



The power and smart energy flagship of PTT Group

VISION ()

The Global Leading Innovative and Sustainable Power Company

ASPIRATION



To be top 3 power company in Southeast Asia with more than half of MW from Green Portfolio

GPSC's SHAREHOLDING STRUCTURE

2,819.7 million shares

55.23%

Public

Thaioil

6GC

24.77%

10.00%

10.00%

(as of 24 Feb, 2023)

COMPANY INFORMATION (as of 17 Aug, 2023)

Paid-up Capital | THB 28,197 million

Market Cap. | THB 148,741 million

(3rd in power sector)

CREDIT RATINGS

AA+



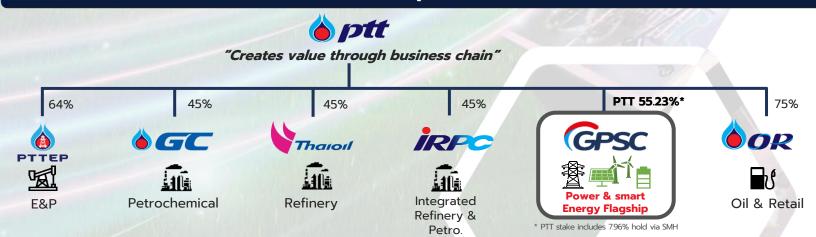
A+(tha) Fitch Ratings
BBB-

Member of

Dow Jones Sustainability Indices

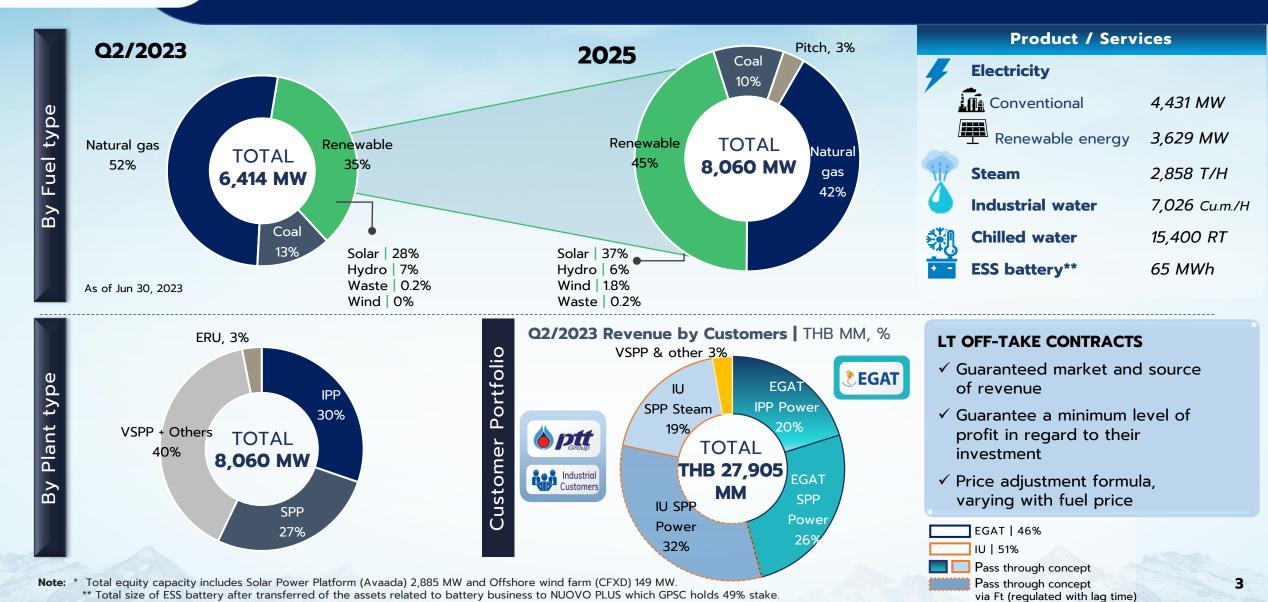
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PTT Group's Business





Business Portfolio



Agenda

- 1 1H/23 Business Highlight
- 2 GPSC Corporate Strategy
- Financial Performance





Power Market Update





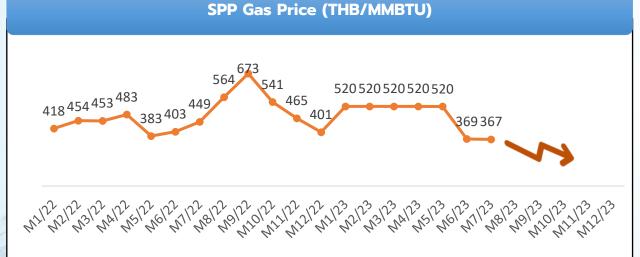


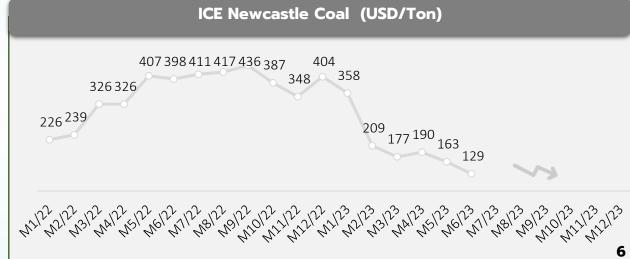


Ft vs. Energy Price



- ERC passed a resolution concurring the Automatic Adjustment Mechanism (Ft) for the collection of electricity invoices during September December 2023 at THB 0.6689 per unit.
- > The downward adjustment of Ft is reflecting the falling energy prices.







2H2O23 Outlook: The Year of Business Recovery

- Strengthen operational performance:

 GE phase 5 and GHECO-One has been fixed so plant availability significantly improved
- The ongoing decline in energy costs : Coal & Natural gas



- Higher Shares of Profit of Associates and Joint Ventures mainly from XPCL and CFXD
- **Continue recording profit from strong operation of AEPL**



Continue growing RE MW with justified return both in Thailand and abroad

Agenda

1 1H/23 Business Highlight

2 GPSC Corporate Strategy

3 Financial Performance





Corporate Strategy 2023 / Strategic House

Vision

Aspiration

Mission

Strategic **Objectives**

> Strategic **Pillars**

Geography



Partnerships

discipline

Sustainability

Agile & Resilient Organization

Operational Excellence

The global leading innovative and sustainable power company

To be top 3 power company in Southeast Asia with more than half of MW from green portfolio

To be a PTT GROUP power and smart energy flagship that innovatively pursue operational excellence to create value for stakeholders by delivering reliable products to customers with responsibility to the planet

Retain existing customers and expand core offerings to new customers

Embrace energy transition, sustainability and convergence trends to offer new solutions

Develop competitive advantages in core and new businesses

Become a regional player by diversifying geographic focus to tap into fast growing power markets





Strengthen and expand the Core

- Best in class operations
- Customer-centric utility
- Expansion into adjacencies (e.g., water)





Scale-up Green energy

- Solar power scale-up
- Wind power entry
- ESS-RE hybrid power entry

India



S-curve & Batteries

- Energy storage systems
- EV & Mobility batteries
- New S-Curves



Shift to Customercentric Solutions

- Distributed generation
- District cooling
- **Energy Management** services

Vietnam

Taiwan

Enablers

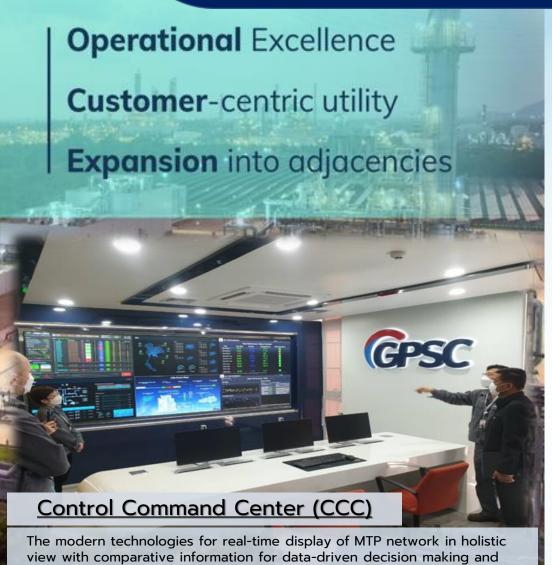
Financial

Technology & Digitalization



O&M management.

S1: Strengthen & Expand the Core



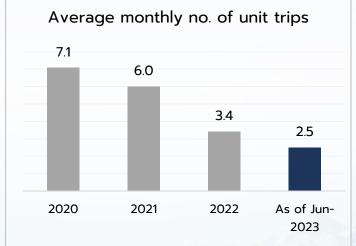
The Operational Excellence Management System (OEMS)

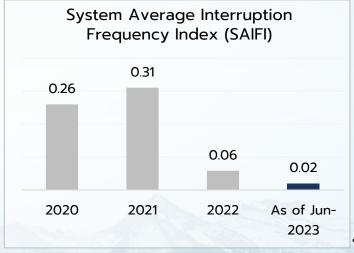
is designed to elevate GPSC's operations to a world-class standard

1H/2023 Operational Highlight

- Strong operations for Cogen Power Plants (no interruptions)
- Providing a reliable source of electricity to connected loads
- GHECO-One recorded higher Availability Payment (AP)

GPSC Group : Continuous improvement in safety and reliability







S1: Update of Projects | Expansion capacity in 2023 - 2025

Glow Energy Phase 2

COD | Q1/2023

Unit 1: 29 Nov 2022 / Unit 2: 19 Jan 2023



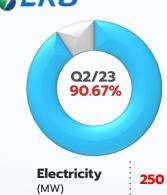
The project is fully commercial operation on Jan 19, 23

Energy Recovery Unit (ERU)









175

Steam

(ton/hr.)

GLOW SPP2 Replacement





Projects	Capacity (MW)	Capacity (t/h)	EGAT (MW)	
Glow SPP2	98	230	60 (2 PPAs * 30 MW)	

The construction has reached 62.65% and the project is in the process of concrete foundation and equipment work on boiler components, exhaust, structural works, and electrical control buildings.

Project updates:

- > The project is in the process of the construction of foundation
- > Overall, the project has reached 90.67%.

Note: 1. The project has been affected by the COVID-19 pandemic and is expected to start commercial operation in 2025.



S2: Scale - Up Green Energy

Scale-up Solar & Wind

ESS-RE hybrid power entry

Target: Enhancing Green portfolio > 50% by 2030

Thailand

New Clean Energy Bidding 2022-2030

RE Bidding	PDP2018 Rev.1	PDP2018 Rev.1 (add)
Solar farm	2,368	2,632
Solar plus BESS	1,000	-
Wind	1,500	1,000
Biogas	335	6.5
Industrial waste	100	30
Total	5,303	3,668.5

- GPSC group won in bidding 16 MW for RE biglot under PDP (2 solar power projects)
- Preparing for a new auction of RE under PDP with 3.66 GW capacity (Expected to be announced in Q3/23)

More focusing on platform growth





Establish local base



Build and maintain local relationships



Separate organization structure



Build on ground capabilities

India's Total RE Installed Capacity

India announced plan to add 250 GW of RE in the next 5 years to achieve 500 GW of clean energy by 2030



Source: India's Ministry of New & Renewable Energy (5 Apr'23)



Key Highlights



- Opportunities for Clean Energy Investment
- Strong RE growth & Value Chain driven policy
- PLI scheme to support domestic manufacturing
- AVAADA is now one of the top RE players in India
- India's population will overtake China in mid-2023



S2: Update of Projects | Expansion capacity in 2023 - 2025

Avaada Energy Private Limited (AEPL)





42.93% of shares

Contracted Capacity 6.720 MW



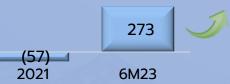
6,720 MW

AEPL Target 11 GW in 2026

As of 30 Jun 2023

3,744 MW As of Jul 2021

The Improvement of Profit Sharing (Unit: MB) **FY2023**



Project	Electricity Capacity (MW) as of 30 Jun 23	COD
Operating	3,987 (29 projects)	-
Under construction	709 (6 projects)	2023–2024
Under development	2,024 (8 projects)	2024-2025
Total	6,720	

CFXD: Offshore wind in Taiwan



SCOD | 2022-2024



CI II and CI III Hold 75% of shares

GRSC TW Holds 25% of shares

Contracted Capacity 595 MW



- > The construction has reached 72%.
- > All foundations are completed. 7 turbines have been energized.
- > The project expected to start full commercial operation in Q1/2024.



S3: S-Curve & Batteries

Energy storage systems

EV & Mobility batteries

New S-Curves

GPSC battery strategy focuses on 3 key pillars ESS and Non-EV mobility will be main focus





S-CURVE Business



Decarbonization Technology









Study for long-term solutions for nuclear energy to serve the base-load generation



Renewable Energy Value Chain





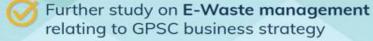
- Further study on RE value chain to diversify risk of supply chain disruption, add new source of revenue and synergy with project development
 - Solar PV
 - Wind Turbine
 - **Energy Storage**
 - Other critical components



E-Waste Management







- Second life battery
- Lithium-Ion Battery Recycling
- Solar PV module Recycling



S3: S-Curve & Batteries









Next-Gen EV Battery Manufacturing





Formation Factory





Next-Gen EV Battery Manufacturing



The main construction is completed, and the facility installation is ongoing



1 GWh battery manufacturing plant for EV is expected to SOP in Q2/2024



Module and pack assembly plant business





NV Gotion will operate the business of importing, assembling, and distributing battery modules and battery packs



Capacity: Module and pack assembly

- 1st Phase 1 GWh, expansion up to 4 GWh
- Available land for potential expansion to cell plant or new pack line



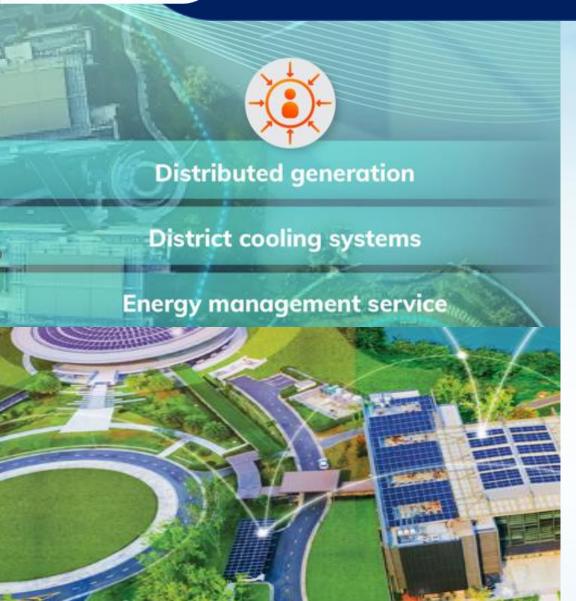
Expected SOP in Q4/2023



Focusing on serving battery for commercial EV, ESS etc.



S4: Shift to Customer – Centric Solution



GPSC signs MOU with PTT digital to explore the development of an energy platform

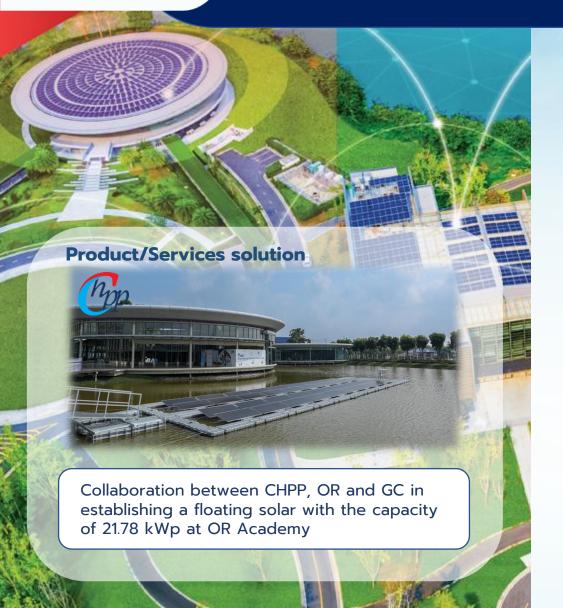


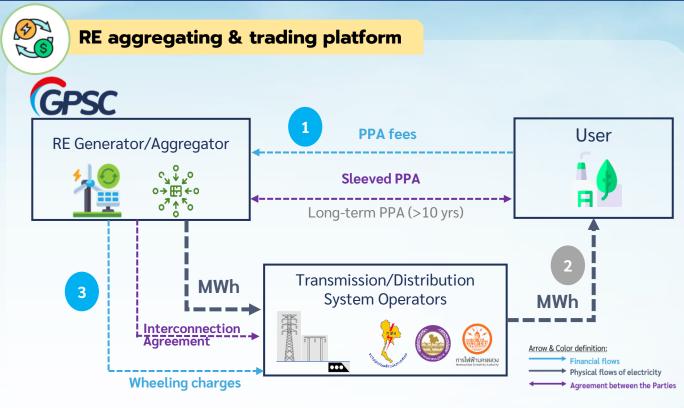
The MOU representing their respective firms to explore the implementation of power management systems via PTT Digital's GAIA platform to help manage power generation and distribution for solar energy.

- > The GAIA platform is an enterprise software platform developed by PTT Digital to address the issues related to supply chain management by helping firms manage and trade energy in real-time.
- ➤ It also provides consumer behavior analysis and accurate energy demand forecasting using AI & machine learning helping firms achieve the highest levels of efficiency through **power management and planning**.
- ➢ In addition, GAIA reduces costs, in terms of both time and money, and increases business confidence.



S4: Shift to Customer – Centric Solution





Third party access (TPA) is a key enabler to expedite RE development plan for GPSC throughout Thailand to achieve green energy target



Sustainability Strategy Management

Long Term Value Creation Innovative & Sustainable Energy



Environmental (8)

Environmental Policy & Management System Emissions Resource Efficiency & Circularity Waste Water Climate Strategy Biodiversity Electricity Generation

Social (7)

Labor Practice Indicators Human Rights Human Capital Development Talent Attraction & Retention Occupational Health and Safety Privacy Protection Stakeholder Engagement

Governance / Economic (11)

Transparency and Reporting Corporate Governance Materiality Risk & Crisis Management Business Ethics Policy Influence Supply Chain Management
Information Security / Cybersecurity & System
Availability
Innovation Management
Market Opportunities

Member of

Dow Jones Sustainability Indices

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Sustainability Framework

Power Accessibility/ Quality of Life/ Ecosystem/ Sustainable Innovation

Human Empowerment

Building performance of sustainability for our people

Intelligence Analytics

Enhance our capability of sustainability analytics

Sustainability Integration

Embedded sustainability for leverage our products, processes and management





GPSC Net Zero GHG Emissions Pathway



Agenda

1 1H/23 Business Highlight

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Q2/2023 Highlights & Lowlights

Highlights

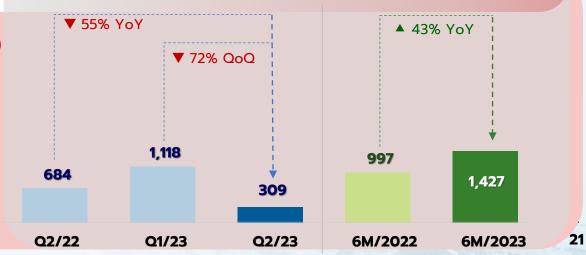
- + Strong operations for Cogen Business (no interruptions)
- + Higher share of profit from AEPL
- + Insurance Claim from SRC GT Blade Incident in 2022 (THB 77 MM)



Lowlights

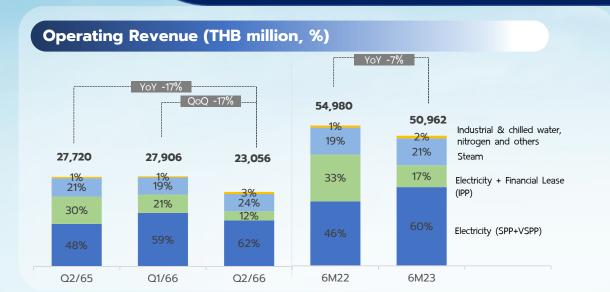
- GHECO-One: Coal Stock Adjustment (THB 210 MM, Net Tax & NCI)
- Planned maintenance of Glow Energy Phase 5 for 25 days
- Lower IU demand YoY but higher QoQ

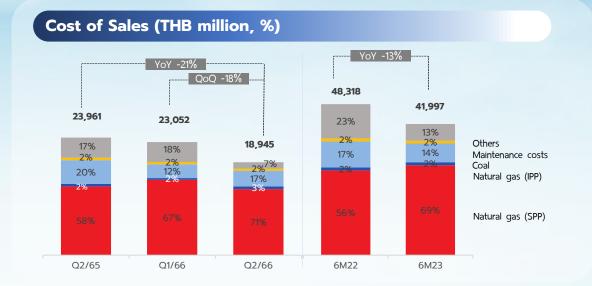
Q2/23	vs Q2/22	vs Q1/23
IU Power	(4%)	+5%
IU Steam	(10%)	+11%





Comparison of Company's Performance





Gross Profit Breakdown (THB million, %)

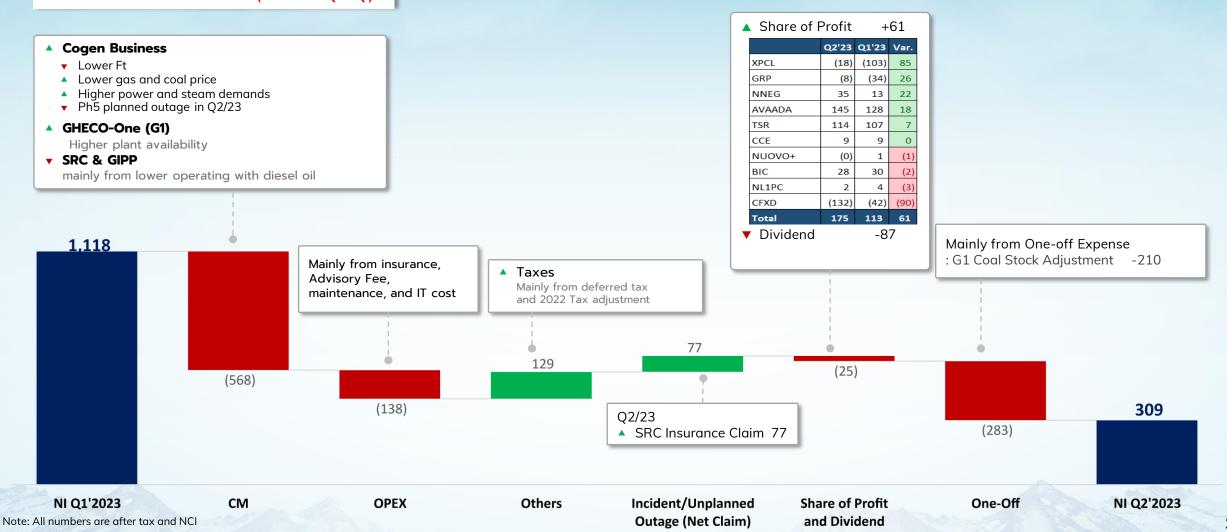


Margin in selling electricity to industrial customers is significantly higher YoY from Ft and energy prices.



Q2/2023 vs Q1/2023 (QoQ) Net Profit

Net Profit 309 MTHB (-72% QoQ)



Q&A SESSION

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Appendix

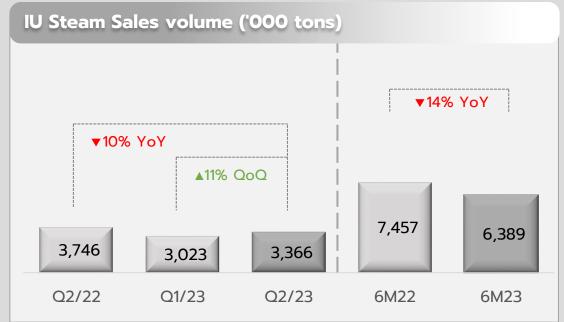
Key Macro Factors (as of Jun 2023) Electricity Sales volume (GWh)



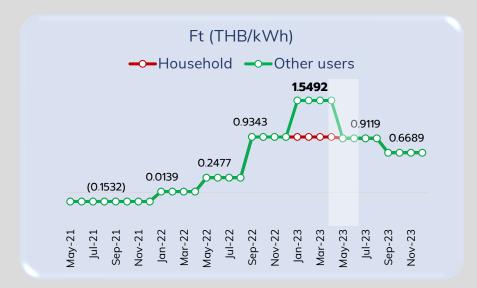


Q2/23	YoY	QoQ
Total	-32%	-15%
VSPP & Others	+9%	-28%
SPP	-4%	-1%
IPP	-86%	-71%
6M23	YoY	
Total	-26%	
VSPP & Others	+48%	
SPP	+0.3%	
IPP	-72%	





Key Macro Factors (as of Jun 2023)



IPP's Availability	Q2/22 Q1/23		Q2/23	Change +/(-)		
Rate (%)				YoY	QoQ	
Sriracha	90%	97%	100%	10%	3%	
GIPP	100%	89%	97%	97% (3%)		
GHECO-One	84%	41%	100%	16%	59%	

End-month FX (THB/USD)

Q2.	/22	Q1	/23	Q2	/23
Apr 22	34.34	Jan 23	32.77	Apr 23	34.14
May 22	34.19	Feb 23	35.32	May 23	34.73
Jun 22	35.29	Mar 23	34.26	Jun 23	35.59
Avg.	34.61		34.12		34.82

Natural Gas Cost 2020 - Q2/2023 (THB/MMBTU)



Q1/20 Q2/20 Q3/20 Q4/20 Q1/21 Q2/21 Q3/21 Q4/21 Q1/22 Q2/22 Q3/22 Q4/22 Q1/23 Q2/23

Coal Cost 2020 – Q2/2023 (USD/Ton JPU) (excluding freight costs)

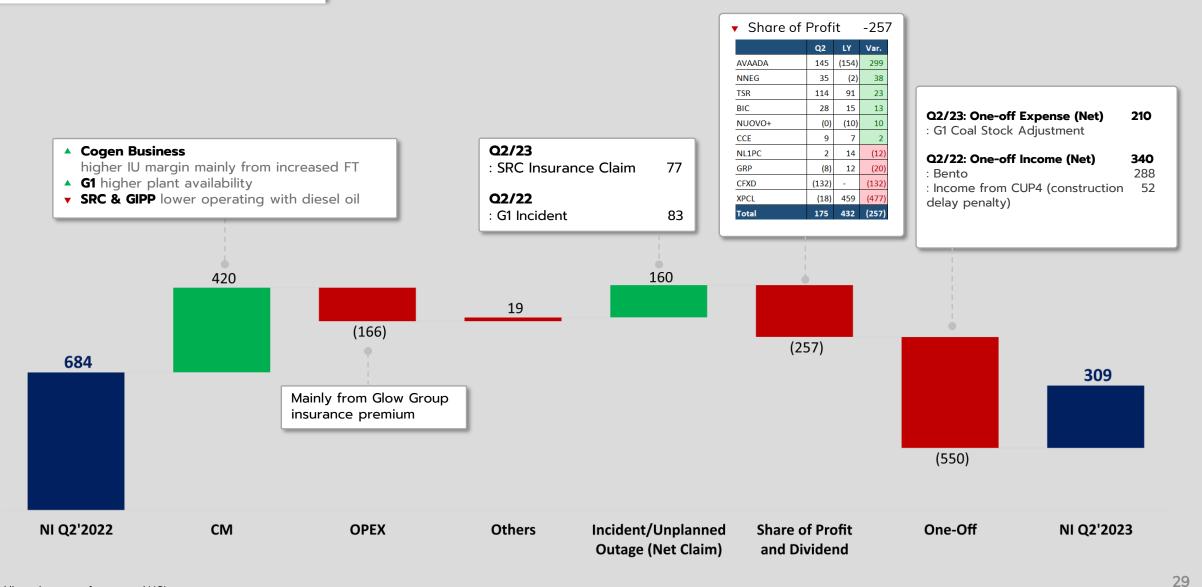


Q2/2023 Operating Results

Overall operating results of the Company and its subsidiaries (unit: THB million)	Q2/22 (Revised)	()1/23		change +/(-)		6M/22 (Revised)	6M/23	change +/(-)
(unit: THB million)	, , ,			YoY	QoQ			YoY
Operating revenue	27,720	27,905	23,056	(17%)	(17%)	54,980	50,962	(7%)
Cost of sales (excluding depreciation and amortization)	(23,961)	(23,052)	(18,945)	(21%)	(18%)	(48,318)	(41,997)	(13%)
Gross profit	3,759	4,854	4,111	9%	(15%)	6,662	8,965	35%
Selling and administrative expenses	(436)	(369)	(596)	37%	62%	(827)	(966)	17%
Other operating income	78	84	(19)	(125%)	(123%)	146	65	(56%)
EBITDA	3,401	4,568	3,496	3%	(23%)	5,981	8,064	35%
Depreciation and amortization	(2,296)	(2,206)	(2,357)	3%	6.8%	(4,519)	(4,563)	1%
EBIT	1,105	2,362	1,139	3%	(52%)	1,462	3,501	140%
Finance costs	(1,048)	(1,242)	(1,342)	28%	8%	(2,022)	(2,585)	28%
Other non-operating income and expenses	553	27	277	(50%)	908%	1,410	304	(78%)
Dividend received and shares of profit of associates	425	202	170	(FO)()	(420/)	600	202	(270/)
and joint ventures	435	203	178	(59%)	(12%)	608	382	(37%)
Income tax expenses	(53)	(105)	233	(539%)	(321%)	(20)	128	(748%)
Profit before FX and extraordinary items	992	1,245	484	(51%)	(61%)	1,437	1,729	20%
Net foreign exchange gain (loss)	(184)	73	33	118%	55%	(252)	105	(142%)
Net profit	808	1,318	517	(36%)	(61%)	1,185	1,835	55%
Non-controlling interests	(124)	(201)	(207)	67%	3%	(188)	(408)	117%
Net profit for the Company	684	1,118	309	(55%)	(72%)	997	1,427	43%
Adjusted Net Income ¹	1,204	1,571	670	(44%)	(57%)	1,974	2,241	13%
Gross profit margin (%)	14%	17%	18%	4%	0.4%	12%	18%	5%
Net profit margin (%)	2%	4%	1%	(0.2%)	(3%)	2%	3%	1%
Adjusted Net Income margin (%)	4%	6 %	3%	(1%)	(3%)	4%	4%	1%

Q2/2023 vs Q2/2022 (YoY) Net Profit

Net Profit 309 MTHB (-55% YoY)



Note: All numbers are after tax and NCI

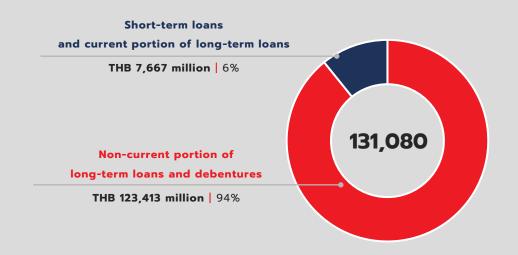
Q2/2023 Operating Results

Summary of Financial Position

(2%) (2%) 288,810 288,810 284,306 284,306 4% Current Liabilities Cash and Cash equivalent 5% 14,236 10.150 6% 7% 20,736 16,725 35,889 Current Assets 12% 9% 18% 19% Debentures Investment in associates and others 17% 19% 27% Long-term borrowing 26% 75,929 74,064 Property, Plant 33% 93,704 and equipment 10% 9% Other non-current liabilities Financial lease 2% 2% receivable 115,100 116,858 41% Equity 32% 89,849 89,864 Other non-current assets 31% 31 Dec 22 30 Jun 23 31 Dec 22 30 Jun 23

+15

Total Interest-Bearing Debt (THB million)



Total assets: THB -4,505 MM

Other non-current assets

Cash and cash equivalents	+2,489
 Investment in associates and JV, mainly from AEPL 	+3,090
• PPE	+810
Other current assets	(10,360)
• Financial lease receivable	(548)

Liabilities : THB -6,261 MM

Current liabilities	(10,586)
 Long-term borrowings and 	
debentures	+4,866
Other non-current liabilities	(542)

CREDIT RATINGS

AA+



A+(tha) BBB-



GPSC | Power Plant Portfolio (1/2)

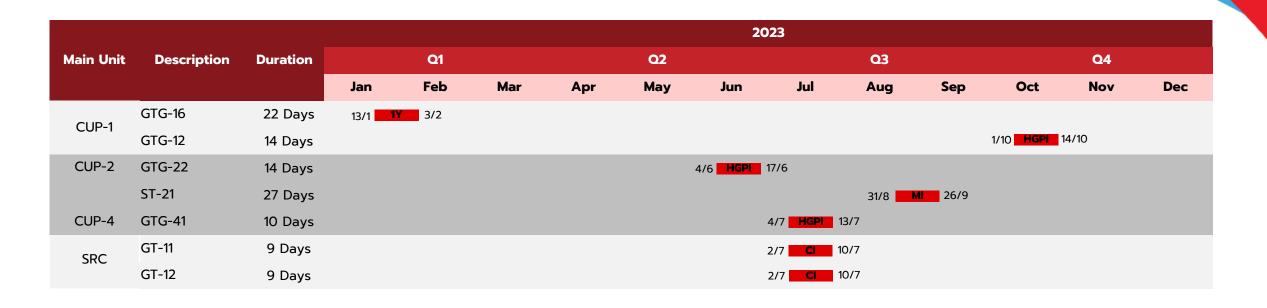
Name	Туре	Shareholding (%)	Total capacity (MW)	Equity Power capacity (MW)	Equity Operating Power capacity (MW)	Steam (T/H)	Industrial water (Cu.m/H)	COD	Tenor
IPP									
Sriracha	IPP	GPSC (100%)	700	700	700	-	80	2000	25
Glow IPP	IPP	GLOW (95%)	713	677	677	-	-	2003	25
Huay Ho	IPP	GLOW (67%)	152	102	102	-	-	1999	30
GHECO-One	IPP	GLOW (65%)	660	429	429	-	-	2012	25
XPCL	IPP	GPSC (25%)	1,285	321	321	-	-	2019	29
RPCL	IPP	GPSC (15%)	1,400	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%)	-	-	-	-	1,240	1994	-
Glow Energy Phase 2 (SPP replacement)	SPP	GLOW (100%)	200	200	200	460	934	2022-23	25
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	10-20
Glow SPP 2	SPP	GLOW (100%)	213	213	213	190	-	1999	25
Glow SPP 3	SPP	GLOW (100%)	300	300	300	-	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	10-20
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	10-20
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
IRPC-CP Phase 3	SPP	GPSC (51%)	70	35.7	-	-	-	2024	-
NNEG	SPP	GPSC (30%)	125	38	38	9	-	2016	25
NNEG Expansion	SPP	GPSC (30%)	60	18	18	3	-	2020	21
NNEG Expansion 2	SPP	GPSC (30%)	30	9	-	1.59	-	2024	-
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, 637	2, 160	2,115	2,683	6,946		

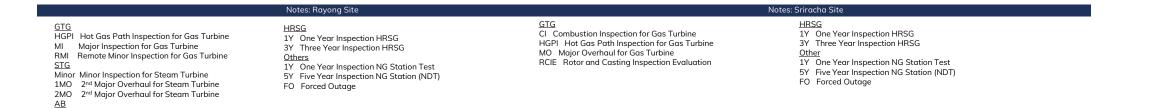
GPSC | Power Plant Portfolio (2/2)

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 (year)
VSPP and others									
Rayong Waste to Energy (WTE)	VSPP	GPSC (100%)	9.8	9.8	9.8	-	-	2021	18
CHPP	VSPP	GPSC (100%)	5	5	5	-	-	2008	30
CHPP (Solar)	VSPP	GPSC (100%)	5	5	5	-	-	2016	25
GRP (NPS, WXA, PPS)	VSPP	GPSC (50%)	39.5	19.75	19.75	-	-	2014-15	25
GRP1 (Sheng Yang)	Solar	GPSC (45%)	55.8	25.11	-	-	-	2016-21	20
AEPL (Solar Power Platform)	Solar	GPSC (43%)	6,720	2,885	1,712	-	-	2018-25	10-25
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
CFXD (Offshore wind farm)	Wind	GPSC (25%)	595	149	-	-	-	2022-24	20
Helios 3 – 4	Solar	GPSC (50%)	16	8	-	-	-	2030	25
Private PPA	Solar	GPSC Gr. (100%)	43.24	43.24	22.18	-	-	2018-24	Long-term
Total VSPP and others			7,643	3,211	1,860	-	-		
ERU									
ERU (Under construction)	Petroleum Pitch	GPSC (100%)	250	250	-	175	-	2025	25
	Total ERU		250	250	-	175	-		
Total capacity			15,440	8,060	6,414	2,858	7,026		

Note: - Total committed equity capacity as of June 30, 2023.
- Equity capacity includes 100% stake in GLOW, CFXD, Private PPA and ERU

2023 Maintenance Schedule | Sriracha and Rayong Plants





1Y

One Year Inspection Aux. Boiler Three Year Inspection Aux. Boiler

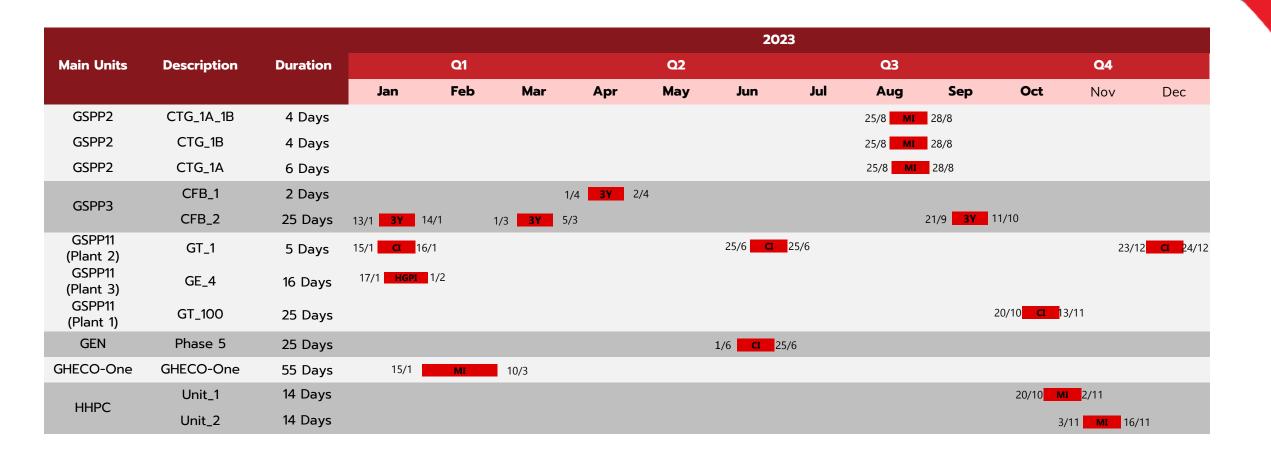
2023 Maintenance Schedule | IRPC-CP

			2023											
Main Unit	Description	Duration		Q1			Q2			Q3			Q4	
			Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Block 1														
CTG 21	А	5 Days								5				
HRSG 21	YI	5 Days								5				
CTG 22	Α	5 Days								5				
HRSG 22	YI	5 Days								5				
STG 23	YI	5 Days								5				
Block 2														
CTG 31	А	5 Days									5			
HRSG 31	YI	5 Days									5			
CTG 32	Α	5 Days												5
HRSG 32	YI	5 Days												5
STG 33	YI	5 Days												5
Aux. Boiler	YI	7 Days						7						

Notes:

- YI: Yearly Inspection, A: Inspection Level A
- The duration of maintenance above does not include inspection by law.

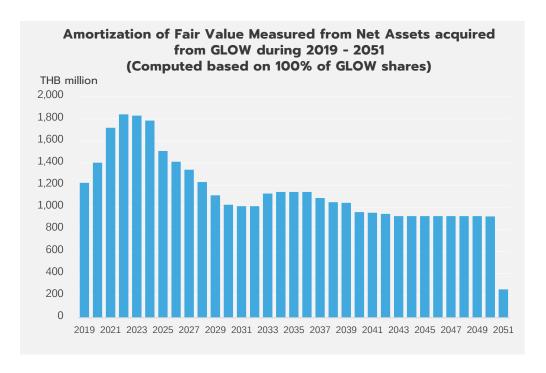
2023 Maintenance Schedule | GLOW's Main Units



Fair Value Measurement of Net Assets from Acquisition of Glow

unit: THB million

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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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