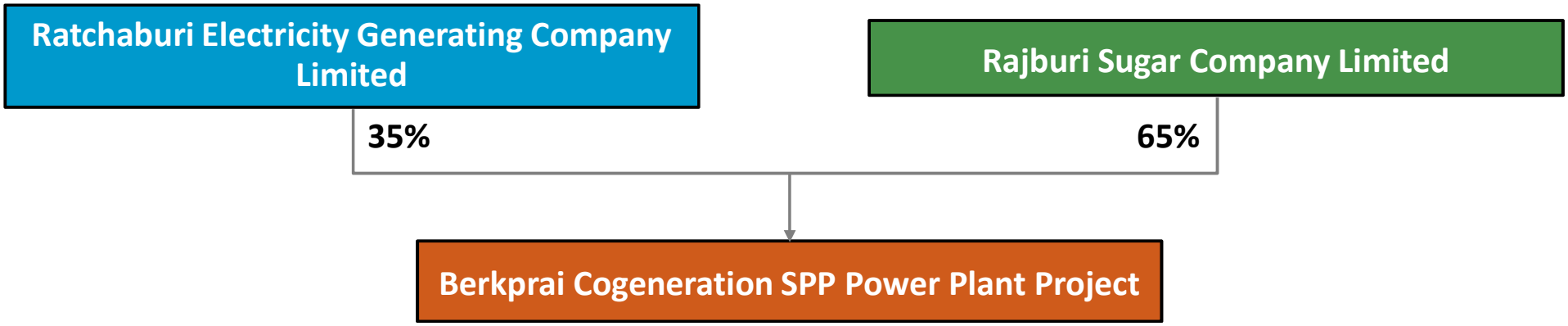
Agenda

Highlights

Highlights: Berkpai Cogeneration Company Limited

On 7 July 2017, RATCHGEN paid for the additional share capital, by its proportion in the amount of Baht 32.61 million. As a result, the total paid up capital was Baht 845.55 million or 63.53 percent of the registered capital.

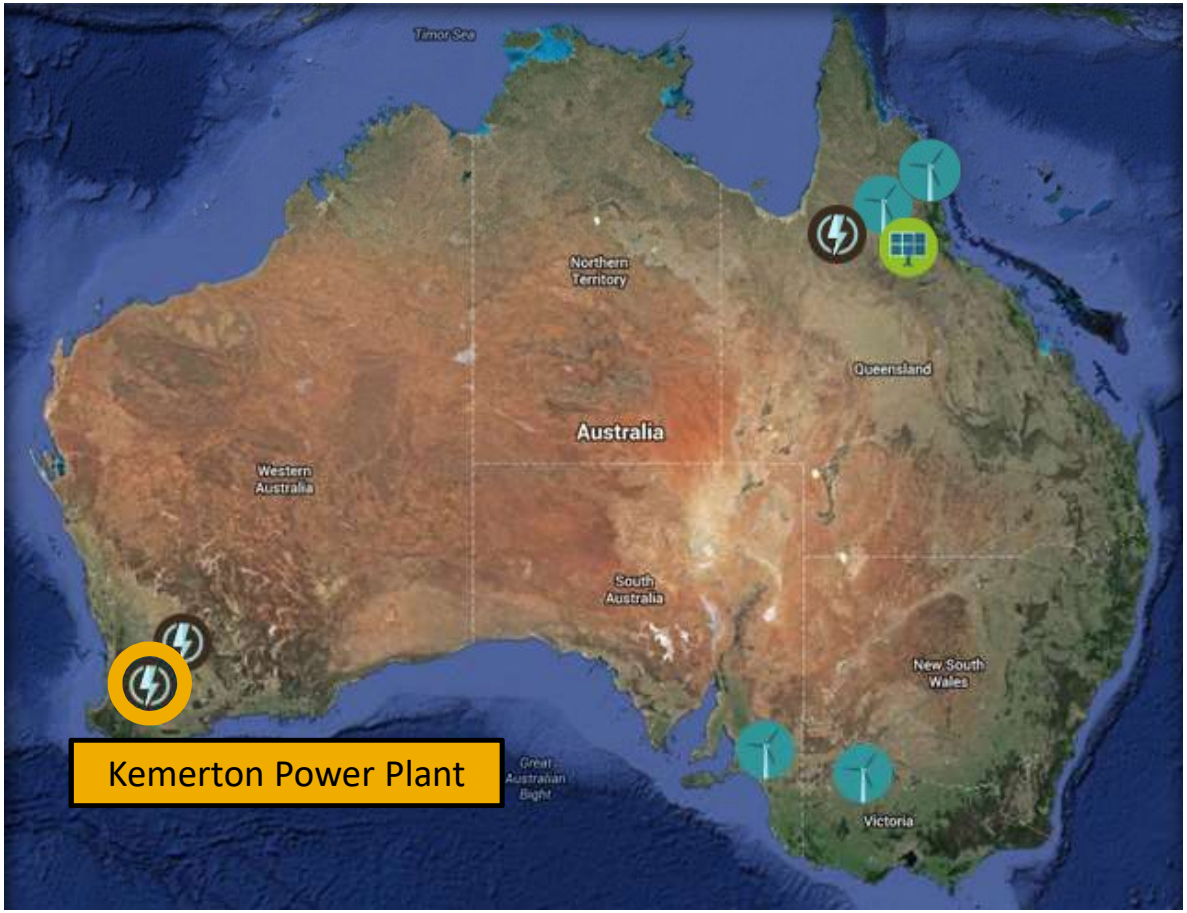
On 16 October 2017, RATCHGEN paid for the remaining share capital in the amount of Baht 170.04 million. As a result, the capital was fully paid at Baht 1,331 million or 100 percent.



Berkprai Cogeneration SPP Project has 100 MW electricity generating capacity and steam generating capacity of 15 tons per hour. It is located in Berkprai Sub-district, Ban Pong District, Ratchaburi Province. The Project has 25-year Firm Cogeneration PPA with EGAT. It is expected to COD in 2019.

Highlights: Kemerton Power Plant in Australia

On 31st October 2017, RATCH-Australia Kemerton Pty Ltd. (RAK) had ***entered into an agreement for Ancillary Service Deed System Restart Service*** with Electricity Generation and Retail Corporation Trading as Synergy (Synergy) ***to provide System Restart Service*** to Australian Energy Market Operator (AEMO) for 10 years. It is done in a form back-to-back contract between RAK and Synergy , and between Synergy and AEMO , whereas conditions for the power purchase under the main contract remain the same. As a result, RAK will gain additional income from the Availability Payment due to this additional service.

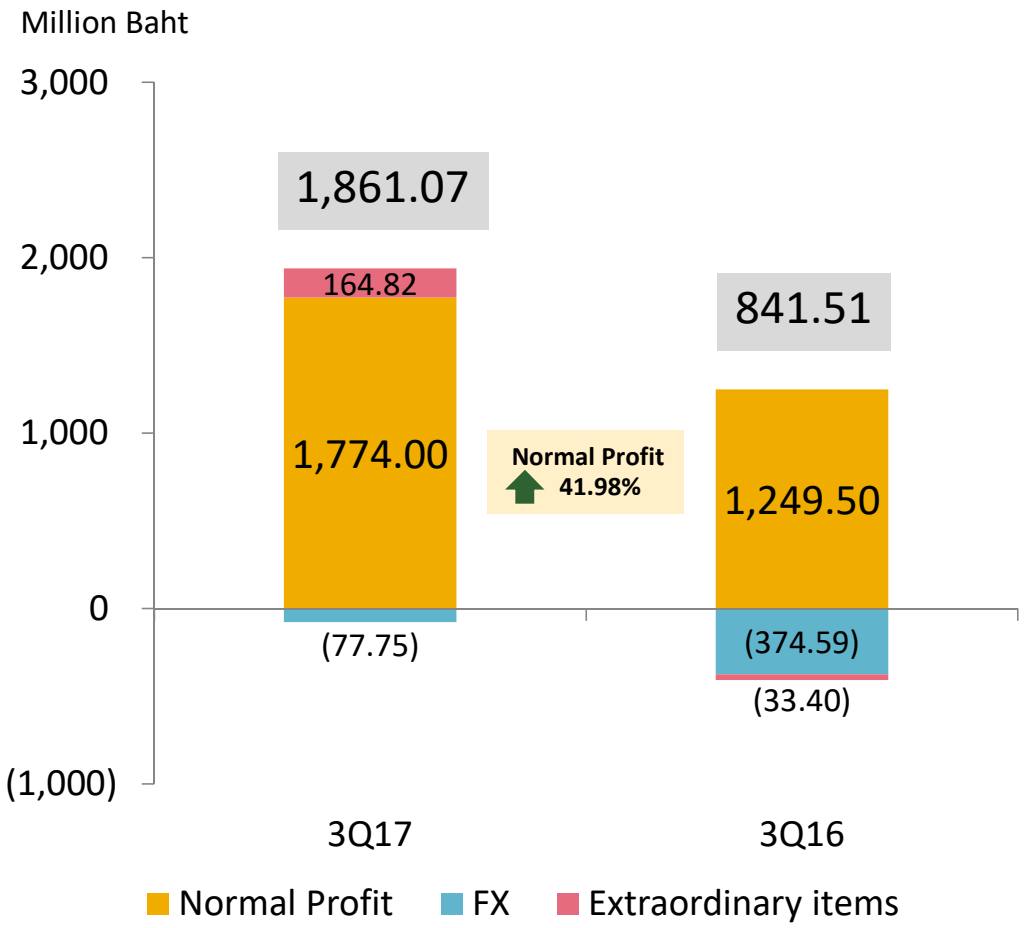


The installation of 4 sets of 1,760 kilowatts diesel power generator (7 megawatts installed capacity) will be done by using RAC's cash flow with the budget of approximately AUD 10 million.

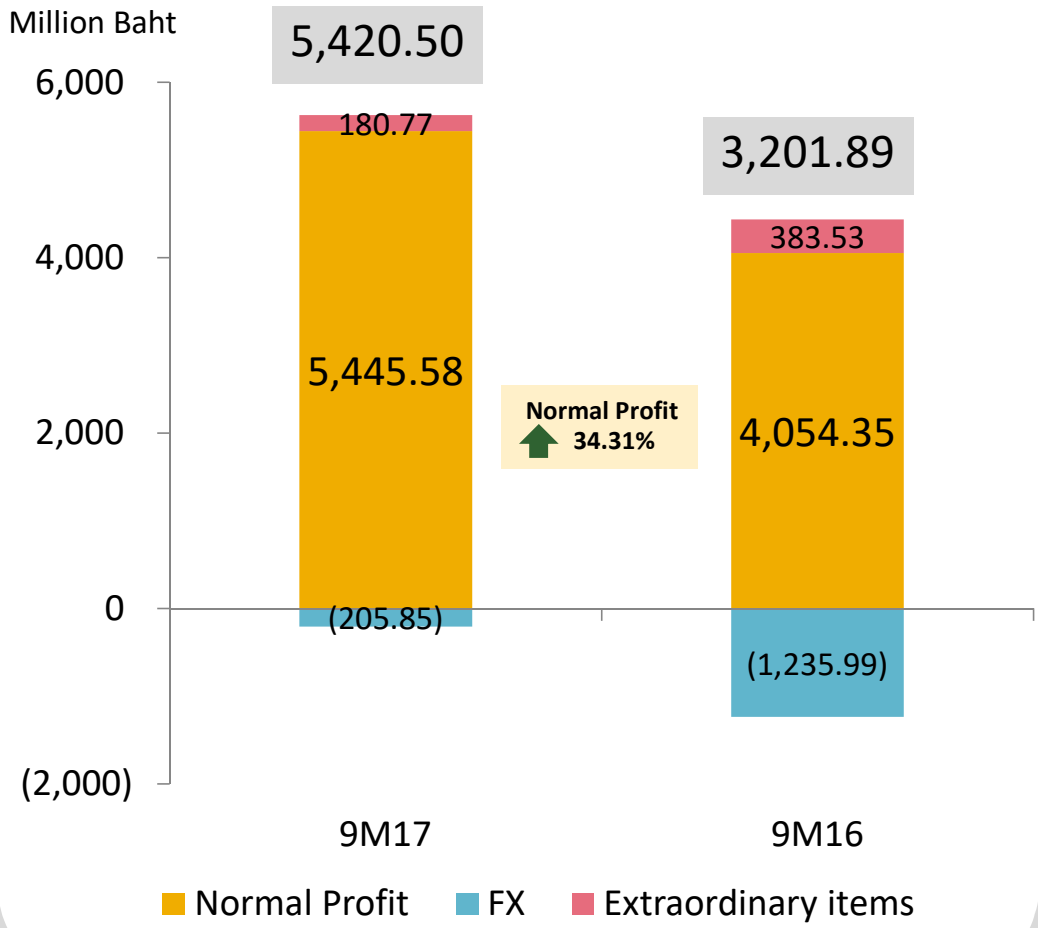
It is expected to commence commercial operation within December 2018, which in ahead of the scheduled commercial operation under the contract (within April 2019).

Profit for the period: Equity holders of the Company

3Q17&3Q16



9M17&9M16



Agenda

RATCH Overview

Overview of RATCH projects

Capacity until 2021
(Committed Projects)

Projects in pipeline from 2018 to 2021
883.62 MW.

Current Projects
6,495.51 MW

2017

2018
178.36 MW
+ Mount Emerald Wind Farm 144.36 MW
+ Collinsville Solar PV 34 MW

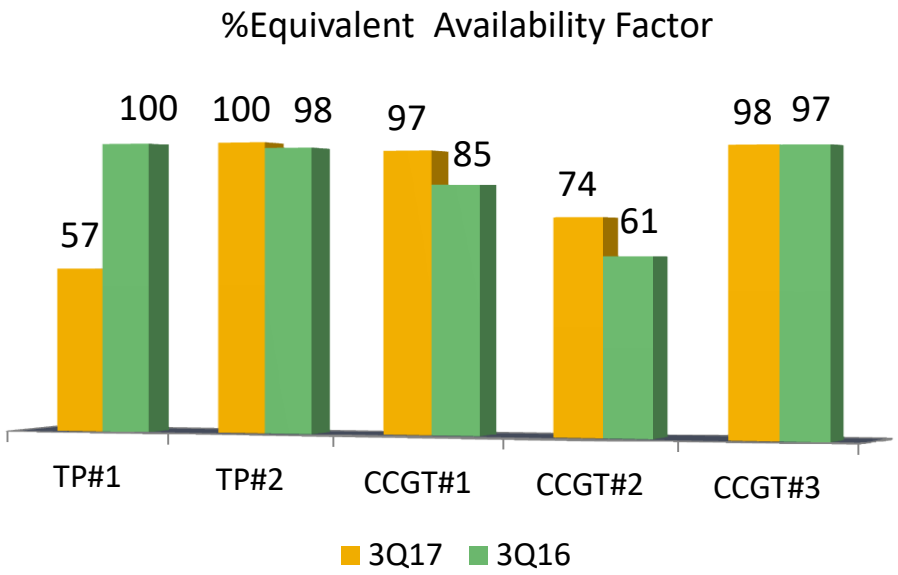
2019
137.23 MW
+ Xe Pian – Xe Namnoy 102.50 MW
+ Berkprai Cogeneration 34.73 MW

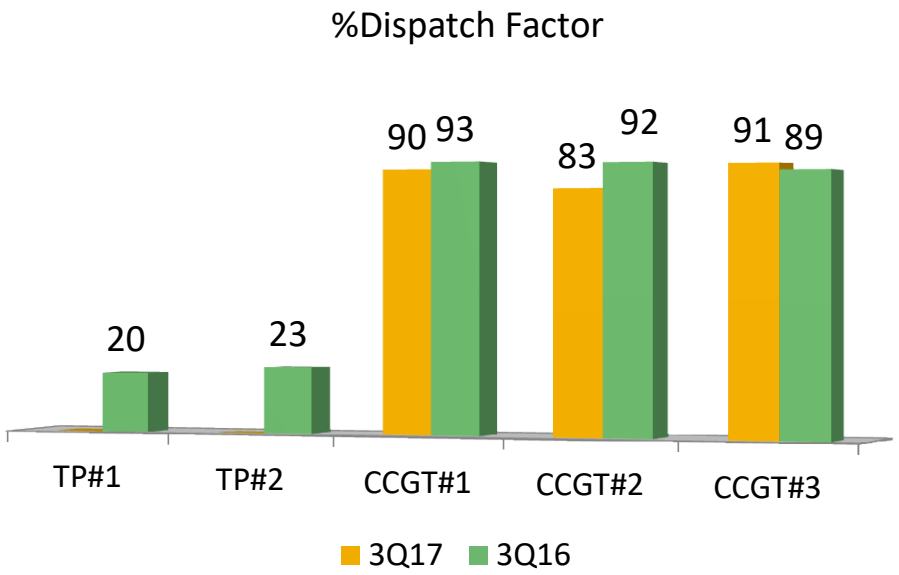
2020
191 MW
+ MRT Pink Line Project and MRT Yellow Line Project equivalent to 191 MW

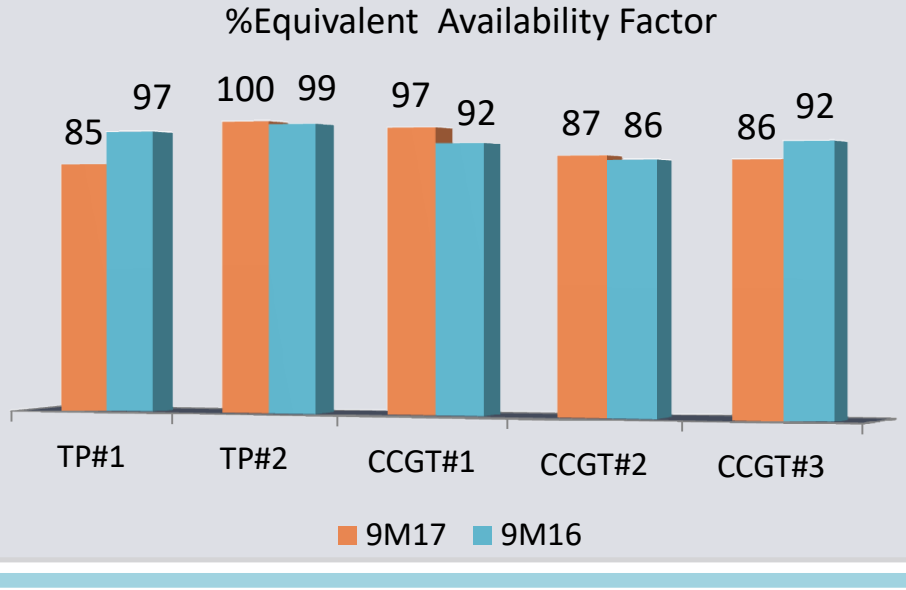
2021
377.03 MW
+ Guangxi Fangchenggang Nuclear Power (II) 236 MW
+ Riau Combined-Cycle Power Plant 141.03 MW

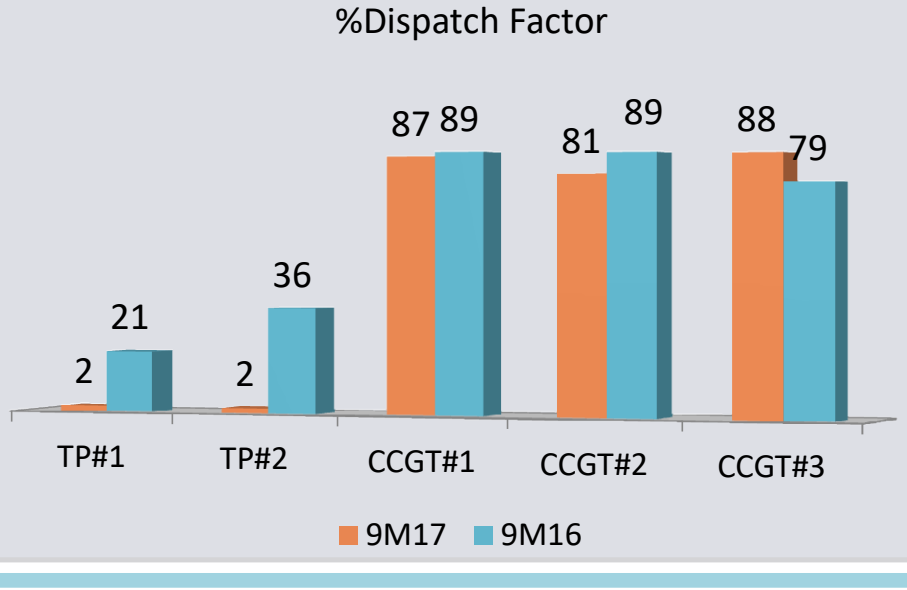
Operating Performance

Operation Performance : RATCHGEN



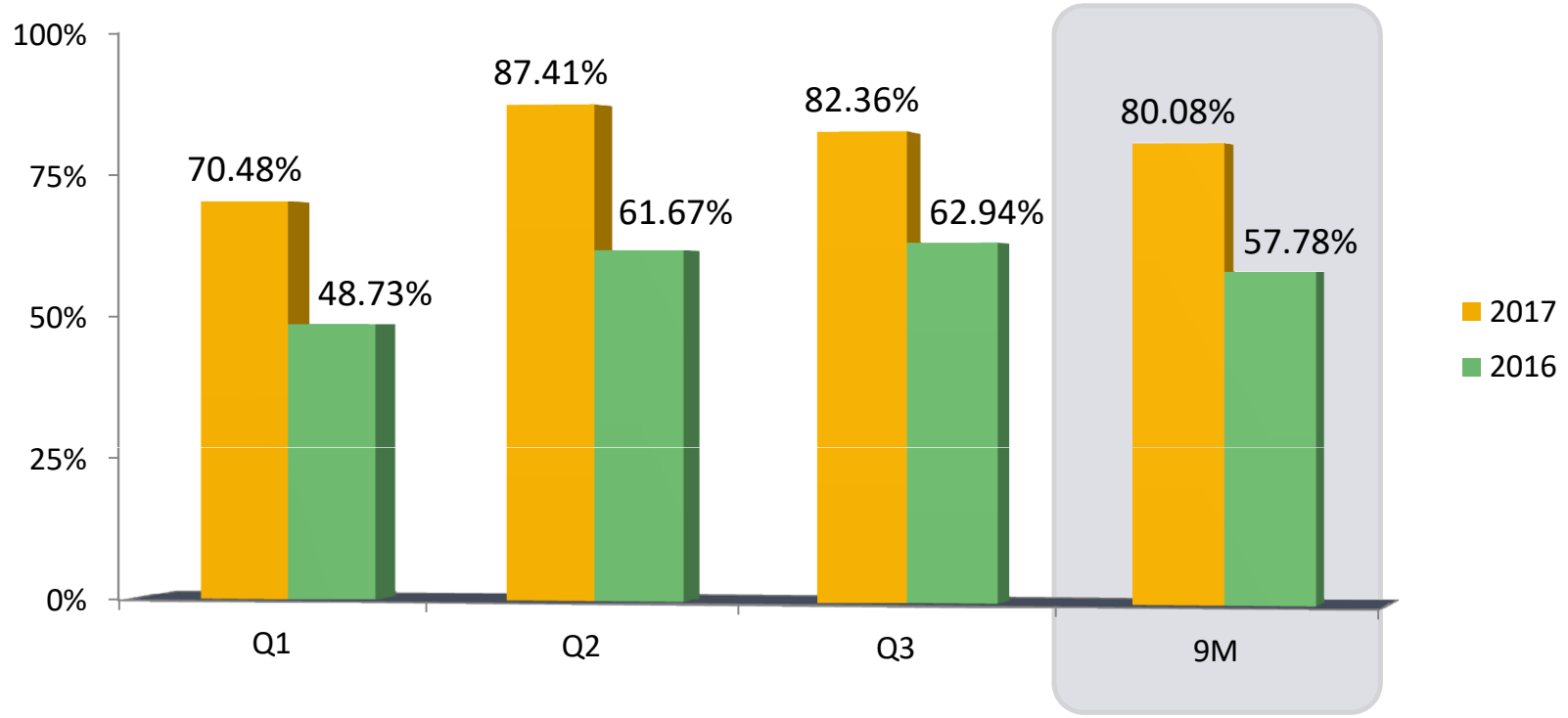






Operation Performance : Hongsa

%Equivalent Availability Factor (3 Units)

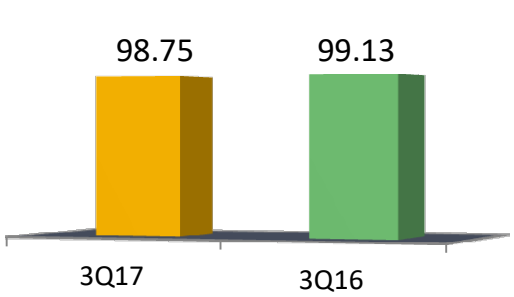


EAF	Q1	Q2	Q3	9M
YoY % Change	⬆ 45%	⬆ 42%	⬆ 31%	⬆ 39%

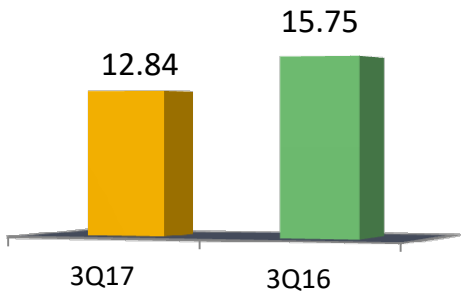
Operation Performance : Huay bong

Huay bong 2 (KR2)

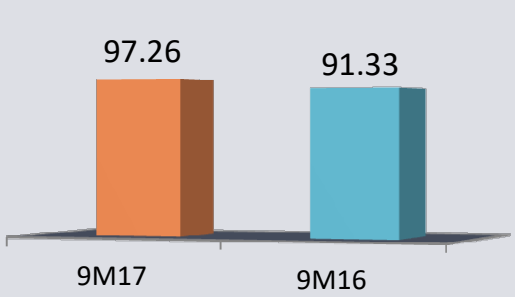
Avg. Commercial Availability (%)



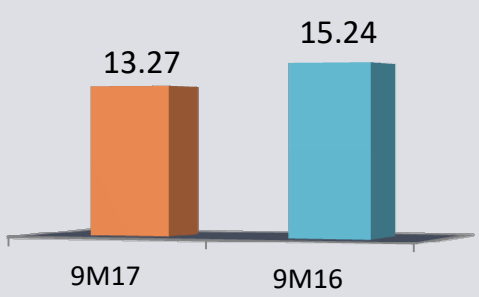
Capacity Factor (%)



Avg. Commercial Availability (%)

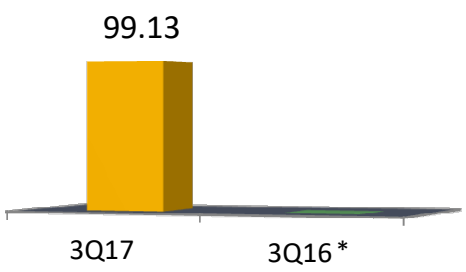


Capacity Factor (%)

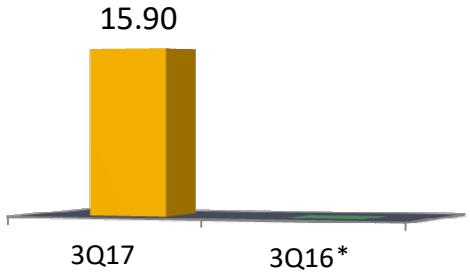


Huay bong 3 (FKW)

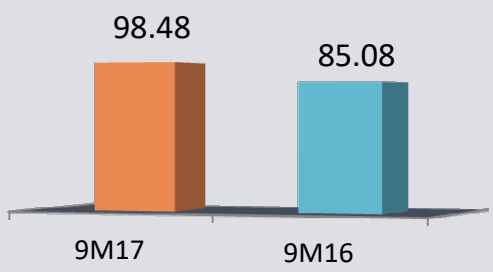
Avg. Commercial Availability (%)



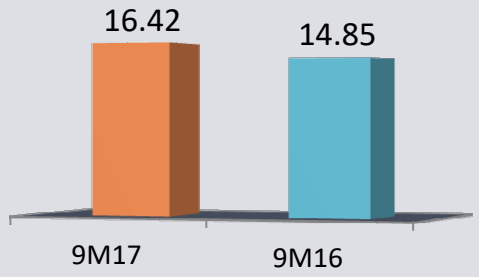
Capacity Factor (%)



Avg. Commercial Availability (%)



Capacity Factor (%)



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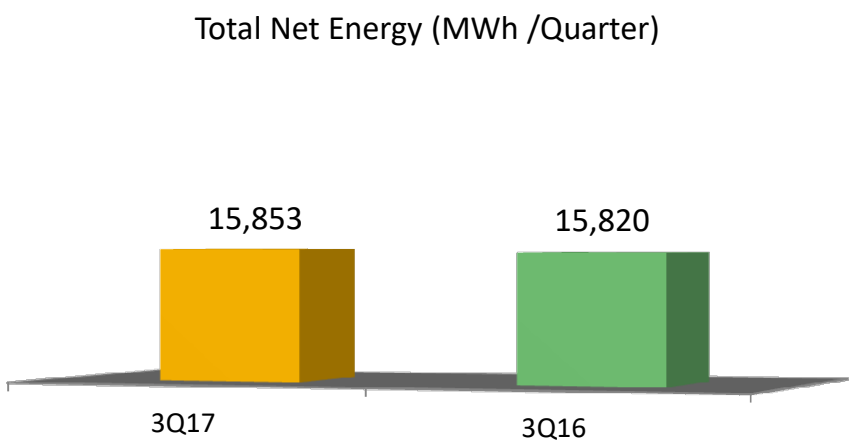
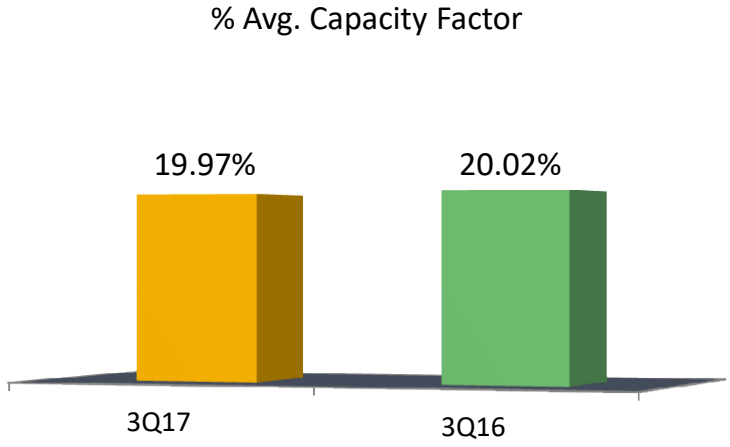
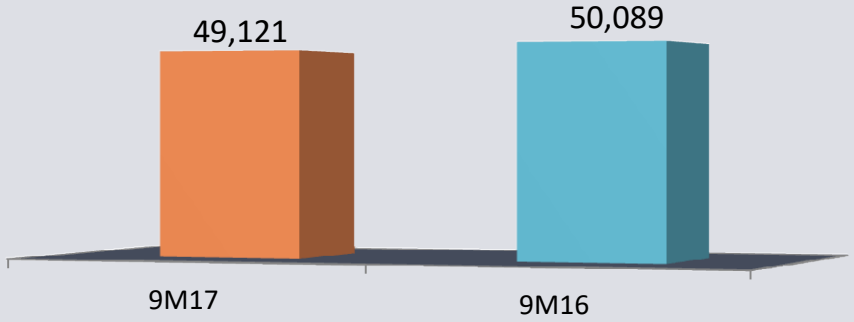
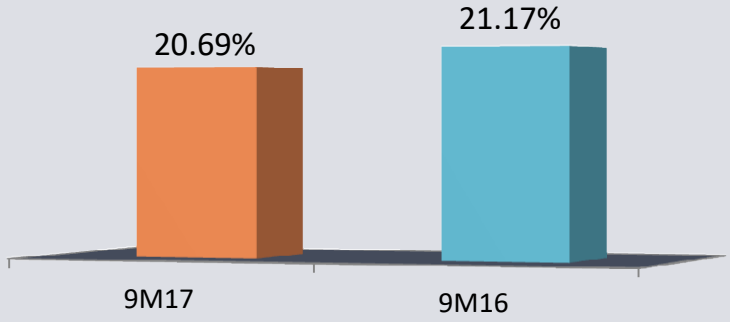
* On 19 June 2016, the fire took place at the transmission line under the high voltage power house of Huay Bong 3 Wind Power Plant leading to the shutdown. The power plant has resumed load on 30 December 2016.

Operation Performance : Solarta



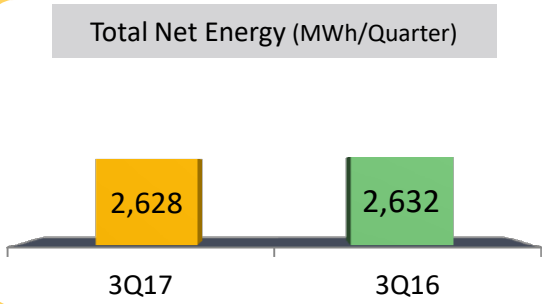


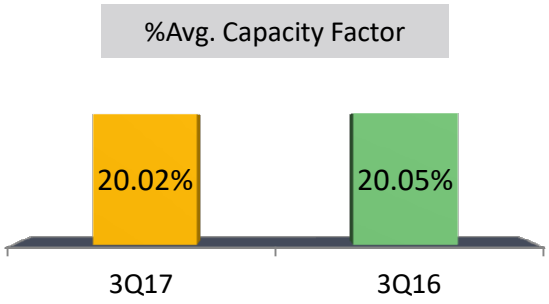


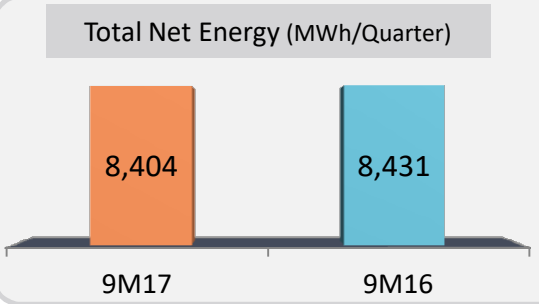


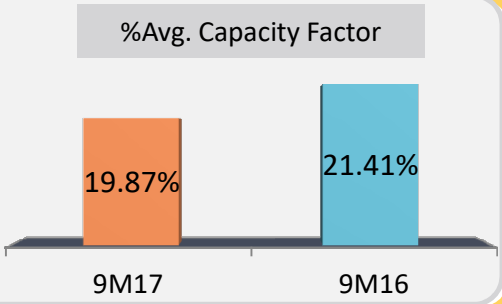
Operation Performance : Solar Power

Korat 3









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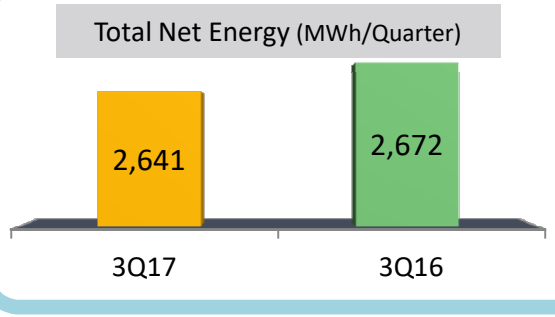

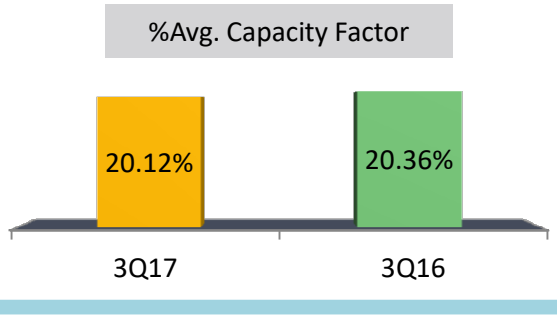

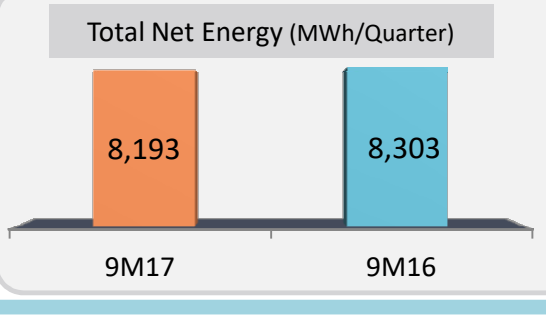

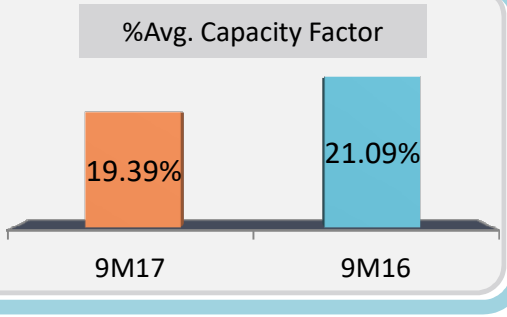

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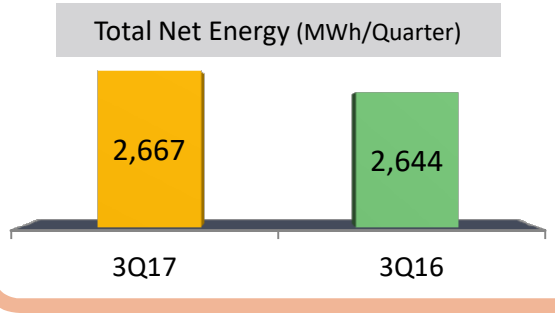
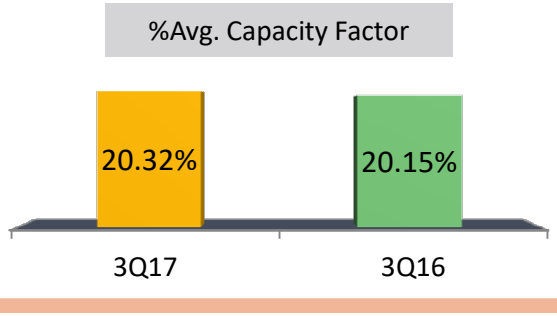
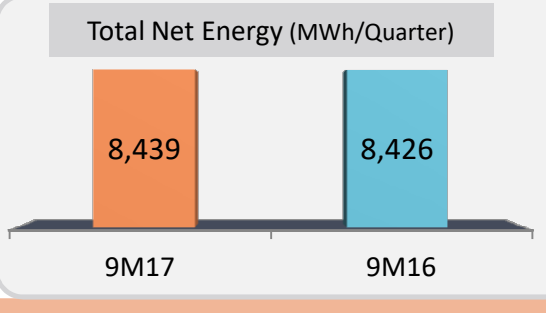
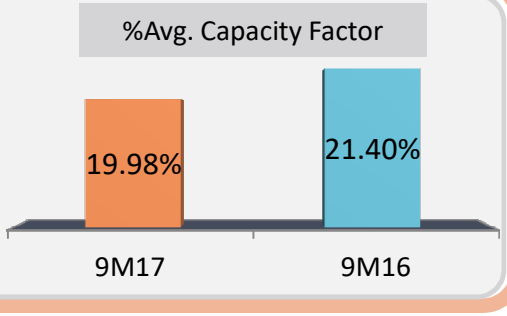








Financial Performance

Income Statement

Unit : in Million Baht	3Q17	2Q17	1Q17	4Q16	3Q16
Revenues	**11,303.72**	**11,150.26**	**9,978.02**	**10,860.57**	**11,349.65**
Cost & Expenses	(9,800.90)	(9,412.26)	(8 ,477.49)	(9,437.12)	(9,892.70)
EBITDA before Share of Profit and FX	**1,502.82**	**1,738.00**	**1,500.53**	**1,423.45**	**1,456.95**
Share of profit of jointly-controlled entities and associates **excluding** gain (loss) on exchange rate	1,227.73	1,425.15	902.65	908.38	654.72
EBITDA included share profit of JV before FX	**2,730.55**	**3,163.15**	**2,403.18**	**2,331.83**	**2,111.67**
Gain (Loss) on exchange rate of subsidiaries	200.65	48.02	233.00	1,169.73	(256.33)
Gain (Loss) on exchange rate of JV	(278.40)	(33.17)	(375.95)	340.32	(118.26)
EBITDA included share profit of JV and FX	**2,652.80**	**3,178.00**	**2,260.23**	**3,841.88**	**1,737.08**
Development cost - Nam Bak	-	-	-	*(126.00)*	-
O&M Compensation – NN2	-	-	-	-	-
Gain on selling assets (Pratu Tao-A & Sao Thian-A)	-	-	-	-	-
Insurance claim	*53.77*	-	*85.61*	-	-
Diesel price movement (RG & RPCL)	*111.05*	*(53.65)*	*(16.01)*	*98.25*	*(33.40)*
Depreciation & Amortization - Cost	*(305.38)*	*(322.87)*	*(319.16)*	*(320.72)*	*(307.70)*
Depreciation & Amortization – Admin	*(32.51)*	*(33.70)*	*(35.11)*	*(35.41)*	*(35.31)*
EBIT	**2,479.73**	**2,767.78**	**1,975.56**	**3,458.00**	**1,360.67**
Finance costs	(374.40)	(369.63)	(400.37)	(361.41)	(361.62)
Income tax expense	(262.60)	(233.25)	(247.06)	(155.59)	(180.84)
Profit for the period	**1,842.73**	**2,164.90**	**1,328.13**	**2,941.00**	**818.21**
Non-controlling interests	18.34	36.09	30.31	22.83	23.30
Equity holders of the Company	**1,861.07**	**2,200.99**	**1,358.44**	**2,963.83**	**841.51**

Income Statement: 9M17&9M16

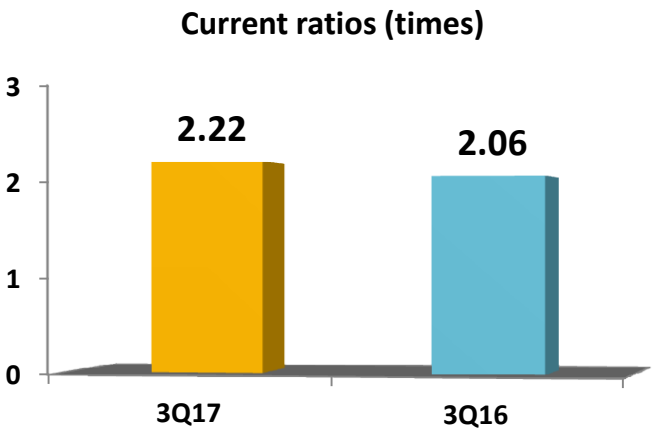
Unit : in Million Baht	9M17	9M16
Revenues	**32,432.00**	**37,323.84**
Cost & Expenses	(27,690.65)	(32,519.22)
EBITDA before Share of Profit and FX	**4,741.35**	**4,804.62**
Share of profit of jointly-controlled entities and associates **excluding** gain (loss) on exchange rate	3,555.53	1,969.99
EBITDA included share profit of JV before FX	**8,296.88**	**6,774.61**
Gain (Loss) on exchange rate of subsidiaries	481.67	(1,012.07)
Gain (Loss) on exchange rate of JV	(687.52)	(223.92)
EBITDA included share profit of JV and FX	**8,091.03**	**5,538.62**
O&M Compensation – NN2	-	134.71
Insurance claim	*139.38*	53.56
Diesel price movement (RG & RPCL)	*41.39*	195.26
Depreciation & Amortization - Cost	*(947.41)*	(937.53)
Depreciation & Amortization – Admin exp	*(101.32)*	(104.39)
EBIT	**7,223.07**	**4,880.23**
Finance costs	(1,144.40)	(1,041.03)
Income tax expense	(742.91)	(707.65)
Profit for the period	**5,335.76**	**3,131.55**
Non-controlling interests	84.74	70.34
Equity holders of the Company	**5,420.50**	**3,201.89**

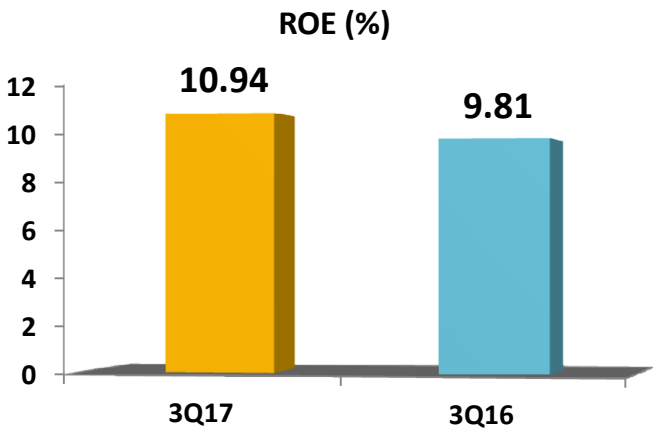
Statements of Financial Position

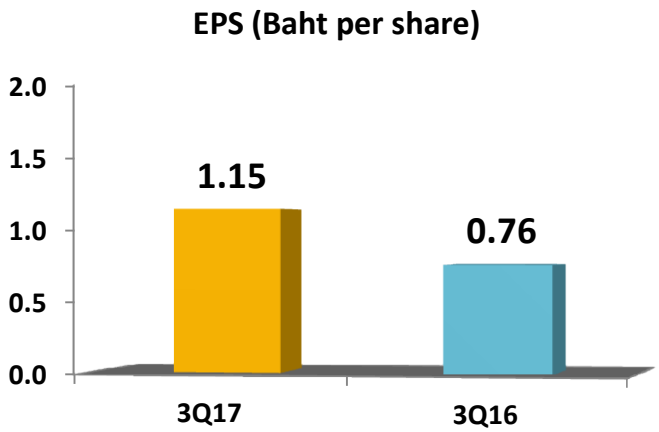
As of 30 September 2017

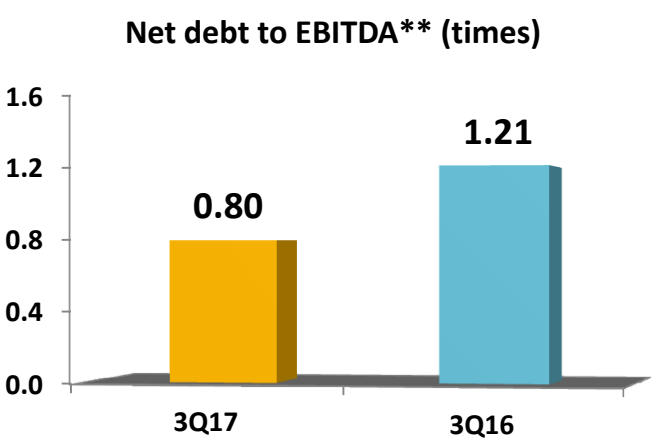
Total Assets	Million Baht	Total Liabilities & Equity	Million Baht
Assets		**Liabilities**	
Cash and cash equivalents	10,522.45	Loans from Related party, Financial Institutions & Debentures	22,585.79
Current investments	542.85	Other liabilities	9,941.86
Current Assets	11,056.97	**Total Liabilities**	**32,527.65**
Investment in Jointly-controlled entities/Associates/Others	30,098.63	**Equity**	
Financial lease receivables	22,187.05	Issued and paid-up share capital	16,031.78
Property, plant & equipments	15,900.03	Other components of equity	(3,679.53)
Other assets	5,388.31	Retained earnings	50,765.64
		Total equity attributable to owners of the Company	**63,117.89**
		Non-controlling interests	50.75
Total Assets	**95,696.29**	**Total Liabilities & Equity**	**95,696.29**

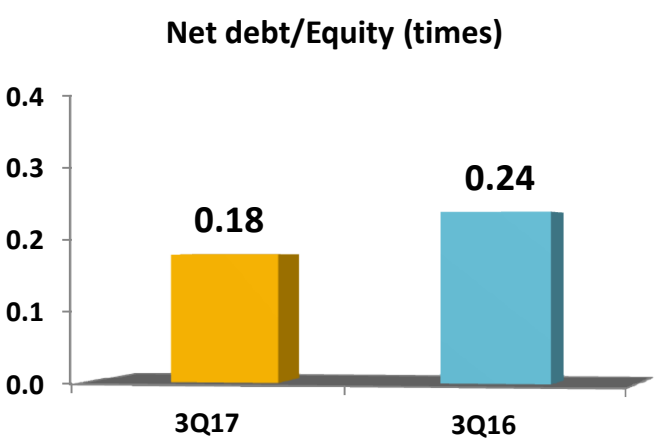
Financial Ratios*

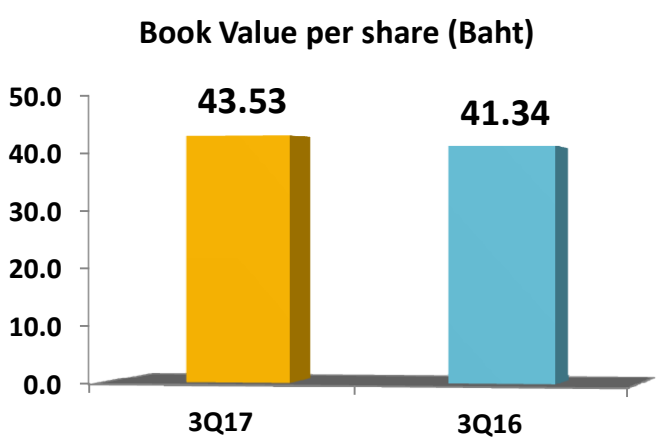












RATCH

* Not included the effect of foreign exchange rate
** Included the change in lease receivable

Appendix: Operating Performance

RATCHGEN Operating Performance

Fuel Consumption					
By Type of Power Plant		**3Q17**	**3Q16**	**9M17**	**9M16**
Fuel Consumption (TH#1-2)					
- Gas	Million MMBTU	-	7.04	0.45	22.63
- Heavy Oil	Million Liters	-	-	26.70	104.89
Fuel Consumption (CCGT#1-3)					
- Gas	Million MMBTU	25.19	23.42	72.25	71.85
- Diesel	Million Liters	0.98	0.18	0.38	4.10
Gas Price (Average) Baht/MMBTU		**241.04**	**232.73**	**239.53**	**241.64**
Heavy Oil Price (Average) Baht/Liter		**-**	**-**	**9.46**	**7.79**
Diesel Oil Price (Average) Baht/Liter		**23.89**	**24.58**	**24.07**	**24.65**

RATCHGEN Operating Performance

Net Generation (GWh)				
By Type of Power Plant	**3Q17**	**3Q16**	**9M17**	**9M16**
Net Generation (TP#1-2) (GWh)	**-**	**674.15**	**140.75**	**2,630.28**
- By Gas (GWh)	-	674.15	41.75	2,228.47
- By Heavy Oil (GWh)	-	-	99.33	401.81
Net Generation (CCGT#1-3) (GWh)	**3,551.18**	**3,307.27**	**10,184.89**	**10,148.21**
- By Gas (GWh)	3,551.18	3,307.27	10,184.89	10,132.29
- By Diesel (GWh)	-	-	-	15.92
Total Net Generation (GWh)	**3,511.18**	**3,981.42**	**10,325.64**	**12,778.49**

Actual Outage

Planned Outage at Ratchaburi Power Plant in 2016

Plant		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
RG	CCST-10												
	CCGT-11									CI (15D) 17 27			
	CCGT-12									CI (15D) 17 27			
RG	CCST-20												
	CCGT-21							MI (30D) 2 31					
	CCGT-22							MI (30D) 2 31					
RG	CCST-30												
	CCGT-31	CI (12D) 1 12											
	CCGT-32	CI (12D) 1 12											
RG	Thermal-1												
RG	Thermal-2												
RG	CCST-10 - CCTE												
	CCGT-11 - CCTE												
	CCGT-12 - CCTE												
RPCL	CCST-10												
	CCGT-11												CI (10D) 4 13
	CCGT-12												CI (10D) 4 13
RPCL	CCST-20	MO(24D) 3 26											
	CCGT-21	MO(24D) 3 26											
	CCGT-22	MO(24D) 3 26											

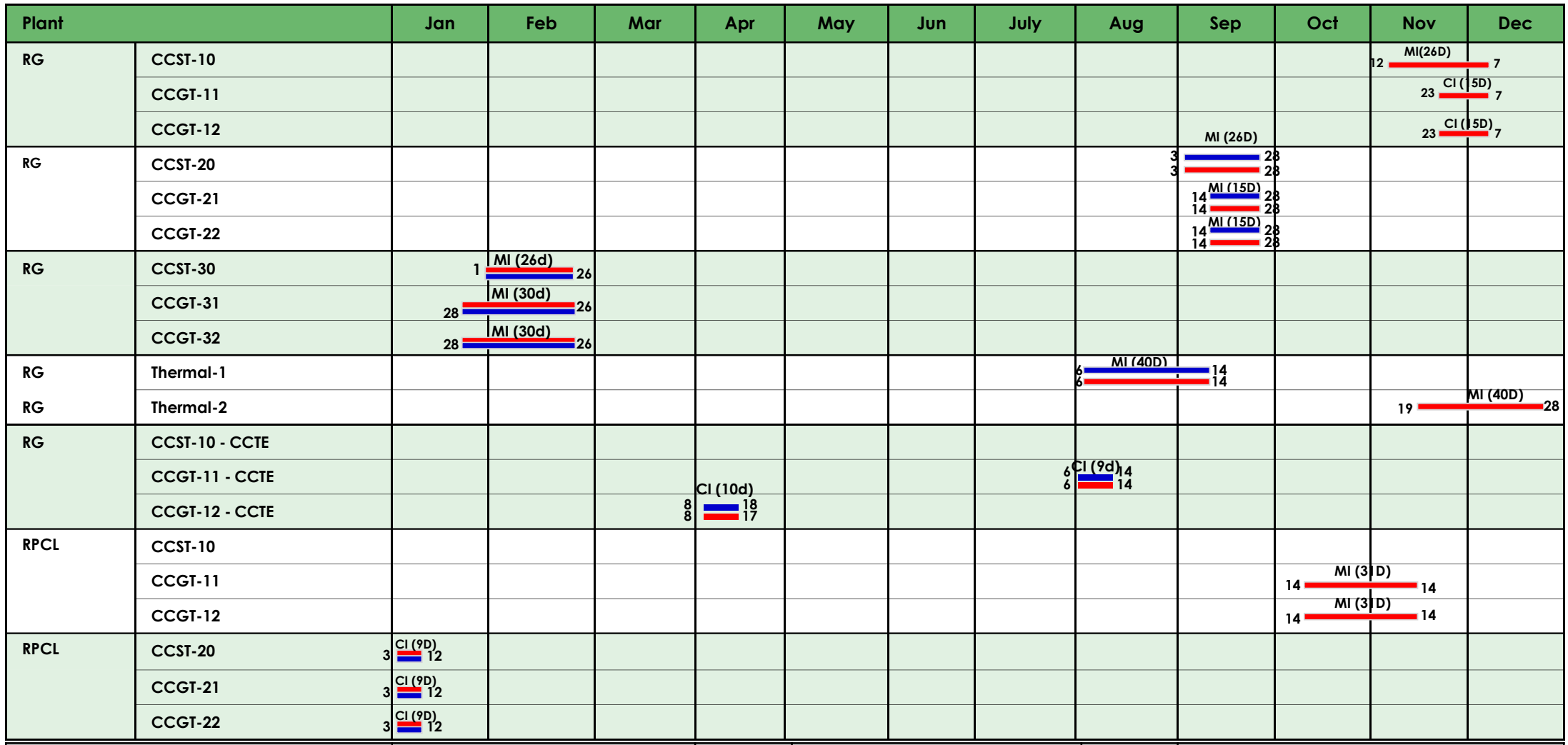
Thermal Plant	Minor Inspection (MI)	40 Days	Major Overhaul (MO)	57 Days

Gas Turbine	Warranty Inspection (WI)		Combustion Inspection	Minor Inspection	Major Overhaul
	Normal (WI)	Gen.Rotor Removed (WI*)	(CI)	(MI)	(MO)
	26 Days	32 Days	15 Days	30 Days	52 Days

Steam Turbine	Warranty Inspection (WI)		Minor Inspection	Major Overhaul
	Normal (WI**)	Gen.Rotor Removed (WI*)	(MI)	(MO)
	26 Days	30 Days	26 Days	49 Days

Actual Outage
Planned Outage

Planned Outage at Ratchaburi Power Plant in 2017



Thermal Plant	Minor Inspection (MI)	40 Days	Major Overhaul (MO)	57 Days

Gas Turbine	Warranty Inspection (WI)		Combustion Inspection	Minor Inspection	Major Overhaul
	Normal (WI)	Gen.Rotor Removed (WI*)	(CI)	(MI)	(MO)
	26 Days	32 Days	15 Days	30 Days	52 Days

Steam Turbine	Warranty Inspection (WI)		Minor Inspection	Major Overhaul
	Normal (WI**)	Gen.Rotor Removed (WI*)	(MI)	(MO)
	26 Days	30 Days	26 Days	49 Days

Appendix: Operating Performance

Revenues: 3Q17 & 3Q16

Unit : in Million Baht		3Q17	3Q16	Diff	%
Sales		**10,095.88**	**9,977.23**	**118.65**	**1.19**
AP	*- RG/TECO*	*990.98*	*724.97*	*266.01*	*36.69*
	- RAC	*427.37*	*425.33*	*2.04*	*0.48*
EP (Fuel)	*- RG/TECO*	*8,434.43*	*8,661.35*	*(226.92)*	*(2.62)*
	- RAC	*243.10*	*165.58*	*77.52*	*46.82*
Revenue from financial leases - RG/TECO		**975.56**	**1,107.20**	**(131.64)**	**(11.89)**
Revenue from Rendering of services		**12.43**	**13.53**	**(1.10)**	**(8.13)**
Management service income		**61.03**	**62.92**	**(1.89)**	**(3.00)**
Dividend Income		**74.75**	**94.86**	**(20.11)**	**(21.20)**
Interest Income		**38.27**	**37.87**	**0.40**	**1.06**
Other Incomes (exc. Extraordinary items)		**45.80**	**56.04**	**(10.24)**	**(18.27)**
Total Revenues		**11,303.72**	**11,349.65**	**(45.93)**	**(0.40)**

Revenues: 9M17 & 9M16

Unit : in Million Baht		9M17	9M16	Diff	%
Sales		**28,734.73**	**33,198.78**	**(4,464.05)**	**(13.45)**
AP	*- RG/TECO*	*3,082.51*	*2,407.41*	*675.10*	*28.04*
	- RAC	*1,245.30*	*1,233.45*	*11.85*	*0.96*
EP (Fuel)	*- RG/TECO*	*23,848.59*	*28,992.42*	*(5,143.83)*	*(17.74)*
	- RAC	*558.33*	*565.50*	*(7.17)*	*(1.27)*
Revenue from financial leases - RG/TECO		**3,053.43**	**3,416.43**	**(363.00)**	**(10.63)**
Revenue from Rendering of services		**38.00**	**92.11**	**(54.11)**	**(58.74)**
Management service income		**184.77**	**194.90**	**(10.13)**	**(5.20)**
Dividend Income		**188.90**	**204.72**	**(15.82)**	**(7.73)**
Interest Income		**130.24**	**121.79**	**8.45**	**6.94**
Other Incomes (exc. Extraordinary items)		**101.93**	**95.11**	**6.82**	**7.17**
Total Revenues		**32,432.00**	**37,323.84**	**(4,891.84)**	**(13.11)**

Share of profit from jointly-controlled entities : 3Q17 & 3Q16

Unit : in Million Baht	3Q17	3Q16	Diff	%
RPCL	96.96	126.69	(29.73)	(23.47)
SEAN	124.56	137.70	(13.14)	(9.54)
HPC	493.87	40.09	453.78	n.a.
PHU FAI	37.95	28.63	9.32	32.55
CRESCO	0.70	0.39	0.31	79.49
SOLARTA	47.64	43.94	3.70	8.42
KORAT 3,4,7	18.76	18.24	0.52	2.85
FKW	20.49	9.51	10.98	115.46
KR2	13.59	21.08	(7.49)	(35.53)
KWINANA	18.25	21.87	(3.62)	(16.55)
PNPC	(34.99)	(6.30)	(28.69)	(455.40)
RW COGEN	65.95	62.83	3.12	4.97
NNEG	43.63	25.63	18.00	70.23
Songkhla Biomass	10.34	10.65	(0.31)	(2.91)
Others	(8.37)	(4.49)	(3.88)	(86.41)
Total Share of profit from jointly-controlled entities	**949.33**	**536.46**	**412.87**	**76.96**

Share of profit from jointly-controlled entities : 3Q17 & 3Q16

EXCL.FX

Unit : in Million Baht	3Q17	3Q16	Diff	%
RPCL	82.30	110.13	(27.83)	(25.27)
SEAN	102.01	125.57	(23.56)	(18.76)
HPC	777.88	190.96	586.92	307.35
PHU FAI	37.56	28.63	8.93	31.19
CRESCO	(0.62)	(1.07)	0.45	42.06
SOLARTA	47.64	43.94	3.70	8.42
KORAT 3,4,7	18.76	18.24	0.52	2.85
FKW	20.47	9.51	10.96	115.25
KR2	13.59	21.08	(7.49)	(35.53)
KWINANA	18.25	21.87	(3.62)	(16.55)
PNPC	(3.92)	(5.07)	1.15	22.68
RW COGEN	65.92	62.74	3.18	5.07
NNEG	43.63	21.83	21.80	99.86
Songkhla Biomass	10.34	10.65	(0.31)	(2.91)
Others	(6.08)	(4.29)	(1.79)	(41.72)
Total Share of profit from jointly-controlled entities	**1,227.73**	**654.72**	**573.01**	**87.52**

Share of profit from jointly-controlled entities : 9M17 & 9M16

Unit : in Million Baht	9M17	9M16	Diff	%
RPCL	317.15	405.11	(87.96)	(21.71)
SEAN	199.87	271.99	(72.12)	(26.52)
HPC	1,644.71	373.33	1,271.38	340.55
PHU FAI	114.50	73.96	40.54	54.81
CRESCO	16.30	24.68	(8.38)	(33.95)
SOLARTA	149.95	132.84	17.11	12.88
KORAT 3,4,7	61.44	60.33	1.11	1.84
FKW	63.37	59.50	3.87	6.50
KR2	46.35	65.85	(19.50)	(29.61)
KWINANA	46.88	57.73	(10.85)	(18.79)
PNPC	(112.87)	3.26	(116.13)	n.a.
RW COGEN	189.02	182.41	6.61	3.62
NNEG	115.45	20.18	95.27	472.10
Songkhla Biomass	18.08	39.24	(21.16)	(53.92)
Others	(2.19)	(24.34)	22.16	91.04
Total Share of profit from jointly-controlled entities	**2,868.01**	**1,746.07**	**1,121.95**	**64.26**

Share of profit from jointly-controlled entities : 9M17 & 9M16

EXCL.FX

Unit : in Million Baht	9M17	9M16	Diff	%
RPCL	264.03	361.36	(97.33)	(26.93)
SEAN	114.52	222.28	(107.76)	(48.48)
HPC	2,377.29	717.98	1,659.31	231.11
PHU FAI	108.17	73.96	34.21	46.25
CRESCO	12.50	20.74	(8.24)	(39.73)
SOLARTA	149.95	132.82	17.13	12.90
KORAT 3,4,7	61.44	60.33	1.11	1.84
FKW	63.35	59.50	3.85	6.47
KR2	46.35	65.85	(19.50)	(29.61)
KWINANA	46.88	57.73	(10.85)	(18.79)
PNPC	(11.98)	(11.11)	(0.87)	7.83
RW COGEN	188.87	182.13	6.74	3.70
NNEG	115.45	9.18	106.27	n.a.
Songkhla Biomass	18.08	39.24	(21.16)	(53.92)
Others	0.63	(22.00)	22.63	(102.86)
Total Share of profit from jointly-controlled entities	**3,555.53**	**1,969.99**	**1,585.54**	**80.48**

Cost and Expenses: 3Q17 & 3Q16

Unit : in Million Baht	3Q17	3Q16	Diff	%
Cost of Sale and rendering of services	**9,436.78**	**9,568.03**	**(131.25)**	**(1.37)**
– Fuel Cost : RG/ TECO	8,336.16	8,619.89	(283.73)	(3.29)
– Fuel Cost : RAC	3.56	2.66	0.90	33.83
– Operation & Maintenance	405.56	379.65	25.91	6.82
– Repairing Expense (CSA)	269.52	272.80	(3.28)	(1.20)
– Spare parts	195.86	37.93	157.93	416.37
– Insurance Premium	112.65	122.08	(9.43)	(7.72)
– Standby Charge	54.25	48.91	5.34	10.92
– Others	59.22	84.11	(24.89)	(29.59)
Selling and Admin- Expenses	**364.12**	**324.67**	**39.45**	**12.15**
Total Cost and Expenses*	**9,800.90**	**9,892.70**	**(91.80)**	**(0.93)**

*excluding depreciation & amortization

Cost and Expenses: 9M17 & 9M16

Unit : in Million Baht	9M17	9M16	Diff	%
Cost of Sale and rendering of services	**26,569.91**	**31,552.36**	**(4,982.45)**	**(15.79)**
– Fuel Cost : RG/ TECO	23,499.41	28,626.99	(5,127.58)	(17.91)
– Fuel Cost : RAC	5.42	8.69	(3.27)	(37.63)
– Operation & Maintenance	1,134.36	1,126.49	7.87	0.70
– Repairing Expense (CSA)	841.61	801.47	40.14	5.01
– Spare parts	365.63	185.76	179.87	96.83
– Insurance Premium	343.47	362.44	(18.97)	(5.23)
– Standby Charge	175.66	156.66	19.00	12.13
– Others	204.35	283.86	(79.51)	(28.01)
Selling and Admin- Expenses	**1,120.74**	**966.86**	**153.88**	**15.92**
Total Cost and Expenses*	**27,690.65**	**32,519.22**	**(4,828.57)**	**(14.85)**

*excluding depreciation & amortization

Gain (Loss) From Foreign Exchange Rate

Unit : in Million Baht	3Q17	3Q16	9M17	9M16
Gain (Loss) from Foreign Exchange Rate	(77.75)	(374.59)	(205.85)	(1,235.99)
The Company and Subsidiaries	**200.65**	**(256.33)**	**481.67**	**(1,012.07)**
- RH	(26.91)	(18.52)	(101.25)	(95.88)
- RH Inter	196.99	(255.81)	460.33	(995.07)
- RG / RE / RL	30.57	18.00	122.59	78.88
Jointly-controlled entities and Associates	**(278.40)**	**(118.26)**	**(687.52)**	**(223.92)**
- SEAN (33.33%)	22.55	12.13	85.35	49.71
- RPCL (25%)	14.66	16.56	53.12	43.75
- HPC (40%)	(284.01)	(150.87)	(732.58)	(344.65)
- PNPC (25%)	(31.07)	(1.23)	(100.89)	14.37
- Others (CRESCO, PMPC, RW Cogen, FKW, KR2, NNEG, Solarta, RICI)	(0.53)	5.15	7.48	12.90

Foreign Exchange Rate as at 30 September 2017 = 33.369 Baht/USD and as at 30 September 2016 = 34.705 Baht/USD

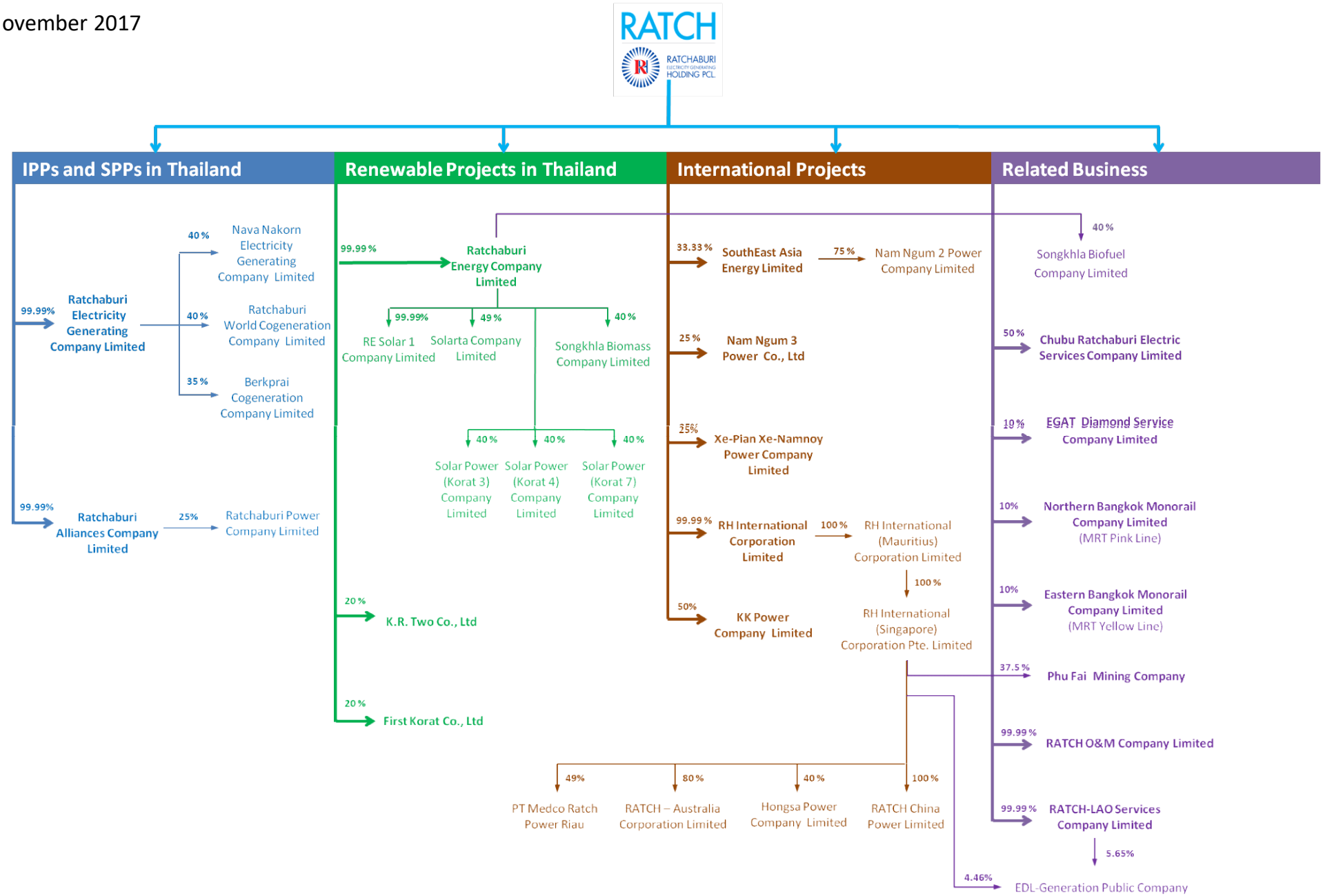
Foreign Exchange Rate as at 30 June 2017 = 33.984 Baht/USD and as at 30 June 2016 = 35.195 Baht/USD

Foreign Exchange Rate as at 30 December 2016 = 35.820 Baht/USD and as at 31 December 2015 = 36.077 Baht/USD

Appendix: RATCH Projects

Company Structure

As of November 2017



Portfolio by Core Business

IPPs and SPPs in Thailand

Name of Power Plant/Project	Location	Technology	Total Installed Capacity (MW)	Installed Capacity contributed to the RATCH's Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
In Operation							
Ratchaburi Power Plant	Ratchaburi Province	Thermal	1,470	1,470 (100%)	EGAT	25 years/ 2025	N/A
		Combined Cycle	2,175	2,175 (100%)	EGAT	25 years/ 2027	N/A
Tri Energy Power Plant	Ratchaburi Province	Combined Cycle	720	720 (100%)	EGAT	20 years/ 2020	N/A
Ratchaburi Power Power Plant	Ratchaburi Province	Combined Cycle	1,490	372.50 (25%)	EGAT	25 years/ 2033	N/A
Ratchaburi World Cogeneration Project	Ratchaburi Industrial Estate, Ratchaburi Province	Cogeneration	234	93.60 (40%)	EGAT	Block 1: 25 years/ 2039 Block 2: 25 years/ 2040	N/A
Nava Nakorn Electricity Generating Project	Nava Nakorn Industrial Promotion Zone, Pathumthani Province	Cogeneration	139.13	55.65(40%)	EGAT	25 years/ 2041	N/A
		Total	**6,228.13**	**4,886.75**			
Under Construction							
Berkprai Cogeneration	Ratchaburi Province	Cogeneration	99.23	34.73 (35%)	EGAT	25 years/2044 (Expected COD: 2019)	N/A
		Total	**99.23**	**34.73**			
		Grand Total	**6,327.36**	**4,921.48**			

Portfolio by Core Business

Renewable Projects in Thailand

Name of Power Plant/Project	Location	Technology	Total Installed Capacity (MW)	Installed Capacity contributed to the RATCH's Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
In Operation							
Huay Bong 2 Wind-Turbine Power Plant	Nakorn Ratchasima Province	Wind-Turbine	103.50	20.70 (20%)	EGAT	5 years/ 2018	Automatic renewal for a further 5 years every 5 years
Huay Bong 3 Wind-Turbine Power Plant	Nakorn Ratchasima Province	Wind-Turbine	103.50	20.70 (20%)	EGAT	5 years/ 2017	Automatic renewal for a further 5 years every 5 years
Solar Power Projects (Korat 3, Korat 4, Korat 7)	Nakorn Ratchasima Province	Solar Power	21.60	8.64 (40%)	PEA	5 years/ 2022	Automatic renewal for a further 5 years every 5 years
Solarta Power Projects	Ayutthaya, Nakhon Pathom, and Suphanburi Provinces	Solar Power	42.30	20.73 (49%)	PEA	Ayutthaya Province : 5 years / 2021 Suphanburi and Nakon Pathom Provinces : 5 years / 2017	Automatic renewal for a further 5 years every 5 years
Songkhla Biomass Power Project	Songkhla Province	Thermal	9.90	3.96 (40%)	PEA	20 years/2035	N/A
		Total	**280.80**	**74.73**			
		Grand Total	**280.80**	**74.73**			

Portfolio by Core Business

International Projects in Australia

Name of Power Plant/Project	Location	Technology	Total Installed Capacity (MW)	Installed Capacity contributed to the RATCH's Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
In Operation							
Townsville Power Plant	North Queensland, Australia	Combined Cycle Gas Turbine	234	187.20 (80%)	AGL/Arrow	February 2025	N/A
Kemerton Power Plant	Western Australia, Australia	Open Cycle Gas/Diesel Turbine	308	246.40 (80%)	Synergy	October 2030	N/A
BP Kwinana Power Plant (30 % owned by RAC)	Western Australia, Australia	Cogeneration	35.40	28.32 (80%)	Verve Energy/BP	December 2021	N/A
Starfish Hill Wind-Turbine Power Plant	South Australia, Australia	Wind-Turbine	33.00	26.40 (80%)	ALINTA Energy	In 2020	N/A
Toora Wind-Turbine Power Plant	Victoria, Australia	Wind-Turbine	21	16.80 (80%)	Merchant	N/A	N/A
Windy Hill Wind-Turbine Power Plant	Queensland, Australia	Wind-Turbine	12	9.60 (80%)	Ergon Energy Queensland (EEQ)	December 2018	N/A
		Total	**643.40**	**514.72**			

Portfolio by Core Business

International Projects in Australia

Name of Power Plant/Project	Location	Technology	Total Installed Capacity (MW)	Installed Capacity contributed to the RATCH's Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
Under Construction							
Mount Emerald Wind Farm	Queensland, Australia	Wind-Turbine	180.45	144.36 (80%)	Ergon Energy Queensland (EEQ)	12.5 year (Expected COD: 2018)	N/A
Collinsville Solar Power Project	Queensland, Australia	Solar Power	42.50	34 (80%)	Braemar Power Project	12.5 year (Expected COD: 2018)	N/A
		Total	**222.95**	**178.36**			
		Grand Total	**866.35**	**693.08**			

Portfolio by Core Business

International Projects in Laos

Name of Power Plant/Project	Location	Technology	Total Installed Capacity (MW)	Installed Capacity contributed to the RATCH's Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
In Operation							
Nam Ngum 2 Hydroelectric Power Plant	Laos	Hydro Power Plant	615	153.75 (25%)	EGAT	27 years/ 2038	N/A
Hongsa Power Plant	Sainyaburi Province, Laos	Lignite-Fired Power Plant	1,878	751.20 (40%)	EGAT & EDL	25 years/ 2040	N/A
		Total	**2,493**	**904.95**			
Under Construction							
Xe Pian - Xe Namnoy Project	Attapue and Champasak provinces, Laos	Hydro Power Plant	410	102.50 (25%)	EGAT EDL	27 years/ 2046 (Expected COD: 2019)	N/A
		Total	**410**	**102.50**			
		Grand Total	**2,903**	**1,007.45**			

Portfolio by Core Business

International Projects in China & Republic of Indonesia

Name of Power Plant/Project	Location	Technology	Total Installed Capacity (MW)	Installed Capacity contributed to the RATCH's Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
Under Construction							
Guangxi Fangchenggang Nuclear Power (II)	Fangchenggang , China	Nuclear Power	2,360	236 (10%)	N/A	30 year (Expected COD: 2021)	N/A
		Total	**2,360**	**236**			
Under Development							
Riau Combined-Cycle Power Plant	Republic of Indonesia	Combined Cycle	287.81	141.03 (49%)	PT PLN (PERSERO)	20 year (Expected COD: 2021)	N/A
		Total	**287.81**	**141.03**			
		Grand Total	**2,647.81**	**377.03**			

Portfolio by Core Business

Related Businesses

Name of Power Plant/Project	Location	Technology	Total Installed Capacity (MW)	Installed Capacity contributed to the RATCH's Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
In Operation							
EDL-Generation	Laos	Hydro Power Plant	1,131.15	114.36 (10.11%)	N/A	N/A	N/A
		Total	**1,131.15**	**114.36**			
Under Development							
MRT Pink Line Project and MRT Yellow Line Project	Nonthaburi and Bangkok Province	Elevated Straddle Monorail	~1,910 MW	~191.00 MW (10%)	N/A	30 years/2051 (Expected COD: 2020	N/A
		Total	**1,910**	**191.00**			
		Grand Total	**3,041.15**	**305.36**			

IPPs and SPPs in Thailand

GAS

In Operation

Ratchaburi Power Plant (RATCHGEN)
Location Ratchaburi Province
Technology Thermal & Combined Cycle
Total Installed Capacity 3,645 MW (holds 100%)
PPA 25-Year
COD TH#1-2 : 31 Oct 2000 CCGT #1-2 : 18 Apr 2002 CCGT#3 : 1 Nov 2002
Partner Ratchaburi Electricity Generating Company Limited holds 100%

Tri Energy Power Plant (TECO)
Location Ratchaburi Province
Technology Combined Cycle
Total Installed Capacity 720 MW (holds 100%)
PPA 20-Year
COD 1 July 2000
Partner Ratchaburi Electricity Generating Company Limited holds 100%

Project Cost (100%) 60,775 Million Baht
Debt to Equity 2.3 : 1
Project Cost (RATCH Portion) 60,775 Million Baht

Project Cost (100%) 404.75 Million USD
Debt to Equity 3 : 1
Project Cost (RATCH Portion) • In 2005, RATCH holds 50% of the total share, at the amount 202.50 Million USD • In 2014, RATCH has purchased 50% of the total share , at the amount 21.32 Million USD

IPPs and SPPs in Thailand

GAS

In Operation

	Ratchaburi Power Power Plant (RPCL)	Ratchaburi World Cogeneration (RW Cogen)	
Project Cost (100%) 840 Million USD	**Location** Ratchaburi Province	**Location** Ratchaburi Province	**Project Cost (100%)** 10,620 Million Baht
Debt to Equity 2.5 : 1	**Technology** Combined Cycle	**Technology** Cogeneration	**Debt to Equity** 75 : 25
Project Cost (RATCH Portion 25%) 210 Million USD	**Total Installed Capacity** 1,490 MW (372.5 MW holds 25 %)	**Total Installed Capacity** 234 MW (93.60 MW holds 40%)	**Project Cost** (RATCH Portion 40%) 4,248 Million Baht
	PPA 25-Year	**PPA** 25-Year	
	COD Block 1: 1 March 2008 Block 2: 1 June 2008	**COD** Unit 1: November 2014 Unit 2: March 2015	
	Partner • Ratchaburi Alliances Company Limited holds 25% • PAI International Power (Mauritius) Company Limited holds 25% • Global Power Synergy Company Limited holds 15% • Chubu Electric Power Company International B.V. holds 15% • Saha-Union Public Co., Ltd. holds 10% • Toyota Tsusho Corporation holds 10%	**Partner** • Ratchaburi Electricity Generating Company Limited holds 40% • Major Shareholder Group of Thai Agri Food PCL holds 60%	

IPPs and SPPs in Thailand

GAS

In Operation

Project Cost (100%)
6,000 Million Baht
Debt to Equity
75 : 25
Project Cost (RATCH Portion 40%)
2,400 Million Baht

Nava Nakhon Electricity Generating (NNEG)

Location
Pathum Thani Province
Technology
Cogeneration
Total Installed Capacity
139.13 MW (55.65 MW holds 40%)
PPA
25-Year
COD
3 June 2016
Partner
• Ratchaburi Electricity Generating Company Limited holds 40%
• Global Power Synergy Public Company Limited holds 30%
• Nava Nakon holds 30%

Berkprai Cogeneration (Former name: Ratchaburi Cogeneration)

Location
Ratchaburi Province
Technology
Cogeneration
Total Installed Capacity
99.23 MW (34.73 MW holds 35%)
Steam Generation 15 ton/hour
PPA
25-Year
Expected COD
In 2019
Progress
14.17% as of September 2017
Partner
• Ratchaburi Electricity Generating Company Limited holds 35%
• Rajburi Sugar Company Limited 65%
Project Cost (100%)
5,331 Million Baht
Debt to Equity
3 : 1
Project Cost (RATCH Portion 35%)
1,866 Million Baht

GAS

Under Construction

About Berkprai Cogenration

On 15th September 2014, Ratchaburi Electricity Generating Company Limited has entered into Shareholders Agreement with Rajburi Sugar Company Limited

On 30th October 2014, Ratchaburi Electricity Generating Company Limited purchased 35 % of Ratchaburi Cogeneration Company Limited's total shares from Rajburi Sugar Company Limited

On 27th January 2015, Ratchaburi Cogeneration Company Limited changed its name to Berkprai Cogeneration Company Limited (the project).

On 28th September 2016, the project increased its registered capital from 100 Million Baht to 1,331 Million Baht

On 6th June 2017, the project has signed Facilities Agreement with Bangkok Bank. The loan amount is 4,000 Million Baht for the period of 20 years from the agreement signed date.

Renewable Projects in Thailand

WIND

In Operation

Huay Bong 2 Wind-Turbine Power Project	Huay Bong 3 Wind-Turbine Power Project
Location Nakorn Ratchasima Province	**Location** Nakorn Ratchasima Province
Technology Wind-Turbine	**Technology** Wind-Turbine
Total Installed Capacity 103.5 MW (20.7 MW holds 20%)	**Total Installed Capacity** 103.5 MW (20.7 MW holds 20%)
PPA 5 years with automatic renewal for a further 5 years every 5 years	**PPA** 5 years with automatic renewal for a further 5 years every 5 years
COD 8 February 2013	**COD** 14 November 2012
Partner • RATCH holds 20% • Aeolus Power holds 60% • Chubu Electric Power Korat, BV holds 20%	**Partner** • RATCH holds 20% • Aeolus Power holds 60% • Chubu Electric Power Korat, BV holds 20%

Project Cost (100%) 6,100 Million Baht			**Project Cost (100%)** 6,500 Million Baht
Debt to Equity 70 : 30			**Debt to Equity** 70 : 30
Project Cost (RATCH Portion 20%) 1,220 Million Baht			**Project Cost (RATCH Portion 20%)** 1,300 Million Baht

Renewable Projects in Thailand

SOLAR

In Operation

Solar Power Projects (Korat 3, Korat 4, Korat 7)
Location Nakorn Ratchasima Province
Technology Solar Power
Total Installed Capacity 21.60 MW (8.64 MW holds 40%)
PPA 5 years with automatic renewal for a further 5 years every 5 years
COD Korat 3 : 9 March 2012 Korat 4 : 14 May 2012 Korat 7 : 30 May 2012
Partner • Ratchaburi Energy Company Limited holds 40% • Solar Power holds 60%

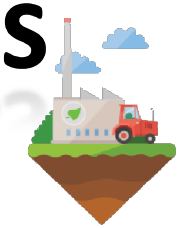
Solarta Power Projects
Location Ayutthaya Province Suphan Buri Province Nakon Pathom Province
Technology Solar Power
Total Installed Capacity 42.30 MW (20.73 MW holds 49%)
PPA 5 years with automatic renewal for a further 5 years every 5 years
COD Ayutthaya Province : 7 April 2011 Suphan Buri Province : In 2012 Nakon Pathom Province : In 2012
Partner • Ratchaburi Energy Company Limited holds 49% • Yanhee Power holds 51%

Project Cost (100%) 1,950 Million Baht
Debt to Equity 75 : 25
Project Cost (RATCH Portion 40%) 780 Million Baht

Project Cost (100%) 4,400 Million Baht
Debt to Equity 75 : 25
Project Cost (RATCH Portion 49%) 2,156 Million Baht

Renewable Projects in Thailand

BIOMASS



In Operation

Songkhla Biomass Power Project
Location Songkhla Province
Technology Thermal Power Plant
Total Installed Capacity 9.9 MW (3.96 MW holds 40%)
VSPP 20-Year
COD 9 November 2015
Partner • Ratchaburi Energy Company Limited holds 40% • Precise Power Producer holds 40% • Assiddeek Saving Cooperative holds 20%
Project Cost (100%) 846 Million Baht
Debt to Equity 75 : 25
Project Cost (RATCH Portion 40%) 338.40 Million Baht

ESP

Boiler & Economizer

Fuel Storage Silo

International Projects in Laos

HYDRO

In Operation

Num Ngum 2 Hydroelectric Power Plant
Location Lao PDR
Technology Hydro Power Plant
Total Installed Capacity 615 MW (153.75 MW holds 25%)
PPA 27-Year
IOD/COD In 2011 / In 2013
Partner • SEAN* holds 75% • GOL holds 25%
* Remark: SEAN's shareholder consist of • RATCH holds 33.33% • CK Power PCL holds 55.99% • Other holds 10.68%

Hongsa Power Plant Unit 1-3
Location Lao PDR
Technology Lignite-Fired
Total Installed Capacity 1,878 MW (751.2 MW holds 40%)
PPA 25-Year
COD Unit 1 : 2 June 2015 Unit 2 : 2 November 2015 Unit 3 : 2 March 2016
Partner (Power Plant) • RHIS holds 40% • Banpu Power holds 40% • Lao PDR holds 20%

COAL

In Operation

Project Cost (100%) 30,832 Million Baht
Debt to Equity 2.5 : 1
Project Cost (RATCH Portion 25%) 7,708 Million Baht

Partner (Phu Fai Mining) • RHIS holds 37.5% • Banpu Power holds 37.5% • Lao PDR holds 25%
Project Cost (100%) 3,710 Million USD
Debt to Equity 75 : 25
Project Cost (RATCH Portion 40%) 1,484 Million USD

RATCH

International Projects in Laos

HYDRO

Under Construction

Xe-Pian – Xe Namnoy Project
Location Lao PDR
Technology Hydro Power Plant
Total Installed Capacity 410 MW (102.5 MW holds 25%)
PPA 27-Year
Expected COD In 2019
Progress 80.82 % as of September 2017
Partner • RATCH holds 25% • SK Engineering holds 26% • Korea Western Power holds 25% • Lao PDR holds 24%
Project Cost (100%) 1,020 Million USD
Debt to Equity 70 : 30
Project Cost (RATCH Portion 25%) 255 Million USD

International Projects in Australia

GAS

In Operation

Townsville Power Plant	Kemerton Power Plant	BP Kwinana Power Plant
Location North Queensland, Australia	**Location** Western Australia	**Location** Western Australia
Technology Combined Cycle Gas Turbine	**Technology** Open Cycle Gas / Diesel Turbine	**Technology** Co-generation
Total Installed Capacity 234 MW (187.20 MW holds 80%)	**Total Installed Capacity** 308 MW (246.40 MW holds 80%)	**Total Installed Capacity** 35.40 MW (28.32 MW holds 80%)
COD In 1999	**COD** In 2005	**COD** In 1996
Contract end date February 2025	**Contract end date** October 2030	**Contract end date** December 2021
Contract counterparty AGL / Arrow	**Contract counterparty** Synergy	**Contract counterparty** Verve Energy / BP

International Projects in Australia

Toora	Starfish Hill	Windy Hill
Location Victoria, Australia	**Location** South Australia	**Location** Queensland, Australia
Technology Wind Farm	**Technology** Wind Farm	**Technology** Wind Farm
Total Installed Capacity 21 MW (16.80 MW holds 80%)	**Total Installed Capacity** 33 MW (26.40 MW holds 80%)	**Total Installed Capacity** 12 MW (9.60 MW holds 80%)
COD In 2002	**COD** In 2003	**COD** In 2000
Contract end date n.a.	**Contract end date** In 2020	**Contract end date** December 2018
Contract counterparty Merchant	**Contract counterparty** ALINTA	**Contract counterparty** Ergon Energy Queenland

International Projects in Australia

WIND

Under Construction

MEWF

Mount Emerald Wind Farm
Location Queensland, Australia
Technology Wind Farm
Total Installed Capacity 180.45 MW (144.36 MW holds 80%)
Expected COD In 2018
Contract end date December 2030
Contract counterparty Ergon Energy Queenland*
Project Cost (100%) 400 Million AUD (Approximately 10,840 Million Baht)
* State Enterprise of Queensland, Australia

About Mount Emerald Wind Farm
On 27th November 2016, Mount Emerald Wind Farm Pty has entered into PPA with Ergon Energy Queensland ("EEQ") a power state enterprise of Queensland. The agreement will expire on 31st December 2030 or totaling the agreement period of approximately 12.5 years.
On 28th June 2016, RAC has entered into share purchase agreement of Mount Emerald Wind Farm Pty with Port Bajool Pty Ltd. who had jointly invested in the Project with RAC in the proportion of 50 : 50. After the purchase was complete, RAC would hold 100 % stake in Mount Emerald Wind Farm Pty.
On 1st November 2016, Mount Emerald Wind Farm Pty the developer of Mount Emerald Wind Farm Project, has successfully sourced loan for the development of the Project by entering into Financial Agreement with 4 financial institutes namely Australia and New Zealand Bank, National Australia Bank, The Bank of Tokyo Mitsubishi, and Societie Generale.

RATCH

International Projects in Australia

SOLAR

Under Construction

Collinsville Solar Power Project
Location Queensland, Australia
Technology Solar Power
Total Installed Capacity 42.50 MW (34 MW holds 80%)
Expected COD In 2018
Contract end date December 2030
Contract counterparty Braemar Power Projects
Project Cost (100%) 95 Million AUD*
* Loan from financial institute at approximately 60 percent, grant fund from ARENA at 10 percent and equity investment at approximately 30 percent.

Source: http://www.cimic.com.au/

Remark

The Project has Power Purchase Agreement with the Braemar Power Projects, a subsidiary of Alinta Energy, for 70 percent. Such Power Purchase Agreement will be expired on 31st December 2030. The other 30 percent of the generated electricity will be sold in Australia's National Electricity Market (NEM).

International Projects in China

NUCLEAR

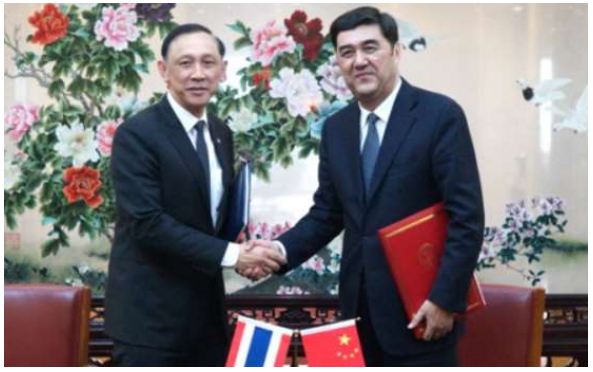
Under Construction

Guangxi Fangchenggang Nuclear Power (II)
Location Fangchenggang , China
Technology HPR1000 (Hualong-1)
Total Installed Capacity 2,360 MW (236 MW holds 10%) (2 unit x 1,180 MW)
PPA 30-Year
Expected COD In 2021
Partner • China General Nuclear Power Corporation (CGN) holds 51% • Guangxi investment Group Co./ Ltd (GIG) holds 39% • RATCH China Power Limited holds 10%
Project Cost (100%) 200,000 Million Baht
Debt to Equity 62.5 : 37.5
Equity Investment (RATCH Portion 10%) 7,500 Million Baht

The signing of the equity joint venture contract (Image: CGN)

On 25th January 2016, RATCH has agreed to take a stake in the two Hualong One reactors being built as Phase II of the Fangchenggang nuclear power plant in China's Guangxi province.

source: world nuclear news



Kanchanarat (left) and Bekri shake on the agreement (Image: NEA)

On 29th March 2017, China and Thailand have a signed an agreement to cooperate in the peaceful use of nuclear energy. The agreement was signed in Beijing by Nur Bekri, director of China's National Energy Administration (NEA), and Thai energy minister Anantaporn Kanchanarat.

source: world nuclear news

International Projects in Republic of Indonesia

GAS

Under Development

MRPR
Medco Ratch Power Riau

On 7 April 2017, Medco Ratch Power Riau and PLN signs a PPA for an IPP of the 275 MW Gas Fired Power Plant in the province of Riau

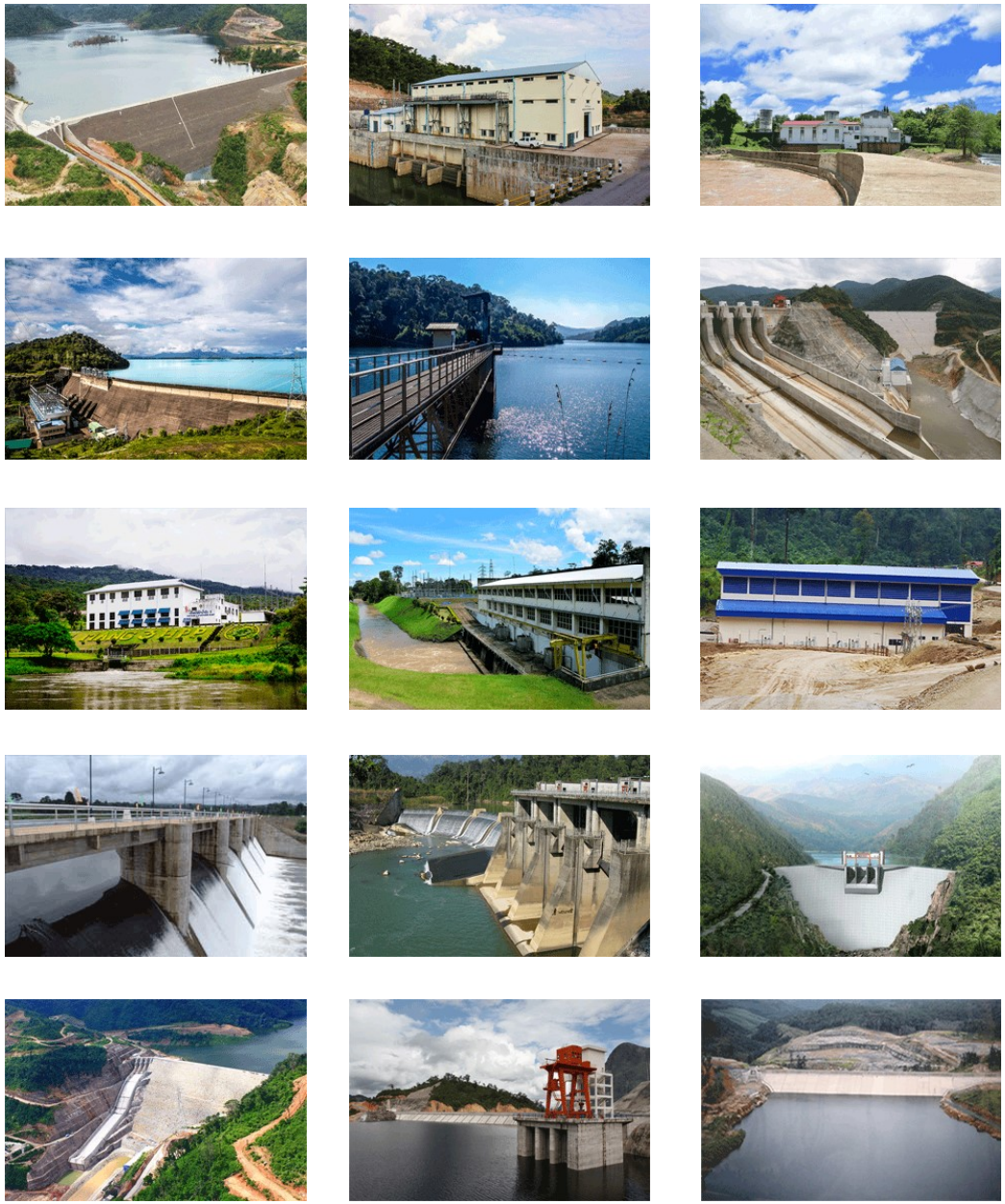
Riau Combined-Cycle Power Plant
Location Republic of Indonesia
Technology Combined-Cycle
Total Installed Capacity 287.81 MW (141.03 MW holds 49%)
PPA 20-Year
Purchaser PT PLN (PERSERO)
Expected COD In 2021
Partner • RH International (Singapore) Corporation Pte. Limited holds 49% • PT Medco Power Sentral Sumatera holds 51%
Project Cost (100%) 300 Million USD
Debt to Equity 75:25
Equity Investment (RATCH Portion 49%) 36.75 Million USD

Related Businesses

HYDRO

In Operation

EDL-Generation Public Company (EDL-Gen)
Location Lao PDR
Technology Hydro Power Plant
Total Installed Capacity 1,131.15 MW (114.36 MW holds 10.11%*)
Shareholders • RATCH-Lao holds 5.65% • RH International (Singapore) Corporation Pte. Limited holds 4.46% • EDL holds 75% • Others holds 14.89%
*Remark: • EDL-Gen has been traded on Lao Securities Exchange since 2010. • In 2016, RATCH acquired 169.78 million shares, or equivalent to 3,254 Million Baht.



Related Businesses

MRT Pink Line Project and the MRT Pink Line Project

BTS GROUP — 15%
STECON — 75%
RATCH / RATCHABURI ELECTRICITY GENERATING HOLDING PCL. — 10%

- Northern Bangkok Monorail Company Limited
- Eastern Bangkok Monorail Company Limited

	Pink Line	Yellow Line
Route	Khae Rai-Min Buri	Lat Phrao - Samrong
Line length	34.5 km	30.4 Km
Stations	30	23

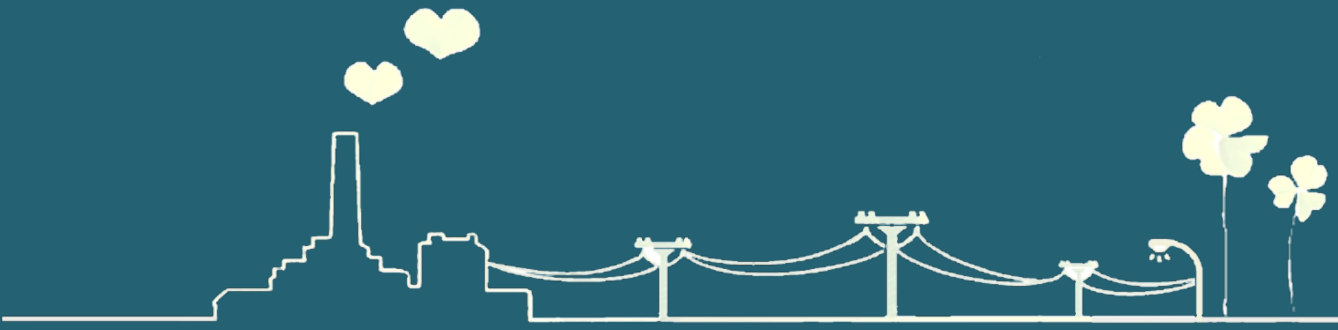
About MRT Pink Line Project and the MRT Yellow Line Project

- On 7 November 2016, the Company, BTS Group Holding Public Company Limited (BTS) and Sino-Thai Engineering & Construction Public Company Limited (STEC) have jointly submitted the proposals under the name of "BSR Joint Venture" for the biddings of the MRT Pink Line and the MRT Yellow Line Project.
- On 14 December 2016, MRTA has issued letters No. MRTA 004/3227 and MRTA 004/3228, notifying that BSR Joint Venture was the bidder who proposed the best offer for the MRT Pink Line Project and the MRT Yellow Line Project.
- On 12 June 2017, the BSR Joint Venture established companies namely “Northern Bangkok Monorail Company Limited” and “Eastern Bangkok Monorail Company Limited’.
- On 16 June 2017, Northern Bangkok Monorail Company Limited and Eastern Bangkok Monorail Company Limited have entered into the Concession Contracts including of the obligation for extensions of the MRT Pink Line Project and MRT Yellow Line Project with Mass Rapid Transit Authority Of Thailand (MRTA).
- On 10 October 2017, the BSR Joint Venture signed the syndicated loan agreement between Bangkok Bank, Siam Commercial Bank and Krung thai Bank at a total value of up to THB 63,360 Million

RATCH

RATCHABURI ELECTRICITY GENERATING HOLDING PCL.

Q & A



Thank You