



Annual Report

2020



Energy Regulatory Commission and Office of the Energy Regulatory Commission

Annual Report 2020

Produced by :

📍 Office of the Energy Regulatory Commission
319, 19th-20th Floor, Chamchuri Square Bld.,
Phayathai Rd., Pathumwan,
Bangkok 10330, Thailand

☎ Call Center : 1204 | Tel : 0 2207 3599
Fax : 0 2207 3506, 0 2207 3502

✉ e-mail : support@erc.or.th

🌐 www.erc.or.th

📖 ISBN : 978-616-92702-4-9

Published : 2021

Edition : 1



Contents

05	Message from Chairman of the Energy Regulatory Commission	16	Production and Distribution of Electricity and Natural Gas by Licensees in 2020
06	Message from Secretary General of the Office of the Energy Regulatory Commission	21	Energy Industry Regulation Performances in Fiscal Year 2020
08	General Information	47	Power Development Fund Performances in Fiscal Year 2020
08	Energy Regulatory Commission and Authority & Duties	61	Operational Plan of the Office of the Energy Regulatory Commission in Fiscal Year 2021
10	Vision, Mission and Core Values	71	Operational Plan of the Power Development Fund in Fiscal Year 2021
11	Action Plan for Energy Industry Regulation, Phase 4 [2020-2022]	74	Abbreviations
14	Organizational Structure of the Office of the Energy Regulatory Commission		





DDW ERICA



Mr. Samerjai Suksumek

Message from Chairman

of the Energy Regulatory Commission

The Energy Regulatory Commission (ERC), in our capacity as the Energy Industry Regulator, has regulated the electricity and natural gas industry in Thailand in accordance with the mandated tasks under the Energy Industry Act B.E. 2550 (2007). In order to achieve the corporate Vision, “Regulate Energy Industry to Attain Sustainable Development and Promote Proper and Fair Competition,” the ERC has set the direction and targets of energy industry regulation in the Action Plan for Energy Industry Regulation, Phase 4 (2020-2022), which is in line with Thailand’s 20-Year National Strategy and the Master Plan under the National Strategy, the National Energy Reform Plan and the 12th National Economic and Social Development Plan, including energy policies of the government. Importance has been placed on reinforcement of the national energy security and promotion of greater competition in the energy industry so as to increase efficiency of the energy industry operation, to have affordable energy prices and to encourage energy consumption that is eco-friendly by promoting greater use of alternative energy in the form of Clean Energy. In addition, emphasis has been given to the development of energy-related infrastructure to accommodate changing energy business models in accordance with the disruptive technology development.

In Fiscal Year 2020, like other countries worldwide, Thailand faced the outbreak of Coronavirus Disease (COVID-19). To regulate the energy industry amidst such a situation, the ERC gave importance to the administration of energy management cost in the situation where the country had a highly excessive reserve margin due to decreasing electricity demand across the nation, coupled with the downward trends in oil and natural gas prices. Relief measures were introduced by the ERC to help alleviate the burden of electricity bills on the people and entrepreneurs, by exploiting around 29,255 million Baht to manage electricity tariffs

and to stabilize the variable electricity tariff (F_v) rate throughout the year 2020. Several measures were also introduced to help mitigate the impacts of drought, to create employment so as to boost the grassroots economy and to help solve public health problems related to COVID-19 protection, control or treatment, via Power Development Fund operations under Section 97(3) of the Energy Industry Act of 2007.

As for the direction of major tasks in Fiscal Year 2021, the ERC will forge ahead with the development of energy industry regulatory framework to promote competition in the electricity and natural gas industry in the future with a view to managing energy supply costs to be efficient and to stimulate investment in Thailand’s energy sector. In addition, the ERC has placed importance on the promotion of participation of all stakeholders in upgrading the implementation of energy industry regulation so as to attain transparency, accountability and acceptance of all concerned.

Given the achievements throughout the past year, on behalf of the ERC, I would like to thank the management, staff members and employees of the Office of the Energy Regulatory Commission for the determination to perform their duties to the fullest capacity in support of the ERC’s mission to regulate the energy industry of the country.

Mr. Samerjai Suksumek
Chairman of the Energy Regulatory Commission



Mr. Khomgrich Tantravanich

Message from Secretary General of the Office of the Energy Regulatory Commission

The Office of the Energy Regulatory Commission (OERC) has the status of a juristic person to support work execution of the ERC so as to achieve specified targets under the strategic plan of the ERC, involving the regulation of energy industry licensing, protection of energy consumers and stakeholders against adverse impacts resulting from energy industry operation and other related undertakings, in accordance with the government policy and authorities prescribed under the Energy Industry Act.

In Fiscal Year 2020 there were a number of influential factors on energy industry regulation, starting with strong trade competition at the beginning of the fiscal year, followed by the outbreak of Coronavirus Disease (COVID-19). At the early stage of the COVID-19 epidemic, many countries were on lockdown to reduce travelling, which resulted in a drop in fuel prices in the world market, particularly the price of LNG, and hence the development in the management approach to enable natural gas procurement and wholesale licenses to get benefits from the then dropping LNG price, which helped lower the average domestic gas price. However, towards the end of the fiscal year, fuel prices began to rebound and the opportunity of the rising LNG price was taken to trial LNG Reloading for export and to further support the policy on Thailand to become the LNG Hub. The OERC grabbed the opportunity of the then LNG price drop to recommend to the ERC to grant natural gas procurement and wholesale licenses to new private-sector players in order to pave the way to open LNG supply in the future. In addition, at the beginning of the COVID-19 outbreak and then the lockdown measure enforcement in Thailand, the OERC had an opportunity to support the government in mitigating the people's burden by using around 29,255 million Baht from the electricity tariff management cost from the Power Development Fund under Section 97(1) to back up the government's relief measures via electricity bill

reduction for over 22 million residential power consumers nationwide in support of the Work from Home policy. Subsequently, the OERC consulted with concerned agencies to reduce their weighted average cost of capital (WACC) in the part of loans with a view to supporting the government in further reduction of electricity bills, accounting for a sum of about 6,000 million Baht. In addition, the OERC had periodically presented to the ERC for consideration the exemption of Minimum Charge throughout the fiscal year.

As for the role of energy consumer protection, the OERC had forged ahead with consultation with the Distribution Utilities regarding customer guarantee deposit (CGD) refunds to Schedule 1: Residential power consumers and Schedule 2: Small General Service power consumers. In this regard, 23.49 million consumers nationwide are eligible for CGD refunds, accounting for a total refund budget of over 33,758 million Baht. Power consumers could then spend the refunds to alleviate their cost of living during the commencement of the COVID-19 outbreak.

The OERC also supported the ERC in amending the approach for Power Development Fund administration in conformity with the objectives of the Fund utilization under Section 97 of the Energy Industry Act of 2007. Improvement has been made to the Fund management structure under Section 97(3), by giving importance to decentralization of authority and responsibilities to local level so that the development or rehabilitation of localities surrounding the power plants would be sustainable. In addition, the Fund management has been geared towards electricity service extension to various localities, development of local communities which have been affected by power plant operation, promotion of the use of renewable energy and technologies for electricity industry operation that have minimal impact on the environment, as well as the building-up of knowledge, awareness and participation of the public in power-related issues.



Although the spread of COVID-19 had caused volatility and difficulty in the management work, the OERC still pushed forward the regulatory work to be compatible with rapidly changing energy technologies as well as business models via the Energy Regulatory Commission Sandbox (ERC Sandbox) program in continuation from Fiscal Year 2019. Also, the working procedures and service provision have been streamlined to be more efficient and up to international standards, for instance, the revision of relevant regulations to provide the one stop service (OSS) licensing in pursuance of the National Energy Reform Plan; the setting of a post-audit system to monitor the energy industry, with the OERC Regional Offices functioning as a supporting mechanism for the implementation so as to enhance the post-audit efficiency in compliance with the safety and environmental standards prescribed by the ERC; including the upgrading of the corporate operations management system to attain the ISO 9001: 2015 standard according to the Integrity & Transparency Assessment (ITA) criteria for government organizations, as prescribed by the Office of Public Sector Anti-Corruption Commission; and the development of the information technology (IT) system to have digital administration and service systems established in accordance with the law on digital government administration and services, and in line with the terms and conditions under relevant legislation.

In Fiscal Year 2021, the direction of OERC operations will be based on the concepts, “Learning from the Past for Further Development – Adjusting the Present – Creating New Future Values,” to mobilize the mission to regulate the electricity and natural gas industry so as to achieve the Vision of the ERC, i.e. “Regulate Energy Industry to Attain Sustainable Development and Promote Proper and Fair Competition.” Emphasis will be placed on the outcomes contributing to the development in the following three aspects: **the revision of rules, regulations and standards pertaining to energy industry regulation** to accommodate changing models of energy industry development

and to enhance the atmosphere of competition promotion in the energy industry while maintaining energy security; **the development of operational procedures and service provision to be efficient**, giving importance to the continuation of urgent missions implemented since Fiscal Year 2020, for instance, the online system upgrading in support of the licensing; the development of a digital system for auditing the energy industry operation, emphasizing participation and decentralization of the work to regional level; and the establishment of a mechanism to audit and evaluate the Power Development Fund management under Section 97(3), including the continuous and systematic upgrade of the corporate operations management system according to the ISO 9001: 2015 standard; and further development of **the transparency of the corporate operations**.

Lastly, in my capacity as Secretary General of the OERC, I would like to thank all of the OERC management, staff members as well as employees for their determination to carry out duties with the utmost efforts in support of the regulation of the electricity and natural gas industry to be strong and sustainable for optimum benefits of the people who are energy users and of the country as a whole. Despite the difficulties caused by the spread of COVID-19 in the past year, the undertakings of OERC missions still met the targets and could promptly respond to the government policy.

Mr. Khomgrich Tantravanich
Secretary General of the Office of the Energy
Regulatory Commission



General Information

Energy Regulatory Commission and Authority & Duties



Energy Industry
Act 2007

Under the Energy Industry Act of 2007 (the Act), it is stipulated that there shall be the Energy Regulatory Commission (ERC), comprising seven members, to regulate the electricity and natural gas industry operation to ensure compliance with the Act under the policy framework of the government, with the support of the Office of the Energy Regulatory Commission (OERC), which is a state agency, functioning as the secretariat to the ERC in their duty execution.

On 1 October 2018, the present set of the ERC was graciously appointed by HM the late King, pursuant to Section 15 of the Act, having the composition as follows:

- | | |
|----------------------------------|--|
| 1. Mr. Samerjai Suksumek | Chairman of the Energy Regulatory Commission |
| 2. Mr. Sudharma Yoonaidharma | Commissioner |
| 3. Mr. Chanvit Amatamatucharti | Commissioner |
| 4. Mr. Peerapong Achariyacheevin | Commissioner |
| 5. Mr. Buntoon Srethasirote | Commissioner |
| 6. Mr. Sahust Pratumkukul | Commissioner |
| 7. Mrs. Atchaka Sibunruang | Commissioner |

Under Section 11 of the Act, the ERC has the following authority and duties:

1. regulate energy industry operation to ensure compliance with the objectives of this Act under the policy framework of the government;

2. issue an announcement determining types of licenses for energy industry operation, and propose an issuance of a Royal Decree to determine the categories, capacities and characteristics of energy industry which are exempt from license requirement;

3. impose measures to ensure security and reliability of electricity system;

4. impose the regulations and criteria of the electricity procurement and the issuance of Requests for Proposals for the purchase of electricity as well as monitor the selection procedures to ensure fairness for all parties;

5. provide opinions on the power development plan, the investment plan of the electricity industry, the natural gas procurement plan and the energy network system expansion plan for submission to the Minister under Section 9(3);

6. inspect the energy industry operation of the licensees to ensure efficiency and transparency;

7. issue regulations or announcements and supervise the customer service standards and quality, including measures to protect energy consumers against adverse impacts resulting from energy industry operation;

8. propose the rules and Codes of Conduct of the Commissioners and the competent officials to the Minister under Section 9(10);

9. issue regulations or announcements on policy

and guidelines with regard to the holding of interests or conflict of interests of the Commissioners and the competent officials;

10. issue regulations or announcements on criteria, method and conditions of the contributions given to the Fund and the Fund utilization to be in line with the policy of the National Energy Policy Council pursuant to Section 9(8);

11. issue orders and prescribe the administrative fines pursuant to Division 8: Administrative Enforcement;

12. provide opinions or recommendations on energy industry operation to the Minister and the cabinet;

13. promote and support study and research on energy industry operation;

14. promote and encourage the general public of energy awareness;

15. promote and support human resources development in order to increase efficiency in energy industry operation;

16. promote economical and efficient use of energy, renewable energy and energy that has minimal impact on the environment, with due consideration of efficiency of electricity industry operation and balance of natural resources;

17. coordinate with other agencies in relation to the execution of the duties stipulated in this Act; and

18. perform any other task as stipulated in this Act or in other laws as part of the Commission's authority and duties.

Vision, Mission and Core Values

Vision

“Regulate Energy Industry to Attain Sustainable Development and Promote Proper and Fair Competition”

Mission

To regulate energy industry operation to be in compliance with the objectives of the Energy Industry Act of 2007 and the state policy framework.

To promote and support study and research pertaining to development of energy industry regulation and energy industry operation.

To increase knowledge and awareness of the public about management and inspection of energy-related operations.

To develop institutional capability with good governance and enhance human resource potential in energy industry regulation.

CORE VALUES



Trust

Stakeholders can be confident in the ERC's decisions and action.



Reliability and Consistency

The ERC will execute its duty without prejudice and the ERC's decisions will be consistent over time.



Unity

The duty execution will be in harmony with unity, happiness and common goals.



Social Accountability

The operation and decisions will be accountable and open to public.



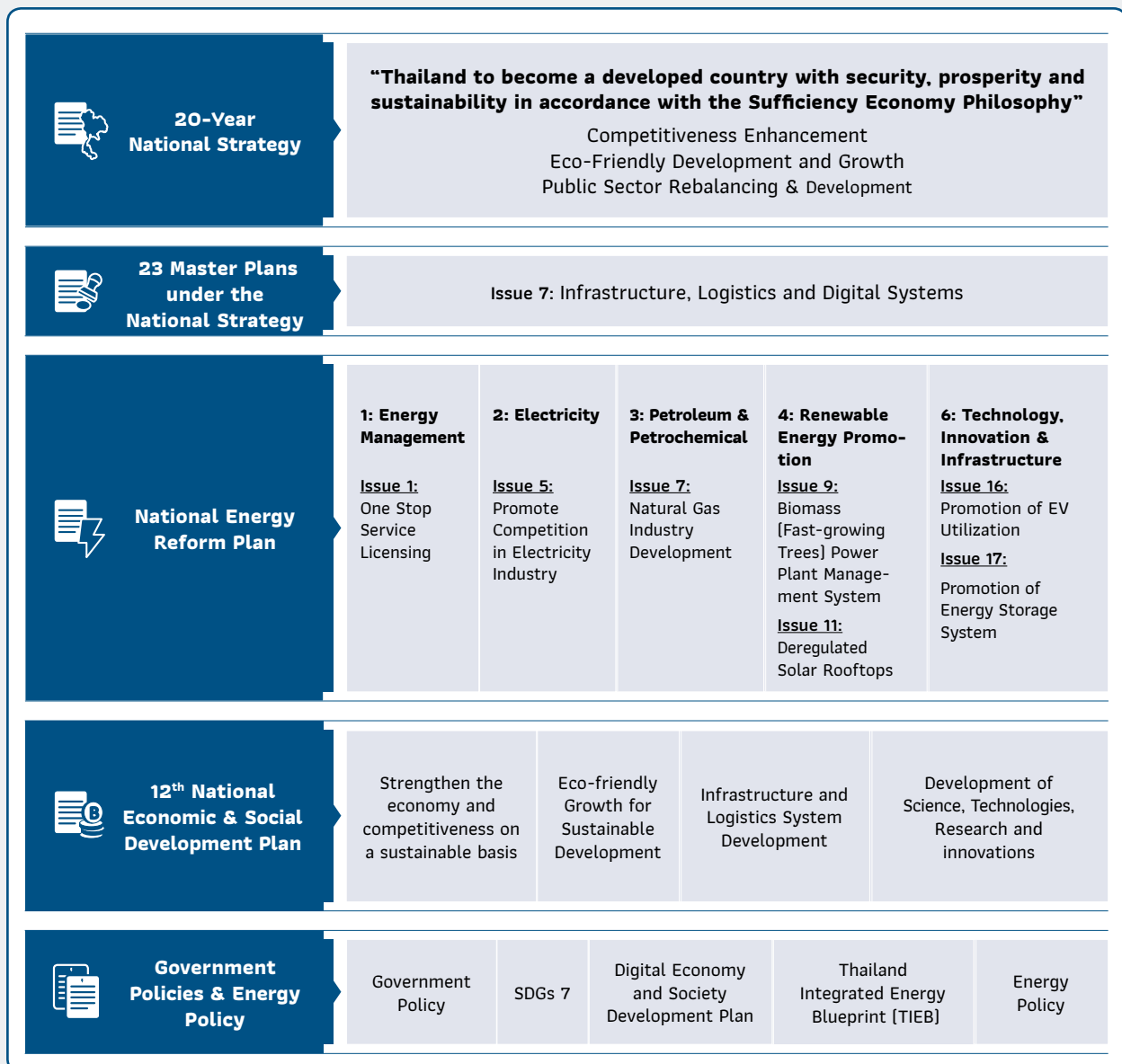
Transparency and Independence

The operation, decisions, appeal process and complaint-handling will be transparent and in compliance with the law, with high relevance to stakeholders and financial independence.



Action Plan for Energy Industry Regulation, Phase 4 [2020-2022]

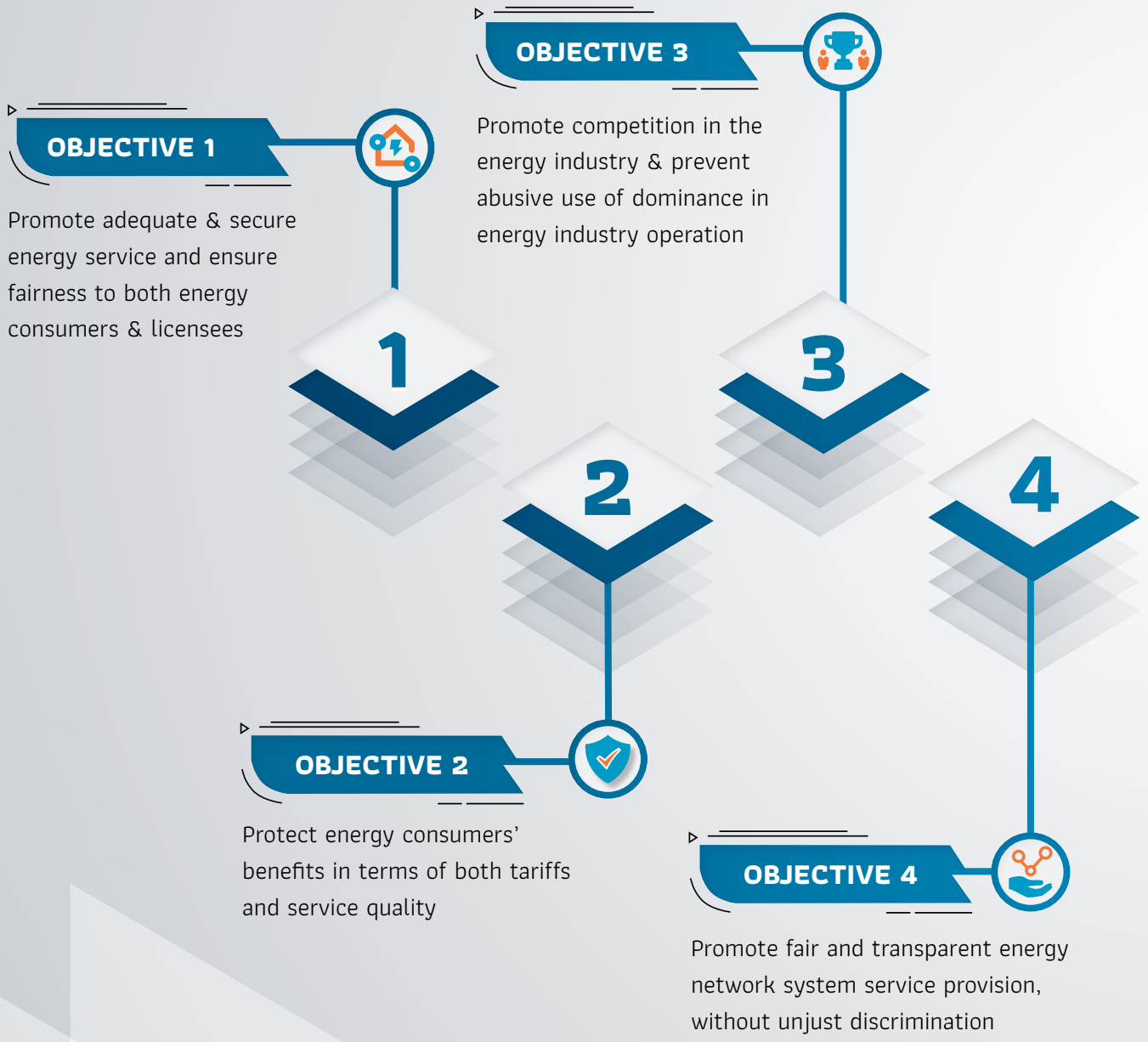
The Energy Regulatory Commission (ERC) has formulated the Action Plan for Energy Industry Regulation, Phase 4 (2020-2022) to set the direction and framework for duty execution of the Office of the Energy Regulatory Commission (OERC) so as to mobilize energy industry regulation in accordance with the tasks specified under the Energy Industry Act of 2007, taking into consideration the interrelation with the National Strategic Plan, the Master Plan under the National Strategic Plan, the National Energy Reform Plan, the 12th National Economic and Social Development Plan (2017-2021) and energy policy of the government, including the Digital Thailand (or the digital development plan for the economy and society).

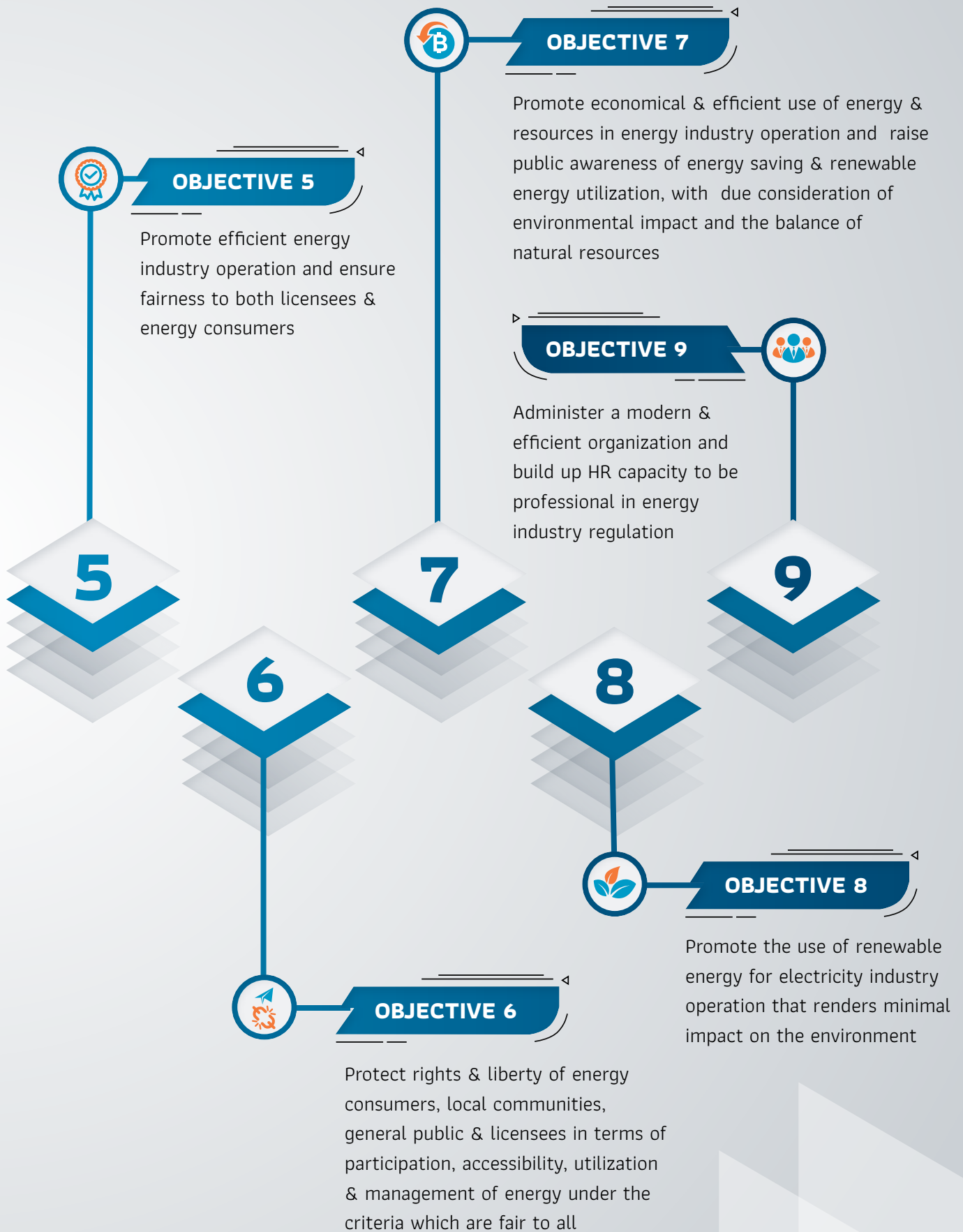


Action Plan for Energy Industry Regulation, Phase 4 [2020-2022]



Action Plan for Energy Industry Regulation
Phase 4 [2020-2022]



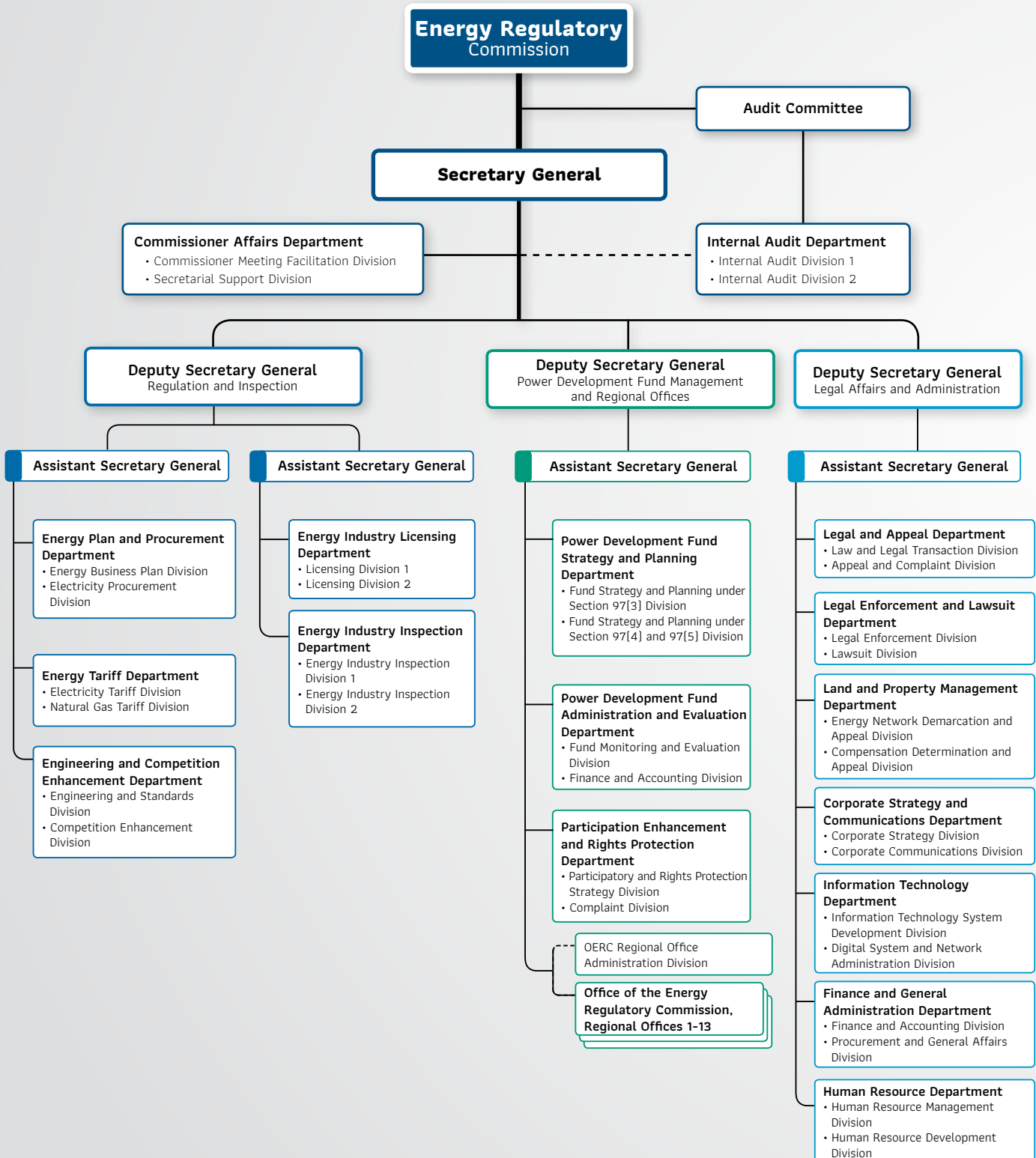




Organizational Structure

of the Office of the Energy Regulatory Commission

The internal organizational structure of the Office of the Energy Regulatory Commission is in pursuance of the Regulation on the Organization of the Office of the Energy Regulatory Commission B.E. 2562 [2019], with the work administration divided into three functions, comprising 30 Departments, of which 17 Departments are at the OERC Head Office and 13 Departments are the OERC Regional Offices, plus one OERC Regional Office Administration Division.





Map Showing Locations of 13 OERC Regional Offices

“To enhance extensive energy industry regulation and energy consumer protection, the ERC has directed to have OERC Regional Offices established in all 13 energy consumer regions nationwide to be a supportive mechanism in carrying out the work pertaining to licensing energy industry operation, auditing energy industry operation facilities, energy consumer protection and the implementation relating to the Power Development Fund.”



OERC Regional
Offices

OERC Regional Offices: 13 Regions

1 OERC Regional Office, Region 1 [Chiang Mai]

In charge of 6 provinces:

- Chiang Rai
- Lamphun
- Phayao
- Chiang Mai
- Lampang
- Mae Hong Son

2 OERC Regional Office, Region 2 [Phitsanulok]

In charge of 8 provinces:

- Nan
- Tak
- Phrae
- Kamphaeng Phet
- Uttaradit
- Phitsanulok
- Sukhothai
- Pichit

3 OERC Regional Office, Region 3 [Nakhon Sawan]

In charge of 6 provinces:

- Phetchabun
- Chai Nat
- Nakhon Sawan
- Sing Buri
- Uthai Thani
- Lopburi

4 OERC Regional Office, Region 4 [Khon Kaen]

In charge of 8 provinces:

- Nongkhai
- Nong Bua Lam Phu
- Nakhon Phanom
- Loei
- Sakon Nakhon
- Khon Kaen
- Udon Thani
- Bueng Kan

5 OERC Regional Office, Region 5 [Ubon Ratchathani]

In charge of 8 provinces:

- Mukdahan
- Yasothon
- Kalasin
- Amnatcharoen
- Maha Sarakham
- Ubon Ratchathani
- Roi-et
- Si Sa Ket

6 OERC Regional Office, Region 6 [Nakhon Ratchasima]

In charge of 4 provinces:

- Chaoyaphum
- Buriram
- Nakhon Ratchasima
- Surin

7 OERC Regional Office, Region 7 [Saraburi]

In charge of 7 provinces:

- Ang Thong
- Nakorn Nayok
- Phra Nakorn Si Ayutthaya
- Prachinburi
- Saraburi
- Sa Kaeo
- Pathum Thani

8 OERC Regional Office, Region 8 [Chonburi]

In charge of 5 provinces:

- Chachoengsao
- Chanthaburi
- Chonburi
- Trad
- Rayong

9 OERC Regional Office, Region 9 [Kanchanaburi]

In charge of 4 provinces:

- Kanchanaburi
- Nakhon Pathom
- Suphanburi
- Samut Sakhon

10 OERC Regional Office, Region 10 [Ratchaburi]

In charge of 6 provinces:

- Ratchaburi
- Prachuap Khiri Khan
- Samut Songkhram
- Chumphon
- Phetchaburi
- Ranong

11 OERC Regional Office, Region 11 [Surat Thani]

In charge of 6 provinces:

- Surat Thani
- Krabi
- Phang-nga
- Nakorn Si Thammarat
- Phuket
- Trang

12 OERC Regional Office, Region 12 [Songkhla]

In charge of 6 provinces:

- Phatthalung
- Pattani
- Satun
- Yala
- Songkhla
- Narathiwat

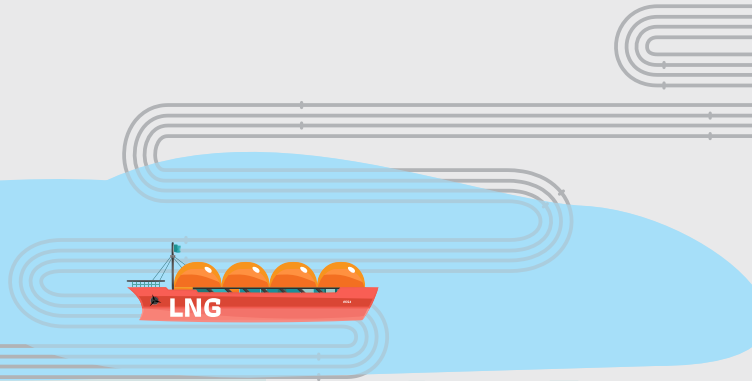
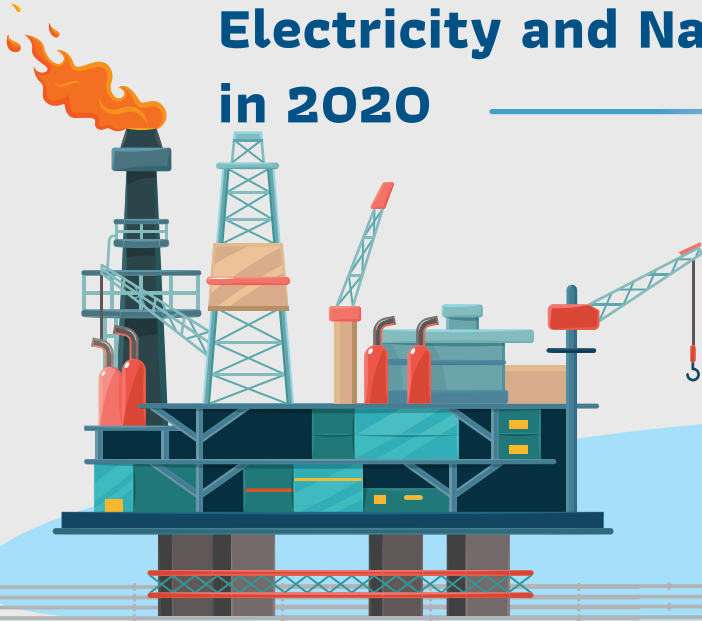
13 OERC Regional Office, Region 13 [Bangkok]

In charge of 3 provinces:

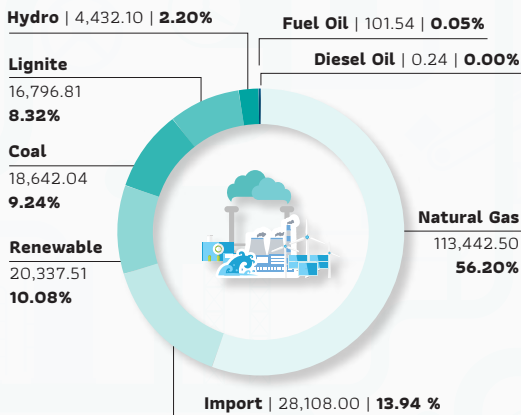
- Bangkok
- Samut Prakan
- Nonthaburi



Production and Distribution of Electricity and Natural Gas by Licensees in 2020

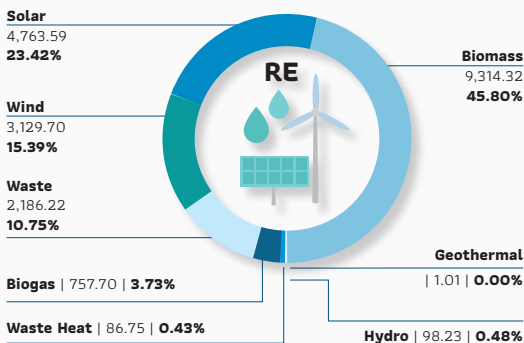


Electricity Generation in the Power Utilities' System [EGAT, PEA and MEA] in 2020, Classified by Fuel Type



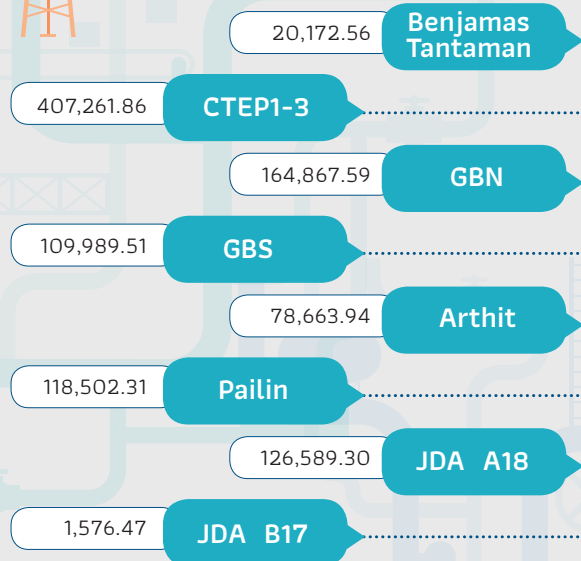
Total: 201,860.74 GWh

Renewable Energy Generation in the Power Utilities' System [EGAT, PEA and MEA] in 2020, Classified by Renewable Fuel

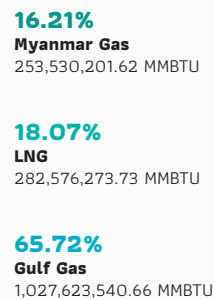


Total: 20,337.52 GWh

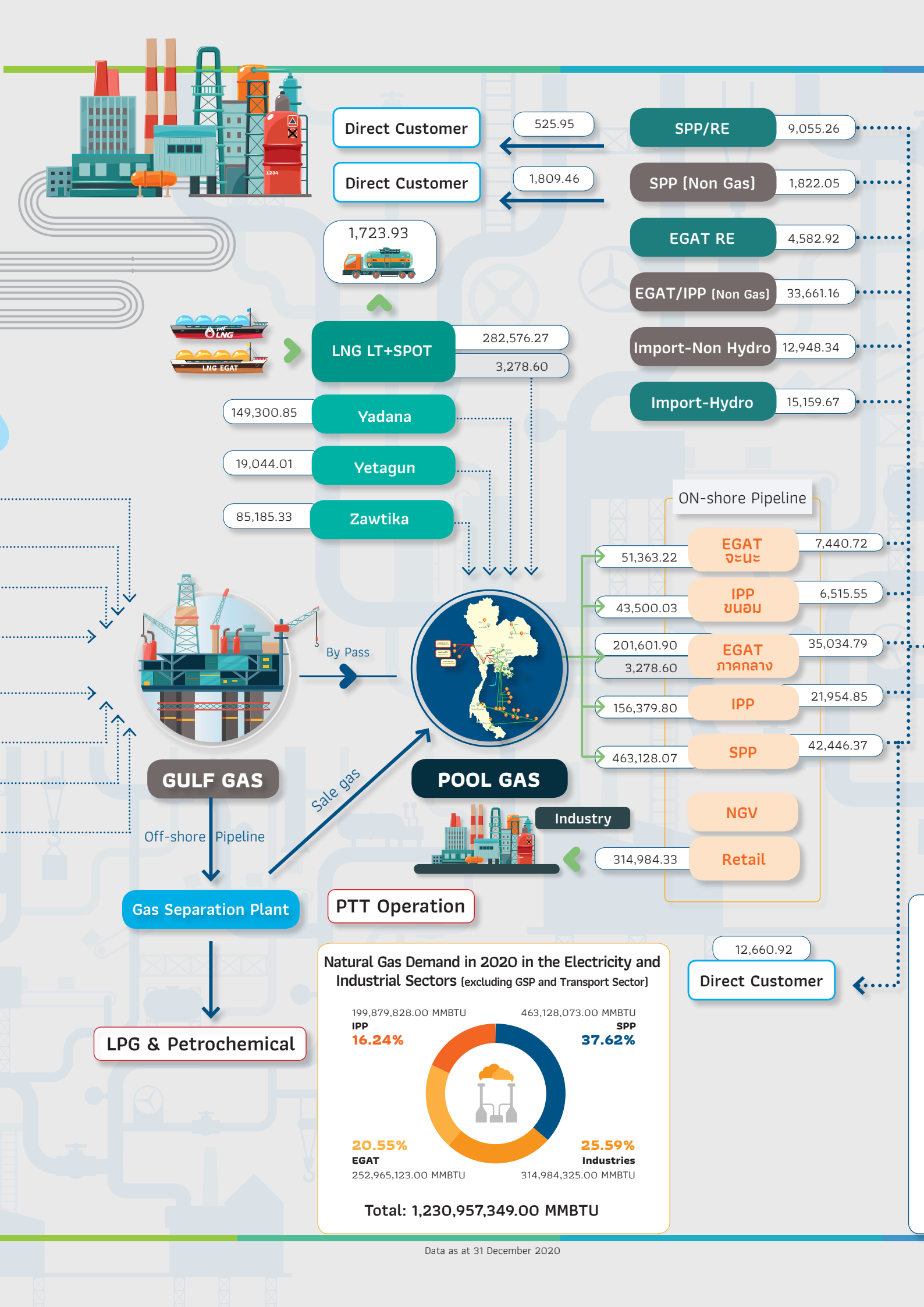
Gas Supply [BBTU] Gulf of Thailand



Natural Gas Supply in 2020, Classified by Source



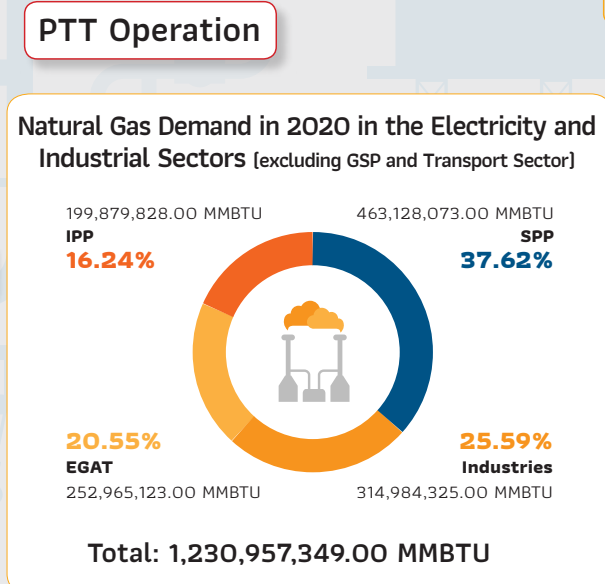
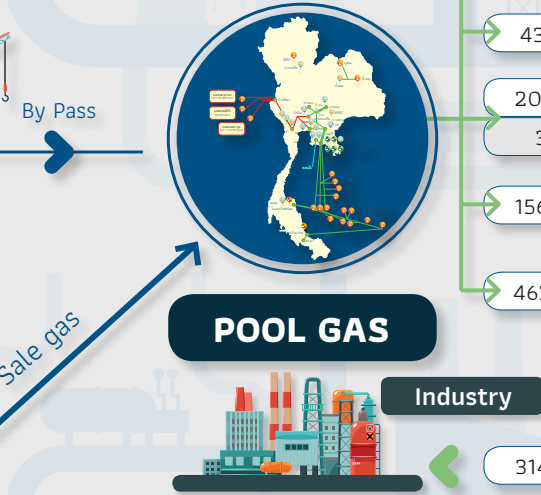
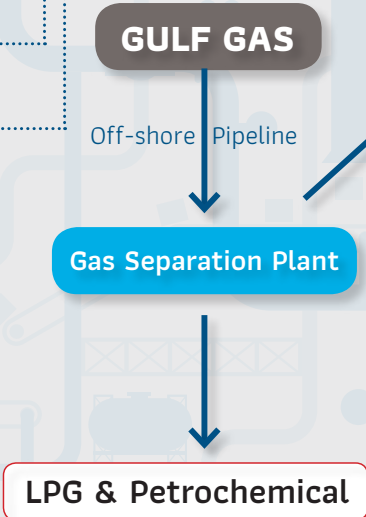
Total: 1,563,730,016.00 MMBTU



Direct Customer	525.95	SPP/RE	9,055.26
Direct Customer	1,809.46	SPP [Non Gas]	1,822.05
	1,723.93	EGAT RE	4,582.92
		EGAT/IPP [Non Gas]	33,661.16
		Import-Non Hydro	12,948.34
		Import-Hydro	15,159.67

LNG LT+SPOT	282,576.27
	3,278.60
Yadana	149,300.85
Yetagun	19,044.01
Zawtika	85,185.33

ON-shore Pipeline	
EGAT	7,440.72
IPP	6,515.55
EGAT	35,034.79
IPP	21,954.85
SPP	42,446.37
NGV	
Retail	

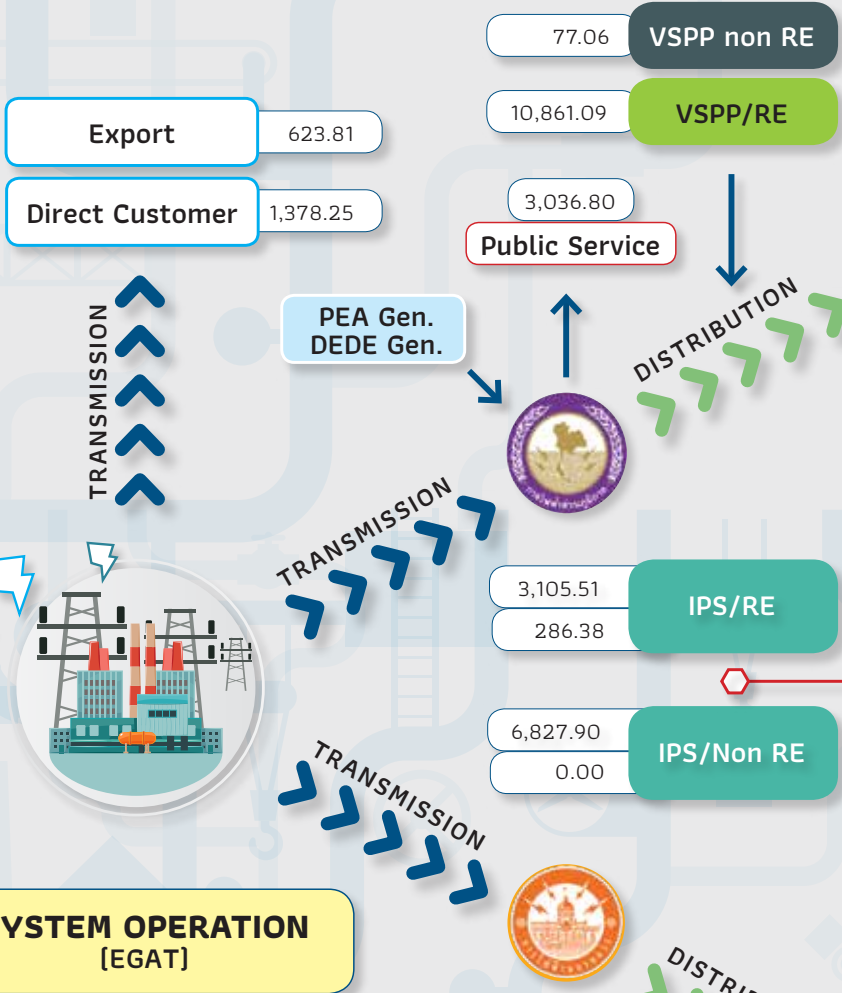


12,660.92

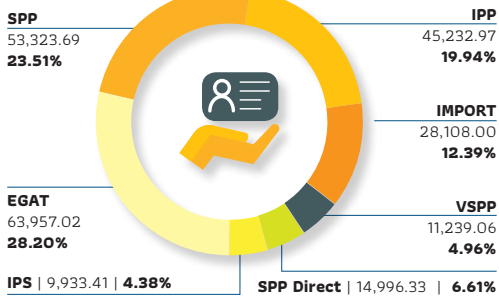
Direct Customer



Electricity Supply [GWh]



Electricity Generation in 2020, Classified by Producer (including IPS)



Total: 226,790.48 GWh

PEA

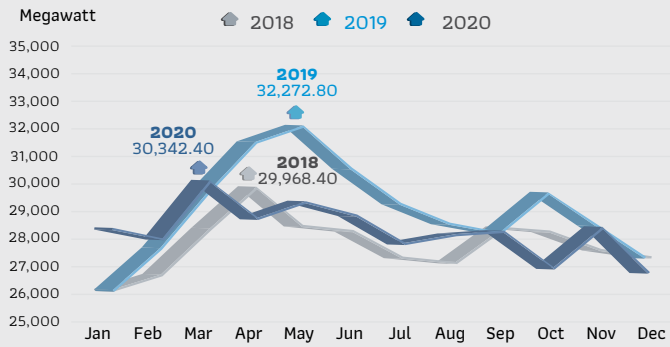
Residential	37,166.65	Small General Service	13,912.37
Medium General Service	21,554.98	Large General Service	53,906.00
Specific Business Service	3,092.95	Non-profit Organization	70.84
Agricultural Water Pumping	697.94	Temporary Power User	925.02
Standby	108.65	Interruptible Power User	693.89
EV Charging Stations	0.00	On-site use	0.00
Export	0.00		

Behind-the-Meter Connection

MEA

Residential	15,693.74	Small General Service	7,213.39
Medium General Service	8,240.55	Large General Service	16,685.64
Specific Business Service	1,655.35	Non-profit Organization	133.01
Agricultural Water Pumping	0.00	Temporary Power User	434.50
Standby	14.77	Interruptible Power User	102.10
EV Charging Stations	0.09	On-site use	40.55
Export	0.00		

Peak Capacity Demand in the Power System [System Peak] in 2018-2020

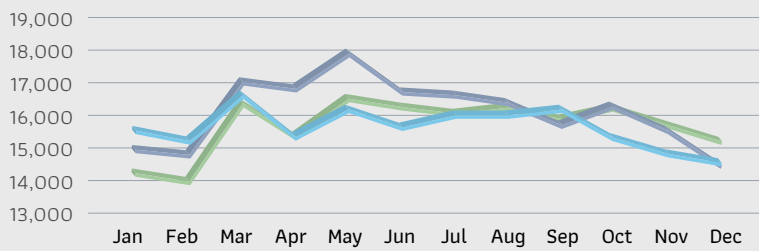


System Peak and National Peak in 2018-2020

Year	System Peak	National Peak ^{1/}
2018	29,968.40 MW [24 April 2018, at 13:51 hrs.]	34,316.80 MW [24 April 2018, at 13:51 hrs.]
2019	32,272.80 MW [3 May 2019, at 14:27 hrs.]	37,311.80 MW [3 May 2019, at 14:27 hrs.]
2020	30,342.40 MW [13 Mar 2020, at 14:14 hrs.]	35,569.71 MW [13 Mar 2020, at 14:14 hrs.]

Remarks: ^{1/} National Peak means the System Peak plus the Independent Power Supply (IPS), or the generation for own-use and sale to direct customers.

Electricity Consumption in 2018-2020



2018
2019
2020

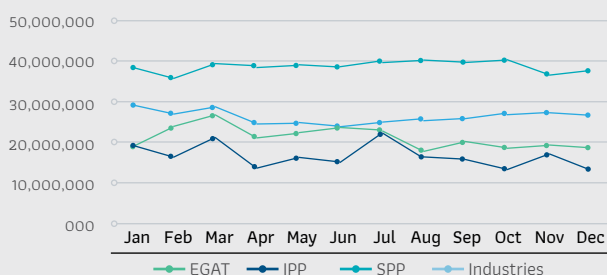


Electricity Consumption Classified by Consumer Category in 2018-2020

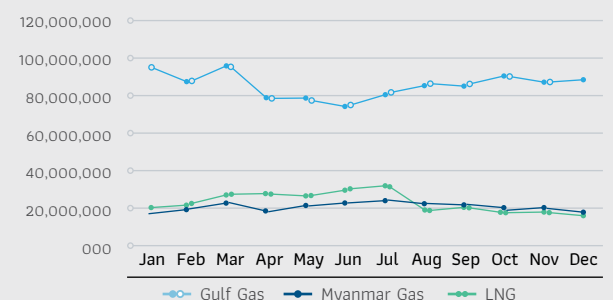
Power Consumer Category	2018	2019		2020	
	GWh	GWh	Growth Rate [%]	GWh	Growth Rate [%]
Residential	45,206.57	49,199.09	8.80	52,860.38	7.40
Residential	21,300.36	22,340.78	4.90	21,125.77	-5.40
Medium General Service	30,550.60	31,382.18	2.70	29,795.53	-5.10
Large General Service	78,655.91	77,330.19	-1.70	71,794.85	-7.20
Specific Business Service	6,483.08	6,794.06	4.80	4,748.30	-30.10
Non-profit Organization	203.49	213.11	4.70	206.07	-3.30
Agricultural Water Pumping	364.94	467.82	28.20	697.94	49.20
Temporary Power User	1,352.13	1,416.45	4.80	1,364.76	-3.70
Standby	255.35	304.30	19.20	290.97	-4.40
Export	202.67	911.55	349.80	623.81	-31.60
Electric Vehicle	0.05	0.05	-0.00	0.09	80.00
Interruptible Power User	0.00	0.00	-0.00	795.99	0.00
Public Lighting	3,228.36	3,368.68	4.30	3,545.39	5.30
On-site use ^{1/}	38.20	41.16	7.70	40.55	-1.50
TOTALE	187,841.71	193,769.42	3.20	187,890.40	-3.00

Remarks: Data as at 31 December 2020 | ^{1/} On-site use means consumption by office buildings of the Power Utilities.

Monthly Natural Gas Demand in 2020 in the Electricity and Industrial Sectors (excluding GSP and Transport Sector)



Monthly Natural Gas Supply in 2020, Classified by Source



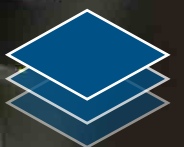
Remarks: Data as at 31 December 2020





Energy Industry Regulation Performances

in Fiscal Year 2020





Regulation of Power Purchase

Status of Power Purchase from Renewable Energy Generation

In developing the energy sector of the country, emphasis has been placed on reinforcement of the electricity system security along with sustainable development. With a view to diversifying fuel sources for electricity generation, promotion has been made on electricity generation from renewable energy, via incentive measures in terms of power purchasing prices, as well as promotion of electricity generation for own use. In total, 8,430 projects have been committed to supply electricity to the grid, accounting for a total installed capacity of 9,730 MW. The purchase status of renewable energy generation could be classified into the following: (1) projects that are commercially supplying power to the grid, i.e. commercial operation date (COD) started: 7,648 projects, with a total installed capacity of 9,008 MW; (2) projects with Power Purchase Agreements (PPAs) signed, pending COD: 471 projects, with a total installed capacity of 264 MW; and (3) projects having been notified of power purchase acceptance: 311 projects, with a total installed capacity of 459 MW. In addition, there are 1,175 renewable energy generation projects for own use and sale to direct customers (Independent Power Supply: IPS), with a total installed capacity of 1,976 MW.

Renewable Energy Generation [Data as at 31 December 2020]

RE Fuel		Committed to supply electricity to the grid ^{1/}		IPS ^{2/} [MW]		AEDP 2015 Target Installed Cap [MW]	Remainder to Achieve AEDP Target Installed Cap [MW]
		No. of Projects	Installed Cap [MW]	No. of Projects	Installed Cap [MW]		
	Waste	56	489	-	-	550	61
	Municipal Solid Waste [MSW]	49	452	-	-	500	48
	Industrial Waste	7	37	-	-	50	13
	Biomass	245	4,014	41	994	5,570	561
	Biogas	183	418	41	121	1,280	741
	Hydro	73	146	-	-	376	230
	Wind	38	1,540	-	-	3,002	1,462
	Solar	7,830	3,026	1,077	579	6,000	2,395
	Solar Farm	472	2,508	49	60	-	-
	Solar Rooftop	6,129	130	1,028	519	-	-
	Solar-Government/Agricultural coop.	98	382	-	-	-	-
	Solar-Residential	1,131	6	-	-	-	-
	RE - Others^{3/}	4	97	16	282	-	-
	Geothermal	0	0	-	-	-	-
Grand Total		8,430	9,730	1,175	1,976	16,778	5,450

Source: EGAT, MEA and PEA reports on power purchase

Remarks: ^{1/} Projects committed to supply electricity to the grid mean projects that are commercially supplying electricity to the grid, projects with PPAs signed, and projects having been notified of power purchase acceptance.

^{2/} Electricity generators, using renewable energy as fuel, for own use and sale to direct customers.

^{3/} RE-Others refer to electricity generation using waste gas from the manufacturing process and geothermal energy.



Electricity Industry Regulation

1

Reduce net power tariff [inclusive of VAT] by 3% for all schedules of power consumers for 3 months (Apr–Jun 2020), **with a budget of 4,953 million Baht.**

2

Free of charge electricity consumption for residential consumers with installation of a meter of no more than 5 amps, i.e. Schedule 1.1 of the MEA, Schedule 1.1.1 of the PEA and Schedule 10 of the Sattahip Electricity Authority (SEA) (Apr–Jun 2020), totaling 3 months, **with a budget of 9,795 million Baht.**

3

Exemption of the Minimum Charge for power consumers under Schedules 3, 4, 5, 6 and 7 (Apr 2020–Mar 2021), totaling 12 months, **with a budget of 291 million Baht.**

ERC Notifications

1 st :	2 Apr 2020	[Apr–Jun 2020]
2 nd :	30 Jun 2020	[Jul–Sep 2020]
3 rd :	29 Sep 2020	[Oct–Dec 2020]
4 th :	14 Dec 2020	[Jan–Mar 2021]

4

Electricity bill relief for residential power consumers under

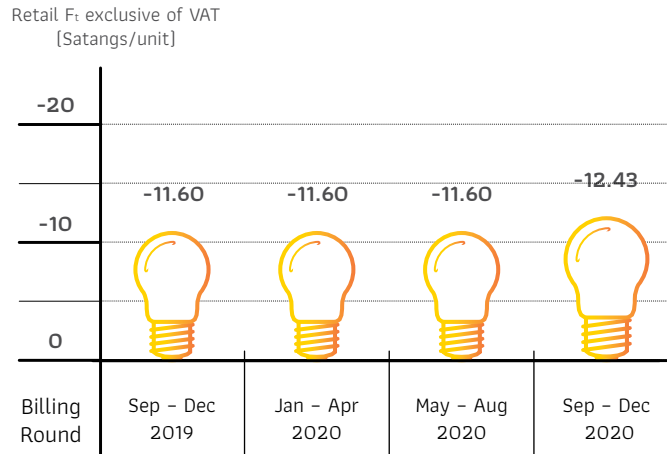
Schedule 1.2-1.3 (MEA)
Schedule 1.1.2 and 1.2 (PEA)
and Schedule 11 (Sattahip Electricity Authority: SEA) (Mar–May 2020), totaling 3 months, **with a budget of 11,663 million Baht.**

1. Introduction of Measures to Help Mitigate Impacts of the Outbreak of Coronavirus Disease 2019 (COVID-19) on Power Consumers. Like other countries worldwide, Thailand faced the outbreak of Coronavirus Disease (COVID-19). To regulate the energy industry amidst such a situation, the ERC gave importance to the administration of energy management cost in the context where the country had a highly excessive reserve margin due to decreasing electricity demand across the nation, coupled with the downward trends in oil and natural gas prices, and introduced electricity-bill relief measures by using around 26,702 million Baht to manage electricity tariffs.

2. Regulation and Adjustment of the F_t Rate.

The ERC reviews the F_t rate every four months to reflect changes in the variable costs which fluctuate in line with the fuel cost, power purchase cost, impact of the foreign exchange rate and the state policy (“policy expense”), e.g. contributions to the Power Development Fund pursuant to Section 97 of the Energy Industry Act of 2007, and the “Adder” or additional purchasing prices for renewable energy generation. In Fiscal Year 2020, the ERC considered the F_t adjustment for four billing rounds. The average electricity tariff in the round of September–December 2020 was 3.63 Baht/unit (exclusive of VAT).

Retail F_t Rates Charged to Energy Consumers



The electricity tariff for

Low-priority Charging Stations at 2.6369* Baht/unit voltage lower than 22 kV

Electricity Tariff [Baht/unit] **2.6369* for voltage lower than 22 kV**

Terms & Conditions

- Fixed rate all day
- Applied to the management of low-priority charging stations, when compared with electricity consumption for other purposes in general, and which can be adjusted downwards or disconnected in case of capacity constraints of the electricity distribution system so as to prevent impacts on other power users and to maintain the power system security. In this regard, technical requirements of the Distribution Utilities responsible in each respective area shall be complied with.

3. Determination of Appropriate Electricity Tariff and Management for Electric Vehicle (EV) Charging Stations.

Pursuant to the government policy on promotion of greater use of electric cars, electric motorcycles and electric public fleets and in order to enable service provision of EV charging stations for electric vehicles in the initial phase, the ERC has set the electricity tariff and electricity distribution system management suitable for EV charging stations to be enforced for two years, or until a new electricity tariff structure is announced. The tariff was approved by the National Energy Policy Council (NEPC) on 19 March 2020.

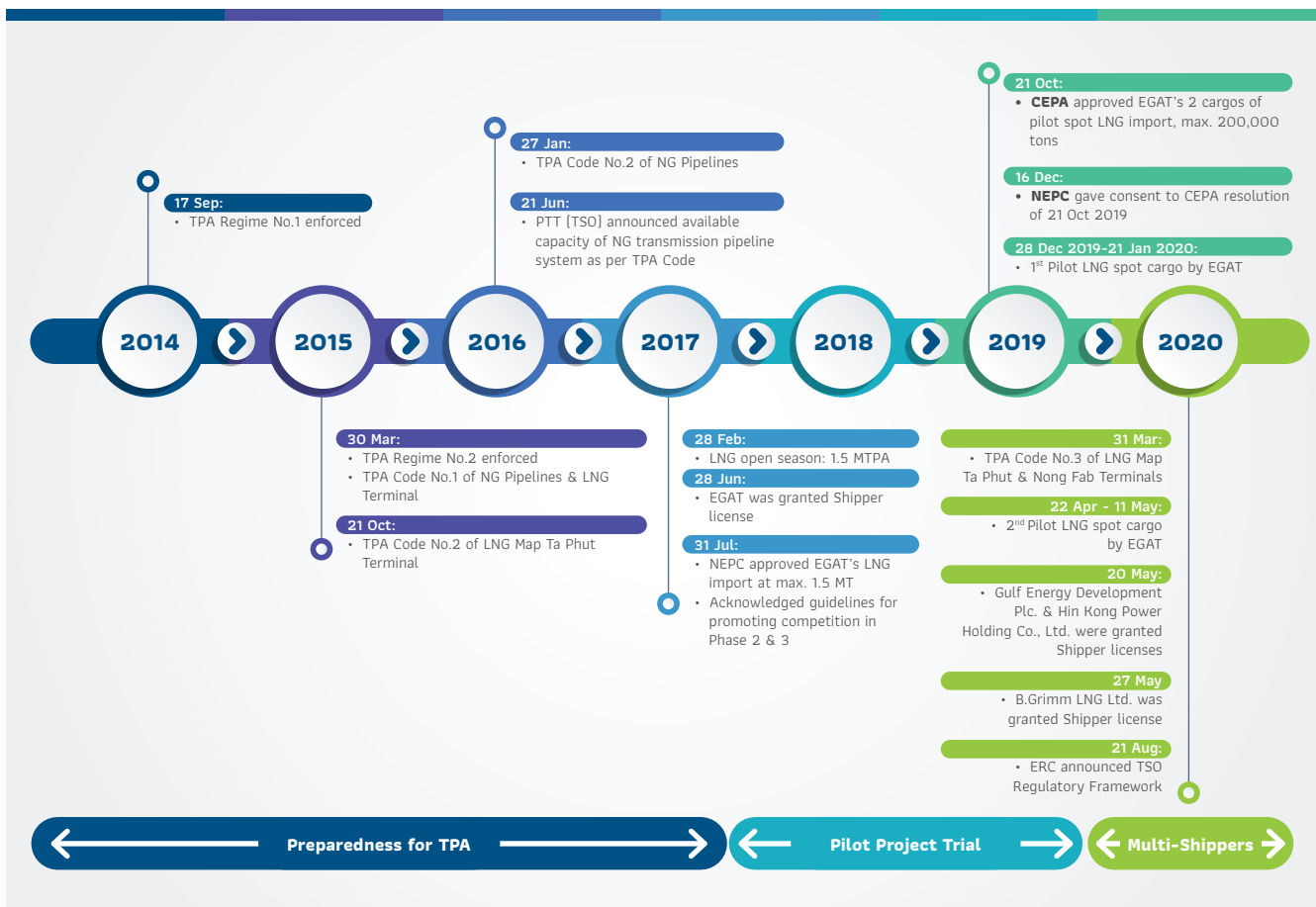
* The Off Peak energy tariff under the Time-of-Use [TOU] rate, imposed on Schedule 2.2: Small General Service power consumers under the current electricity tariff structure, is applied to the tariff for EV charging stations.



Natural Gas Industry Regulation

1. Promotion of Competition in the Natural Gas Industry, Phase 1. Since 2014 the ERC has continuously improved the TPA Regime related to the opening of access to the use of or connection to the natural gas transmission system and LNG Terminal by a Third Party, and has regulated the concerned licensees to develop TPA Codes for both the natural gas transmission system and LNG Terminal with a view to increasing the number of natural gas procurement and wholesale operators (“Shippers”) pursuant to the NEPC resolutions of 31 July 2017 and 16 December 2019. In this connection, the ERC regulated

experimental LNG imports of the Electricity Generating Authority of Thailand to test the management system of the natural gas transmission system and LNG Terminal as well as issued the Notification of the ERC on Transmission System Operator Regulatory Framework B.E. 2563 (2020), which has been effective since 22 August 2020, and granted licenses to four new Shippers; hence there were then five Shippers altogether, i.e. the PTT Public Company Limited, the Electricity Generating Authority of Thailand, Gulf Energy Development Public Company Limited, Hin Kong Power Holding Co., Ltd. and B.Grimm LNG Ltd.



2. Regulation of the Tariffs for Natural Gas Transportation through the Natural Gas Transmission Pipeline System of the PTT Public Company Limited. The ERC has regulated tariffs in the natural gas industry to reflect the costs and reasonable expense burdens. The tariffs for natural gas transportation through the natural gas transmission pipeline system are divided into five zones.



Natural Gas Transmission Tariffs through the Natural Gas Transmission Pipeline System by Zone

Unit: Baht per Million BTU

Zone	Fixed Costs [Td]	Variable Costs [Tc]
Zone 1: Offshore natural gas transmission pipeline, in Rayong	8.5899	1.1668
Zone 2: Offshore natural gas transmission pipeline, at Khanom	14.2177	1.1668
Zone 3: Onshore natural gas transmission pipeline	12.0654	1.1668
Zone 4: Onshore natural gas transmission pipeline, at Chana	2.4855	0.1569
Zone 5: Onshore natural gas transmission pipeline, at Namphong	1.1299	0.0000

Remarks: Data as at 30 September 2020



Power Development Fund Administration



Power Development Fund
for sustainable community development

Development or rehabilitation of localities affected by power plant operation in designated areas and introduction of measures to help mitigate impacts of drought, to create local employment to boost domestic economy and to solve public health problems related to the coronavirus disease 2019 (COVID-19) protection, control or treatment under the Power Development Fund budget for operations under Section 97(3), covering areas in 72 provinces across the country. The ERC approved community projects in designated areas under the Fiscal Year 2020 budget framework and the additional budget, totaling 8,266 projects with a total budget of 3,224.87 million Baht.



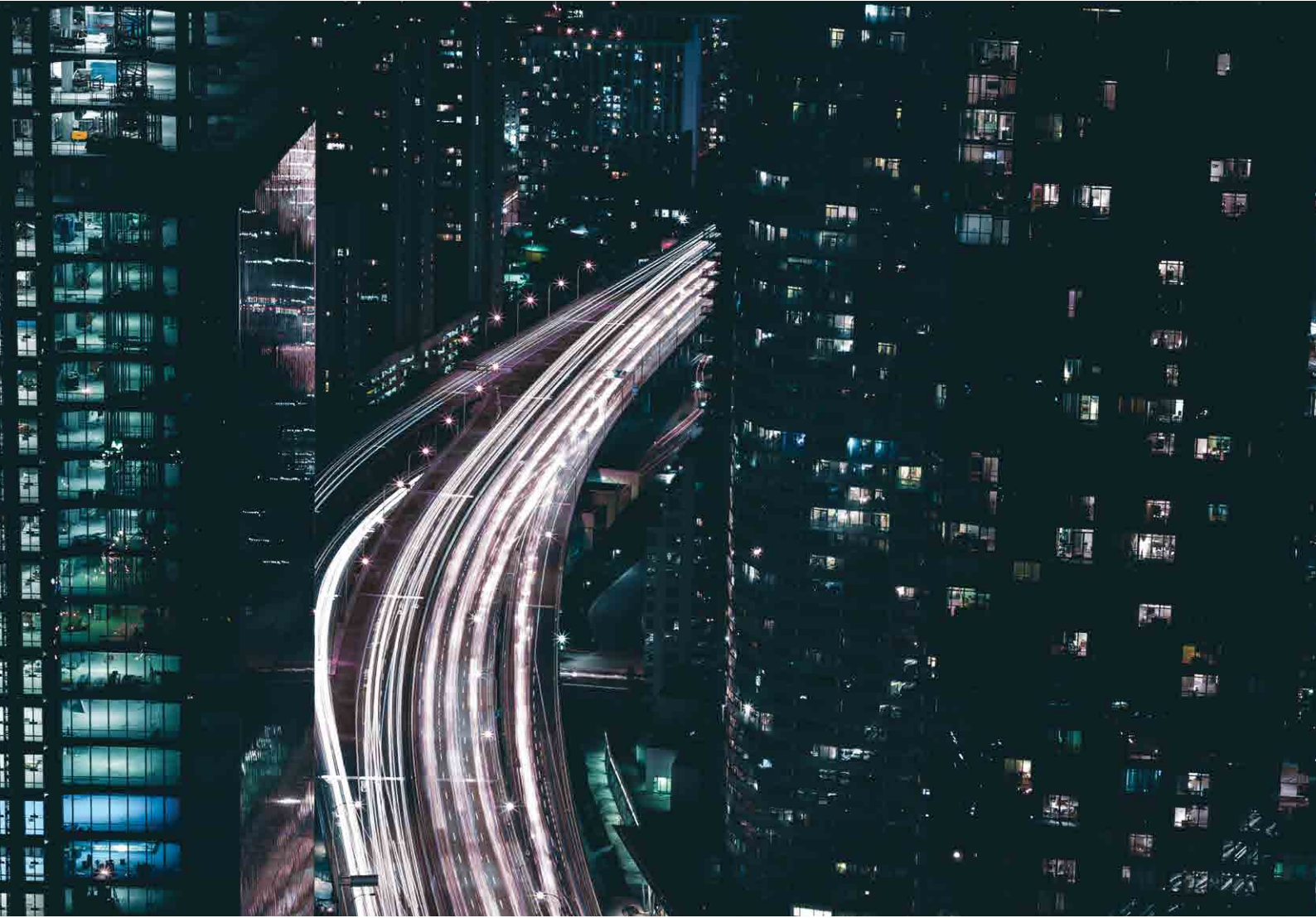
Project on Procurement of Water Supply Containers

Ban Huai Duk Sub-district Health Promoting Hospital, Nong Pho Sub-district, Nakhon Sawan Province

Project on Public Health Service Provision in the COVID-19 Emergency Situation and Procurement of Medical Supplies

Ban Khao Din Sub-district Health Promoting Hospital, Rayong Province





Energy Industry Regulation Performances in Fiscal Year 2020

The Energy Regulatory Commission (ERC) emphasizes the execution of its mission as mandated under the Energy Industry Act of 2007, by conducting operations pursuant to the Annual Work Plan for Fiscal Year 2020 under the Action Plan for Energy Industry Regulation, Phase 4 (2020-2022). Major performances of the Office of the Energy Regulatory Commission (OERC) in Fiscal Year 2020 in pursuance of the nine main objectives of energy industry regulation can be summarized in the following.



OBJECTIVE 1

To promote adequate and secure energy service provision, while ensuring fairness to both energy consumers and licensees

◆ Strategy 1:

Increasing the potential to analyze energy policy and energy-related plans to be trustworthy and acceptable to stakeholders.

The OERC has devised human resource development courses to provide in-depth knowledge about the electricity and natural gas industry regulation, in terms of the analysis of energy demand and supply data as well as the financial analysis, including the development of a post-audit system for monitoring the implementation pursuant to the energy industry development plans. This is aimed to upgrade the standards and efficiency of the analysis of the Power Development Plan, investment plans in the electricity industry and energy network system extension plans.



◆ Strategy 2:

Improvement of the energy industry regulatory system to be more efficient so that energy supply would be adequate and secure.

(1) Regulated electricity procurement from power projects using renewable energy in accordance with Thailand Power Development Plan 2018-2037 (PDP 2018) and the government policy on renewable energy generation promotion, on a continuous basis, to ensure electricity system security and to promote electricity generation from renewable energy. Some major projects comprised: the ground-mounted solar PV generation; renewable energy generation under the Feed-in Tariff (FiT) scheme, using biomass as fuel; purchase from power projects using industrial waste and municipal solid waste (MSW) as fuel; renewable energy generation under the Feed-in Tariff (FiT) scheme, using biogas as fuel; and power generation projects under the Residential Solar Rooftop Program.

(2) Streamlined the one stop service (OSS) licensing. The OERC revised seven secondary laws on the granting of licenses for electricity industry operation and prepared drafts of two Memorandums of Understanding (MOU) between the ERC and three agencies, i.e. the Ministry of Interior, the Ministry of Industry and the Ministry of Natural Resources and Environment, concerning the permission procedures for energy facility construction and other relevant permits for energy industry operation and the regulation in connection with the environment, safety as well as sewage and waste management of power plants. Arrangements were also made to be prepared for the OSS licensing, namely: preparing license application forms together with a checklist of required documents to be attached to the applications; and ensuring preparedness of the personnel to provide licensing services at both the OERC Head Office and the OERC Regional Offices.



Hearing held by the OERC

On 13 January 2020, the OERC organized a hearing on the “Draft Regulation of the ERC to Accommodate Minimizing the Procedures and Processing Time for Energy Industry Licensing [One Stop Service],” with the objective to gather opinions on the revision of procedures and processing time for granting licenses for energy industry operation to be more rapid and to be prepared for the removal of power plants from being facilities under the law on factories, which is in line with the National Energy Reform Plan. The event was attended by ERC Commissioners [Mrs. Atchaka Sibunruang and Mr. Chanvit Amatamatucharti] together with Mr. Khomgrich Tantravanich—OERC Secretary General, energy industry operators and interested persons, totaling over 250 participants, at The Sukosol Hotel Bangkok.

(3) Issued licenses within the specified timeframe, comprising: 128 licenses for electricity and natural gas industry operations; 749 licenses for regulated energy production under the law on energy development and promotion; and 66 licenses for power generation facility

operation under the law on factories. In addition, permits for building construction or modification for the purpose of energy industry operation, and designated building construction certificates were issued, totaling 129 permits/certificates.

Issuance of Energy Industry Licenses and Licenses for Regulated Energy Production under the Law on Energy Development and Promotion in Fiscal Year 2020

License Type	Number of Licenses Granted	
	2020	2019
Issuance of Energy Industry Licenses		
1. Electricity Industry Licenses:	125	113
1.1 Electricity Generation License	73	78
1.2 Electricity Transmission System License	-	-
1.3 Electricity Distribution System License	21	11
1.4 Electricity Retail License	31	24
1.5 Electricity System Operation License	-	-
2. Natural Gas Industry Licenses:	3	-
2.1 Natural Gas Transmission through Transmission Pipeline System License	-	-
2.2 Natural Gas Procurement and Wholesale License	3	-
2.3 Natural Gas Retail through Distribution Pipeline System License	-	-
2.4 Natural Gas Storage and Transformation of Liquid to Gas License	-	-
Total	128	113
Licenses for Regulated Energy Production under the Law on Energy Development and Production		
1. Regulated Energy Production License	749	694
2. Power Generation Facility Operation License	66	27
Total	815	721

Remarks: Data as at 30 September 2020



Issuance of Permits for Building Construction or Modification for Energy Industry Operation, and Designated Building Construction Certificates in Fiscal Year 2020

License Type	Number of Licenses Granted	
	2020	
Permits for Building Construction or Modification	Construction	Modification
1. New Permits	57	12
2. Permit Renewal – 1 st and 2 nd renewal	20	-
Certificates for Designated Building Construction	33	7
Total	110	19

Remarks: Data as at 30 September 2020

(4) Reviewed and improved the criteria, procedures and conditions of compensation payment for land and property affected by the energy network system rights of way, including the restrictions of rights over the land covered by energy network system areas, so as to attain the standard which is in line with the criteria for legislative drafting and evaluating the outcomes of law (2019).

OBJECTIVE 2

To protect energy consumers' benefits in terms of both tariffs and service quality

Strategy 1:

Revise the criteria for regulating energy tariffs to be transparent and to better meet international standards

(1) Set the criteria for regulating electricity tariffs (in the short term) so that the electricity tariff regulation would correspond with the current economic situation which has been affected by the spread of COVID-19.

(2) Regulated the variable tariff (F_t) to reflect the fuel costs and implementation pursuant to the government policies. In Fiscal Year 2020, the ERC stabilized the F_t rate for the billing rounds of January–April 2020 and May–August 2020 at –11.60 Satangs/unit, resulting in the average electricity tariff at 3.64 Baht/unit (excluding VAT) to help alleviate the cost of living of the people amidst economic impacts during the spread of COVID-19. As for the F_t charged in the round of September–December 2020, the ERC gave consent to a further reduction of 0.83 Satangs/unit,

so the F_t charged was equal to –12.43 Satangs/unit. This was due to the earlier decrease in natural gas price and hence reduction in the electricity generation cost, which was reflected in the F_t rate in this round, resulting in the average electricity tariff at 3.63 Baht/unit (excluding VAT).



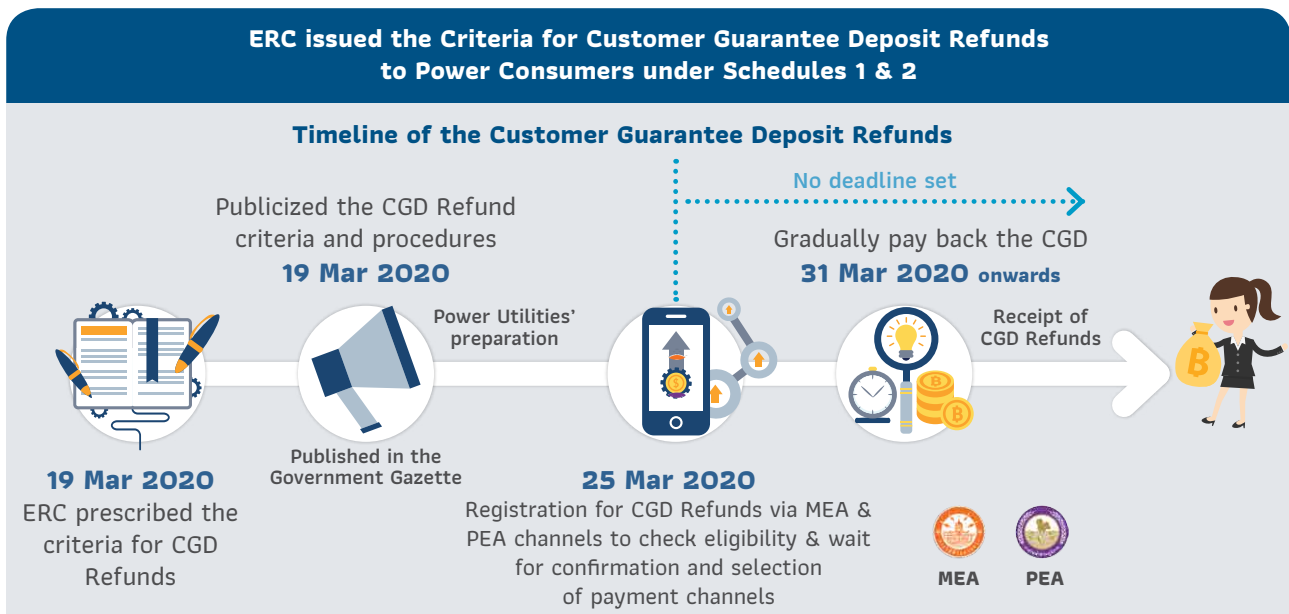
Press Conference on F_t Adjustment for the round of May-August 2020

(3) Set the electricity tariff and the method of electricity distribution system management for EV charging stations in order to get prepared for the promotion of electric vehicles (EV) utilization according to the guidelines prescribed in the National Energy Reform Plan. The rate would be enforced for two years, or until a new electricity tariff structure is announced, under the terms of electricity distribution system management for low-priority charging stations, which were approved by the NEPC on 19 March 2020. Subsequently, the ERC approved

the technical requirements for the grid system management for low-priority charging stations.

(4) Regulated the tariffs in the natural gas industry in accordance with the prescribed criteria.

(5) Revised the criteria, procedures and conditions for preparing accounting and financial reports to cover the natural gas industry, resulting in the issuance of the Notification of the ERC on Criteria, Procedures and Conditions for Preparing Accounting and Financial Reports for Energy Industry Licensees B.E. 2563 (2020), which has been in force since 22 August 2020.



Strategy 2:

Improve the regulation of service quality so that the public would extensively receive up-to-standard services

(1) Issued the Notification on Customer Guarantee Deposit Refunds to Power Consumers under Schedule 1: Residential Customers and Schedule 2: Small General Service, B.E. 2563 (2020), taking effect as from 20 March 2020 so that the Metropolitan Electricity Authority (MEA), the Provincial Electricity Authority (PEA) and the Sattahip Electricity Authority—the Royal Thai Navy Welfare Concession (SEA)—could pay back customer guarantee deposits (CGD) to power consumers who have paid the CGD

based on the schedule and capacity of their power meters. This involves 23.49 million cases nationwide that are eligible to claim for the CGD payback, with a total budget of over 33,758 million Baht. Moreover, the CGD collection will be discontinued for new power consumers, except for the case where consumers change their customer schedules from Schedule 1 and Schedule 2 to other schedules. In this regard, the Distribution Utilities have been paying back the CGD, starting from 31 March 2020.



Customer Guarantee Deposit Refunds: Registration and Amount of Claimed CGD

23.49
million cases

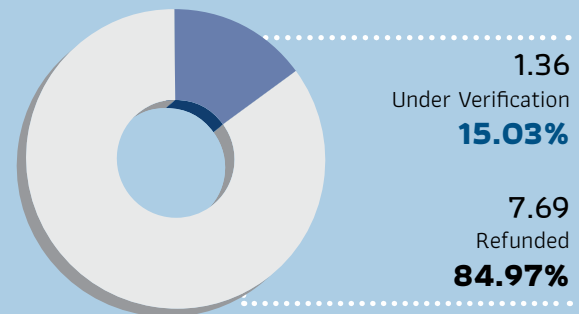
Eligible Consumers for
CGD Refunds:



Unit: million cases

9.05
million cases

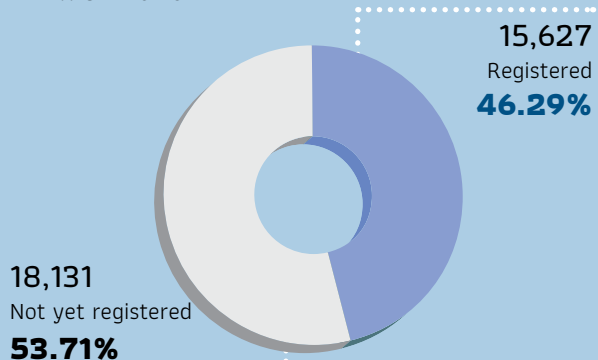
Registrants:
CGD Refunded vs. Under Verification



Unit: million cases

33,758
million Baht

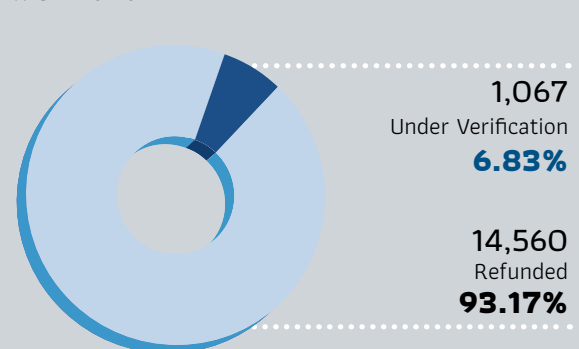
Eligible Claimed CGD
Refunds:



Unit: million Baht

15,627
million Baht

Claimed CGD Refunds:
Refunded vs. Under Verification



Unit: million Baht

Refunds of Customer Guarantee Deposits [CDG]

Utility	Registration		CGD Refunded		Under Verification	
	No. of Cases	Claimed Amount	No. of Cases	Refunded Amount	No. of Cases	Claimed Amount
MEA	2.31 million cases	6,168 million Baht	1.97 million cases	5,955 million Baht	0.34 million cases	213 million Baht
PEA	6.72 million cases	9,425 million Baht	5.70 million cases	8,571 million Baht	1.02 million cases	854 million Baht
SEA	16,967 cases	34 million Baht	16,967 cases	34 million Baht	-	-
Total	9.05 million cases	15,627 million Baht	7.69 million cases	14,560 million Baht	1.36 million cases	1,067 million Baht

Remarks: Data as at 26 October 2020



Standards of Power Service Provision Contracts B.E. 2558 (2015) which has already been enforced for five years, with the aim of upgrading the standards of power service provision, increasing protection and providing fairness for over 22 million retail power consumers. Review of 12 issues concerning power consumers' benefits were conducted, e.g. the obligations must be specified in the Distribution Utilities' service provision contracts and such contracts must be disseminated so that power consumers would be informed; power meter inspection; delivery of electricity bills; determination of the electricity bill payment period; notification of power supply outage to carry out necessary tasks; no collection of the customer guarantee deposits (CGD) from new power consumers by power service providers; power supply reconnection after the supply has already been suspended; compliance with the engineering and service provision standards; and complaint lodging & resolution of complaints.

(2) Reviewed the service quality standards of all of the five types of electricity industry licenses, i.e. generation, transmission system, distribution system, retail and system operation.

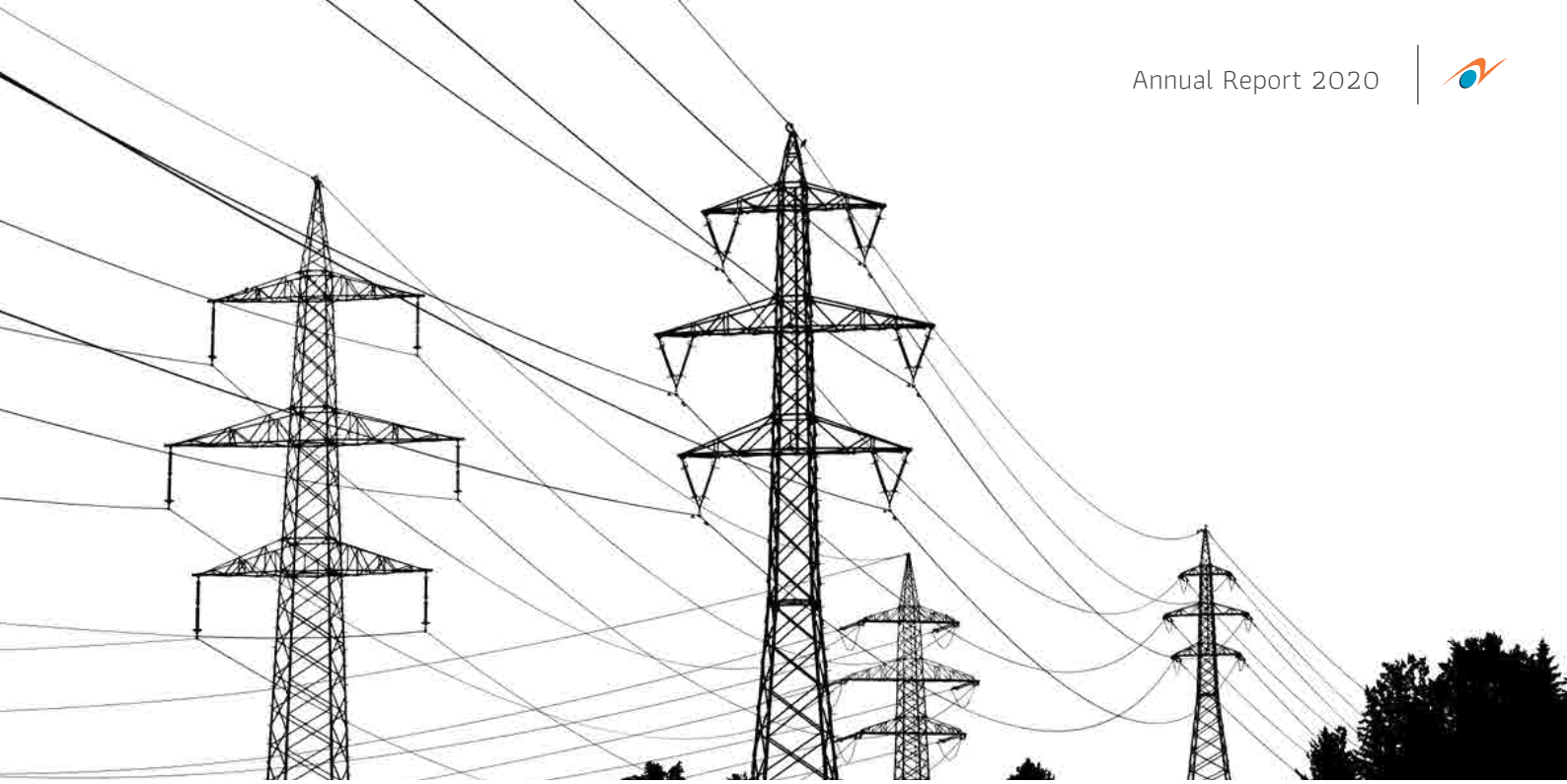
(3) Reviewed the standards of power service provision contracts for retail power consumers, i.e. Schedule 1: Residential and Schedule 2: Small General Service, pursuant to the Notification of the ERC on



OERC and the Standards of Power Service Provision Contracts

On 19 November 2019, at Chaophya Park Hotel, Bangkok, the OERC organized a PR forum to disseminate knowledge about the standards of power service provision contracts for large-scale power consumers and review of the standards of power service provision contracts

for retail power consumers. A panel discussion was also arranged on the topic: "Standards of Power Service Provision Contracts and Standards of Energy Industry Regulation," with a view to providing opportunities for participants to raise enquiries and exchange opinions so that the OERC would take the obtained opinions and suggestions into consideration for further improvement of the standards of power service provision contracts. Attended the forum were ERC Chairman [Mr. Samerjai Suksumek], Commissioner Sahust Pratuknukul [in his capacity as Chairman of the Sub-committee on Consumer Protection], Representative of the Federation of Thai Industries [Mr. Piset Lertvilai], Representative of Power Consumers [Mr. Suriyan Laosuapa] and representatives of large-scale and retail power consumers, including interested persons, totaling over 200 participants.



OBJECTIVE 3

To promote competition in the energy industry and prevent abusive use of dominance in energy industry operation

◆ Strategy:

Increase competitive edge in the electricity and natural gas industry according to the National Energy Reform Plan.

(1) In order to accommodate the opening of competition in natural gas procurement and wholesale business by multi-Shippers pursuant to the Guidelines on Promotion of Competition in the Natural Gas Industry, Phase 1, according to the NEPC resolutions of 31 July 2017 and 16 December 2019, whereby the PTT Public Company Limited (PTT) was directed to have its natural gas transmission pipeline business separated and to have the Natural Gas Transmission Pipeline Business Unit of PTT function as the Transmission System Operator (TSO) to manage the natural gas pipeline system independently and efficiently, and whereby EGAT was permitted to import LNG on a trial basis to test the management system of the natural gas transmission pipeline system and LNG Terminal, the ERC has since 2014 continuously improved the TPA Regime related to the opening of access to the use of or

connection to the natural gas transmission system and LNG Terminal by a Third Party, and has regulated the concerned licensees to develop TPA Codes for both the natural gas transmission system and LNG Terminal so as to increase the number of Shippers. In this connection, the ERC had regulated experimental imports of two LNG cargos of the Electricity Generating Authority of Thailand in December 2019 and April 2020 and issued the Notification of the ERC on Transmission System Operator Regulatory Framework B.E. 2563 (2020), which has been effective since 22 August 2020, and granted licenses to four new Shippers, resulting in a total of five Shippers in 2020, i.e. the PTT Public Company Limited, the Electricity Generating Authority of Thailand, Gulf Energy Development Public Company Limited, Hin Kong Power Holding Co., Ltd. and B.Grimm LNG Ltd.



OERC Organized a Seminar on “Gas & Energy Market Liberalization”

On 30 October 2019, at Chamchuri Square Building, Bangkok, a seminar on “Gas & Energy Market Liberalization” was held the OERC. The objective was to strengthen cooperation and enhance Thailand’s energy industry regulation to be on a par with international standards and compatible with the digital economy concept as well as to exchange knowledge about electricity and natural gas

industry regulation, electricity trading market, and the impact of Big Data and 5G on energy industry regulation. The seminar was chaired by ERC Commissioner Sudharma Yoonaidharma, who also delivered the opening remarks, and was honored by participation, as guest speakers, of Professor Martin Cave, Chairman of the UK Gas & Electricity Markets Authority [GEMA], Professor Erik Bohlin, Professor Peter Cramton and Dr. Simon Forge. Over 40 participants attended the seminar, comprising representatives from concerned government agencies and energy industry operators.



(2) Conducted studies on natural gas and electricity market designs, including regulatory guidelines for opening competition in the electricity industry. Monitoring was also undertaken on a regulatory sandbox program for energy-related innovations using technology to enhance energy services, or the so-called Energy Regulatory Commission Sandbox (ERC Sandbox). Outcomes of the ERC Sandbox Program will be applied to enhance energy industry regulation to be up to international standards and practical. In Fiscal Year 2020, the ERC approved the action plans of 12 projects out of 25 projects selected in Fiscal Year 2019.



Regulatory Sandbox for Energy Sector Innovations



1 Peer-to-Peer Energy Trading & Bilateral Energy Trading: 2 projects

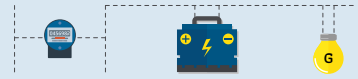
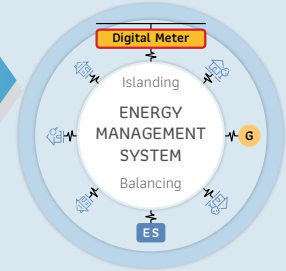
2 Microgrid System: 2 projects

3 Battery Storage System: 3 projects

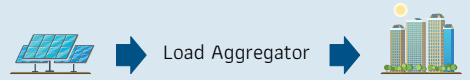
4 New Tariff Structure: 3 projects

5 New Business Models: 1 project

6 Natural Gas Business: 1 project
[Regional LNG Hub]



- Net Billing
- Net Metering
- Ancillary service
- Backup service
- EV Charging rate



On 19 March 2020, the ERC proposed to the NEPC to approve, in principle, the relaxation for peer-to-peer power trading via the Power Utilities’ grids and to use the tariffs as determined by the ERC in the project implementation under the ERC Sandbox Program. In addition, in Fiscal Year 2020 the OERC had applied the study results from ERC Sandbox projects under the following four categories of the Desk Study group to

the development of relevant regulatory guidelines, i.e. (1) Peer-to-Peer Energy Trading & Bilateral Energy Trading, including the study result on Wheeling Charge; (2) New Business Models, e.g. Load Aggregator; (3) Battery Storage on Koh Samui, to explore delayed investment in laying underwater cables, and new business models; and (4) Battery Storage & Wind farm, to study the reduction of wind power intermittency.

OBJECTIVE 4

To promote fair and transparent energy network system service provision, without unjust discrimination

Strategy:

Develop the standards of energy network service provision to be up to international standards



Signing ceremony of a Letter of Intent on cooperation under the ASEAN Low Carbon Energy Programme between the OERC and the British Embassy in Thailand

On 11 August 2020, Mr. Khomgrich Tantravanich, OERC Secretary General, and H.E. Mr. Brian Davidson, British Ambassador to Thailand, jointly signed a Letter of Intent on cooperation under the ASEAN Low Carbon Energy Programme [ASEAN LCEP], to conduct a project on Development of Peer-to-Peer Renewable Energy Trading Market in Thailand, which would study the existing P2P renewable energy trading and operational guidelines in foreign countries to be guidance in the development of a regulatory mechanism for P2P renewable energy trading in Thailand.

(1) Regulated the use of or connection to the natural gas network system to be in compliance with the Notification of the ERC on Third Party Access (TPA) Regime (2014)—the principles and directions for setting TPA Codes for the use of or connection to the natural gas transmission system and LNG Terminal— and as amended, as well as the Stipulation of the ERC on Natural Gas Industry Operation as regards the Energy Network System Operation B.E. 2560 (2017).



Technical Visit to the Chonburi Distribution Service Center and Rayong Gas Separation Plant of PTT Plc.

On 9–10 January 2020 the ERC together with OERC executives took a field visit to the Chonburi Distribution Service Center and Rayong Gas Separation Plant of PTT Plc. to observe the transportation process and quality control of natural gas from natural gas producers and LNG Terminal to gas users to ensure compliance with the framework of natural gas quality control, as stipulated in the Stipulation of the ERC on Natural Gas Industry Operation as regards the Energy Network System Operation [2017].

(2) Conducted a study on the regulatory framework for opening access to the use of or connection to the electricity network system via the ERC Sandbox Program in order to apply the results of the experimental projects to the issuance of a regulatory framework for the use of or connection to the electricity transmission system in Fiscal Year 2021.



OBJECTIVE 5

To promote efficient energy industry operation and ensure fairness to both licensees and energy consumers

Strategy:

Promote energy industry operation to be efficient and fair to licensees and energy consumers

(1) Issued the Code of Practice (CoP) for electricity generation operators with a generating capacity not exceeding 10 MW, for all individual fuel types. In Fiscal Year 2020, the OERC issued the Regulation of the ERC on Measures for the Prevention and Monitoring of Environmental Impact for Power Producers Using Coal as Fuel and Not Falling into the Type and Capacity of Plants that Are Required to Prepare an Environmental Impact Assessment Report under the Law on Enhancement and Conservation of National Environmental Quality (2020), which has come into force since 20 August 2020.

(2) Established a post-audit system for energy industry operation facilities. In this regard, the OERC Regional Offices would function as a driving mechanism for the implementation, aiming to enhance efficiency of the post audit of energy industry operation to ensure compliance with the prescribed safety and environmental standards. The OERC and all 13 OERC Regional Offices had jointly reviewed the plan for systematic post

audits for auditing electricity generation licensees, and an OERC order was issued to empower the Directors of all OERC Regional Offices to carry out matters related to licensing and audits of energy industry operation facilities. Concurrently, the workflow and procedures of the execution of administrative orders were reviewed to set practice guidelines so that the implementation would be standardized. Also developed was an information system of the post-COD audits according to the terms and conditions of license granting for electricity generation operation. Personnel preparedness has also been enhanced, at both the OERC Head Office and the OERC Regional Offices, to be able to conduct post audits of energy industry operation facilities in Fiscal Year 2021.

(3) Evaluated the efficiency and efficiency indicators of electricity industry operation. A proposal has been made to review the regulatory standards of electricity industry efficiency in order to improve the criteria for the industry efficiency regulation to be on a par with international standards in Fiscal Year 2021.

OBJECTIVE 6

To protect rights and liberty of energy consumers, local communities, the general public and licensees in terms of participation, accessibility, utilization and management of energy under the criteria which are fair to all parties

◆ Strategy:

Develop a systematic participation process so that energy consumers, local communities, the general public and licensees could participate in all stages.

(1) Improved a participation process related to energy industry regulation—by reviewing the draft ERC regulation on hearing and creating understanding of the public and stakeholders with regard to the consideration of electricity generation license issuance. Currently, the OERC is preparing to issue the ERC regulation on hearing and creating understanding of the public and stakeholders with regard to the consideration of electricity generation license issuance and is inspecting compliance with environmental measures of the electricity generation licensees so that the regulation could be enforced in Fiscal Year 2021.

(2) Reviewed the approach for networking, the process of participation in energy consumer protection and the training courses in systems thinking related to energy matters, provided for the Regional Energy Consumer Committees (RECCs) in order to create networking for energy consumer protection and arrange training courses for the RECCs to build up

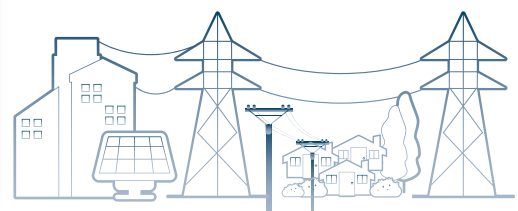
their knowledge and understanding of various aspects—legislation, good governance, energy, mediation, participation process and network development—so that the RECCs could disseminate the acquired knowledge to create public awareness in their respective responsible areas.

(3) Considered energy consumers' complaints within the specified timeframe. Consideration was finalized for 115 cases, and 7 cases are under consideration within the specified timeframe.

OERC organized a Consultative Forum to meet with RECC Chairs from 13 Regions nationwide to exchange opinions, problems and obstacles and to propose constructive ideas



On 31 January 2020, at the OERC Office in Bangkok, the OERC organized a forum to meet with Chairs of Regional Energy Consumer Committees from 13 energy consumer regions across the country to exchange opinions, problems and obstacles and to table constructive ideas so as to jointly lay down guidelines for enhancing the protection of rights and interests of energy consumers, under the Action Plan for Energy Industry Regulation, Phase 4 [2020-2022].





Performance on Complaint Consideration

Issue	No. of Complaints	Status of Complaint Consideration		
		Finalized	Under Consideration	Total
1. Complaints under Sections 100 and 103—where energy consumers have difficulties as a result of service provision of the licensees and unfair collection of service charge	116	111	5	116
2. Complaints under Section 90—where electrification expansion is requested or where the service exists but is inadequate to meet energy consumers' demand	-	-	-	-
3. Complaints opposing power plant construction	6	4	2	6
4. Complaints against operators regarding wastewater disposal and soot emission	-	-	-	-
5. Other complaints	-	-	-	-
Total	122	115	7	122

Remarks: Data as at 30 September 2020

(4) Considered appeals against the demarcation of areas to be surveyed and the demarcation of energy network system construction areas, including determination of compensation prices for land and assets was finalized for 1,008 cases and 500 cases are still under consideration within the specified timeframe.

Performance on the Regulation of Immovable Property Utilization

Issue	No. of Appeals	Status of Appeal Consideration		
		Finalized	Under Consideration	Total
1. Notification on demarcation of areas to be surveyed for energy network systems, pursuant to Section 105	3	3	-	3
2. Notification on demarcation of energy network system areas, pursuant to Section 106	34	25	9	34
3. Determination of compensation prices for land and assets	25	15	10	25
4. Appeals against notifications on demarcation of energy network system areas and objection to energy network system construction, pursuant to Section 106 and Section 108[1]	464	350	114	464
5. Appeals on compensation for property covered by energy network system boundaries, pursuant to Section 108[4]	982	615	367	982
Total	1,508	1,008	500	1,508

Remarks: Data as at 30 September 2020

(5) Administered the Power Development Fund money pursuant to the objective of the Fund under Section 97(1) of the Energy Industry Act of 2007— to compensate and subsidize electricity industry licensees who have provided services for underprivileged power consumers or to enhance extensive electrification. In Fiscal Year 2020, compensation and subsidies totaled 16,917 million Baht,

consisting of 14,838 million Baht collected from the MEA to compensate the PEA's revenue for having provided extensive electricity service and the collection of 2,079 million Baht to subsidize free-of-charge electricity consumption for residential power consumers with the installation of a 5-ampere meter and electricity consumption not exceeding 50 units/month for at least three consecutive months.



(6) Administered the Power Development Fund money pursuant to the objective of the Fund under Section 97(3) of the Energy Industry Act of 2007—to develop or rehabilitate localities affected by power plant operation—and the Regulation of the ERC on the Power Development Fund for Development or Rehabilitation of Localities Affected by Power Plant Operation B.E. 2553 (2010). The ERC approved a total budget framework of over 4,040 million Baht for development or rehabilitation of localities affected by power plant operation in designated areas in such aspects as public health, education, career promotion & development, community energy and environment. In addition, measures were introduced to help mitigate impacts of drought problems, to create local employment in order to boost the economy and to help solve public health problems in relation to COVID-19 protection, control or treatment for people living in designated areas of the Power Development Fund under Section 97(3), involving areas in 72 provinces nationwide. Moreover, local Power Development Funds (local PDFs) were encouraged to review their community projects, already approved under the normal budget framework but not yet implemented, in order to switch to implementing projects related to water supply management to address drought problems, or projects contributing to creation of labor hiring, utilization of local materials & equipment and local entrepreneurs for project operation so as to stimulate the circular flow of capital in the domestic economy. In this connection, the ERC approved community projects in designated areas under the Fiscal Year 2020 budget framework and the additional budget, totaling 8,266 projects with a total budget of 3,224.87 million Baht.

Additionally, in Fiscal Year 2020, the ERC approved a budget of 176.47 million Baht for the administrative cost of the Power Development Fund under Section 97(6),

which includes the development and improvement of the Power Development Fund information system, particularly for making transactions, in order to have nationwide interconnection and cover all local PDFs via the Enterprise Resource Planning, GIS and e-Fund systems, etc.



OERC's Press Conference on "Support to the Government Policy on Grassroots Economy Development via the Power Development Fund Operations under Section 97[3]" on 21 September 2020, at the OERC Office in Bangkok.

(7) Restructured the Power Development Fund management under Section 97(3) to be of higher efficiency and standards, by amending and issuing the Regulation of the ERC on the Power Development Fund for Development or Rehabilitation of Localities Affected by Power Plant Operation B.E. 2563 (2020), which has been in effect since 1 October 2020, aiming to improve the administration and project operations of local Power Development Funds by emphasizing the following four aspects: 1) decentralization of authority and responsibility to the local level; 2) creation of tangible and sustainable benefits of the development or rehabilitation of areas surrounding power plants, by revising the scope of the Fund money utilization to have clearer dimensions and to attain greater sustainability, comprising seven programs, i.e. public health, education, community economy, environment, public utilities, community energy and other aspects that contribute to community development; 3) enhancement of the good governance system, transparency and accountability; and 4) enhancement of the operational efficiency of the OERC. This aims to create agility, improve efficiency of the Fund money spending, decentralize authority, create transparency, and reduce the procedures and time for considering and approving budgets and community projects in the designated areas so that money could be injected into the community faster and more efficiently, which will be another means that helps the government to solve problems and develop the grassroots economy.



OBJECTIVE 7

To promote economical and efficient use of energy and resources in the energy industry operation and to raise public awareness of energy saving as well as renewable energy utilization, with due consideration of environmental impacts and the balance of natural resources

◆ Strategy 1:

Upgrade the regulatory system to encourage the operators to use resources for energy industry operation economically and efficiently so as to be prepared for a changing energy world driven by the 3-D trend: Decarbonization, Digitalization and Decentralization.

Supported the study, research and demonstration of technological advances in the electricity industry operation, which are efficient and have minimal impact on the environment, and promoted economical use of resources in the energy industry operation, including promotion of the use of renewable energy in the electricity industry via the Power Development Fund under Section 97(4). The OERC had issued a Request for Proposals of projects of this kind for Fiscal Year 2020, with a budget framework of 1,800 million Baht, comprising: Open Grant, with a budget framework of 400 million Baht; Strategic Grant (targeted research projects), with a budget framework of 1,100 million Baht; and Projects on Emerging Issues and Projects on Long-term Issues, with a budget framework of 300 million Baht. In this regard, approval was granted by the ERC to allocate money from the Fiscal Year 2020 budget to 13 projects, accounting for a total budget of 137.67 million Baht (data as at 30 December 2020).

Projects involving the study, research and promotion of economical and efficient use of resources in energy industry operations and promotion of energy saving and renewable energy utilization were, for example, the project on the technology for converting organic waste from fresh markets to high-efficiency biomass; the prototype project on sustainable electricity generation system using renewable energy for national parks and wildlife sanctuaries in Thailand; the project on research and development of ground-control station system for unmanned aerial vehicles (UAV) using solar energy as the main energy source to perform surveillance missions to prevent forest fire and haze problems; the feasibility study on the use of nanomaterials to increase power generation efficiency of perovskite solar cells and the use of perovskite solar cells in Thailand; and the study on hydropower potential and proper technology selection for downstream hydroelectric power generation for small hydropower plants, etc.

◆ Strategy 2:

Promote economical and efficient use of energy as well as the use of renewable energy.

In Fiscal Year 2020, the ERC approved a budget framework of 600 million Baht for enhancing knowledge, awareness and participation of the public in power-related issues, pursuant to Section 97(5). Then, the OERC issued a Request for Proposals for implementing Power Development Fund projects pursuant to Section 97(5), emphasizing the creation of knowledge and understanding, including dissemination of knowledge obtained through actual practice. Subsequently, the ERC approved the Fund money allocation for the aforesaid purposes in Fiscal Year 2020 to 26 projects, accounting for a total budget of 476.47 million Baht. Recipients of the Fund money allocation under Section 97(5) carried out projects in various forms and encompassed target groups under the support framework to communicate and create knowledge and understanding about electricity generation from renewable energy, i.e. electricity generated from solar energy, waste, biomass and biogas, including the promotion of economical and efficient use of energy via the project on Young Architect ECO Home Contest, monitored by Chula Unisearch, Chulalongkorn University.



OBJECTIVE 8

To promote the use of renewable energy for electricity industry operation that renders minimal impact on the environment

Strategy:

Promote the exploitation and development of renewable energy resources so that electricity industry operation would have minimal impact on the environment.

(1) Conducted a review of the guidelines used for the past renewable energy purchase in Thailand and analyzed the restraints on green power purchase in order to use the results to improve the criteria and methods for renewable energy purchase to be up to standard and more appropriate in the future.

(2) Promoted the use of renewable energy in the electricity industry operation that has minimal impact on the environment, by supporting the installation of renewable energy generation systems as well as the study and research via the Power Development Fund under Section 97(4), i.e. to promote the use of electricity generated from renewable energy and the application of study and research outcomes to create further benefits, including dissemination of the outcomes to the public, for example, the project on promotion of the use of solar PV systems and energy storage systems in remote areas, and the study project on hydropower potential and proper technology selection for downstream hydroelectric power generation for small hydropower plants, etc.



Knowledge Development Project on Waste-to-Energy via Active Learning Method

On 22 January 2020, the OERC jointly with Bundit Center Co., Ltd. launched a project “Waste to Energy Game” and organized a back-to-back discussion on “Waste to Energy: energy generation by waste management starting at its origins,” led by Dr. Buntoon Srethasirote, ERC Commissioner; Mr. Poramate Minsiri, Managing Director of www.kapook.com; and the Game Caster–Softpomz Channel Youtuber, at Siam Square One.

OBJECTIVE 9

To administer a modern and efficient organization and build up human resource capacity to be professional in energy industry regulation

Strategy 1:

Upgrade the operations management system to be modern and on a par with international standards so that responses to the needs and service provision would be convenient, rapid, transparent and professional

(1) Upgraded the work system to attain the ISO 9001: 2015 standard so that the management and operations would be up to international standards and meet satisfaction of service recipients and stakeholders. In Fiscal Year 2020, the OERC completed developing a workflow chart and working regulations, comprising altogether 76 procedures, which will be used in the review and preparation of the work manual and other necessary documents in accordance with

the ISO 9001: 2015 criteria, with a target to be ISO 9001: 2015 certified in Fiscal Year 2021.

(2) Upgraded the information technology (IT) system to have a digital administration and services system established in accordance with the guidelines prescribed in the law on digital government administration and services, including relevant legislation, via:

- 1) Reviewing the Business Workflow and Data

Flow so as to prepare an ICT action plan and designing the Master Database Management and ERC Data Sharing Platform to improve the analysis and reporting system that supports energy industry regulation (or the Executive Information System: EIS).

2) Developing the operating information systems, i.e. the regulatory system to ensure that the implementation complies with the energy industry development plan, the Geo-information for Regulation (GFR) system of energy network systems, the improvement of the procedures for sending license-fee invoices and payment via electronic transactions, the development a Welfare Disbursement

Service Platform and an Authorization Service Platform in the form of Single Sign-on.

3) Preparing the regulatory framework for the operations of the agencies under the OERC's jurisdiction to be in compliance with the Cyber Security Act B.E. 2562 (2019).

(3) Organized campaigns to raise conscience of employees in the organization in performing their duties based on morality and transparency, including improvement of the corporate workflow to meet the Integrity & Transparency Assessment (ITA) criteria of the Office of Public Sector Anti-Corruption Commission.



OERC and measures to promote transparency and anti-corruption



On 15 June 2020, a training workshop was organized by the OERC to determine measures to promote transparency and anti-corruption of the office, which will serve as guidelines for the operations and creation of corporate culture in carrying out duties with honesty, transparency, integrity and ethics. The event was chaired by Assistant Secretary General of the OERC [Mrs. Ruedee Paringkan] and participated by Department Directors or representatives of individual departments of the OERC.

(4) Construction of the new premises of the OERC Head Office to facilitate service provision to stakeholders and the general public wishing to contact the OERC offices and to accommodate the OSS licensing service provision in the future. As for the construction of the OERC Head Office's new premises, the OERC has received an approved budget framework of 831.42 million Baht. Currently, the construction of the new premises of the OERC Head Office is underway and it is expected to complete within the Fiscal Year 2022, as specified in the project timeline.

Strategy 2:

Build up human resource capability to be professional in energy industry regulation.

(1) Improved the human resource management in continuation from Fiscal Year 2019, in which the organizational management was restructured and became effective on 1 October 2019. Review of the manpower framework and revision to secondary legislation on human resource management was completed in Fiscal Year 2020. Then, in Fiscal Year 2021 a review of the job position structure and salary structure will be conducted, including the development of the Career Development

Plan and the Succession Plan.

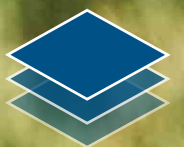
(2) Enhanced human resource potential to be equipped with knowledge and expertise in energy industry regulation. Review of the OERC staff competency was made to be in line with the current situation, and technical cooperation was established with the World Bank under the Reimbursable Advisory Services (RAS) program to enhance energy industry regulation to be comparable to international regulatory agencies.





Power Development Fund Performances

in Fiscal Year 2020





Power Development Fund Performances in Fiscal Year 2020

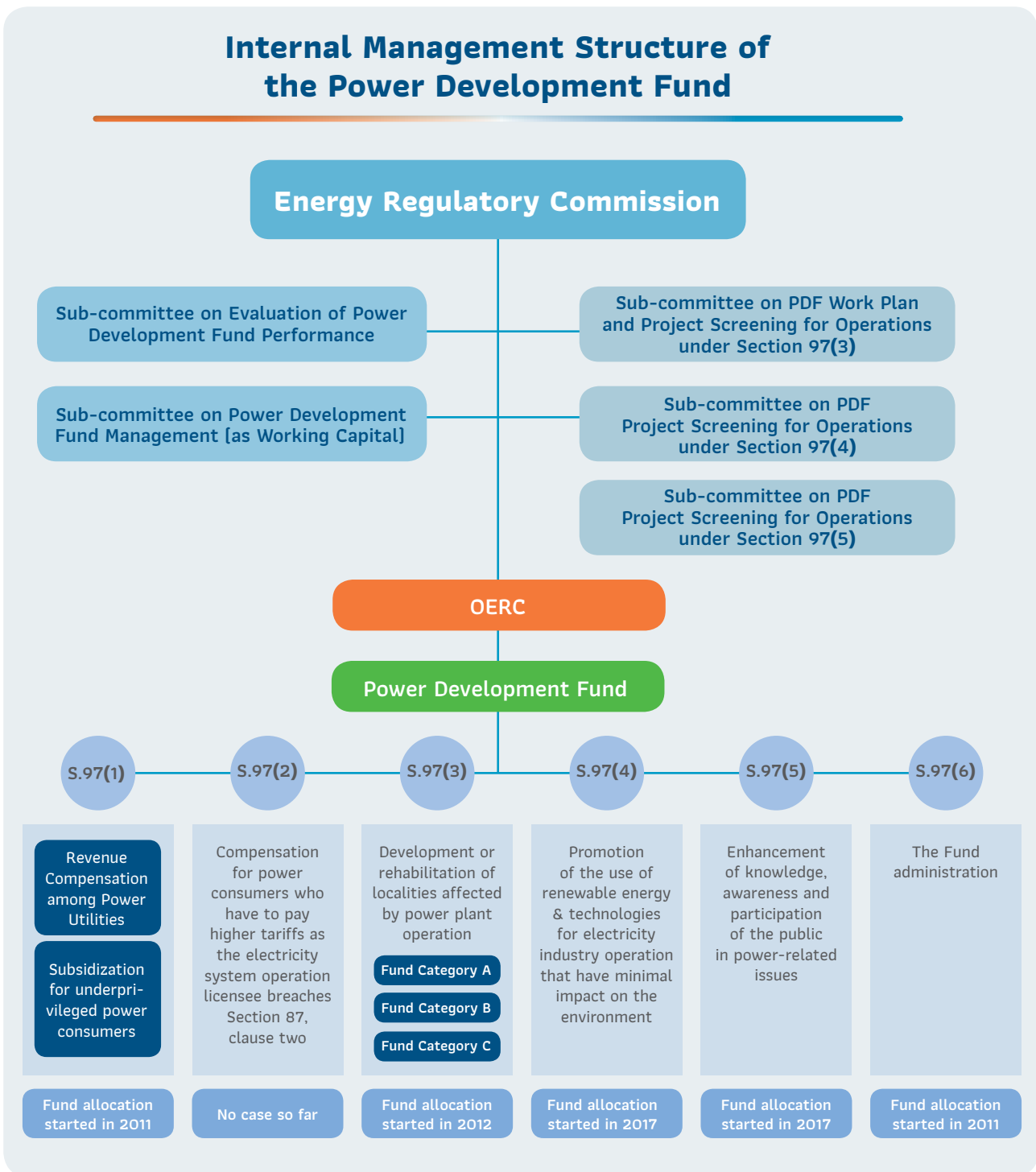


The “Power Development Fund” is working capital with no juristic person status and is set up under the OERC, which is a state agency, pursuant to the Energy Industry Act of 2007 (the Act) to be used in compliance with the objectives under Section 97(1)–Section 97(6) of the Act, namely:

1. to compensate and subsidize electricity industry licensees who have provided services for underprivileged power consumers or to enhance extensive electrification or to support the policy on development decentralization to provincial areas;
2. to compensate power consumers who have to pay more expensive electricity rate resulting from the licensee who has an electricity system operator breaches Section 87, clause two;
3. to develop or rehabilitate localities affected by power plant operation;
4. to promote the use of renewable energy and technologies for electricity industry operation that have minimal impact on the environment;
5. to increase knowledge, awareness and participation of the public in power-related issues; and
6. to pay for administrative cost of the Fund.



Internal Management Structure of the Power Development Fund



Remarks: Information as at 30 September 2020

The Fund operations will be regulated by the ERC in accordance with the policy framework of the National Energy Policy Council. The money and assets belonging to the Fund are not subject to remittance to the Ministry of Finance as state revenue under the law on treasury balance and the law on budgetary procedure. The OERC is tasked with the receipt, disbursement, keeping and management of the Fund money in conformity to the regulations

prescribed by the ERC, by separating the Fund account from the OERC budget. The Fund operations will be subject to an audit by the State Audit Office of the Kingdom of Thailand (SAO).

As for the performance in Fiscal Year 2020, the OERC had collected contributions to the Fund and allocated the Fund money pursuant to the objectives of the Fund utilization under Section 97 of the Act, as follows:

Fund Performance under Section 97(1)

To compensate and subsidize electricity industry licensees who have provided services for underprivileged power consumers or to enhance extensive electrification or to support the policy on development decentralization to provincial areas. In Fiscal Year 2020, the compensation and subsidies totaled 16,917 million Baht.

Revenue compensation among the Power Utilities: to compensate electricity industry licensees who have provided extensive electricity services. In this connection, the ERC has issued an order regarding sending contributions to and disbursement of money from the Fund under Section 97(1) for revenue compensation among the Power Utilities to enhance extensive electrification. During Fiscal Years 2011–2015, the OERC collected contributions from the Electricity Generating Authority of Thailand (EGAT) and the Metropolitan Electricity Authority (MEA) for use as revenue compensation to the Provincial Electricity Authority (PEA). As from 2016 onwards, contributions have been collected from the MEA to compensate the PEA. Up to the present, the revenue compensation among the Power Utilities has totaled around 149,622 million Baht, or an annual average of about 14,962 million Baht. In Fiscal Year 2020 alone, the revenue compensation among the Power Utilities was 14,838 million Baht.

Subsidization for underprivileged power consumers: to subsidize electricity industry licensees who have provided services for underprivileged power consumers. In this connection, the ERC has issued an order regarding sending contributions to and disbursement of money from the Fund under Section 97(1), imposed on electricity retail licensees for subsidizing underprivileged power consumers. Accordingly, the OERC has collected contributions from four public utilities, i.e. EGAT, MEA, PEA and Sattahip Electricity Authority, the Royal Thai Navy Welfare Concession (SEA), including about 142 existing private-sector electricity retail licensees, to subsidize underprivileged power consumers, pursuant to the government policy, via the 90-unit free-of-charge electricity consumption measure (July 2011–May 2012) and the 50-unit free-of-charge electricity consumption measure (as from June 2012 up to the present). So far, the accumulated subsidization for free-of-charge electricity consumption for underprivileged power consumers has been around 32,816 million Baht, or an annual average of about 3,282 million Baht for the implementation of the 50-unit free-of-charge measure (counting as from 2013 onwards). In Fiscal Year 2020, the collection and subsidization for free-of-charge electricity consumption for residential power consumers with the installation of a 5-ampere meter and consumption not over 50 units per month for at least three consecutive months, accounting for a total sum of 2,079 million Baht.

Compensation and Subsidization for Electricity Industry Licensees Having Provided Services for Underprivileged Power Consumers or to Enhance Extensive Electrification during Fiscal Years 2011-2020

Unit: Million Baht

	Fiscal Year										
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Total
Revenue compensation among the PUs	9,707	13,291	14,192	14,404	12,456	21,028	19,153	15,679	14,874	14,838	149,622
Subsidization for underprivileged power consumers	2,810	8,631	3,212	3,631	3,578	2,428	2,109	2,225	2,113	2,079	32,816
Total	12,517	21,922	17,404	18,035	16,034	23,456	21,262	17,904	16,987	16,917	182,438

Fund Performance under Section 97(2)

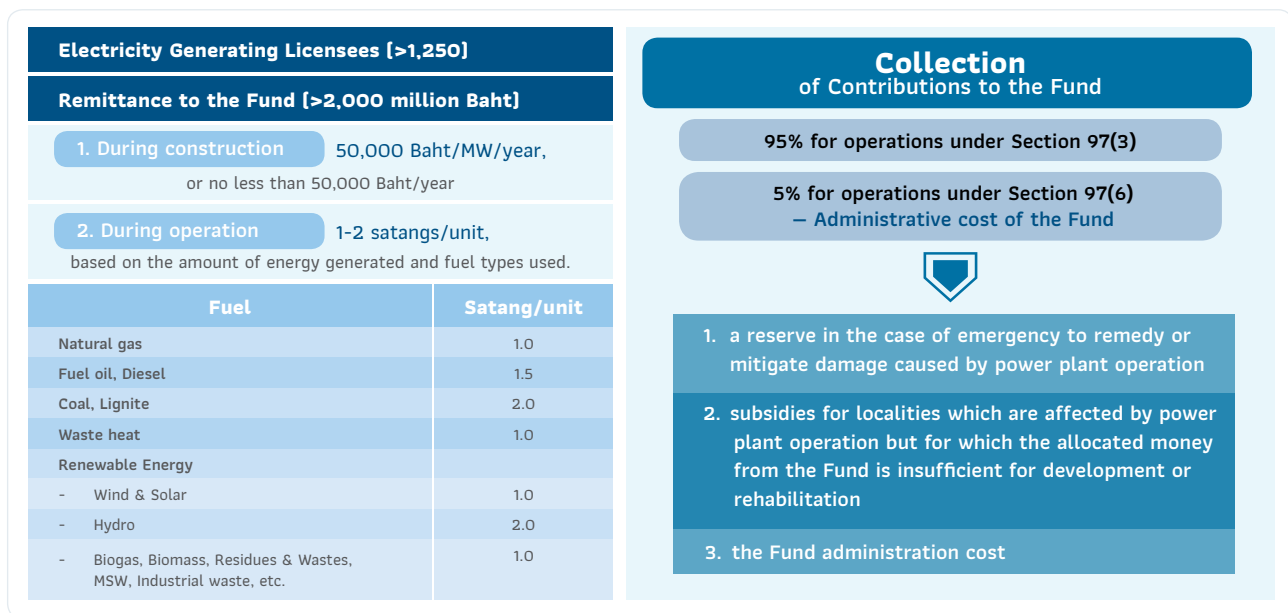
As for the Fund operation under Section 97(2), there has been no case reported so far regarding an unfair power dispatch order by the electricity system operation licensee. However, the OERC will get prepared to properly handle such a situation should any case arise.



Fund Performance under Section 97(3)

To develop and rehabilitate localities affected by power plant operation. Since 2012, the OERC has collected contributions from electricity generation licensees to the Fund, with a contribution rate based on the fuel type used for electricity generation, and allocated the Fund money in accordance with the objectives of the Fund spending under Section 97(3) of the Act. The OERC has allocated 95% of the Fund money for operations under Section 97(3) to develop communities surrounding power plants and the remaining 5% as the administrative cost of the Fund for operations under Section 97(6).

Delivery of Contributions to the Power Development Fund under Section 97(3)



The performance in Fiscal Year 2020 can be summarized as follows.

1. Determination of the Power Development Fund designated areas according to the Regulation of the ERC on the Power Development Fund for Development or Rehabilitation of Localities Affected by Power Plant Operation B.E. 2553 (2010). It is stipulated that the OERC, by and with ERC approval, issue notifications on determination of designated areas which are eligible to be beneficiaries of financial support from the Fund, by encompassing Tambons (sub-districts) within a radial distance of 1 or 3 or 5 kilometers from a power plant, depending on the amount of annual electricity generation of the plant. In this regard, the OERC has already issued notifications on the establishment of 494 local Power Development Funds (local PDFs).

Determination of Designated Areas of Local PDFs under Section 97(3)

Fund Category	Fiscal Year									
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Category A	10	11	11	12	12	12	13	13	13	13
Category B	28	40	40	49	55	55	55	62	73	73
Category C	107	107	104	100	214	251	278	287	408	408
Total	145	158	155	161	281	318	346	362	494	494

Remarks: Data as at December 2020

2. The ERC has allocated budget to local PDFs since Fiscal Year 2012 for development and rehabilitation of localities affected by power plant operation, pursuant to the Regulation of the ERC on the Power Development Fund for Development or Rehabilitation of Localities Affected by Power Plant Operation (2010). Approval has been given to over 58,274 projects on development of such localities, with a total budget of 21,658.50 million Baht. In Fiscal Year 2020, the ERC approved a budget framework of over 4,040 million Baht for development or rehabilitation of localities affected by power plant operation in designated areas in the aspects of public health, education, career promotion & development, community energy, and environment. Moreover, measures were introduced to help mitigate impacts of drought problems, to create local employment in order to boost the economy and to help solve public health

problems in relation to COVID-19 protection, control or treatment for people living in designated areas of the Power Development Fund under Section 97(3), involving areas in 72 provinces nationwide. In addition, local PDFs were encouraged to review their community projects, already approved under the normal budget framework but not yet implemented, in order to switch to implementing projects related to water supply management to address drought problems, or projects contributing to creation of labor hiring, utilization of local materials & equipment and local entrepreneurs for project operation so as to create the circular flow of capital to stimulate the economy.

The ERC approved community projects in designated areas under the Fiscal Year 2020 budget framework and an additional budget, totaling 8,266 projects with a total budget of 3,224.87 million Baht.

Summary of Approval of Annual Work Plans of Local PDFs

Fiscal Year	Category A & B Funds				Category C Funds			Total Budget (Million Baht)
	No. of Funds	Adminis- tration Budget (Million Baht)	Community Project		Community Project			
			No. of Projects	Budget (Million Baht)	No. of Funds	No. of Projects	Budget (Million Baht)	
2018	74	264.07	6,392	2,320.01	164	419	62.36	2,646.43
2019	75	273.98	7,191	2,524.85	169	498	85.75	2,877.30
2020	75	204.01	5,872	2,126.27	244	808	190.90	2,521.18
2020 [Addition]	67	-	1,441	676.13	67	145	27.56	703.69

Remarks: Data as at December 2020

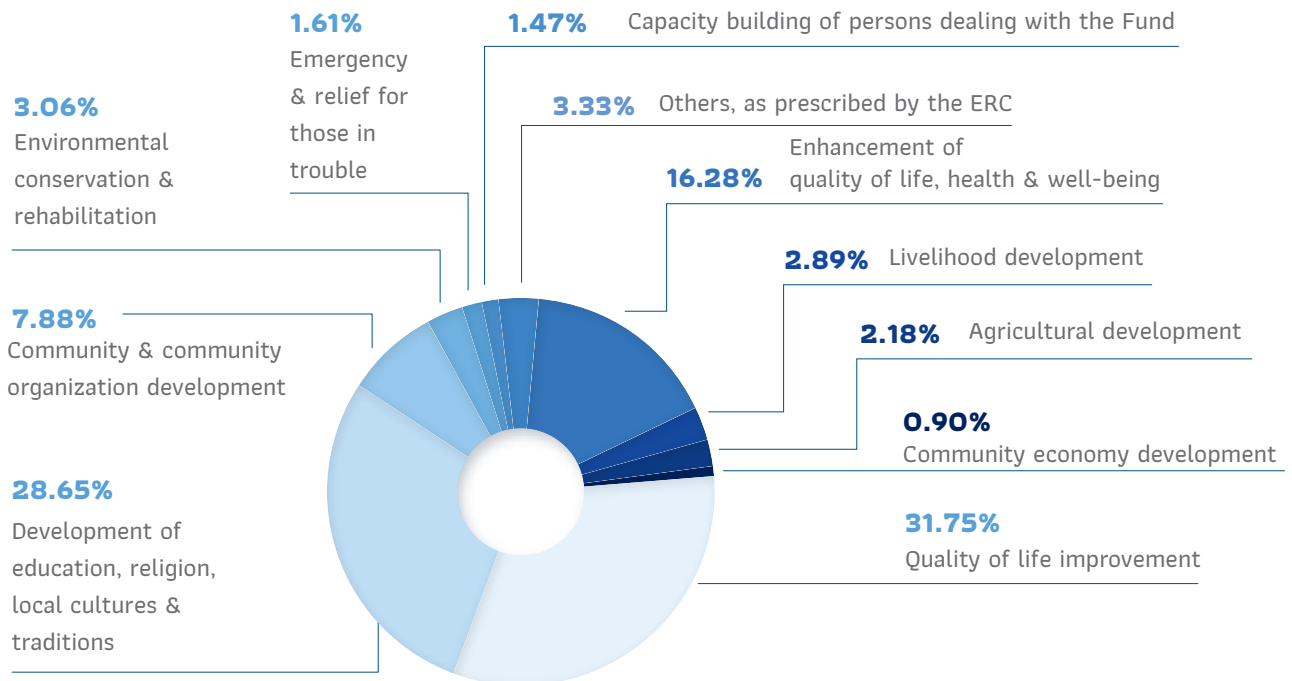
Additionally, in Fiscal Year 2020, the ERC approved a budget of 176.47 million Baht for the administrative cost of the Power Development Fund under Section 97(6), which includes the development and improvement of the Power Development Fund information system, particularly for making transactions, in order to have nationwide interconnection and cover all local PDFs via the Enterprise Resource Planning, GIS and e-Fund systems, etc.

In Fiscal Year 2020, the ERC had revised and issued the

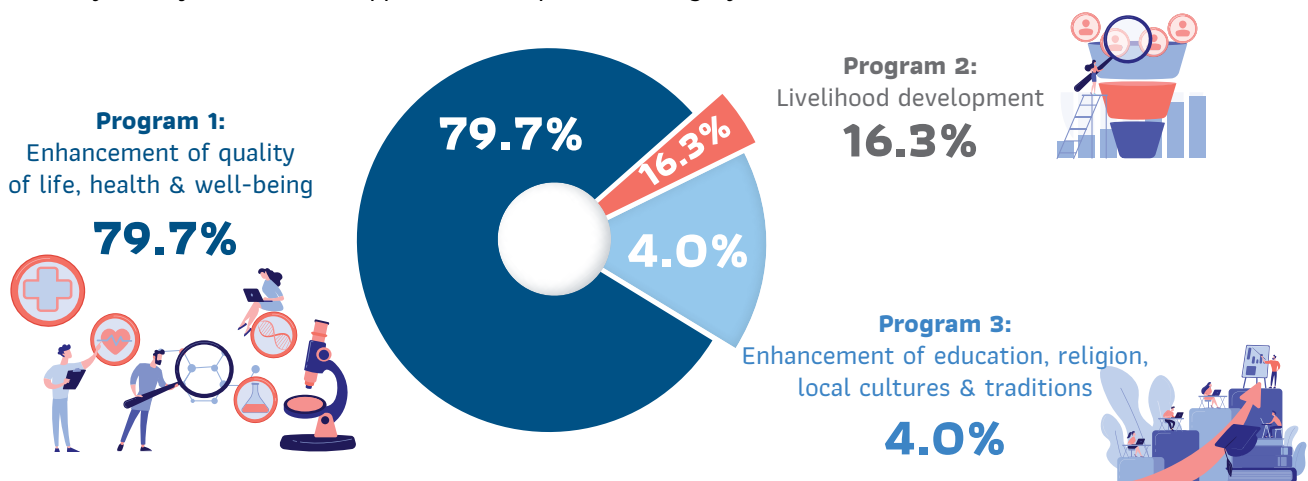
Regulation of the ERC on the Power Development Fund for Development or Rehabilitation of Localities Affected by Power Plant Operation B.E. 2563 (2020), which has been in effect since 1 October 2020, aiming to improve the administration and project operations of local Power Development Funds by emphasizing the following four aspects: 1) decentralization of authority and responsibility to the local level; 2) creation of tangible and sustainable benefits of the development or rehabilitation of areas surrounding power plants, by revising



Summary of Project Work Plan Approval in All 11 Aspects of Category A and B Funds in Fiscal Year 2020



Summary of Project Work Plan Approval in 3 Aspects of Category C Funds in Fiscal Year 2020



the scope of the Fund money utilization to have clearer dimensions and to attain more sustainability, comprising seven programs: public health, education, community economy, environment, public utilities, community energy and other aspects that contribute to community development; 3) enhancement of the good governance system, transparency and accountability; and 4) enhancement of the operational efficiency of the OERC. This aims to create agility, improve efficiency of the Fund money spending, decentralize authority,

create transparency, and reduce the procedures and time for considering and approving budgets and community projects in the designated areas so that money could be injected into the community faster and more efficiently, which will be another means to help the government solve problems and develop the grassroots economy. Currently, the OERC is preparing notifications on local PDF reclassification and determination of designated areas of the reclassified local PDFs respectively, for presentation to the ERC.



Fund Performance under Section 97(4)

With a view to promoting the use of renewable energy and technologies for electricity industry operation that render minimal impact on the environment, the ERC has stipulated that electricity retail licensees send contributions to the Fund for spending on the Fund operations under Section 97(4), pursuant to the NEPC policy framework, at a rate of 0.005 Baht per unit of electricity sale in a monthly billing round, effective since 31 December 2014. As a result, electricity retail licensees have been obliged to send contributions to the Fund as from March 2015 onwards. Also, the Regulation of the ERC on Criteria and Procedures for Allocating Power Development Fund Money to Promote the Use of Renewable Energy and Technologies for Electricity Industry Operation that Have Minimal Impact on the Environment B.E. 2559 (2016) was issued by the ERC and hence, as from Fiscal

Year 2017, Requests for Proposals have been issued to invite submission of local Power Development Fund (PDF) projects on activities under Section 97(4) to promote the use of renewable energy and technologies for electricity industry operation that render minimal impact on the environment.

In Fiscal Year 2020, the OERC issued a Request for Proposals inviting submission of local PDF projects under the Fiscal Year 2020 budget framework of 1,800 million Baht, comprising: 400 million Baht for the Open Grant category; 1,100 million Baht for the Strategic Grant category; and 300 million Baht for Projects on Emerging Issues & Long-term Issues. So far, the ERC has approved allocation of the Fiscal Year 2020 budget to 13 projects, accounting for a total budget of 137.67 million Baht.

Sending of Contributions to the Power Development Fund under Section 97(4)

Public & Private Electricity Retail Licensees

900
Million THB/year

Contribution rate to the Fund: 0.5 Satang/sale unit as from the billing month of Jan 2015.
Sending of contributions to the Fund must be made within 45 days as from the end of the given month.

Year	Budget Framework (million THB)	Proposed Projects		Approved Projects	
		Project	Budget (million THB)	Project	Budget (million THB)
2017	650	725	2,942	4	18.08
2018	1,050	73	1,578	4	11.72
2019	1,880	54	2,149	9	625.56
2020	1,800	59	3,242	13	137.67
Total		911	9,912	30	793.03

Spending of the Fund under Section 97(4)

OERC issued a Request for Proposals for Funding Allocation as per the ERC Regulations

- Program on promotion & demonstration of renewable energy utilization in the electricity industry operation
- Program on development & improvement of technologies for electricity industry operation that are efficient and create minimal impact on the environment
- Program on study & research on renewable energy and technologies for electricity industry operation that are efficient and create minimal impact on the environment
- Program on administration — expenses in support of the operation
- Other programs relevant to the Fund objectives under S.93 or S.97(4) as stipulated by the ERC

Remarks: Data as at 24 December 2020



1. **Open Grant**—16 project proposals were submitted, with a total proposed budget of 376.91 million Baht; 5 projects were approved by the ERC, with a total allocated budget of 43.78 million Baht, which can be summarized as follows.

Project Name		Agency	Allocated Budget (Million Baht)
1	Study project on the model and preliminary Standby Rate tariff suitable for grid connection by IPS (renewable energy)	Petroleum Institute of Thailand Foundation	9.51
2	Technology for converting organic waste from fresh markets to high-efficiency biomass	Rattanakosin College for Sustainable Energy and Environment, Rajamangala University of Technology Rattanakosin	9.23
3	Prototype project on sustainable electricity generation system using renewable energy for national parks and wildlife sanctuaries in Thailand	King Mongkut's University of Technology Thonburi	10.76
4	Project on research and development of ground-control station system for unmanned aerial vehicles (UAV) using solar energy as the main energy source to perform surveillance missions to prevent forest fire and haze problems	Royal Thai Air Force	3.09
5	Feasibility study on the use of nanomaterials to increase power generation efficiency of perovskite solar cells and the use of perovskite solar cells in Thailand	National Nanotechnology Center (NANOTEC), National Science and Technology Development Agency	11.19
Total			43.78

2. **Projects on Emerging Issues & Long-term Issues**—9 project proposals were submitted under an MOU between the OERC and the Ministry of Energy, with a total proposed budget of 128.98 million Baht; 8 projects were approved by the ERC, with a total allocated budget of 93.89 million Baht, which can be summarized as follows.

Project Name		Agency	Allocated Budget (Million Baht)
1	Review of renewable power purchase costs and guidelines for managing renewable power purchase agreements	Energy Policy and Planning Office	15.01
2	Pilot project on the Use Case development, the use of data on electric power for policy analysis and energy industry regulation		15.89
3	Study project to formulate an action plan for promotion of the battery energy storage system manufacturing industry		15.00
4	Project on devising the battery charging station development plan for electric vehicles to accommodate the target of electric vehicle promotion of the country		15.00
5	Study on guidelines for adopting the Renewable Energy Certificate (REC) mechanism to improve policies and mechanisms to promote electricity generation from renewable energy in Thailand		12.00
6	Study and development of a policy and business model to promote utilization of sugarcane leaves in support of the policy on biomass power generation promotion & reduction of PM 2.5 emission problem		10.00
7	Study, design and development of a database system and data transmission formats for the management of renewable electricity generation systems of the DEDE	Department of Alternative Energy Development and Efficiency (DEDE)	5.70
8	Study on hydropower potential and proper technology selection for downstream hydroelectric power generation for small hydropower plants		5.29
Total			93.89



Fund Performance under Section 97(5)



In order to increase knowledge, awareness and participation of the public in power-related issues, the ERC has stipulated that electricity retail licensees send contributions to the Fund at a rate of 0.002 Baht per unit of electricity sale in a monthly billing round, to be spent on the Fund operations under Section 97(5) pursuant to the NEPC policy framework, effective since 31 December 2014. As a result, electricity retail licensees have sent contributions to the Fund as from March 2015 onwards. In addition, the ERC issued the Regulation of the ERC on the Criteria and Procedures for Allocating Power Development Fund Money to Increase Knowledge, Awareness and Participation of the Public in Power-related Issues B.E. 2559 (2016), and as amended. As from Fiscal Year 2017, Requests for Proposals have been issued to invite submission of local PDF projects on activities under Section 97(5) to increase knowledge, awareness and participation of the public in power-related issues.

In Fiscal Year 2020, the ERC approved a budget framework of 600 million Baht and the OERC issued a Request for Proposals inviting submission of local PDF project

proposals on activities under Section 97(5). Emphasis was placed on the build-up of knowledge and understanding as well as practical application of the knowledge gained. The allocation for project proposals was divided into two categories, i.e.

(1) Open Grant, with a budget framework of 150 million Baht, under the following themes: 1) communication to foster understanding about electricity generation from renewable energy, e.g. electricity generation from solar energy, waste, biomass and biogas; 2) application of modern technology or social media; and 3) promotion of economical and efficient use of energy.

(2) Strategic Grant, with a budget framework of 450 million Baht, under the following themes: 1) communication to foster understanding about electricity generation from renewable energy, e.g. electricity generation from solar energy, waste, biomass and biogas; 2) communication to create understanding about energy industry regulation; 3) application of modern technology or social media; and 4) promotion of economical and efficient use of energy.



Orientation

On 6 December 2019, the OERC issued a Request for Proposals inviting project proposals under Section 97(5) with regard to the communication to build up understanding about power generation from renewable energy, and on 13 January 2020 an orientation was organized by the OERC at Chamchuri Square Building, Bangkok, to provide guidelines on the provision of Power Development Fund allocation for operations under Section 97(5) and to create understanding about the tasks of energy industry regulation, including guidelines for submission of project proposals under the Open Grant and Strategic Grant categories. The event was honored by the presence of ERC Commissioner, Dr. Buntoon Srethasirote, who delivered the opening remarks and a keynote speech. Over 240 participants attended the orientation and a total of 163 project proposals were received.

A total of 163 project proposals were submitted, accounting for a total requested budget of 3,459.98 million Baht, divided into: 114 projects under the Open Grant category and 44 projects under the Strategic Grant. The ERC has already granted approval of the Fund money allocation under Section 97(5) for 26 projects, with a total budget of 476.47 million Baht, divided into: 12 projects under the Open Grant category, with a total budget of 128.32 million Baht; and 14 projects under the Strategic Grant, with a total budget of 348.15 million Baht.

Sending of Contributions to the Power Development Fund under Section 97(5)

Public & Private Electricity Retail Licensees

350
Million THB/year

Contribution rate to the Fund: 0.2 Satang/sale unit as from the billing month of Jan 2015. Sending of contributions to the Fund must be made within 45 days as from the end of the given month.

Year	Budget Framework (million THB)	Proposed Projects		Approved Projects	
		Project	Budget (million THB)	Project	Budget (million THB)
2017	210	58	916.14	15	88.95
2018	490	54	734.56	9	126.92
2019	685	139	3,099.03	18	463.80
2020	600	163	3,459.98	26	476.47
Total		414	8,209.71	68	1,156.14

Spending of the Fund under Section 97(5)

OERC issued a Request for Proposals for Funding Allocation as per the ERC Regulations

- Program on enhancement of competency, role and knowledge about power-related issues
- Program on public relations to create awareness and foster consciousness, understanding & positive attitude towards power-related issues
- Program on promotion of participation in power-related issues, e.g. development of networking or creation of participatory networks
- of the public or power-related agencies
- Program on enhancement of power supply security and preparedness for electricity incidents
- Program on administration – expenses in support of the operation
- Other programs relevant to the Fund objectives under S.93 or S.97(5) as stipulated by the ERC

Approved Power Development Fund Projects under Section 97[5]

No.	Project Name
Strategic Grant	
1	Contribution to Community-based Power Plant Promotion Policy for Local Economy
2	Future Kids Future Energy
3	Thung Bang-or Kap ERC [Gain Knowledge with the ERC]
4	Khon Bandarn Fai Season 2
5	Survey on Awareness of the ERC's Role and Opinions towards Electricity Situation
6	Innovation for Renewable Energy from Waste and Solar Power
7	Solar Man in Southernmost Border
8	The Electric Playground
9	Documentary Series on "Electricity Brought to ... Community"
10	Clean Energy Smart Platform
11	Creative Learning Innovations for Clean and Affordable Energy Education
12	Strategic Communication of the Power Development Fund, Section 97[5]
13	Power of Me, Power of We
14	Clean Energy for Life
Open Grant	
1	Clean Energy Temporary Exhibition
2	3-D Cartoon Animation project, "Electric Man–Protector of the World," Season 2
3	"Dek Wakeup" Season 2 [Electricity from waste and biomass]
4	Fai-Fah for Tale [Narration of renewable energy generation via stage play & exhibition to foster the mindset about clean energy [solar, waste & biomass]]
5	Micro Influencer for Biogas Electric Power
6	Young Architect ECO Home Contest
7	SME RE POWER [Enhancement of business potential by using RE for electricity generation]
8	"Electricity Innovation of the Future"—Online Curriculum Development and Clean Energy School Network Initiation
9	Innovation for Waste-to-Energy
10	Renewable Energy Training for the Trainer
11	Promote and Develop Knowledge of Photovoltaics Technology
12	Green Station



Fund Performance under Section 97(6)

To use the Fund money for the following three major administrative matters: (1) the Fund administrative cost; (2) a reserve in the case of emergency to remedy or mitigate, in the first instance, damage caused by power plant operation; and (3) subsidies for development or rehabilitation of localities which are affected by power plant operation but for which the allocated money from the Fund is insufficient for such implementation.



Evaluation of the Power Development Fund Performance [as Working Capital]

Since the Power Development Fund is considered as working capital and hence it is required to have a performance evaluation system that is up to international standard with the application of Balanced Scorecard (BSC) principles, as stipulated by the Ministry of Finance, or with an equivalent tool to be applied. Moreover, a Third Party has to be appointed to conduct the evaluation and report the performance evaluation outcome to the Comptroller General's Department (CGD) so that the latter could collect the information and prepare a report summarizing the overall evaluation outcome of this working capital for presentation to the cabinet at the end of each fiscal year. In this connection, the OERC has conducted the performance evaluation of the Fund as working capital since Fiscal Year 2014 onwards.

In Fiscal Year 2020, Thailand faced the outbreak of COVID-19 and several measures were introduced by the government to prevent the spread of COVID-19, which had affected the operations of the Power Development Fund in the Fiscal Year 2020, in which six evaluation criteria had been set for the Power Development Fund performance. Therefore, the evaluation outcome for the 12-month period (1 October 2019 – 30 September 2020) resulted in an average score of 3.9794 from the full score of 5. Details of the evaluation outcomes under each criteria were as follows:

- **Finance** with a score of 5.0000— the Power Development Fund could efficiently manage its operating cost;
- **Response to Stakeholders' Benefits** with a score of 4.5320—the score obtained for stakeholders' satisfaction with the Fund operation was 83.80%, or equivalent to 'Very Satisfied.' Complaints could be addressed and decisions

officially notified to the complainants within the specified timeframe. In addition, participation and networking with regard to awareness, recognition and participation in the Fund operation was created, comprehensively covering three types, i.e. the networking with government agencies related to the OERC, including local government agencies; the networking with educational institutions & the youth; and the networking with community leaders, including interested people.

- **Working Capital Management & Improvement** with a score of 4.5267—the Fund could conduct risk management and internal control comprehensively in compliance with the specified criteria. Also, the Fund management has been reinforced by the application of information technology and digital system, by devising a (long term) Digital Action Plan, together with an Annual Digital Action Plan, in line with the Digital Economy and Society Development Plan ("Digital Thailand"). In addition, the Fund performance reporting system has been developed to contain up-to-date information, including a system that enhances operational efficiency and that is user-friendly for both internal and external service users, which contributes to the core missions of the Fund.

With regard to the evaluation outcomes in the remaining criteria: **Operations; Performance of the Managing Committee, Fund (Working Capital) Administrator, Staff & Employees; and Implementation pursuant to Policies of the Government/ Ministry of Finance**, the obtained scores decreased (compared with the previous fiscal year) due to the outbreak of COVID-19 and measures introduced by the government to prevent the spread of COVID-19, which had affected the operations of the Power Development Fund.

Evaluation Outcome of the Power Development Fund Performance [as Working Capital] in Fiscal Years 2019–2020

Evaluation Criteria		Fiscal Year 2019		Fiscal Year 2020	
		Weight	Score	Weight	Score
1	Finance	-	-	10	5.0000
2	Response to Stakeholders' Benefits	20	4.1996	20	4.5320
3	Operations	45	4.3063	35	3.6005
4	Working Capital Management & Improvement	15	4.4500	15	4.5267
5	Performance of the Managing Committee, Fund [Working Capital] Administrator, Staff & Employees	10	4.3904	10	3.7232
6	Implementation pursuant to Policies of the Government/Ministry of Finance	10	4.3910	10	2.6150
Total Score		100	4.3241	100	3.9794





Operational Plan of the Office of the Energy Regulatory Commission

in Fiscal Year 2021





Operational Plan of the Office of the Energy Regulatory Commission in Fiscal Year 2021

The Office of the Energy Regulatory Commission (OERC) has devised the Operational Plan, Budget and Estimated Revenue for Fiscal Year 2021, by assessing the accomplishments of the Fiscal Year 2020 performance and conducting a SWOT analysis that affected the operation of the organization, the results of which served as input for reviewing the Operational Plan for Fiscal Year 2021 under the Action Plan for Energy Industry Regulation, Phase 4 (2020–2022). It was revealed that, despite the sluggish economic conditions caused by the COVID-19 outbreak, continuation of energy sector mobilization is still essential to ensure future energy security of the country and to accommodate the economic recovery as well as changes in social behavior in a New Normal way of living. The direction of energy sector development is still under the framework of the National Strategic Plan, the Master Plan under the National Strategic Plan, the National Energy Reform Plan, the 12th National Economic and Social Development Plan (2017–2021) and government policies, Thailand Integrated Energy Blueprint (TIEB), including the Digital Economy and

Society Development Plan (“Digital Thailand”). Therefore, in order to mobilize energy industry regulation in pursuance of the targets of energy sector development of the country, the ERC has established the Operational Plan for Fiscal Year 2021, focusing on the development of a mechanism for regulating electricity tariffs that is efficient and up to international standard as well as the development of rules and regulations for regulating electricity and natural gas industry to accommodate the policy on promotion of competition as well as new energy business models following changes in energy technologies, e.g. promotion of electric vehicle utilization and promotion of the use of energy storage system, etc. Importance is also placed on the enhancement of monitoring and post-audit systems to ensure compliance with environmental standards and service quality standards, on a continuous basis; the establishment of a participatory mechanism to reinforce the energy industry regulation and the Power Development Fund management with greater efficiency; and the organizational development to become a digital organization.

Objective 1:

To promote adequate and secure energy service provision, while ensuring fairness to both energy consumers and licensees



Strategy 1: Increase the potential to analyze energy policy and plans to be trustworthy and acceptable to stakeholders



1) Study and prepare recommendations on the regulatory framework to accommodate electricity consumption of such innovations as electric vehicles [EVs] and the energy storage system [ESS] so as to enhance the promotion of EV utilization and the application of ESS so that energy management of the country would be of greater efficiency and security.



2) Conduct the study on commercial-scale investment in the LNG receiving terminal business, with a view to developing the LNG Receiving Terminal Regulatory Framework to get prepared for open competition in the natural gas industry in the future.



3) Develop an information system for regulating electricity procurement, monitoring and auditing investments in the electricity industry to be in line with the energy industry investment plans, including development of a tool for analyzing energy industry investment plans and assessing the purchasing rates for renewable energy generation under the FIT scheme that are appropriate for electricity generation from each type of renewable energy. This will be applied to the analysis and provision of opinions on the load forecast, electricity generation and consumption situations, and investments in the energy industry in Fiscal Year 2022.

Strategy 2: Improve the energy regulatory system to be more efficient so that energy supply would be adequate and secure.



1) Develop the online licensing system. In Fiscal Year 2021, the online licensing system development will commence with registered energy business operations that are exempt from license requirement so that the one stop service [OSS] licensing, which has been in operation since Fiscal Year 2020, would be more comprehensive. Moreover, the registration service for such energy business operations will be integrated with the Government Access Channel [GovChannel] via the electronic system for the business sector [Biz Portal], in accordance with the guidelines for developing a comprehensive business facilitation system [Doing Business Portal] of the Office of the Civil Service Commission under the Digital Economy and Society Development Plan ["Digital Thailand"].



2) Review secondary laws on natural gas industry licensing to be in line with the business conditions and promotion of competition in the natural gas industry.



3) Review the license fees for energy industry operation.

Objective 2

To protect energy consumers' benefits in terms of both tariffs and service quality



Strategy 1: Revise the criteria for regulating energy tariffs (electricity and natural gas) to be transparent and to better meet international standards.



1) Issue a notification prescribing the formats of accounting and financial reports of the electricity industry and the natural gas industry—account unbundling according to the international standards (Uniform System of Accounts: USOA)—to be used for regulating energy tariffs, and develop the database system on energy tariff regulation so as to have sufficient data for making an analysis and determining measures in an emergency situation, such as the outbreak of COVID-19.



2) Study the electricity tariff structure for the period 2022–2025 in order to determine and put into force electricity tariffs during the mentioned period.



3) Prepare the criteria for determining tariffs for the use of or connection to the electricity network system (Wheeling Charge) for the implementation under the ERC Sandbox Program.



4) Review the criteria for determining tariffs in the natural gas industry under the guidelines for promoting competition in the natural gas industry, which has opened for many new natural gas procurement & wholesale operators (new Shippers), including the determination of natural gas transmission pipeline system tariffs and LNG Terminal tariffs so that the procurement costs would be more reasonable, with optimum benefits to energy consumers.

Strategy 2: Regulate electricity and natural gas service quality to meet international standards as well as facilitate service users in terms of timely solutions to problems related to service provision and extensive service provision.



1) Review the service quality standards in the natural gas industry and establish service quality standards for the natural gas Transmission System Operator (TSO) licensee so that the standards would be in place for all types of natural gas industry licenses.



2) Inspect and evaluate the service quality standards in the electricity and natural gas industry.



3) Review the standards of energy service provision contracts for power consumers under Schedule 3–Schedule 5, i.e. Medium General Service, Large General Service and Specific Business Service.



4) Establish the standards of energy service provision contracts for power consumers under Schedule 6–Schedule 8, i.e. Non-profit Organizations, Water Pumping for Agricultural Purposes and Temporary Power Consumption.

Objective 3

To promote competition in the energy industry and prevent abusive use of dominance in energy industry operation

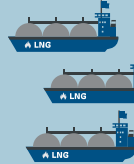
Strategy: Increase the competitive edge in electricity and natural gas industry according to the National Energy Reform Plan.



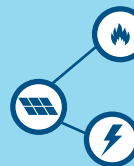
Analyze the natural gas market development and make recommendations on the regulatory framework for the future natural gas industry, including setting up a Data Platform for analyzing the promotion of competition in the energy industry so as to accommodate greater competition in the future.



Strategy: Develop the standards of energy network service provision to be up to international standards.



1) Review the TPA Regime in the Natural Gas Industry to be prepared for the opening for a larger number of third parties to get access to efficient services of the natural gas transmission pipeline system, and to create optimum benefits of the use of the domestic infrastructure. Consideration will also be made on the Codes for a third party to use or connect to the natural gas transmission system and LNG Terminal [Third Party Access Codes: TPA Codes] of the licensees to be in compliance with the principles stipulated under Section 81 of the Act and the TPA Regime, prescribed by the ERC.



2) Review the Codes for connection to the electricity distribution system to be standardized and establish the regulatory framework for allowing third party access to the use of or connection to the electricity network system for the implementation under the ERC Sandbox Program.

Objective 4

To promote fair and transparent energy network system service provision, without unjust discrimination

Strategy: Promote energy industry operation to be efficient and fair to licensees and energy consumers.



Objective 5

To promote efficient energy industry operation and ensure fairness to both licensees and energy consumers

1) Conduct post audits of energy industry operation to ensure compliance with the licensing terms and conditions, according to the post-audit plan for monitoring energy industry operation facilities, and develop a Digital Platform, or the online information system, of the post-COD audits and the reporting of environmental issues.

2) Issue the regulatory framework for the dispatching orders of the Energy Network System Operator so as to regulate the energy system management of the Energy Network System Operators to ensure the balance, security, stability, efficiency and reliability of the system and to regulate the dispatching of Energy System Operation Licensees to be fair and non-discriminatory.

3) Promote study and research on efficiency improvement in the electricity industry operation for small-scale power plants, pursuant to Section 97[4].

Objective 6

To protect rights and liberty of energy consumers, local communities, the general public and licensees in terms of participation, accessibility, utilization and management of energy under the criteria which are fair to all parties



Strategy: Develop a systematic participation process so that energy consumers, local communities, the general public and licensees could participate in all stages.



1] Develop a participation process and provide consultation on the promotion of participation in energy industry regulation of the OERC in continuation of the implementation in Fiscal Year 2020. Development has been made on the ERC regulation on hearing and fostering understanding of the public and stakeholders with regard to the consideration of electricity generation license issuance and audits of electricity generation licensees' compliance with environmental measures, including the electricity tariff adjustment, so that energy consumers, local communities, the general public and licensees could be confident that energy industry regulation by the OERC is transparent and fair to all concerned and hence would give support to the energy industry regulation.



2] Develop the information system in order to establish an e-Petition Management Center.



3] Manage the Power Development Fund in compliance with its objectives under Section 97 of the Act. In Fiscal Year 2021, an estimated budget framework of 22,403 million Baht are to be spent on the compensation and subsidization of service provision for underprivileged power consumers or to enhance extensive electricity service provision; the development or rehabilitation of localities affected by power plant operation, under the Power Development Fund management structure which was revised in Fiscal Year 2020, placing emphasis on decentralization of administrative powers to the communities; the promotion of the use of renewable energy and technologies for electricity industry operation that have minimal impact on the environment; the increase of knowledge, awareness and participation of the public in power-related issues; and the administrative cost of the Fund. The Fund money spending will be in accordance with the regulations imposed by the ERC.



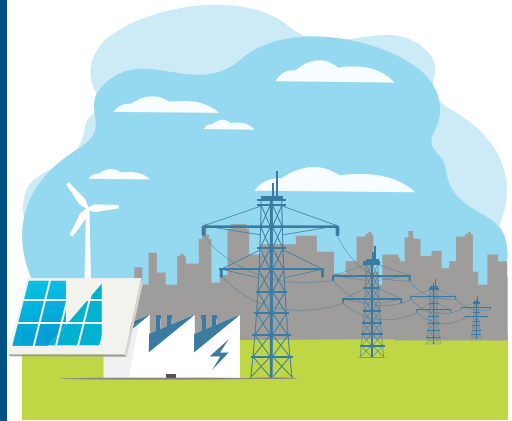
4] Raise the community's awareness and participation in respect of their rights and access to benefits from the Fund under Section 97[3], and enhance the community's potential in developing community development plans via a participation process, with further implementation expansion to other areas in the next fiscal year. In addition, a system will be set to post audit and evaluate the Fund performance under Section 97[3].



5] Increase knowledge, awareness and participation of the public in power-related issues further to the implementation in Fiscal Year 2020. In Fiscal Year 2021, emphasis will still be placed on provision of education about renewable energy, "Affordable and Clean Energy," the electricity industry regulation, the use of communication technology, and economical and efficient use of energy, with a view to putting the knowledge obtained into action.

Objective 7

To promote economical and efficient use of energy and resources in the energy industry operation and to raise public awareness of energy saving as well as renewable energy utilization, with due consideration of environmental impacts and the balance of natural resources



Strategy 1: Upgrade the regulatory system to encourage the operators to use resources for energy industry operation economically and efficiently so as to be prepared for a changing energy world driven via the 3-D trend: Decarbonization, Digitalization and Decentralization.



1) Examine electricity industry efficiency as well as provide recommendations and encourage efficiency improvement of each type of power plants, by applying the study results derived from the ERC Sandbox Program together with the results of the study and research on efficiency improvement in the electricity industry operation, which received financial support from the Power Development Fund under Section 97[4], to such efficiency improvement, as appropriate.



2) Revise the guidelines for funding the study and research under Section 97[4] to support the upgrading of electricity industry regulation with a view to enhancing greater efficiency of the electricity industry operation, such as the study and research to improve efficiency of the electricity system and load management in connection with the promotion of electric vehicles (EVs); the energy storage system (ESS) and digital technology to support energy management due to the promotion of electricity generation from renewable energy.



3) Support the study, research and development of energy consumption and resource utilization in the electricity industry operation, that is efficient and has minimal impact on the environment, in line with changes in technologies in the future.



4) Publicize the results of the study and research funded by the Power Development Fund under Section 97[4] with respect to the use of energy and resources in electricity generation that is efficient and has minimal impact on the environment so as to have the results widely applied to actual operations.

Strategy 2: Promote economical and efficient use of energy as well as the use of renewable energy.



Educate and raise awareness of economical and efficient use of electrical energy, including the use of renewable energy, via the Power Development Fund operations under Section 97[5], with the aim of engaging public participation and further extension of practical application.

Objective 8

To promote the use of renewable energy for electricity industry operation that renders minimal impact on the environment



Strategy: Promote the exploitation and development of renewable energy resources so that electricity industry operation would be eco-friendly.



1] Review the previous criteria and guidelines used for purchasing electricity generated from renewable energy and examine electricity purchase guidelines in foreign countries in order to improve the implementation of this matter to be on a par with international standards and to prepare knowledge in this respect to educate the OERC personnel via the case study on Best Practices under technical cooperation in energy industry regulation with the World Bank under the Reimbursable Advisory Services (RAS) program.



2] Promote the use of renewable energy in government schools and public health offices in remote areas beyond the grid system or with no electrification, via the Power Development Fund operations under Section 97(4).

Objective 9

To administer a modern and efficient organization and build up human resource capacity to be professional in energy industry regulation



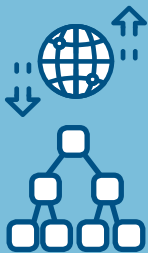
Strategy 1: Upgrade the operations management system to be modern and up to international standards so that responses to the needs and service provision would be convenient, rapid, transparent and professional.



1] Develop the Quality Management System (QMS) according to the ISO 9001: 2015 criteria, in continuation of the implementation in Fiscal Year 2020.



2] Upgrade the overall process of the issuance of legislation on energy industry regulation to be in compliance with the state policy framework under Section 77 of the Constitution of the Kingdom of Thailand B.E. 2560 [2017] and the Act on Legislative Drafting and Evaluation of Law B.E. 2562 [2019]. The OERC will evaluate the results of secondary legislation that has been enforced by the ERC for five years and will make complete the issuance of secondary legislation as prescribed in the Energy Industry Act of 2007. In addition, review and evaluation of implementation results of the Energy Industry Act of 2007 will be conducted in order to prepare recommendations and revisions in Fiscal Year 2022.



3] Review the 3-Year Digital Action Plan [2021–2023] to support the target for the OERC to become the Energy Industry Regulation Information Center by 2024, pursuant to the Action Plan for Energy Industry Regulation, Phase 4, and the digital-related laws, including the development of the corporate IT system on a continuous basis. Key tasks will include the following:

- a. Develop an information system for regulation [ERC Data Sharing Platform].
- b. Upgrade the operating information systems, i.e. the online licensing system for energy businesses that are exempt from license requirement, the information system for monitoring annual performance, the legal execution information system and the e-Petition system.
- c. Establish standard practice guidelines on cyber security in the energy sector to be in compliance with the Cyber Security Act [2019], which requires that core infrastructure agencies comply with the cyber security practice. The OERC will prepare a cyber-security risk audit and assessment plan as well as the cyber threat response plan and will establish the cyber threat surveillance process, including developing cyber security personnel as well as raising cyber security awareness and knowledge of the staff.
- d. Design and develop modern technology systems of the new OERC office premises to be “Smart Office,” comprising the Data Center room, IT Infrastructure System [Server Network Client] and the Building Management System, so that the new OERC office premises would be equipped with the infrastructure that supports appropriate technologies and that is efficient to accommodate the operations of a digital organization.
- e. Develop a system for service delivery and interconnection to exchange government data, in compliance with the Digital Government Administration and Services Act B.E. 2562 [2019].

Strategy 2: Upgrade the management system and build up human resource capability to be professional.



1] Review the Action Plan for Human Resource Management and Development to be in line with the Action Plan for Energy Industry Regulation, Phase 4 [2020–2022].



2] Prepare a Career Development Path and a Succession Plan after having completed the determination of employee competency in Fiscal Year 2020.



3] Improve the employee recruitment system to be faster and more efficient so as to get well-qualified personnel to carry out duties to accomplish the corporate goals.



4] Evaluate the personnel competency and develop their potential according to the Human Resource Development Plan for Fiscal Year 2021, focusing on in-depth knowledge about energy industry regulation and digital literacy to support proactive energy industry regulation and the transformation of the organization to a digital organization.



5] Prepare knowledge bases about energy industry regulation, such as the review of criteria and guidelines for the purchase of electricity generated from renewable energy.



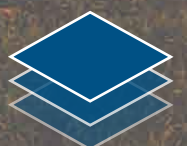
6] Organize activities to foster corporate commitment, ethics and governance.





Operational Plan of the Power Development Fund

in Fiscal Year 2021





Operational Plan of the Power Development Fund in Fiscal Year 2021

The ERC has devised the Power Development Fund Strategic Plan, No. 5 (2020–2024) to serve as the framework for the Power Development Fund (“the Fund”) management, which corresponds with the Action Plan for Energy Industry Regulation, Phase 4. Emphasis is placed on efficiency improvement of the Fund administration and promotion of stakeholders’ participation so as to meet the needs of all stakeholders.

In Fiscal Year 2021, the ERC will focus on efficiency improvement of the Fund administration and improvement of the Fund workflow to be more efficient, by applying the results from the organization of the contest among local Power Development Funds (local PDFs) and community projects in designated areas, including the success of prototype community projects, to improve the Fund administration and implementation of PDF projects under Section 97(3) to be suitable and correspond with changing situations at the present time. With the aforesaid improvement, the community development will be sustainable under good governance. In addition, improvement of regulations, manuals and criteria of the Fund money allocation for operations under Section 97(4) and Section 97(5) will be made so as to attain greater efficiency and to be more in line with the Fund objectives.

Furthermore, the information and digital system will be developed to accommodate integrated operations pursuant to the missions of the Fund. This will facilitate the interconnection of information and learning via the knowledge management system as well as the Fund website. The management system, including the monitoring and evaluation of projects that have received the Fund money allocation, will also be improved to be up-to-date and correspond with changing situations in order that the Fund operations will be rapid, efficient and that the quality of service provision for stakeholders as well as the general public will better meet their needs.

Plans have also been formulated to conduct proactive public relations activities in each area to create awareness of the Fund operations and to disseminate information about benefits to be obtained from the Fund operations. This aims to increase awareness and enhance the good image of the Fund operations, which will then create a positive attitude towards coexistence between power plants and surrounding communities.

Highlights of the Operational Plan of the Power Development Fund in Fiscal Year 2021

STRATEGY ①

Upgrade the development and rehabilitation of the communities surrounding power plants

- ▶ Revise the structure and work programs of community projects to upgrade the community project implementation towards good quality of life.
- ▶ Develop or rehabilitate localities affected by power plant operation.
- ▶ Develop potential of the personnel dealing with the Fund.
- ▶ Conduct public relations activities and create alliance networks for implementing the tasks of local PDFs.



STRATEGY ②

Promote the regulation and development of electricity industry operation that is efficient and eco-friendly

- ▶ Study and research on renewable energy and electricity industry operation technologies that are efficient and have minimal impact on the environment.
- ▶ Promote and demonstrate the use of renewable energy in the electricity industry operation.
- ▶ Develop and improve technologies for the electricity industry operation to be more efficient with less impact on the environment.

STRATEGY ③

Build up knowledge, awareness and participation of stakeholders in the electricity sector

- ▶ Build up potential, promote the roles and increase power-related knowledge of the public or concerned personnel.
- ▶ Conduct public relations to raise awareness, consciousness, understanding and positive attitudes towards electricity-related matters.
- ▶ Promote participation in the development of information networks and cooperate with concerned agencies electricity-wise.
- ▶ Enhance energy security and preparedness for electricity-related incidents.

STRATEGY ④

Increase efficiency of the Fund administration to be able to respond to the needs of stakeholders

- ▶ Regulate the Fund money administration.
- ▶ Monitor and evaluate the Fund performance.
- ▶ Review regulations, notifications and manuals pertaining to the Fund operations and establish operational standards for local PDFs.
- ▶ Develop capacity of the Fund personnel to be ready for efficient duty execution.
- ▶ Develop and improve the IT systems of the Fund to cover core transactions and to be interconnected nationwide.



Abbreviations



Abbreviations

Act, The	Energy Industry Act B.E. 2550 [A.D. 2007]
Adder	Additional energy purchasing price
CEPA	Committee on Energy Policy Administration
COD	Commercial Operation Date
EGAT	Electricity Generating Authority of Thailand
EIA Report	Environmental Impact Assessment Report
ERC	Energy Regulatory Commission
F _t	Automatic Power Tariff Adjustment Mechanism
Fund, The	Power Development Fund
GW	Gigawatt – a unit of electric power equal to 1,000 megawatts, or 1,000,000 kilowatts, or 1,000,000,000 watts
GWh	Gigawatt hour – a unit of energy representing 1,000 megawatt hours, or 1,000,000 kilowatt hours and is equivalent to 1,000,000,000 watt hours
IPP	Independent Power Producer
IPS	Independent Power Supply– the generation for own-use and sale to direct customers
Managing Committee	Managing Committee on Power Generation from Renewable Energy Promotion
MEA	Metropolitan Electricity Authority
MW	Megawatt – a unit of electric power equal to 1,000 kilowatts or 1,000,000 watts
NEPC	National Energy Policy Council
OERC	Office of the Energy Regulatory Commission
PDP	Thailand Power Development Plan
PEA	Provincial Electricity Authority
Por Kor 2 License	Regulated Energy Production License
PPA	Power Purchase Agreement
PTT	PTT Public Company Limited
RECC	Regional Energy Consumer Committee
Ror Ngor 4: Factory Category No. 88 License	Power Generation Facility Operation License
SEA	Sattahip Electricity Authority, the Royal Thai Navy Welfare Concession
TSO	Transmission System Operator – an entity entrusted with controlling the transmission of energy in the form of natural gas or electricity at national or regional levels
WACC	Weighted Average Cost of Capital