Q1/2021 Opportunity Day

May 24, 2021

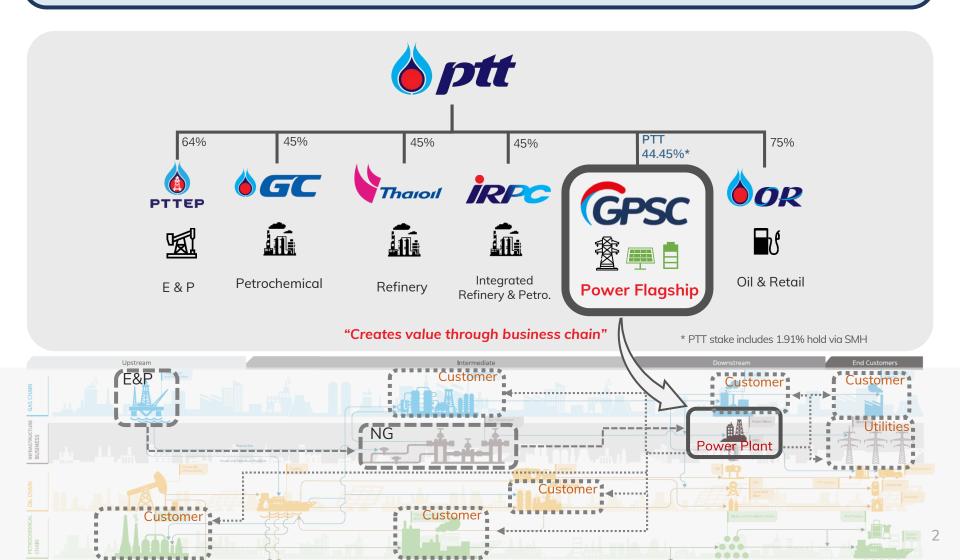






# The power flagship of PTT Group

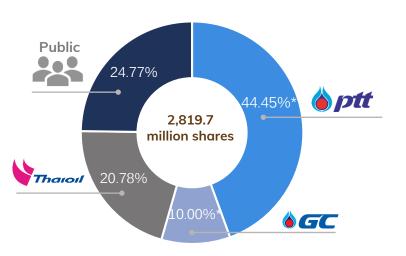
"GPSC, The global leading innovative and sustainable power company, the core business is to generate and supply electricity and utilities to customers and also developing new S-Curve business to create value to stakeholders."



# GPSC Innovative Power Company at a Glance | as of

as of 17 May 2021

### SHAREHOLDING STRUCTURE



\* PTT stake includes 1.91% hold via SMH, a wholly-owned indirect subsidiary of PTT. The transaction is expected to be completed by Q2/2021.

### **TOTAL EQUITY CAPACITY\***

Electricity | 5,055 MW

Steam | 2,946 T/H

Chilled Water | 15,400 RT

Industrial Water | 7,372 Cu.m./H

Semi-solid Energy Storage Unit | 30 MWh

#### **COMPANY INFORMATION**

Business Type | Energy & Utilities

Paid-up Capital | THB 28,197 million

Market Cap. | THB 193,151 million

Listed on | Stock Exchange of Thailand

#### **CREDIT RATINGS**

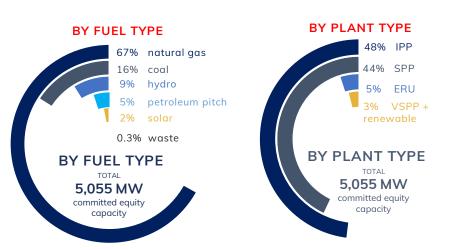
BBB- S&P Global

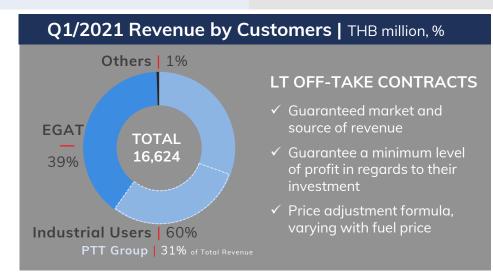
AA-

TRIS

A+(tha)

**Fitch**Ratings





# GPSC: Q1/2021 Highlight

Financial Performance & 2021 Outlook

# **Strategic Directions (3S)**

- Synergy and Integration
- Selective Growth
- S-Curve

Sustainability at GPSC

**Update of Projects** 

Q&A



# **Q1/2021** | Highlight

### **Challenges and Concerns**

COVID-19



**Energy Transition** 



**Climate Change** 



## **Operational Excellence and Readiness to move forward**

**Strengthen the Core** 



### To ensure stability and continuity of utilities to supply IUs

- Measures against COVID-19: The highest control measures have been implemented e.g. safe house for operators (Golden Man), refrain external parties to access the offices and operating areas.
- Business Continuity Plans (BCP) to give confidence that the company will be able to manage and continually operate production, without any interruption
- Operational Excellence: Best-in-class operation for reliability and security of the network and continuous Improvement

**Growth ambitions** 



- Follow the **growth plan** to invest in conventional and renewable
- Increased focus on renewables
- Increased present outside of Thailand

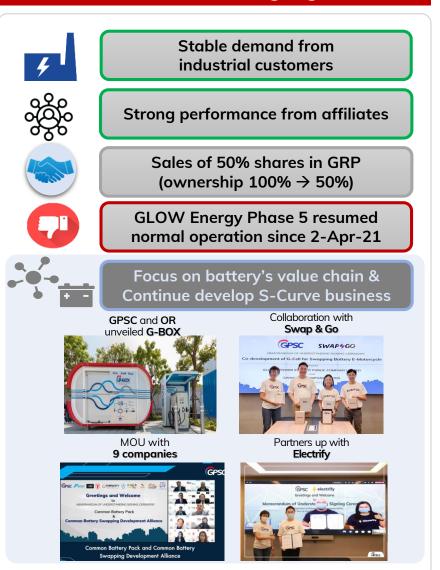
New Businesses



- · Battery value chain
- Expansion in **S-curve** and adjacent businesses

# **Q1/2021** | Highlight

### Q1/21 Events & Highlights



### Q1/21 Performance **Sales Volume of Industrial Customers (IUs)** Electricity sales volume (GWh) Steam sales volume ('000 tons) 14% YoY 14% QoQ ▼1% QoQ 8% 2,081 3,739 3,705 1,928 1.823 3,254 Q1/20 04/20 01/21 Q1/20 Q4/20 Q1/21

# **Net Income (THB MM)**



GPSC: Q1/2021 Highlight

# Financial Performance & 2021 Outlook

**Strategic Directions (3S)** 

- Synergy and Integration
- Selective Growth
- S-Curve

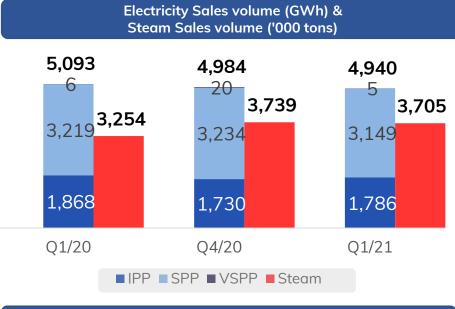
Sustainability at GPSC

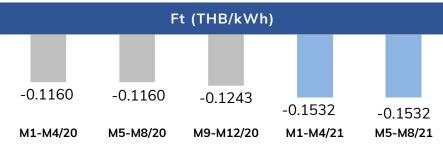
**Update of Projects** 

Q&A



# Q1/2021 Key Drivers

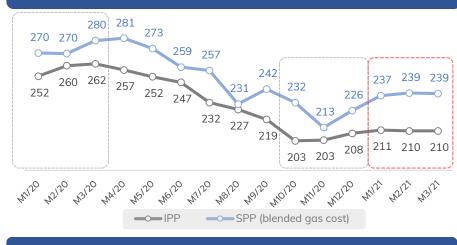




Ft for M1-M8/2021 is -15.32 Satang/unit.

IPP's Availability Rate (%)	01/20	04/20	01/21	Change <b>+/(-)</b>		
irr's Avuilability Rate (%)	Q1/20	Q4/20	QI/ZI	YoY	QoQ	
Sriracha Power Plant	95%	90%	99.8%	5%	10%	
GIPP	100%	90%	76%	(24%)	(14%)	
GHECO-One	96%	94%	59%	(37%)	(35%)	

### Natural Gas Cost 2020 - Q1'2021 (THB/MMBTU)



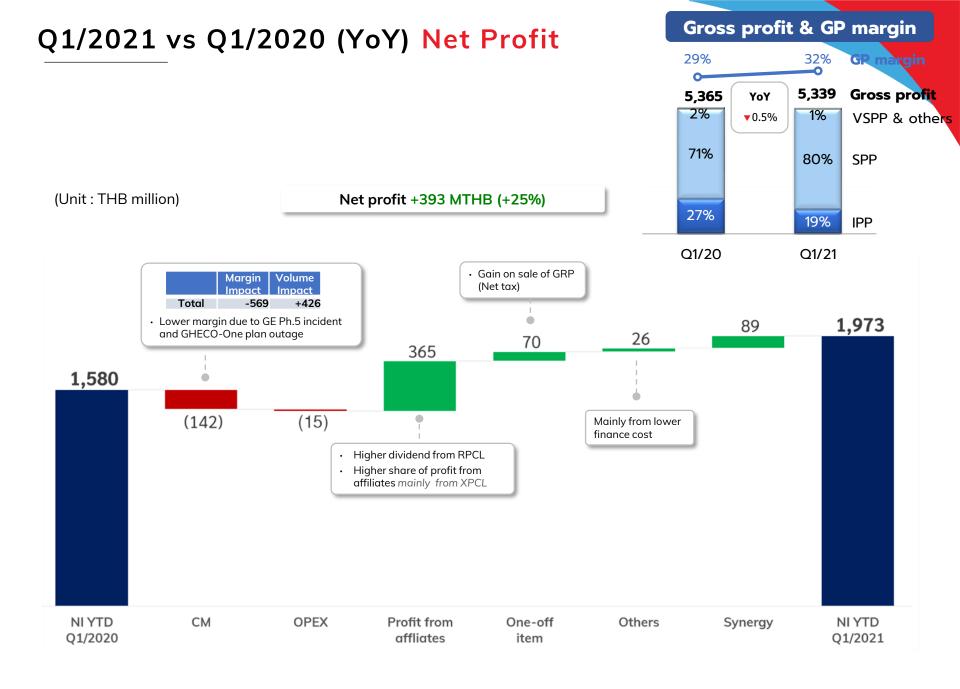
### Coal Cost 2020 - Q1'2021 (USD/Ton JPU)

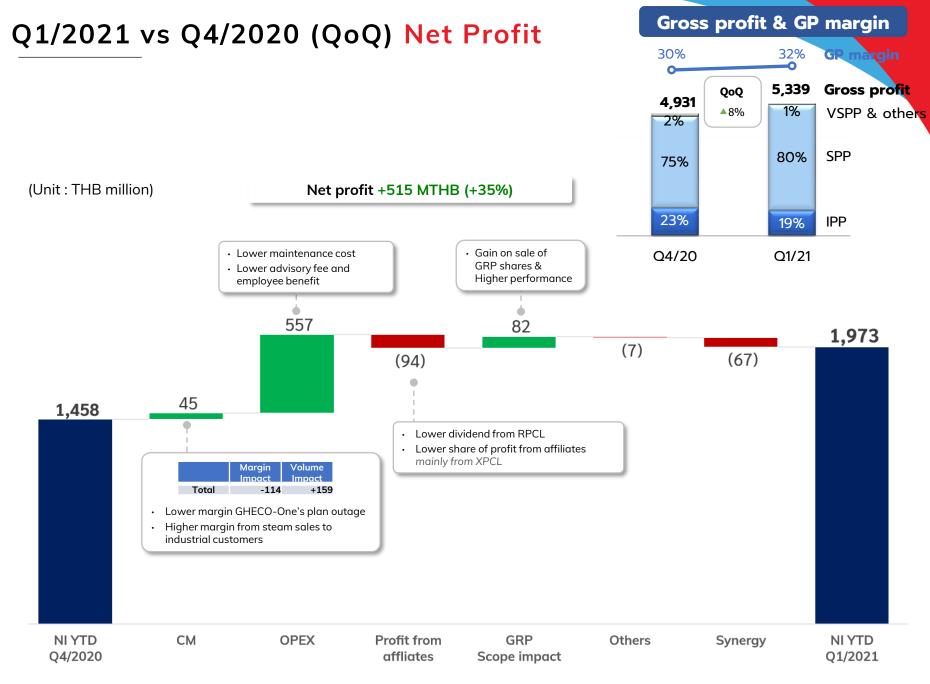


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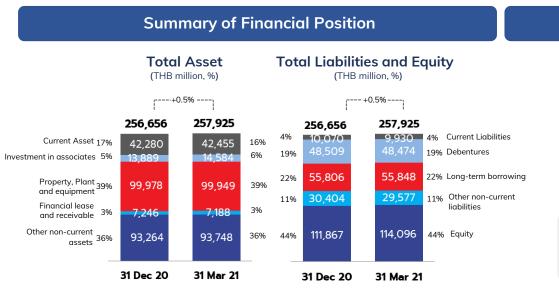
End-month FX	(THB/USD)
	(1110,000)

Average	31.97		30.68		30.63	
M3/20	32.83	M12/20	30.21	M3/21	31.51	
M2/20	31.78	M11/20	30.45	M2/21	30.21	
M1/20	31.30	M10/20	31.37	M1/21	30.17	

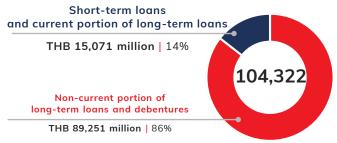




## Financial Positions and Debt Profile



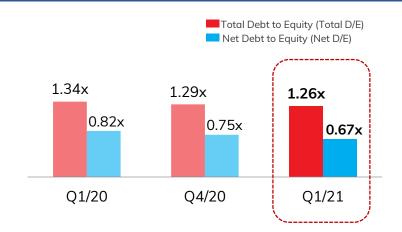
### Total Interest-Bearing Debt | THB million



#### As of Q1/2021:

- Average cost of debt: 3.06%
- Average remaining tenor: 5.3 year

### Total debt to equity and net debt to equity ratio | times



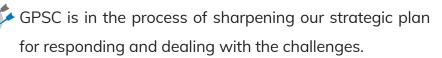
### **Credit ratings**



## 2021 Outlook

#### Performance Outlook

- ▲ Synergy value from acquisition of GLOW is expected to be THB >800 million (after tax) in 2021.
- Demand of electricity and steam in the MTP area increased by 4%, approximately.
- ▼ In 2021, average gas price is expected to be higher 5% from Q1/2021, while coal price is expected to maintain from Q1/2021.
- GLOW Energy Phase 5 Plant resumed to normal operation in 2-Apr-2021. Insurance payment claim is ongoing.



### Project Closing and COD in 2021



Solar projects of 25 MW in Taiwan expected to closing in Q2/2021



Rayong Waste to Energy Project expected to COD in Q2/2021



Energy Storage Unit 30 MWh p.a. expected Start of regular production in Q2/2021

### **Key Assumptions** (Unit: USD/BBL)



- Natural gas price is forecasted to increase slightly in the same direction with crude oil with lag time 6 – 12 months.
  - NG price increased slightly in Q1/2021.
  - Blended gas cost of SPP portfolio is expected
     10% increase at year-end.

### Coal price

- Coal price increased slightly in Q1/2021.
- Coal price range is expected about US\$ 85-90 per ton (NewCastle) at year-end.

GPSC: Q1/2021 Highlight

Financial Performance & 2021 Outlook

# **Strategic Directions (3S)**

- Synergy and Integration
- Selective Growth
- S-Curve

Sustainability at GPSC

**Update of Projects** 

Q&A



# Strategic Directions and Growth Strategy | 3S Strategy



**SYNERGY & INTEGRATION** 



Customer Centric



ROE Uplift



Thailand Business Development



International Business Development



Co-investment with PTT



New Businesses







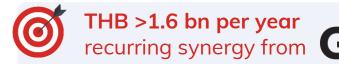


# **Synergy and Integration**

# **Synergy and Integration**

Q1/2021, the recognized synergy value is approx. THB 224 mm (After tax)

mainly from operation and maintenance, the management of power and steam network integration and coal ash management





Ramp up with full synergy value contribution by 2024

### **Key Synergy Initiatives**



- Enhance reliability in Maptaput via Power and Steam Integration
- Aligning best practice to increase maintenance and procurement productivity and cost saving
- Corporate Function & IT Synergy

# Operational Excellence (OpEx)



"To be **Top of Operational Excellence**in power and utilities
business"

### Strengthen the core = Foundation for future

- Best-in-class operation
- Customer-centric utility service provider

### **Explore & Innovate**

- Build capabilities
- Setup and scale up S-curve and new business



### **GPSC Selective Growth**

**Thailand** 

**International** 



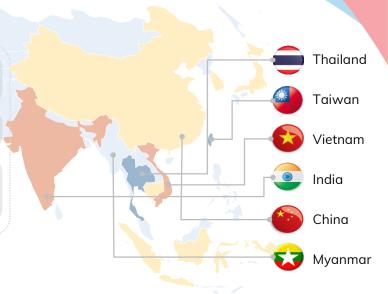
Conventional & Renewable



Conventional



Renewable



### Way forward to sustainable growth



Focusing on power plant projects by Leveraging PTT Group's Networking

for PTT Group Investing especially in renewable energy businesses internationally through:



resources & Expertise



Financial capability

## **Expansion with Business Ecosystems**

# Manufacturing

Scale-up



One-stop service smart solution provider



Digital Energy and **Expand business** 

Pilot projects and proof of concept



**GPSC** Pilot Scale









**GPSC** 













- Sharing of experience
- · Joint procurement of Electrode Active Materials
- · Right to offtake product to Thailand and etc.

### Possible acceleration if market develops faster

### **Development and Achievements**



#### 24 February 2021:

**GPSC and OR unveiled G-BOX** 

150 kWh G-Box, a Battery Energy Storage System at PTT station



#### 26 March 2021:

Collaboration with Swap & Go for swappable battery packs of motorcycles



#### 29 April 2021:

MOU with 9 companies to develop a common battery pack and to develop a battery swapping **platform** for charging stations.

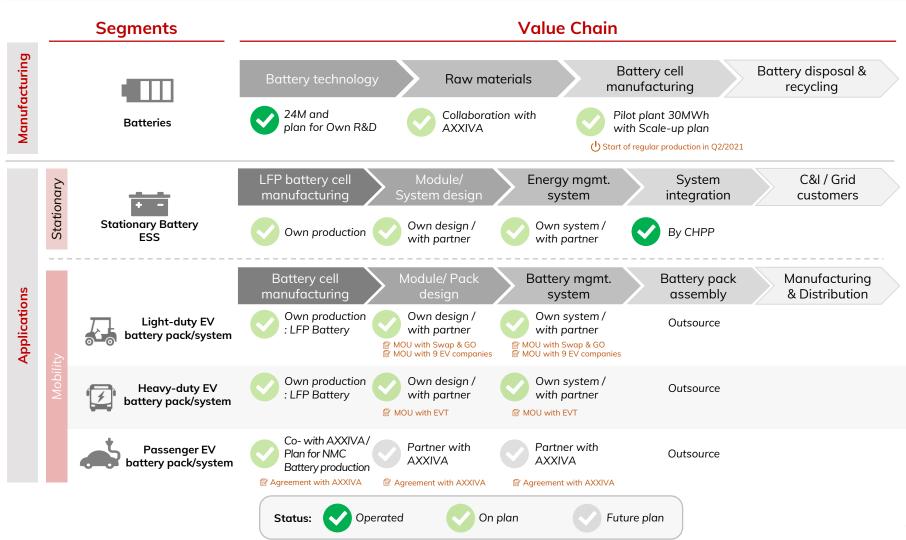


#### 18 May 2021:

Partners up with **Electrify** to develop and implement a P2P energy trading platform



# GPSC has built capabilities across different segments of the value chain, with focus on stationary battery ESS and light duty EV battery pack



GPSC: Q1/2021 Highlight

Financial Performance & 2021 Outlook

**Strategic Directions (3S)** 

- Synergy and Integration
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- S-Curve

# **Sustainability at GPSC**

**Update of Projects** 

Q&A



# **Q1/2021** Move towards sustainability

# Sustainability & Climate Change Strategy

### Sustainability Management Framework

### **Power Accessibility**

Enhance stability of access by investing in distributed energy technologies and infrastructure



Empower better living by providing occupational training program, light for a better life program and zero-waste village

# Eco - system 🛇



Eco-system of driving clean energy,

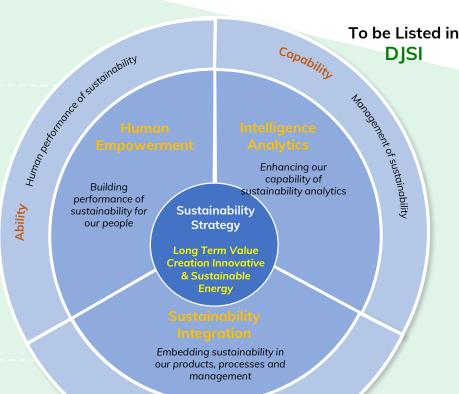
cultivating the Circular Economy concept and

### Sustainable Innovation

easing environmental impacts

Sustainable Innovation for the corporation to drive improvement initiatives through Artificial Intelligence (AI) and Blockchain, innovation culture and youth social innovation

### **Long Term Values Creation Innovative & Sustainable Energy**



Impact of business & society

Results



Aim to

**NET ZERO** 

# **Sustainability** Net Zero Framework

### The route to net zero for utilities

#### INTERNAL



### Reduce fossil fuel usage

- Adopt best practice operational excellence
- Retrofit non-renewable power plants, etc.

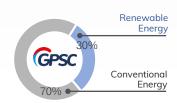




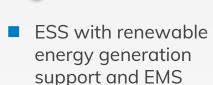
### Grow renewables

Execute the growth strategy as planned by

- Develop solar and wind power plants
- Integrate distributed solar and Switch to microgrid, etc.



### **Enhance** infrastructure



- Implement digital transformation
- Study and adopt CCUS, etc.



### **EXTERNAL**



Trading / **Offsets** 

Study carbon credits. emissions trading schemes, shadow carbon pricing, etc.



Note: ESS: Energy Storage System

EMS: Energy Management System

CCUS: Carbon Capture, Utilization and Storage

GPSC: Q1/2021 Highlight

Financial Performance & 2021 Outlook

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Sustainability at GPSC

**Update of Projects** 

Q&A



# **Update of Projects**

# **GPSC**

### Semi-Solid Energy Storage Unit | 30 MWh





Capacity (MWh/yr.)

### Rayong Waste to Energy (WTE)





**Electricity** (MW)

9.8

### SPP Replacement - Stage 1 | Glow Energy Ph. 2

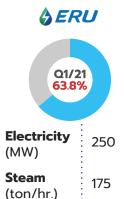




<b>Electricity</b> (MW)	192
Steam	300

### **Energy Recovery Unit (ERU)**





# **Q&A SESSION**

### **IR Contact:**

Pongsak Plaingam +662 140 4646 Suthathip Charoenkij +662 140 5318 ir@gpscgroup.com www.gpscgroup.com

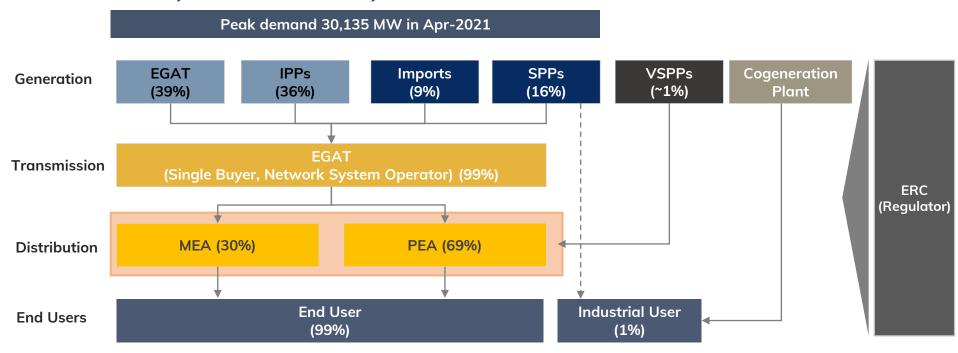


Feedback survey



# **Current power industry structure in Thailand**

- EGAT and IPPs dominate electricity generation market, with the combined market share 75%.
- EGAT is the sole purchaser for almost all of the electricity generated, while VSPPs sell electricity directly to the MEA and PEA
- · SPPs sell electricity to both EGAT and directly to industrial users



### Definition

EGAT Electricity Generating Authority of Thailand (State-owned entity)

IPP Independent Power Producers

SPP Small Power Producers

VSPP Very Small Power Producers

MEA Metropolitan Electricity Authority (State-owned entity)

PEA Provincial Electricity Authority (State-owned entity)

**ERC** Energy Regulatory Commission

Source: EGAT and GPSC 25

### **Power Plant Definition & Revenue Structure**

**IPP** 

Independent Power Producer (IPP):

- A large power producer who has entered into the Power Purchase Agreement (PPA) with contracted capacity more than 90 MW
- IPPs are obliged to sell their entire output to EGAT

SPP

# Small Power Producer (SPP) / Cogeneration (Cogen):

 A small power producer who sell their electricity to EGAT\* and sell their electricity and utilities (e.g. steam, industrial water, chilled water) to Industrial customers (IUs)

#### **Contract Type:**

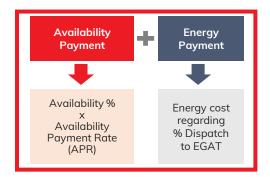
#### EGAT:

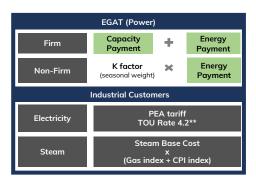
Firm: Contract term > 5 years; CP + EP (+ FS)\*\*
 Non-Firm: Contract term <= 5 Years; Only EP<sub>NF</sub>
 IUs: Commercial contract as agreed.

### Very Small Power Producer (VSPP):

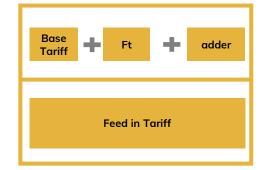
**VSPP** 

- A very small generator whose power generating process is generated from renewable energy, cogeneration, biogas, biomass, waste heat, etc. with contracted capacity no more than 10 MW of electricity capacity
- VSPPs are able to sell power to the Distribution Utility Authority only



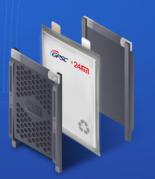


- \* Under various type of contracts.
- \*\* Fuel Saving (FS)
- \*\*\* Reference rate with conditions: https://www.pea.co.th/



## **GPSC Battery:** G-CELL and Applications

### **G-CELL Core Values**



Safer

Greener

Reliable



# **Semi-Solid Battery Unique Design**



Shorter **Process** 



Remove 40% Inactive Material



No binder Needed



Low Risk of Contamination

### Application and Target Market for Semi-Solid Energy Storage Unit (30 MWh p.a.)

## **Energy** Storage



# **E-Mobility**



### **Target applications**

#### Commercial & Industrial

- Charging station
- Industrial Estate
- Micro-Grid
- Remote Area

#### **Residential (RESS)** and others

- **Property Development**
- ESS Mobility and others
- **E-Mobility**
- Battery for EVs
- Battery swapping

### Target market



PTT Group network



Reputable commercial & Industrial



Government offices. University, Hospitals



**EVs Provider** (Bus, Motorcycle, Tuktuk)



**Lead Acid Replacement** 



**EV-Bus** 



ESS x EV Charger



**Battery Swapping** & Car Charing



**Battery Pack** 



Energy Platform

# **S3**

### Applications and Achievement in Renewable & Smart Energy Projects

## VISTEC VIDYASIRIMEDHI

#### SMART ENERGY MANAGEMENT

- √ 1.39 MW renewable energy (solar roof + floating)
- ✓ 1.2 MWh ESS, Renewable optimization and Zero-import building
- ✓ Blockchain P2P energy trading, EV chargers and Artificial Intelligence





### 6 MW Smart Energy Project at Suranaree University To create a low carbon university

1.74 MW Solar Rooftop 4.312 MW Floating Solar 100-200 kWh Lithium-ion BESS AI & Smart Energy Platform

- High efficiency BESS with management of solar power generation
- Blockchain-based smart grid and Al
- Cutting-edge innovation and smart energy platform



## @Wangchan Valley

**Smart Natural Innovation Platform** 



### **SMART Energy Management**



Clean Energy Generation



Flexibility Distributed Generation



Cost Efficient No Clean Energy Shedding

# ESS FOR GC's INNOVATION CENTER (Launched: Feb 2020)





- ✓ Increase gas engine efficiency
- ✓ Peak shift with ESS
- ✓ 250kW/1.5MWh
- ✓ Emergency backup power

### First offshore floating solar farm

TANK 100 kW installed capacity for seaside of PTT Tank





- PTT Tank: Cut the electricity cost and reduce carbon dioxide emission
- ✓ GC developed special plastic "InnoPlus HD8200B"
- CHPP designed and installed the floating solar system

# Sustainability at GPSC | CSR / CSV / SE

# Embedded sustainability to our strategy to build

# "Long Term Value Creation, Innovation & Sustainable Energy"

#### LIGHT FOR BETTER LIFE

Small-scale Solar PV in remote areas

#### Solar Rooftop to Schools in Rayong





- GPSC delivered Solar Rooftop System to 3 schools (25.9 kW) in Wangchan Valley in Rayong
- Lower emission of green house gas 93.5-187 tons of carbon/year

### Solar Rooftop to Hospital in Koh Sichang

 GPSC and Thailoil delivered Solar Rooftop System (53.46 kW) to Koh Sichang Hospital to improve energy security of the hospital





#### Solar Rooftop to Hospital in Mae Hong Son





 GPSC and TOP delivered Solar Rooftop System (40.5 kW) to Thanyarak Hospital in Mae Hong Son

### **GPSC YOUNG SOCIAL INNOVATOR**







2 golden prizes and 1 silver prize from 2020 The 6th World Invention Innovation Contest (WiC) in Seoul

#### **ZERO WASTE VILLAGE**



Delivering a waste management learning center to Baan Phai community in Rayong

# **Q1/2021 Operating Results**

Overall operating results of the Company and its subsidiaries (unit: THB million)	Q1/20	Q4/20	Q1/21	change YoY	e +/(-) QoQ
Operating revenue	18,308	16,532	16,624	(9%)	1%
Cost of sales (excluding depreciation and amortization)	(12,943)	(11,601)	(11,285)	(13%)	(3%)
Gross profit	5,365	4,931	5,339	(0.5%)	8%
Selling and administrative expenses	(418)	(528)	(434)	4%	(18%)
Other operating income	4	5	5	25%	(8%)
EBITDA	4,951	4,409	4,910	(1%)	11%
Depreciation and amortization	(2,074)	(2,046)	(2,053)	(1%)	0%
EBIT	2,877	2,362	2,856	(1%)	21%
Finance costs	(1,041)	(965)	(974)	(6%)	1%
Other non-operating income and expenses	174	133	264	52%	98%
Dividend received and shares of profit of associates and joint ventures	(68)	367	297	537%	(19%)
Income tax expenses	(254)	(141)	(453)	78%	222%
Profit before FX and extraordinary items	1,688	1,757	1,990	18%	13%
Net foreign exchange gain (loss)	(30)	12	2	106%	(85%)
Net profit	1,658	1,769	1,992	20%	13%
Non-controlling interests	(78)	(311)	(19)	(76%)	(94%)
Net profit for the Company	1,580	1,458	1,973	25%	35%
Adjusted Net Income	1,948	1,813	2,359	21%	30%
Gross profit margin (%)	29%	30%	32%	3%	2%
Net profit margin (%)	9%	9%	12%	3%	3%
Adjusted Net Income margin (%)	11%	11%	14%	3%	3%

# **GPSC's Prudent Financial Policy**

### **GPSC's FINANCIAL POLICY**

- 1 Net Debt to Equity ≤ 1.0x
- Net Debt to EBITDA ≤ 4.0x
- Dividend Policy | Minimum dividend at the rate of not less than 30% of the net profit

according to the financial statements of the Company after the deduction of tax, reserved funds as required by law (with additional conditions)

# **GPSC Power Plant Portfolio (1/2)**

Name	Туре	Shareholding (%)	Total capacity (MW)	Equity Power capacity (MW)	Equity Operating Power capacity (MW)	Steam (T/H)	Industrial water (Cu.m/H)	COD	Tenor
IPP									
Sriracha	IPP	GPSC (100%)	700	700	700	-	80	2000	25
Glow IPP	IPP	GLOW (95%)	713	677	677	-	-	2003	25
Huay Ho	IPP	GLOW (67%)	152	102	102	-	-	1999	30
GHECO-One	IPP	GLOW (65%)	660	429	429	-	-	2012	25
XPCL	IPP	GPSC (25%)	1285	321	321	-	-	2019	29
RPCL	IPP	GPSC (15%)	1400	210	210	-	-	2008	25
Total IPP			4,910	2,439	2,439	-	80		
SPP									
CUP-1	SPP	GPSC (100%)	226	226	226	890	720	2006	10-15
CUP-2	SPP	GPSC (100%)	113	113	113	170	510	2008	15
CUP-3	SPP	GPSC (100%)	-	-	-	280	770	2009	15
Rayong Expansion (CUP-3)	SPP	GPSC (100%)	15	15	15	-	-	2019	n/a
CUP-4	SPP	GPSC (100%)	49	49	49	140	-	2019	Long-term
Glow Energy Phase 1	SPP	GLOW (100%)	-	-	-	250	1,340	1994	-
Glow Energy Phase 2	SPP	GLOW (100%)	281	281	281	300	1,180	1996	3
Glow Energy Phase 4	SPP	GLOW (100%)	77	77	77	137	2,050	2005	25
Glow Energy Phase 5	SPP	GLOW (100%)	328	328	328	160	-	2011	-
Glow SPP 2/ GLOW SPP 3	SPP	GLOW (100%)	513	513	513	190	150	1999	25
Glow SPP 11 Phase 1	SPP	GLOW (100%)	120	120	120	-	360	2000	25
Glow SPP 11 Phase 3	SPP	GLOW (100%)	42	42	42	-	-	2006	-
Glow SPP 11 Phase 2	SPP	GLOW (100%)	110	110	110	-	212	2012	25
Glow Energy CFB 3	SPP	GLOW (100%)	85	85	85	79	-	2010	-
IRPC-CP Phase 1	SPP	GPSC (51%)	45	23	23	86.7	-	2015	25-27
IRPC-CP Phase 2	SPP	GPSC (51%)	195	99.4	99.4	66.3	-	2017	25

Note: Equity capacity includes 100% stake in GLOW, ERU and GRP1

# **GPSC Power Plant Portfolio (2/2)**

Name	Туре	Shareholding (%)	Total capacity (MW)	Equity Power capacity (MW)	Equity Operating Power capacity (MW)	Steam (T/H)	Industrial water (Cu.m/H)	COD	Tenor
NNEG	SPP	GPSC (30%)	125	38	38	9	-	2016	25
NNEG Expansion	SPP	GPSC (30%)	60	18	18	3	-	2020	21
BIC-1	SPP	GPSC (25%)	117	29.25	29.25	5	-	2013	25
BIC-2	SPP	GPSC (25%)	117	29.25	29.25	5	-	2017	25
Total SPP			2,618	2,196	2,196	2,771	7,292		
VSPP and others									
Rayong WTE (under construction)	VSPP	GPSC (100%)	9.8	9.8	-	-	-	2021	18
Glow Energy Solar Plant	VSPP	GLOW (100%)	1.55	1.55	1.55	-	-	2012	25
CHPP	VSPP	GPSC (100%)	5	5	5	-	-	2008	30
CHPP (Solar)	VSPP	GPSC (100%)	5	5	5	-	-	2016	25
ISP1	Solar	GPSC (99%)	20.8	20.59	20.59	-	-	2017	20
GRP (NPS, WXA, PPS)	VSPP	GPSC (50%)	39.5	19.75	19.75	-	-	2014-15	25
GRP1 (Solar in Taiwan) (Under closing process)	Solar	GRP (90%)	55.8	25.11	-	-	-	2016-21	20
TSR (SSE1)	VSPP	GPSC (40%)	80	32	32	-	-	2013	25
NL1PC	Hydro	GPSC (40%)	65	26	26	-	-	2019	24
Chonburi Clean Energy (CCE)	VSPP	GLOW (33%)	8.6	2.87	2.87	-	-	2019	20
Private PPA	Solar	GPSC Gr. (100%)	21.90	21.90	4.08			2018-21	Long-term
Total VSPP and others			313	170	117	-	-		
ERU									
ERU (under construction)	Cogen	GPSC (100%)	250	250	-	175	-	2023	25
	Total ERU		250	250	-	175	-		
Total capacity			8,091	5,055	4,752	2.946	7,372		

Note: Equity capacity includes 100% stake in GLOW, ERU and GRP1

# 2021 Maintenance Schedule | Sriracha and Rayong Plants

								2021						
Site	Description	Duration		Q1			Q2			Q3			Q4	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
CUP-1	GTG-13	22 Days						12	2/7 <b>MI</b>	2/8				
COI -1	HRSG-13	22 Days						12	2/7 <b>3Y</b>	2/8				
CUP-2	GTG-21	22 Days		9	MI	30								
001 2	HRSG-21	22 Days		g	3Y	30								
CUP-4	GTG-41	5 Days											15/11	<b>RMI</b> 9/12
001 1	HRSG-41	11 Days						27/6	7/7					
	HRSG#1	14 Days											15/11 3Y	28/11
SRC	HRSG#2	14 Days											15/11 <b>3Y</b>	28/11
Site	Steam Turbine.10	25 Days												_
	GT-11	8.33 Days											15/11 C	23/11
RDF	BMH Machine	7 Days									7	MNI 13	3	

	Notes: Rayong Site			Notes: Sriracha Site
GTG HGPI Hot Gas Path Inspection for Gas Turbine MI Major Inspection for Gas Turbine STG Minor Minor Inspection for Steam Turbine 1MO 2 <sup>nd</sup> Major Overhaul for Steam Turbine 2MO 2 <sup>nd</sup> Major Overhaul for Steam Turbine AB 1Y One Year Inspection Aux. Boiler	HRSG  14 days 22 days 37 Three Year Inspection HRSG  Others 15 days 23 days 57 Five Year Inspection NG Station Test 23 days 70 Forced Outage  11 days 13 days	11 days 14 days Online Online Depending on physical damage	GTG CI Combustion Inspection for Gas Turbine HGPI Hot Gas Path Inspection for Gas Turbine days MO Major Overhaul for Gas Turbine days RCIE Rotor and Casting Inspection Evaluation days	8 days HRSG 26 1Y One Year Inspection HRSG 8 days 37 Three Year Inspection HRSG 33 days 38 Other 19 One Year Inspection NG Station Test Online 49 5Y Five Year Inspection NG Station (NDT) Online FO Forced Outage Depending on physical damage

# 2021 Maintenance Schedule | IRPC-CP

								20	21					
Main Unit	Descripti on	Duration		Q1			Q2			Q3			Q4	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Block 1														
CTG 21	В	20 Days				20								
HRSG 21	В	20 Days				20								
CTG 22	В	20 Days				20								
HRSG 22	В	20 Days				20								
STG 23	MI	20 Days				20								
Block 2														
CTG 31	В	20 Days					20							
HRSG 31	В	20 Days					20							
CTG 32	С	22 Days							22					
HRSG 32	С	22 Days							22					
STG 33	MI	20 Days							20					
Aux. Boiler	YI	15 Days						15						

#### Notes:

MI Major Inspection

YI Yearly Inspection Aux Boiler

15 days

B CTG/HRSG Inspection Level B

20 days

C CTG /HRSG Inspection Level C

22 days

Excluded 1 Day maintenance

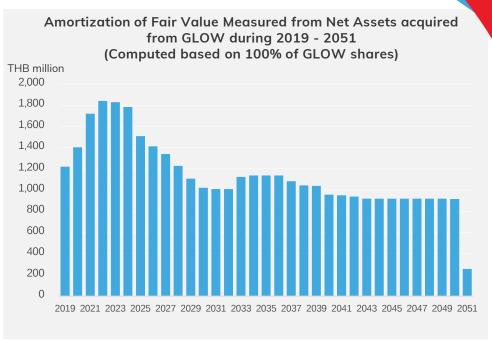
# 2021 Maintenance Schedule | GLOW's Main Units

		2021												
Main Units	Description	Duration		Q1			Q2			Q3			Q4	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
GHECO-ONE	Minor Inspection	37 Days <sub>1,</sub>	/1 <b>2Y</b>	6/2										
GIPP: UNIT 1	Minor Inspection	5 Days									27/9	<b>3Y</b> 1/	10	
GIPP: UNIT 2	Minor Inspection	5 Days										10 3Y	14	
CFB 3	Minor Inspection	7 Days				22/4	<b>3Y</b> 12	2/5						
Phase 5	Minor Inspection	5 Days			29/3	<b>1.25</b> 2/4								
GSPP11 (Plant 2)	Minor Inspection	14 Days							18 <b>3Y</b>	31				
GSPP11 (Plant 2)	Major Inspection	5 Days										10 <b>5.7Y</b>	14	

### Fair Value Measurement of Net Assets from Acquisition of Glow

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Items	Book Value of GLOW	Fair Value of GLOW	Differential Value
Assets	107,655	155,500	47,845
Liabilities	(56,246)	(66,497)	(10,251)
Net Assets of GLOW at 14 March 2019	51,409	89,003	37,594
Non-Controlling interests at 30.89%		(32,092)	
Total Net Asset obtained GLOW at 69.11%		56,911	
Goodwill		36,090	
Proportion of acquisition cost 69.11%		93,001	



GPSC has completed the acquisition of 69.11% on 14 March 2019 at a total of THB 93,001 million, the company has measured the fair value of GLOW net assets as follows:

- The fair value uplift of THB 37,594 million from Purchase Price Allocation (PPA)
- The fair value recognition of net assets acquired from GLOW will be amortized yearly (based on the remaining period of the contract, 5 to 31 years).
- Goodwill will be subjected to an impairment test on a yearly basis.



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