

# RATCH



RATCHABURI  
ELECTRICITY GENERATING  
HOLDING PCL.

# Analyst Meeting

## 3Q2016

16 November 2016

# Agenda

**Highlights**

**RATCH Overview**

**Operating Performance**

**Financial Performance**

**Appendix**

# Highlights

## On 27<sup>th</sup> September 2016

Berkprai Cogeneration Company Limited has increased its registered capital by Baht 1,231 million by issuing 123.10 million new ordinary shares, valuing at Baht 10 each. The purpose of the capital increase is to spend on the construction of a power plant in the future. As a result, Berkprai Cogeneration Company Limited's registered capital is Baht 1,331 million.

## On 1<sup>st</sup> November 2016

Mount Emerald Wind Farm Pty, has achieved the financing for the project's development by signing financial agreements with 4 financial institutions namely Australia and New Zealand Bank, National Australia Bank, The Bank of Tokyo Mitsubishi, and Societe Generale. The total loan amount is AUD 258.30 million or equivalent to approximately Baht 7,120 million. The debt to equity ratio of the project is 68:32.

# Highlights

## On 7<sup>th</sup> November 2016

The Company, BTS Group Holding Public Company Limited and Sino-Thai Engineering & Construction Public Company Limited have jointly submitted the proposals under the name of "BSR Joint Venture" for the biddings of the MRT Pink Line (Khae Rai - Min Buri: 34.5 km) and Yellow line (Lat Phrao - Samrong: 30.4 km) to Mass Rapid Transit Authority of Thailand.

# RATCH

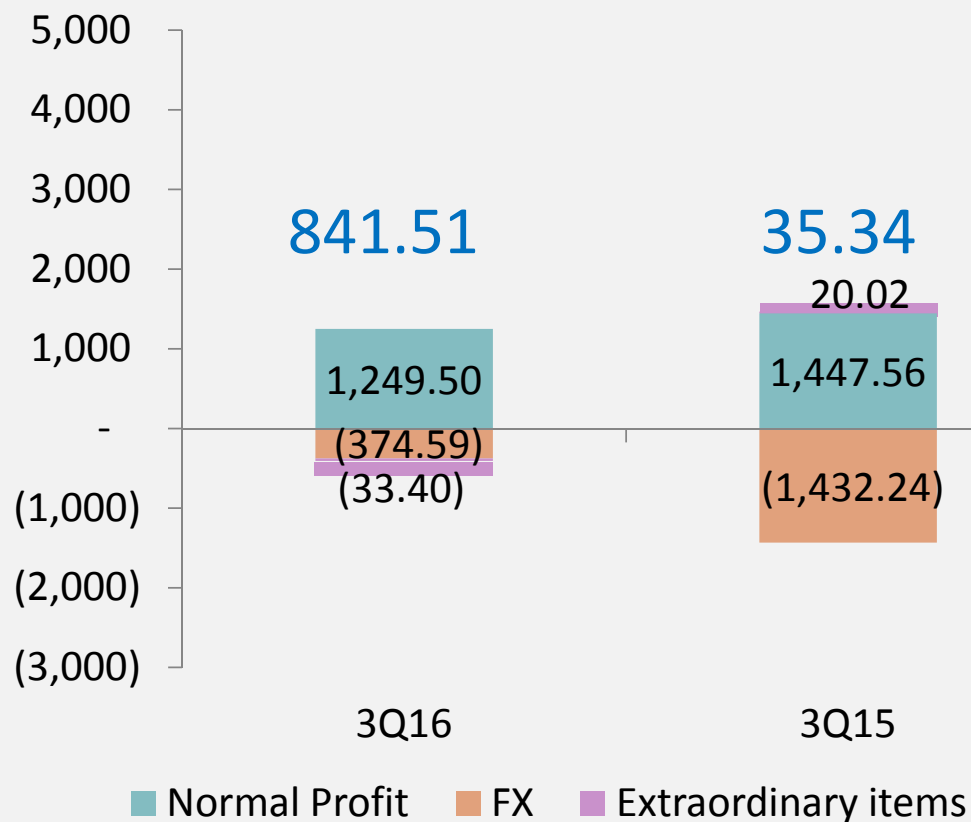


**RATCHABURI**  
ELECTRICITY GENERATING  
HOLDING PCL.

# Profit for the period: Equity holders of the Company

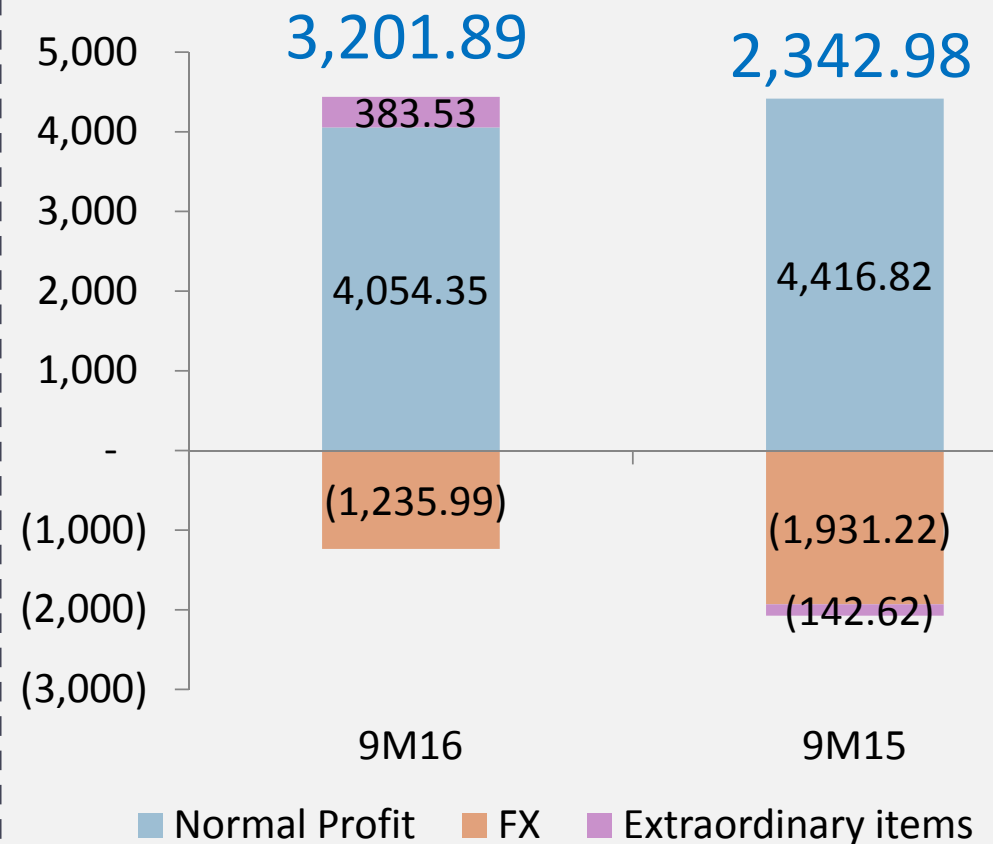
## Profit for the period: 3Q16&3Q15

Normal Profit ↓ 14%



## Profit for the period: 9M16&9M15

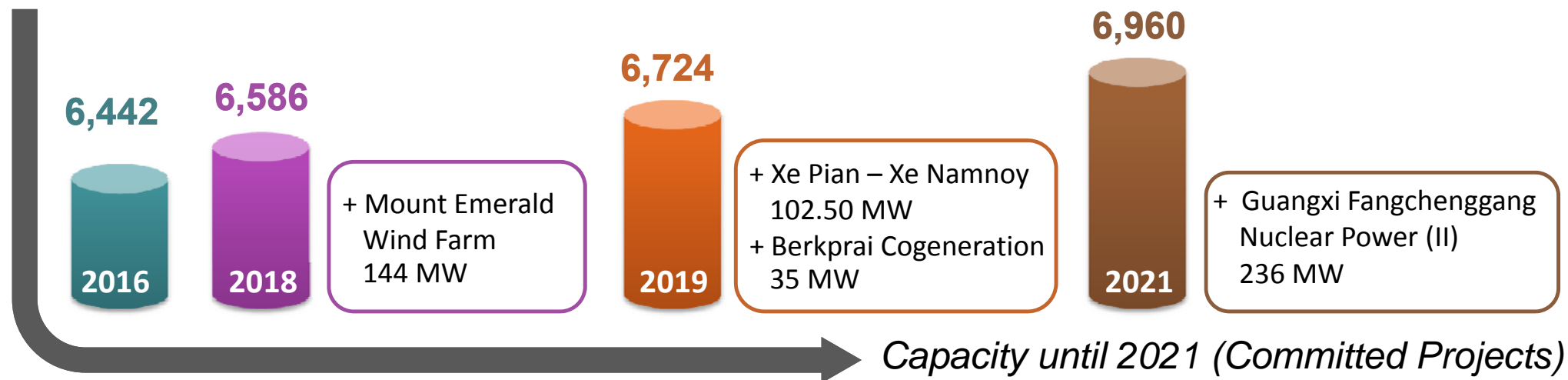
Normal Profit ↓ 8%



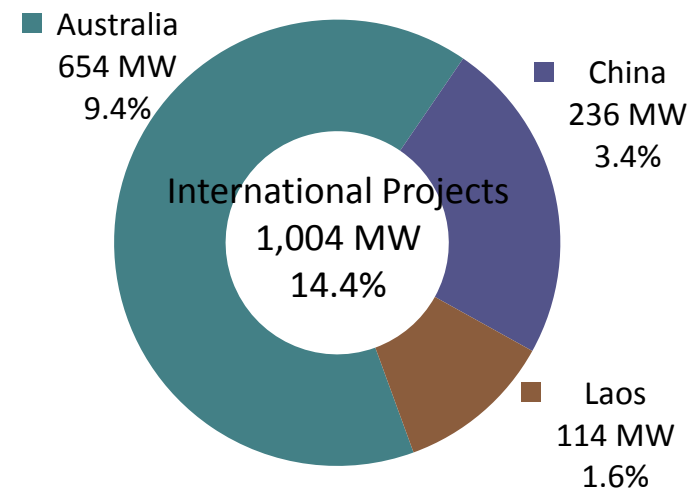
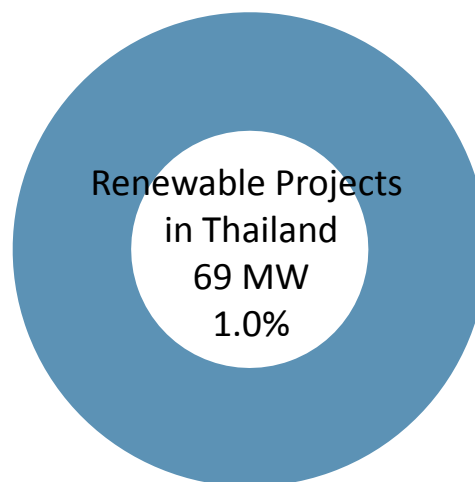
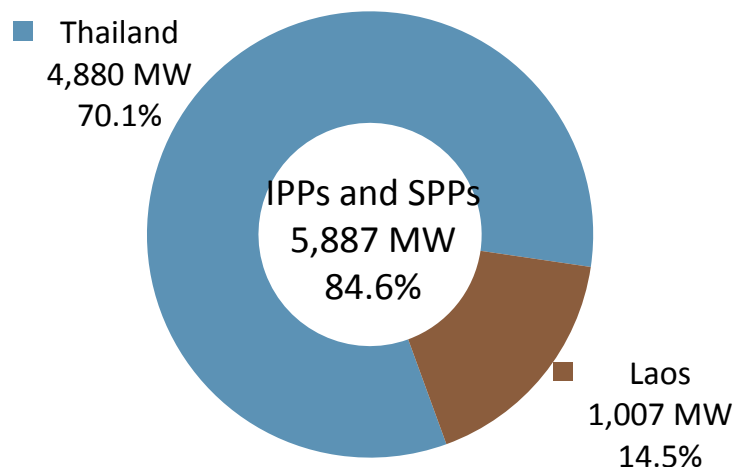
# RATCH Overview

# Overview of RATCH projects

Unit: Megawatts



Current Breakdown of Capacity till 2021



# Portfolio by Core Business

## IPPs and SPPs in Thailand

Name of Power Plant/Project	Location	Technology	Total Capacity (MW)	Capacity contributed to the 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	Not Applicable
		Combined Cycle	2,175	2,175 (100%)	EGAT	25 years/ 2027	Not Applicable
Tri Energy Power Plant	Ratchaburi Province	Combined Cycle	700	700 (100%)	EGAT	20 years/ 2020	Not Applicable
Ratchaburi Power Power Plant	Ratchaburi Province	Combined Cycle	1,400	350 (25%)	EGAT	25 years/ 2033	Not Applicable
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	Not Applicable
Nava Nakorn Electricity Generating Project	Nava Nakorn Industrial Promotion Zone, Pathumthani Province	Cogeneration	139.13	55.65(40%)	EGAT	25 years/ 2041	Not Applicable
Total			6,118.13	4,844.25			



# Portfolio by Core Business

## IPPs and SPPs in Thailand (Cont.)

Name of Power Plant/Project	Location	Technology	Total Capacity (MW)	Capacity contributed to the Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
Under Development							
Berkprai Cogeneration	Ratchaburi Province	Cogeneration	100	35 (35%)	EGAT	25 years/2044 (Expected COD: 2019)	Not Applicable
		Total	100	35			
Grand Total			6,218.13	4,879.25			

# Portfolio by Core Business

## IPPs and SPPs in Laos

Name of Power Plant/Project	Location	Technology	Total Capacity (MW)	Capacity contributed to the 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	Not Applicable
Hongsa Thermal Project	Sainyaburi Province, Laos	Lignite-Fired Power Plant	1,878	751.20 (40%)	EGAT & EDL	25 years/ 2040	Not Applicable
		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	27 years/ 2046 (Expected COD: 2019)	Not Applicable
		Total	410	102.50			
Grand Total			2,903	1,007.45			

# Portfolio by Core Business

## Renewable Projects in Thailand

Name of Power Plant/Project	Location	Technology	Total Capacity (MW)	Capacity contributed to the 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	18	7.20 (40%)	PEA	5 years/ 2017	Automatic renewal for a further 5 years every 5 years
Solarta Power Projects	Ayutthaya, Nakhon Pathom, and Suphanburi Provinces	Solar Power	34.25	16.78 (49%)	PEA	Ayutthaya Province : 5 years / 2016 Suphanburi and Nakhon 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	Not Applicable
		Total	269.15	69.34			
Grand Total			269.15	69.34			

# Portfolio by Core Business

## International Projects

Name of Power Plant/Project	Location	Technology	Total Capacity (MW)	Capacity contributed to the 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	Not Applicable
Kemerton Power Plant	Western Australia, Australia	Open Cycle Gas/Diesel Turbine	300	240 (80%)	Synergy	October 2030	Not Applicable
BP Kwinana Power Plant	Western Australia, Australia	Cogeneration	35.40	28.32 (80%)	Verve Energy/BP	December 2021	Not Applicable
Starfish Hill Wind-Turbine Power Plant	South Australia, Australia	Wind-Turbine	34.50	27.60 (80%)	Diamond Energy	December 2016	Not Applicable
Toora Wind-Turbine Power Plant	Victoria, Australia	Wind-Turbine	21	16.80 (80%)	Merchant	Not Applicable	Not Applicable
Windy Hill Wind-Turbine Power Plant	Queensland, Australia	Wind-Turbine	12	9.60 (80%)	Ergon Energy	December 2018	Not Applicable
		Total	636.90	509.52			

# Portfolio by Core Business

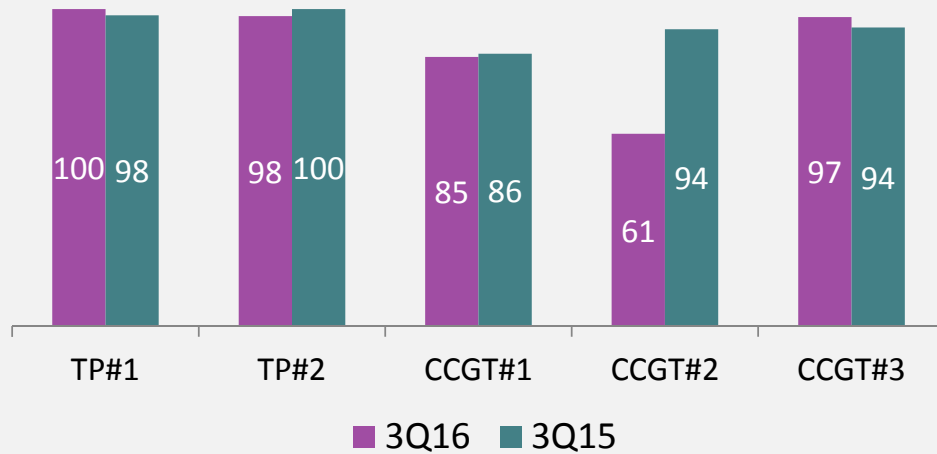
## International Projects (Cont.)

Name of Power Plant/Project	Location	Technology	Total Capacity (MW)	Capacity contributed to the Group (MW)	Terms of the PPA		
					PPA Party	Tenure/ Expiry Year	Renewal/ Option to Extend
Under Development							
Guangxi Fangchenggang Nuclear Power (II)	Fangchenggang , China	Nuclear Power	2,360	236 (10%)	n.a.	30 years (Expected COD: 2021)	Not Applicable
Mount Emerald Wind Farm	Queensland, Australia	Wind-Turbine	180	144 (80%)	Ergon Energy	12 years/2030 (Expected COD: 2018)	Not Applicable
		Total	2,540	380			
Related Businesses							
EDL-Generation	Laos	Hydro Power Plant	1,131.15	114.36 (10.11%)	-	-	Not Applicable
		Total	1,131.15	114.36			
Grand Total			4,308.05	1,003.88			

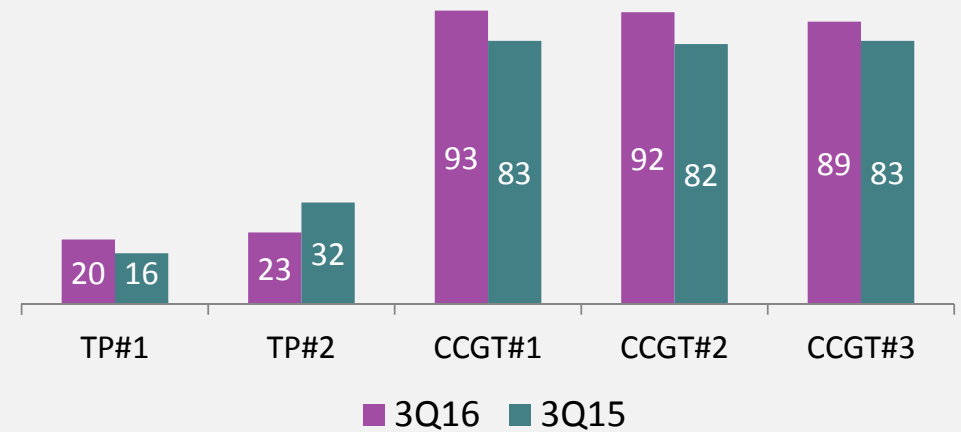
# Operating Performance

# Operation Performance : RATCHGEN

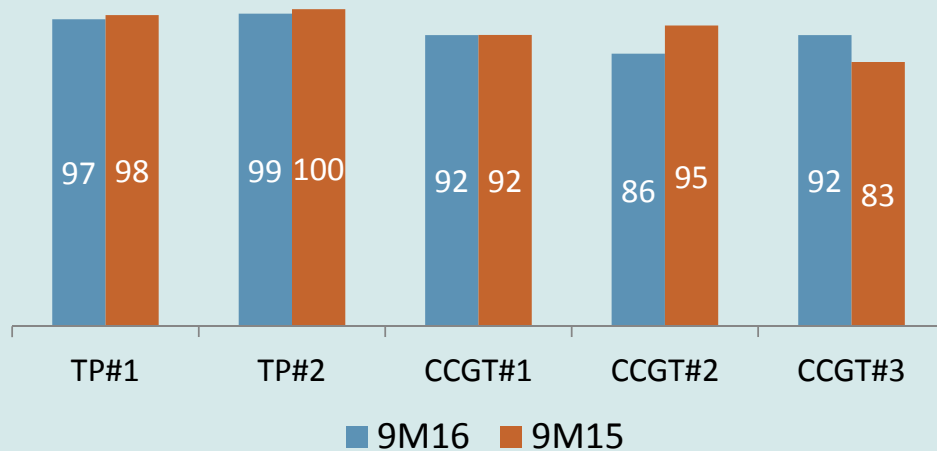
%Equivalent Availability Factor



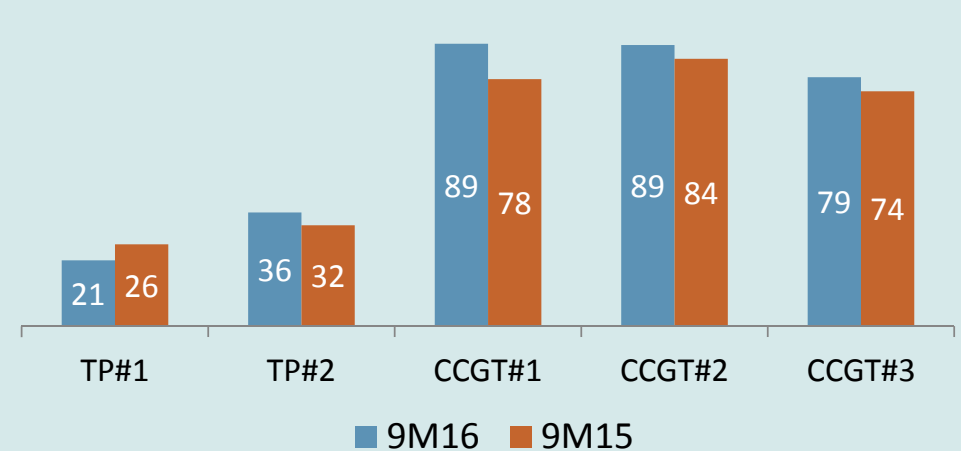
%Dispatch Factor



%Equivalent Availability Factor



%Dispatch Factor

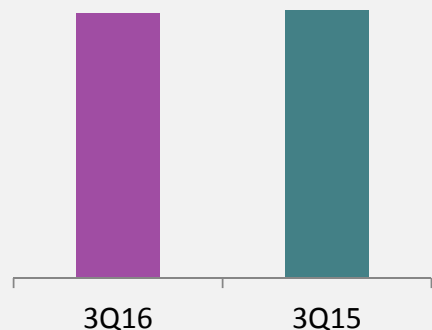


# Operation Performance : Huay bong

## Huay bong 2 (KR2)

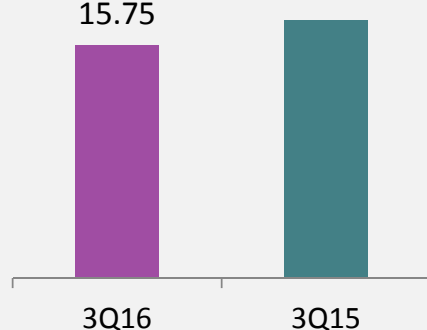
Avg. Commercial Availability (%)

99.13      99.60



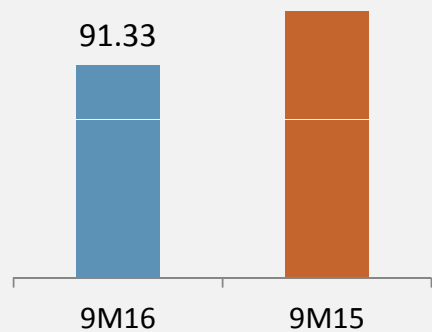
Capacity Factor (%)

15.75      16.37



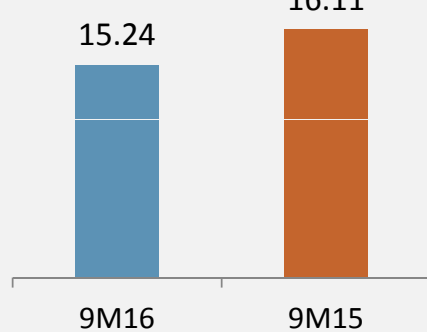
Avg. Commercial Availability (%)

91.33      99.43



Capacity Factor (%)

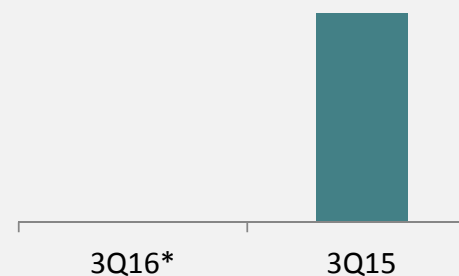
15.24      16.11



## Huay bong 3 (FKW)

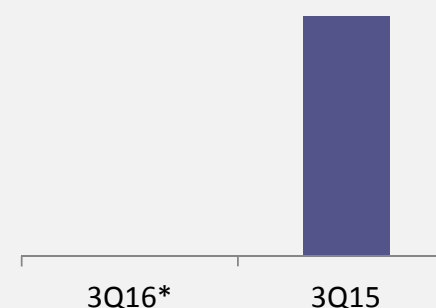
Avg. Commercial Availability (%)

99.87



Capacity Factor (%)

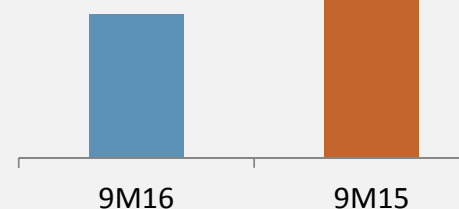
19.11



\* 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 up to the present. The power plant is expected to be operated in November 2016.

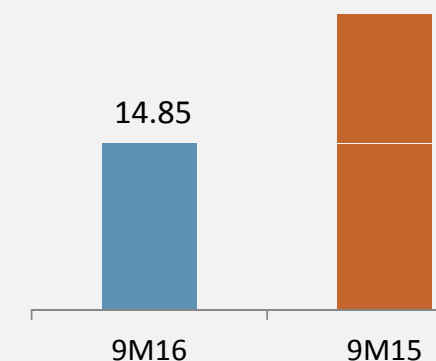
Avg. Commercial Availability (%)

85.08



Capacity Factor (%)

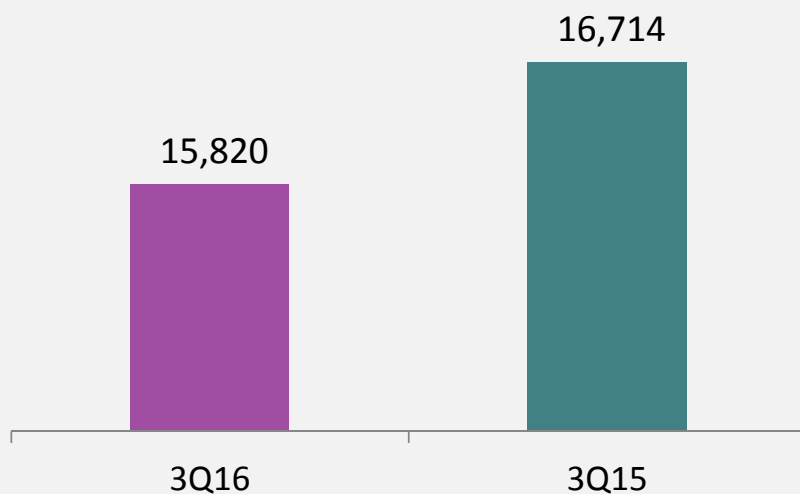
18.62



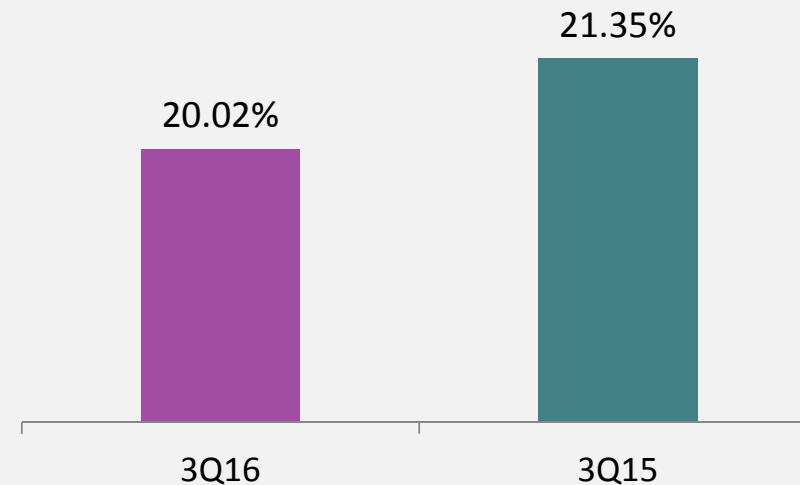


# Operation Performance : Solarta

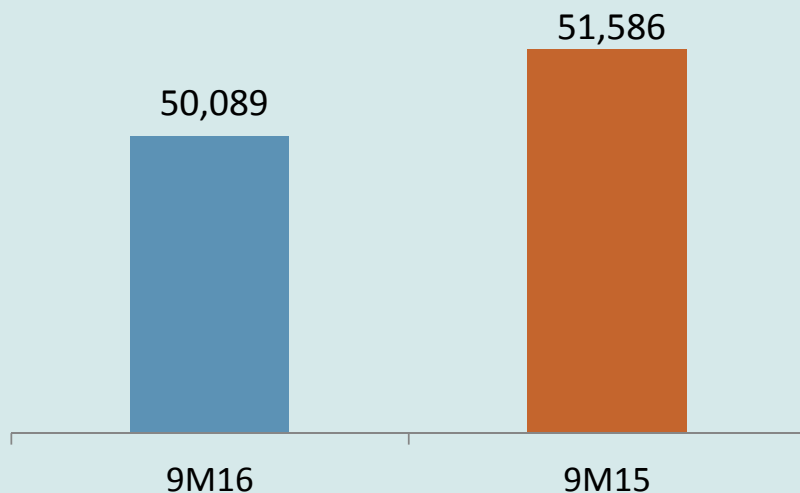
Total Net Energy (MWh /Quarter)



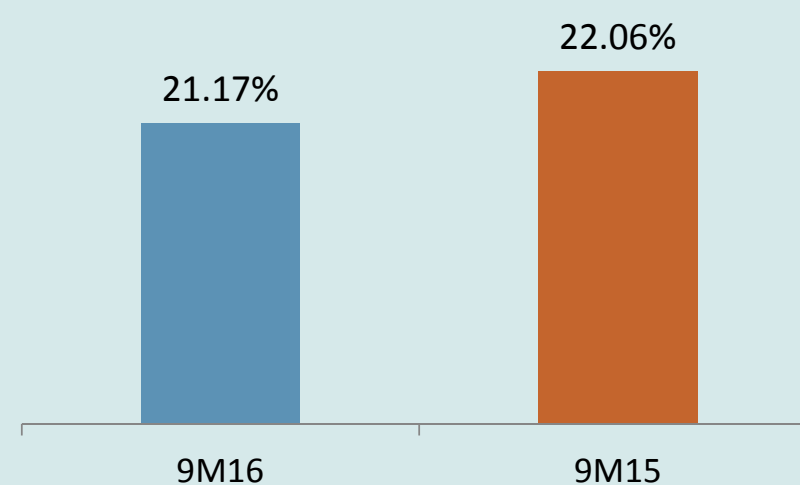
% Avg. Capacity Factor



Total Net Energy (MWh /Quarter)



% Avg. Capacity Factor



# Operation Performance : Solar Power

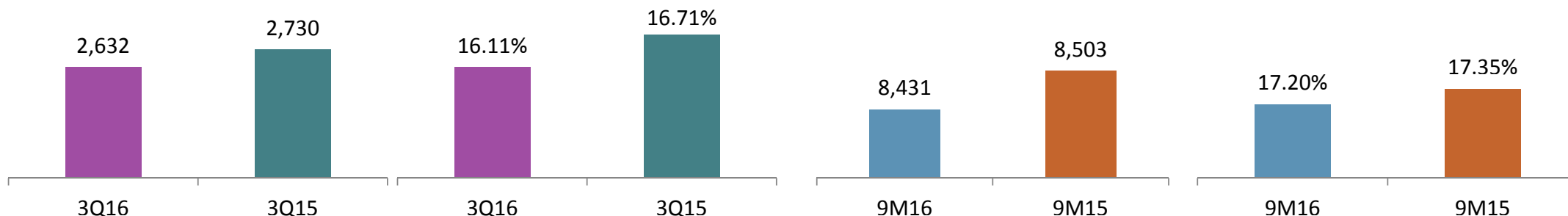
## Korat 3

Total Net Energy (MWh/Quarter)

%Avg.Capacity Factor

Total Net Energy (MWh/Quarter)

%Avg.Capacity Factor



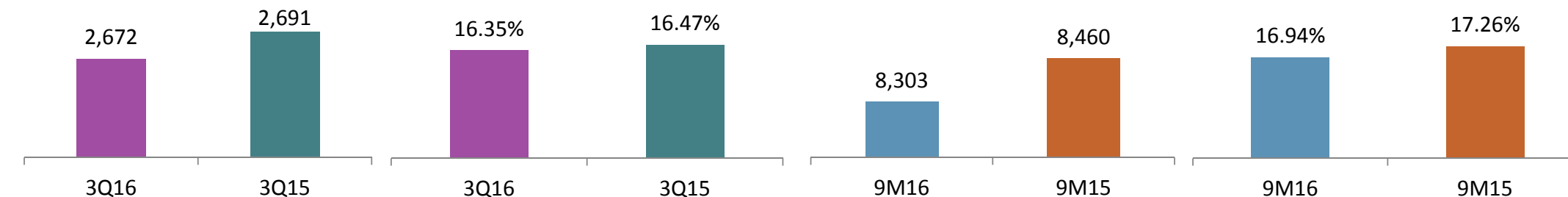
## Korat 4

Total Net Energy (MWh/Quarter)

%Avg.Capacity Factor

Total Net Energy (MWh/Quarter)

%Avg.Capacity Factor



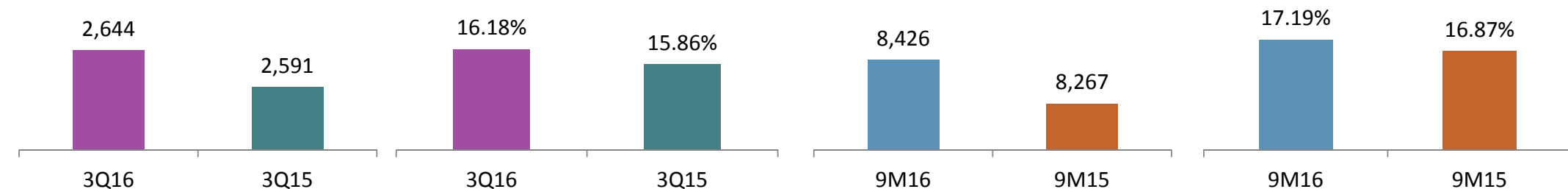
## Korat 7

Total Net Energy (MWh/Quarter)

%Avg.Capacity Factor

Total Net Energy (MWh/Quarter)

%Avg.Capacity Factor



# Financial Performance

# Income Statement

Unit : in Million Baht	3Q16	2Q16	1Q16	4Q15	3Q15
Revenues	11,349.65	12,589.67	13,384.52	12,905.64	14,963.02
Cost & Expenses	(9,892.70)	(10,961.40)	(11,665.12)	(11,901.78 )	(12,906.37)
<b>EBITDA before Share of Profit and FX</b>	<b>1,456.95</b>	<b>1,628.27</b>	<b>1,719.40</b>	<b>1,003.86</b>	<b>2,056.65</b>
Share of profit of jointly-controlled entities and associates <b>excluding</b> gain (loss) on exchange rate	654.72	897.59	417.68	603.86	417.61
<b>EBITDA included share profit of JV before FX</b>	<b>2,111.67</b>	<b>2,525.86</b>	<b>2,137.08</b>	<b>1,607.72</b>	<b>2,474.26</b>
Gain (Loss) on exchange rate of subsidiaries	(256.33)	(762.23)	6.49	257.65	(1,150.97)
Gain (Loss) on exchange rate of JV	(118.26)	(37.96)	(67.70)	(128.98)	(281.27)
<b>EBITDA included share profit of JV and FX</b>	<b>1,737.08</b>	<b>1,725.67</b>	<b>2,075.87</b>	<b>1,736.39</b>	<b>1,042.02</b>
O&M Compensation – NN2	-	134.71	-	-	-
Gain on selling assets (Pratu Tao-A & Sao Thian-A)	-	-	-	126.08	-
Insurance claim	-	-	53.56	-	-
Diesel price movement (RG & RPCL)	(33.40)	138.62	90.04	(260.85)	20.02
Depreciation & Amortization	(343.01)	(350.99)	(347.92)	(294.77)	(346.28)
<b>EBIT</b>	<b>1,360.67</b>	<b>1,648.01</b>	<b>1,871.55</b>	<b>1,306.85</b>	<b>715.76</b>
Finance costs	(361.62)	(352.58)	(326.83)	(348.31)	(340.43)
Income tax expense	(180.84)	(217.75)	(309.06)	(149.62)	(362.47)
<b>Profit for the period</b>	<b>818.21</b>	<b>1,077.68</b>	<b>1,235.66</b>	<b>808.92</b>	<b>12.86</b>
Non-controlling interests	23.30	23.37	23.67	35.97	22.48
<b>Equity holders of the Company</b>	<b>841.51</b>	<b>1,101.05</b>	<b>1,259.33</b>	<b>844.89</b>	<b>35.34</b>

# Income Statement

Unit : in Million Baht	9M16	9M15
Revenues	37,323.84	45,141.18
Cost & Expenses	(32,519.22)	(38,779.72)
<b>EBITDA before Share of Profit and FX</b>	<b>4,804.62</b>	<b>6,361.46</b>
Share of profit of jointly-controlled entities and associates excluding gain (loss) on exchange rate	1,969.99	1,036.71
<b>EBITDA included share profit of JV before FX</b>	<b>6,774.61</b>	<b>7,398.17</b>
Gain (Loss) on exchange rate of subsidiaries	(1,012.07)	(1,591.40)
Gain (Loss) on exchange rate of JV	(223.92)	(339.82)
<b>EBITDA included share profit of JV and FX</b>	<b>5,538.62</b>	<b>5,466.95</b>
O&M Compensation – NN2	134.71	-
Insurance claim	53.56	37.29
Diesel price movement (RG & RPCL)	195.26	37.78
Depreciation & Amortization	(1,041.92)	(1,040.20)
<b>EBIT</b>	<b>4,880.23</b>	<b>4,501.82</b>
Finance costs	(1,041.03)	(1,014.50)
Income tax expense	(707.65)	(1,281.32)
<b>Profit for the period</b>	<b>3,131.55</b>	<b>2,206.00</b>
Non-controlling interests	70.34	136.98
<b>Equity holders of the Company</b>	<b>3,201.89</b>	<b>2,342.98</b>

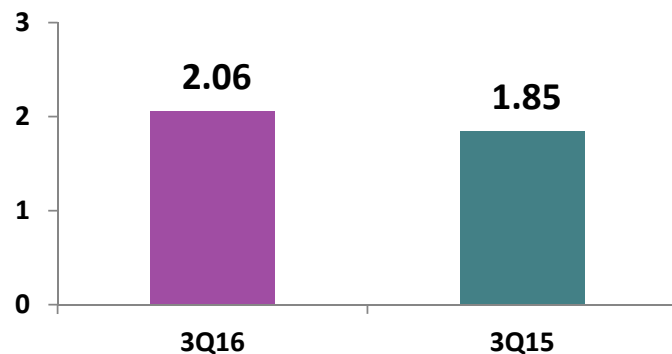
# Statements of Financial Position

As of 30 September 2016

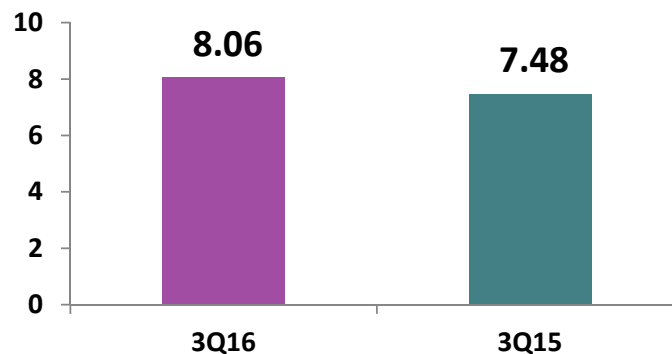
Total Assets	Million Baht	Total Liabilities & Equity	Million Baht
<b><u>Assets</u></b>		<b><u>Liabilities</u></b>	
Cash and cash equivalents	5,016.09	Loans from Related party, Financial Institutions & Debentures	21,376.04
Current investments	2,209.67	Other liabilities	10,458.47
Current Assets	12,025.25	<b>Total Liabilities</b>	<b>31,834.51</b>
Investment in Jointly-controlled entities/Associates/Others	28,079.85	<b><u>Equity</u></b>	
Financial lease receivables	25,801.59	Issued and paid-up share capital	16,031.78
Property, plant & equipments	13,351.85	Other components of equity	(1,952.12)
Other assets	5,443.09	Retained earnings	45,861.32
		<b>Total equity attributable to owners of the Company</b>	<b>59,940.98</b>
		Non-controlling interests	151.90
<b>Total Assets</b>	<b>91,927.39</b>	<b>Total Liabilities &amp; Equity</b>	<b>91,927.39</b>

# Financial Ratios\*

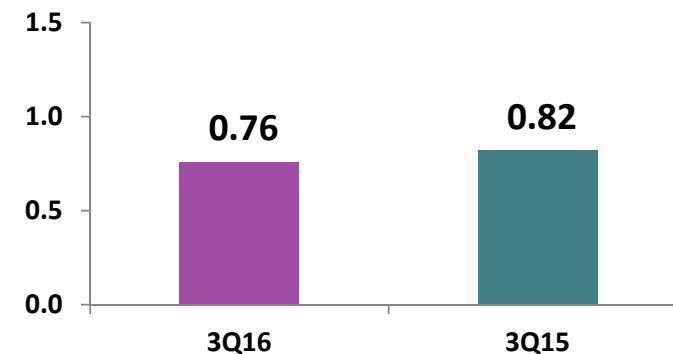
Current ratios (times)



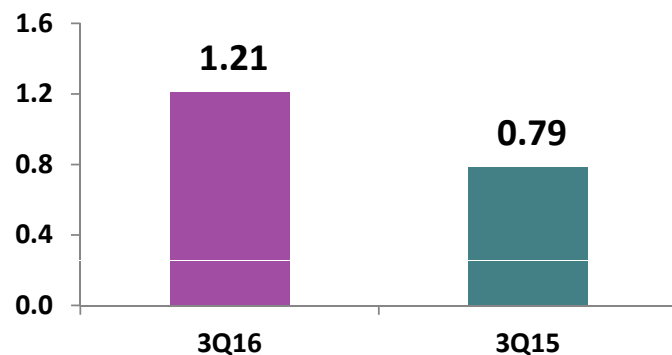
ROE (%)



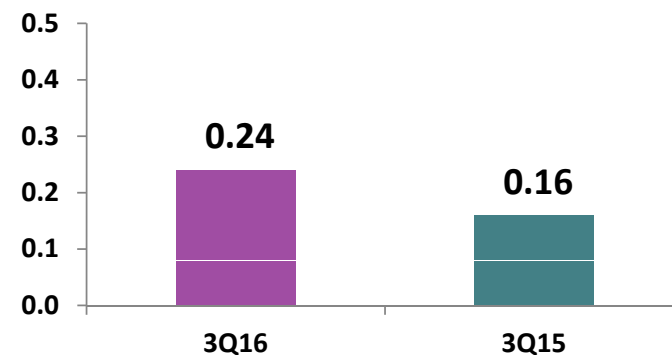
EPS (Baht per share)



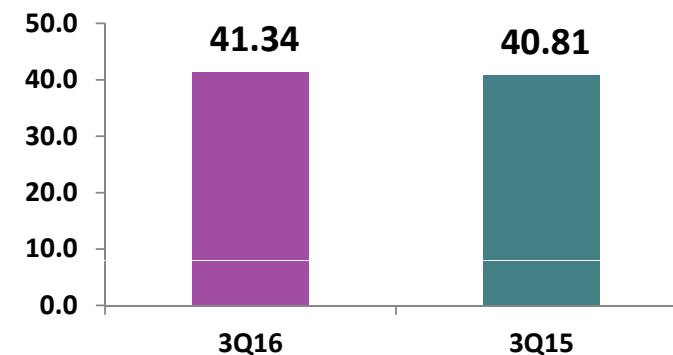
Net debt to EBITDA\*\* (times)



Net debt/Equity (times)



Book Value per share (Baht)



# Appendix

# Operating Performance





# RATCHGEN Operating Performance

Fuel Consumption				
By Type of Power Plant	3Q16	3Q15	9M16	9M15
<b>Fuel Consumption (TH#1-2)</b>				
- Gas      Million MMBTU	7.04	8.93	22.63	23.34
- Heavy Oil    Million Liters	-	0.99	104.89	91.32
<b>Fuel Consumption (CCGT#1-3)</b>				
- Gas      Million MMBTU	23.42	24.78	71.85	66.76
- Diesel      Million Liters	0.18	0.06	4.10	6.96
<b>Gas Price (Average) Baht/MMBTU</b>	<b>232.73</b>	<b>298.90</b>	<b>241.64</b>	<b>306.51</b>
<b>Heavy Oil Price (Average) Baht/Liter</b>	-	<b>10.91</b>	<b>7.79</b>	<b>12.86</b>
<b>Diesel Oil Price (Average) Baht/Liter</b>	<b>24.58</b>	<b>24.72</b>	<b>24.65</b>	<b>25.23</b>

# RATCHGEN Operating Performance

Net Generation (GWh)				
By Type of Power Plant	3Q16	3Q15	9M16	9M15
<b>Net Generation (TP#1-2) (GWh)</b>	<b>674.15</b>	<b>880.79</b>	<b>2,630.28</b>	<b>2,701.24</b>
- By Gas (GWh)	674.15	876.14	2,228.47	2,321.73
- By Heavy Oil (GWh)	-	4.65	401.81	379.51
<b>Net Generation (CCGT#1-3) (GWh)</b>	<b>3,307.27</b>	<b>3,494.89</b>	<b>10,148.21</b>	<b>9,370.74</b>
- By Gas (GWh)	3,307.27	3,494.89	10,132.29	9,342.24
- By Diesel (GWh)	-	-	15.92	28.50
<b>Total Net Generation (GWh)</b>	<b>3,981.42</b>	<b>4,375.68</b>	<b>12,778.49</b>	<b>12,071.98</b>

 Actual Outage  
 Planned 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 <div></div> 27			
	CCGT-12									CI (15D) 17 <div></div> 27			
RG	CCST-20												
	CCGT-21						2	MI (30D) <div></div> 31					
	CCGT-22						2	MI (30D) <div></div> 31					
RG	CCST-30												
	CCGT-31	1 <div></div> 12 CI (12D)											
	CCGT-32	1 <div></div> 12 CI (12D)											
RG	Thermal-1												
RG	Thermal-1												
RG	CCST-10 - CCTE												
	CCGT-11 - CCTE												
	CCGT-12 - CCTE												
RPCL	CCST-10												
	CCGT-11												4 <div></div> 13 CI (10D)
	CCGT-12												4 <div></div> 13 CI (10D)
RPCL	CCST-20	3 <div></div> 26 MO(24D)											
	CCGT-21	3 <div></div> 26 MO(24D)											
	CCGT-22	3 <div></div> 26 MO(24D)											

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		 RATCHABURI SECURITY OPERATING HOLDING PCL.	
	Normal (WI**)	Gen.Rotor Removed (WI*)		(MI)		(MO)			
	26 Days	30 Days		26 Days		49 Days			


**Actual Outage**

# Planned Outage at Ratchaburi Power Plant in 2015

Plant		Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec		
RG	CCST-10									13	MO (51D)	2			
	CCGT-11									2	MI (46D)	16			
	CCGT-12									2	MI (32D)	2			
RG	CCST-20											8	MO (47D)	24	
	CCGT-21												12	CI (13D)	24
	CCGT-22					MO (47D)							12	CI (13D)	24
RG	CCST-30				26		11								
	CCGT-31					30	CI (9D)	7							
	CCGT-32	1	CI (15D)	15											
RG	Thermal-1										4	MI (40D)	12		
RG	Thermal-1											15	MI (40D)	24	
RG	CCST-10 - CCTE	20	CI (9D)	28											
	CCGT-11 - CCTE														
	CCGT-12 - CCTE														
RPCL	CCST-10										11	MI (24D)	3		
	CCGT-11										11	MI (24D)	3		
	CCGT-12										11	MI (24D)	3		
RPCL	CCST-20														
	CCGT-21	3	CI (10D)	12											
	CCGT-22	3	CI (10D)	12											
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

# Financial Performance

# Revenues : 3Q16 & 3Q15

Unit : in Million Baht		3Q16	3Q15	Diff	%
Sales		9,977.23	13,510.13	(3,532.90)	(26.15)
AP	- RG/TECO	724.97	1,211.56	(486.59)	(40.16)
	- RAC	425.33	398.09	27.24	6.84
EP (Fuel)	- RG/TECO	8,661.35	11,644.71	(2,983.36)	(25.62)
	- RAC	165.58	237.42	(71.84)	(30.26)
	- Flared Gas	-	18.35	(18.35)	(100.00)
Revenue from financial leases - RG/TECO		1,107.20	1,231.23	(124.03)	(10.07)
Revenue from Rendering of services		13.53	55.15	(41.62)	(75.47)
Management service income		62.92	64.67	(1.75)	(2.71)
Dividend Income		94.86	-	94.86	-
Interest Income		37.87	86.06	(48.19)	(56.00)
Other Incomes (exc. Extraordinary items)		56.04	15.78	40.26	255.13
Total Revenues		11,349.65	14,963.02	(3,613.37)	(24.15)

# Revenues : 9M16 & 9M15

Unit : in Million Baht		9M16	9M15	Diff	%
Sales		33,198.78	40,517.17	(7,318.39)	(18.06)
AP	- RG/TECO	2,407.41	3,568.23	(1,160.82)	(32.53)
	- RAC	1,233.45	1,168.77	64.68	5.53
EP (Fuel)	- RG/TECO	28,992.42	35,160.41	(6,167.99)	(17.54)
	- RAC	565.50	568.38	(2.88)	(0.51)
	- Flared Gas	-	51.38	(51.38)	(100.00)
Revenue from financial leases - RG/TECO		3,416.43	3,807.35	(390.92)	(10.27)
Revenue from Rendering of services		92.11	178.06	(85.95)	(48.27)
Management service income		194.90	188.20	6.70	3.56
Dividend Income		204.72	133.14	71.58	53.76
Interest Income		121.79	269.39	(147.60)	(54.79)
Other Incomes (exc. Extraordinary items)		95.11	47.87	47.24	98.68
Total Revenues		37,323.84	45,141.18	(7,817.34)	(17.32)

# Share of profit from jointly-controlled entities : 3Q16 & 3Q15

Unit : in Million Baht	3Q16	3Q15	Diff	%
RPCL	126.69	122.72	3.97	3.24
SEAN	137.70	(56.97)	194.67	341.71
HPC	40.09	(206.44)	246.53	119.42
CRESCO	0.39	(0.78)	1.17	150.00
SOLARTA	43.94	39.98	3.96	9.90
KORAT 3,4,7	18.24	18.07	0.17	0.94
FKW	9.51	34.17	(24.66)	(72.17)
KR2	21.08	28.61	(7.53)	(26.32)
KWINANA	21.87	24.34	(2.47)	(10.15)
PNPC	(6.30)	44.90	(51.20)	(114.03)
RW COGEN	62.83	63.22	(0.39)	(0.62)
NNEG	25.63	22.34	3.29	14.73
Songkhla Biomass	10.65	(5.67)	16.32	287.83
Others	24.14	7.85	16.29	207.52
<b>Total Share of profit from jointly-controlled entities</b>	<b>536.46</b>	<b>136.34</b>	<b>400.12</b>	<b>293.47</b>



# Share of profit from jointly-controlled entities : 3Q16 & 3Q15

EXCL.FX

Unit : in Million Baht	3Q16	3Q15	Diff	%
RPCL	110.13	202.63	(92.50)	(45.65)
SEAN	125.57	50.51	75.06	148.60
HPC	190.96	(18.44)	209.40	<i>n.a.</i>
CRESCO	(1.07)	(2.67)	1.60	59.93
SOLARTA	43.94	39.97	3.97	9.93
KORAT 3,4,7	18.24	18.07	0.17	0.94
FKW	9.51	34.17	(24.66)	(72.17)
KR2	21.08	28.62	(7.54)	(26.35)
KWINANA	21.87	24.34	(2.47)	(10.15)
PNPC	(5.07)	(20.50)	15.43	75.27
RW COGEN	62.74	63.45	(0.71)	(1.12)
NNEG	21.83	(2.74)	24.57	896.72
Songkhla Biomass	10.65	(5.67)	16.32	287.83
Others	24.34	5.87	18.47	314.65
<b>Total Share of profit from jointly-controlled entities</b>	<b>654.72</b>	<b>417.61</b>	<b>237.11</b>	<b>56.78</b>

# Share of profit from jointly-controlled entities : 9M16 & 9M15

Unit : in Million Baht	9M16	9M15	Diff	%
RPCL	405.11	476.17	(71.06)	(14.92)
SEAN	271.99	33.44	238.55	713.37
HPC	373.33	(433.60)	806.93	186.10
CRESCO	24.68	2.26	22.42	992.04
SOLARTA	132.84	134.91	(2.07)	(1.53)
KORAT 3,4,7	60.33	60.09	0.24	0.40
FKW	59.50	95.17	(35.67)	(37.48)
KR2	65.85	78.02	(12.17)	(15.60)
KWINANA	57.73	61.34	(3.61)	(5.89)
PNPC	3.26	52.58	(49.32)	(93.80)
RW COGEN	182.41	113.27	69.14	61.04
NNEG	20.18	13.42	6.76	50.37
Songkhla Biomass	39.24	(8.49)	47.73	562.19
Others	49.62	18.31	31.31	171.00
<b>Total Share of profit from jointly-controlled entities</b>	<b>1,746.07</b>	<b>696.89</b>	<b>1,049.18</b>	<b>150.55</b>

# Share of profit from jointly-controlled entities : 9M16 & 9M15

EXCL.FX

Unit : in Million Baht	9M16	9M15	Diff	%
RPCL	361.36	580.88	(219.52)	(37.79)
SEAN	222.28	169.89	52.39	30.84
HPC	717.98	(203.17)	921.15	453.39
CRESCO	20.74	(2.11)	22.85	<i>n.a.</i>
SOLARTA	132.82	134.90	(2.08)	(1.54)
KORAT 3,4,7	60.33	60.09	0.24	0.40
FKW	59.50	95.16	(35.66)	(37.47)
KR2	65.85	78.02	(12.17)	(15.60)
KWINANA	57.73	61.34	(3.61)	(5.89)
PNPC	(11.11)	(35.19)	24.08	68.43
RW COGEN	182.13	113.53	68.60	60.42
NNEG	9.18	(16.97)	26.15	154.10
Songkhla Biomass	39.24	(8.49)	47.73	562.19
Others	51.96	8.83	43.13	488.45
<b>Total Share of profit from jointly-controlled entities</b>	<b>1,969.99</b>	<b>1,036.71</b>	<b>933.28</b>	<b>90.02</b>

# Cost and Expenses : 3Q16 & 3Q15

Unit : in Million Baht	3Q16	3Q15	Diff	%
<b>Cost of Sale and rendering of services</b>	<b>9,568.31</b>	<b>12,563.60</b>	<b>(2,995.29)</b>	<b>(23.84)</b>
– Fuel Cost : RG/ TECO	8,619.89	11,532.28	(2,912.39)	(25.25)
– Fuel Cost : RAC	2.66	4.96	(2.30)	(46.37)
– Fuel Cost : Flared Gas	-	2.96	(2.96)	(100.00)
– Operation & Maintenance	379.65	404.80	(25.15)	(6.21)
– Repairing Expense (CSA)	272.80	268.20	4.60	1.72
– Spare parts	37.93	164.01	(126.08)	(76.87)
– Insurance Premium	122.08	92.18	29.90	32.44
– Standby Charge	48.91	51.78	(2.87)	(5.54)
– Others	84.39	42.43	41.96	98.89
<b>Selling and Admin- Expenses</b>	<b>324.39</b>	<b>342.77</b>	<b>(18.38)</b>	<b>(5.36)</b>
<b>Total Cost and Expenses*</b>	<b>9,892.70</b>	<b>12,906.37</b>	<b>(3,013.67)</b>	<b>(23.35)</b>

\*excluding depreciation & amortization

# Cost and Expenses : 9M16 & 9M15

Unit : in Million Baht	9M16	9M15	Diff	%
<b>Cost of Sale and rendering of services</b>	<b>31,552.36</b>	<b>37,718.02</b>	<b>(6,165.66)</b>	<b>(16.35)</b>
– Fuel Cost : RG/ TECO	28,626.99	34,835.94	(6,208.95)	(17.82)
– Fuel Cost : RAC	8.69	12.73	(4.04)	(31.74)
– Fuel Cost : Flared Gas	-	8.26	(8.26)	(100.00)
– Operation & Maintenance	1,126.49	1,204.44	(77.95)	(6.47)
– Repairing Expense (CSA)	801.47	744.16	57.31	7.70
– Spare parts	185.76	347.54	(161.78)	(46.55)
– Insurance Premium	362.44	279.58	82.86	29.64
– Standby Charge	156.66	156.11	0.55	0.35
– Others	283.86	129.26	154.60	119.60
<b>Selling and Admin- Expenses</b>	<b>966.86</b>	<b>1,061.70</b>	<b>(94.84)</b>	<b>(8.93)</b>
<b>Total Cost and Expenses*</b>	<b>32,519.22</b>	<b>38,779.72</b>	<b>(6,260.50)</b>	<b>(16.14)</b>

\*excluding depreciation & amortization

# Gain (Loss) From Foreign Exchange Rate

Unit : in Million Baht	3Q16	3Q15	9M16	9M15
Gain (Loss) from Foreign Exchange Rate	(374.59)	(1,432.24)	(1,235.99)	(1,931.22)
<b>The Company and Subsidiaries</b>	<b>(256.33)</b>	<b>(1,150.97)</b>	<b>(1,012.07)</b>	<b>(1,591.40)</b>
- RH	(18.51)	90.31	(95.88)	120.68
- RH Inter	(255.82)	(1,192.43)	(995.07)	(1,641.76)
- RG / RE / RL	18.00	(48.85)	78.88	(70.32)
<b>Jointly-controlled entities and Associates</b>	<b>(118.26)</b>	<b>(281.27)</b>	<b>(223.92)</b>	<b>(339.82)</b>
- SEAN (33.33%)	12.13	(107.48)	49.71	(136.45)
- RPCL (25%)	16.56	(79.91)	43.75	(104.71)
- HPC (40%)	(150.87)	(188.00)	(344.65)	(230.43)
- PNPC (40%)	(1.23)	65.40	14.37	87.77
- Others (CRESCO, RW Cogen, FKW, KR2, NNEG, Solarta, RICl)	5.15	28.72	12.90	44.00

*Foreign Exchange Rate as at 30 September 2016 = 34.705 Baht/USD and as at 30 September 2015 = 36.359 Baht/USD*

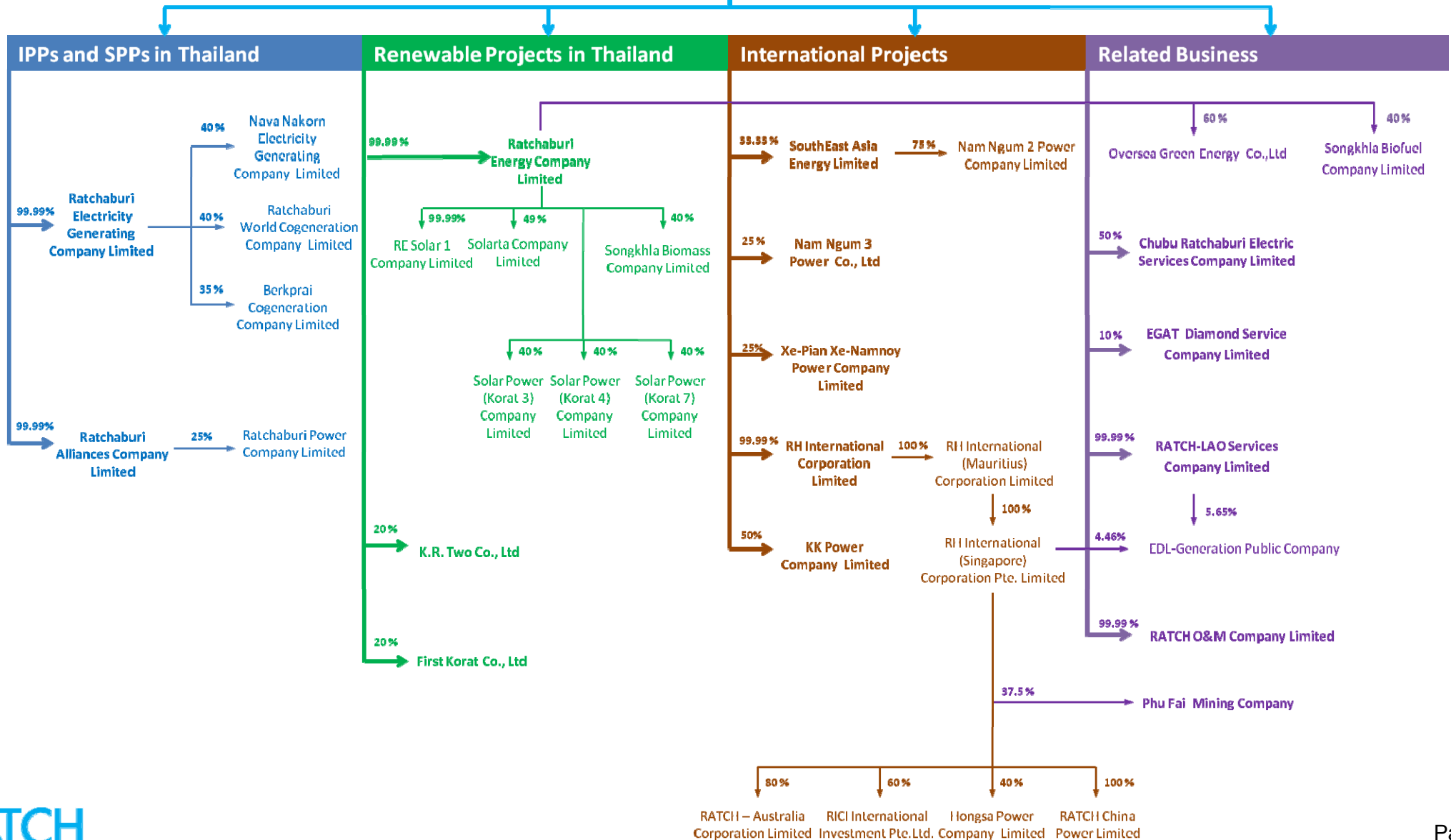
*Foreign Exchange Rate as at 30 June 2016 = 35.195 Baht/USD and as at 30 June 2015 = 33.773 Baht/USD*

*Foreign Exchange Rate as at 30 December 2015 = 36.077 Baht/USD and as at 30 December 2014 = 32.964 Baht/USD*

# Appendix

# RATCH Projects

# Company Structure





# IPPs and SPPs in Thailand



**In Operation**

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

## Ratchaburi Power Plant (RATCHGEN)



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

## Tri Energy Power Plant (TECO)



<b>Location</b> Ratchaburi Province
<b>Technology</b> Combined Cycle
<b>Total Capacity</b> 700 MW (holds 100%)
<b>PPA</b> 20-Year
<b>COD</b> 1 July 2000
<b>Partner</b> Ratchaburi Electricity Generating Company Limited holds 100%

<b>Project Cost (100%)</b> 404.75 Million USD
<b>Debt to Equity</b> 3 : 1
<b>Project Cost (RATCH Portion)</b> <ul style="list-style-type: none"> <li>In 2005, RATCH holds 50% of the total share, at the amount 202.50 Million USD)</li> <li>In 2014, RATCH has purchased 50% of the total share , at the amount 21.32 Million USD</li> </ul>

# IPPs and SPPs in Thailand



**In Operation**

<b>Project Cost (100%)</b>
840 Million USD
<b>Debt to Equity</b>
2.5 : 1
<b>Project Cost (RATCH Portion 25%)</b>
210 Million USD

## Ratchaburi Power Plant (RPCL)



<b>Location</b>
Ratchaburi Province
<b>Technology</b>
Combined Cycle
<b>Total Capacity</b>
1,400 MW (350 MW holds 25 %)
<b>PPA</b>
25-Year
<b>COD</b>
Block 1: 1 March 2008 Block 2: 1 June 2008
<b>Partner</b>
<ul style="list-style-type: none"> <li>• Ratchaburi Alliances Company Limited holds 25%</li> <li>• Power Assets holds 25%</li> <li>• Chubu Electric Power Company International B.V. holds 15%</li> <li>• PTT PCL holds 15%</li> <li>• Union Energy Company Limited holds 10%</li> <li>• Toyota Tsusho Corporation holds 10%</li> </ul>

## Ratchaburi World Cogeneration (RW Cogen)



<b>Location</b>
Ratchaburi Province
<b>Technology</b>
Cogeneration
<b>Total Capacity</b>
234 MW (93.60 MW holds 40%)
<b>PPA</b>
25-Year
<b>COD</b>
Unit 1: November 2014 Unit 2: March 2015
<b>Partner</b>
<ul style="list-style-type: none"> <li>• Ratchaburi Electricity Generating Company Limited holds 40%</li> <li>• Major Shareholder Group of Thai Agri Food PCL holds 60%</li> </ul>

<b>Project Cost (100%)</b>
10,620 Million Baht
<b>Debt to Equity</b>
75 : 25
<b>Project Cost (RATCH Portion 40%)</b>
4,248 Million Baht

# IPPs and SPPs in Thailand



**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 Capacity**

139.13 MW (55.65 MW holds 40%)

**PPA**

25-Year

**COD**

3 June 2016

**Partner**

- Ratchaburi Electricity Generating Company Limited holds 40%
- PTT holds 30%
- Nava Nakhon holds 30%

**Berkprai Cogeneration  
(Former name: Ratchaburi Cogeneration)**

**Location**

Ratchaburi Province

**Technology**

Cogeneration

**Total Capacity**

100 MW (35 MW holds 35%)  
Steam Generation 15 ton/hour

**PPA**

25-Year

**Expected COD**

In 2019

**Partner**

- Ratchaburi Electricity Generating Company Limited holds 35%
- Rajburi Sugar Company Limited 65%

**Project Cost (100%)**

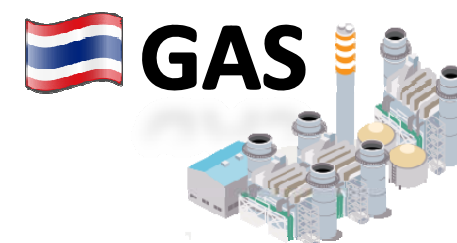
4,700 Million Baht

**Debt to Equity**

3 : 1

**Project Cost (RATCH Portion 35%)**

1,645 Million Baht





**Under Development**

# Renewable Projects in Thailand



<b>Project Cost (100%)</b> 6,100 Million Baht
<b>Debt to Equity</b> 70 : 30
<b>Project Cost (RATCH Portion 20%)</b> 1,220 Million Baht

Huay Bong 2 Wind-Turbine Power Project	
	
<b>Location</b>	Nakorn Ratchasima Province
<b>Technology</b>	Wind-Turbine
<b>Total Capacity</b>	103.5 MW (20.7 MW holds 20%)
<b>PPA</b>	5 years with automatic renewal for a further 5 years every 5 years
<b>COD</b>	8 February 2013
<b>Partner</b>	<ul style="list-style-type: none"> <li>• RATCH holds 20%</li> <li>• Aeolus Power holds 60%</li> <li>• Chubu Electric Power Korat, BV holds 20%</li> </ul>

Huay Bong 3 Wind-Turbine Power Project	
	
<b>Location</b>	Nakorn Ratchasima Province
<b>Technology</b>	Wind-Turbine
<b>Total Capacity</b>	103.5 MW (20.7 MW holds 20%)
<b>PPA</b>	5 years with automatic renewal for a further 5 years every 5 years
<b>COD</b>	14 November 2012
<b>Partner</b>	<ul style="list-style-type: none"> <li>• RATCH holds 20%</li> <li>• Aeolus Power holds 60%</li> <li>• Chubu Electric Power Korat, BV holds 20%</li> </ul>

<b>Project Cost (100%)</b> 6,500 Million Baht
<b>Debt to Equity</b> 70 : 30
<b>Project Cost (RATCH Portion 20%)</b> 1,300 Million Baht

# Renewable Projects in Thailand



## Solar Power Projects (Korat 3, Korat 4, Korat 7)



### Project Cost (100%)

1,950 Million Baht

### Debt to Equity

75 : 25

### Project Cost (RATCH Portion 40%)

780 Million Baht

### Location

Nakorn Ratchasima Province

### Technology

Solar Power

### Total Capacity

18 MW (7.2 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 Capacity

34.25 MW (16.78 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%)

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 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



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

Num Ngum 2 Hydroelectric Power Plant

<b>Location</b>
Lao PDR
<b>Technology</b>
Hydro Power Plant
<b>Total Capacity</b>
615 MW (153.75 MW holds 25%)
<b>PPA</b>
27-Year
<b>IOD/COD</b>
In 2011 / In 2013
<b>Partner</b>
<ul style="list-style-type: none"> <li>• SEAN* holds 75%</li> <li>• GOL holds 25%</li> </ul>
<p>* Remark: SEAN's shareholder consist of</p> <ul style="list-style-type: none"> <li>• RATCH holds 33.33%</li> <li>• CK Power PCL holds 55.99%</li> <li>• Other holds 10.68%</li> </ul>

EDL-Generation Public Company (EDL-Gen)

<b>Location</b>
Lao PDR
<b>Technology</b>
Hydro Power Plant
<b>Total Capacity</b>
1,131.15 MW (114.36 MW holds 10.11%*)
<b>Shareholders</b>
<ul style="list-style-type: none"> <li>• RATCH-Lao holds 5.65%</li> <li>• RH International (Singapore) Corporation Pte. Limited holds 4.46%</li> <li>• EDL holds 75%</li> <li>• Others holds 14.89%</li> </ul>
<p>*Remark:</p> <ul style="list-style-type: none"> <li>• EDL-Gen has been traded on Lao Securities Exchange since 2010.</li> <li>• In 2016, RATCH acquired 169.78 million shares, or equivalent to 3,254 Million Baht</li> </ul>

# International Projects



## HYDRO



## Under Construction

### Xe-Pian – Xe Namnoy Project

#### Location

Lao PDR

#### Technology

Hydro Power Plant

#### Total Capacity

410 MW (102.5 MW holds 25%)

#### PPA

27-Year

#### Progress

60.85% as of September 2016

#### 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



## Hongsa Power Plant Unit 1-3

### Location

Lao PDR

### Technology

Lignite-Fired

### Total Capacity

1,878 MW (751.2 MW holds 40%)

### IPP

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%

### 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 25%)

1,484 Million USD



# International Projects



## Townsville Power Plant



### Location

North Queensland, Australia

### Technology

Combined Cycle Gas Turbine

### Total Capacity

234 MW (187.20 MW holds 80%)

### COD

In 1999

### Contract end date

February 2025

### Contract counterparty

AGL / Arrow

## Kemerton Power Plant



### Location

Western Australia

### Technology

Open Cycle Gas / Diesel Turbine

### Total Capacity

300 MW (240 MW holds 80%)

### COD

In 2005

### Contract end date

October 2030

### Contract counterparty

Synergy

## BP Kwinana Power Plant



### Location

Western Australia

### Technology

Co-generation

### Total Capacity

35.40 MW (28.32 MW holds 80%)

### COD

In 1996

### Contract end date


December 2021


### Contract counterparty


Verve Energy / BP

# International Projects

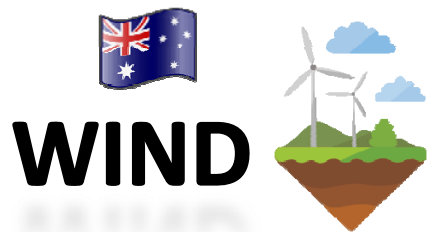


Toora

<b>Location</b> Victoria, Australia
<b>Technology</b> Wind Farm
<b>Total Capacity</b> 21 MW (16.80 MW holds 80%)
<b>COD</b> In 2002
<b>Contract end date</b> n.a.
<b>Contract counterparty</b> Merchant

Starfish Hill

<b>Location</b> South Australia
<b>Technology</b> Wind Farm
<b>Total Capacity</b> 34.5 MW (27.60 MW holds 80%)
<b>COD</b> In 2003
<b>Contract end date</b> December 2016
<b>Contract counterparty</b> Diamond Energy

Windy Hill

<b>Location</b> Queensland, Australia
<b>Technology</b> Wind Farm
<b>Total Capacity</b> 12 MW (9.60 MW holds 80%)
<b>COD</b> In 2000
<b>Contract end date</b> December 2018
<b>Contract counterparty</b> Ergon Energy

# International Projects



Under Development

Mount Emerald Wind Farm	About Mount Emerald Wind Farm
<b>Location</b> Queensland, Australia	On the 26th May 2016, Queensland Premier Anastacia Palaszczuk, announced in parliament that ERGON Energy has offered to purchase the full output of the Mount Emerald wind farm under a power purchase agreement.
<b>Technology</b> Wind Farm	The agreement was signed by executives of ERGON Energy and Mount Emerald on the 27th May 2016.
<b>Total Capacity</b> 180 MW (144 MW holds 80%)	This agreement includes the purchase of all of the electricity and green energy certificates produced by the wind farm through to the end of 2030. This is a major milestone for the project as the power purchase agreement provides the revenue stream which underpins the financial case for the project.
<b>Expected COD</b> In 2018	
<b>Contract end date</b> December 2030	
<b>Contract counterparty</b> Ergon Energy*	
<b>Project Cost (100%)</b> 9,500 Million Baht	

\* State Enterprise of Queensland, Australia



# International Projects



Guangxi Fangchenggang Nuclear Power (II)	
<b>Location</b>	Fangchenggang , China
<b>Technology</b>	HPR1000 (Hualong-1)
<b>Total Capacity</b>	2,360 MW (236 MW holds 10%) (2 unit x 1,180 MW)
<b>PPA</b>	30-Year
<b>Expected COD</b>	In 2021
<b>Partner</b>	<ul style="list-style-type: none"><li>• China General Nuclear Power Corporation (CGN) holds 51%</li><li>• Guangxi investment Group Co./ Ltd (GIG) holds 39%</li><li>• RATCH China Power Limited holds 10%</li></ul>
<b>Project Cost (100%)</b>	200,000 Million Baht
<b>Equity Investment (RATCH Portion 10%)</b>	7,500 Million Baht



# RATCH



RATCHABURI  
ELECTRICITY GENERATING  
HOLDING PCL.

## Q&A

*Thank you*