PEA
PROVINCIAL ELECTRICITY AUTHORITY

GREEN THE GRID, GO FOR BETTER LIFE

Sustainability Report 2023
Provincial Electricity Authority

GREEN THE GRID, GET THE BETTER LIFE

"PEA is driving towards becoming an intelligent electricity organization, excelling with an environmentally friendly smart grid system. It is committed to develop electrical infrastructure that supports clean energy accessible to everyone, addressing economic, social, and environmental changes holistically. The PEA aligns its efforts with the United Nations' Sustainable Development Goals to enhance quality of life and promote sustainability for all."

CONTENTS

01 MESSAGE FROM THE GOVERNOR [2-22]

MR. SUPACHAI EK-UN

Governor

The Provincial Electricity Authority (PEA) strives to advance technology and innovation to enhance the efficiency of the electrical grid and electricity distribution services. PEA is committed to utilizing clean and renewable energy sources, adopting Electric Vehicles (EVs), and advancing our technology to modernize the grid. These efforts align with Thailand's energy transition goals outlined in the 13th National Economic and Social Development Plan (2023-2027). PEA has provided access to electricity for 21,841,228 households out of the total 21,907,462 households within its service area, which accounts for 99.70% coverage. Furthermore, they are integral to PEA's strategy for addressing climate change. PEA fully supports and contributes to the government's objectives of achieving carbon neutrality by 2037 and reaching net-zero emissions by 2065. To achieve these goals, PEA has integrated the ESG (Environmental, Social, and Governance) framework into the core of PEA's organizational management.

PEA recognizes that sustainable management is an ongoing development process toward the coexistence of communities, society, and the environment. With the collaborative efforts of PEA's board of directors, executives, employees, and contracted workers, we are advancing toward achieving our core organizational missions and Thailand's significant targets with social responsibility and environmental concerns, focusing on creating balance and sustainable development in the ESG dimension as follows:

E: Environmental

PEA has successfully reduced internal greenhouse gas (GHG) emissions by approximately 7,400 tCO_2e. This reduction results from two initiatives: The Green Office Project, which cut GHG emissions by 3,567.17 tCO_2e., and the Solar Energy Installation for PEA Buildings Project, which reduced emissions by 3,887.95 tCO_2e. Additionally, PEA has supported clean energy use through the Solar Energy Boat Project, replacing diesel with solar-powered engines in local boats in the Damnoen Saduak district of Ratchaburi province. This initiative promotes clean energy and tourism and reduces GHG emissions by 0.038 tCO_2e.

RECOGNIZING THE IMPORTANCE OF EQUITABLE ACCESS TO ELECTRICITY

for enhancing the quality of life and opportunities, PEA has launched the Remote Area Electricity System Development Project named Renewable Energy for

THE SUSTAINABILITY OF REMOTE COMMUNITIES,

which aims to extend electricity distribution using renewable energy to areas typically beyond our reach.

S: Social

PEA has achieved a stakeholder engagement score of 4.4447, surpassing the target of 4.0580. This score reflects PEA's commitment to prioritizing all internal and external stakeholders, ensuring they are treated fairly, and upholding human rights without discrimination. PEA is dedicated to employee safety under the principle of "PEA Safety for All," focusing on continually reducing the Disabling Injury Index (vDI) and associated the insecurity consequential costs.

Recognizing the importance of equitable access to electricity for enhancing the quality of life and opportunities, PEA has launched the Remote Area Electricity System Development Project named Renewable Energy for the Sustainability of Remote Communities, which aims to extend electricity distribution using renewable energy to areas typically beyond our reach. This project has been honored with the Asia Responsible Enterprise Awards 2023 (AREA 2023) in the Social Empowerment category.

G: Governance

PEA has maintained an AA level in Integrity and Transparency Assessment (ITA) for four consecutive years, achieving a score of 99.35, the highest in the state enterprise sector. This success comes from PEA's initiatives via several projects:

- **THE PEA Hero project** promotes ethical behavior among employees by highlighting the role model behavior of PEA's executives (Governor, Deputy Governor, and Assistant Deputy Governor). This project fosters a culture of trust, knowledge management, and innovation, uniting executives and officers with a shared vision.
- **The PEA Ranger project** encourages employees and contracted workers to embody PEA's core values of TRUSTED, focusing on developing essential skills and competencies to adapt to a changing world. This project aims to improve attitudes, intelligence, knowledge, and skills, promoting effective behavior and role modeling.
- **The PEA Clean Village Project** establishes a cooperation network with communities, temples, and schools to combat corruption. This initiative promotes honesty among employees, contracted workers, youth, and the broader Thai public and has earned the NACC Integrity Award.

All of PEA's achievements came from the dedication and hard work of our board of directors, executives, employees, and contracted workers. On behalf of PEA, I extend my heartfelt gratitude to everyone who has contributed to our growth and earned us international trust.

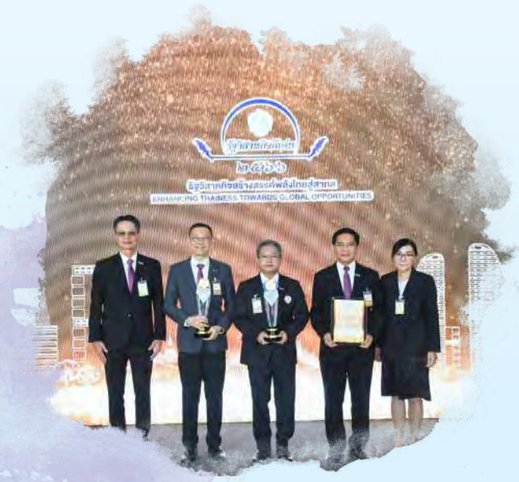
We are committed to continuous improvement toward a sustainable future for all and appreciate stakeholders' support and trust in PEA. Every suggestion is valuable to the organization in developing power quality and services, according to PEA's vision of

"SMART ENERGY FOR BETTER LIFE AND SUSTAINABILITY"

02 AWARDS OF PRIDE 2023

National Awards

1



Outstanding State-Owned Enterprise (SOE) Awards 2023,

organized by the State Enterprise Policy Office. PEA earned a total of three awards:

1. **Digital State Enterprise Development Award** demonstrates the outstanding ability to create and utilize digital technology to develop the organization in various aspects and accommodate efficient and rapid changes by promoting and driving PEA to become a digital state enterprise, reflecting the organization's direction toward "Smart Energy for Better Life and Sustainability".
2. **Outstanding Services Award** reflects the quality of services provided to electricity users and stakeholders in PEA's main and related missions, focusing on responding to the needs and expectations of customers and the public over short and long terms, based on balance, efficiency, flexibility, and alignment with international standards. PEA presents the "PEA Smart Service" project to meet the needs of customers and achieve satisfaction in quality and services by continuously developing the organization and increasing product efficiency and customer services. To this end, PEA focuses on commitment in responding to the needs of customer groups and provide public services to users with equality and fairness to ensure convenience, speed, and easy access for the public.
3. **Outstanding Creativity and Innovation Award, Innovation Category, Honorable Mention** reflects the promotion and support of the learning process and the creation of innovation within the organization. Innovation is effectively applied to benefit the organization via new products, work processes, increased operational efficiency, and cost reduction, resulting in relentlessly good performance. The award recognized the presentation by PEA on the innovation of the "Cable Termination Steel Support for 115-kV Riser Pole", an innovation that designs and develops steel frames to support oil-free cable terminations. The electrical equipment support structure is lighter and smaller, making it easier to construct 115-kV underground cable poles, saving construction time, and making construction more efficient.

2

11th NACC Integrity Awards: Honor with Morality, Ethics, and Integrity,

Organized by the National Anti-Corruption Commission, which demonstrates PEA is committed to value responding to customers' needs through operations based on good governance and responsibility toward community, society, and environment. The award criteria included the following: enhancing the transparency of Thailand, fostering morale and honoring exemplary organizations, generating social trends to create value, and promoting management with the good governance code, code of ethics, and social responsibility.

3

Bronze Award at the 18th "Thailand Research Expo 2023",

Organized by the National Research Council of Thailand, Ministry of Higher Education, Science, Research and Innovation. PEA was recognized for the innovation of the "Robotic Solar Cleaner".

4

Plaque and Certification Mark from the Government Easy Contact Center (GECC) Awards 2023,

Organized by the Office of the Public Sector Development Commission (OPDC) and the Office of the Prime Minister. 145 offices under PEA jurisdiction was certified and awarded with plaques. Four offices achieved the Excellence Level, namely Ubon Ratchathani, Pattaya City, Nang Rong District, and Khun Han District Provincial Electricity Authority; 36 offices, the Advanced Level; and 105 offices, the Fundamental Level.

5

Public Sector Excellence Awards 2023, Public Service Category,

Organized by the Office of the Public Sector Development Commission (OPDC). PEA was honored with the Service Innovation Award from the work "Quick to Know, Quick to Fix, Quick to Return: 3Qs".to Return: 3Qs)"

> "PEA is committed to value responding responses to customers' needs through operations based on good governance and responsibility toward community, society, and the environment."

6

Best Contact Center Awards 2023, Corporate Category,

Organized by the Thai Contact Center Trade Association. PEA won three Silver Medals under the Corporate Category:

1. Best Workflow Contact Center - Outstanding International Standard Process Award.
2. Best Professional Management Contact Center - Outstanding Contact Center Management and Administration Award.
3. Best Customer Satisfaction Contact Center - Outstanding Customer Satisfaction Award.

7

National Innovation Awards at the 2023 National Innovation Day Event,

Organized by the National Innovation Agency (Public Organization), Ministry of Higher Education, Science, Research and Innovation. PEA won a National Innovation Award for Outstanding Innovative Organization, State Enterprise Category, Merit Prize.

1129 PEA Contact Center

8

Thailand Energy Awards 2023,

Organized by the Department of Alternative Energy Development and Efficiency (DEDE), Ministry of Energy. PEA won the Outstanding Energy Conservation Award in the Zero Energy Building Category for the renovation of “Building D of the High-Voltage Training Center”, located at the Provincial Electricity Authority, Nakhon Chaisi District, Nakhon Pathom Province.

9

Sustainability Disclosure Award 2023,

Thaipat Institute announced the Sustainability Disclosure 2023 Award to encourage organization members of the Sustainability Disclosure Community (SDC member) to be aware and value the importance of company’s information disclosure of ESG issues (Environmental, Social and Governance issues) more than being solely aware on financial issues. This awareness would lead the Company to sustainable business which would be beneficial to all stakeholders and the Company’s long-term business development.

“BUILDING D OF THE HIGH-VOLTAGE TRAINING CENTER”, located at the Provincial Electricity Authority, Nakhon Chaisi District, Nakhon Pathom Province

International Awards

1

Asia Responsible Enterprise Awards (AREA) 2023,

Organized by Enterprise Asia, a leading NGO that promotes the potential of responsible entrepreneurship in Asia:

1. Social Empowerment Award from the “Clean Energy for Sustainability of Remote Communities Project”.
2. Corporate Sustainability Reporting Award from the “Provincial Electricity Authority’s 2021 Sustainability Report”.

2

Innovation Awards from the “Seoul International Invention Fair 2023” (SIIF 2023),

Held in Seoul, Republic of Korea:

1. Gold Prize and Distinguished Innovation Award from King Abdulaziz University, Kingdom of Saudi Arabia, for the “185-Square-Millimeter Hotline Electric Cable Stripper”.
2. Gold Prize for the “Pin Post Insulator Holder Tool”.
3. Silver Prize and Special Prize from the Vietnam Fund for Supporting Technological Creation (VIFOTEC), Socialist Republic of Vietnam, for the “Multipurpose Safety Hook”.

3

Innovation Awards at the “2023 KAOHSIUNG INTERNATIONAL INVENTION AND DESIGN EXPO (KIDE 2023)”,

Held in Kaohsiung, Taiwan:

1. Gold Medal and Special Award from the Macao Innovation and Invention Association, Macao Special Administrative Region, People’s Republic of China, for the “Low-Voltage Wiring Tool”.
2. Gold Medal and Gold Award from the Bramunastyaits Team, Indonesia, and Special Award from the Dubai Invention Show, Dubai, for the “HRC Fuse Test”.
3. Silver Medal and Ace Gold Award from the University of Malaysia Perlis, Malaysia, for the “Crawler Cart for Climbing Stairs with an Electric Motor”.

LOW-VOLTAGE WIRING TOOL

4

Innovation Awards at The 48th International Exhibition of Inventions Geneva,

Held in Geneva, Switzerland:

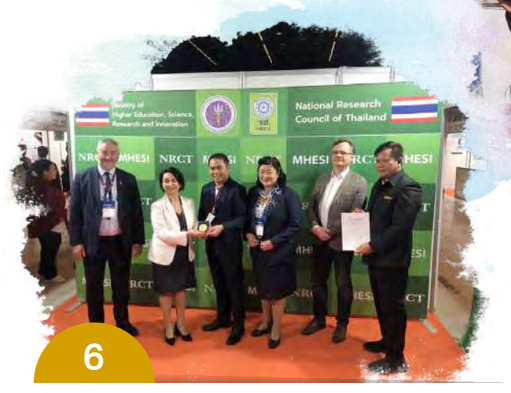
1. Gold Medal and Special Award from the Research Institute of Creative Education (RICE), Vietnam, for “Mini AVR”.
2. Silver Medal and Special Award from the Research Institute of Creative Education (RICE), Vietnam, for “Cable Termination Steel Support for 115-kV Riser Pole”.
3. Silver Medal and Distinguished Innovation Award from King Abdulaziz University, for “Super Wire Stripper”.
4. Silver Medal Award for “Pump as Impulse Turbine”
5. Bronze Medal and CAI Award Invention & Innovation from China, for “Cable Pusher with Auto Lubricant”.

5

Innovation Awards at “The International Trade Fair - Ideas, Inventions and New Products (iENA 2023)”,

Held in the Republic of Germany:

1. Silver Medal and Special Prize on Stage for the Best Invention from The First Institute of Researchers and Inventors in I.R. IRAN (FIRI), Islamic Republic of Iran, for “Easy Guard”.
2. Bronze Medal and Special Award from the Taiwan Prominent Inventor League, Republic of China, for “IEC 61850 Based Substation Control and Protection System (SCPS) Simulator”.



6

Innovation Awards at “The 16th International Invention and Innovation Show” (INTARG 2023),

Held in Katowice, Poland:

1. Gold Medal and WIIPA Special Award from the World Invention Intellectual Property Associations, Republic of China (Taiwan), for “Robotic Saw for Tree Trimming (RST)”.
2. Gold Medal for “Robotic Solar Cleaner”.
3. Silver Medal for “All-Voltage Multifunction (ATM)”.

Innovation Awards at “The 48th International Convention on Quality Control Circles” (ICQCC 2023),

Held in Beijing, People’s Republic of China:

1. Gold Award for the innovation of “Time Confirmation in Meter Installation - Exchange (ZW01 - ZW02)”.
2. Gold Award for the innovation of “Lack of Materials Delivery (LMD)”.

7

03 PERFORMANCE HIGHLIGHTS

Environment

2065
PEA Net-Zero Emissions covers greenhouse gases in scope 1, 2, and 3

2050
More than 75% of the electricity distributed by PEA is clean energy

2040
The majority of the power grid has been developed into grid modernization and digital grid

2037
PEA Carbon Neutrality (own operation)

2030
PEA Volta: driven by clean energy

2025
Solar power systems installed across all PEA buildings with potential for installation

2024
Energy efficiency enhanced across all eligible offices and electric vehicle replacing conventional vehicles

2023
PEA's greenhouse gas data management: fully digitalized

PEA's Goals toward Carbon Neutrality and Net Zero Emission

7,455.13
tCO_2e
total GHG Reduction.

3,567.17 tCO_2e
GHG reduction by the Green Office Project.

3,887.95 tCO_2e
GHG reduction by the Solar Power Generator Installation at PEA Offices Project.

140.51 GWh of cumulative electrical energy saved, representing a **13.98%** increase from 2022.

The Eco-efficiency achieved under the ISO14045 approach is **31,198 units/1 tCO_2e,** representing a Factor X improvement of **1.07881** times compared to the baseline year.

Remark: The baseline year is set to 2021, as it is the year when the calculation of Eco-Efficiency was adjusted from EBITDA to electricity sales units.

The organization's net greenhouse gas emissions (Scope 1-3) amount to **4,806,224.275 tCO_2e,** representing a **3.54%** decrease from 2022.

5,988
new households
have been electrified with the completion of the power system expansion

2,311
new farmers
have been electrified with the completion of the power system expansion in agricultural areas

Social

The number of training hours per employee per year is **48.10 hours,** superior to the goal of 14 hours per employee per year by **3.435 times.**

The Disabling Injury Index ($\sqrt{DI}$) is **0.1021,** against the goal of 0.1208, representing a performance improvement of **15.48%.**

99.70% households have access to the power system, In 2023 **21,841,228 households** were electrified, versus a total of 21,907,462 households nationwide

4.4406 marks scored against the goal of 4.0900 in stakeholders' satisfaction with PEA's operations (8.57% superior to the goal).

88% overall Organization Health Index (OHI) score from a survey of **6,862 employees.**

4.3788 marks scored against the goal of 4.0580 in stakeholders' engagement with PEA's operations (7.91% superior to the goal).

67.71
marks
the Net Promoter Score (59.32% superior to the goal).

8,605.95
million baht
Related/downstream business income (7.57% superior to the goal).

Governance and Economic

4.60 marks in the customer group satisfaction survey (performance meeting the goal).

4.72 marks in the engagement score of key accounts (performance meeting the goal).

5.36% of the distribution losses of 8,443.47 million units against the goal of 5.40% (0.74% superior to the goal).

1.46 times/customer/year in SAIFI against the goal of 1.48 times/customer/year (1.35% superior to the goal).

5.29 million cumulative PEA Smart Plus applicants against the goal of 5 million applicants (5.80% superior to the goal).

111,624 e-Bill applicants against the goal of 91,737 (21.68% superior tothe goal).

27.58 minutes/customer/year in SAIDI against the goal of 27.74 minutes/customer/year (0.58% superior to the goal).

Remarks:
1. PEA's SAIFI & SAIDI are exclusive of the three southernmost provinces.
2. PEA's SAIFI & SAIDI are exclusive of events resulting from severe accidents, force majeure,catastrophes, and severe interruptions at power generation sites.

4.6245 marks against the goal of 4.45 marks in industrial estate power system satisfaction (3.92% superior to the goal).

0.714 time/customer/year against the goal of 0.783 time/customer/year in SAIFI of low-voltage distribution systems (8.83% superior to the goal).

Developed an information security management system and received certification according to **ISO/IEC 27001:2013** for Critical Infrastructure, covering the headquarters and 12 regional offices.

2.920 minutes/customer/year of SAIDI in industrial estates against the goal of 9.350 minutes/customer/year (68.77% superior to the goal).

Remarks: PEA's SAIFI & SAIDI of industrial estates are exclusive of Pattani Industrial Zone.

0.30 time/customer/year of SAIFI in industrial estates against the goal of 0.51 time/customer/year (41.18% superior to the goal).

42.814 minutes/customer/year against the goal of 72.211 minutes/customer/year in SAIDI of low-voltage distribution systems (40.71% superior to the goal).

Remarks:
1. PEA's SAIFI & SAIDI are exclusive of the three southernmost provinces.
2. PEA's SAIFI & SAIDI are exclusive of events resulting from severe accidents, force majeure, catastrophes, and severe interruptions at power generation sites.

04 ABOUT PEA

General Information [2-1]

The Provincial Electricity Authority (PEA) [2-1] was established on 28 September 1960, replacing the former Provincial Electricity Organization, which commenced operations on 6 March 1954. During its initial decade, PEA undertook the vital tasks of procuring electricity generators and employing skilled technicians for generator installation to facilitate electrification of undeveloped regions. Now, in the sixth decade, it PEA has undertaken organizational restructuring and improved operational strategies to provide efficient electricity services while fostering continuous development in quality and service standards. Striving to excel in this business, PEA is committed to meeting customers' expectations, creating value for society and the environment through digital technology and driving toward becoming PEA Digital Utility.

As a state enterprise in the energy sector under the Ministry of Interior, PEA is regulated by the State Enterprise Policy Office (SEPO). [2-1] Our core business is the procurement and distribution of electricity to consumers in provincial areas. Also offering supplementary services to our customers, including construction, inspection, maintenance, and repair, we explore new business opportunities to capitalize on our assets, knowledge, and capability for potential future growth or ventures. To ensure a reliable and adequate supply of electricity to meet customers' demand and electrify remote areas, PEA has devised plans and projects to expand distribution systems, enhance and reinforce power infrastructure, and improve services. These endeavors inevitably impact stakeholders in all sectors, society, and the environment. Therefore, we strive to conduct our operations in compliance with the law, aligning with the organization's mission and public policies.

Vision, Mission, and Core Values [2-23]

Vision

Smart Energy for Better
Life and Sustainability

MISSION

PEA is responsible for the provision of standardized electricity services together with related businesses to attain customers' satisfaction on products and services through PEA's continual corporate development plans together with the recognition of socio-environmental responsibility.

Core Values

- Modernization
- Excellent Service
- Good Governance

Businesses and Services [2-6]

PEA is responsible for providing electricity to 74 provinces in Thailand except Bangkok, Nonthaburi, and Samut Prakan. We procure electricity from power producers, including the Electricity Generating Authority of Thailand (EGAT) and Very Small Power Producers (VSPPs), which is transmitted to major consumers (large industries, hotels, anddepartment stores) and medium-sized industries. We also distribute electricity to residential consumers in the North, Northeast, Central, and South. Furthermore, PEA provides comprehensive electrical engineering services, including consultancy, planning, design, construction, installation, and maintenance through a professional team equipped with modern tools and equipment. We aim to deliver quality, reliable, and efficient services to meet customers' needs and ensure maximum satisfaction.

Power Procurement and Distribution Business

This involves sourcing electrical power from power producers and distributing it to customers in the North, Northeast, Central, and South.

Power Service Support Business

Related Businesses: These consist of supplementary and new businesses related to electrical services. These regulated or non-regulated businesses aim to foster business growth and increase returns from operations to PEA.

Supplementary Businesses: These businesses provide support to PEA's customers or power services domestically and internationally. It entails further development of PEA's resources, expertise, and capability in various fields, including construction, inspection, repair, maintenance, and leasing.

New Businesses: These concern electrical power services. They can be adjacent businesses that leverage PEA's existing assets or expertise, or a new S-Curve business developed for a domestic or international market by PEA or in collaboration with public or private partners to address changes in the power industry and add value to PEA's portfolio and its affiliates.

Energy Trading Management Business

Leveraging expertise in power distribution systems to engage in the energy trading management business, PEA develops and provides energy trading channels while developing and managing power systems that connect power producers, prosumers, and energy storages. This enables efficient management of energy resources within cost-effective structures.

Investment Businesses by Affiliates

To drive business growth, PEA needs to adapt to changes in the power industry and create new opportunities by investing in renewable energy or other ventures through PEA ENCOM and other affiliates that act as primary investors and engage in joint ventures with PEA's business partners. This supports the country's renewable energy development.

PEA ENCOM International Company Limited (PEA ENCOM) is PEA's first affiliate. It is a state enterprise established under the Cabinet Resolution dated 3 June 2009, which engages in the electricity investment business and provides power system training to public and private organizations in Thailand and abroad. PEA ENCOM is wholly owned by PEA, with an initial registered capital of 100,000,000 baht. Currently, its registered capital amounts to 5,110,621,250 baht.

PEA's Value Chain [2-6]

UPSTREAM

DOWNSTREAM

Power Generator

Electricity Procurement, Transmission and Distribution Business

Electricity Service Support Business

Operational Support

Strategic

Strategic Governance and Sustainable

EGAT

SPP & VSPP

Solar Rooftop

DEDE

PEA

Fuel Source

- Natural Gas
- Oil
- Lignite

Renewable Energy Source

- Solar
- Hydro
- Wind
- Biomass

Planing and Energy Procurement

Construction and Maintenance

- Power and Transmission Lines System
- Power Substation

Distribution

115kV
- Large-sized Industries
- Hotels

69kV
- Medium-sized Industries

22-33kV
- Condominiums
- Industry Small

220V/ 380V
- Temples
- Churches
- Mosques
- Houses

Customer Service and Marketing

Innovation and Business

Power System Construction and Installation
- Design and Construct Power Distribution Service
- Design and Construct Substations and Transmission Lines Service
- Intertrip and Teleprotection Installation Service

Power System Inspection and Maintenance
- Power System Inspection and Maintenance Service
- Hotline Service
- Transformer Inspection and Maintenance Service

Power Quality Measurement
- Power Quality Inspection Service

Electrical Equipment Testing and Calibration
- Transformer Testing Service
- Electricity Meter Testing Service

Electrical Equipment Supply and Leasing
- Electrical Equipment Supply Service
- Electrical Equipment Leasing Service

Fiber Optic Leasing
- Fiber Optic Service
- Submarine Fiber Optic Service

Energy Management
- Solar Power System Services Solar Rooftop, Solar Farm, Floating Solar
  - ESCO Model
  - EPC Model

PEA SOLAR
- Comprehensive Solar Rooftop Service

EV Charger
- PEA Volta Pupaplug

Logistics Management

Budget, Accounting and Finance

HR, PR and Organization Management

Digital Technology Management

Stakeholders across the Entire Value Chain

Stakeholders	Planing and Energy Procurement	Construction and Maintenance	Distribution	Customer Service and Marketing	Strategic Governance and Sustainable	Innovation and Business	Logistics Management	Budget Accounting and Finance	HR, PR and Organization Management	Digital Technology Management
Regulators and The Public Sector	✓	✓	✓	✓	✓			✓		✓
Customers and Electricity Users			✓	✓	✓	✓		✓		
Communities and Society		✓			✓					
Press					✓				✓	
Cooperator	✓	✓	✓		✓	✓	✓	✓		✓
Board of Directors					✓			✓		
Employees					✓					✓
Affiliates					✓	✓				
Comparison					✓	✓				

Organization Structure [2-4, 2-9, 2-24]

PEA made changes to its management structure in October 2023 to ensure effective management and alignment with its mission and strategies, ensuring the ability to address changes in the industry and the development of new future electricity businesses.

- Executive Committee
- Audit Committee
- Risk Management and Internal Control Committee
- Corporate Governance and Sustainable Development Committee
- Governor's Performance Evaluation Committee
- Governor Nomination Committee
- Governor Remuneration Committee
- Relations Affairs Committee
- Independent Directors
- Digital Technology Committee
- Legal, Regulation, and Appeal Committee

Board of Directors

Audit Committee

PEA Governor

Assistant Governor (Internal Audit)

- Deputy Governor (Corporate Strategy)
- Deputy Governor (Business and Marketing)
- Deputy Governor (Planning and Engineering)
- Deputy Governor (Grid Operation)
- Deputy Governor (Digital and Communication Technology)
- Deputy Governor (Accounting and Finance)
- Deputy Governor (Organization Management)
- Deputy Governor (Logistics and Organization Service)
- Deputy Governor (Northern and Northeastern Region)
- Deputy Governor (Central and Southern Region)

North
- Chiang Mai Province
- Phitsanulok Province
- Lop Buri Province

Central
- Phra Nakhon Si Ayutthaya Province
- Chon Buri Province
- Nakhon Pathom Province

Northeast
- Udon Thani Province
- Ubon Ratchathani Province
- Nakhon Ratchasima Province

South
- Phetchaburi Province
- Nakhon Si Thammarat Province
- Yala Province

Service Areas [2-1]

PEA's Head Office is located at 200 Ngamwongwan Road, Ladyao, Chatuchak, Bangkok 10900. PEA is responsible for providing electricity to 74 provinces in Thailand except Bangkok, Nonthaburi, and Samut Prakan. This represents 99 percent of Thailand, which is about 510,000 square kilometers, serving 22,006,683 electricity users.

North

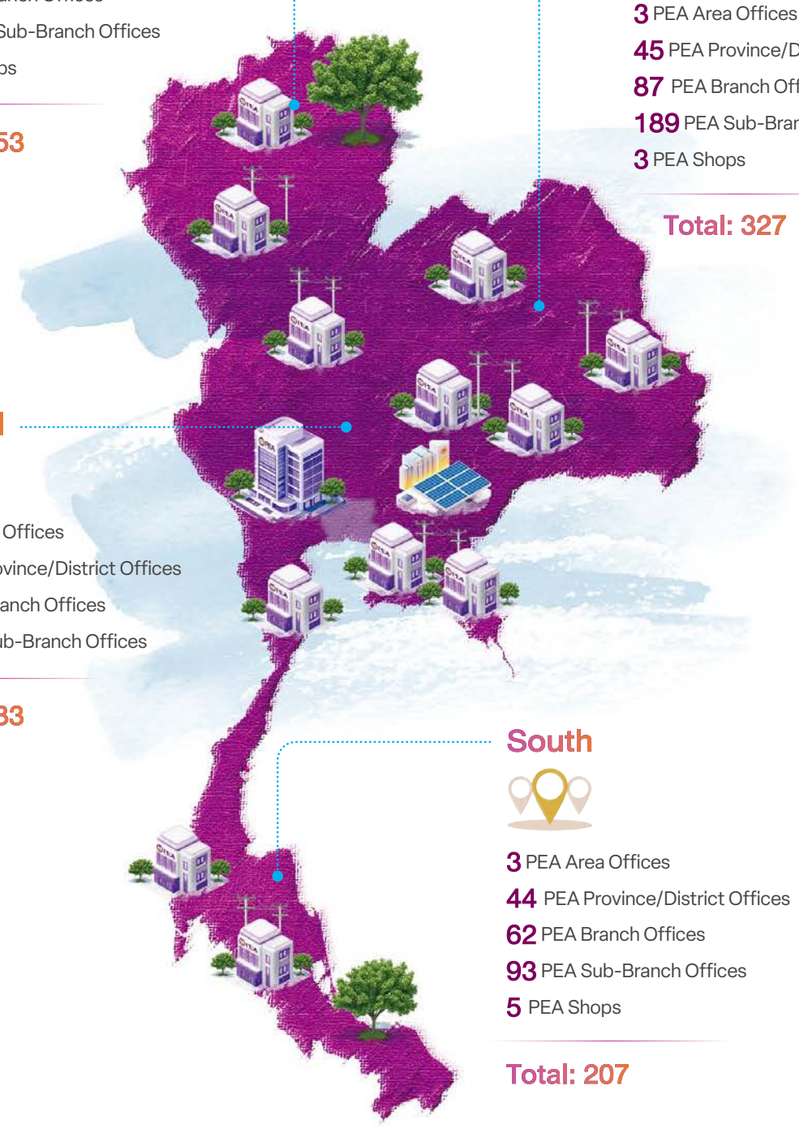
3 PEA Area Offices
43 PEA Province/District Offices
86 PEA Branch Offices
119 PEA Sub-Branch Offices
2 PEA Shops

Total: 253

Northeast

3 PEA Area Offices
45 PEA Province/District Offices
87 PEA Branch Offices
189 PEA Sub-Branch Offices
3 PEA Shops

Total: 327



Central

3 PEA Area Offices
67 PEA Province/District Offices
49 PEA Branch Offices
64 PEA Sub-Branch Offices

Total: 183

South

3 PEA Area Offices
44 PEA Province/District Offices
62 PEA Branch Offices
93 PEA Sub-Branch Offices
5 PEA Shops

Total: 207

Number of Electricity Users [2-6]

Electricity Users		2019	2020	2021	2022	2023
Major Customers	Industrial	36,213	37,066	37,856	38,456	39,974
	Major Commercial	50,408	50,394	48,810	51,993	58,401
Retail Customers	Residential	17,816,406	18,308,892	18,757,812	19,107,386	19,364,315
	Retail Commercial	1,733,449	1,759,639	1,817,650	1,863,496	1,912,373
Public Sector		557,389	578,726	595,404	608,726	631,620
Total Electricity Users		**20,193,865**	**20,734,717**	**21,257,532**	**21,670,057**	**22,006,683**

Number of Employees [2-7, 2-8]

Number of Employees / Contractors	2019		2020		2021		2022		2023	
	Number	%	Number	%	Number	%	Number	%	Number	%
Number of Employees and Contractors by Genders										
Employees										
Male	21,469	73.82	20,962	73.88	20,870	74.09	20,893	74.38	20,704	74.24
Female	7,615	26.18	7,410	26.12	7,298	25.91	7,197	25.62	7,182	25.76
Total	29,084	100	28,372	100	28,168	100	28,090	100	27,886	100
Contractors										
Male	3,911	66.73	4,047	66.75	3,705	65.36	3,778	66.46	4,158	69.27
Female	1,950	33.27	2,016	33.25	1,964	34.64	1,907	33.54	1,845	30.73
Total	5,861	100	6,063	100	5,669	100	5,685	100	6,003	100
Grand Total	**34,945**		**34,435**		**33,837**		**33,775**		**33,889**	
Number of Employees and Contractors by Area										
Employees										
Head Office	4,040	13.89	3,917	13.81	3,895	13.83	3,878	13.81	3,792	13.81
North	5,769	19.84	5,572	19.64	5,561	19.74	5,522	19.66	5,540	19.87
Northeast	6,786	23.33	6,610	23.30	6,583	23.37	6,584	23.44	6,506	22.98
Central	7,054	24.25	6,953	24.51	6,859	24.35	6,819	24.28	6,802	24.43
South	5,435	18.69	5,320	18.75	5,270	18.71	5,287	18.82	5,246	18.91
Contractors										
Head Office	168	2.87	170	2.80	166	2.93	160	2.81	171	2.85
North	1,163	19.84	1,212	19.99	1,219	21.50	1,227	21.58	1,277	21.27
Northeast	1,525	26.02	1,564	25.80	1,400	24.70	1,478	26.00	1,501	25.00
Central	1,693	28.89	1,775	29.28	1,671	29.48	1,679	29.53	1,725	28.74
South	1,312	22.38	1,342	22.13	1,213	21.40	1,141	20.07	1,329	22.14
Grand Total	**34,945**		**34,435**		**33,837**		**33,775**		**33,889**	

Remarks: Employees refer to:

1) Management (Executives), including Deputy Governors, Assistant Governors / Department Directors / Managers Level 1, Deputy Department Directors, Division Directors, Center Directors, Electric Vocational School Directors, Managers Level 2-3 or equivalents, Deputy/ Assistant Division Directors, Deputy / Assistant Center Directors, Deputy / Assistant Electric Vocational School Directors, Deputy Managers Level 1-2, Branch Managers, Assistant Managers Level 3, Section Heads, Sub-Branch Managers, and Assistant Section Heads
2) Experts, including Experts Level 12-13, Researchers Level 9-11, Specialists Level 9, Specialists Level 8, Researchers Level 7-8, and Professional Officers Level 7
3) Practitioners, including Researchers/Professional Officers Level 4-6 and Professional Officers Level 2-3. Contractors refer to monthly workers who agree to work for the employer and receive monthly wages under the workforce plan. They also include full-time workers in the Governor's, Deputy Governors', and Assistant Governors' Offices, including drivers and housekeepers.

Membership Associations [2-28]

Operating under the Provincial Electricity Authority Act 1960, PEA has adopted national and international requirements, frameworks, standards, and principles to improve its operations. These include requirements of the State Enterprise Policy Office, COSO ERM Framework, ISO/IEC 22301 (Business Continuity Management), ISO/IEC 27001 (Information Security Management), ISO 26000 (Social Responsibility), GRI Standards, and UN SDGs. [2-23]

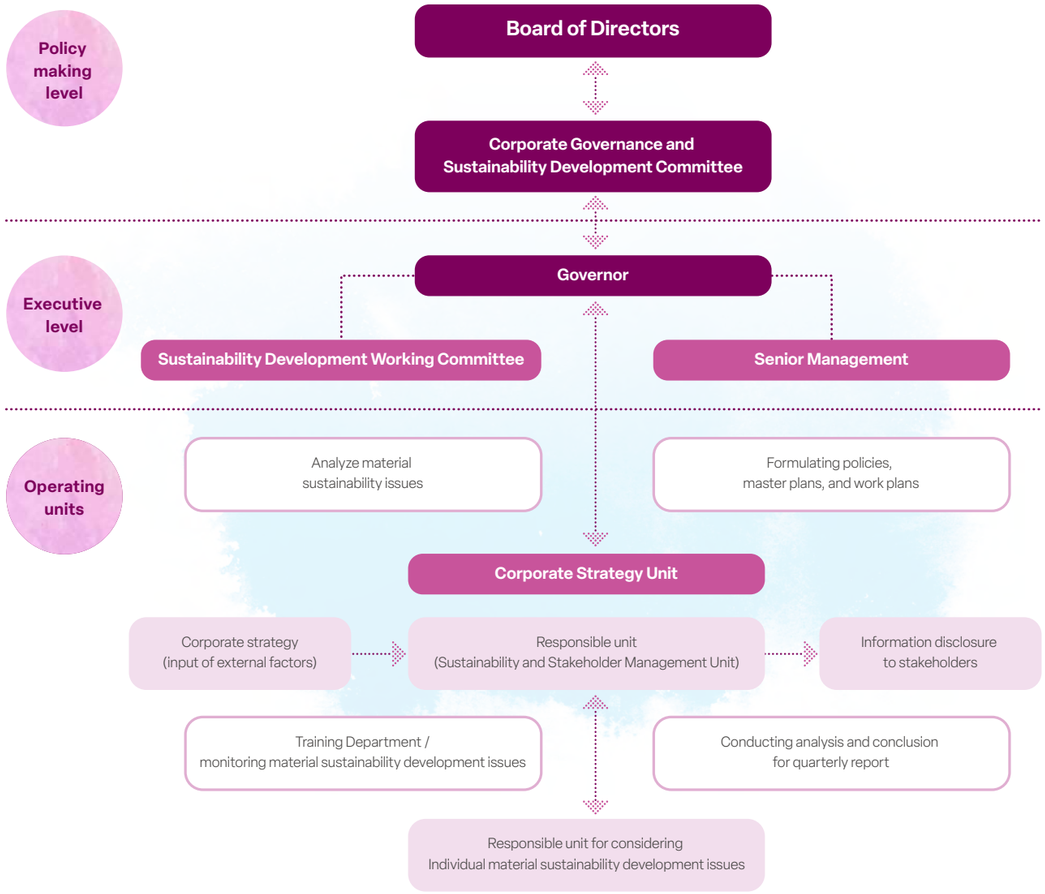
Furthermore, to drive efficient operations and deliver value to communities and society, PEA participates as a member or collaborates with various public and private organizations below:

- Key operations (distribution system):
  - Energy Policy and Planning Office
  - Office of the Energy Regulatory Commission
  - Engineering Institute of Thailand under the Royal Patronage
  - Institute of Electrical and Electronics Engineers (IEEE) Thailand Section
  - Electricity Supply Industry Association of Thailand (TESIA), Heads of ASEAN Power Utilities/ Authorities (HAPUA)
  - Electricity System Reliability Improvement Committee (the three electricity authorities).
- Other associations:
  - Thailand Business Council for Sustainable Development (TBSCD)
  - Thai Electrical and Mechanical Contractors Association
  - Personnel Management Association of Thailand (PMAT)
  - Department of Skill Development, Ministry of Labor
  - Department of Environmental Quality Promotion, Ministry of Natural Resources and Environment.

05 SUSTAINABILITY MANAGEMENT

In pursuit of becoming a sustainable organization, PEA has adopted such international guidelines as ISO26000 and Sustainable Development Goals (SDGs) as frameworks for policy formulation and the development of PEA's Sustainable Development Manual. Analyses are made into both internal and external factors within the sustainability context, while stakeholders' inputs are valued to support strategies for sustainability development, which are then translated into actions. Directors and management play their roles in all processes under the sustainability management structure to assure long-term value addition to the organization while keeping "economic growth in parallel with social and environmental sustainability" [2-12] in balance.

Sustainability Management Structure [2-13, 2-24]



The Board of Directors has assigned the Corporate Governance and Sustainable Development Committee in response to oversee sustainability management to attain the strategic objectives outlined in the Sustainable Development Policy. The Committee also reviews and approves material sustainability issues identified by the Governor, senior management, and the Sustainable Development Working Group, while offering recommendations to ensure the effective realization of strategic objectives. In addition, the Sustainability and Stakeholder Engagement Management Division, Stakeholder Engagement and Corporate Communication for Sustainability Department, and Corporate Strategy Function were assigned under the Deputy Governor (Corporate Strategy) and Assistant Governor (Corporate Strategy-Organization Affairs) to communicate policies, material sustainability issues, master plans, and other strategies throughout the organization. They also collaborate with other departments to manage sustainability issues, drive and monitor implementation, and report progress to management every quarter.

Strategic Sustainable Development Policy [2-23]

Committed to smart electricity services to sustainably improve lives in all corners of Thailand, PEA has developed itself across the value chain in line with stakeholders' needs and expectations, the BCG Economic Model, and the UN SDGs to achieve its goal of becoming an energy entity for sustainability. To this end, we strive to strike a sustainable balance between economic growth and society as well as the environment to lead to PEA's long-term value supplementation. Therefore, PEA has prescribed the following policy for the management, employees, and contractors:

Customer relationship management (CRM)

Forge extraordinary experiences through services, focusing on meeting all customers' needs and satisfaction with the quality of electricity and services. To this end, strive for higher efficiency of service, relationship building, and retention of key accounts by applying digital technology.

Handling of business transformation

Prepare and develop organizational capability in step with change (technology, energy, industry, climate, and other significant aspects of the future) to enable PEA to become more competitive in the future. Be committed to developing better products and services at affordable prices for the public to raise the quality of life for electricity users and to comprehensively satisfy all stakeholder groups.

Management of innovation and digital research and development to grow business capability

Value the adoption of research and innovation as the main driver of business operations and related businesses by focusing on exploiting them to raise the efficiency of products, services, and processes with due regard for research outcomes that can be commercialized in the long run.

Community health and safety

Strive to engage in implementing PEA's mission and related businesses that prove safe for customers, communities, and the environment. Develop a safety management system for the power system consistent with laws, international standards, and other requirements. At the same time, raise awareness and understanding of safe electricity use, with proper value given to the prevention and risk assessment of hazards and impacts on electricity users. Make the best effort to ensure that such systems are effectively applied.

Management of human capital

Develop the workforce to upgrade their work on a par with professionals. Develop organizational work systems and create innovations. Put in place welfare, safety, occupational health, and a sound work environment. Advocate personnel's engagement in direct and indirect public services with proper regard for human rights across the value chain. Treat stakeholders fairly. Promote the hiring of locals, the underprivileged, and the handicapped without discrimination despite differences in nationality, religion, gender, age, education, belief, and others.

Security of power stability and availability

Upgrade the quality of power systems for security, reliability, efficiency, and sufficiency to accommodate expanding domestic economic zones and remote areas. Strive to develop smart grids and smart cities with digital technology.

Safety of data, IT system, and customer data confidentiality

Focus on strengthening security and confidence in digital technology operation among all stakeholders. Devise cyber threat vigilance and management measures that are proper and of international standard, notably the safeguarding of critical infrastructure, confidentiality, integrity, and availability of information systems.

Governance, risk management, and compliance (GRC)

Engage in the core mission by pursuing lawful supplementary and new businesses, oppose corrupt practices, and be transparent as well as accountable. Conform to PEA's good governance policy. Advocate free and fair competition.
Avoid causing conflicts of interest, monopolies, or violation of intellectual property by paying attention to all stakeholder groups' best interests. Put in place a risk analytical process for economic, social, environmental, and cyber security activities across the value chain. Finally, align surveillance and risk management measures along with emergency management and rehabilitation consistent with the international code and the Sendai Framework for Disaster Risk Reduction.

Supply chain management

Strive to develop an efficient process of product and service procurement to avert and minimize GRC risk. Support local businesses and advocate hiring and purchasing of products and services around operating sites to support the economy, hiring, and income generation at the community level. Advocate green financing by developing projects that benefit society and the environment in the long run through additional options for fund mobilization of ESG bonds.

Management of energy and assets

Evolve an international-standard energy management system. Advocate energy conservation and renewables consumption, inside and outside PEA, with modern technology. At the same time, evolve an asset management system to grow the efficiency of asset application and implementation of the missions of PEA and related businesses. Finally, reduce the costs of maintenance activities and increase PEA's rate of financial returns.

Electrification and affordable prices

Guarantee that the public can access modern and reliable energy services at affordable prices by expanding infrastructure and evolving technology for equitable energy service delivery to all.

Personnel's occupational health and safety

Evolve a safety, occupational health, and work environment policy consistent with laws, international standards, and other requirements. Cultivate a work safety culture among personnel to minimize or eliminate accidents and incidents. Value risk prevention and assessment of hazards as well as environmental impacts. Do one's best to ensure that risk prevention and remedial systems are effectively applied.

Stakeholder engagement

Address needs and expectations and upgrade cordial relations with all stakeholders under an efficient and effective stakeholder management system across the value chain to create new marketing opportunities, exert positive impacts, and lower negative social impacts under the requirements of applicable laws and regulations.

Greenhouse gas emission and climate change strategy

Uplift awareness of climate change risk and impacts across the value chain by lessening or stopping certain non-essential activities requiring fossil fuel energy. Focus on clean energy and digital technology in carrying out the mission and related businesses. Duly compensate for carbon emission in various appropriate ways to strive to become a carbon-neutral organization while pursuing Thailand's Net Zero Emissions.

BCG Economic Model and environmental management

Evolve a process of carrying out PEA's mission and related businesses by creating new values for renewable products. Focus on natural resource conservation and consumption that are most cost-effective or lasting the longest to drive PEA toward an eco-friendly organization in conjunction with stakeholders in a sustainable way.

Announced on 8 September 2023.

Unsit Sampuntharat
Chairman, Board of Directors

Supachai Ek-un
Governor

Yodphot Wongrukmit
Chairman of the Corporate Governance and Sustainable Development Committee

The Management Framework of Sustainability and Stakeholder Engagement [2-23]

Key Stakeholders

Regulators and Public Sector
Agencies authorized to define directions and policies; grant approvals, licenses, and support; or involve in business operations

Customers and Electricity Users
Electricity users in PEA's distribution network and in other businesses under PEA

Community and Social
Communities around PEA sites as well as the public

Press
Mainstream media and all online media

Cooperator
Distributors of electricity, equipment, and service, or collaborators of support missions and other endeavors

PEA Board's of Directors
PEA Board of Directors

Employee
PEA executives/management, employees, and contractors, as well as other working groups in PEA

Affiliate
PEA ENCOM

Comparison
Agencies, organizations, and companies operating the power distribution business or those in the same industry as PEA's related businesses

Vision

To be a leading agency to provide Smart Grid service and to create value along with stakeholders in a balance and sustainable manner

Mission

To operate business with adherence to the corporate governance code, with social and environmental responsibility and with continuous stakeholder engagement to support sustainable growth

Objectives

- To set the scope of sustainability development and align it with the organization's business while systematically managing material needs and expectations of stakeholders
- To manage levels of relationship between the organization and stakeholders to ensure strategic goal attainment
- To grow a corporate culture that values sustainability and stakeholders in all missions

Scope

Scope of operations covers key stakeholders as designed by PEA's business architecture.
Key stakeholders

Designed/released: Sustainability and Stakeholder Management Unit, PEA PEA's Sustainability Management [2-23]

Master Plan on Sustainability and Stakeholder Management for 2023-2027

Strategic objective 1

Promoting sustainability development as a driver of the organization

Targets

- To identify, prioritize, and systematically drive material issues concerning the needs and expectations of stakeholders
- To allow stakeholders to voice their concerns and creatively take part in defining business directions
- To suitably disclose material information to stakeholders

Strategic objective 2

Establishing business partnership while upgrading relationship with stakeholders

Targets

- To seek key business partners to support the operations consistent with the organizational strategies
- To systematically manage engagement with key stakeholders
- To efficiently manage information concerning stakeholders
- To minimize issues while addressing stakeholders' needs and expectations about business operations

Strategic objective 3

Developing sustainability and stakeholder management processes

Targets

- To learn and improve processes to enhance operational efficiency
- To enhance competencies of personal dealing with sustainability and stakeholder management to ensure their preparedness for change

The Management Framework of Sustainability and Stakeholder Engagement

Strategic Objectives

After reviewing its strategic plan for 2023-2027, PEA has defined Strategic Objectives (SO) in four areas as follows:

SO1: Enhance international management and operation system through digital and innovation with human capital as the main driving force

PEA stresses the upgrading of its organizational and human capital management, considered key enablers for driving the organization forward. It encourages development and application of digital technology and innovation management, as seen in its business management upgrade to international standards, skill development to keep up with business and technological changes, as well as competition environment, and the ambition to expand into a digital utility. To this end, PEA focuses on Digital Service – to achieve customer service efficiency improvement; Digital Operational Excellence – to achieve higher operating efficiency and productivity; and Digital Business – to achieve higher efficiency of current products and services, which could lead to future businesses. PEA always keeps a watchful eye on cyber security and innovation management as innovation is recognized as the key driver for both the core business and related businesses.

SO2: Leveraging efficiency and reliability of distribution system and developing Smart Grid to become a leader in grid modernization and be responsive to customers and stakeholders' satisfaction

PEA aims for continuous development of the power distribution system of regionally accepted standards. This would lead to an upgrade into a stronger grid with assured stability, reliability, and efficiency, capable of supporting the expansion of special economic zones and industrial estates located in the country's strategic locations. Various technologies have been applied for grid management, including voltage control, SCADA upgrade, use of integrated grid images derived from satellite diagrams, use of drone survey together with integrated data used in Grid Model Data Management (GMDM) to support Grid Analytics and Smarter Grid, development of an asset management system and a quality modern procurement system to achieve better asset and operation management. PEA also recognizes the need to maintain its relationship with customers. Improvements were made to the Digital Touchpoint system and Customer Relationship Management (CRM) system to raise the efficiency of overall customer service to in turn ably satisfy needs and expectation of each group of customers. Sustainable relationship with customers was to be assured in better service efficiency supported by suitable application of digital technology and of customer service staff professionalism.

SO3: Enhancing business performance and leveraging new business to be prepared for the electricity market liberalization

PEA devised a plan to be ready for electricity liberalization by segregating Distribution System Operation (DSO) and Retail functions using the perfect market competition mechanism. A pilot project was launched in the Eastern Economic Corridor (EEC), where PEA's distinguished role as the leader in DSO was underscored, taking advantage of its skilled personnel and the readiness of distribution systems. Meanwhile, PEA's role as a leader in the retail sector was highlighted. Such leading roles have led to the design of a business model with a distinct difference from the current position to further support business expansion. Organizational adjustment was inevitable amid changes in the power business driven by the advancement of technology and industrial structure. PEA has therefore sought investment opportunities in renewable energy or entered partnership with either the government or the private sector in Thailand and ASEAN. Such investment is under the responsibility of PEA ENCOM International Co., Ltd., and its future affiliates who will make decisions to be either a major investor or a joint investor with PEA's business partners.

SO4: To be a leading electrical organization carrying out challenging tasks for social and environmental sustainability

Aiming to achieve its economic, social, and environmental goals, PEA honors its obligations to take care of society and the environment. International best practices have been adopted as benchmarks for operations, including ISO 26000, UNSDGs, and DJSI, as well as good governance criteria defined by the State Enterprise Policy Office (SEPO), Ministry of Finance. A number of socially and environmentally responsible projects have been carried out to answer the needs and expectations of key stakeholders and communities in a comprehensive and sustainable manner. Concrete results of these projects have earned PEA awards and certification of sustainability reporting of international standards. This also conforms to the organization's policy on sustainability, which aims for greenhouse gas reduction to minimize adverse social and environmental impacts caused by the business. These projects have been designed as a platform for greater use of clean energy in the future to comply with the public policy on energy and national energy security regarding carbon neutrality attainment by 2050.

Business Administration in Support of Sustainable Development Goals (SDGs)

	SO1	SO2
Goal	**Enhance international management and operation system through digital and innovation with human capital as the main driving force**	**Leveraging efficiency and reliability of distribution system and developing Smart Grid to become a leader in grid modernization and be responsive to customers and stakeholders' satisfaction**
Corresponding UN SDGs		
Strategy	S1 – Leverage human capital management S2 – Develop and enhance digital technology competency and digital security for digital transformation S3 – Deploy Corporate Innovation System (CIS)	S4 – Develop a Regional-Leading Distribution System complying with Grid Modernization Roadmap S5 – Enhance satisfaction and engagement of customers and stakeholders
2023 Action Plan	• Digital platform development plan to support transformation into a digital utility along with the management of related businesses • Cyber security plan • Business Continuity Plan (BCP) • Development plans for personnel and executives to ensure they are equipped with the required future competencies, including digital skills, marketing and organizational management skills, and knowledge of electricity sector liberalization • Personnel development plans involving big data analytics and greater leverage of data analytics	• Strong Grid Plan • Loss control plan (technical and non-technical) • Digital Customer Experience Development Plan • Key account retention plan using the digital DRM system • Grid Model Data Management (GMDM) Plan • Stakeholder Engagement Plan • Loyalty program and organizational value promotion plan • Energy efficiency plan with promotion of alternative energy

	SO3	SO4
Goal	**Enhancing business performance and leveraging new business to be prepared for the electricity market liberalization**	**To be a leading electrical organization carrying out challenging tasks for social and environmental sustainability**
Corresponding UN SDGs		
Strategy	S6 – Define strategic alignment between PEA and affiliates S7 – Implement related business plan and product portfolio management S8 – Review relevant regulations for streamlining business and increasing competitiveness S9 – Promote PEA's role in preparation for free electricity market policy	S10 – Grow sustainably with increasing Eco-efficiency S11 – Encourage people's access to renewable energy
2023 Action Plan	• Business Portfolio Implementation Plan • Power Sector Liberalization Preparedness Plan • IT and software architectural development plan of the Energy Trading Platform to ensure PEA's preparedness for power sector liberalization • Plans on organizational structure, personnel, and business process design to ensure PEA's preparedness for power sector liberalization	• GRC integration plan and tangible implementation • Plan to upgrade safety operation for international compatibility • Organizational development plan in pursuit of carbon neutrality

SO1 - Enhance international management and operation system through digital and innovation with human capital as the main driving force

The implementation of **PEA's digital operating plan proved successful,** covering five operating systems, namely the Enterprise Content Management (ECM), IP Access Network, fiber optic cable network, internet network security system, and internet application firewall system.

The number of commercial innovations, innovations used as standard tools, or income creation / cost reduction processes amounted to 22 pieces: **six of them generated an income of 68.31 million baht** while 16 resulted in a cost saving of 2 billion baht.

The success rate of the expansion of the security management scope based on ISO 27001 equaled **100%** as planned, resulting in PEA's successful certification of ISO/IEC 27001:2013.

100% awareness of cyber security was achieved as planned.

100% of the preparedness for cyber threat response and recovery was achieved as targeted. The review of the Business Continuity Plan (BCP) and Cybersecurity Incident Response Plan was complete.

The procurement of equipment required to support cyber security was **97.20% achieved**, against the planned 95%, covering six systems, namely the Internal Application Firewall, XDR Security Platform, E-Certification Authority, Security Web Gateway, internet network system security system with supporting equipment for the backup data center, and Next-Generation Content Delivery Network.

Talent and successor development was **100% achieved as targeted,** covering 131 talents and 9 successors.

100% of the target personnel to be upgraded with knowledge of Big Data Analytics was achieved as planned.

The development of the knowledge management team proved **100% successful as planned.**

100% of the target group of personnel to be developed with future competencies was achieved as planned. Four key fields of knowledge and skills identified are those concerning digital knowhow, marketing management, organizational management, and liberalized power market. These knowledge and skills were offered in six training courses.

The number of training hours per person per year clocked 48.1, reflecting **2.48 times** of the target of 14 hours per person per year.

100% of the members of the knowledge management team successfully passed the learning effectiveness assessment under the specified development criteria.

SO2 - Leveraging efficiency and reliability of distribution system and developing Smart Grid to become a leader in grid modernization and be responsive to customers and stakeholders' satisfaction

67.71 in net promotor scores was given by customers receiving services through PEA's digital channels, surpassing the expected 42.50 scores by **59.32%.**

E-service and PEA Smart Plus, which are PEA's online services, achieved **100%** success as targeted by the development plan on Digital Customer Experience.

The customer satisfaction survey showed a score of **4.60** as targeted.

The number of applications for e-bill services was **111,624 accounts,** exceeding the target of 91,737 by **21.68%.**

The development of the **CRM** system was completely successful as planned.

Cumulative applications for PEA Smart Plus reached **5.29 million accounts,** exceeding the target of 5 million by **5.80%.**

The System Average Interruption Frequency Index (SAIFI) showed a result of 1.46 times/account/year against the target of 1.48 times/account/year, or **1.35% better than the target.**

The engagement score with key high-risk customers reached **4.72 as targeted.**

The number of lost units (loss) in the distribution system totaled 8,443.47 million units, equivalent to 5.36% of the entire system, considered less loss than the target of 5.34% by **0.37%.**

The System Average Interruption Duration Index (SAIDI) showed a result of 27.58 minutes/account/year against the target of 27.74 minutes/account/year, or **0.58 % better than the target.**

Remarks :
1. PEA's SAIFI and SAIDI results excluded the three southernmost provinces
2. PEA's SAIFI and SAIDI results excluded outages caused by serious accidents, forc majeures, catastrophes, and serious power outages occurred at power generation sites

SAIFI in industrial estates amounted to 0.30 time/account/year against the target of 0.51 time/account/year, or **41.18% better than the target**.

SAIDI in industrial estates amounted to 2.920 minutes/account/year against the target of 9.350 minutes/account/year, or **68.77 % better than the target.**

Remarks : PEA's SAIFI and SAIDI results at industrial estates excluded Pattani Industrial Zone

SAIFI of low-voltage distribution systems showed a result of 0.714 time/account/year, against the target of 0.783 time/account/year, or **8.83%** better than the target.

The survey results on satisfaction with power supply in industrial estates scored 4.6245, reflecting **3.92% higher than the target** of 4.45.

SAIDI of low-voltage distribution systems showed a result of **42.814 minutes/account/year,** against the target of 72.211 minutes/account/year, or **40.71% better than the target.**

Remarks :
1. PEA's SAIFI and SAIDI results excluded the three southernmost provinces
2. PEA's SAIFI and SAIDI results excluded outages caused by serious accidents, force majeures, catastrophes, and serious power outages occurred at power generation sites)

The success rate of SCADA system installation for low-voltage system distribution proved **100% as planned.**

The analysis into the number of target areas (prepared for addressing the vast expansion of EVs) along with engineering plan and design for increasing power supply capacity to meet demand from EVs (GIS backlog/cleansing, equipment installation, etc.) was complete. It found out that the number of distribution transformers affected by the power system if they do not support EVs was as many as **118,883 units** (accumulated from 2025-2035), up from the expected 64,838 units, in preparation for EV servicing.

Successful arrangement for Grid Model Data Management (GMDM) (quality of integrated data to support network and asset management to achieve higher efficiency of power transmission and distribution systems) was **100% as planned.**

The success rate of the acquisition of a database to support long-term asset management planning at power substations was **100% as planned.**

The eco-efficiency factor, based on guidelines suggested by ISO 14045, was **1.07881, as targeted.**

The survey results on stakeholder satisfaction with PEA's performance scored 4.4406, or **8.57% higher than the target** of 4.0990.

The success rate of the improvement and arrangement of operating guidelines to support connection among power producers to achieve operation streamlining reached **100% as targeted.**

Cumulative electricity supply units (kWh) saved amounted to **140.51 kWh,** or **0.36% higher than the target** of 140 kWh.

The survey results on stakeholders' loyalty to PEA amounted to 4.4447, or **9.53% higher than the target** of 4.0580.

SO3 - Enhancing business performance and leveraging new business to be prepared for the electricity market liberalization

Successful arrangement for Grid Model Data Management (GMDM) (quality of integrated data to support network and asset management to achieve higher efficiency of power transmission and distribution systems) was **100% as planned.**

The success rate of safety management efficiency improvement to international standards is **100% as planned.**

The success rate of organization and workforce preparedness / business process design to get ready for power sector liberalization is **100% as planned.**

SO4 - To be a leading electrical organization carrying out challenging tasks for social and environmental sustainability

The success rate of concrete integration of the GRC plan is **100% as targeted.**

The success rate of safety management efficiency improvement to international standards is **100% as planned.**

The Disabling Injury Index ($\sqrt{DI}$) was 0.1021, **better than the target** of 0.1208 by **15.48%.**

The carbon neutrality attainment plan was **100% successful as planned.**

Assessment of Material Sustainability Development Issues [3-1]

In preparing a sustainability report, PEA assessed sustainability development issues considered significant for PEA and stakeholders, taking into account internal and external factors, as guided by the Global Reporting Initiatives (GRI). The assessment followed the following steps:

(1) Study, Review, and Identify Relevant Sustainability Issues

PEA investigated and reviewed information obtained from sustainability practices of international standards, sustainability reports of leading companies in the power industry, along with needs and expectations of PEA stakeholders. The information involved:

- "Sustainability topics for sectors: What do stakeholders want to know?" Issues involving electric utilities and independent power producers and energy traders
- Sustainability accounting standard infrastructure sector: electric utilities and power generators
- Sustainability reports issued by sustainability leaders recognized in the Dow Jones Sustainability Indexes (DJSI) and similar state enterprises
- Needs and expectations of PEA's stakeholders, namely regulators and the public sector; customers and power users; community, social, and environmental groups; media; Cooperator; directors, employees, and internal units; affiliates; and Comparison
- Comparison of past performance in according with SDGs
- Review of 2022 of material sustainability issues against PEA's strategic plan for 2023-2027

(2) Ranking of Sustainability Issues

Sustainability issues conceived in Step 1 were ranked with the following criteria:

- Level of influence on stakeholders' assessment and their decision-making
- Level of possible impacts on the economy, society, and the environment

(3) Validation of Sustainability Issues

Issues already ranked in Step 2 were brought up for verification and endorsement by the Corporate Governance and Sustainable Development Committee to ensure their validity, completeness, and efficient response to the needs and expectations of stakeholders. A total of 15 issues have been identified:

PEA's Material Sustainability Topics [3-2]

Material Topic	Scope
1. Customer relationship management	Creating a good service experience with a focus on meeting the needs of all customer groups to win their satisfaction with power supply and service quality, by leveraging digital technology to enhance customer service efficiency, customer interface, and retention of key customers
2. Adapting to readiness to change business models	Getting organizational development prepared for technological, energy, industrial, and climate change, as well as other significant future changes to stay competitive even further. PEA stresses development of products and services at affordable prices for general users to raise power users' quality of life while creating satisfaction among all stakeholders.
3. Innovation management, research and development with digital technology	Using research and innovation to drive business in response to corporate missions and related businesses. Emphasis is on leveraging research and innovation to raise the efficiency of products, services, and operating processes. Therefore, research with results that support long-term commercialization is considered.
4. Stability and reliability of electrical power provision	Upgrading power supply quality to enhance stability, reliability, efficiency, and adequacy in response to the country's economic zone expansion and to get remote areas electrified. Development is focused on Smart Grid and Smart City, using the digital technology.
5. Data security, integrity of information technology and customer data protection	Ensuring all stakeholders of security and reliability of digital operations through available surveillance measures and international-standard response to any cyber threat, especially protection of critical infrastructure, which must ably maintain confidentiality, integrity, and availability of the IT system
6. Good corporate governance, risk management, and regulatory compliance practices	Carrying on with the core business while looking out for new opportunities, which must be lawful, anti-corruption, transparent and accountable, compliant with good governance principles, and supportive of free and fair competition. These new opportunities must not entail conflicts, monopoly of benefits, or infringement of intellectual properties, with maximum benefit of all stakeholders considered. Economic, social, environmental, and cyber security risks should be analyzed along the value chain. Surveillance measures should also be available to eliminate risks and to be ready for dealing with any emergency, based on the Sendai Framework for Disaster Risk Reduction.
7. Supply chain management	Committed to providing efficient products and services to prevent and minimize environmental, social, and governance risks while giving support to local businesses by considering procurement of goods and services available around operating sites to foster the economy, employment, and income generation at the community level. The attempt is also meant to enhance green financing through projects with long-term social and environmental benefit by providing greater financing options in the form of Environmental Social and Governance Bond (ESG Bond).
8. Energy and asset management	Developing the energy management system of international standards while promoting energy conservation and renewable energy, using modern technology within and outside the organization. An asset management method that enhances efficient asset utilization is developed in support of corporate missions and related businesses while minimizing maintenance costs and maximizing financial returns.

Material Topic	Scope
9. Community health and safety preservation	Developing safe operations for customers, communities, and the environment according to corporate missions and related businesses while developing a safety management system that ensures the power supply business's compliance with related laws and regulations. PEA also aims to create awareness and understanding of the safe use of electricity by focusing on the prevention and assessment of possible hazards on users. PEA will do everything to ensure that its preventive and corrective measures are effectively implemented.
10. Human capital management	Paying attention to staff development to raise their professionalism while upgrading work processes, promoting innovation in the organization, providing welfare, safety, occupational health, and a good work environment. PEA also encourages staff to take part in activities with direct and indirect benefit to society. PEA respects human rights throughout the value chain, treats all stakeholders equally and fairly, and supports employment of local people, the under-privileged, and the disabled with no discrimination against race, religion, gender, age, education, belief, etc.
11. Electrical accessibility and affordability	Ensuring equal access to modern, reliable power supply services at affordable prices among the public by expanding the infrastructure and improving technology vital to power transmission
12. Occupational health and safety	Developing a system for managing safety, occupational health, and work environment consistent with laws and international standards as well as applicable regulations, while cultivating a work safety culture among staff to minimize or eliminate accidents and near-misses. PEA, recognizing the need for preventive measures and risk assessment of hazards and impacts on the environment, will do it best to ensure that preventive and corrective measures are effectively implemented.
13. Stakeholder Engagement	Answering the needs and expectations of all stakeholders while fostering good relationships with them through an efficient and effective stakeholder management method throughout the value chain. This is meant to support new market opportunities while creating positive impact and minimizing negative impact on society under related laws and regulations.
14. GHG emissions and climate change mitigation strategies	Forging awareness of climate change risk and impact along the value chain by reducing or discontinuing unnecessary activities that require heavy use of fossil fuels. The focus should instead be placed on clean energy and digital technology to support corporate missions and related businesses. Carbon offsetting in various forms as considered suitable is done to achieve carbon neutrality for the organization while joining the country's effort to realize the zero-emissions target.
15. Circular economy and environmental management	Developing work processes to support missions and related businesses. The focus is placed on creating value to circular goods to support natural resource conservation. Consumption of resources to their full potential or to their longest possible life is to also be stressed to sustainably drive an environment-friendly organization in collaboration with stakeholders.

Remarks: One material topic reported in 2022 concerning economic performance is not part of PEA's material topics for this year. Topics concerning anti-corruption and promotion of free and fair competition are instead included in the GRC part, and non-discrimination is included with human capital management. Six additional topics have now been included in this report, namely customer relationship management; handling of business transformation; digital technological innovation, research and development for greater business capability; supply chain management; energy and asset management; and the Circular Economy and environmental management to ensure management comprehensiveness consistent with the organization's sustainability development goal.

Management of PEA's Material Sustainability Issues in Connection with the Value Chain

Material Topic	Electricity Distribution System			Customer Service and Marketing	Governance and Strategic	Innovation and New-business Management	Resources and Service Management System			Digital Technology Management	SDGs
	Planning and Energy Procurement	Construction and Maintenance	Distribution				Logistics Management	Budgeting, Accounting and Finance	Human Resource Development and Management		
Environmental issues											
Energy & asset management	✓	✓	✓							✓	SDGs 7 (7.2, 7.3) SDGs 12 (12.2)
GHG emissions & climate change mitigation strategies	✓	✓	✓		✓		✓				SDGs 9 (9.4) SDGs 13 (13.1, 13.2)
Circular Economy & environmental management	✓	✓	✓		✓		✓				SDGs 11 (11.6) SDGs 12 (12.2, 12.4, 12.5)
Social issues											
Customer relationship management			✓	✓	✓						SDGs 8 (8.1, 8.3) SDGs 9 (9.b)
Community health & safety		✓	✓	✓	✓						SDGs 3 (3.9, 3.D)
Human capital management						✓			✓		SDGs 4 (4.4, 4.7)
Power system stability & availability	✓	✓	✓	✓							SDGs 8 (8.4) SDGs 9 (9.1)
Supply chain management	✓	✓	✓	✓			✓	✓			SDGs 12 (12.7, 12.A)
Electrical accessibility & affordability	✓	✓	✓	✓							SDGs 7 (7.A) SDGs 9 (9.1) SDGs 11 (11.1)
Occupational health & safety					✓				✓		SDGs 8 (8.5, 8.8)
Stakeholder Engagement				✓	✓		✓				SDGs 16 (16.7)
Governance issues											
Handling of business transformation					✓	✓				✓	SDGs 8 (8.2) SDGs 12 (12.2) SDGs 13 (13.2, 13.3)
Digital technological innovation, R&D for greater business capability					✓	✓				✓	SDGs 9 (9.5, 9.b)
Data and IT system security & customers' confidentiality					✓					✓	SDGs 8 (8.2) SDGs 16 (16.6, 16.10)
GRC Governance, Risk and Compliance					✓						SDGs 11 (11.b) SDGs 16 (16.5)

Material Topic	Electricity Distribution System						Innovation and New-business Management	Resources and Service Management System			Digital Technology Management	SDGs
	Planning and Energy Procurement	Construction and Maintenance	Distribution	Customer Service and Marketing	Governance and Strategic			Logistics Management	Budgeting, Accounting and Finance	Human Resource Development and Management		
Stakeholder	Regulators and public sector Cooperator	Regulators and Public Sector Community and Social Cooperator	Regulators and Public Sector Customers and Electricity Users Cooperator	Regulators and Public Sector Customers and Electricity Users	Regulators and Public Sector Community and Social Press PEA Board's Of Director Affilate Comparison		Customers and Electricity Users	Cooperator	Regulators and Public Sector	Employee	Regulators and Public Sector Cooperator	

06 STAKEHOLDER ENGAGEMENT [3-3]

PEA conducts its business with due regard for internal and external stakeholders and values efficient stakeholder management, regular operational reviews, improvement and development, support of their engagement in key issues, including appropriate responses to their needs, expectations, and concerns for sustainable growth of PEA, communities, and society.

With this commitment, PEA has defined its strategy for stakeholder management to gain their trust and support for its operations and enhance relations to achieve its strategic targets. This engagement covers all key stakeholders under its business architecture to promote their engagement in creating market opportunities, building positive as well as mitigating negative impacts from every work process, and cultivating appropriate relationships with stakeholders, as these are essential elements for becoming a sustainable organization which grows alongside communities and society with sustainable value delivered.

Building Business Partnerships and Upgrading Relationships with Stakeholders

Goal [3-3]

Percentage of stakeholder engagement score more than 76.50

Operating Strategy [3-3]

- Building business partnerships and upgrading relationships with stakeholders
- Developing sustainability and stakeholder management processes to achieve the vision of sustainable development and building good relationships with stakeholders.

Stakeholder Engagement Management [3-3]

- PEA has applied the AA1000 Stakeholder Engagement Standard (AA1000SES) code and the State Enterprise Assessment Model (SE-AM) criteria to assess stakeholders and customers to learn about their opinions and suggestions on its operations, either in normal situations or during crises through interviews, recommendation and complaints channels, including ESG issues. Stakeholders and key issues between PEA and stakeholders are analyzed and ranked according to business relationships, direct and indirect, including analysis of risk and impacts to stakeholders. PEA has identified nine groups of stakeholders and 17 subgroups:

1. Regulators and Public Sector	
1.1 Public sector / independent entities that set or monitor policies and business directions	Covering units that influence business directions at the policy level, overall performance assessment, and compliance performance
1.2 Public sector/ independent entities that grant approval or permission for operation:	Covering units responsible for laws related to PEA's core business, in particular, power pole and line installation, and expansion of power distribution service zones
1.3 Public sector/ independent entities that cooperate, support or involve PEA's operations	Covering units responsible for laws related to PEA's core business, in particular, power pole and line installation, and expansion of power distribution service zones

2. Customers and Electricity Users	
2.1 Electricity users in the power distribution business	Covering all electricity users in the power distribution business
2.2 Customers in other businesses besides the power distribution business	Covering all customers in other businesses besides the power distribution business

3. Community and Social	
3.1 Communities and community leaders	Covering all communities and their leaders in the areas surrounding PEA's operating areas
3.2 Public at large	Covering all inhabitants of Thailand

4. Press	
4.1 Press	Covering all traditional and online media

5. Cooperator	
5.1 Electricity Suppliers	Covering all electricity suppliers in PEA's power distribution business
5.2 Apparatus Suppliers	Covering all PEA's material suppliers
5.3 Service Providers	Covering all PEA's service providers, including system, construction, power unit recording, metering, and consulting services, including IT systems in supporting operations.
5.4 Partners in PEA's supporting or other businesses	Covering all PEA's partners in supporting or other businesses that conduct business interdependence with PEA, including electricity bill payment agents, communication companies seeking approval for electric cable laying, and parties under MOUs

6. PEA Board's of Director	
6.1 Board of Directors	Covering all directors

7. Employee	
7.1 Management/ executives, employees, and contractors	Covering all PEA management/ executives, employees, and contractors
7.2 Internal units/ working groups	Covering PEA's internal units/ working groups

8. Affiliate	
8.1 Affiliates	Covering all PEA's affiliates

9. Comparison	
9.1 Benchmark/ competitors in power distribution, related or other businesses	Covering competitors, manufacturers of substitute products, benchmark in the energy business (power distribution, related and new businesses), other service businesses (besides the energy business), and Best Practices in various aspects

- PEA defines responders for stakeholder engagement management as follows:
  - The Board of Directors and the Corporate Governance and Sustainable Development Committee monitor the policy and strategy on stakeholder management and ensure performance compliance on a quarterly basis.
  - The Corporate Sustainability and Communication Management, Corporate Strategy Function, compiles and analyzes all needs, expectations, and concerns of stakeholders obtained from surveys and summarizes them into issues at the enterprise and business unit levels, links them with operations under the defined strategy, and defines guidelines in response to the policy and strategy on stakeholder management implementation, and, finally, monitors and assesses the performance on a quarterly basis.
  - All PEA divisions manage issues at the business unit level and pass the policy and strategy on stakeholder management to their responsible personnel for stakeholder relationship building and monitoring.
- Through various channels, PEA provides opportunities for stakeholders to participate in matters that affect them, allowing them to voice their opinions, express their needs, and communicate their expectations before, during, and after their collaboration with PEA or during interactions or relationship-building activities via touchpoints.
  - Physical Touchpoints which consist of PEA officers in service areas, PEA publications, seminars, customer relation activities, 1129 PEA Contact Center, and the mass media.
  - Digital Touchpoints which consist of www.pea.co.th, PEA Smart Plus, PEA's official account on Facebook, Line, X and Youtube, and PEA Email.
- PEA reviews the policy and guidelines for practicing stakeholders engagement and frameworks on sustainability and stakeholder management annually consistent with the needs, expectations, and concerns of all stakeholders by ensuring that appropriate mechanisms and processes for stakeholder engagement are in place, with defined objectives, scope of relationship-building, and systematic stakeholder management to manage the level of relationship of PEA and stakeholders to achieve PEA strategic position.

Stakeholder Engagement [2-29]

Stakeholder Group	Communication Format and Channel	Frequency	Responsible Unit	Stakeholders' Needs and Expectations	Responses to Needs and Expectations Topic
Regulators and Public Sector 	• Participating in meetings on regulatory policies and guidelines	• Annually • Quarterly • Monthly	• Digital Office • Internal Audit Bureau • Corporate Strategy Function • Business and Marketing Function • Planning and Power System Development Function • Construction and Project Management Function • Operation and Maintenance Function • Electricity Authority Region 1 – 4 • ICT Function • Finance and Accounting Function • Organization Management Function	Compliance with laws, rules, and regulations, and cooperation provision/ efficiency in communication or coordination with government agencies/ compliance with the corporate governance code and ethics/ investment policy aligning with the goals of public policies	Complied with applicable laws, rules, and regulations on business operation, and developed work processes as recommended/ provided training to employees and agents for speedy facilitation/ enhanced efficiency in investment and disbursement in line with the goals of public policies
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			
Customers and Electricity Users 	• Holding PR activities via Physical Touchpoints and Digital Touchpoints	• Regularly	• Business and Marketing Function	Speedy internal cooperation and problem-solving/ more information dissemination on corporate innovation and technology/ improved communication and notification method/ innovation development to mitigate impacts on society and the environment/ keeping regular contact to monitor the operation and set up an approach for working together/ streamlining work process/ improving power line installation with due regard for safety, scenery, and overall usefulness	Provided training to employees for better cooperation among units/ held meetings for major customers to enhance relations and presented corporate innovation and technology/ developed Physical Touchpoint and Digital Touchpoint efficiency/ developed power systems to underground cable "1 Province, 1 Street in honor of HM the King"
	• Holding customer relations activities	• Annually			
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			
Community and Social 	• Holding/ participating/ supporting community relations activities and communicating via Physical Touchpoints and Digital Touchpoints	• Regularly	• Corporate Strategy Function • Construction and Project Management Function • Electricity Authority Region 1 – 4	Electrification of remote communities/ safety of power systems and materials/ information dissemination improvement/ public communication on power maintenance and shortage, etc./ provision of convenient communication channels/ promotion of cordial relations between PEA and communities/ efficient and speedy handling of social impacts of PEA operations	Launched PEA's Project on Clean Energy for Communities which supported renewable energy by producing electricity from solar energy for people in remote areas/ "1 Village, 1 Electrician" Project/ continuous efficiency improvement of PEA Smart Plus
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			

Stakeholder Group	Communication Format and Channel	Frequency	Responsible Unit	Stakeholders' Needs and Expectations	Responses to Needs and Expectations Topic
Press 	• Communicating via Physical Touchpoints and Digital Touchpoints	• Regularly	• Corporate Strategy Function	Timely access to clear, accurate, and complete information/ providing information that is communicable and simple/ use of traditional and social media to report news nationwide	Efficiency development of Physical Touchpoints and Digital Touchpoints/ improvement of PR by more use of infographic and less technical terms for easy understanding
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			
Cooperator 	• Holding meetings, seminars, or activities to share views on working together	• Quarterly • Monthly	• Digital Office • Internal Audit Bureau • Corporate Strategy Function • Business and Marketing Function • Planning and Power System Development Function • Engineering Function • Construction and Project Management Function • Operation and Maintenance Function • Electricity Authority Region 1 – 4 • ICT Function • Finance and Accounting Function • Logistics and Organization Service Function	Coordination to ensure safety and work speed in the workplace/ timely exchange of clear, accurate, complete, and accessible information/ development of power purchase systems and speedy meter recording/ security and stability of the power distribution system/ safety of the power system and electric materials/ fairness and non-discrimination in the operations/ transparent and accountable procurement process/ building and promoting good relations between partners (suppliers and collaborators) and PEA/ projects/ joint ventures to strengthen the stability of the national power system	Provided training to employees for better cooperation among units/ developed Physical Touchpoint and Digital Touchpoint efficiency/ replaced rotor power meters with electronic meters that can make remote electricity unit recording via Bluetooth to support future power purchase/ arranged an MOU to strengthen national power system stability
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			
PEA Board's of Director 	• Attending meetings on regulatory policies and guidelines; monitoring the performance	• Quarterly • Monthly	• Governor Affairs Department	PEA transformation to mitigate the impact of power sector liberalization and other changes for PEA'S sustainable growth/ creating business opportunities from the promotion of clean, alternative, and renewable energy/ organizational governance covering business transparency, fair treatment of employees, workers, and business partners/ refraining from procurement for personal gain/ promoting safety of electricity use/ system promoting community economic development/ power system investment and development for community stability	Established the Development and Change Management Department and the Electricity Liberalization Division in response to public policy and future changes/ developed PEA's solar business to support clean, alternative, and renewable energy customers/ improved power systems and defined more stringent indices
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			

Stakeholder Group	Communication Format and Channel	Frequency	Responsible Unit	Stakeholders' Needs and Expectations	Responses to Needs and Expectations Topic
Employee 	• Attending meetings on policy via CEO CONNEXT	• Quarterly	• Digital Office • Organization Management Function	Reduction of non-essential operation workload and operating expenses, and streamline work processes/ clear and continued communication of management's vision/ application of digital systems for organization efficiency development/ development of attitude for preference of work which benefits both oneself and the organization/ not demanding benefit, money, or committing fraud or corruption for one's own gain	Held CEO CONNEXT activities to communicate the vision of the PEA Governor and management/ developed digital systems for efficiency development, reduction of operating expenses, streamlined work processes/ provided training to employees/ created an organization culture of Trust
	• PR via Intranet, E-Mail and PEA Life application	• Regularly			
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			
Affiliate 	• Holding meetings to communicate PEA's policy and monitoring the performance	• Quarterly	• Corporate Strategy Function	Define clear targets, objectives, and responsibility of affiliates/ enhance cooperation of PEA and affiliates/ define accurate, speedy business procedures, reduce delays in doing business with PEA/ support and assist affiliates as requested/ management recognize affiliates' potential and upgrade their operations/ support and develop their skills and competencies to support the business for PEA's benefits	Held meetings to communicate policies and monitored executives' performance
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			
Comparison 	• Holding meetings, seminars or activities to share views on working together	• Quarterly	• Corporate Strategy Function	Promote and nurture cordial relations/ set up cooperation network of PEA and benchmarks/ conduct joint project to develop national power system stability or other business extension	Held activities for cordial relations and shared views on working together/ held meetings to strengthen cooperation of EGAT, MEA, and PEA to enhance national power system stability
	• Holding/ participating/ supporting relations promotion activities	• Quarterly			
	• Conducting satisfaction surveys/ interviews to assess needs/ forecast expectations	• Annually			

SCAN ME

Stakeholder Engagement Report 2023

Performance Outcomes [3-3]

Percentage of all stakeholder engagement

2021	2022	2023
Target >75.00	Target ≥76.00	Target ≥76.50
Outcome 76.90	Outcome 80.20	Outcome 86.12

Work Improvement Planning [3-3]

- The outcomes of stakeholder management assessment were applied to relentlessly develop and improve PEA's operations, with reports published in the Annual Sustainability Report on: www.pea.co.th and Facebook online media.

07 ENVIRONMENTAL IMPACT MANAGEMENT

Performance Outcomes

The eco-efficiency	1.07881	exceeding the goal
The cumulative energy saving	140.51 GWh	exceeding the goal
The preparation and publication of the procedural guidelines for transmission connection with all power producers to optimize the process	100 percent	exceeding the goal

07-1 Circular Economy and Environmental Management [3-3]

PEA values environmental management and the Circular Economy with a focus on electricity generation and all related operations and activities to continuously create value-added products that can be efficiently reused and recycled without generating waste, conservation of natural resources, and generating balance of nature by optimizing natural resources and restoring them. These principles help PEA become a truly eco-friendly organization that can sustainably strive for economic and social development.

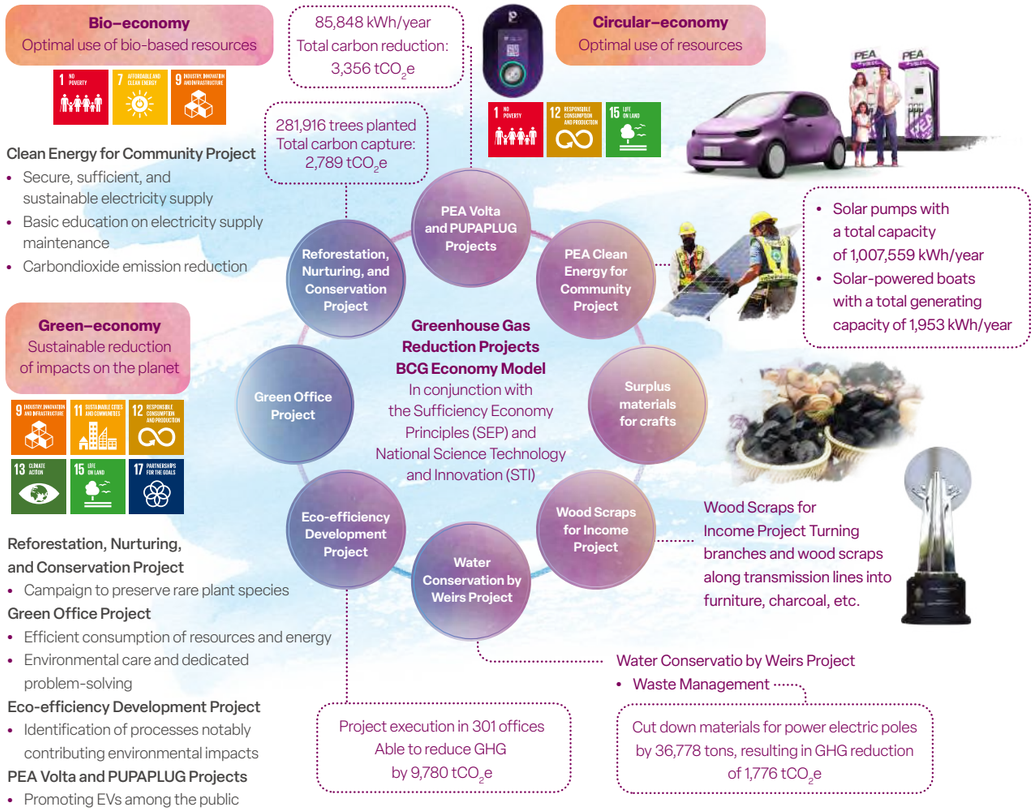
Goals [3-3]

- Achieve the ISO14045 eco-efficiency factor of 1.078730.
- Achieve cumulative energy saving of 140 GWh.
- 100% completion of operating guideline amendment for transmission connection and upgrade for power producers to streamline work processes.

Operating Strategy [3-3]

- Increase the sustainable efficiency of energy and resource consumption including not only the entire PEA organization, but also suppliers and business partners as well as power consumers in tandem to reduce the greenhouse gas (GHG) emission under the ISO14045 Eco-Efficiency Assessment Standard and rules defined by the State Enterprise Policy Office (SEPO).
- Promote the use of the BCG Economic Model (Bio Economy, Circular Economy, and Green Economy) with responsibility to society and the environment, consistent with the PEA Carbon Roadmap and the national Carbon Neutrality Policy for achieving neutrality of carbon emission by 2050.

PEA's Projects on GHG Emission Reduction



Circular Economy and Environmental Management [3-3]

PEA clearly defines eco-efficiency assessment to help identify the potentiality of the consumption of resources emitting GHG and the ratio between the generated economic value and the consumption of resources such as electricity, water, paper, and fuels. This efficiency assessment leads and supports PEA in order to optimize the use of resources. With regular control and monitoring of work plans, PEA has reduced GHG emissions and steadily increased the eco-efficiency index, thus achieving the level-5 goal set by SEPO with a Factor X of 1.078730.

The assessment results from the development approach to continuously improve the eco-efficiency of PEA in the next stage, and such improvement plan is communicated with other state agencies partly as knowledge-sharing among state organizations and partly as assurance that PEA's eco-efficiency assessment aligns with the national strategies. The assessment scope covers 74 provinces of Thailand where PEA operates and provides services.

2023 Eco-efficiency Assessment Key Metrics

Metric Level	Description
Level 1	Factor X = 1.045750
Level 2	Factor X = 1.053995
Level 3	Factor X = 1.062240
Level 4	Factor X = 1.070485
Level 5	Factor X = 1.078730

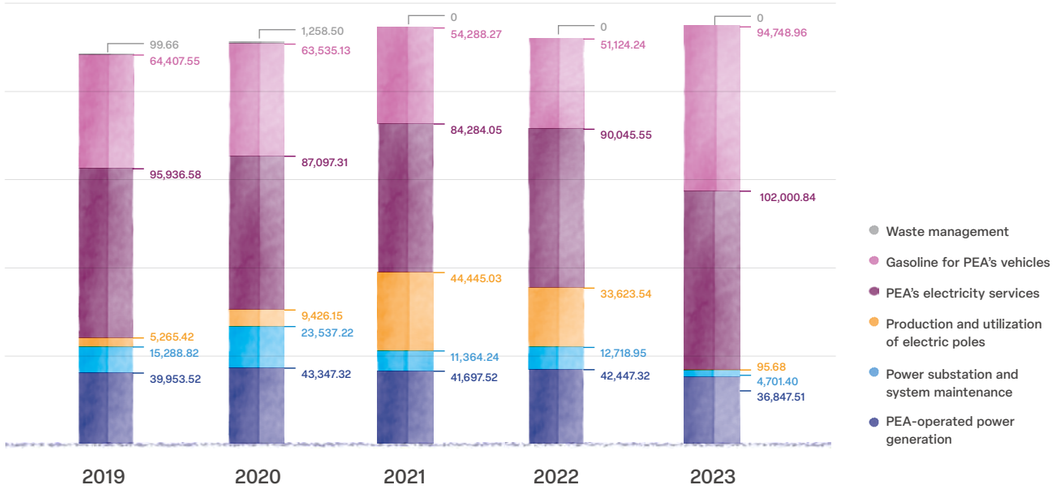
Remarks: Factor X is defined as a comparison of the eco-efficiency assessed in 2023 against the baseline, which is the eco-efficiency measured in 2021.

PEA's monitoring program continuously tracked and collected energy and resource consumption data including GHG emissions from various activities on a monthly basis throughout 2023, particularly on 10 key resources (office use only) from 5 key activities. These data were consistently compared with the sold units of power from distribution to determine the level of Factor X.

Key Activities	List of Resources Consumed
Power generated by PEA	(1) Volume of diesel consumed
PEA services	(2) Methane (CH_4) Emissions per Person (3) Volume of refrigerants used, namely R-22, R410A, R-134A, and R-32
Maintenance of power substation electrical and engineering systems	(4) Fire Suppression Substance Leakage (5) Volume of SF6 used
Gasoline consumed by PEA's vehicles	(6) Volume of diesel consumed by PEA's vehicles (7) Volume of benzene consumed by PEA's vehicles
Manufacturing of electric power poles	(8) Volume of diesel consumed by manufacturing (9) Volume of LPG consumed by manufacturing
PEA services	(10) Volume of power consumed in offices

Comparison of PEA's Major Activities with Greenhouse Gas Emissions

Unit : tCO_2e



Performance Outcomes of Circular Economy and Environmental Management [3-3]

- The total GHG emission volume measured from five key activities of PEA during 2023 (on 10 key resources (office use only) and excluding the volume of units lost from the transmission and distribution system) 238,374.39 tCO_2e.

In view of the eco-efficiency assessment of the consumption of 10 resource items versus the baseline established in 2021, PEA's total GHG emissions rose during 2021-2023, driven mainly by a higher volume of diesel and gasoline for electricity generation and vehicles along with higher office energy consumed intended for the improvement of service efficiency.

Before the setup of the baseline in 2021, PEA's total GHG emissions were calculated from six major activities during 2018-2020 including electricity generated by PEA, maintenance of substations and engineering systems, construction and utilization of electricity poles, PEA services provided, gasoline consumption for PEA's vehicles, and waste management. Since 2021, however, the calculation of GHG emissions from waste management has been excluded, as the volume became insignificantly immaterial. Several resource conservation campaigns have been continuously promoted to reduce GHG emissions, for instance, the Green Office program and the installation of solar rooftops at PEA's offices nationwide. Nevertheless, the total amount of GHG emissions in 2023 was still on the rise. The top five major activities emitting the highest GHG volume in 2023 were

1. PEA services: 102,000.84 tCO_2e or 40.72%
2. Gasoline consumed by PEA's vehicles: 94,748.96 tCO_2e or 39.74%
3. Electricity generated by PEA: 36,847.51 tCO_2e or 15.46%
4. Maintenance of power substation electrical and engineering systems: 4,701.40 tCO_2e or 1.97%.
5. Construction and installation of electric power poles: 95.68 tCO_2e or 0.04%

Based on the above data and categories, PEA has subsequently developed a resource consumption plan with a focus on reducing GHG emissions. For instance, the installation of solar rooftops to generate electricity for offices, replacing the existing systems in 62 offices worldwide and the Green Office Program resulted in the reduction of GHG emissions totaling 7,455.13 tCO_2e.

PEA's eco-efficiency in 2023 was 31,198 kWh/1 tCO_2e, which means that every 31,198 kWh of power distributed by PEA emitted GHG equivalent to 1 tCO_2e. When comparing this figure with the baseline recorded in 2021, the eco-efficiency became higher, with the calculated Factor X standing at 1.07881, which means 1.07881 times more efficient than the baseline recorded in 2021—which was superior to the goal.

The result was considered positive, not only from the process objective setting under ISO14045 and the environmental assessment scoping, but also in economic value and eco-efficiency assessment. These achievements warranted PEA to comfortably surpass the Level-5 threshold defined by SEPO, with a Factor X at 1.078730, including

- The cumulative energy saving was 140.51 GWh, which was superior to the goal
- 100% success of the preparation and publication of the procedural guidelines for transmission connection with all power producers to optimize the process, which met the goal.

Work Improvement Planning [3-3]

In view of the 2023 performance outcomes, PEA has applied eco-efficiency assessment to define the direction to improve its operations for 2024, including the GHG emission work plan and activities as follows:

GHG Emission Workplan in 2024	GHG Emission Reduction Target (tCO_2e)
1. Green Office – redevelop offices to become Green	3,000
2. Low-Emission Support Scheme – promoting PEA activities to reduce GHG emissions	4,500
3. Installation of solar energy systems in PEA offices	2,600
Total GHG emission reduction	**10,100**

10,100 tCO_2e
GHG Emission Reduction Target for 2024

Performance Outcomes

The preparation and publication of the procedural guidelines for transmission connection with all power producers to optimize the process	100 percent	meeting the goal
The development of a long-term asset management database and substation assets, meeting the goal	100 percent	meeting the goal

07-2 Energy and Asset Management [3-3]

The maximum efficiency and optimal value creation of energy and asset management are crucial to the performance of PEA. With the continuously increasing number and value of assets employed to provide services to people nationwide, the volume of maintenance work has increased exponentially despite a limited number of maintenance workers and staff. The asset management work program is therefore crucial to ensure maximum efficiency by focusing on preventive measures and application of technologies to regularly audit assets to cope with the rising amount and value of electricity assets.

Good governance on assets leads to the ability to effectively manage the assets and generate financial returns for the organization. PEA's asset management was originally designed to audit and assess assets in a fair manner, incorporated with a proper review of the asset maintenance program. This efficient asset management significantly supports PEA in lowering operating costs and increasing returns on investment effectively. Cases in point are an efficient and reliable distribution system, efficient maintenance management of all assets, procurement of high-quality materials, and operating expense reduction. A lack of well-managed asset management plans could result in numerous and prolonged blackouts affecting the quality of life, energy-driven socio-economic activities, and PEA's credibility and reliability to its customers and the public.

Goals [3-3]

- 100% completion of the installation and commissioning of the high-quality Grid Model Data Management (GMDM), capable of handling integrated data for managing assets and electricity networks, to increase the efficiency of electricity distribution and transmission systems.
- 100% completion of the construction and commissioning of the database for PEA to manage assets at all substations in the long term.
- Reduction of power and fuel consumption of at least 20%.

Operating Strategy [3-3]

- Formulate strategy and develop an asset management plan for the entire electricity network for an efficient, reliable power distribution system up to the Smart Grid level, leading PEA to become the power network leader providing satisfactory services to customers and stakeholders.
- Develop an asset management plan (AMP) with details of all equipment in categories with priority.
- Govern and control all functions to conform to the AMP.
- Formulate data management strategies, including the architecture and formats of all data, information, and data depository structure to enhance the AMP.
- Manage all assets with the Enterprise Asset Management software (EAM-Software).
- Perform analytics, assessment, planning, and execution of assets in all substations to effectively address the mission of PEA and optimize value.
- Develop preventive maintenance and condition-based maintenance programs for substations and their instruments and equipment; execute and assess through internal units.
- Procure and manage parts and materials for substation repairs and replacements.
- Analyze and upgrade the quality of electrical equipment, maintenance systems, repairs of electronic equipment, and machines and tools to maintain the efficiency.
- Prepare and publish procedural manuals on substation maintenance programs and maintenance safety measures as guidelines for operation and inspection.
- Develop and admit human resources for power substation maintenance.
- Continuously monitor modern technologies for substation maintenance to continuously improve maintenance efficiency.

Energy and Asset Management [3-3]

- Define additional initiatives to save more power and fuel energy within PEA to achieve the 20%+ reduction goal in line with the Cabinet's resolution through the integration of energy data, energy-saving programs, fuel saving programs, and long-term initiatives.
- Deploy the Enterprise Asset Management Software (EAM-Software) to manage energy network assets and PEA's assets.

- Execute the asset management system to handle system maintenance, including risk management of all electronic equipment and the asset management lifecycle, from procurement, installation, commissioning, maintenance to decommissioning, as a basis for preventive maintenance planning.
- Develop a distribution system with quality defined by the Grid Modernization Roadmap.
- Integrate data for asset and network management for transmission system upgrade under GMDM with a data management plan categorized by asset type and record date.
- Organize workgroup meetings among relevant parties to define strategies and develop power network asset management.
- Develop an emergency responding plan to tackle distribution failures and mishaps.
- Set a high priority for data collecting processes and continuously keep the database updated.
- Develop a proper condition-based maintenance plan and maintain a good inventory of key parts for all substations.
- Design various forms and applications for use at all area offices to request transformers appropriately for data collection and compilation.

Performance Outcomes [3-3]

- 100% achievement of the development of GMDM, meeting the goal.
- 100% achievement of the development of a long-term asset management database and substation assets, meeting the goal.

Enterprise Energy Consumption [302-1]

Internal Energy Consumption	Energy Consumed (Gigajoules)		
	2021	2022	2023
Power	501,442.23	528,773.57	544,469.80
Fuel (diesel)	815,575.39	888,345.39	788,445.73
Total enterprise energy consumption (net)	1,317,017.61	1,417,118.96	1,332,915.53

1,332,915.53 Gigajoules
The total enterprise energy consumption in 2023

Remarks: Factor X is defined as a comparison of the eco-efficiencyassessed in 2023 against the baseline, which is the eco-efficiency measured in 2021.

Energy Intensity [302-3]

8.95 GJ/GWh [302-3]
The energy intensity, versus total power distribution

Annual Energy Intensity	2021	2022	2023
Net enterprise energy consumption per power unit distributed (GJ/GWh)	9.43	9.79	8.95
Net enterprise energy consumption per employee (GJ/Person)	45.84	50.31	47.67
Net enterprise energy consumption per revenue (GJ/MBaht)	2.59	2.34	1.93

Energy Saving [302-4]

Communication Channel	Communication Frequency	Related Party	Energy-Saving in 2023 against the Baseline (joules)
Executive order of the PEA Governor on energy-saving measures	Additional measures within PEA to meet the Cabinet-defined goal	Electrical power consumption	15,696.24 gigajoules or a 2.97% rise versus 2022
		Fuel energy consumption (all fuel types)	99,899.65 gigajoules or a 10.58% fall from 2022
		Electrical power and fuel energy consumption	57,797.94 gigajoules or a 7.11% fall from 2022

84,203.42 Gigajoules
Pursued additional measures to save power and fuel energy from all offices (equivalent to 5.94% of 2022, lower than the goal) [302-4]

Remarks:
- Data for analytics are referenced to those directly measured and recorded in the System Applications and Products (SAP)
- The average value is calculated from [100*(differences of total data between 2023 and 2022)/ total data in 2022]

07-3 Greenhouse Gas Emission and Climate Change Strategy [3-3]

Work Improvement Planning [3-3]

- Deliberate investment on technologies and equipment to efficiently save energy that significantly enhances long-term energy consumption efficiency and sustainably lowers operating expenses.
- Focus more on preventive maintenance than corrective maintenance, thus leading to a reduction of electricity system malfunctions while increasing the stability and reliability of services for continuous and efficient asset management.
- Monitor and identify new technologies and initiatives to develop and improve PEA's maintenance programs and asset management.
- The operations and maintenance group has set up a taskforce to analyze and develop solutions when distribution failures and malfunctions take place at substations. These lessons learned will be used to improve operating procedures and coordination with all parties.

Climate change has become a critical driver of the volatility of global energy and will continuously increase its impact on the global energy industry. The energy shift includes the change in fuel sources to generate power from coal and fossils to renewables or clean energy. Thailand has a policy to shift energy sources to those of renewables as primary sources. Furthermore, the Thai government gave explicit statements at the United Nations-supported COP26 and COP27 on its obligation to actively participate in an effort to reduce GHG emissions with a Carbon Neutrality goal by 2050 and a Net Zero goal by 2065. Moreover, the European Community has launched a carbon trade mechanism known as the Carbon Border Adjustment Mechanism (CBAM), significantly affecting importers of goods into the EU market. This effect is more pronounced on the industrial sector manufacturing goods for export, as they are now forced to declare their sources of energy and pay carbon tax if energy sources for manufacturing are not renewable. In short, traders in such cases would lose their competitive advantages. There are other regulations and policies driven by many states to push the use and accessibility of renewables.

Under these circumstances, PEA has therefore committed to fully driving and developing activities to enhance the service quality and reliability of distribution systems, increase the use of renewables among its energy portfolio in the entire power network to reduce GHG emissions and strive to become a carbon-neutral organization to minimize environmental impacts and help Thailand achieve the carbon emission and GHG emission goals.

Performance Outcomes

A Factor X value
1.078730 versus
the base year (2021)
meeting the goal

GHG reduction within the organization
7,400 tCO_2e per year.
meeting the goal

Goals [3-3]

- A total GHG reduction goal from 62 work offices of up to 3,500.00 tCO_2e through the installation of solar power generating systems.
- GHG reduction by 3,500.00 tCO_2e through the Green Office Project.
- 100% completion of the organizational development toward a carbon-neutral organization.
- GHG reduction within the organization of up to 7,400 tCO_2e per year.

Operating Strategy [3-3]

- Define goals and directions for the organization to sustainably manage internal and external environmental parameters toward carbon neutrality by 2037, and develop a PEA Carbon Roadmap along with work plan to upgrade the organization toward carbon neutrality
- Develop to low-carbon organization by using GHG offset measures under the guidelines of the Thailand Greenhouse Gas Management Organization (Public Organization) (TGO).
- Share knowledge on the impact of climate change with employees and business partners to cultivate awareness, thus triggering behavioral change in all personnel and related parties.

4D Strategy to Become a Carbon Neutrality and a Net Zero GHG Emission Organization

Decarbonize Operation:

reducing GHG emissions from direct operation (Scope 1) and indirectly by the use of electricity (Scope 2) of PEA, excluding grid losses.

Decarbonize Supply:

reducing GHG emissions indirectly from power distribution (Scope 3) and grid losses (Scope 2) through clean-energy substitution.

Decarbonize Network:

reducing GHG emissions indirectly from grid losses (Scope 2) through grid management.

Decarbonize Growth:

campaigning for GHG reduction among stakeholders (Beyond Boundary).

GHG Emission Management and Climate Change Strategy [3-3]

- Define the 4D strategy to strive for carbon neutrality and a net zero GHG emission organization, with execution measures to ensure the achievement of the PEA Carbon Neutrality Roadmap.
- Continuously review the PEA Carbon Neutrality Roadmap, beginning with the environmental analysis of circumstances for the carbon neutrality and net zero emissions work programs, analyses and data management on carbon emissions and absorption against the baseline under TGO's guidelines, to organization of workshops to obtain feedback and recommendations to develop and lead PEA to become a net zero organization.
- Organize discussions with experts to develop guidelines for data management of GHG emissions and capturing under TGO's guidelines on Carbon Footprint of Organization (CFO) and the carbon footprint calculation platform.
- Develop the Green Office Policy to support PEA personnel's full awareness of the optimal and most efficient use of resources and energy, as well as upgrading internal work systems to be fully eco-friendly and minimizing impacts on the environment, particularly by maximizing GHG emission reduction. PEA annually tracks all the progress intended to expand the Green Office to cover 372 additional offices from the total of 482 in 2025.
- Communicate and publicize the Green Office Policy through all internal channels, including the PEA Green Office Website and the organization of Green Day activities to generate and reinforce awareness and share knowledge of the impacts of climate change on the environment, society, and businesses of PEA. The communication is structured in the six following major aspects.
- Develop a CARBONFORM platform to assess enterprise GHG emissions, drive the organization toward carbon neutrality, and promote business operators' efficient evaluation of their carbon emissions. The platform is structured with the following features: (1) display data in a real-time dashboard infographic, (2) present GHG Scope 2 (indirect GHG emissions acquired) automatically, speedily, and reliably (only from customers within the jurisdictions of PEA), (3) co-develop with officers a joint organization scope of work, (4) is user-friendly with accurate and reliable calculation, (5) issue reports automatically under TGO's Green Office standard, (6) is easy to use with several templates according to specific and various needs, and (7) quickly calculate the carbon footprint under the ISO14064-1 CFO and TGO standards. The CARBONFORM platform is an innovation of PEA that is suitable for all organizations regardless of size, since it is user-friendly and modifiable. Interested parties can test the CARBONFORM platform free of charge at https://bufferbox.pea.co.th under PEA-defined terms and conditions.

Encourage all offices to conform to eco-friendly Green Office approach

Campaign for all offices to recycle and reuse all office waste to cut GHG emissions

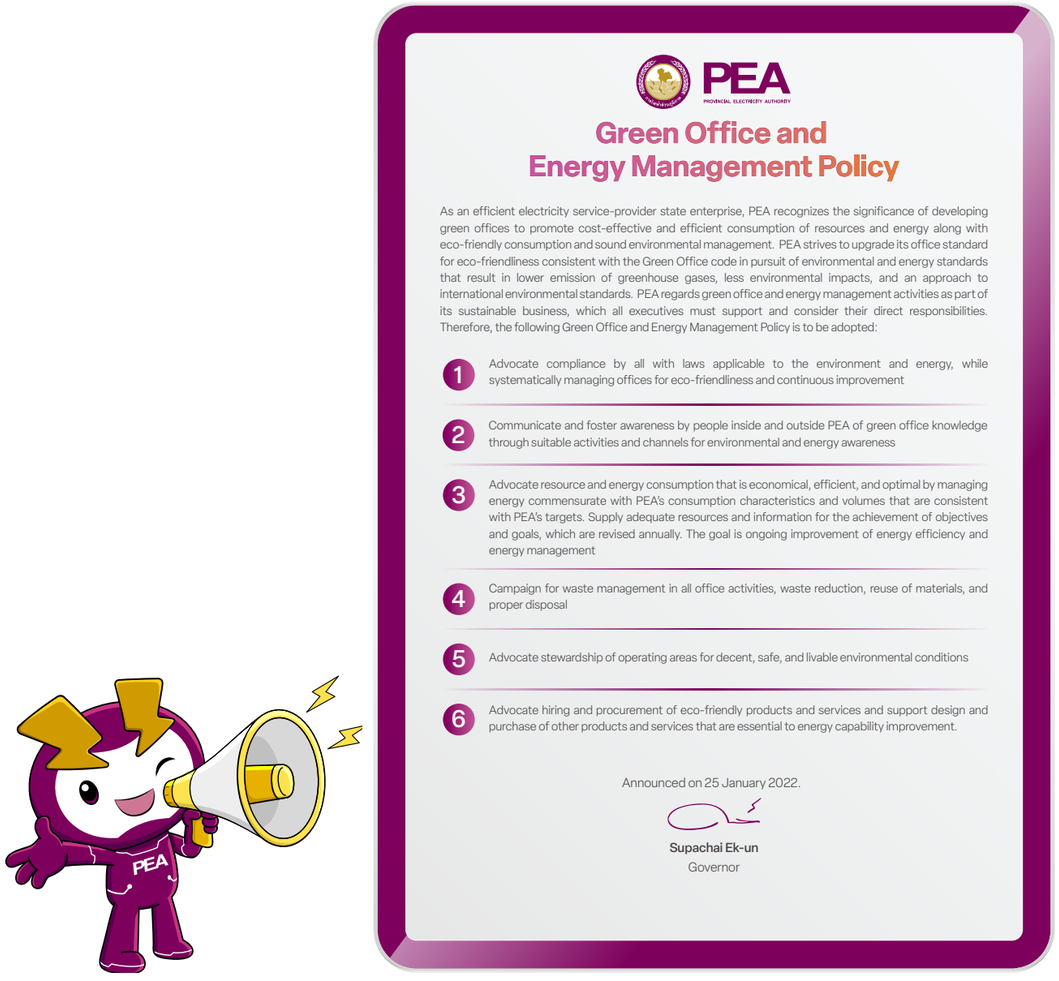
Communicate and cultivate awareness of environmental aspects by the workforce and the public through activities and proper channels

Advocate activities to regularly maintain sound, safe, and livable workplaces

Cultivate awareness of economical consumption of resources and energy to optimize efficiency and benefit

Promote hiring and procurement of eco-friendly goods and services

Green Office Policy [2-23]



PEA
PROVINCIAL ELECTRICITY AUTHORITY

Green Office and Energy Management Policy

As an efficient electricity service-provider state enterprise, PEA recognizes the significance of developing green offices to promote cost-effective and efficient consumption of resources and energy along with eco-friendly consumption and sound environmental management. PEA strives to upgrade its office standard for eco-friendliness consistent with the Green Office code in pursuit of environmental and energy standards that result in lower emission of greenhouse gases, less environmental impacts, and an approach to international environmental standards. PEA regards green office and energy management activities as part of its sustainable business, which all executives must support and consider their direct responsibilities. Therefore, the following Green Office and Energy Management Policy is to be adopted:

1. Advocate compliance by all with laws applicable to the environment and energy, while systematically managing offices for eco-friendliness and continuous improvement
2. Communicate and foster awareness by people inside and outside PEA of green office knowledge through suitable activities and channels for environmental and energy awareness
3. Advocate resource and energy consumption that is economical, efficient, and optimal by managing energy commensurate with PEA's consumption characteristics and volumes that are consistent with PEA's targets. Supply adequate resources and information for the achievement of objectives and goals, which are revised annually. The goal is ongoing improvement of energy efficiency and energy management
4. Campaign for waste management in all office activities, waste reduction, reuse of materials, and proper disposal
5. Advocate stewardship of operating areas for decent, safe, and livable environmental conditions
6. Advocate hiring and procurement of eco-friendly products and services and support design and purchase of other products and services that are essential to energy capability improvement.

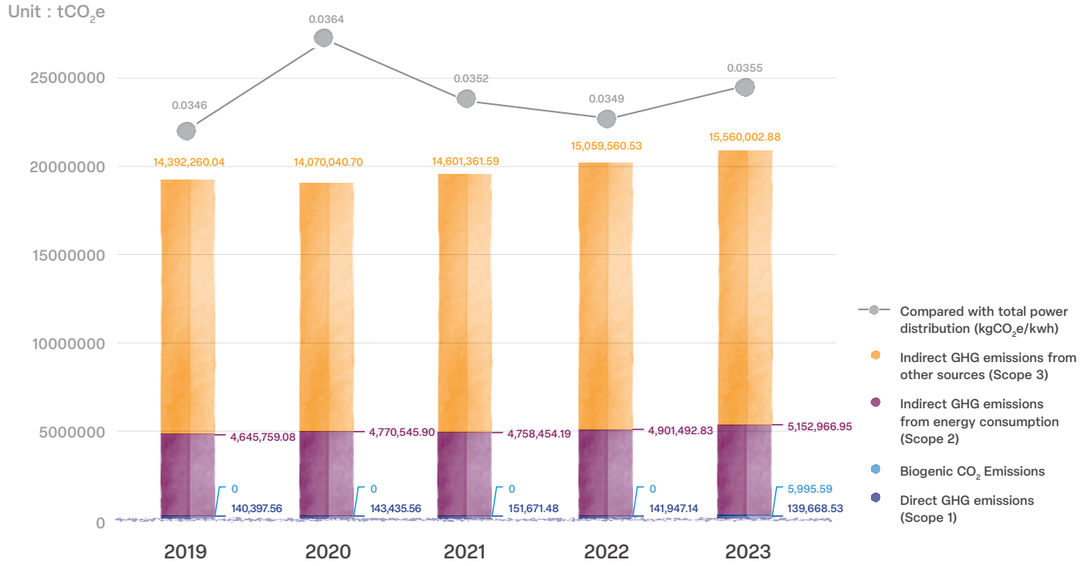
Announced on 25 January 2022.

Supachai Ek-un
Governor

Performance Outcomes of Greenhouse Gas Emissions and Climate Change Strategy [3-3]

- GHG reduction of no less than 7,455.13 tCO_2e per year, meeting the goal.
- Total GHG emissions (Scopes 1-2-3 combined) in 2023 was 20,852,638.36 tCO_2e with GHG emission intensity (Scopes 1-2-3 combined) versus the total power distribution of 0.0355 tCO_2e/kWh, which 0.85 % higher than the baseline year (2021).

GHG Emission Data [305-1] [305-2] [305-3] [305-4]



Remarks:

- In 2021, PEA changed its eco-efficiency assessment metric from EBITDA to units of electricity sold, establishing greenhouse gas emissions for that year as the baseline.
- The enterprise GHG emissions are defined as the volume of GHG emitted by the organization, including that from fuel combustion, energy consumption, waste management, and transport, measured in tons of carbon dioxide equivalent, determined from three major sources and defined by the following scopes:

  Scope 1 – Direct Emissions of GHG from direct activities of the organization, such as diesel energy consumption in the power generation process, gasoline consumption by vehicles, fuels used in power substations and power networks, construction of concrete electric poles, and seepages and leakages from processes and activities.

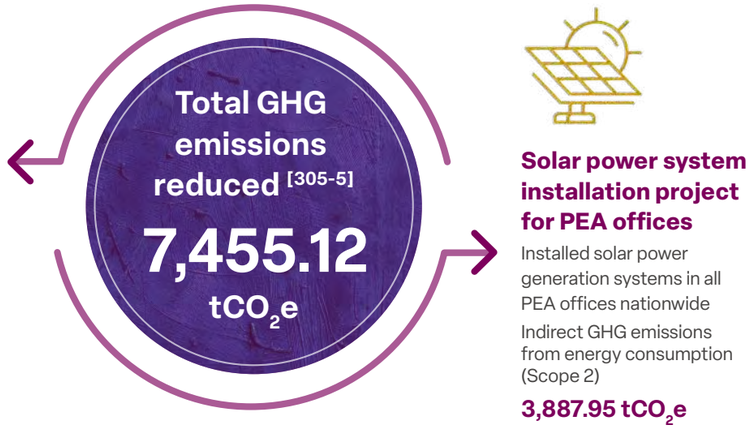
  Scope 2 – Indirect emissions of GHG from energy consumption, such as those from the procurement of energy for internal consumption and losses associated with power transmission and distribution.

  Scope 3 – Indirect emissions of GHG from other sources comprising:

  Category 1: Purchased goods and services, such as water, paper, transformer oil, steel, gravel, cement, and sand for electric pole production.

  Category 3: Fuel-and energy-relatedactivities (not included in Scope 1 or 2), such as units of electricity purchased from the Electricity Generating Authority of Thailand (EGAT) and very small power producers (VSPP).

  Category 5: Waste generated in operations, including municipal and hazardous waste.
- The co-efficient of GHG emissions or Emission Factor is derived from TGO and the Intergovernmental Panel on Climate Change (IPCC).
- The types of gas included for GHG emission calculation (Scopes 1, 2 and 3, category 1, 3 and 5) are CO_2, CH_4, N_2O, HFCs, PFC, SF_6, and NF_3
- An operational control is selected as the consolidation approach for GHG emissions.
- The consolidation approach for GHG emissions by use of an operational control technically defines that the enterprise has an independent and sole power to control the emissions directly, considering ownership and authority to control the policies and all activities to assess and reconcile all the emission data of the enterprise. This also applies to all the divisions and units under the enterprise. This operational control, however, does not apply to the GHG emissions owned by an organization but uncontrollable by it.
- Details of reporting according to GRI 305-1, 305-2, 305-3, and 305-4 can be found in the appendix in the Greenhouse Gas Emissions Summary Table (pages 222)



Remarks: Gases included in the GHG emissions (Scopes 1, 2, 3 combined) are CO_2, CH_4, N_2O, HFCs, PFCs, and SF_6

- Work plans, activities, projects of GHG reduction in 2023 reduced GHG emissions by a total of 7,455.12 tCO_2e [305-5]
- Launched a PEA project to plant, nurture, and preserve forests jointly with the Lao Patthana community and adjacent communities together with local administrative units of Pa Daet Subdistrict, Mae Suai District, Chiang Rai, on 1 June 2023. The cumulative plantation included 29,500 trees capable of GHG absorption and storage of 897.24 tCO_2e (emission volume calculated by using the formula: 0.95 tCO_2e/ton/rai/year at the density of 150 trees).
- Initiated the PEA LED project for Thai cultural tourism destinations with the installation of LED systems. The cumulative energy saving from the initiative in 71 locations since 2023 is more than 30,096 units/year, equivalent to a saving of 132,420 baht/year, thus reducing GHG by more than 486 tCO_2e/year.
- Activated the PEA Clean Energy for Community Project through support of solar power-generated boats for the community around Damnoen Saduak District, Ratchaburi Province. Five such boats were supplied each year from 2021 to 2025, totaling 25, promoting renewable power and tourism. Replacement of diesel-generated boats with electric ones cut GHG emissions from 0.041 tCO_2e to 0.003 tCO_2e and cut noise pollution from 85.5-113.0 dBA to 87 dBA.

Adopt the Carbon Form platform to assess enterprise GHG emissions.

Work Improvement Planning [3-3]

- Prepare the grids to cope with the use of clean energy in line with the energy framework designed by the Energy Policy and Planning Office (EPPO), an authority directly in charge of the national GHG reduction, with three major plans: (1) reducing energy intensity, (2) increasing renewables proportion, (3) promoting electricity generation from renewable sources. All these approaches are adopted to develop PEA into an efficient carbon-neutral and net zero organization.
- Relentlessly pursue the Green Office project to turn all PEA offices into highly efficient work offices, including Head Office and all regional offices, to ensure that GHG reduction efforts are enterprise-wide and that all units are committed to driving PEA toward carbon neutrality.
- Adopt the Carbon Form platform to assess enterprise GHG emissions.

08 ENGAGEMENT IN COMMUNITY AND SOCIAL DEVELOPMENT

08-1 Human Rights and Equitable Treatment of Labor [3-3]

PEA earnestly nurtures and handles personnel with fairness, respect human rights, be fair in the manpower planning and recruitment process with equitability, and focus on recruiting those with competency, commitment, and caliber for driving PEA toward sustainability as well as on managing compensation and welfare together with personnel retention. We fully understand that organizational growth and development toward sustainability come not only from the development of skills and competency alone, but also from the provision of a safe work environment favoring one's quality of life. At PEA, therefore, we review and assess risk in work units of forced labor, child labor, illegal labor, sexual discrimination, and others. We heed the workforce's issues in response to all personnel's needs and expectations. In short, PEA advocates people's happiness and work contentment and attempts to boost personnel's morale until their retirement—thus leading to the growth and development of the organization, which delivers sustainable values to society.

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Performance Outcomes

Complaint about unfair recruitment and selection, as well as zero complaint about discrimination — **none** — meeting the goal

OHI showed that the overall score — **88** percent

Goals [3-3]

- Minimize complaints of discrimination in PEA's recruitment and selection process
- Minimize personnel turnover
- Personnel that are proud of and engaged with PEA
- Personnel training favors no one

Compliance Policy

Respect and comply with the human rights code, which mandates respect for and compliance with legal requirements concerning labor and human rights. Respect human dignity, which includes liberty and equality, of those protected, with due regard for applicable laws.

Operating Strategy [3-3]

- Drive respect for human rights across the organization, a fundamental virtue for work and co-existence in society, to give all stakeholders fundamental respect in a fair manner, which agrees with the human rights policy, which consists of respect for the human rights code, non-trespassing, non-discrimination, human rights due diligence (HRDD), communication, and education on human rights knowledge.
- Strictly focus on compliance with PEA's Compliance Policy
- Evolve assorted criteria / rules, including those concerning recruitment and selection and annual pay rise, for fairness, which includes prize awarding, for instance, those for outstanding employees and contractors. To prevent discrimination, the rule determiners are the working group on amending annual pay rise considerations and the working group on selection of outstanding employees and contractors.
- Declare an intention to prevent and resolve sexual harassment at the workplace by cultivating an organizational culture along with values among the management and workforce of PEA of honoring one another and respecting human dignity
- Devise a policy on the benefits and welfare for all by monitoring and amending applicable rules so that the rights and welfare received by PEA's personnel will not be lower than the standard benefits under the announcement of the State Enterprise Labor Union. Such policy is made known through the declaration of the PEA Labor Union, including opposition to the use of forced labor and child labor, vigilance and compliance with international standards, and respecting the rights of employees to express views.
- Advocate an understanding of differences between human beings along with the design of joint work among units or people for genuine extension and adaptation to work performance with all other personnel
- Stage activities and nurture an ambience of the workplace and foster good experiences for PEA personnel through their PEA careers to give them better physical and mental health, boost their morale, and cultivate pride and dedication to give their best efforts to PEA

PEA

Compliance Policy

PEA values and strives to comply with laws and regulations to ensure that its management and personnel abide by its example in their performance and that its business conduct is strictly in line with laws, rules, regulations, directives, and various announcements inside and outside PEA. Directors, management, employees, and contractors are therefore required to abide by the following policy:

1. Be committed to the rules of law and respect as well as abiding by laws, rules, regulations, directives, and applicable announcements apart from the Cabinet's resolutions, public policy, PEA Board's resolutions. Always be mindful of the harm resulting from non-compliance or violations of applicable laws and regulations.
2. Operate with responsibility to communities, society, and the environment with due regard for laws and regulations that provide protection to the health and safety of lives and properties of those who may be affected by PEA's operation.
3. Respect and comply with the human rights code, which mandates respect for and compliance with legal requirements concerning labor and human rights. Respect human dignity, which includes liberty and equality, of those protected, with due regard for applicable laws.
4. Maintain PEA's interests and refrain from exploiting data under one's possession, business secrets, or PEA's intellectual property by following legal and ethical codes. Refrain from disclosing such data to harm others and PEA, except where required by law.
5. Be committed to compliance with laws concerning corruption and bribery involving public officials, officers of private agencies, or other parties, or both.

Announced on on 15 September 2021

Chatchai Phromlert
Chairman, Board of Directors

SCAN ME

Compliance Policy [2-23]

SCAN ME

Human Rights Policy [2-23]

PEA

Human Rights Policy

As the state agency charged with electrical procurement and service provision as well as other related businesses to meet customers' needs for their satisfaction with quality and services, PEA is responsible to society and the environment in parallel with its advocacy and drive for respect for human rights across its organization. Such respect underlies PEA's operation and co-existence in society so that all fundamental rights of its stakeholders may be fairly observed.

For the benefit of uniform practice, this policy applies to all parties related to PEA's business value chain. PEA also advocates the policy below to all stakeholders:

1. **Respect for human rights:** Comply with the human rights policy in PEA's operations consistent with the United Nations Universal Declaration of Human Rights (UNDHR) and the Ratification on the Principles and Fundamental Rights of the International Labor Organization (ILO).
2. **Non-violation:** Engage in business activities that do not in any way affect or violate the human rights of others, including employees, society, communities, and business stakeholders across the business value chain, directly or indirectly.
3. **Non-discrimination:** Treat everyone equitably under the human rights code without discrimination.
4. Human rights due diligence (HRDD): Comprehensively audit human rights issues as related to business conduct. Audit impacts arising from related parties across the business value chain that could be involved or could support businesses.
5. Communication, publicity, and education on human rights: Foster acknowledgment and understanding of human rights among related parties across the business value chain, spanning all stakeholder groups. These elements are for the acknowledgment and compliance by all.

Announced on on 6 May 2022.

Supachai Ek-un
Governor

PEA
PROVINCIAL ELECTRICITY AUTHORITY

Labor Relations Policy

Recognizing that its personnel represent a valuable and critical part of PEA Citizenship that is ready to drive its mission toward the "Smart Energy for Better Life and Sustainability" vision, PEA advocates personnel capability development and nurturing of the work environment together with a happy work ambience with due regard for the governance and sustainable development code in pursuit of a digital utility.

In view of this, PEA has defined the policy below on labor relations consistent with the guidelines and standards for international human rights as well as the treaty and international standards observed by PEA:

1. **Participation:** PEA enables management, employees, and contractors to meet and share views as well as taking part in decision-making and problem-solving in activities affecting all stakeholders through readily accessible channels.
2. **Fostering relations:** Management, employees, and contractors breed familiarity with as well as trust among each other. They recognize each other's reasons and respect others' rights and roles. They strengthen labor networks of the employer and employees to foster cordial relations in the organization.
3. **Internal communication:** PEA values labor relations data communication among management, employees, and contractors. The PEA Labor Relations Committee centralizes labor relations publicity through PEA's internal communication channels that are diverse and comprehensive, with representative committee members as the media. In place are regular visits to work sites to listen to problems and survey employees' and contractors' ideas.
4. **Safety, occupational health, and work environment:** PEA values safety, occupational health, and the work environment under applicable laws. We are committed to preventing accidents and impacts on the health and hygiene of employees, contractors, and related parties, and to mitigating environmental impacts arising from PEA's activities.
5. **Governance code:** PEA commands sound management under the scope, concept, and guidelines for good governance on a par with international standards. To this end, we have defined criteria for controlling, monitoring, and supervising activities. We have also explicitly assigned responsibility of authority delegators and delegated parties for the disclosure of essential and fair information with integrity and due regard for transparency and accountability.
6. **Nurturing of sustainability:** PEA focuses on creating good experiences and a good quality of life for employees and contractors through their careers, promoting a happy workplace, grooming personnel's capability for work in the digital age, fostering equitability for deserved opportunities, and adequately defining benefits and welfare for employees and contractors that are at least on a par with legal requirements.

Announced on 24 February 2023.

Supachai Ek-un
Governor

SCAN ME

Labor Relations Policy [2-23]

Human Rights Management and Equitable Treatment of Labor

- Manage manpower by enabling equitable hiring opportunities together with a transparent selection process based on competencies and qualifications desired by PEA. The Recruit Replace Reskill Upskill guidelines favor suitable manpower, consistent with the drive toward a digital utility. Finally, analyze the need for manpower, recruitment, and selection to obtain personnel that fits the needs of PEA.
- Plan personnel stewardship for efficient growth in their careers. Assist and support them by instituting fair benefits and welfare. Institute channels for personnel to communicate and express views. Survey their needs and expectations, which differ with jobs and performance, to improve benefits and welfare to suitably and accurately meet needs and expectations, including the development of the PEA Life application, a digital channel supporting work and fostering good, integrated experiences for personnel.

Benefits for PEA Personnel [401-2]

Benefit and Welfare [401-2]	Personnel Type		Remarks
	Employee	Contractor	
Severance or retirement pay	✓		Only for retiring personnel / varies with salary
Overtime and holiday pay	✓		Varies with salary
Workers' assistance fund	✓		Only for members
Funeral assistance expenses	✓		Varies with salary
Medical expenses and financial compensation for loss of income	✓		
Financial assistance for children	✓		
Leave with pay as specified by law	✓		
Supplementary pay	✓		Only for members
Travel expenses for work inside/outside Thailand	✓		Only for approved personnel
House rental	✓		Only approved rentals
Uniform	✓		Only for some positions
On-duty pay to resolve outages	✓		
Extra pay for workers on shift work	✓		Varies with salary
Overtime and holiday pay for those operating small-scale generators	✓		Varies with salary
Extra supplementary pay for hotline personnel	✓		Only for hotline technicians
Extra pay for bus drivers or trailer drivers	✓		

Benefit and Welfare [401-2]	Personnel Type		Remarks
	Employee	Contractor	
Supplementary pay for drivers	✓		Only for technicians
Pay adjustment	✓		
Special area pay	✓		Only for approved areas
Medical expenses (self, parents, spouse, children)	✓		Contractors: self, spouse, children only
Children's school fees	✓		
Maternity support	✓		Only for female personnel
Ordination support	✓		Only for male personnel
Fire victim or other victim support	✓		
Electricity bill support for PEA personnel	✓		Varies with salary
Southern Region risk pay	✓	✓	Only for the three southernmost provinces
Personnel loan	✓		
Cremation support	✓		Only for members
Personnel commute bus	✓	✓	
Loan for children's school fees	✓		
Medical expenses at PEA Medical Care facilities	✓	✓	
Phone bill support for management employees	✓		Varies with position
PEA executive car	✓		Varies with position
Extra pay for wartime service	✓		On such pay before joining PEA
Supplementary professional pay	✓		Only for some positions
Personnel assistance for those charged with crimes while on duty	✓	✓	
Privilege for wearing uniforms	✓		
Privilege for receiving royal decoration	✓		Only for section heads upward
Use of nursery and child development facilities at PEA	✓		
Assorted recreational activities	✓	✓	
Coverage for the handicapped and the defective	✓		
Leave for child care	✓		

Item	2021	2022	2023
Ratios of standard salaries by gender in comparison with local minimum wages [202-1]			
Percentage of employees with first pay equal to or more than the minimum wage			
Male	100.00	100.00	100.00
Female	100.00	100.00	100.00
Ratio of first pay (based on those with minimum pay in each area) by gender at key workplaces to the minimum wage			
Head Office			
Male	1.28	1.20	1.20
Female	1.28	1.20	1.20
North			
Male	1.33	1.27	1.27
Female	1.33	1.27	1.27
Northeast			
Male	1.32	1.26	1.26
Female	1.32	1.26	1.26
Central			
Male	1.30	1.23	1.23
Female	1.30	1.23	1.23
South			
Male	1.32	1.26	1.26
Female	1.32	1.26	1.26
Percentage of contractors with first pay equal to / more than the minimum wage			
Male	100.00	100.00	100.00
Female	100.00	100.00	100.00

Remarks: The minimum wages at key workplaces in each area are derived from the starting salary of 12,690 baht/30 days divided by the average minimum wage approved by the Cabinet of the province in question:

North: Chiang Mai, Mae Hong Son, Chiang Rai, Lamphun, Lampang, Phayao, Nan, Uttaradit, Tak, Sukhothai, Phitsanulok, Kamphaeng Phet, Phichit, Phetchabun, Lop Buri, Uthai Thani, Chainat, Nakhon Sawan

Northeast: Kalasin, Roi Et, Khon Kaen, Chaiyaphum, Nakhon Phanom, Nakhon Ratchasima, Buriram, Maha Sarakham, Mukdahan, Yasothon, Loei, Si Sa Ket, Sakhon Nakhon, Surin, Nong Khai, Nong Bua Lamphu, Udon Thani, Ubon Ratchathani, Amnat Charoen, Bueng Kan

Central: Pathum Thani, Phra Nakhon Si Ayutthaya, Saraburi, Sing Buri, Ang Thong, Prachin Buri, Sa Kaeo, Nakhon Nayok, Chon Buri, Rayong, Chanthaburi, Trat, Chachoengsao, Kanchanaburi, Suphan Buri, Nakhon Pathom, Samut Sakhon

South: Samut Songkhram, Prachuap Khiri Khan, Phetchaburi, Ratchaburi, Chumphon, Trang, Nakhon Si Thammarat, Surat Thani, Krabi, Narathiwat, Pattani, Phang-nga, Phatthalung, Phuket, Yala, Ranong, Songkhla, Satun

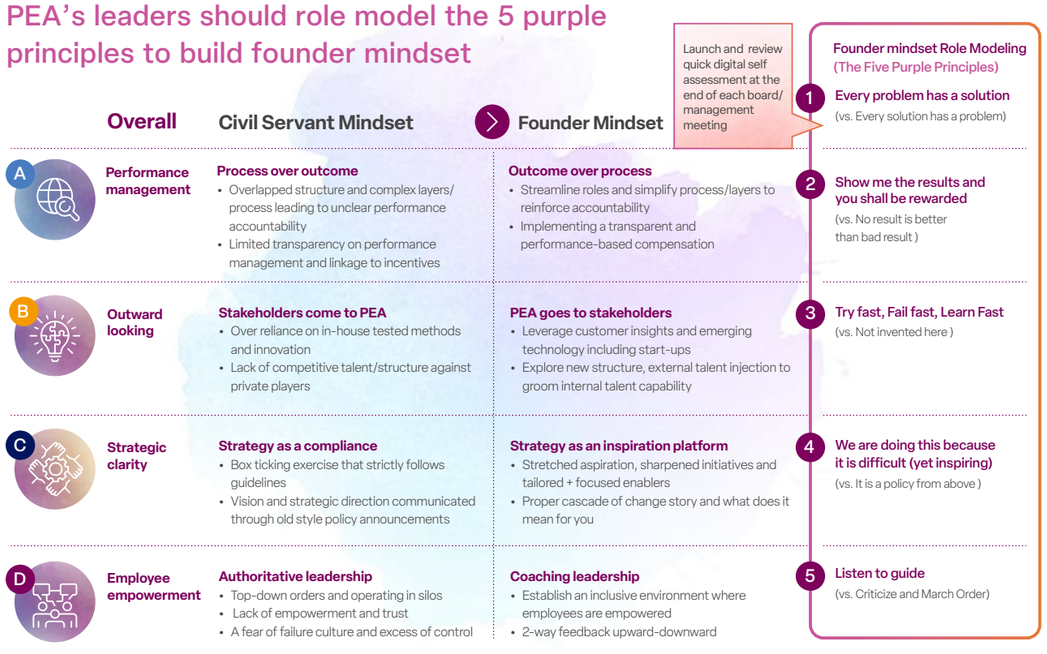
Ratio of Basic Salary and Supplementary Pay for Females to Males [405-2]

Item	2021	2022	2023
Ratio of pay for females to males by type of personnel			
	Management **0.92**	Management **0.91**	Management **0.91**
	Expert **1.00**	Expert **1.00**	Expert **1.01**
	Practitioner **1.01**	Practitioner **1.01**	Practitioner **1.00**

Remarks: Average salary for females / average salary for males for each year

- A survey of Organizational Health Index (OHI) found that the number was 88% (top decile; benchmark: Southeast Asia), which can replace employee engagement surveys because the outcomes can be benchmarked with international entities. PEA then applied the OHI data to the development planning of personnel mindsets and behaviors in five aspects (see diagram) through the Review Corporate Culture and People Change Journey Design Project and the PEA Employee Experience Work Plan to upgrade performance to the utmost and drive the organization's mission to fruition in a sustainable way.
- Created were PR media, namely the Banner UU Intranet circular, LINE Openchat communication videoclips, and PEA Email, as channels for inquiries. Also, an online forum was staged for the expression of views on plan mobilization at the functional / office / provincial electricity authority area levels to share experience and learning about how to mobilize the engagement upgrading plan by each work unit.

PEA's leaders should role model the 5 purple principles to build founder mindset



Hiring of the Handicapped in 2023

Hiring of the Handicapped			Male	Female	Total
The handicapped hired under Section 33	Employees	Holders of handicapped cards	61	12	73
		Non-holders of handicapped cards	6	0	6
	Contractors under 1-2 years' contracts	Holders of handicapped cards	13	3	16
		Non-holders of handicapped cards	2	0	2
Formulated a project to showcase and sell goods or services to support the livelihoods of the handicapped or those looking after the handicapped at Head Office and regional offices (under Section 35)			34	56	90
Female			116	71	187

Percentage of Executives Hired from Local Communities [202-2]

Item	2021	2022	2023
Senior management	**64.53** (91 /141 persons)	**65.96** (93 /141 persons)	**63.96** (71/111 persons)

Remarks:
- Senior management means the ranks of deputy governor, assistant governor, and director/manager, PEA Class 1
- Local community member means a person who was born in or is legally entitled to take residence in a community over an indefinite period, including one whose name appears in the house registration, citizens having undergone nationality conversion or those holding permanent visas, in the same area as an operating area (Head Office – Bangkok, Samut Prakan, Nonthaburi, and 12 areas & provinces under jurisdiction)

- Gave personnel the opportunity to form a group of employee representatives in negotiations with the employer for the protection of welfare and benefits and for counseling members who were unfairly treated. Also, formally declared a labor relations policy to all PEA personnel to assure them that PEA values good relations among employees, the employer, and all stakeholders.
- Encouraged personnel to operate under the guidance of the human rights policy. PEA will never participate in violating human rights in all processes (Zero Tolerance Policy)—notably forced labor, illegal multinational labor, child labor, and human trafficking.
- Advocated local hiring to contribute to the economic benefits of local communities, improved the organization's appreciation of local needs, and enabled the handicapped to work for PEA without discrimination; their rights and welfare are on a par with other personnel to raise their quality of life.

100%

Employees under the Auspices of Agreements made by the Labor Union [2-30]

Human Rights Actions [2-23]

PEA actively drives respect for human rights across the organization, since such respect represents a fundamental virtue of working and co-existence in society. The intention is for all PEA's stakeholders to garner fundamental respect in a fair manner, consistent with the national operating plan on business and human rights, phase 1 (2019-2022) (NAP implementation), serving as operating guidelines for uniform practices. Finally, PEA advocates such actions among all stakeholders. Below are the essences of these actions.

- **Respect for the human rights code:** PEA conforms to human rights policy in operating businesses in line with the United Nations Universal Declaration of Human Rights (UNDHR) and the declaration on the principles and fundamental rights for work of The International Labor Organization (ILO). About 71.73% of the PEA workforce have acknowledged such policy.
- **Non-breaching:** PEA's business activities must not breach the human rights of rightful owners, including employees, society, communities, and stakeholders across the business value chain, either directly or indirectly.
- **Non-discrimination:** PEA treats everyone equitably under the human rights code, while firmly remaining determined to serve the public—urban, rural, specific, or remote, arid areas—for full access to electricity PEA is convinced that access to electricity, a fundamental public utility, is key to the decentralizationof progress to provincial areas.For this would pave the way to the key goals of income generation, support to national gross domestic products, and equitable creation of a good quality of life for the population through the continued electrification of households in remote areas, new rural household electrification, and clean energy for community projects.
- **Human rights due diligence (HRDD):** In operating its business, PEA exhaustively reviews issues concerning human rights as well as examining impacts due to related parties across the business value chain with possible involvement or support to such impacts.
- **Communication and education of human rights knowledge:** PEA fosters acknowledgment and understanding of human rights among involved parties across the business value chain to embrace all stakeholders.

In addition, PEA earnestly blends elements of the human rights code, that is, respect and remedy with the human rights in process through four management measures:

- **Equitable stewardship of personnel:** PEA enables fair recruitment and hiring together with hiring of the handicapped. Since 2016, we have proceeded with a project to hire employees and contractors that are handicapped persons under Section 33, now numbering 187. This action has promoted job and income generation for members of society. Non-discriminatory and accountable reviews of career growth has given personnel and stakeholders confidence in a transparent review process, thus satisfying them and bolstered their engagement to PEA. At the same time, PEA has allowed personnel to form the Labor Unity of the Provincial Electricity Authority to provide protection of welfare and benefits, counsel members that are treated unfairly, and allow collective labor to take part in negotiation.
- **Occupational health and workplace safety:** Our Happy Workplace, Zero Accidents, and the PEA Safety Management System (PEA-SMS) help us prevent accidents involving employees, contractors, and the public—that is, protection of labor rights for all our stakeholders in the supply chain. PEA also houses complaint channels together with systematic management processes and measures for remedying harm resulting from our operation. A hotline and fellow employees fund has been in place since 2006 to aid personnel who suffer from work hazards. Finally, a PEA rule has been made about explicit payment of damages or assistance for humanitarian purposes to PEA's stakeholders.

Improve and diversify PR formats for human rights, non-discrimination, and sexual violation or harassment in the workplace

- **Transparent and fair hiring and procurement:** A project was launched on the development of integrity pacts, designed to produce transparency and fairness in the hiring and procurement process, enable suppliers/business partners to stand on equal ground on project hiring and procurement, minimize risk of bribery and unfair advantages, and prevent corrupt practices. Finally, the pact enlarges the confidence in transparent hiring and procurement processes for suppliers/business partners as well as all PEA stakeholders.
- **Eco-friendly hiring and procurement:** The Green Office Project advocates to PEA's supply chain due abiding to laws, standards, and the human rights code on the environment, natural resources, communities, and land. Implemented since 2014, the project urges PEA's internal units to engage in more eco-friendly hiring and procurement while advocating to PEA-related units recognition of the resource consumption and work that could affect the environment. In 2022, PEA developed the PEA Eco Standard, which was delivered to all its offices for framing their respective operations to minimize environmental impacts, a move to minimize GHG emissions as well as environmental complaints.

Performance Outcomes of Human Rights and Equitable Treatment of Labor [3-3]

- Zero complaint about unfair recruitment and selection, as well as zero complaint about discrimination [406-1]
- OHI showed that the overall score was 88%
- The employee turnover of 2023 was 0.23%, about 4.54 % higher than last year.

Work Improvement Planning [3-3]

- Improve and diversify PR formats for human rights, non-discrimination, and sexual violation or harassment in the workplace
- Improve the resignation form to include a process or channel for superiors and employees to consult before resigning and to enable data collection supporting the resignation for genuine analysis and problem-solving
- Value in-depth research about key factors for satisfaction evaluation through focus group conversations or in-depth interviews with relevant personnel or parties. The resulting data would then contribute to a plan to upgrade organizational engagement as well as scaling up good experiences for personnel.

8 DECENT WORK AND ECONOMIC GROWTH

Performance Outcomes

Occupational health and safety activities	level 5 (100percent)	meeting the goal
Certification	ISO45001	

08-2 Occupational Health and Safety

PEA has developed management of occupational health and safety and hazard prevention in the course of work for comprehensiveness and safety, consistent with laws, regulations, strategies of Thailand's safety supporting agencies, and international work safety standards. Also in place is a master plan on safety and occupational health, designed to track and evaluate performance against goals. We also properly arranged our work environments and foster a safety culture together with a work environment favoring a decent quality of life and work safety for our personnel and contractor employees that work in our areas. The aim is to minimize or eliminate accidents and incidents by focusing on minimizing the causes of accidents (health and environmental context) that impact personnel's life and properties. Finally, we value safety, occupational health, and the work environment of those on the job—a critical factor for our personnel and our own operating efficiency.

Goals [3-3]

- In place is the measurement of the Disabling Injury Index ($\sqrt{DI}$) and reduction of accidents by 5% each year
- Success of safety and occupational health activities
- The number of employees and contractors with work injuries and fatality is down from last year
- The number of contractors whose work or workplaces, or both, are controlled by PEA/contractor employees with work injuries and fatality is down from last year
- Advocacy of the safety culture and zero accidents by measuring $\sqrt{DI}$. Also, compilation of accident statistics occurring at PEA Head Office and Electricity Authority areas, including units of Head Office, for prevention of repeat accidents and remedy.

Operating Strategy [3-3]

Compliance Policy

Operate with responsibility to communities, society, and the environment with due regard for laws and regulations that provide protection to the health and safety of lives and properties of those who may be affected by PEA's operation.

PEA is committed to ongoing safety, health, and work environment operation to minimize or eliminate accidents and incidents while strictly conforming to the PEA Compliance Policy.

To this end, PEA has defined its strategic plan for 2022-2026, which contains the SO1 strategic objective, the upgrading of organizational governance for sustainability. To elaborate, we defined a plan to upgrade our operations concerning standard/international safety along with a plan to develop standards and processes for supporting work safety and forge a PEA safety culture along with a PEA master plan on safety, occupational health, and the work environment 2020-2024 (Revision 2, 2022) to supervise work under the PEA Policy on Safety, Occupational Health, and the Workplace 2021 guided by the PEA Safety for All concept, as summarized below: [403-6] [403-7]

- Upgrade the PEA-SMS to the enterprise work standard for public safety. The purpose is to seriously and steadily develop safety operation and pursue an international safety management system
- Each of the management, employees, and workers of PEA must recognize and participate in advocating safety, health, and work environment operation in addition to lending cooperation with safety operation networks
- Supply sufficient budgets and resources for work safety, health, and the work environment
- Develop the human capital for greater knowhow and proficiency in safety, occupational health, and the work environment. In place is work up-skilling and re-skilling. Drive PEA practitioners to pass legally required training and courses required by PEA.
- Develop innovations and apply digital technology to PEA's safety, occupational health, and work environment activities.
- Focus on zero accidents and minimize work-related illness risk by giving primary consideration for safety procedures and work standards. Strictly control PEA's own operation and PEA's contractor operation.

The PEA Governor, Deputy Governors, and Assistant Governors of all areas have signed their names in a memorandum of understanding to jointly drive our resolution on “2022: Year of Safety and Strict, Sustainable, and Ongoing Enforcement” under the “Compliance, Minimize Losses for Everyone: PEA Safety for All” concept. This MOU efficiently and systematically guides our safety work. The following punitive actions have also been defined for violators of defined standards:

- PEA-SMS is to be implemented
- All practitioners must take part in the PEA Safety Culture (PSC) activities organized by their respective units
- There must be a survey of PPE to ensure enough supply for every practitioner’s work, and all of them must put on their PPE before work begins
- All practitioners must conform to the standards, measures, rules, manuals, and requirements for safe work.

Occupational Health and Work Safety Management

[3-3] [403-1]

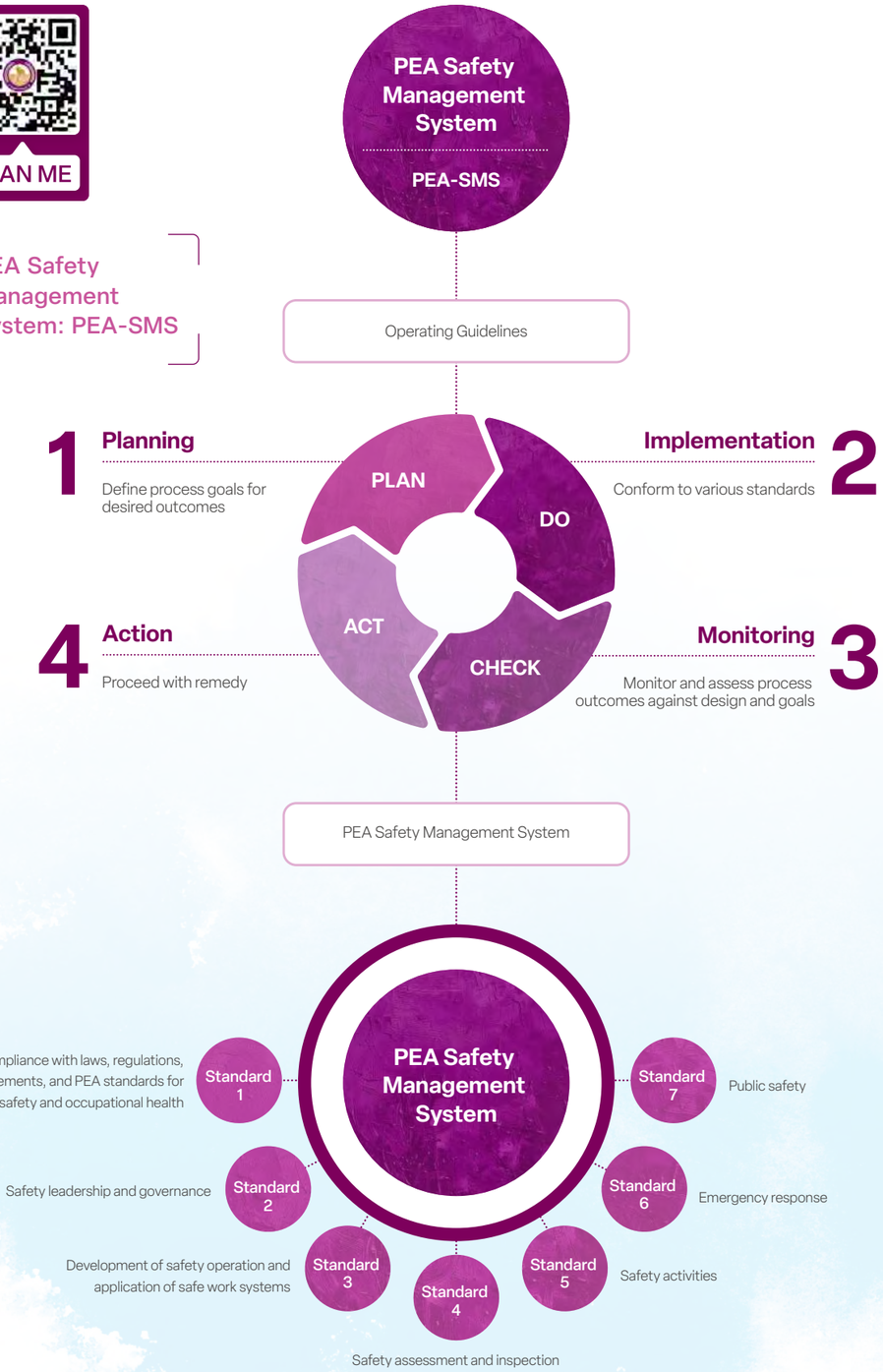
By defining an action plan for achieving goals under each strategy item, PEA defines and cascades its safety strategy down to implementation. To this end, responsible parties, goals, and operating periods are completely defined under the PEA Master Plan on Safety, Occupational Health, and the Work Environment 2020-2024 (Revision 2, 2022). At the same time, PEA-SMS is developed in line with the Safety, Occupational Health, and Work Environment Act of 2011 in a bid to file for TIS 18001 / BS OHSAS 18001 certification and supervise the prevention of accidents for employees, contractors, and the public.

PEA-SMS embraces the following aspects of operation: compliance with requirements or applicable laws, overseer of implementation, safety assessment, safety activities, emergency response, and public safety. These serve as vital tools for the oversight of operation by improving the speed and reduction of risk for unsafe incidents to personnel.

PEA Safety Management System (PEA-SMS) [403-2] [403-3]

SCAN ME

PEA Safety Management System: PEA-SMS



Process to Manage Risk of Work Injuries and Illnesses [403-2] [403-9] [403-10]

Harnessing PEA-SMS in managing risk of work injuries and illnesses, PEA develops reporting forms for the annual outcomes of emergency risk assessments for the formal assessment and measurement of risk levels. This action ranks risks from high to low.

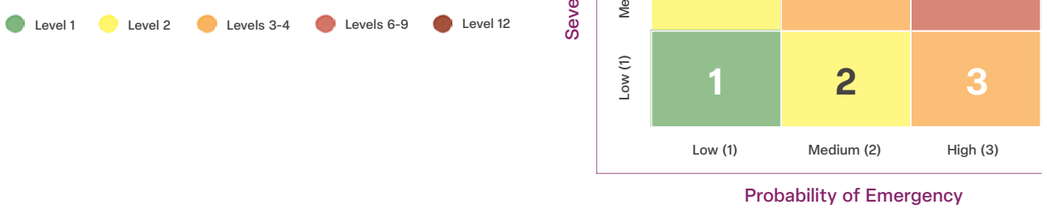
Risk assessment relies on the consideration of risk severity and risk probability under the assessment criteria jointly agreed. Calculation is based on the formula: “risk level = probability x severity”. Below are detailed consideration fundamentals:

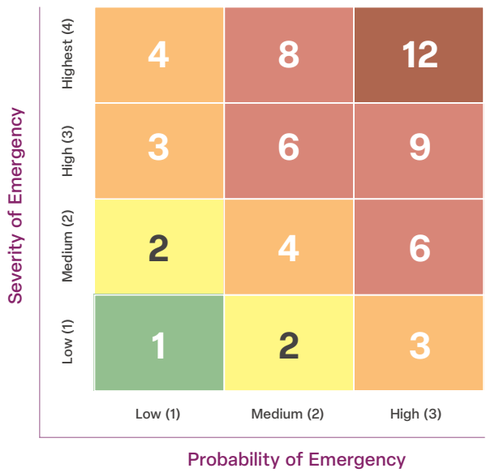
Level	Severity	Detail
1	Low	No lost workday or property damage worth less than 500,000 baht
2	Medium	Three days or less in workdays lost or property damage worth 50,000-250,000 baht
3	High	More than three days in workdays lost or property damage worth 250,000-500,000 baht
4	Highest	Loss of organs / incapacitation / loss of life, or property damage worth more than 500,000 baht

Level	Severity	Detail
1	Low	Hazard unlikely
2	Medium	Hazard moderately likely
3	High	Hazard most likely

In ranking risks, PEA defines conditions for doing so and arranges them from high to low to choose significant emergencies and prepare response plans accordingly. To this end, five levels of risk are in order.

Level 1	Mild
Level 2	Acceptable
Levels 3-4	Medium
Levels 6-9	High
Level 12	Unacceptable





Risk Level	Action and Time Spent	List of Resources Consumed	
Unacceptable	Work cannot proceed or resume until the risk is mitigated. If impossible to mitigate despite full efforts, the work must be stopped	Reduce	PEA must identify suitable risk control measures by focusing primarily on reducing the probability and an emergency response plan to address the risk
High	Risk must be lowered before work begins. To this end, resources and measures must be duly allocated. As long as risk exists concerning the work, remedial action must be promptly identified.	Plan	PEA must prepare an emergency response plan and conduct plan drills
Medium	To lower risk, try one’s best, but preventive expenses should be prudently considered, as the budget must be limited. Risk mitigation measures must be in place in due time. When a medium risk relates to severe damage, PEA should conduct additional assessment to more accurately decide the likelihood of damage to justify the need and extent for control measure adjustment.	Control	PEA must duly identify risk control measures. If such measures are already in place, one should regularly proceed with such measures by focusing primarily on lowering the probability of occurrence.
Acceptable	No need for additional control. Consideration of risk could be conducted if it is cost-effective or if adjustment does not incur additional expenses. Yet, monitoring and inspection remain in order to ensure that control is still in place.	Accept	PEA can live with the risk. If control measures are in place, one should regularly proceed with such measures.
Mild	No need to proceed with remedy	None	

Such risk level division underlines the decision whether risk management or definition of preventive measures is in order, namely elimination of the probability of occurrence, reduction of the probability of occurrence, or both. Another factor is the time spent on control and prevention, which relates directly to a given risk as seen in the table above.

In addition, PEA has defined the types of possible work accidents that can produce injuries with high impacts, including electric shocks, material collision with vehicles, falls from high places, burns, slips or sliders, crumbling construction, falling objects, material cuts/stabbings, squeezing/pulling, and chemicals/poisonous animals. These accidents must be properly studied/reviewed and risk control measures defined. Today, PEA has analyzed risks of work illnesses and found the risk of skin exposure to chemicals in divisions supporting PEA’s operations. PEA therefore proceeded under the ministerial regulation on the standard for safety management systems of 2022 by requiring personnel with such risks to undergo physical examinations strictly by the law and PEA’s operating guidelines. In 2023 no abnormality that could cause work illnesses arose, and there was no instance of employees or contractors falling ill at work.

Structure of the Working Group on Occupational Health and Safety [403-4]

Below is the structure of the working group charged with developing an oversight system for work processes under applicable laws and regulations as well as procedures on safety and occupational health that deal with personnel, suppliers, workers, and contractors or safety, occupational health, and work environment committee member at Head Office.

Employer's representative
Deputy Governor (Region 1)
Chairman

Employer's representative
Deputy Governor (Organizational Management)
Vice Chairman

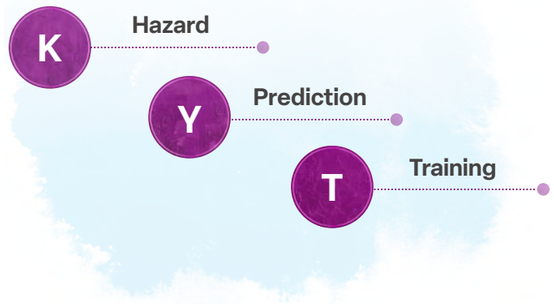
Secretary
Safety Officer

Employer's representatives at the supervisory level, six of whom selected by the employer:

- Assistant Governor (Engineering)
- Assistant Governor (Corporate Strategy, Organization Affairs)
- Assistant Governor (ICT)
- Director (Organization Service Work Management)
- Director (Human Resource Service)
- Director (Safety and Occupational Health Division)

Employee representatives
Seven members elected by employees

In PEA's advocacy of the safety culture, a safety talk precedes the beginning of work every week, with the application of the KYT safety training system to the prevention of work accidents in parallel. KYT analyzes or predicts work hazards and defines measures or methods of managing such hazards for safety. Finally, PEA organizes training and develops curricula to promote safety together with monitoring and measurement for continuous improvement of training.



Personnel Communication at Meetings to Drive Safety Management [403-4]

Communication Channel	Communication Frequency	Related Party
Employees		
Meeting to report ⱯDI	Quarterly	PEA Area Safety and Occupational Health Section
Safety Subcommittee Meeting	At least quarterly	Assistant Governor (Organizational Management) as chairman
Incident Prevention Committee Meeting	Quarterly	Chaired by the Governor, with the Deputy Governors, the Assistant Governors (12 areas), and related parties as members
Occupational Safety, Health, and Work Environment Committee Meeting	Monthly	1. Deputy Governor (Org. Mgt.) as chairman for Head Office 2. An Assistant Governor as chairman for each PEA Area 3. A manager as chairman for each PEA Office For (1) to (3), a professional-level safety officer serves as secretary
Contractors		
Operational safety awareness drills	Four tasks each month	Professional-level safety officer

Improve the safety management system to embrace all aspects of the Safety Transformation Project.

Performance Outcomes of Occupational Health and Safety [3-3]

- ISO45001 certification was earned
- 100% success in occupational health and safety activities, with level 5 achieved against the goal
- $\sqrt{DI}$ equaled 0.1054 (level 4) against the goal of level 5 (0.1208-0)
- Organized personnel training on occupational health and safety under two curricula (engineering techniques and required by law). General training included the onboarding program, basic firefighting, and PEA Safety Excellence. Specialty training included curricula on technical safety officer, management safety officer, supervisory safety officer, contest on performance skills, safe work control, review of crane work, review of Hotline technicians on leave or those with more than three months' leave. A total of 3,224 trainees (10.5% of the workforce) took part. [403-5]

Work Improvement Planning [3-3]

- Develop the WeSafe application for easier and more convenient use
- Provide a budget for the procurement of voltage detectors, shorting units, and disconnect sticks for all units
- Develop the PEA-SMS Monitoring program for easier and more convenient data reporting
- Develop the work permit system in a digital format (E-Permit)
- Improve the safety management system to embrace all aspects of the Safety Transformation Project.

3 GOOD HEALTH AND WELL-BEING

Performance Outcomes

Success of the plan to upgrade safety operation to international standards	100 percent	meeting the goal
The impact factor concerning unsafe conditions	level 5 (0.0014)	meeting the goal

08-3 Community Health and Safety [3-3]

Since electricity users may encounter hazards in their application, PEA fully recognizes the importance of their safety, hence our focus on conforming to the mission and related businesses conducted with due regard for safety, security, stability, and absence of hazards due to unsafe electricity systems and unsafe application to customers, communities, and the environment. To this end, we have developed a safety management system abiding to laws, international standards, and other requirements, while cultivating awareness and mastery of safe consumption among users. We take it most seriously to prevent and assess hazards and impacts on electricity users to ensure that our prevention and remedial system is efficiently applied for health and safety stewardship.

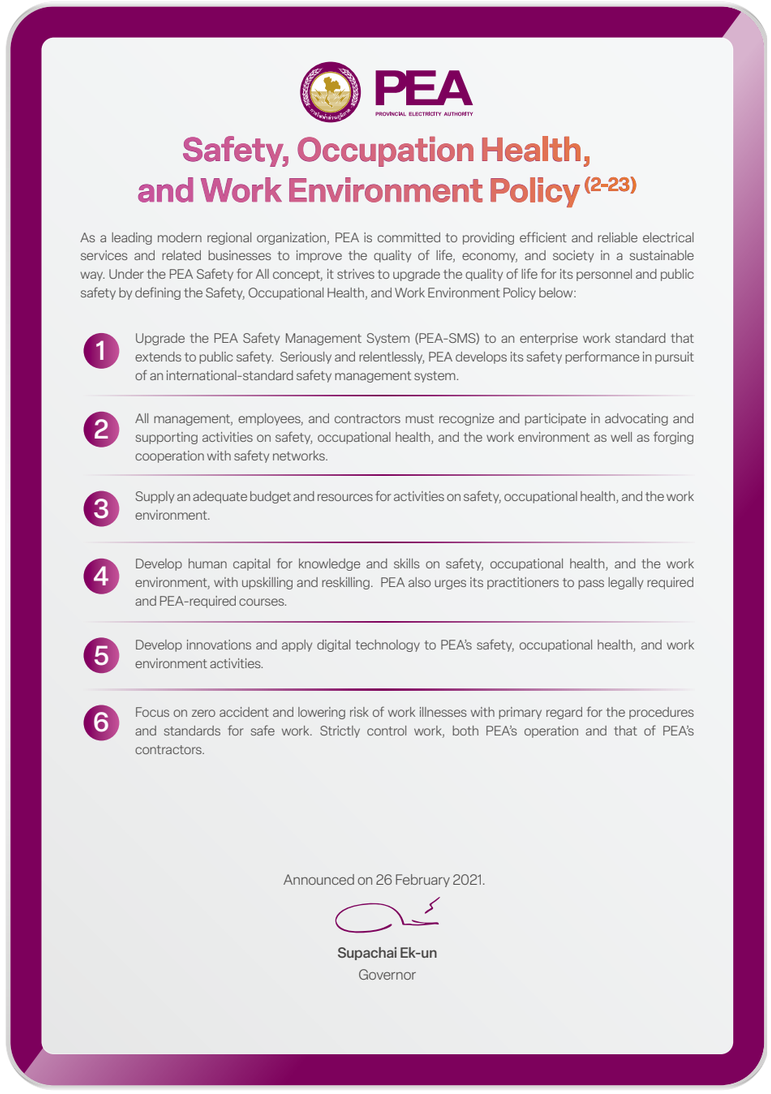
Goals [3-3]

- 5% reduction in the number of accidents to electricity users resulting from PEA's distribution systems
- 0.0262 (level 5) impact value on PEA electricity users
- 100% success of the plan to upgrade safety operation to international standards
- Apply Standard 7 of PEA-SMS (public safety) by conforming to the PEA Master Plan on Safety, Occupational Health, and Work Environment 2020-2024 (Revision 2, 2022).

Operating Strategy [3-3]

- Require safety patrol planning in areas of responsibility
- Apply the TISI 18001 occupational health and safety management system for vigilance and audit purposes; also, continually improve PEA's public safety operation
- Improve electricity lines near buildings or other facilities, consistent with PEA's standard

To this end, PEA has defined its policy on customers' health and safety as part of its safety, occupational health, and work environment policy under the PEA Safety for All concept. PEA aims to upgrade PEA-SMS to an enterprise operating standard, which includes public safety, to seriously and continually develop its safety-related operation on its pursuit of an international standard management system. This requires that management, employees, and contractors must recognize and play a part in advocating and supporting its operations.



PEA
PROVINCIAL ELECTRICITY AUTHORITY

Safety, Occupation Health, and Work Environment Policy [2-23]

As a leading modern regional organization, PEA is committed to providing efficient and reliable electrical services and related businesses to improve the quality of life, economy, and society in a sustainable way. Under the PEA Safety for All concept, it strives to upgrade the quality of life for its personnel and public safety by defining the Safety, Occupational Health, and Work Environment Policy below:

1. Upgrade the PEA Safety Management System (PEA-SMS) to an enterprise work standard that extends to public safety. Seriously and relentlessly, PEA develops its safety performance in pursuit of an international-standard safety management system.
2. All management, employees, and contractors must recognize and participate in advocating and supporting activities on safety, occupational health, and the work environment as well as forging cooperation with safety networks.
3. Supply an adequate budget and resources for activities on safety, occupational health, and the work environment.
4. Develop human capital for knowledge and skills on safety, occupational health, and the work environment, with upskilling and reskilling. PEA also urges its practitioners to pass legally required and PEA-required courses.
5. Develop innovations and apply digital technology to PEA's safety, occupational health, and work environment activities.
6. Focus on zero accident and lowering risk of work illnesses with primary regard for the procedures and standards for safe work. Strictly control work, both PEA's operation and that of PEA's contractors.

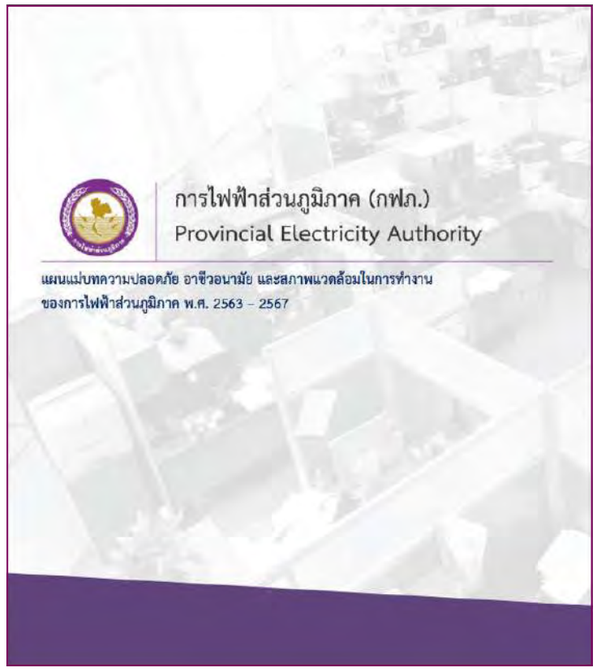
Announced on 26 February 2021.

Supachai Ek-un
Governor

SCAN ME

Safety, Occupation Health, and Work Environment Policy [2-23]

Community Health and Safety Management [3-3]

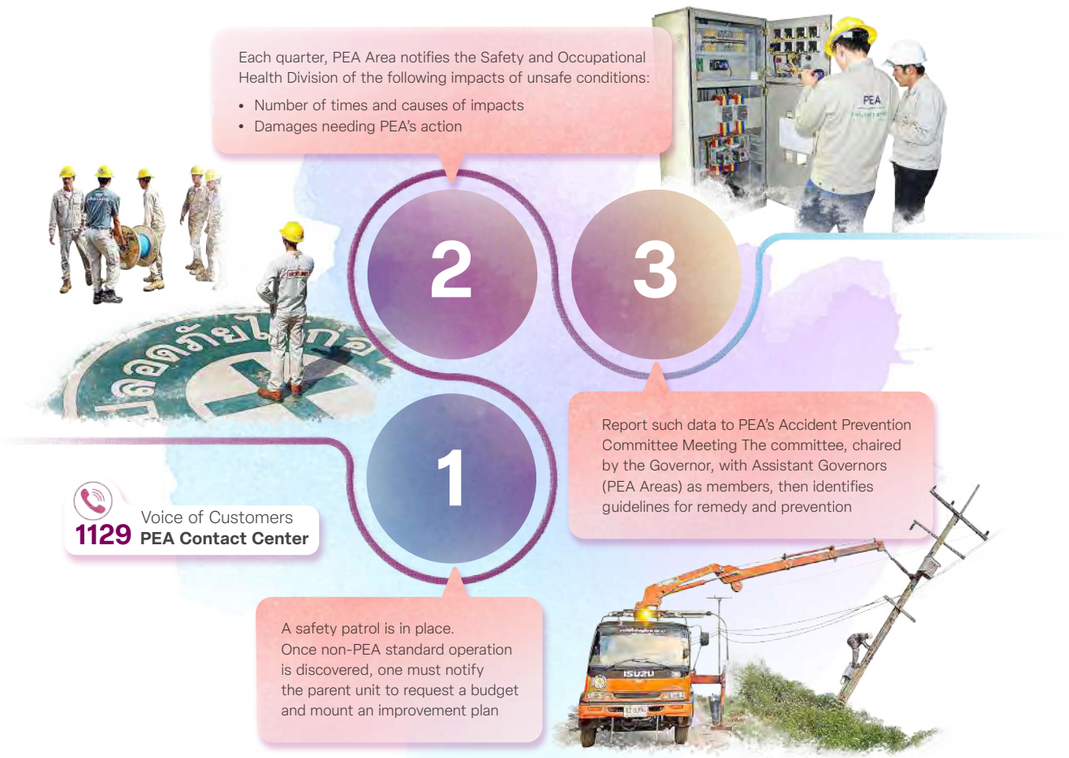


SCAN ME

PEA Master Plan on Safety, Occupational Health,and Work Environment 2020-2024 (Revision 2, 2022) [2-23]

above are the guidelines for safety management of PEA's electricity users:

- 100% inspection and assessment of risky points that could affect electricity users
- 100% inspection and assessment—of the standards for design, quality, and installation safety concerning transmission and distribution systems—of all products and services. These requirements are made annually. Electricity authority areas are required to file reports of remedy and improvement against plans every three months. [416-1]
- Regular random inspection in each service area. Should any index deviate from the guidelines or standards, PEA must improve and plan remedy or service resumption and then notify the safety patrol unit of the progress made.
- Conform to the Safety, Occupational Health, and Work Environment Policy. The Safety and Occupational Health Division then tracks improvement outcomes for cases found from surveys or public complaints and repair of distribution systems. To this end, the PEA-SMS Standard 7 (Public Safety) and the PEA Master Plan on Safety, Occupational Health, and Work Environment 2020-2024 (Revision 2, 2022) are to be implemented.



- Survey, amend, and record data on the safety of public electricity users, namely data about impacts, unsafe conditions involving PEA's systems for electricity users, including broken or collapsing electricity poles, electricity lines stretched across buildings, severed electricity lines, exploded electrical appliances, and short-circuiting. These serve as data for distribution system repair and fixing along with PEA's operations.
- Publish advertisement, so electricity users shall notify PEA of unsafe distribution system conditions. The notification channels are the 1129 Contact Center, LINE application, PEA website, and the area's electricity authority offices. Alternatively, organize safety promotional activities for the public.
- Inform electricity users through assorted projects, including the project on safe community users of each area, providing knowledge and advice on the safety of PEA's distribution systems and safety tips for using electricity and electrical appliances.
- Align the guidelines for assessing and compensating those harmed by PEA's distribution system mishaps and apply such risks to electricity safety improvement to promote the health and safety of customers and communities in respective areas of responsibility.

Accidents involving high-voltage electricity lines near buildings or structures

- All PEA Areas and Offices inspect to ensure that high-voltage electricity lines' distance from buildings or structures in their respective areas of responsibility conform to the electrical safety clearance standards
- Formalize a registry and plan for corrective actions. PEA Area then reports implementation progress quarterly.

High-voltage electric shocks

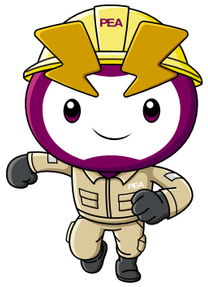
- All PEA Areas and Offices ensure that high-voltage electricity lines conform to electrical safety clearance standards
- All PEA Offices prepare an action plan for improving high-voltage electricity lines near buildings or structures annually
- PEA Areas monitor the action plan's implementation progress and file a report to the Safety and Occupational Health Division quarterly for submission to the Governor
- Regularly inspect and maintain high-voltage and low-voltage electricity lines together with electrical equipment in distribution systems
- Promote public awareness of the hazards and safe use of electricity

Electrical accidents

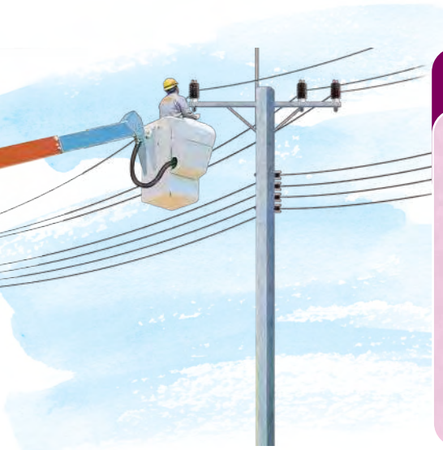
- All PEA Areas and Offices ensure that high-voltage electricity lines conform to electrical safety clearance standards at least monthly
- If electricity line clearances deviate from standards, responsible PEA Offices will promptly take corrective actions. PEA Areas will report the outcomes to the Safety and Occupational Health Division quarterly so that it may devise proper measures and report to the Governor
- Regularly inspect and maintain high-voltage and low-voltage electricity lines together with electrical equipment, especially during the monsoon season and those in risky areas
- Seek cooperation from locals in reporting safety concerns observed in PEA's distribution systems and promote public awareness of the hazards and safe use of electricity

Performance Outcomes of Community Health and Safety Operation [3-3]

- 100% success of the plan to upgrade safety operation to international standards, meeting the goal
- 12 incidents of breach of regulations or voluntary guidelines, or both, concerning the health impacts and safety of products and services during the reporting period for PEA's distribution in 2023: [416-2]
  - 12 instances of regulation breach, resulting in fines
  - 0 regulation breach, resulting in formal warnings
  - 1,183,332 baht paid in compensation and humanitarian expenses.



Remarks: The minimum wages at key workplaces in each area are derived



Example of regulation breach, resulting in fines

Letting a contractor approach or use conductors without proper insulators to approach live electricity at a distance under the distance specified by the standard of the Engineering Institute of Thailand. This was a breach of the Safety, Occupational Health, and Work Environment Act of 2011, Section 8, which requires that employers must manage and implement safety, occupational health, and the work environment strictly by the standard defined in the ministerial regulation. For this breach, PEA was subjected to a fine of 200,000 baht.

- 0.0014 in the impact factor concerning unsafe conditions (level 5), or 5.9 % of the measurement range of level 5
  - Six instances of severed electricity lines
  - No explosion of electrical equipment
  - Two instances of electrical short-circuiting

- The public and PEA personnel joined a hearing on the Safe Communities Use PEA Electricity Project, as detailed below:

Activity 1: Junior Savers' Journals

PEA Areas educated children and youths (primary or secondary level) on economical and safe use of electricity to cultivate awareness among them and modify their behavior to conscientiously use electricity. Each Area educated 50 of these children and youths, thus a total of 600.

Activity 2: Education for vocational students (ordinary and higher levels)

The electrician discipline under the auspices of the Office of the Vocational Education Commission organized training for one community (50 students) under each PEA Area, a total of 600 students. Each PEA Area provided training on the basic use of electricity along with economical and safe consumption of electricity. Also, it organized an activity of electrical services, where PEA's expert personnel and contractors, in addition to electricians from the One Tambon, One Electrician Project, provided inspection, improvement, and basic repair services to communities where electricity systems are aged and unsafe (one temple, one school, and one community each).

Activity 3: PEA United Community, Secure Distribution Systems

Each PEA Area organized education for officers of the Department of Local Administration, community leaders, and the public on PEA's distribution systems (100 trainees under each Area for a total of 1,200 trainees).

Work Improvement Planning [3-3]

- Increase the frequency of surveying risky points and expedite the improvement of electricity lines near buildings or structures to conform to PEA's standards and complete the work as planned
- Increase the frequency of reporting impacts of unsafe conditions, for which the PEA Assistant Governors of all Areas are to report directly to the Governor during monthly senior management meetings. The purpose is to identify defects in the problem-solving process of various units and improve.

Performance Outcomes

Net Promoter Score	67.71 Marks	exceeding the goal
e-Bill applicants and PEA Smart Plus applicants	At least 111,624 and 5.29 million	exceeding the goal
The engagement score of risky key accounts	4.72 Marks	exceeding the goal

08-4 Customer Relationship Management

PEA's core mission, which has seen steady customer relationship management (CRM) development, is to provide electrical services to meet the needs of customers and fulfill their desire for quality and services. This year saw a total customer base of about 22.01 million, a 1.55% rise or 0.34 million over last year. The breakdown is 0.45% for the major customer group; 96.69%, retail customer group; and 2.86%, public sector group. At PEA, we manage relationship-building, service platform development, upgrading of standard, security, and reliability with digital technology under a customer-centric approach. The intention is to grow the efficiency of existing systems while evolving new businesses consistent with prevailing circumstances and satisfy customers' expectations in parallel with sustainable development of the organization, quality of life, economy, and society.

Goals [3-3]

- 42.50 marks (out of 100) in the Net Promoter Score of customers through PEA's digital channels
- 100% success in e-Service and PEA Smart Plus online services
- 4.49 marks in customer group satisfaction
- At least 91,737 applications for e-Bill services
- At least 4.5 million applications for PEA Smart Plus
- 5 (perfect score) in the success of Service Level Agreement (SLA) service
- 3.5075 marks (out of a score of 5) in the engagement score of key accounts with risk
- 100% success of the CRM Development Project.

Operating Strategy [3-3]

- Develop comprehensive service channels for the needs of all customer groups with due regard for the customer touch point service process, both digital and physical touch points, throughout the Customer Journey
- Focus on customer service with speed, efficiency, and service standard, complete with continuous quality improvement, marked by advanced technology, for greater efficiency
- Adopt a customer-centric approach to investment decisions and planning, leveraging digital technology and innovations in the drive to become a digital utility, equipped with smarter grids capable of instant data reception and transmission, efficient management of distribution sources and loads, quick maintenance of balance of load and energy, and compilation of Big Data.

CRM [3-3]

- Develop a master plan for the management of customers and marketing, 2021-2025 (revision 2, 2023), as CRM guidance. Four operating strategies are in place. First, develop digital services for customers' satisfaction. Second, maintain and upgrade service standards. Third, focus on establishing good relations and keeping the key account base. Fourth, develop related/ downstream businesses for improved organizational performance.

C1 Strategy 1:
Digital service improvement for customers' satisfaction

DS1 Develop digital products and services for retail customers

- Receive applications through the website (e-Service)
- Add service channels to receive applications through the LINE application
- Institute the ICS service applications and service tracking system

DS2 Create good experiences for using digital services

- PEA Smart Plus (Phase 3-4)
- 1129 Contact Center (Phase 4)

DS3 Advocate digital services

- Project to invite electricity users to apply for bill notification and online receipt (e-Bill)

C2 Strategy 2:
Maintain and upgrade service standards

SS1 Get customer insight

- Project to survey learning about customers, markets, and organizational image
- Project to formalize organization's customer database
- Plan to investigate the customer database structure to exploit data for value addition to the organization

SS2 Upgrade service standards

- Project to improve service standards
- Project to monitor and resolve outages of low-voltage distribution systems
- Develop the front office
- Project to increase the efficiency of complaint-handling (VOC)

C3 Strategy 3:
Focus on forging good relations and maintain key-account database

CM1 Develop a process to serve key accounts

- Grow personnel's capability for forging good relations with customers and their services
- Forge relations to maintain key accounts
- Apply digital CRM to supportcustomer service
- Engage in digital marketing & sales redesign for key accounts

CM2 Increase service efficiency for major customers

- 115 kV – 230 kV one-stop service
- Nationwide one-stop service
- Monitor and resolve outages in industrial estates
- Customer relationship management (CRM)

C4 Strategy 4:
Evolve related and downstream businesses to improve the organization's performance outcomes

RB1 Upgrade the organization's performance outcomes of related and downstream businesses

- Project to add skills, develop the capability and supplementary business service techniques (support teams)
- Project for customer analytics to develop service quality or create business opportunities
- Business portfolio implementation

RB2 Evolve new products and business services

- Project to install EV charging stations
- PEA CARE & SERVICE
- PEA VOLTA Platform
- PEA Solar Hero (Solar monitoring and evaluation system)
- PEA Now Biz App improvement

- Define the PEA GIS to raise distribution system stability and upgrade services for PEA's electricity users. To elaborate, the scope of services is extended to embrace a greater number posed by various systems. Centralized data compilation is in place to analyze the national power system. A Data Recovery Center (DRC) is set up. New applications are developed for mobile applications. Sophisticated aerial photos are acquired for greater efficiency of work analysis and then connected to various work systems to integrate map data of distribution systems accommodating nationwide users.
- Develop online technological systems—that is, enterprise work systems and systems used by customers outside PEA—to accommodate customer services for convenience, speed, and service experiences for customers, including the PEA website and PEA Smart Plus for iOS and Android. Such move streamlines services for customers to apply for power grid hook-ups, applications for tap water use in parallel with that of electricity, extension of electricity zones, electricity bill payment, termination of service, increased/decreased meter sizes, ownership transfer, record amendment, report of outages, and downloading of electricity invoices, in addition to electronics receipts and tax invoices.
- Set SLAs and regularly assess users' satisfaction by analyzing the voice of customers (VOC) to summarize their needs and expectations, leading to proper and integrated service channel development.
- For efficiency and speed, develop the Work-D Super App for site personnel as the main application for various aspects of work. This year, PEA has improved its service ability to link data to the customers' application system, notably on the part of engineering service applications. This move streamlines paper work and minimizes potential errors in providing engineering services to businesses.
- Integrate buying and selling data on the GIS Portal system, which connects power-purchase data from EGAT, SPPs, VSPPs, and data of key accounts. Analyzed results are displayed on the GIS Portal Dashboard to aid decision-making on buying and selling planning together with the compilation of RE, REC data and the carbon credit between PEA and EGAT.
- Analyze credit scoring and load profiles of key accounts on AMR meters to select customer groups for presenting services/products involving photovoltaic (PV) energy, energy storage systems (ESSs), and future related services/products.
- Analyze data to identify customer groups needing compensation for outages. Anticipate customer churn prediction for risk management and minimizing opportunities for losing high-value/key accounts.
- Evolve IT Governance standards under the COBIT work scope under the ISO/IEC 38500:2015 and ISO/IEC 20000-1:2018 international standards. This year has seen PEA pass re-certification assessment for six services: intelligent customer service (ICS), administration of computer sets and auxiliary/network equipment, PEA Smart Plus services, electronics documentary system (DDOC) services, bill printing and payment management (BPM) services, and the PEA Service Desk.
- Define a service charter, service standard, service ethics, and code of conduct as guidance for customer treatment under the service standard. Also, support PEA personnel's understanding of their roles and treatment of customers that are PEA's standard spanning all key touch points throughout the customer lifecycle, from before becoming PEA customers to their engagement with PEA.

SCAN ME

Service Charter, Service Standard, Service Ethics, and Code of Conduct [2-23]

- Monitor the outcomes of relationship building with customers and file a summary of outcomes quarterly. Survey key accounts' satisfaction through the Tele Survey channel for the assessment of key account managers and the overall satisfaction of key account management annually.
- Conduct in-depth interviews with representatives of major customers and arrange a focus group in conjunction with the representatives and key account managers of each area. The purpose was to hear problems and obstacles as well as advice for efficient and practical process development in each location.

Performance Outcomes of CRM [3-3]

- 67.71 marks in Net Promoter Score of digital channel service users, superior to the goal
- 100% success of online services through e-Service and PEA Smart Plus, meeting the goal
- 4.60 in the satisfaction of customer groups, superior to the goal
- At least 111,624 e-Bill applicants, superior to the goal
- More than 5.29 million PEA Smart Plus applicants, superior to the goal
- Level 5 success of SLAs, meeting the goal
- 4.72 in the engagement score of risky key accounts, superior to the goal
- 100% success of the CRM System Development Project, meeting the goal. PEA has studied and prepared a draft scope of this project, as called for by the plan.

Advocate sufficient and efficient distribution and service quality to accommodate future power industrial structure, which accompanies greater demand for electricity.

Work Improvement Planning [3-3]

- Review assorted data and improve processes and standards in line with customers' needs. Maintain service standards and add digital technology services in aspects like product, service, support, and complaint management.
- Advocate sufficient and efficient distribution and service quality to accommodate future power industrial structure, which accompanies greater demand for electricity. This agrees with the policy on EV promotion, distributed energy resources (DERs), and innovation as well as technologies supporting electricity consumption, including battery energy storage systems (BESSs) and energy alternatives facing electricity users that need clean energy and a smart grid.
- Next year (2024), PEA plans to scale up application of the "CRM Plus (Web Application) / CRM Mobile Workforce (Mobile Application)", which consists of
  - CRM Plus / CRM Mobile Workforce system, which will be extended to serve all members of the customer steward group
  - PEA Privilege system, which will be extended first to the key account group and later to PEA's major customers in the following year (2025).

8 DECENT WORK AND ECONOMIC GROWTH

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Performance Outcomes

Development of a Digital Technology Security Development Plan according to the ISO27001 standard	100 percent	meeting the goal
Success of the Information Security Awareness Enhancement Plan	100 percent	meeting the goal
Success of the equipment procurement plan to enhance cyber security	100 percent	meeting the goal

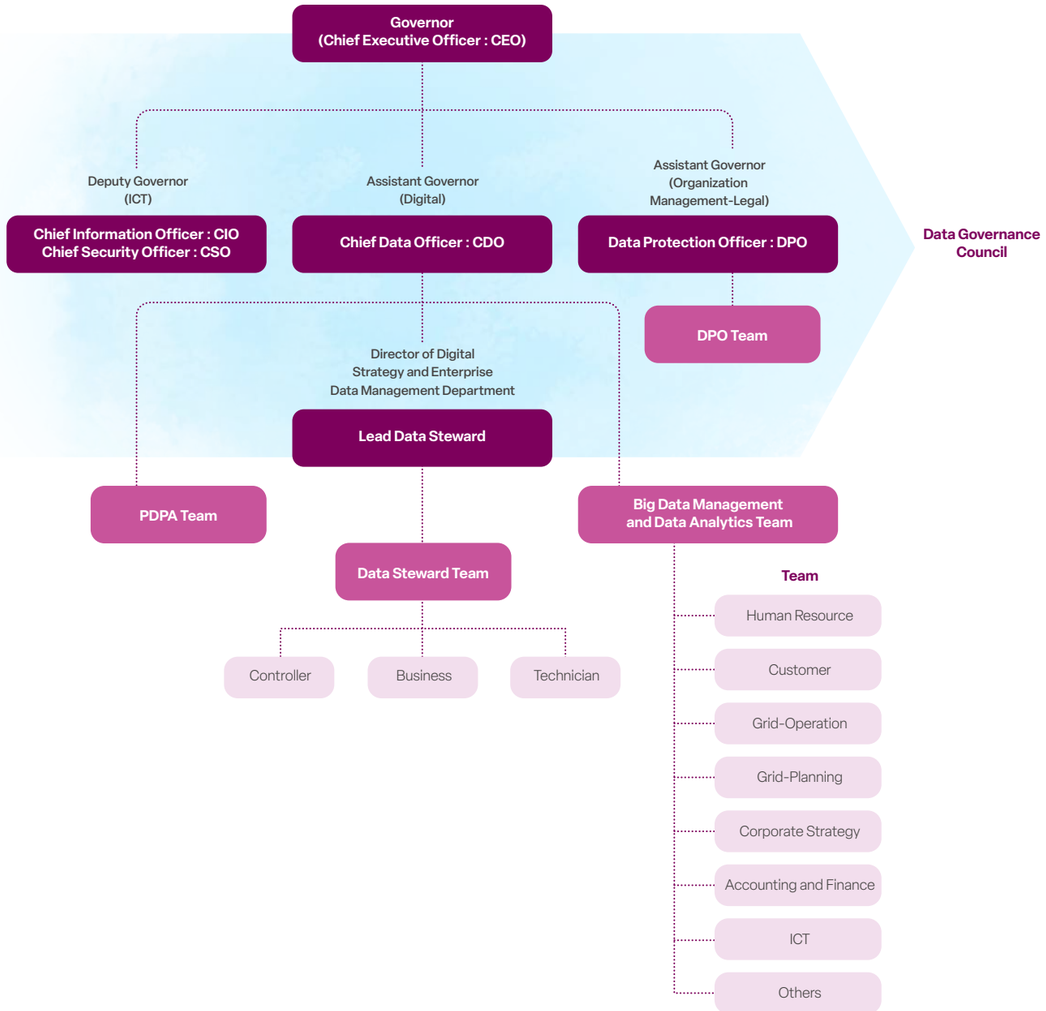
08-5 Information Technology System and Cyber Security

Determined to assure all stakeholders of security and reliability of its digital systems, PEA has embraced the ISO/IEC 27001 Information Security Management System (ISMS) for the development of an information security management system, with particular attention paid to the protection of key infrastructure. Such development covers assurance of data confidentiality, completeness, and promptness for use. As the digital age grows, technology could be advantageous or detrimental to corporate management and national security. Cyber threats brought in by system intrusions do call for serious attention. PEA, in its digital data management, recognizes the need for system security to prevent potential damage to the organization, relevant stakeholders, and the country's economy.

To this end, PEA assigned its Standards and Cyber Security Unit under the Digital Technology Infrastructure Department to take key responsibility for maintaining PEA's cyber security, which covers individual, process, and technology security. PEA also established a Cyber Security Coordination Committee to oversee and manage information technology (IT), operation technology (OT), and data and to coordinate with internal and external units. A Security Operation Center (SOC) monitors and deals with cyber threats. PEA understands the need for personal data protection, thus PEA takes very seriously careful use of personal data in compliance with the Personal Data Protection Act 2019 (PDPA), enacted to prevent data leaks. Should any personal data breach be discovered, PEA will launch a thorough investigation. Suitable measures have also been laid down to prevent consequences for customers' privacy.

Goals [3-3]

- The 2023 questionnaire was distributed among the personnels to assess their awareness of the PDPA and communication channels. The entire personnels must complete to the questionnaire.
- The Record of Processing Activities (RoPA) is updated with reference to the organization's business architecture.
- Key datasets are defined and managed with the aid of metadata, data dictionary, data lifecycles, and certain indicators showing data quality and data security.
- Greater implementation of ISO27001 information Security Management Standards (ISMS) is to be a complete success.
- Creating awareness of cyber security.
- Preparedness for cyber threat response and recovery.
- Provision of supporting tools to enhance cyber security.



Operating Strategy [3-3]

- Initiate on personal data protection within the organization when the PDPA was announced in the Royal Gazette on 27 May 2019. Policies, regulations, and guidelines are devised with their subsequent implementation aligned with the PDPA and related practices. Awareness and understanding of personal data protection are created among employees and contractors. A data governance structure, a responsible unit, and individuals as well as a working committee is to be established, with the Data Protection Officer (DPO) assigned to provide advice on personal data protection.
- Map out a data governance structure
- To ensure conformance to the Digital Government Administration and Service Act (2019), PEA's Data Governance Policy and Guidelines (2019) was formulated to cover data management and integration, details of which are:

SCAN ME

PEA Data Governance Policy and Guidelines (2019) [2-23]

General domain: Data management structure and definition of roles and responsibilities

- Data creating, storage, and quality control
- Data processing and use domain
- Data request, exchange, and integration domain
- Data request, exchange, and integration domain
- Data disclosure and confidentiality domain
- Data archive and destruction domain.

- Review and improve related documents, policies, and guidelines to be surely up-to-date and aligned with the PDPA as well as the announcement of the Personal Data Protection Committee (subordinate legislation). These documents include:

- Privacy Policy 2023
- PEA's regulation on personal data protection, 2023
- Procedures for personal data protection, 2023 (amendment)
- Data processing agreement
- Data sharing agreement.

SCAN ME

Personal Data Protection Policy and Guidelines (2023) [2-23]

Compliance Policy

Maintain PEA's interests and refrain from exploiting data under one's possession, business secrets, or PEA's intellectual property by following legal and ethical codes. Refrain from disclosing such data to harm others and PEA, except where required by law.

- Formulate the PEA Compliance Policy as the operating code for management and personnel so that strict compliance with laws, regulations, orders, and announcements issued by internal and external parties may be assured

PEA
PROVINCIAL ELECTRICITY AUTHORITY

Compliance Policy

PEA values and strives to comply with laws and regulations to ensure that its management and personnel abide by its example in their performance and that its business conduct is strictly in line with laws, rules, regulations, directives, and various announcements inside and outside PEA. Directors, management, employees, and contractors are therefore required to abide by the following policy:

1. Be committed to the rules of law and respect as well as abiding by laws, rules, regulations, directives, and applicable announcements apart from the Cabinet's resolutions, public policy, PEA Board's resolutions. Always be mindful of the harm resulting from non-compliance or violations of applicable laws and regulations.
2. Operate with responsibility to communities, society, and the environment with due regard for laws and regulations that provide protection to the health and safety of lives and properties of those who may be affected by PEA's operation.
3. Respect and comply with the human rights code, which mandates respect for and compliance with legal requirements concerning labor and human rights. Respect human dignity, which includes liberty and equality, of those protected, with due regard for applicable laws.
4. Maintain PEA's interests and refrain from exploiting data under one's possession, business secrets, or PEA's intellectual property by following legal and ethical codes. Refrain from disclosing such data to harm others and PEA, except where required by law.
5. Be committed to compliance with laws concerning corruption and bribery involving public officials, officers of private agencies, or other parties, or both.

Announced on on 15 September 2021

Chatchai Phromlert
Chairman, Board of Directors

SCAN ME

Compliance Policy [2-23]

- Focus on ensuring security and trust in digital operations among all stakeholders, which is a basic factor for driving PEA toward a Digital Utility
- Foster information system and communication security to earn confidence for making online communications and transactions, such as an efficient and secure electronic bill payment that meets requirements
- Lay down measures and guidelines for service providers nationwide for the safeguarding of personal rights and personal data of service requesters, such as the guidelines for using mobile commerce or smartphones and the use of social media, among others, to support digital technology growth
- Institute suitable measures of international standards for monitoring and responding to cyber threats, particularly measures for the protection of critical infrastructure, such as the SCADA system, to ensure sufficient security while giving support to the networking of cyber threat information
- Advocate awareness and understanding that attention to cyber threats is imperative and needs continuous management, while raising digital technology management to international standards for operations, management, and service. Emphasis is to be placed on the development and promotion of the IT governance code, to be put into practice to improve the decision-making process and digital technology management to ensure their international standards and true alignment with the corporate strategy. In this regard, tools and standards must be appropriately used, while decision-making and digital technology management methods must be developed.

IT Management and Data Security [3-3]

PEA has stored personal data processes within the organization to keep control of their compliance with the PDPA. A unit was assigned to assess impacts on individuals' privacy in various activities and handle potential negative impacts on customers. Key guidelines for employees on personal data protection include:

- Developing a work manual and related documents concerning personal data, which comprise:
  - Procedures for handling general complaints about personal data, complaints about leaks of personal data, or reports of data leaks
  - Process for Data Subject Access Request (DSAR)
  - Requirement for a Data Processing Agreement (DPA) or a Personal Data Sharing Agreement (PDSA), as applicable, whenever there is an activity concerning personal data processing
  - Privacy Notice for electricity users, personnel, and the Board of Directors.
- Publicizing the personal data matter and staging training on dealing with personal data provided:
  - Opening a webpage to support circulation of policies, regulations, and related practices regarding personal data so that personnel may study and gain understanding. Matters about personal data are to be communicated on the organization's usual media/communication channels, such as e-mail and the electronic document management system.
- Conducting an annual review of the privacy policy based on past performance and presenting the results of the review to the management for further improvement and implementation.

According to the announcement of the Electronic Transactions Board (ETB) on the names of organizations considered the country's critical infrastructure, PEA is one such organization. PEA is therefore required to follow the Strict Secure Methods (2016) and applicable laws, which cover confidentiality, integrity, and availability of the IT system under the announcement of the ETB on Information System Security Standards according to Secure Methods (2012), issued in compliance with the Cyber Security Act (2019) and the announcement of the Cyber Security Oversight Board on the Code of Cyber Security Practices and Standard Frameworks for Government Agencies and Critical Information Infrastructure Agencies (2021). To ensure efficient cyber security in line with laws and international standards, PEA has already laid down regulations, policies, guidelines, and measures for IT and cyber security, detailed below:

- PEA Regulation on Information Management and Security (2017)
- Information Security Policy (2018) and Policy No. 2 (2019)
- Guidelines for information security issued under the Information Security Policy
- Measures on the Use of Information Assets belonging to PEA (2020). In 2023, PEA managed the following activities in line with the above-mentioned regulations:
- Reviewed PEA's Digital Operating Plan, 2023-2027) (Revision 2, 2024) for use as a framework and guidelines to ensure that business development and technological development are aligned to become a digital organization. A strategy on digital platforms has been laid down for upgrading the management of digital platforms and applications with the adoption of international standards in an efficient and systematic way. PEA also developed infrastructure that addresses operating directions and technological trends while raising cyber security competency.
- Instituted information security management based on the ISO/IEC 27001 standards, of which the scope covers critical infrastructure, particularly information management at the computer center. PEA has therefore paid continuous attention to the management of security risk under the ISO/IEC 27001 standards by establishing procedures for information security risk assessment, a scope of information security system structure, and roles of internal and external parties involved that are aligned with PEA's objectives and circumstances. Procedures and methods for information security risk assessment have taken effect since 2017, with annual reviews examining input from internal and external stakeholders that have changed with legal requirements. During 2022-2023, PEA commanded a plan under ISO/IEC 27001 to improve the information security management of critical infrastructure at PEA Head Office and 12 regional offices across the country, along with the management of ready-made computer software systems for PEA's core business (phase 2) covering bill printing and payment management (BPM), back-office software (Enterprise Resource Planning (ERP)), front-office software (IS-U), and outage management system. The scope of work has now been expanded to the WAN infrastructural system with an upgrade of ISO/IEC 27001: 2013 to ISO/IEC 27001: 2022 under the 2023 operating plan.
- Applied tools and systems to assess risk management and monitor performance to ensure preparedness for threats or possible threats, such as the computer log collection system, security information and event management (IEM) system, and formulation of a policy on device control with the ITSM system. These have enabled PEA to render a faster digital service for customers.
- Arranged a cyber threat drill in the form of a table-top exercise (TTX), participated by operators in charge of IT and OT to ensure their preparedness for any cyber threat and their ability to respond. A cyber exercise for executives was also arranged, presided over by the PEA Governor, to encourage discussions and sharing of opinions on business administration amid cyber threats as well as the sharing of decision-making processes under the pressure of time constraints and severity of the situation. Moreover, a network of cooperation between internal and external parties was established, reflecting a positive image of PEA's readiness for providing secure services to the public and society at large.
- Arranged training to develop relevant personnel in compliance with PEA policies that are compatible with international-standard requirements. There was training especially arranged for specific groups of personnel and general administrative personnel. Various promotion programs have been carried out to establish awareness of information security among personnel in the form of two-dimensional animation and infographic, such as the password policy, dangers from pirated software, and methods to catch phishing mails. PEA also provided knowledge while giving warning through various channels, including LockScreen before PC Login, @PEAFriends, and PEA newsletter. Training provided for executives and personnel during 2023 comprised:

- Forging awareness of cyber security through the Learning Management System (LMS) for general personnel
- The 2023 Onboarding Program for new recruits on 'Information System Security' provided through the e-learning system
- Forging awareness of information security for system developers (Secure Software Development Lifecycle)
- Information security management for the ISMS working group
- Raising awareness of information security for 2023 for working groups and sub-working groups, as well as outsourcing companies involved in PEA's business
- NIST: Cyber Security Course for working groups and sub-working groups along with OT units (SCADA, AMR, GIS)
- 2023 table-top exercises with PEA CST and SCADA teams under the Emergency Response Plan (ERP) and Business Continuity Plan (BCP) to ensure preparedness for cyber threats

- Established a Security Operation Center (SOC), manned by operators who worked 24/7 to monitor and respond to any cyber threat. The center is equipped with IT, operating technology, and a timely notification system for related parties.

Performance Outcomes on IT System and Data Security Performance [3-3]

PEA's criteria gauge levels of knowledge and understanding of personal data protection among personnel. In 2023, all PEA personnel were required to attend a training course on personal data protection, and each unit is required to log and update their respective personal data processing activities

- Units having recorded and updated their respective personal data processing activities with reference to the business architecture
- Units having identified key datasets and ensured data governance by developing metadata, data dictionary, and guidelines for data lifecycle, while establishing measurements for data quality and data security

Breach of Customer Privacy and Loss of Customer Data [418-1]	2022		2023	
	Received from Third Parties	Received from Responsible Unit	Received from Third Parties	Received from Responsible Unit
Number of confirmed cases concerning breach of customer privacy or loss of customer data	6	0	8	2
Number of leakages, thefts, or losses of customer data	0	0	0	0
Total	**6**	**0**	**8**	**2**

- PEA received 10 issues about personal data from outsiders, followed by its collaboration with the Data Protection Officer (DPO) to assess risk facing data owners. No personal data leakage or violation, which may entail high risk for data owners, was found.
- Developing an ISMS and earning ISO/IEC 27001:2013, which certified the standards of critical infrastructure at PEA Head Office and 12 regional offices. The certification also covers the standards of ready-made computer software for PEA's core business (phase 2) which features bill printing and payment management (BPM), front-office group (IS-U), and outage management system (OMS). During 2022-2023, PEA commanded a plan to expand the scope of ISO/IEC 27001 certification to the WAN infrastructural system while upgrading to the current ISO/IEC 27001: 2013 certification ISO/IEC 27001:2022.
- Assessing the effectiveness of the information security management by incorporating a set of criteria into the procedures for measuring the effectiveness of the ISMS. Status updates of the implementation of the information security risk management plan are to be monitored and reported.
- Conducting a yearly audit of the information security management by Internal Audit (IA) and certified body (CB). Audit results are useful for efficiency improvement.
- Taking part in the Intensive Cybersecurity Capacity Building Program (phase 1) to join the nation in developing local personnel with cyber insights. The program is intended for personnel in agencies dealing with critical information infrastructure (CII) in the public and private sectors and other relevant agencies under the Cyber Security Act (2019). The program contains courses that offer basic knowledge and those designed for experts and management.

- Developing a National Incident Response Plan and an Incident Response Fundamental Plan in collaboration with other agencies in the public and private sectors dealing with critical information infrastructure (CII)
- Following close monitoring of cyber threats by the Cyber Security Center, no serious cyber threat potentially harmful to PEA operations was found in 2023. Most of the threats (40.7%) were from exploits, 36.6% from malware, 15.4% from unauthorized access, and 7.3% from other causes. This has led to the following improvement:
  - Updates of the cyber threat response process
  - Upgrade of the Cyber Security Center to enhance its preventive operations
  - Emphasis on compliance with PEA's Information Security Policy together with Security Awareness Training provided for personnel.
- Results of personnel awareness of cyber security were obtained from two tests detailed below:

First Test (May 15 – June 16, 2023)

No.	Target Group	Activity	Number of Group
1.	Risk groups who opened phishing emails and clicked inserted links, then filled up information and sent in the second test (2/2022)	0 Registration for a 1,000-baht Starbucks voucher	92
2.	Executives at the Manager of Division level and above	Registration for annual Covid-19 vaccination	768
3.	Finance personnel	Giving out discount codes for buying goods online	1,000
4.	Personnel aged 50 upward	Registration for the rights to receive a return on investment report from the PEA provident fund	1,366
5.	Personnel aged between 29-49	Registration for a 1,000-baht Starbucks voucher	1,366
	Total		**4,592**

From a total of 4,592 executives and personnel, target groups were divided into age ranges and work levels from the Manager of Division upward. A total of 57 fell victim to the test, representing 1.24% of the target groups

Second Test (December 19-28, 2023)

No.	Target group	Activity	Number of participants
1.	Personnel aged 40 upward	Registration for a maximum tax deduction of 50,000 baht under the government's 'Shop and Payback' campaign	12,780
2.	Personnel aged below 40	Request for cooperation to answer a questionnaire on 'Acknowledgement of online social threats' with the right to win a piece of gold ornament	14,470
	Total		**27,250**

From a total of 27,250 executives and personnel from all functions, target groups were divided into different age ranges. A total of 263 fell victim to the test, representing 0.97% of the target groups.

Following the two tests in 2023, the responsible unit has further monitored those who fell victim to phishing mails and provided them with online training to ensure they can take notice of fake mails and know how to react.

- Simulation of a cyber threat attack in the form of phishing mail with a token or special right offered in a mock-up campaign or activity to lure mail recipients to open the mail and click the link or the QR code inserted for registration and then submit, shown in the diagram:

A conclusion can be made, following the distribution of a malicious mail to a total of 31,842 personnel, in the table below:

Year	Number of Phishing Mails Sent Out	Number of readers of phishing mails who clicked inserted wlink, filled it out, and pressed the send button
First test, 2023 (Q2)	Target groups of 4,592 executives and personnel: - 768 executives at the Manager of Division level upward - 1,366 personnel members aged 50 upward - 1,366 personnel members aged between 29-49 - 1,092 members of other personnel	57
Second test, 2023 (Q4)	Target groups of 27,250 executives and personnel from all functions: 12,780 members aged 40 and over 14,470 members aged below 40	263

Arrange cyber security response exercises at all **12 regional offices** in collaboration with key national regulating agencies

Both tests presented high risk for receiving phishing mails among PEA personnel. Therefore, PEA's Cyber Security Standards and Maintenance Division felt the need to run more activities to heighten awareness and incorporated these activities in the 2023 operating plan, in which training and knowledge-sharing about cyber threats are to be provided throughout the organization to enhance prevention and preparedness for future cyber threats. Personnel will be taught to spot phishing mails, how to react and prevent these malicious mails coming in any form.

- Development of a Digital Technology Security Development Plan according to the ISO27001 standard was completely successful as planned.
- Success of the Information Security Awareness Enhancement Plan was 100% achieved as planned.
- Success of the Business Continuity Plan exercise was 100% achieved as planned.
- Success of the Cyber Security Incident Response Plan was 100% achieved as planned.
- Success of the equipment procurement plan to enhance cyber security reached 100% as planned.

Work Improvement Planning [3-3]

- Enhance awareness of compliance with the PDPA and other applicable laws
- Develop the Data Protection Impact Assessment (DPIA) process
- Provide supporting systems that raise the operation efficiency of personal data protection
- Draw up a proactive cyber threat prevention plan to ward off any future risk by using the threat intelligence technology, threat analytics tools, and automation to support incident responses
- Arrange cyber security response exercises at all 12 regional offices in collaboration with key national regulating agencies
- Establish a structure and operating guidelines that are ready to support monitoring activities in 2023 through the development of the Security Operation Center (SOC).

08-6 Human Capital Management [3-3]

Enhancement of corporate management by elevating the significance of human capital management is considered an enabler of the organization. PEA recognizes its personnel as a key mechanism to drive the organization toward success. A workforce with knowledge, competence, and happiness at work heightens the operating efficiency and productivity, while raising the organization competitiveness and business value. Amid a changing environment, energy costs, and fast-evolving technology, PEA is determined to develop the skills and potential of its workforce to ensure they can ably respond to the world situation

SCAN ME

Human Resource Management Policy [2-23]

PEA
PROVINCIAL ELECTRICITY AUTHORITY

Human Resource Management Policy

Valuing efficient, transparent, and virtuous human resource (HR) management and development in support of PEA's strategic pursuit to become a digital and green grid, PEA has upgraded its international management with digital technology and innovation. To this end, human capital represents the core driver in line with the PEA Governor's policy concerning the institution of the management and development of human capital to optimize personnel's capability to benefit PEA. In place are upskilling and reskilling, nurturing of a work environment favorable to work, and creation of a happy workplace ambience, where management serve as role models and employees feel a sense of ownership—to give all a sense of PEA citizenship. Below are the 4Ds key HR strategies:

1. **Developing a "Growth Mindset" to cope with change:** Growth mindset and digital mindset transform personnel's mindsets to adopt a learning behavior and strive to develop themselves and open up to new ideas and challenging tasks, thus leading to integrated creative ideas.
2. **Implementing HR Dashboard:** Modify personnel's performance by valuing data, technology, and consideration of the HR system in pursuit of positive experience and the ability to leverage key HR data in analyzing situations and issues in support of management-level decision-making.
3. **Managing Digital Talent:** Develop an HR management and development system to extract the capability of critical personnel groups and turn them into digital-savvy officers to competently support PEA's transformation into a high-capability organization that is ready to accommodate change in core businesses and related businesses in the future.
4. **Embedding Digital Culture:** Reshape PEA's culture to advocate everyone's work behavior transformation, leveraging digital technology in all elements of the workforce so that personnel may exhibit behavior that is consistent with PEA's desired behavior at work as well as in everyday life.

Announced on 12 April 2023.

Supachai Ek-un
Governor

Performance Outcomes

Success in the development of the target groups of personnel with future competency	100 percent	exceeding the goal
The number of training hours per person per year	48.5 hours/ person/year	exceeding the goal
Success in the assessment of the Knowledge Management Team's effectiveness in learning and development under the requirements.	100 percent	exceeding the goal

Goals [3-3]

- 80% success in the development of the target groups of personnel with future competency (digital, marketing, and business administration skills, and others)
- 100% success in talent and successor development
- 14 hours/person/year in the number of training hours per person per year
- 100% success of the plan in the development of target groups of personnel in Big Data Analytics skills.
- 100% success of the plan in knowledge management.
- 90% success of the plan in the assessment of the Knowledge Management Team's effectiveness in learning and development under the requirements.

Operating Strategy [3-3]

- To define an integrated organization structure suiting current internal and external factors and respond to the strategies while getting the organizational management and work systems well prepared. Taken into consideration is the management of a workforce that can support current and future missions through the analysis of manpower demand and the supply and substitution of technology. All these support preparedness for the future power business structure.
- To raise personnel potential and ensure their preparedness for the transformation of the power business structure and the growth of future businesses. Personnel, through Human Resource Development (HRD), will have to keep up with digital technology while commanding flexibility and the ability to work in an integrated way.

Human Capital Management [3-3]

- Improve the organization structure to shape a dynamic organization in response to internal and external environmental changes, which include public policies, power industry's structural change, business trends, technologies, and innovations. Improvements to be made are under such key concepts as a lean organization, energy disruption, and efficiency enhancement.
- Conduct human capital management by stressing the performance management system, creation of values for individuals, work units, and the organization. Currently, PEA's performance assessment system (PEATA-PMS) has been established to support the new organization structure. The system has also been more widely applied so that personnel and contractors may have online access to make their performance appraisal anywhere, anytime. Information is usable for consideration for annual salary increase, job appointment, search for talents, and personnel development.
- Upskill and reskill personnel at all levels and in all positions, leveraging the HRD Blueprint as the guidelines for the PEA Competency Model. As for high-potential personnel at executive and operating levels, they will be developed under the Individual Development Plan (IDP). The 70:20:10 model for learning and development has been adopted for the design of IDPs for developing specialists in engineering and management areas.

Training Courses on Skill Development and Courses Designed to Support Job Transfer [404-2]

Course	Type of Training		Detail / Number of Courses	Course Attendees (Persons)
	Hard skill (/)	Soft Skill (/)		
1. Skill development courses				
1.1 In-house training				
1.1.1 Management	/	/	35	24,605
1.1.2 Overseas training	/	/	3	153
1.1.3 Scholarship	/	/	6	62
1.1.4 Engineering techniques	/	/	55	3,672
1.1.5 Managerial skills	/	/	9	6,021
1.1.6 Knowledge management skills	/	/	5	4,755
1.1.7 Digital skills	/	/	21	27,886
1.1.8 Legal skills	/	/	13	21,671
1.1.9 New businesses	/	/	3	170
1.2 Study leave entitlement with guaranteed re-employment				
Master of Science	/	/	Business Analytics	1
2. Training arranged to support personnel nearing retirement and employment termination				
2.1 Courses on retirement planning				
Happy Retirement Project for 2023 - Smart retirement activity	-	-	To equip personnel due for retirement with knowledge and skills required to support their retirement	927

Remarks: - Hard skills are skills or competencies required for the technical performance of each position, which can be concretely assessed.
- Soft skills are social skills, which include personality traits, attitude, and thinking required to support a healthy interpersonal relationship.

Raise the
workforce potential
to competently keep up with industrial and technological transformation, with a focus on regular skill development

- Establish a Triple Transformation Capacity Center (T3CC) for efficiency enhancement with a focus on
  - Business – to raise PEA's business administration efficiency
  - Technology – to centralize tech start-ups, both in and outside Thailand, to achieve fast development of new business solutions
  - People – to open opportunities for users to take part in working toward practical solutions.
- Conduct enterprise-wide knowledge management, ranging from identifying essential knowledge required for current and future businesses, organizing explicit and tacit knowledge, to sharing knowledge obtained from interactions between different work units/departments/functions for further improvement that benefits PEA's higher efficiency and effectiveness.

Performance Outcomes of Human Capital Management [3-3]

- 100% success in the development of the target groups of personnel with future competency (digital, marketing, and business administration skills, and others)
- 100% success in talent and successor development
- 48.1 hours/person/year in the number of training hours per person per year [404-1]
- 100% success in the development of target groups of personnel in Big Data Analytics skills.
- 100% success in knowledge management as planned.
- 100% success in the assessment of the Knowledge Management Team's effectiveness in learning and development under the requirements.

Work Improvement Planning [3-3]

- Raise the workforce potential to competently keep up with industrial and technological transformation, with a focus on regular skill development
- Develop mechanisms that particularly support career development of the younger generation in response to business directions, while developing future leaders. Talents are to be prepared as successors for key positions under future business requirements.
- Review the personnel development plan on digital competency, upgrade personnel dealing with Big Data Analytics and leverage of Data Analytics, and develop target groups of personnel with the required competencies.

Performance Outcomes

Completed electrification new households	5,988 households	exceeding the goal 19.76 percent
Completed electrification farmers' households	2,311 households	exceeding the goal 15.55 percent
Households were electrified in this year	21,841,228 households	equivalent to 99.70%

08-7 Improvement of Quality of Life through Electrification [3-3]

Recognized as the basic infrastructure for the civic and business sectors, electricity is crucial for economic growth and the quality of life. Providing a comprehensive distribution system will support business and industrial sectors as well as people in general. Electricity is also essential for fueling the growth of urban and rural areas and for boosting employment to narrow the income gap, resulting in the decentralization of prosperity to remote areas. It helps improve living conditions, particularly for residents of remote areas. Despite substantial economic and social benefit, access to the distribution system needs strict control since expansion of the distribution into some areas may harm the environment. A thorough assessment of environment impacts is thus required along with efficient measures for effective management.

Goals [3-3]

- To electrify 5,000 non-electrified households in 2023
- To electrify 2,000 farming households to support agriculture in 2023

Operating Strategy [3-3]

- Fulfill demand for distribution and expand it to remote areas, such as the countryside, islands, and off-grid areas
- Initiate other projects to widen access to electricity supply, such as a project on electricity bill reduction
- Raise the capacity of the Smart Grid

Management of the Quality of Life Through Electrification [3-3]

- Devise a plan on renewable energy (RE) or microgrids to extend distribution for households located in restricted areas, remote islands, or off-grid areas, where electricity supply cannot be reached through conventional poles and cable installation. PEA has divided these electricity users into (1) households located outside watershed class 1 areas, where renewable energy will be used in the form of a mini-grid and (2) households located within watershed class 1 areas, where the solar home system will be used. PEA will also help low-income earners/vulnerable group to have a wider access to electricity through various projects, such as the free-electricity-supply project and the measure to continue distributing for households with bedridden patients, among others.

- Monitor the operating efficiency by requiring all PEA regional offices to report updates if there arise complaints or requests for distribution expansion. PEA will coordinate with those regional offices to ensure supply acceleration.

Performance Outcomes of Quality-of-Life Improvement Through Electrification [3-3]

- Completed electrification of 5,988 new households, superior to the goal
- Completed electrification of 2,311 farmers' households, superior to the goal
- This year a total of 21,841,228 households were electrified (versus a total of 21,907,462 households nationwide), equivalent to 99.70%
- A total of 66,234 households remained without electricity, equivalent to 0.3% [EU26]. These households are situated in national parks or restricted areas where the installation of utility poles and electricity lines is not permitted
- Assistance measures for electricity users affected by rising prices of energy in 2023.

Due to the rising prices of energy stemming from higher demand for electricity in line with the economic recovery in the wake of Covid-19, coupled with the climbing energy costs of power generation, basic electricity bills were inevitably rising. Therefore, to ease the hardship as well as the cost of living for the vulnerable group, the Cabinet decided to aid those electricity users affected by the current situation as follows:

- Electricity bills for January – April 2023

  Below were the assistance measures to ease the hardship of people suffering from the rising prices of energy, meaning those residential users consuming up to 300 units a month.

Units Consumed	Ft Discount (satang/unit)	Total (excluding VAT) (Million baht)
1-150	92.04	2,561.45
151-300	67.04	2,140.40
Total		**4,701.85**

- Electricity bills for May - August 2023

  Below were the assistance measures to ease the hardship of people suffering from the rising prices of energy, meaning those residential users consuming up to 300 units a month.

Units Consumed	Ft Discount (satang/unit)	Total (excluding VAT) (Million baht)
1-150	89.80	2,446.28
151-300	64.80	2,281.54
Total		**4,727.82**

- Electricity bills for May 2023

  Below were the urgent assistance measures for residential users consuming up to 500 units a month.

Electricity Bill Discount (baht/user)	Total (excluding VAT) (Million baht)
150	2,110.60

- Electricity bills for May 2023

  Assistance measures for the public by the ERC, who decided to lower the retail Ft for all electricity users for September to December 2023 from 66.89 to 20.48 satang/unit.

Work Improvement Planning [3-3]

- Execute the electrification project for households in remote areas with renewables in five pilot areas (Ban Huai Hung, Ban Sao Hin, Ban Mae Samong Tai, Ban Sala Chiang Tong, and Ban Sapheng Tai), Mae Hong Son Province, at a budget of 60 million baht
- Extend the electrification project for households in remote areas with renewables for 2022-2025 in 238 target villages (about 18,659 households) at a budget of 3,200 million baht
- Extend the scope of service with the solar home system for 2022-2024 for target villages in the watershed class 1 areas, amounting to 178 villages (about 16,860 households), with a budget supported by various funds
- Execute a plan to extend the new household electrification project, 3rd stage, for 2024-2028, for a total of 128,000 households at a budget of about 6,500 million baht
- Execute a plan to extend the agricultural electrification project, 3rd stage, for 2024-2028, for a total of 60,000 households at a budget of about 4,500 million baht.

09 BUSINESS CONDUCT WITH ORGANIZATIONAL GOVERNANCE

09-1 Governance and Anti-corruption [3-3]

PEA emphasizes the importance of good governance by concentrating on efficient operations and the connection between regulatory agencies, board of directors, executive committees, employees, and other stakeholders. As a consequence, PEA focuses on the management under the operational standards in terms of provision of core structure in devising the objectives and the methods to accomplish the objectives, and on monitoring the performance to ensure that PEA is based on good governance. PEA strives to enhance competitiveness and achieve sustainable growth while upholding ethical standards, fulfilling responsibility to both internal and external stakeholders, and maintaining transparency and accountability. The Board of Directors is responsible for governing and ensuring that PEA operates with honesty, integrity, and caution to promote competitiveness and effective long-term performance. PEA also considers ethics and responsibility to stakeholders inside and outside the organization, which performs with transparency and accountability. PEA works with the board of directors regularly to ensure that business regulations are adhered to with honesty and prudence under the scrutiny of the Corporate Governance and Sustainable Development Committee. The executive committees are also required to act with honesty, integrity, and caution, and to demonstrate PEA's commitment to preventing all forms of corruption and improving the Corruption Perception Index (CPI), which is vital for the overall development of the country.

Performance Outcomes

The number of complaints via the VOC system	**15 grounded** complaints	from the average of the base year **(68.18 percent).**
The Integrity and Transparency Assessment (ITA)	PEA achieved a score of **99.35** percent, ranking **1st** among state enterprises in the energy sector	exceeding the goal
Awareness and application of code of good governance, morality, ethics, and transparency in the workplace	**98.43** percent	exceeding the goal

Goals [3-3]

- A leading organization operating business with good governance, achieving ethical standards and code of conduct for directors, management, and the workforce, as well as the core profession of the organization, and maintaining a positive public image and recognition, free of all forms of fraud and corruption.
- No less than 90% of all personnel are equipped with knowledge and understanding of corporate governance, morality, ethics, and transparency in performing their duties.
- The number of fraud and misconduct complaints decrease as a result of effective, standard, and fair prevention, deterrence, and suppression procedures.
- All stakeholders accept and trust PEA's good governance operations.
- Maintain an Integrity and Transparency Assessment (ITA) scores of 95 – 100 (equivalent to AA rating) or to rank first among state-owned enterprises in the energy sector.
- All departments assessed with the GRC score over or equivalent to B rating with the scores of 75.00 - 84.99 (ITA's assessment criteria).

Operating Strategy [3-3]

PEA had analyzed the evaluation of the basic components and practices, carefully examining its strengths, weaknesses, opportunities, and threats, to support good governance. It defined the strategy according to its Master Plan on Governance, Prevention, and Suppression of Fraud and Corruption (2023-2027), which covers ethical standards, core values of business ethics, and the ethical code for directors, management, and employees, as well as its core professional code of conduct by defining concrete support plans/projects with regular monitoring on performance outcomes, which include three strategies as follows:

Strategy 1	Strategy 2	Strategy 3
Upgrade operation based on governance principles and evaluation criteria of Core Business Enablers Criteria 1 on Governance & Leadership and GRC-based work processes	Upgrade behavior on governance, culture, honesty, and integrity	Foster sustainability based on fraud prevention and suppression system to ensure fairness, transparency, and indiscrimination

Since 2022, PEA has applied digital technology to devise a process of supervision and anti-corruption, including monitoring and evaluating performance, managing potential risks, and supporting effective communication with all stakeholders, especially an increase in surveillance and monitoring of all forms of potential fraud, which enhances governance efficiency.

Actions Taken to Improve PEA's Governance and Anti-corruption System

- Integrating the Governance Policy into the Governance, Risk Management, Compliance (GRC) policy to ensure an effective management system under the code of governance, transparency, fairness, and accountability, allowing PEA to achieve its vision and mission, build confidence among the board of directors, management, employees, contractors, as well as direct and indirect stakeholders, and drive for sustainable growth.
- Promulgating the No-Gift Policy to reaffirm PEA's commitment to operating with transparency and combating bribery, fraud, and corruption.

GRC Integration Policy [2-23]

SCAN ME

GRC INTEGRATION POLICY

Governance
Risk And
Compliance

1 Principle

Committed to efficient development while meeting its stakeholders' needs and expectations, PEA has applied the international-standard Governance Risk and Compliance (GSC) principle, integrating governance, risk management, and compliance in support of an efficient organizational management system, filled with transparency, fairness, and accountability. PEA can then achieve the vision and mission, thus ensuring directors, management, employees, and contractors as well as stakeholders (direct and indirect) that they can drive its sustainable growth.

2 Definition

GRC represents an effort to man PEA with people that are qualified (People), transparent and well-controlled procedures (Process), accurate, proper, and timely data management (Information), and efficient technological application (Technology). Through integration, they give an organization good governance, systematic risk management, and comprehensive compliance with laws and regulations.

3 Structure and roles

3.1 The PEA Board of Directors devises a policy for governance and revises all key work systems under a good governance code together with best practices and supports the implementation of integrated GRC policy in PEA.

3.2 The Corporate Governance and Sustainable Development Committee assigns the policy, oversees, and endorses plans as well as monitoring outcomes of governance, stakeholder management, and sustainable development consistent with international standards in addition to overseeing GRC integration.

3.3 The Risk Management and Internal Control Committee assigns the policy, oversees, and endorses plans as well as monitoring outcomes of risk management, internal control, and risk management under extraordinary circumstances, and compliance in addition to overseeing GRC integration.

3.4 The GRC Committee, which consists of PEA management team members, defines the model and concrete guidelines for GRC activities through planning, monitoring and assessment, coordination, and reporting of performance outcomes including other GRC activities.

3.5 PEA's management, employees, and contractors are responsible for conforming to this GRC policy and integration process.

4 GRC integration

4.1 Map out objectives, strategies, and goals consistent with PEA's context and culture, under which internal and external factors are analyzed and assessment of risks and opportunities together with all stakeholders' expectations is conducted, focusing on PEA's value addition and sustainability.

4.2 Steer internal units' strategy implementation and definition of comprehensive action plans consistent with PEA's resources and applicable laws and regulations to eliminate the opportunities for violations. Devise a process for suppression of corrupt practices and communicate it for enterprise compliance.

4.3 Institute systems for risk management and internal control at all levels, while establishing awareness of operating risks in all processes and procedures to form PEA's culture.

4.4 Develop IT in support of management data and timely decision-making.

4.5 Promote an ambience conducive to GRC integration by engaging in international-standard businesses in line with the GRC code of The Office of Compliance and Ethics Group (OCEG).

4.6 Monitor, assess, and audit GRC activities and assess potentially volatile circumstances for continuous analysis, revision, modification, and development of work systems and business processes.

5 Revision of GRC Integration Policy

5.1 If the GRC Integration Policy has proven unsuitable for business conditions, the GRC Committee must revise it for submission to the Board through the Corporate Governance and Sustainable Development Committee and the Risk Management and Internal Control Committee for their approval of the amendment.

5.2 The GRC Committee annually reviews and revises the GRC Integration Policy and submits their findings to the Corporate Governance and Sustainable Development Committee and the Risk Management and Internal Control Committee for deliberation and forwarding to the Board. This ensures that the policy always suits PEA's business circumstances.

This policy applies to all PEA directors, management, employees, and contractors.

Announced on 20 June 2022.

Unsit Sampuntharat
Chairman, Board of Directors

- Rolling out PEA's Corporate Governance Code & Code of Conduct to ensure that the directors, management, and the workforce perform their duties based on compliance with relevant rules and regulations, and adherence to transparency, morality, and ethics, the importance of which has been stressed by the directors and management for uplifting the governance standards to ensure PEA's gal accomplishment under the code of governance, transparency, fairness, and accountability.
- Declaring a joint intention to combat corruption as a reaffirmation of PEA's determination to operate with integrity, transparency, and good governance, promote ethical and responsible business, become a good corporate citizen, and achieve corporate resilience. This declaration has been held annually for seven consecutive years and is participated in by all PEA's management and the workforce nationwide.
- Participating in the Integrity and Transparency Assessment (ITA) conducted by the Office of the National Anti-Corruption Commission (NACC) for the ninth consecutive year. The assessment results are used to improve PEA's performance integrity and transparency.
- Requiring senior management to serve as role models for workplace ethics and core values (TRUSTED). Video clips are produced to show exemplary behavior and posted on internal and external communication channels. Furthermore, the PEA TRUSTED HEART activity allows employees to submit stories of colleagues who exemplify workplace ethics or core values.
- Organizing Soft Control activities and training to promote integrity and transparency in the workplace and raise awareness of anti-corruption of three target groups, namely 1) Students of the PEA's Electric Vocational School, 2) New employees, and 3) Management, employees, and contractors.
- Upgrading the database on corporate governance and incorporating it into the CG e-System and improving it to keep abreast with new situations and international standards. The system comprises three components:

1. CG Acknowledgment facilitates the communication and dissemination of the governance manual, and signature required for acknowledgment.
2. CG Testing assesses the understanding of corporate governance and anti-corruption and the promotion of good governance, morality, ethics, transparency, and anti-corruption.
3. COI Reporting facilitates the reporting of conflicts of interest with PEA.

Pursuit of Cooperation and Drive for Fraud-Free Society

During 2023-2024, PEA collaborated with external organizations to develop an effective governance and anti-corruption system, leveraging PEA's knowledge and competencies to empower communities and stakeholders to combat corruption. Actions taken included the following:

1) Signing an MOU on "Drive of Good Governance and Corporate Governance" between ONCC, SEPO, Office of the Securities and Exchange Commission (SEC), Thai Institute of Directors (IOD), and state enterprises for concrete drive of good governance and good governance by implementing an Action Plan Against Corruption and Misconduct in State Enterprises (2023-2027).

2) Signing an MOU on "Upgrade the Organization toward the Core Business Enablers" between PEA, National Telecom Public Company Limited, and Port Authority of Thailand in a project to concretely upgrade performance under the Core Business Enablers and ensure efficient organizational management based on governance, transparency, and accountability.

3) Meeting on "GRC-based operations of the three agencies responsible for electricity" between PEA, Metropolitan Electricity Authority (MEA), and Electricity Generating Authority of Thailand (EGAT) to jointly advance integration, exchange the guidelines for GRC as well as guidelines for internal audit reporting, and operations based on the No-Gift Policy.

4) Meeting with PEA's subcommittees to communicate, integrate, and upgrade PEA's operations based on GRC and elaborate on the measures/guidelines for the prevention of misconduct by PEA's Anti-corruption Operation Center for good understanding and uniform implementation.

5) Fraud Risk Assessment based on the criteria and guidelines of the Office of Public Sector Anti-Corruption Commission on a continuous and concrete basis.

6) Participation in the Integrity Pact initiative which requires that an integrity pact must be made between PEA, the bidder, and an observer for procurement with a value exceeding 1,000 million baht. This is aimed at fostering confidence among private companies participating in bidding.

7) Project to promote good and ethical people to honor employees who perform their duties as role models under the components of sufficiency, discipline, honesty, service-mindedness, and gratitude to accommodate the environment for the promotion of morality/good deeds appropriate to the context of the organization and the Thai society.

PEA Board of Directors [2-9]

1) Name – Surname: **Mr. Unsit Sampuntharat,**
(Chairman of the Board)
(State Enterprise Directors' Pool 2020)

Age: 51

Position: Director General, Department of Provincial Administration

Key work experience:
- Deputy Permanent Secretary, Ministry of Interior
- Governor, Tak Province

Education:
- Master of Public Administration (Public Administration), National Institute of Development Administration
- Bachelor of Political Science (Government), Chulalongkorn University

Directorship of other organizations: Director, Tourism Authority of Thailand

2) Name – Surname: **Mr. Danucha Pichayanan**
(State Enterprise Directors' Pool 2020)

Age: 52

Position: Secretary General, Office of the National Economic and Social Development Council

Key work experience:
- Deputy Secretary General, Office of the National Economic and Social Development Council
- Policy and Plan Advisor, Office of the National Economic and Social Development Council

Education:
- Master of Science in Engineering Management, George Washington University, USA
- Bachelor of Engineering, Chulalongkorn University

Directorship of other organizations:
- Director, PTT Public Company Limited
- Director, Bank of Thailand

3) Name – Surname: **Mr. Yodphot Wongrukmit**
(State Enterprise Directors' Pool 2020)

Age: 63

Position: Retired

Key work experience:
- Advisory Chairman, Nakhonchai Air Company Limited
- Senior Executive Advisor, Bangchak Corporation Public Company Limited

Education:
- Master of Business Administration, Middle Tennessee State University, USA
- Bachelor of Economics, University of the Thai Chamber of Commerce (2nd Class Honors)

Directorship of other organizations:
- Chairman, PEA ENCOM International Company Limited
- Independent Director, Bless Asset Group

4) Name – Surname: **Mr. Thongchai Chawalitpicheat**

Age: 60

Position: Retired Government Official

Key work experience:
- Director General, Office of Industrial Economics, Ministry of Industry
- Deputy Permanent Secretary, Ministry of Industry

Education: Bachelor of Engineering, Chiang Mai University

Directorship of other organizations: Director, Export-Import Bank of Thailand

5) Name – Surname: **Mr. Sak Segkhoonthod**
(State Enterprise Directors' Pool 2018)

Age: 56

Position: Consultant on Digital Transformation, Electronic Transactions Development Agency

Key work experience:
- President & CEO, Digital Government Development Agency
- Executive Vice President, Government Information Technology Services (GITS), National Science and Technology Development Agency (NSTDA)

Education:
- Doctor of Philosophy (Electronic Systems Engineering), Essex University, UK
- Master of Computer Studies, Essex University, UK
- Bachelor of Industrial Technology (Electronics) King Mongkut's Institute of Technology Ladkrabang

Directorship of other organizations:
- Director, PEA ENCOM International Company Limited
- Director, Payment System Committee, Bank of Thailand

6) Name – Surname: **Pol. Maj. Gen. Wiwat Chaisangkha**
(State Enterprise Directors' Pool 2021)

Age: 56

Position: Deputy Commander, Central Investigation Bureau, Royal Thai Police

Key work experience:
- Commander, Natural Resources and Environment Crime Suppression Division
- Commander, Consumer Protection Police Division

Education:
- Master of Public and Private Management, National Institute of Development Administration (NIDA)
- Bachelor of Public Administration, Royal Police Cadet Academy

Directorship of other organizations: Director, Forestry Industry Organization

7) Name – Surname: **Flg. Off. Kamolnai Chaixanien**
(State Enterprise Directors' Pool 2020)

Age: 64

Position: Deputy Managing Director, TCC Assets (Thailand) Company Limited

Key work experience:
- Senior Vice President, Thai Beverage Public Company Limited
- Deputy Managing Director, Asset Management for International Hotels Group, TCC Assets (Thailand) Company Limited

Education:
- Master of Business Administration, Cornell University, USA
- Master of Engineering (Operations Research and Industrial Engineering), Cornell University, USA
- Bachelor of Science in Chemical Engineering, University of New Hampshire, USA

Directorship of other organizations:
- Director, ASM International Limited
- Director, ThaiBev Marketing Company Limited
- Director, Amarin Printing and Publishing Public Company Limited

8) Name – Surname: **Mr. Panit Dhirapharbwongse**
(State Enterprise Directors' Pool 2018)

Age: 55

Position: Legal Advisor, Office of the Permanent Secretary, Ministry of Finance

Key work experience:
- Director, Legal Affairs Group, Office of the Permanent Secretary, Ministry of Finance
- Head, Legal Affairs Group, Legal Bureau, Revenue Department

Education:
- Doctor of Philosophy (Law), Thai Government Scholarship, Queen Mary College, University of London, UK
- Master of International Economic Law, University of Warwick, UK
- Bachelor of Laws, Thammasat University

Directorship of other organizations:
- Director, Islamic Bank Asset Management
- Director, KTB Law Company Limited

9) **Name – Surname:** **Mr. Chavang Thaiying**
(State Enterprise Directors' Pool 2021)

Age: 60

Position: Retired Government Official

Key work experience:
- Director, Common Legal Information Center, Office of the Council of State
- Director, Public Law Training and Development Institute

Education:
- Master of Laws, Chulalongkorn University
- Bachelor of Laws, Ramkhamhaeng University
- Bachelor of Education, Chulalongkorn University

Directorship of other organizations: None

10) **Name – Surname:** **Assoc. Prof. Thira Jearsiripongkul**
(State Enterprise Directors' Pool 2018)

Age: 47

Position: Dean, Faculty of Engineering, Thammasat University

Key work experience:
- Director, Office of the Registrar, Thammasat University
- Assistant President, Rangsit Campus Management Development, Physical Division, Thammasat University

Education:
- Doctor of Engineering in Applied Mechanics (Dynamics), Technische Universität Darmstadt, Germany
- Master of Engineering in Mechatronics, School of Advanced Technologies (Exchanged Program), Asian Institute of Technology, Bangkok Thailand, Hamburg University of Technology, Hamburg, Germany
- Bachelor of Mechanical Engineering, King Mongkut's University of Technology Thonburi

Directorship of other organizations: None

11) **Name – Surname:** **Assoc. Prof. Pornanong Budsaratragoon**
(State Enterprise Directors' Pool 2022)

Age: 54

Position: Head, Department of Banking and Finance, Faculty of Commerce and Accountancy, Chulalongkorn University

Key work experience:
- Working Group on Provident Fund Capability Development, Securities and Exchange Commission (SEC)
- Expert, Senate Commission on Economics, Finance, and Treasury

Education:
- Doctor of Business Administration (Finance), Chulalongkorn University
- Master of Business Administration (MIS), University of Dallas, USA
- Bachelor of Business Administration (Quantitative Management), Chulalongkorn University

Directorship of other organizations: Director, Thai-Nichi Institute of Technology Council, Office of the Higher Education Commission

12) **Name – Surname:** **Col. Sarunyu Viriyavejakul**
(State Enterprise Directors' Pool 2019)

Age: 53

Position: Vice President, Neighboring Countries Economic Development Cooperation Agency (Public Organization)

Key work experience:
- Deputy Director, Peace Operations Center, Directorate of Joint Operations, Royal Thai Armed Forces Headquarters
- Director, Projects and Budget Division, Directorate of Joint Intelligence

Education:
- Doctor of Science (Technology of Environmental Management), Mahidol University
- Master of Science (Structural Engineering), Stanford University, USA
- Master of Science (Environmental Engineering), University of California Los Angeles (UCLA), USA
- Bachelor of Science (Honors) (Double Majors in Civil Engineering and Nuclear Engineering), United States Military Academy (USMA: West Point), USA

Directorship of other organizations: Executive Director, United Thai-Sweden 1897 Foundation

13) Name – Surname: **Miss Tidarat Thanapakpawin**
(State Enterprise Directors' Pool 2021)

Age: 43

Position: Vice President and Chairperson of the Standards and Indicators Mission, Digital Council of Thailand

Key work experience:
- Director, Information Technology Business and Communication, Thai Chamber of Commerce
- President, Thai Game Software Industry Association

Education:
- Master of Finance/Marketing, Willmette University, USA
- Bachelor of Science (Computer Science), Chulalongkorn University

Directorship of other organizations: Director, Government Savings Bank

14) Name – Surname: **Mr. Supachai Ek-Un**
(State Enterprise Directors' Pool 2021)

Age: 57

Position: Governor, Provincial Electricity Authority (since 17 August 2021)

Key work experience:
- Deputy Governor (Engineering)
- Deputy Governor (Electricity Authority Region 3)

Education:
- Master of Engineering (Safety Engineering), Kasetsart University
- Master of Business Administration, Khon Kaen University
- Bachelor of Science in Technical Education (Electrical Engineering), King Mongkut's Institute of Technology North Bangkok

Directorship of other organizations: None

Nomination and Selection Process for the Board [2-10]

The qualifications of a person who can be nominated for the PEA Board of Directors are as indicated in the PEA Act and the Standard Qualifications of State Enterprise Directors and Employees Act. The qualifications include Thai nationality and having knowledge and experience in business administration, electricity, engineering, economics, finance, or law, as well as other qualifications and not being under any prohibitions as indicated in the Acts. Independent directors, accounting for no less than one-third of all directors, are selected from the list of Directors of State Enterprises (Director's Pool or DP), prepared by the Ministry of Finance, and no less than one-third of all directors under the Principles and Guidelines on Corporate Governance for State-Owned Enterprises B.E. 2562 (2019). In addition, those nominated as PEA's directors must be considered and approved by the Screening Committee for State Enterprise Directors, and submitted to the Cabinet.

PEA recruits the Board in line with the announcement of the Screening Committee for State Enterprise Directors and the State Enterprise Policy Office (SEPO) in two cases as follows:

1) In case a state enterprise does not have sufficient directors to serve as its directors:

Ministry of Interior/SEPO announces recruitment of state enterprise directors.

→ Ministry of Interior/SEPO announces closing of recruitment of the directors (at least seven days).

→ Ministry of Interior investigates prohibitions and skills.

↓

SEPO investigates prohibitions and skills.

← SEPO submits to the Screening Committee for State Enterprise Directors' names for consideration.

← SEPO announces the results of the consideration to enable the relevant authorities to submit the appointment for approval (within 60 days).

↓

The Cabinet approves the appointment of the directors.

2) In case a state enterprise has enough directors to serve as its directors:

Composition of the Board [2-11]

The Board of Directors consists of 14 members, including the Chairman, directors, and the Governor, who serves as an ex officio member. Of the Board, there are 12 males and 2 females. They must command knowledge, experience, and diverse fields of expertise apart from business management, electricity, engineering, finance, or laws as stipulated in the Provincial Electricity Authority Act B.E. 2503 (1960) with its revisions, notably information technology (IT), internal audit, and sustainability management. The Chairman does not hold the position of PEA executive to ensure balance and transparency, as the Governor is the top executive.

In 2023, 57 percent of the directors served terms of one to three years, and the remaining 43 percent served terms of four to six years. PEA had 11 independent directors, who exercised judgment and expressed their own opinions freely from any external influence, and there were three directors representing regulatory agencies and serving as ex officio members. This is in accordance with the Principles and Guidelines on Corporate Governance for State Enterprises B.E. 2562 (2019), established by SEPO, which stipulates that at least one-third of the total board numbers in a state enterprise must be independent directors to ensure true independence in decision-making, and an adequate number to influence the opinions of the meetings. Independent directors should possess specialized knowledge and abilities that are beneficial to the state enterprise.

Role and Duties of the Board in Corporate Governance and Sustainability Management [2-12] [2-13] [2-14]

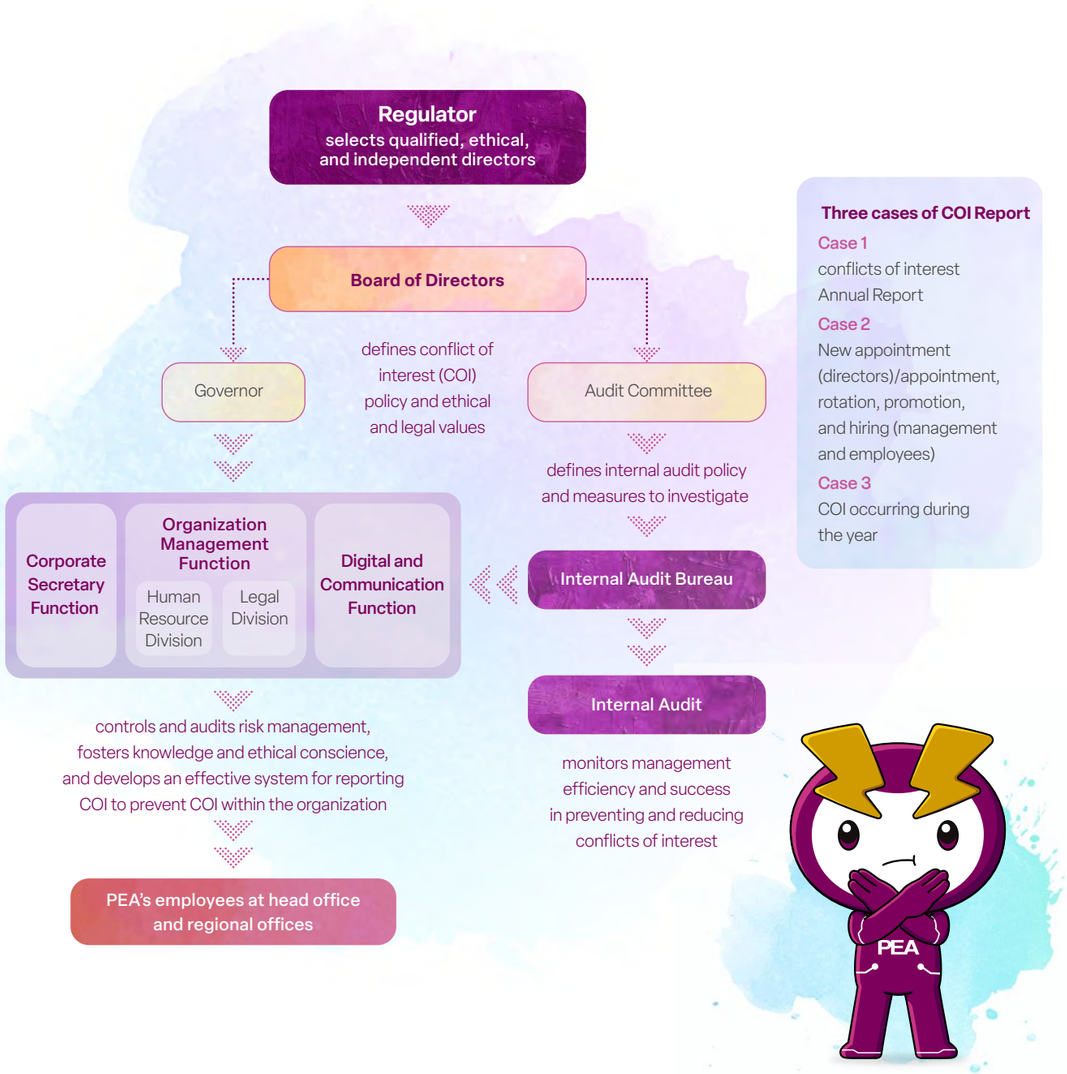
The Board, appointed by the Cabinet, is responsible for ensuring good governance for the organization. The Board appointed 11 specific committees with their roles and responsibilities to monitor and consider all action plans before submission to the Board, with directors serving as members in all subcommittees by issuing the order to appoint the directors, stipulating duty and responsibilities of the subcommittees to follow up on the operations of all systems, make recommendations, and screen the action plans of all systems before submitting views to the Board, which gives approval/acknowledges annual action plans before the end of the calendar year, as well as following up on the action plans which investigate the efficiency of the management procedure quarterly.

Moreover, the Board stipulates that the Corporate Governance and Sustainable Development Committee is responsible for ensuring good governance and sustainability in all policy and action plans, and for ensuring the integration of good governance, risk management, and compliance with laws and regulations. The Committee is also responsible for reviewing the implementation guidelines of good governance, anti-corruption, CSR in process, and sustainable development in the environmental, social and governance aspects by comparing them to the international standards and submitting them to the Board at least once a quarter.

Management and the Corporate Governance and Sustainable Development Committee communicate/report major concerns to the Board for acknowledgment every quarter. In 2023, there were 29 incidents which required orders concerning governance and sustainable development for execution by the relevant departments and for reporting back to the Board.[2-16]

Prevention of Conflicts of Interest [2-15]

Prevention of conflicts of interest is vital to PEA. As indicated by the PEA Act B.E. 2503 (1960), its revisions, and the Standard Qualifications of State Enterprise Directors and Employees Act B.E. 2518 (1975), and its revisions, the Board must not be a shareholder in any contract with PEA or any direct or indirect transactions made for PEA. Furthermore, as described in the corporate governance manual and guidelines of PEA, the Board is responsible for setting the conflicts of interest policy, ethical and legal values, and appointing the Audit Committee to set policy and measures of internal audit and to examine any offense in conflicts of interest. In addition, the Committee is responsible for controlling and examining risk management, strengthening knowledge and ethics, and developing an efficient conflict of interest report to prevent any conflicts of interest in PEA.



SCAN ME

Corporate Governance Code and Code of Conduct for PEA [2-23]

Knowledge Development and Improvement of Directors [2-17]

PEA values the development and promotion of knowledge and understanding by the Board by assigning the directors to participate in five activities:

- Meeting with the three agencies responsible for electricity, namely PEA, MEA, and EGAT with the aim of integrating various aspects, forging cooperation to drive the implementation of the government's policies, in particular, investment in power system infrastructure to avoid redundancies and to ensure security and support the transition to the age of the Digital Green Grid.
- Study tour and workshop for PEA's directors and management to devise PEA's strategic and risk management plan, organized by the consultant Mckinsey and Company (Thailand) Co., Ltd.
- Participation in the 2023 GRC Day where the Chairman of the Corporate Governance and Sustainable Development Committee gave a special lecture on "Governance and Sustainable Development"
- Lecture on "Governance and Social Responsibility toward Sustainable Organization" by Assoc. Prof. Dr. Montree Socatiyanurak and Dr. Vorapol Socatiyanurak.
- Lecture on "Guidelines for energy and environmental management and promotion of the use of alternative energy" by a representative from the Smart Campus Management Center, Chiang Mai University.

Moreover, the Board participated in the activities to promote knowledge and understanding of other issues, which constituted another factor ensuring the supervision of sustainable operations:

- Discussions and exchange of opinions and perspectives between directors and management.
- A study visit on innovation and technology of advanced alternative energy to ensure that the organization can sustainably operate in the technological transition age.
- Training courses on development for efficient supervision, such as The Executive Program in Energy Literacy for a Sustainable Future.

Performance Evaluation of the Board [2-18]

The performance evaluation of the Board is based on directors' performance, including self-evaluation, both individual evaluation and group evaluation officially during the Board meeting. The results of the self-evaluation will contribute to the enhancement of the efficiency of the Board's supervision, which is under the corporate governance manual and guidelines of PEA. Sustainability criteria are not included in the evaluation. However, the sustainability of PEA will be continuously considered by the Board through the submission of the Corporate Governance and Sustainable Development Committee. In addition, to align the operations of PEA with the international sustainability standard, PEA is considering whether to integrate sustainability criteria into the performance evaluation of the Board in compliance with sustainable operations on a par with international practices.

Remuneration of the Board [2-19] [2-20]

PEA follows the resolution of the Cabinet of 24 April 2019 that approved the adjustment of rate and criteria for monthly and meeting allowances for state enterprises' committees, subcommittees, or other working groups of the group 1: large state enterprises. The monthly and meeting allowances for the Board were adjusted according to the resolution of the Cabinet as seen below.

Monthly Remuneration

The chairman of a state enterprise receives twice the pay of other directors as follows:

1) The chairman receives 20,000 baht per month.
2) Each director receives 10,000 baht per month.

If a state enterprise board member does not serve a full month, the monthly pay is to be prorated to the duration of service.

Meeting Allowance

1) The meeting allowance must be paid on a per-meeting basis, or once per month. In exceptional circumstances, it may be paid more than once per month, but no more than 15 times per year.

2) The chairman of the board of a state enterprise receives a meeting allowance that is 25 percent higher than that of each director. Specifically, the chairman receives 25,000 baht, while each director receives 20,000 baht.

Members of a committee or subcommittee will receive a meeting allowance on a per-meeting basis at a rate of 0.5 times that of the board meetings (up to 10,000 baht per person per meeting). The chairman will receive a meeting allowance that is 25 percent higher than that of other committee members. The allowance will be paid only to attendees. Each committee or subcommittee member or other working group can receive a meeting allowance of no more than two committees and one meeting per committee per month.

Bonus

Board directors of a state enterprise receive a bonus, subject to that state enterprise's performance evaluation. The bonus amount is subject to the state enterprise's net profit and evaluation score and in accordance with the rules set by the Ministry of Finance. The chairman and vice chairman of the Board receive a bonus that is 25 and 12.5 percent higher than other directors. If a director misses more than three monthly meetings in a fiscal year, the following rules will be applied:

1) In the event of absence from meetings for more than three months but not more than six months, the bonus will be reduced by 25 percent.

2) In the event of absence from meetings for more than six months but not more than nine months, the bonus will be reduced by 50 percent.

3) In the event of absence from meetings for nine months or more, the bonus will be reduced by 75 percent.

Meeting Allowances, Monthly Remuneration, and Annual Bonuses of the Board in 2023

Name	Position	Meeting Allowance (Baht)		Monthly Remuneration (Baht)		Annual Bonuses in 2023 disbursed in 2024 (Baht)
		Before tax	After tax	Before tax	After tax	
1. Mr. Unsit Sampuntharat	Chairman	225,000.00	202,500.00	180,000.00	162,000.00	189,875.01
2. Mr. Danucha Pichayanan	Director	160,000.00	144,000.00	90,000.00	81,000.00	151,899.99
3. Mr. Yodphot Wongrukmit	Director	160,000.00	144,000.00	90,000.00	81,000.00	151,899.99
4. Mr. Thongchai Chawalitpicheat	Director	40,000.00	36,000.00	15,666.67	14,100.00	29,531.25
5. Mr. Sak Segkhoonthod	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
6. Pol. Maj. Gen. Wiwat Chaisangkha	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
7. Flg. Off. Kamolnai Chaixanien	Director	60,000.00	54,000.00	25,333.33	22,800.00	46,233.87
8. Mr. Panit Dhirapharbwongse	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
9. Mr. Chavang Thaiying	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
10. Assoc. Prof. Thira Jearsiripongkul	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
11. Assoc. Prof. Pornanong Budsaratragoon	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
12. Col. Sarunyu Viriyavejakul	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
13. Miss Tidarat Thanapakpawin	Director	180,000.00	162,000.00	90,000.00	81,000.00	151,899.99
14. Mr. Supachai Ek-Un	Governor (ex officio director)	180,000.00	162,000.00	120,000.00	108,000.00	245,000.00

Remarks: No. 4 resigned from directorship, effective 18 February 2023
No. 7 completed the term of directorship at the age of 60, effective 16 March 2023
Nos 1 – 3, 5 – 6, and 8 – 13 resigned from directorship, effective 9 September 2024

Policy and Remuneration Payment of Senior Management [2-19] [2-20]

The remuneration fees and payment of the PEA Governor are based on the Cabinet resolution on 13 June 2000 on the criteria and guidelines for remuneration payment to the most senior executive according to the hiring contract, with the Ministry of Finance taking part in determining this under the contract. The consideration of this payment consists of 1) the MOU on performance evaluation signed with the Ministry of Finance, 2) policy implementation under the Governor's policy, and 3) competency evaluation with 360-degree method approved by the Board, the Ministry of Finance, and a document Kor Ror Bor (Ror Bor.) 1366/2023 dated 6 September 2023, approving new positions defined as the group of senior management comprising Deputy Governor, Assistant Governor/Executive Director/Director of Internal Audit Bureau/Bureau Director, and Department Director/Area Manager/Manager Level 1. The Governor assigns the Organization Management Function to devise the remuneration, based on the criteria of increasing annual salary and bonus of senior management through individual evaluation under the four following criteria:

1) Work under the policy assigned by supervisor

2) Work under the duty and responsibilities

3) Work based on creativity

4) Behavior under PEA's core values.

Due regard is for the quality of leadership in management, decision-making, problem-solving, ability to forge the learning process atmosphere, development of subordinates, human relations, and honesty and integrity.

Number of Management and Senior Management

No. of Management	2019			2020			2021			2022			2023		
	Department Director	Assistant Governor	Deputy Governor	Department Director	Assistant Governor	Deputy Governor	Department Director	Assistant Governor	Deputy Governor	Department Director	Assistant Governor	Deputy Governor	Department Director	Assistant Governor	Deputy Governor
Male	77	23	17	82	25	17	81	27	15	82	24	16	70	18	5
Female	16	4	1	14	3	-	15	2	1	15	4	-	15	3	-
Total	138			141			141			141			111		

Remarks: Senior management consist of: - Deputy Governors
- Assistant Governors equivalent to Executive Directors/Director of Internal Audit Bureau/Bureau Directors
- Department Directors equivalent to Area Managers/Managers Level 1

In 2023, there arose 34 cases of non-compliance with laws and regulations, with **all cases addressed**

Monthly Total Compensation Ratio [2-21]

The ratio of the monthly total compensation for PEA's highest-paid individual to the median for all employees (excluding the highest-paid individual): 6.9341.

The ratio of the increased monthly total compensation for PEA's highest-paid individual to the median for all employees (excluding the highest-paid individual): 1.1177.

Free and Fair Competition

PEA recognizes the importance and promotion of free and fair competition by refraining from abuse of dominance and tolerating the government's future opening of competition (such as the future liberalization of the power business or merchant power market) by determining clear guidelines for fair market competition under the Trade Competition Act B.E 2560 (2017) and the Public Procurement and Supplies Administration Act B.E. 2560 (2017), as specified in PEA's Corporate Governance Code and Code of Conduct. PEA's objective is to ensure transparent and fair business operation without abusing the government authority or political connection to increase its advantage or existing monopoly, resulting in exploitation or making competitors or creditors disadvantageous or deprived of rights or any due benefits. This move ensures transparent, fair, and indiscriminate procurement, which otherwise would entail unfair competition in the organization's procurement practices. In 2023, PEA's operations were found to have no practice of any anti-competition and violation, including opposition to confidence and trade monopoly.[206-1]

Compliance with Laws [2-27]

In 2023, there arose 34 cases of non-compliance with laws and regulations, with all cases addressed. All cases were confirmed to have involved abuse of power for serious fraud and misconduct, and violation of the Occupational Safety, Health and Environment Act, which breached the regulations and incurred a total fine of 5,547,375.07 baht. In the previous year, the fines totaled 1,755,000 baht in the payment for compensation and all humanitarian costs relevant to impacts on health and safety of products and services.

Complaints and Whistleblowing Channels [2-16] [2-25] [2-26]

Voice-based Channels
- 1129 PEA Contact Center
- Corporate fixed-line

Government-based Channels
- PEA Anti-corruption Center
- Regulators (such as Ministry of Interior and ERC)
- Damrongdhama Center, Ministry of Interior
- Office of the Permanent Secretary, Prime Minister Office (www.1111.go.th)
- P.O. Box 150, Lak Si Post Office, Bangkok
- Other agencies (such as NACC, Office of the Public Sector Anti-corruption Commission, and Office of the Ombudsman)

Media and Social Network Channels
- PEA website (www.pea.co.th)
- Radio, TV, newspaper, and local media
- E-mail
- IA/IR Chat
- PEA Smart Plus

Interaction-based Channels
- Direct contact at the PEA Head Office and regional offices
- Voice of stakeholder activities

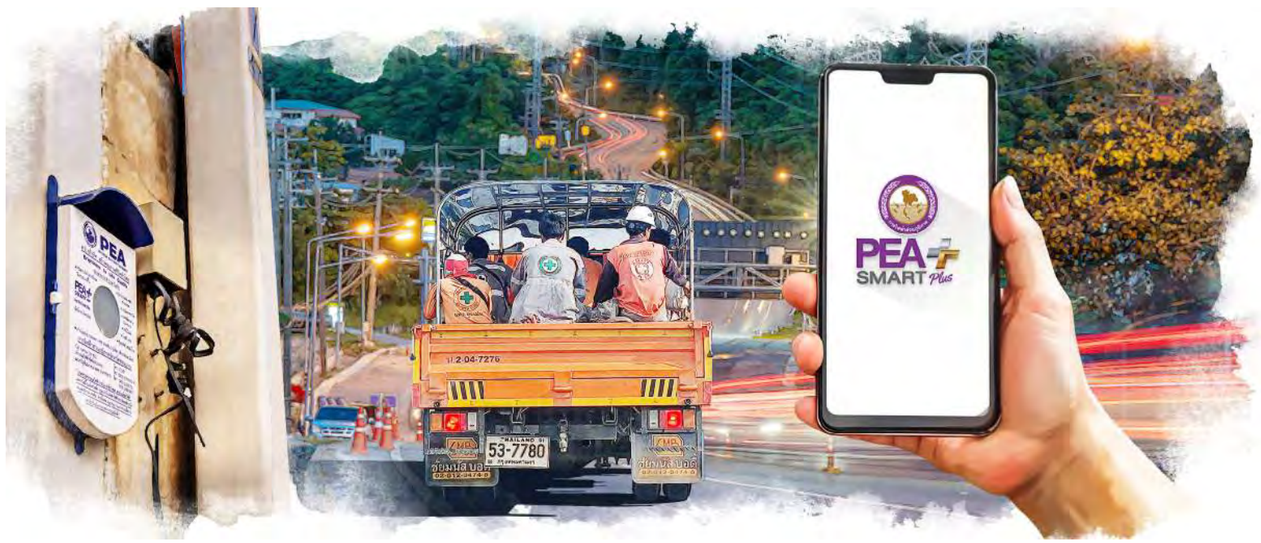
PEA systematically manages complaints and reports of corruption and misconduct, involving stakeholders in evaluating its governance performance and ensuring fairness for all parties. There are over 20 channels in place such as the PEA Application, PEA Website, 1129 PEA Contact Center, and customers' voice via mass media.

PEA commands an information system known as PEA-VOC that is used for complaint management and customer feedback management to exhibit transparency and ensure fairness for all stakeholders. It enables quicker, more convenient complaint management, tracking, and response performance reporting for relevant stakeholders within a period permitted by using the same database throughout the organization. The PEA-VOC system can report various information, grouping complaints into six categories and complaints of corruption and misconduct into eight categories:

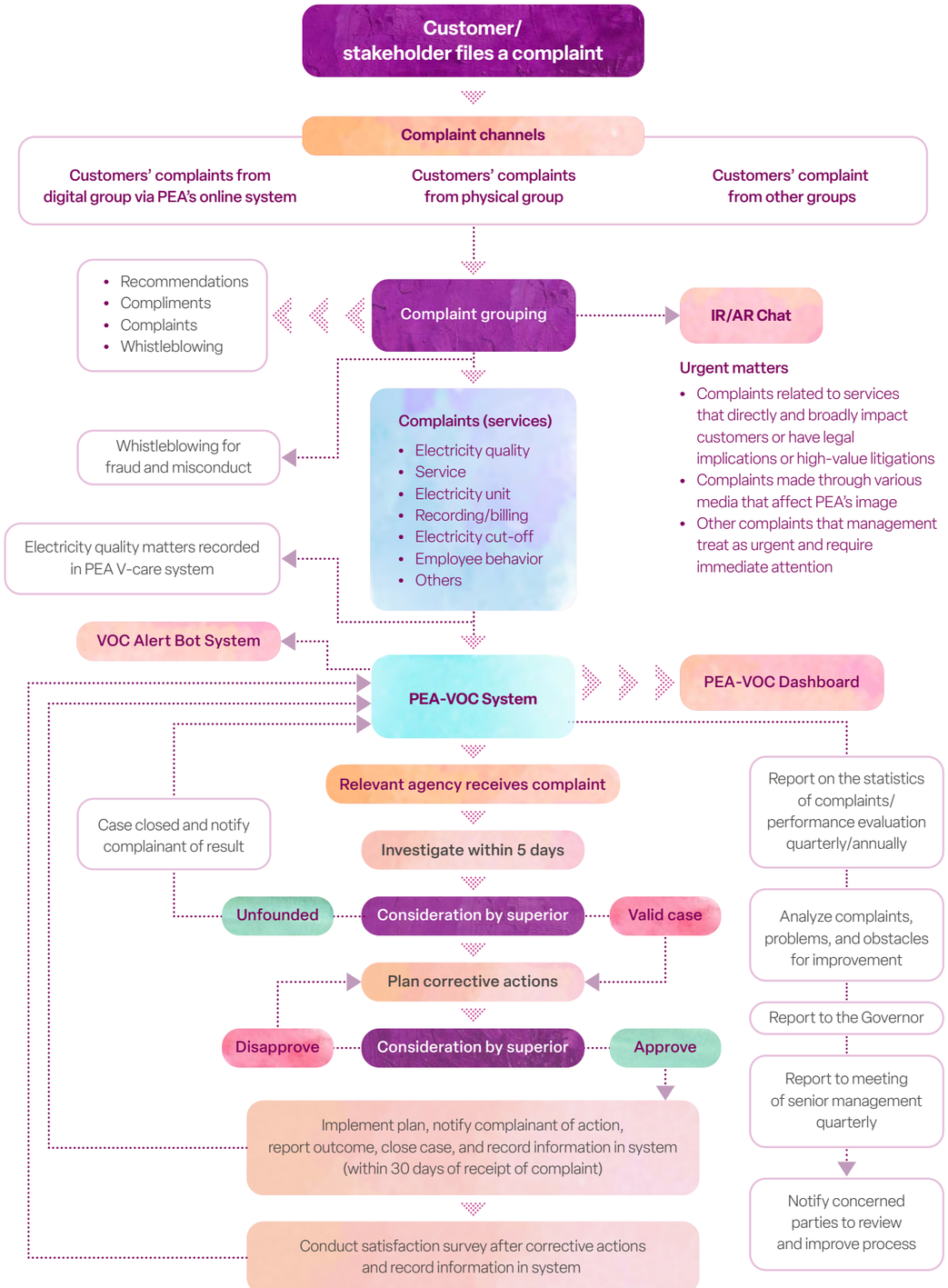
Nature of Complaints	Complaints of Corruption and Misconduct
1. Electricity Quality	1. Procurement Process
2. Service	2. Human Resource Process
3. Electricity Unit Recording/Billing	3. Service Process
4. Electricity Cut-off	4. Financial Process
5. Employee Behavior	5. Misconduct/Code of Conduct Violation
6. Others	6. Electrical Systems Process
	7. Organizational Management Process
	8. Others

Protection of Complainants and Whistleblowers

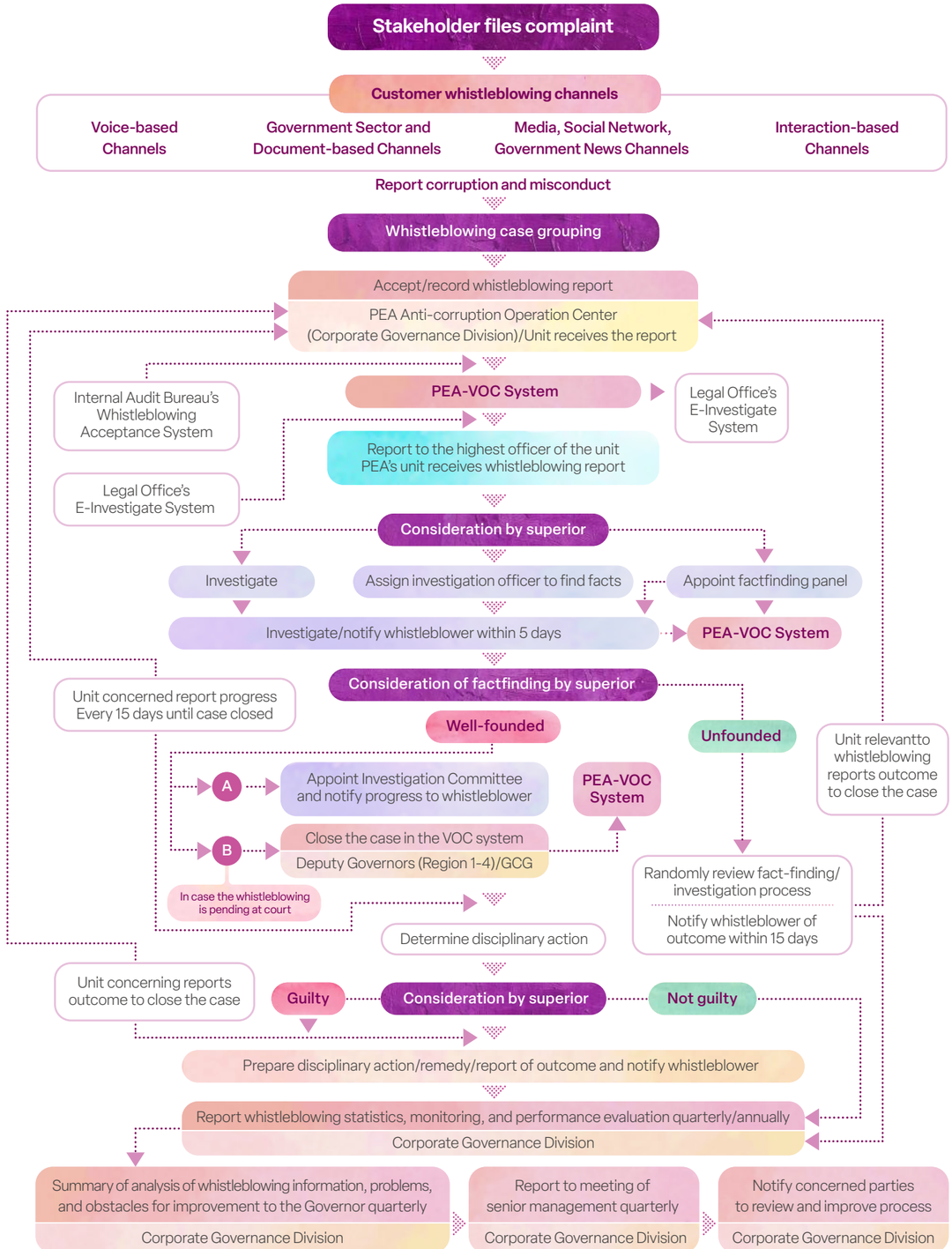
PEA has clearly specified rules in the manual to enhance its complaint management efficacy. The manual states that PEA officials responsible for complaints and whistleblowing must protect the privacy of the complainants and whistleblowers. The information must be kept confidential, with reasonable discretion in protecting complainants, whistleblowers, witnesses, and informants. Moreover, they will be protected from potential harm or unfairness from such complaints, testimonies, or information furnished.



Service Complaint Handling Process [2-25]



Whistleblowing Handling Process [2-26]



Performance Outcomes on Corporate Governance and Anti-corruption [3-3]

- 100 percent of operating units assessed with fraud-connected risks, with evaluation of all units and types of identified risks with their significance seen below.[205-1]

Identified Risk and Significance [205-1]	Risk Management Measures/Plan
Risk of bribery facing the mission of the unit in the following issues: • Authorization and approval under the Licensing Facilitation Act B.E. 2558 (2015) • Legal enforcement/mission-based services • Hiring and procurement • Personnel management	PEA completed the risk management measures/plan on bribery consisting of 1. Application for electrical meter installation of up to 30 amps in and outside community in case of internal wiring inspection before fee payment 2. Business services for telecommunication wiring and installation 3. Plan to purchase 13 35-ton cranes 4. Consideration to promote employees (levels 2-7) (regional only)

- Communication of policy and training on anti-corruption practices to directors, the workforce, and relevant business partners, with 13 directors and 27,171 personnel acknowledging the communication of policy and guidelines or 97.46 percent of the workforce. Note that this year the policy and guidelines were not communicated to PEA's business partners across the country.[205-2]

Number of Directors, Personnel, Business Partners that Learned about PEA's Anti-corruption Policy and Guidelines [205-2]

Category	People That Have Learned about Anti-corruption Policy and Guidelines	Percentage
Directors	13	100
Personnel by Group*		
Management	8,069	29.70
Experts	378	1.39
Practitioners	18,724	68.91
Personnel by Area		
Head Office	3,592	96.25
Northern and Northeastern	11,593	96.09
Central and Southern	11,986	99.21
Business Partner		
Suppliers/cooperation partners	0	0
Deliverer	0	0

Number of Directors and Personnel Trained on Anti-corruption Courses [205-2]

Category	Year-round Cumulative Trainees on Anti-corruption	Percentage
Directors	13	100
Personnel by Group*		
Management	8,069	29.70
Experts	378	1.39
Practitioners	18,724	68.91
Personnel by Area		
Head Office	2,625	9.66
Northern	11,037	40.62
Northeastern	1,977	7.28
Central	2,497	9.19
Southern	9,035	33.25

Remarks: Employees refer to (1) Management, namely Deputy Governors, Assistant Governors, Department Directors/Managers Level 1, Deputy Department Directors, Division Directors, Center Directors, Electric Vocational School Directors, Managers Level 2-3 or equivalents, Deputy/Assistant Division Directors, Deputy/Assistant Center Directors, Deputy/Assistant Electric Vocational School Directors, Deputy Managers Level 1-2, Branch Managers, Assistant Managers Level 3, Section Heads, Sub-Branch Managers, and Assistant Section Heads (2) Experts, namely Experts Level 12-13, Researchers Level 9-11, Specialists Level 9, Specialists Level 8, Researchers Level 7-8, and Professional Officers Level 7 (3) Practitioners, namely Researchers/Professional Officers Level 4-6 and Professional Officers Level 2-3

- There were in total 22 incidents of corruption involving serious fraud and misconduct. In these cases, 52 employees were disciplined, 9 dismissed, and 43 discharged, with the damage valued at 4,364,043.07 baht.[205-3]
- The number of complaints via the VOC system fell from the average of the base year (grounded information for the past three years): 15 grounded complaints decreased from the average of the base year (68.18 percent).
- A two-part Soft Control Program: (1) Organizing activities to raise awareness of good governance, morality, ethics, and transparency in the workplace for three target groups: 1) PEA Electrical Vocational School students, 2) new hires, and 3) management and personnel, and (2) Assessing the awareness and application of good governance, morality, ethics, and transparency through activities and lectures on good governance and anti-corruption in the workplace (Soft Control) in 2023 in all regions. There were 57,551 management, personnel, and PEA Electric Vocational School students that participated in these activities.
- PEA announced its declaration of intention for anti-corruption 2023 under the “PEA Zero Tolerance” theme for the seventh consecutive year to demonstrate its commitment to honesty, integrity, transparency, and conformance to the code of good governance. A total of 27,496 employees, or 98.60 percent of the workforce, participated in the activity (as of 31 December 2023).
- As for the Integrity and Transparency Assessment (ITA), PEA achieved a score of 99.35 percent, ranking first among state enterprises in the energy sector.
- Awareness and application of code of good governance, morality, ethics, and transparency in the workplace this year averaged 98.43 percent, exceeding the goal.
- All units undergoing the GRC evaluation scored higher than or equal to the B rating (ITA’s evaluation criteria) with the overall score posted at 88.62 percent (passing the criteria)

- Results of technological implementation the CG e-System in 2023 (as of 30 November 2023):
  - CG Testing yielded a score of 98.43 percent, based on a sample group of 26,844 employees, or 98.50 percent of the workforce.
  - The CG Acknowledgment rate was 97.46 percent, exceeding the target of 90 percent.
  - COI Reporting showed 1) annual reporting achieved a 100-percent submission rate among the workforce required to submit the reports, and 2) the processes of appointment, transfer, promotion, and recruitment achieved 100 percent of all appointed personnel.
- The five Integrity Pact Projects for 2023 were
  1) Contract for the construction of 115-kV submarine cables (4th circuit) to replace and increase the distribution capacity to Ko Samui, Surat Thani Province (2,133 million baht)
  2) The CBS 2 (software procurement for core business) project, 2nd Stage (5,499.80 million baht)
  3) Contract for the construction of 22-kV, 185 sq.mm. aerial cables for 39,177 km (747.60 million baht)
  4) Submarine cable construction project to Ko Tao, Surat Thani Province (1,786 million baht)
  5) The Enterprise Resource Planning (ERP) and Utility Platform (UTP) Project (4,998.47 million baht).

Work Improvement Planning [3-3]

- Compile and prepare a report on the analysis of potential risk management in operating with good governance over the past year and continue to undertake related study tours to leading agencies at the national level to upgrade PEA's operation.
- Apply the survey outcomes on stakeholders on PEA's operations between 2022 and 2023 and assess the materiality sustainability issue as a major input to review the 2024 Master Plan and Action Plans on Governance, Prevention, and Suppression of Fraud and Corruption by continually inviting relevant agencies (regarded as internal stakeholders) for discussions on formulation/review of governance action plans.

11 SUSTAINABLE CITIES AND COMMUNITIES

16 PEACE, JUSTICE AND STRONG INSTITUTIONS

Performance Outcomes

Conducted **BCP exercises** on various key business processes to counter potential threats.
Conducted **Disaster Recovery Planning (DRP)** drills and a full **BCP exercise**
Conducted a cyber threat response drill **involving information and operational technology systems and the Cyber Security Operations Center (SOC).**

09-2 Enterprise Risk Management

Uncertainty and changes in various factors such as operating costs, energy prices, technological updates, and natural disasters can all impact PEA's business operations. PEA therefore values enterprise risk management to protect its operational efficiency, business competitiveness, as well as the ability to drive the business and deliver social and environmental values to uphold its business objectives. At PEA, risk management is established according to the internationally adopted COSO ERM 2017 Standard Framework (Enterprise Risk Management Integrating with Strategy and Performance: ERM) to actively manage risks via risk identification, risk assessment concerning opportunities and impacts, and setting measures and processes in place to prevent and mitigate damage to ensure that the enterprise can manage their risks efficiently within the risk appetite, promptly, and appropriately with the evolving environment.

Goals [3-3]

- Operate with efficiency and effectiveness while promptly addressing economic, social, and environmental changes to attain strategic objectives and operational targets within the risk appetite.
- Maintain a balance between risks and returns to meet stakeholders' expectations, conduct operations in compliance with applicable laws and regulations, and effectively consume resources.
- Foster distribution system stability and reliability and create value, allowing the organization to meet the needs of stakeholders.

Operating Strategy [3-3]

- PEA has divided its strategic positioning into three phases:
  - Short-term (2022 - 2026): Ensure accomplishment of Digital Utility and create value through digital innovation.
  - Medium-term (2027): Become a domestic and regional leader in the electricity business.
  - Long-term (2037): Become an enterprise of sustainable electricity utility to facilitate the attainment of strategic goals in each phase through phase-based risk assessment (intelligent risk) and objective-based risk assessment. A SWOT analysis was employed to identify opportunities, and the risk assessments were conducted for strategic, operational, financial, and compliance risk objectives. PEA also aligns its risk management with enterprise strategies, annual investments, technological change that may impact the enterprise, customers, competitors, budgets, personnel, annual operating plan, business and incident indicators that may involve stakeholders during the year, as well as potential opportunities over the short term, medium term, and long term.
- Manage risks against the COSO ERM 2017 Standard and assess risk management practices using the State Enterprise Assessment Model (SE-AM) established by the State Enterprise Policy Office (SEPO) and the Ministry of Finance.
- Implement enterprise risk management, including developing a risk management policy, defining organizational objectives, identifying and assessing risks in terms of opportunities and impacts, putting risk management measures in place, and monitoring and reporting risk management performance.
- Develop and implement the 2023 enterprise risk management plan to mitigate the likelihood and impact of potential risks. Assess implementation progress quarterly and report the outcomes to the Risk Management and Internal Control Committee.

Risk Management [3-3] [2-25]

PEA values risk management and its continuous implementation. The enterprise risk management practices are aligned with the COSO ERM 2017 Standard to ensure efficient execution of strategies and operational plans, while attaining the mission and objectives. PEA reports risk management results quarterly and reviews the risk management results at least annually. Both internal and external factors that may impact the organization, along with the results of the 2023 PEA enterprise risk management plan, were assessed as part of the development of 2024 risk management program. Annual surveys have also been conducted among stakeholders and the executive board.

In managing enterprise risks, the Board of Directors is responsible for overseeing and supporting risk management policies by assigning the Risk Management and Internal Control Committee along with the PEA top management to supervise, control, and monitor the implementation of the risk management policies and frameworks. They also collaborate with the Risk Management Subcommittees across all functions, with each subcommittee chaired by the respective Deputy Governors, and with the risk owners executing the procedures provided in the risk management policies and manual. PEA's risk management structure is shown below:

Board of Directors
- Monitor risk management
- Approve risk management issues

Risk Management and Internal Control Committee
- Supervise / assign policies/ frameworks / monitor and report the results of risk management / communicate with the Audit Committee and Board of Directors

Audit Committee
- Audit risk management and internal control and advise the Risk Management and Internal Control Committee

Internal Audit Bureau
- Review PEA risk management and internal control against the risk-based audit plan

PEA Governor

Policy and Strategy Committee
- Contribute to the development of the enterprise risk management plan with observations, opinions, and advices.

Governance Risk and Compliance (GRC) Committee
- Define / review / improve the GRC policy to align with the prevailing enterprise context and standards
- Define directions for objective executions and work integration, including related systems
- Plan, control, monitor, and report the execution of GRC work
- Oversee the development of GRC manuals/guidelines and ensure alignment with PEA's context and SE-AM criterion
- Execute other works related to GRC.

Deputy Governor (Corporate Strategy)

Governance Risk and Compliance (GRC) Subcommittee/Work Team

Corporate Governance and Internal Control Committee
- Set directions for driving GRC integration
- Execute GRC integration under the guidelines
- Monitor and report the results of GRC integration
- Initiate communication among personnel to forge knowledge, understanding, and recognition of GRC

Corporate Governance and Risk Management Department
- Set directions/manuals for risk management and internal control
- Coordinate with committees and subcommittees in the development and monitoring of risk management and internal control plans
- Administer the meetings of the Risk Management and Internal Control Committee
- Initiate communication on risk management and internal control for public understanding
- Assess risks and manage corporate risks.

Pilot unit: PEA 1-3/ Function /Division/Department
- Administer the assessment of internal control
- Set directions for internal control assessment and directions for compliance with PEA's regulations
- Initiate the planning and report of internal control
- Conclude results of internal control and compliance with PEA's regulations

Economic, Social, and Environmental Risk Management and Implementation Outcomes [3-3]

Risk Issue	Significance to PEA	Mitigation Measure	Outcome
Economic			
Risk of key customers switching to obtain distribution services from other service providers 	There are currently many private power producers providing distribution services apart from PEA. The needs and expectations of customers, especially key accounts, include price, services, and network stability. PEA cannot enter price competition with the private sector, but thanks to our expertise in electricity services, PEA can compete in distribution stability and troubleshooting speed. PEA therefore retains its priorities on distribution network services and stability to meet key customers' expectations. PEA has reviewed its database, improved work processes and service standards to meet customers' needs, maintained its service standards, increased service efficiency with digital technologies, and created satisfactory customer experiences. Clear account strategies across different aspects such as products, services, support, and feedback management have increased customers' satisfaction and account retention.	1. Customer-specific plans to increase customers' satisfaction. 2. Plans to define and execute Service Level Agreements (SLAs) with digital technologies to exceed customers' expectations and competitors' abilities. 3. Plans to maintain relationships with key accounts and employ Digital CRM systems in supporting customer services. 4. Projects to increase efficiency in customers' needs management and key accounts' expectations. 5. CRM project. 6. Micro-grid development project on Samui Island area, Surat Thani Province. 7. Study on energy storage systems in grids. 8. Plans to monitor and resolve outages in industrial cluster areas. 9. Plan to review high-risk customer assessment. 10. Plans to improve relationships with key accounts with in-depth knowledge. 11. Loyalty Program plans for key accounts. 12. Prioritization plan for power system improvement in high-risk areas. 13. Study to review power backup guidelines.	• Engagement score for high-risk key accounts exceeds 3.5075. • Key account customer satisfaction score exceeds 4.4489. • Large customer (large/major industrial and commercial customers) satisfaction score exceeds 4.4781.
Existing data not fully utilized for maximum benefit to PEA 	With higher business growth and competition, PEA needs to adapt to changes in the power business in technologies and industrial structure. The main revenue stream comes from distribution. High coverage of customers over 74 provinces (except Bangkok, Nonthaburi, and Samut Prakan) generates a vast database of electricity users. This database can improve services and develop business extension, including the use of in-depth knowledge of Smart Grid Analytics to increase power grid efficiency. This could only be optimized with good data management, good database cleansing, effective data analytics from highly-skilled personnel, and protection of data privacy.	1. Develop and pilot integrated digital technology-workforce program with FTE to estimate the manpower for each department. 2. Design an integrated future competency development program for senior management and the workforce, including digital technology, business management, marketing, organization management, and power market liberalization. 3. Employee upskill plan in Big Data Analytics and its applications. 4. Employee development plan in knowledge-driven work improvement. 5. Manpower management plan to support operation strategy. 6. Knowledge management plan on data analytics with related departments. 7. Procurement and development plan for Big Data platform. 8. API data connection plan. 9. Digital platform development plan to support business transformation into Digital Utility and related businesses. 10. Plan to develop data-driven business. 11. Customer database study for potential value-added benefit. 12. Plan to cooperate with the Future Grid in the development of Smart Grid Analytics with a pilot area in Pattaya using data from Smart Meter. 13. Data strategy plan (people, process, and technology) to support the corporate strategy.	• 100% completion of the Big Data Platform development for Use Case analyses. • 100% completion on Big Data Analytics for the upskilled workforce. • 100% completion on customer database assessment for potential value-added benefit.

Risk Issue	Significance to PEA	Mitigation Measure	Outcome
Vague alignment of business directions and policies between PEA and affiliated companies preventing business expansion from proceeding as planned. 	Despite the disruption of the power industry and technology, PEA, with its core competency and essential resources, can still maintain its competitive advantages over other private power producers, including industrial distribution service systems, solar rooftop services, and electrical system design. These emerging value-added services and other abilities including its agility are critical to future businesses. It is vital for PEA to define clear directions for itself and affiliates under good governance to warrant appropriate returns to PEA.	1. Way of Conduct between PEA and affiliated companies. 2. Meetings between PEA and PEA ENCOM through the Strategy and Good Governance Committee. 3. Filing plan for PEA ENCOM's IPO on the Stock Exchange of Thailand (SET). 4. Integrative plans to define a business flagship and interrelated transactions between PEA and PEA ENCOM.	• 100% completion on the filing preparation of PEA ENCOM on SET.
Maintaining adequate financial liquidity to meet operating costs amid a volatile economy. 	Some PEA customers have faced higher costs of businesses due to the economic impacts, including those from the Russia-Ukraine war, the Covid-19 pandemic, and global inflation. These factors, along with the rise in Ft surcharges, resulted in some PEA account receivables being delayed or defaulted, thus adding the risk of financial liquidity to PEA. It is necessary to monitor and closely manage operating costs to prevent impacts on the operations.	1. Negotiation with SEPO on delaying revenue remission. 2. Plan to utilize a short-term credit line within 5,000 million baht. 3. Negotiation plan with EGAT to extend payable terms. 4. Plan to provide convenience to customers with online payment channels. 5. Debt collection plan review for all overdue payments to increase debt collection efficiency. (Using data analytics tools such as SAP BI to review debt-aging data and identify debt collection targets, including large and small private enterprises, state-owned enterprises, and government agencies.) 6. Internal financial management plan.	• Operating cost management (CPI-X) is less than 30,203 million baht.
Social			
The Smart Grid strategic target in 2027 is to be delayed due to slow network development. 	The 2027 strategic milestone includes the Smart Energy Solution and the Thailand's Smart Grid Development Master Plan, 2015-2036. The Energy Policy and Planning Office (EPPO), Ministry of Energy, as the developer of the Master plan, has defined the Smart Grid as a vision to sufficiently provide electricity with efficiency, sustainability, high-quality, and highest possible benefit to the country, to cope with higher demand from the power industry in the future, in line with the national policy to promote the use of EVs and Distributed Energy Resources (DERs), as well as the support to power innovations and technologies such as Battery Energy Storage Systems (BESSs) and alternative energy such as clean energy. The Smart Grid network is the critical answer for future power network management.	1. Studies on distribution grid storage systems. 2. Micro-grid development project on Samui Island, Surat Thani Province. 3. Micro-grid development plan in Mueang District, Mae Hong Son Province. 4. Off-grid power supply program with alternative energy. 5. SVG installation monitoring study at Yupharachan Substation in Betong District, Yala Province. 6. Impact assessment study of the use of EVs on low-voltage distribution systems. 7. Follow-up plan on GIS system's qualitative data cleansing. 8. Smart Grid Committee to integrate directions of all projects and plans. 9. Expedition plan for smart-meter installation for large customers. 10. Sourcing of consultants for Smart Meter Operation Center (SMOC) design. 11. Improvement plan for low-voltage systems to support changes in the power industry. 12. Tracking and troubleshooting plans for low-voltage system outages. 13. SCADA system installation plan for low-voltage systems, with pilot project in Pattaya. 14. Lessons-learned study and knowledge-sharing on micro-grid regulations and permit application for land use. 15. Assessment plan for the PEA Smart Grid system development pilot project. 16. Detailed study on BESS maintenance. 17. Study on electric equipment upgrade in low-voltage systems.	• >90% completion on the micro-grid system development plan in Mueang District, Mae Hong Son Province. • SAIFI in low-voltage systems is lower than 0.739. • SAIDI in low-voltage systems is lower than 68.594.

Risk Issue	Significance to PEA	Mitigation Measure	Outcome
Cyberattack preventive measures insufficient for currently increasing risk environment. 	As PEA strives to take on a new role as a Digital Utility enterprise driven by technologies, innovations, and new businesses, cyber security and stakeholders' trust in digital operations are critical business fundamentals. PEA therefore focuses on the security of its IT and communication systems, with cyber standards and security in place, to foster trust in its online communications and transactions, reflected in an accurate, efficient, and secure payment system. The efforts also include sufficient manpower for the Security Operation Center (SOC) and adequate measures for the monitoring and handling of cyber threats under international standards. Special cyber threat preventions are put in place for critical infrastructure, such as the SCADA system to ensure operation security. PEA also continuously encourages knowledge exchange within the organization and promotes its personnel to recognize cyber threats.	1. Business Continuity Plan (BCP) rehearsal plan. 2. Cyber security incident response plan. 3. Procurement of support equipment for cybersecurity. 4. IT security loophole detection plan under the ISO/IEC 27001:2013 Standard. 5. The 24x7 SOC monitoring plan. 6. Cyber security awareness raising plan. 7. Cyber range rehearsal plan. 8. Digital technology security system development plan. 9. Programs to review laws, ministerial regulations, Cabinet resolutions, and new rules and practices for PEA's operations. 10. Employee development plan for cyber threat prevention. 11. Employee development plan for knowledge-driven operation improvement. 12. Employee training plan via e-Learning on cyber security awareness. 13. Operation plans under the Cyber Security Act 2019 for critical services, including the SCADA system, CSCS/SCPS system, prevention and relay system, unmanned security system, communications system, access control system, and facility management of the distribution dispatching centers. 14. Communication plans on IT security for the internal workforce and the public. 15. Skill definition plan for SOC personnel. 16. System security penetration test plan. 17. IT investment study plan (2023 three-year notebook computer lease plan). 18. Cyber security collaboration plan with other organizations. 19. Joint meetings with IT Division creating contents and communication formats on new cyber threats. 20. Media monitoring and tracking plans to design safe social media. 21. Substation control system efficiency improvement plan under the cyber security policy. 22. Skill definition plan for SOC personnel.	• 100% completion of cyber security expansion management under ISO 27001. • 100% completion of cyber security response & recovery.

Risk Issue	Significance to PEA	Mitigation Measure	Outcome
Environmental			
Vague transmission connection, rights and surcharge, with independent power producers 	With the national power market liberalization policy demanding that roles and responsibilities of a DSO (distribution system operator) entirely separate from the retail to strive for a perfect market mechanism, PEA has prepared for market liberalization as follows: • Preparation for the establishment of the market operator (MO) and distribution system operator (DSO). • Development of an information system and software architecture for an energy-trading platform to support PEA's new roles under the liberalized market mechanism. • Preparation of the organization structure and human resources / design of new business processes • Related systems, as well as laws and regulations The Energy Regulatory Commission (ERC) issued regulations for third-party access (TPA), joining or connecting to the power grids operated by three state-owned enterprises for power trading. PEA must prepare itself for the imminent TPA implementation, including the development of grid access application, review and approval procedures, duration and access fees, operating IT systems, compatible accounting/financial systems, unbundling account system, fee and surcharge calculation system, metering data transmission, and related SAP systems. PEA is taking on the leading role of DSO with its advantages in skilled personnel and system readiness, while taking on a clear leading position in the retail market with its robust customer database covering the entire country. From these roles arises our future business model.	1. Employee development plans for personnel and senior management focusing on future competency, including digital literacy, business management, marketing, organization management, and power market liberalization. 2. Review of existing and new ministerial regulations and Cabinet resolutions, and preparation of instructions, rules and standards and work guidelines for the future. 3. Improvement on legal work in support of power market liberalization. 4. Preparation of a manpower plan, organizational capability assessment, and skill levels of personnel related to DSO, MO, and Trader roles and activities 5. Review of expert-sourcing channels and extra manpower structure to support expert sourcing 6. Preparation plan for power market liberalization 7. Preparation for the establishment of the market operator (MO) trading center 8. Preparation for the organization structure and human resources / design of business processes to support power market liberalization 9. Preparation for PEA's distribution centers ready to become a distribution system operator (DSO) 10. Preparation for PEA's accounting, finance, IT system, cyber security, as well as related laws and regulations 11. Study and monitoring plans on Renewable Energy Certificates (RECs) 12. Reconciliation and reporting plan to integrated data from AMR and Regen for daily and monthly uses 13. Development of PEA Peer-to-Peer (P2P) Energy Trading Platform	• 100% completion on preparation for power market liberalization

Risk Management and Internal Control Training Programs

PEA takes seriously executive knowledge development of risk management and internal control through various training programs. The 2023 enterprise risk management workshop was organized with consultants to address and study enterprise-level risk factors. The 2023 Risk Management and Internal Control training programs were provided for the Risk Management Subcommittee along with management and all personnel to foster their awareness and understanding of risk management, enabling them to effectively manage risks within their respective units or areas of responsibility. The overall aim is to foster a risk management culture. Pre-training and post-training assessment were also conducted to improve future training programs.

Work Improvement Planning [3-3]

- Review the 2023 Risk Management Plan and identify risk factors for 2024 based on residual risks as well as determining mitigation measures.
- Analyze the risk management plan and submit issues, suggestions, and input for development to the committee to redefine policy and strategy accordingly.
- Develop a more effective Cyber Security Plan for 2024.

Business continuity and crisis management [3-3]

PEA is a vital player in electricity distribution services, a strategic commodity for all public and private sectors to function for the entire population across 74 provinces. Today, PEA faces multiple critical risks, including increasingly violent cyberattacks, natural disasters, protests, terrorism acts and sabotages, uncertainty in electricity demand, and higher requirements for system stability. Therefore, PEA must develop an effective business continuity management system (BCMS) under the ISO 22301:2019 Standard. This plan allows PEA to respond to potential threats and business emergencies, enabling the enterprise to deliver products (electricity) and services to customers continuously and promptly. It will also enhance PEA's business resiliency, enabling it to respond and safeguard the interests of its stakeholders, reputation, and image.

Goals [3-3]

- Continue to operate and provide electricity services uninterrupted, including during a disaster or an unforeseen event.
- Develop the PEA BCMS under the ISO 22301:2019 Standard, focusing on planning, execution, continuation, and regular improvement of the system.
- Achieve the defined Recovery Time Objective (RTO).
- Focus on addressing stakeholders' needs and expectations.

Operating Strategy [3-3]

- Establish guidelines for prevention, likelihood reduction, preparedness, emergency response, and recovery.
- Manage and mitigate risks from potential threats to business operations. Continuously review, improve, and exercise emergency response plans to foster a culture of readiness.
- Encourage all personnel to develop knowledge and understanding of business continuity management and actively participate in implementing business continuity policies.
- Monitor and evaluate the implementation of the PEA BCMS.

PEA
PROVINCIAL ELECTRICITY AUTHORITY

Business Continuity Policy

Committed to providing electrical services in an uninterrupted manner, PEA has mapped out a crisis prevention and preparedness plan underlined by a Business Continuity Management System (BCMS) to mitigate impacts and achieve effective response. Below are elements of such policy:

1. Be relentlessly committed to distribute electricity and keeping business running even in view of potential interruptions resulting from threats of natural disasters as well as from human beings and epidemics, apart from incidents affecting the ICT system.
2. Advocate PEA BCMS alignment with international standards by focusing on planning, implementation, maintenance, and improvement of business continuity management.
3. Advocate all work units' conformance to the PEA BCMS with a focus on risk management of threats of business interruptions, plan revision and amendment, and continual plan drills to the point of organizational culture formation.
4. Support all personnel's mastery and awareness of business continuity management by applying digital technology to the compilation, monitoring, and access to data and information about business continuity management and various threats in a comprehensive and efficient way.
5. All personnel must participate in the effort to enable PEA to relentlessly and sustainably conform to the BCMS.
6. In place are the monitoring and assessment of PEA BCMS performance outcomes.

Announced on 31 January 2022.

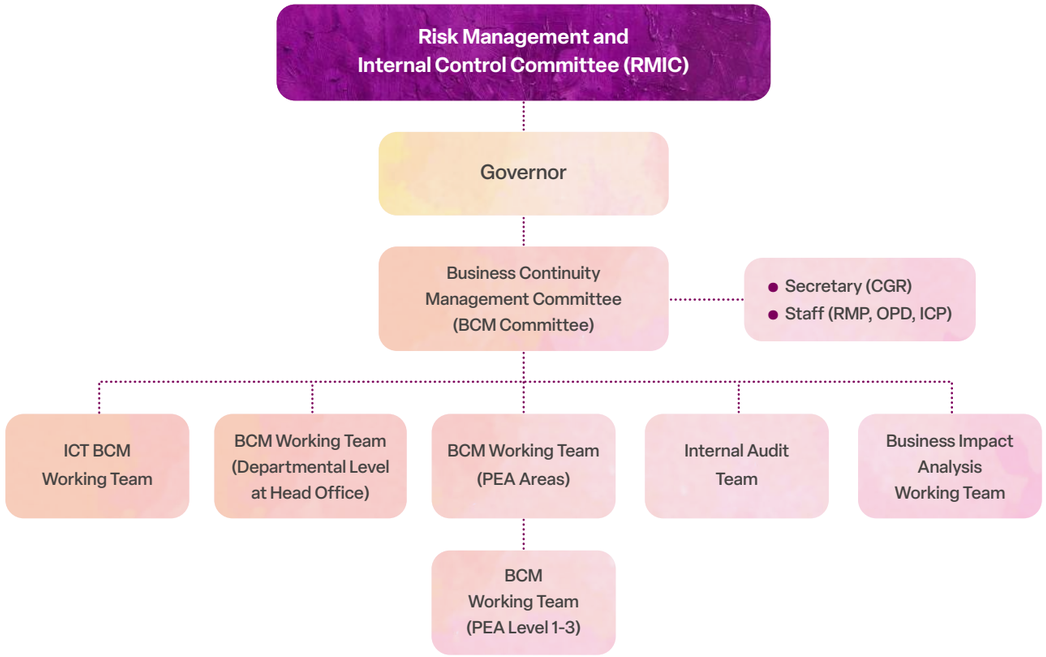
Supachai Ek-un
Governor

SCAN ME

Business Continuity Policy [2-23]

Business Continuity and Crisis Management [3-3]

PEA has established a Business Continuity Management Committee to manage business continuity and crises, with the following roles and responsibilities:



1. Defining the Business Continuity Management Policy consistent with the guidelines of ERC and SEPO, as well as PEA's Operation Risk Management Policy, to be submitted to the PEA Governor for review and approval.
2. Endorsing a list of identified critical missions, RTO, strategies, and the implementation of the BCP.
3. Assigning responsible parties to implement the BCP as well as preventing and responding to emergency situations.
4. Submitting the progress of BCP implementation, as well as the emergency prevention and response plans, to the Governor for consideration.
5. Setting guidelines for communicating the Business Continuity Management Policy and BCP to the workforce.
6. Setting guidelines for communicating information to the workforce and external stakeholders about crises potentially affecting the organization's business operations and reputation.
7. Establishing a subcommittee and determining its authorities under the Business Continuity Management Committee (BCM Committee). This subcommittee will ensure compliance with the Business Continuity Management Policy and the achievement of goals set by the BCM committee.
8. Having the authority to summon relevant individuals for clarification or request additional documents from relevant departments to ensure that the committee fulfills its objectives.

BCMS, developed under the ISO 22301:2019 Standard (security and resilience – business continuity management systems), ensures that PEA efficiently and effectively manages crises or disasters and commands the capability of addressing various incidents, recovering critical business processes in a timely manner, and delivering an uninterrupted distribution to consumers. Also, it minimizes the impact of potential threats effectively. PEA has established the business continuity management processes, as shown below:

PEA's BCMS is divided into the following response phases:

Pre-Crisis	During-Crisis	Post-Crisis
Prevent and Prepare	**Manage During Crisis**	**Business Continuity, Restore, and Review**
• Every unit assesses the likelihood of future crises (low/high/very high) based on past and current disaster/crisis data. • Develop crisis response (ERP BCP RP) and crisis communication plans. • Establish a risk monitoring and alert mechanism. • Assign to respective personnel roles for crisis management. • Implement crisis response plan drills.	• Manage and monitor crisis by the guidelines. • Request support from external agencies. • Communicate crisis measures to the workforce and the public. • Adapt methods based on the actual situation.	• Continue to operate the business as planned. • Restore the business to normalcy. • Review and evaluate the efficiency of relevant plans. • Improve crisis management plans and processes. • Communicate plans to relevant functions to comply.

Remarks: ERP: Emergency Response Plan, BCP: Business Continuity Plan, RP: Recovery Plan

Performance Outcomes of Risk Management [3-3]

- PEA Head Office continued to secure re-certification for the ISO 22301:2019 Standard.
- Developed the PEA BCMS under international standards. ISO 22301:2019 was applied to the operations with information communicated and cascaded to 36 regional and area offices along with substations to ensure the effective implementation of PEA BCM
- Conducted BCP exercises on various key business processes to counter potential threats. The exercise incident scenarios are listed below in descending order:
  - Fire: 30%
  - Cyber attack: 20%
  - Car collision into electricity pole: 10%
  - Storm impacts distribution system and transmission lines: 10%
  - Office flooding: 10%
  - Covid-19: 10%
  - Riot and protest: 5%
  - Sabotage to office/distribution system and transmission lines: 3%
  - Submarine cable damage: 2%
- Conducted Disaster Recovery Planning (DRP) drills and a full BCP exercise, in which ransomware was found at the Head Office, harming the server at the DC Site Phase 2 (SAP, BPM, and OMS systems) and necessitating relocation to the DR Site. The exercise restored services within the timeframe specified by the RTO.
- Conducted a cyber threat response drill involving information and operational technology systems and the Cyber Security Operations Center (SOC). The scenario was based on a real-life attack which targeted the energy sector, believed to be related to PEA. The drill was aimed to develop cyber threat response strategies and improve cyber incident response plans across the organization. Also, it improved understanding of the roles and responsibilities of relevant units, not only for internal incidents but also for those related to other sectors and even in cases of severe incidents with nationwide impacts. The drill was able to achieve its objectives and the expected results.
- Organized crisis communication and incident command training for executives to support and appreciate the principles of crisis management and emergency response, and to put this understanding into practice to meet the needs and expectations of stakeholders.

Automatic meter reading (AMR) and advanced metering infrastructure (AMI) systems, thus making the scope of PEA's BCM more comprehensive and complete

Work Improvement Planning [3-3]

- Improve the scopes of supportive activities and systems, including automatic meter reading (AMR) and advanced metering infrastructure (AMI) systems, thus making the scope of PEA's BCM more comprehensive and complete.
- Test and improve the PEA BCMS standards and manual to ensure their efficient implementation across all functions.
- Provide training and knowledge to develop internal auditors and support the expanded scope of PEA BCMS standard certification.
- Have an internal auditor conduct PEA BCMS certification audit and an external auditor validate compliance with the ISO 22301 Standard.

Performance Outcomes

SAIFI and SAID	**1.48** times/user/year and **27.58** minutes/user/year	**1.35 percent** and **0.58 percent** superior to the goal
Distribution system loss	**5.36**	**0.74 percent** superior to the goal
SCADA installation inlow-voltage distribution systems	**100** percent	meeting the goal

09-3 Security of Distribution Stability and Availability

Electricity represents a fundamental public utility and an essential driver of the domestic economy and society. As a supplier and service provider of electricity, PEA takes it most seriously to increase the ability of its distribution systems to be efficient, secure, stable, and sufficiently available to sustain rising power demand. By so doing, the public will see fully efficient electricity consumption, which promotes ongoing sustainable economic and social development while lowering risks to the public's quality of life due to interruptions in distribution systems. To this end, PEA is committed to developing distribution systems, smart grids, and smart cities with digital technology to sustain growth in domestic economic areas along with remote areas of the kingdom in line with the 13th National Economic and Social Development Plan (2023-2027) and domestic energy policies and strategies including the Energy 4.0 policy, Power Development Plans (PDPs), and Alternative Energy Development Plans (AEDPs).

Goals [3-3]

- 1.48 times/user/year in SAIFI
- 27.27 minutes/user/year in SAIDI
- 5.40 in percent loss in the distribution system
- 0.510 time/user/year in SAIFI for industrial estates
- 9.350 minutes/user/year in SAIDI for industrial estates
- 4.5591 marks (out of 5) in satisfaction with distribution systems in industrial estates
- 0.783 time/user/year in SAIFI for low-voltage distribution systems
- 72.211 minutes/user/year in SAIDI for low-voltage distribution systems
- Percentage of SCADA installation success for low-voltage distribution systems
- Percentage of target areas where massive EV expansion is expected, plans, and engineering models for upgrading the capability of power systems to sustain EV power consumption.

Operating Strategy [3-3]

- Revise relevant risk and define an approach for risk management, annual maintenance plans, and preventive maintenance plans to grow the efficiency and reliability of distribution systems
- Construct substations and monitor fully against plans to ensure sufficient distribution with credible security and the ability to meet a rising demand
- Improve and connect distribution systems in business zones and critical areas to sustain expanding economic zones
- Improve the infrastructure of smart grids to sustain future renewable energy and technologies
- Maintain the measure of no electricity cuts for households with bed-ridden people.

Security Management of Distribution Stability and Availability [3-3]

- Project demand with a forecasting model, statistical methods, and assorted hypotheses bearing on future electrical power consumption by analyzing data and planning substations and transmission lines to sustain rising power demand
- Analyze the approach to strengthening security for power systems in the short term (2023-2024) and long term (2022-2028) by employing the main program, namely the DIgSILENT Power Factory program, which can analyze generation, transmission, and distribution systems, both steady-state and transient-state. It plays a key role in analyzing various problems, including electrical flow, short-circuiting analysis, and stability analysis.
- Define explicit plans to cut distribution losses, both technical and non-technical, and develop distribution system maintenance for greater efficiency by focusing on preventive maintenance
- Develop smart grids in which ICT is harnessed to manage and control electricity generation, transmission, and distribution to sustain electricity system connection from distributed energy resources (DERs). In addition, smart grids can serve those users connected by smart meters in an efficient, secure, safe, reliable, and international-standard electricity quality. Cases in point are the application of voltage control in managing voltages to sustain EVs and power business liberalization.
- Define a PEA Smart Grid Roadmap in line with the Master Plan on Thailand's Smart Grid System Development 2015-2036, starting with staging, supporting pilot project research, defining a pilot project investment policy, and supporting ongoing investment in various infrastructures and technologies, including Advanced Metering Infrastructure (AMI), to sustain rising EVs and future REs and ESSs.

Performance Outcomes for Power Stability and Availability [3-3]

- 1.48 times/user/year in SAIFI, 1.35 percent superior to the goal [EU28]
- 27.58 minutes/user/year in SAIDI, 0.58 percent superior to the goal [EU29]
- 5.36 percent in distribution system loss, 0.74 percent superior to the goal
- 0.300 time/user/year in SAIFI for industrial estates, 41.18 percent superior to the goal
- 2.830 minutes/user/year in SAIDI for industrial estates, 68.77 percent superior to the goal
- 4.6245 marks (out of 5) in satisfaction with power systems in industrial estates, 3.92 percent superior to the goal
- 0.714 time/user/year in SAIFI for low-voltage distribution systems, 8.83 percent superior to the goal
- 42.814 minutes/user/year in SAIDI for low-voltage distribution systems, 40.71 percent superior to the goal
- 100-percent success in SCADA installation in low-voltage distribution systems, meeting the goal
- 100 percent of the target areas where massive EV expansion is expected and plans and engineering models for upgrading the capability of power system to sustain EV power consumption, meeting the goal.

Work Process	Performance Outcome
• Residential power consumers commanded higher growth than forecast, with 1.44-percent deviation • Medium-size power consumers commanded higher growth than forecast, with 0.20-percent deviation • Major power consumers posted lower growth than forecast, with 0.67-percent deviation	According to PEA's distribution outcomes for 2023, the year's growth equaled 3.04 percent, 0.51 percent higher than forecast, based on user types with discrepancies [EU10] • 148,976 GWh in power demand • 22,006,683 in total users

Improve the quality and security of smooth power distribution, **reduce the frequency of outages**, notably in industrial and urban zones

Work Improvement Planning [3-3]

- Amend polices and regulations to favor smart-grid development and encourage PEA's infrastructural development investment
- Upgrade the quality of low-voltage distribution systems to sustain the power industry's transformation by developing such distribution systems for security and reliability, notably for target areas where EVs are expected to mushroom
- Improve data quality on a par with ISO/IEC 25012: Data Quality Model standard to grow the confidence in data exploitation, meet users' expectations including grid analysis conduct, which features prominently in planning network expansion and management to address power demand and DERs integration
- Improve and connect power distribution systems in zones with businesses, industries, industrial estates, and critical areas so that they may have electrical infrastructure that is comprehensive, sufficient, stable, standard, and capable of sustaining expanding domestic economic and strategic zones
- Improve the quality and security of smooth power distribution, reduce the frequency of outages, notably in industrial and urban zones. Grow the efficiency and security of power systems in domestic business and strategic zones.

Performance Outcomes

Related/downstream business revenue	8,605.95 million baht	exceeding the goal
The preparation for power business liberalization plan	100 percent	meeting the goal
The preparation for organization structure and personnel / business process design to sustain power business liberalization	100 percent	meeting the goal

09-4 Handling of Business Transformation

Today's circumstances and other environmental factors are volatile and ongoing, including shifting electricity consumption of the public and digital disruption resulting from innovation or novel technologies, which have transformed business processes and models as well as lifestyles. In addition, world politics has affected energy costs. The value given to clean energy and public policy alike have clearly impacted PEA. So, to ensure that our management and operations are filled with resilience, meaning efficient adaptation and coping with business operation models to meet stakeholders' needs and expectations, PEA values systematic management as well as the design and revision of work systems before integrating them with our business. The bottom line is operations that are ready to handle transformation, competitive, and responsive to sustainable development—PEA's objectives.

Goals [3-3]

- Evolve work systems and key processes, including an organization structure and job descriptions to address internal and external factors, including public policy and PEA's strategic plans, business trends, and digital technology
- Prepare and develop personnel caliber so that they may be skilled and competent enough to handle a shifting environment in keeping with technological transformation and future electrical power
- Manage change and achieve the objectives of projects so that affected stakeholders may be aware, acknowledge, understand, implement, and form a culture of change
- Percentage of process improvement to address services to related and downstream businesses
- 7,100 million baht in the revenue of related and downstream businesses
- 100-percent success in the formulation of plans to prepare for power business liberalization
- 100-percent success in the preparation for organization structure and personnel / business process design to sustain power business liberalization

Operating Strategy [3-3]

- Assess and analyze internal and external environments concerning PEA's transformation, including the public policy advocating clean energy, notably solar cells and EVs, as well as cost volatility and energy stability. The aim is to identify risks and opportunities which prime PEA for change
- Evolve an organization structure, work systems, and work processes for efficiency
- Steadily review PEA's business architecture (BA) to align with shifting internal and external factors so that this BA may serve as guidelines and data for improving work systems and work processes, organization structure, and duties and responsibility
- Map out a change management plan for key projects that affect PEA
- Study and analyze stakeholders and the impacts of change. Conduct a gap analysis to improve and develop applicable operations.

Management of Handling of Business Transformation [3-3]

- Design and review work systems and their requirements together with work processes in the aspects of integration and competition that align with PEA's context. Cases in point are vision-related business directions, specialization, strategic plans, stakeholders' needs and expectations, laws, public policies, and applicable regulators.
- Add requirements that focus on addressing stakeholders' and customers' needs consistent with the change in the environment and technology (economic, social, and environmental) and sustaining innovation, business opportunities, and PEA's competitiveness. Proper regard is given to the harnessing of suppliers'/ partners' specialties in supporting PEA's pursuit of strategic objectives and goals.
- Investigate and develop appropriate business models in the aspects of customer group identification, service provision / fees, and accounting / financial, legal, and technical processes
- Develop and seek approval of the resulting business models, procedures, contracts / agreements concerning customer group service, including government agencies, companies, and households. To this end, PEA publicizes business data and coordinates among public and private agencies interested in participation, including the EV charging business catering to EV fleets and installation of solar rooftop generators.
- Consult related work units to consider potential impacts and include them in contract terms or service agreements

Performance Outcomes of Handling of Business Transformation [3-3]

- Integrated the design and work system review process, work processes, requirements of work systems with individual processes and related work units in line with BA
- Launched and scaled up PEA provincial pilot projects and pilot projects to accommodate organizational restructuring
- 100-percent success of the business portfolio implementation plan, marked by 8,605.95 million baht in related/downstream business revenue
- 100-percent success of the improvement of significant processes for raising related/downstream business revenue
- 100-percent success of the preparation for power business liberalization plan
- 100-percent success of the preparation for organization structure and personnel / business process design to sustain power business liberalization.

Work Improvement Planning [3-3]

- Continuously monitor macro-changes in the public policy to revise and improve work systems as well as work processes as well as planning to efficiently sustain anticipated changes
- Plan transitioning to restructure PEA and personnel management to duly accommodate future power business restructuring in skill development for affected personnel, specifically upskilling, reskilling, and new-skilling
- Map out change management plans for key projects and those affecting PEA
- Revise and evolve performance monitoring systems consistent with PEA's work systems and work processes.

9 INDUSTRY, INNOVATION AND INFRASTRUCTURE

Performance Outcomes

Commercialized innovations, innovations used as standard tools, or revenue-generating or cost-reduction processes	22 item	exceeding the goal
Innovation revenue/ expenditure saving due to the application of innovations	76.2 million baht/ 2,052 million baht	
The operating plans on innovation under PEA's innovation master plan	100 percent	meeting the goal

09-5 Digital Technology Innovation, Research and Development (R&D) for Greater Business Capability

At PEA, we value the management of digital technological innovation as well as R&D to drive business. We advocate creativity and drive its application to products, processes, and new business models to raise operating efficiency and keep up with change, while fostering competitive and sustainable PEA development advantages.

Goals [3-3]

- 100-percent success in PEA's digital operation plan
- No less than five commercialized innovations adopted as standard tools or income-generating / cost reduction tools for PEA
- 100-percent innovation implementation under PEA's master plan for 2023.

Operating Strategy [3-3]

- Define an innovation policy, direction, and strategic position consistent with the innovation vision for "PEA's employing innovation as a critical tool for adding value to products, services, work processes, and for supporting its strategy for becoming a modern organization as well as a regional innovation organization."
- 2023-2026: Digital and green energy innovation
- 2027-2036: Smart energy innovation
- 2037: Sustainable innovation organization.

Innovation and Intellectual Property Policy

Valuing the management of innovation and intellectual property as well as the application of innovation to business operations, PEA advocates creativity and a drive to leverage product innovation, process innovation, and new-business model innovation under a code of governance, ethical standard, and professional code of conduct. The aim is to grow business efficiency in step with imminent change while advocating PEA as an organization of innovation to bring about sustainable competitive as well as organizational development advantages. Below are elements of PEA's innovation and intellectual property policy:

1. **Creativity:** PEA advocates the nurturing of sufficient ambience and resources for promoting personnel creativity and innovations to grow business efficiency and scale up to application inside the organization as well as commercial application for the core, related, and upcoming businesses.
2. **Innovation and intellectual property management:** PEA values the management of innovation data and intellectual property to systematically support their exploitation.
3. **Exploitation of innovation and intellectual property and inspiration:** PEA advocates exploitation of innovation and intellectual property. Also, in place are regulations, rules, criteria, and inspiration designed to stimulate PEA's practical innovations.
4. **Protection of rights and avoidance of intellectual property violation:** PEA's work on innovation and intellectual property will receive due protection as a measure against unauthorized application. PEA's personnel must respect such rights and refrain from violating others' rights to innovation and intellectual property.
5. **Management of innovation and intellectual property:** At PEA, in place is a management system and a responsible unit in charge of innovation and intellectual property with sufficient budget and resource allocation for concrete implementation and efficient linkage among related units.
6. **Forging of awareness of intellectual property:** PEA commands communication channels and promotion of all personnel's competency and exploitation of innovations and intellectual property.

Announced on 19 January 2022.

Unsit Sampuntharat
Chairman, Board of Directors

SCAN ME

PEA's Innovation and Intellectual Property Policy [2-23]

DO NOW

2023 | 2024

Focus on the efficiency and creation of sustainability in driving PEA's digitalizationthrough the strengthening structure and basic systems, management of urgent issues that are vital to operations, and institution of holistic standards and operating guidelines to advocate systematic development, streamline operations and investment, and prevent digitalization risk.

DO NEXT

2025 | 2026

Upgrade and integrate PEA's digitalization through extending the development scope from pilot work and developing advanced digital technology consistent with business and operating challenges. Also, value efficient digital extension to create value from such application and leverage digital technology for PEA's business outcomes.

INTO THE NEW

2027

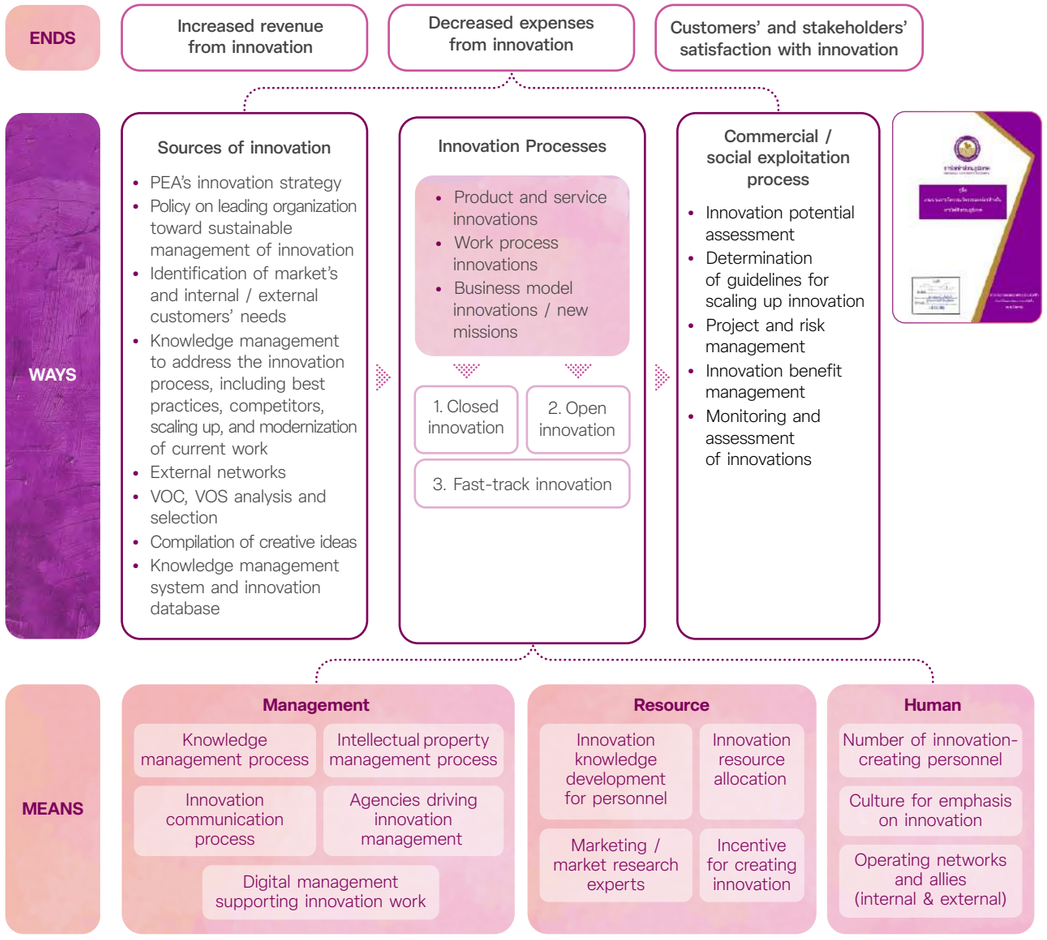
Scale up and make strides toward operating and absolute digital operation. Alter operating roles and modes according to industrial transformation through digital embedding into the routine operating mode, assuming the DSO of the Future role, and providing innovative energy services to drive PEA toward its vision and goals in a sustainable way.

- Define the direction and digital strategic positioning in pursuit of the PEA Digital Utility in three stages.
- Operate under the ISO 56002:2019 innovation management system
- Operate under the Innovative Organization Model (IOM) scope.

Management of Digital Technology Innovation, R&D for Greater Business Capability [3-3]

PEA developed its Innovation Master Plan 2023-2027 to upgrade organizational management for consistency with international guidelines for digital and innovation. Human capital development serves as the core driver of the corporate innovation system (CIS). Digital and innovation application lead to work process improvement, while efficient data system integration falls in line with the strategic objectives of PEA's strategy 2023-2027. The key elements of PEA's strategy for driving innovation appear below:

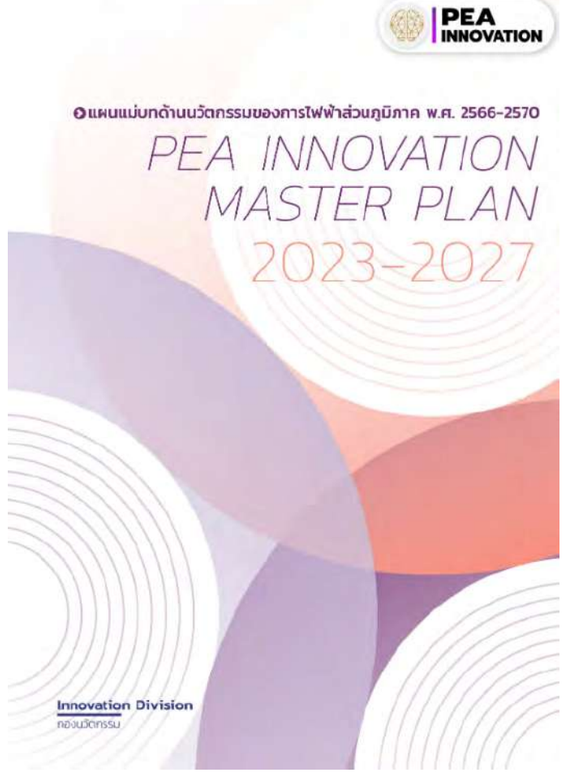
Corporate Innovation System (CIS)



- **Improvement of innovation process:** Revise and cascade innovation strategy into practice. Revise the CIS and formulate / revise the innovation portfolio (data and information) for developing innovation with a focus on customers and market as well as for upgrading knowledge management into innovation.
- **Networking and new innovation culture:** Serving as role models / supporters through drivers of values, management take part in various activities for fostering an ambience for creativity and innovation, upgrading and developing competencies and potential for creative ideas and the organization's innovation management, and nurturing a culture and networks. The moves focus on innovation so that PEA personnel may be well-informed of the significance of creativity and innovation in addition to knowledge management into innovation creation through the performance management system and the incentive system.
- **Obtain innovation benefits:** PEA achieves this by developing innovations for its own exploitation, scaling up to commercialization, and focusing on shaping its own image.

This year, PEA implemented the action plans under such strategy, as summarized below:

Strategy	Action Plan
Improvement of innovation process	• Formulation of innovation master plan and innovation management plan, and cascading of both • Revision of CIS, innovation portfolio, and innovation management manual • Compile Big Data and apply data analytics to develop innovation with a focus on customers and the market • Formulation of a knowledge management process leading to innovation
Networking and new innovation culture	• Supporting management's becoming role models / supporters and the main tools for nurturing an ambience and culture of innovation • Upgrading and developing of competencies and potential for harnessing creativity and managing PEA's innovation • Cultivation of values and promotion of innovation culture • Development of an incentive system for clear, concrete innovation development
Obtain innovation benefits	• Promotion of creativity and commercialization of inventions / innovations and PEA's application • Driving and advocating innovation contests (domestic and abroad)



SCAN ME

PEA Innovation Master Plan 2023-2027 [2-23]

In addition, PEA formulated its Digital Operating Plan 2023-2027 (Revision 2, 2024) in pursuit of excellence in business processes, network and asset management, facilitation of electricity users, and establishment of national sustainability via having its own efficient distribution systems and developing the efficiency of every business system to meet the needs and expectations of customers and all stakeholder groups. PEA therefore defined critical strategy for driving digital work through five key elements:

- **Upgrade digital energy operations** for excellence by upgrading the management of power networks' technology and operation, enhancement of smart grids, promotion of leadership in the liberalized power business, and the drive toward distribution system operator (DSO) of the future
- **Connected customers** by evolving the competency and modifying services through digital channels, upgrading sales and marketing competencies, and evolving new business opportunities in line with industrial transformation and business trends
- **Next-generation enterprise**, achieved by digitizing PEA's operation, upgrading organizational management with technology, evolving supply chain management along with its data management and integration to scale up data analytics for optimal business management while driving digital excellence in an integrated manner
- **Driving talent and organization** by upgrading PEA's approach for managing and developing its personnel through their careers. To this end, PEA can nurture positive experiences digitally while enhancing digital knowledge, skills, and culture to become an agile organization that, through efficient change management, eventually becomes a digital entity
- **Digital platform** achievement by upgrading digital platform and application management by applying international standards to an efficient and systematic organization. Also, evolve infrastructure consistent with operating directions and technological trends. Finally, enhance cyber security capability.

These five elements fall into two groups. First, the business group: focusing on addressing PEA's mission in managing the organization and providing direct services. Second, cross-cutting: focusing on evolving a foundation for sustainable digitization in technological and operational aspects.

BUSINESS GROUP

Upgrade digital energy operations for excellence by upgrading the management of power networks' technology and operation, enhancement of smart grids, promotion of leadership in the liberalized power business, and the drive toward distribution system operator (DSO) of the future

Connected customers by evolving the competency and modifying services through digital channels, upgrading sales and marketing competencies, and evolving new business opportunities in line with industrial transformation and business trends

CROSS-CUTTING

Next-generation enterprise, achieved by digitizing PEA's operation, upgrading organizational management with technology, evolving supply chain management along with its data management and integration to scale up data analytics for optimal business management while driving digital excellence in an integrated manner

Driving talent and organization by upgrading PEA's approach for managing and developing its personnel through their careers. To this end, PEA can nurture positive experiences digitally while enhancing digital knowledge, skills, and culture to become an agile organization that, through efficient change management, eventually becomes a digital entity

Digital platformachievement by upgrading digital platform and application management by applying international standards to an efficient and systematic organization. Also, evolve infrastructure consistent with operating directions and technological trends. Finally, enhance cyber security capability.

Under such digital strategy, in 2023 PEA has executed plans / projects under its digital operating plan as follows:

Strategy	Plan/Project
Digital energy operations	• Capital Project Management Enhancement • Work-D Super App Enhancement • Outage Management Improvement – Phase 2 • Operation & Maintenance Digital Enhancement • Smart Grid and Smart Meter Expansion • GIS Enhancement – GIS Phase 4 • SCADA Enhancement Phase 2 • Market Management Platforms • Investigate and evolve a DER prototype on PEA's distribution systems with virtual power plant (VPP) technology
Connected customers	• Customer Journey Design • End-to-End Customer Operation Process Design • Digital Marketing & Sales Strategy • Contact Center Enhancement • Advanced Digital Services across Channels • Evolving PEA Energy Services
Next-generation enterprise	• Digital Strategy Refresh • BPM Expansion • Smart Contract and Legal Management • GRC Management System • Digital Supply Chain Transformation • Data-Driven Business CoE • RPA CoE
Talent and organization	• Future Workplace Management • HR Development Platform • End-to-End HR Process Redesign and Transformation • Employee Journey Design • Seamless PEA Life & Employee Community Enhancement • Digital Transformation Change • Digital Leadership Accelerator Program
Digital platforms	• Application Transformation – The Next Generation • IT Infrastructure and Communication Infrastructure • Virtual Desktop Infrastructure • PEA Cloud Enhancement • COBIT & ISO 38500 Certification • IT Service Enhancement • Integration Architecture and Strategy Development • IT Portfolio Management • Application Development and Maintenance Process Redesign • Cyber Security Enhancement

SCAN ME

PEA Digital Operation Plan 2023-2027 (Revision 2, 2024) [2-23]

Note that PEA has tracked its innovation effectiveness by reporting innovation master plan performance outcomes under the master plan along with innovation activities to the PEA Governor, the Executive Committee, and the Board of Directors for acknowledgment and comments every quarter. In addition, tools are in place for tracking innovations at the development project level via www.incube.pea.co.th so that the working group on inventions and innovations of each area/function may monitor development of innovations in their own units.

Improve/evolve channels for selling innovation goods through the digital system and publicize these channels to grow income from the sales of innovation goods

Performance Outcomes on Digital Technology Innovation, R&D for Greater Business Capability [3-3]

- 99.90 percent in the success of the PEA Digital Operation Plan. This fell below the goal for the inability to operate in time for the last budget disbursement process this year.
- 100-percent success in the operating plans on innovation under PEA's innovation master plan for 2023
- 76.2 million baht in innovation revenue
- 2,052 million baht in expenditure saving due to the application of innovations
- 22 items of commercialized innovations, innovations used as standard tools, or revenue-generating or cost-reduction processes in 2023 (former EU8). A total of 244.24 million baht of budget had been allocated for innovation R&D this year.

Work Improvement Planning [3-3]

- Improve/evolve channels for selling innovation goods through the digital system and publicize these channels to grow income from the sales of innovation goods
- Amend laws, regulations, and processes concerning the selection / procurement / commercialized sales of innovation goods
- Amend the CIS in line with PEA's context and business guidelines.

Performance Outcomes

Commanding GMDM	100 percent	meeting the goal
Commanding a database for long-term asset management planning together with planning for assets in substations, meeting the goal	100 percent	meeting the goal
The process of preparing an international-standard Sustainable Finance Framework	due for completion by June 2024	ahead of schedule

09-6 Sustainability of Supply Chains

Committed to the development of efficient product procurement and services to prevent and ease environmental, social, and governance (ESG) risk, PEA stresses green financing, financial innovations for a more sustainable environment. To elaborate, we develop projects benefiting society and the environment in the long term and add options for fund mobilization for ESG bonds, which expand PEA's investor base, notably investors who consider sustainability factors ahead of their investment. This practice also primes the organization in conforming to domestic and international regulations on socio-environmental issues, which are likely to become stricter in the future. It also enables PEA to cope with pressure from those in the business ecosystem.

Goals [3-3]

- 100-percent success in commanding the Grid Model Data Management (GMDM), or the level of data quality for integrating management data as well as network and asset management data to grow the efficiency of electricity transmission and distribution systems
- 100-percent success in commanding a database for long-term asset management planning together with assets in substations
- Ability to mobilize funds through issuing ESG bonds, leveraging eco-friendly and social service projects, with a goal to issue sustainability bonds by August 2024.

Operating Strategy [3-3]

- Advocate ESG bond issuance, meaning green bonds, social bonds, or sustainability bonds, to address public policy for recognition of socio-environmental responsibility for the development of investment projects compatible with sustainable development goals together with the national directions and development strategy
- Evolve distribution systems that are efficient and reliable before upgrading them to smart grids under the power system leadership that meets the satisfaction of customers and stakeholders
- Evolve quality regional distribution systems under the Grid Modernization Roadmap.

Improve and develop eco-friendly projects to ensure they have a carbon neutrality roadmap in PEA's drive toward net zero emission through

ESG Bond

issuance

Approach for Sustainability Management of Supply Chains [3-3]

- Investigate procedures and methods for fund mobilization through ESG bonds. Conduct study visits to third-party agencies to properly master ESG bond issuance of international standards. To this end, PEA will be inviting experts from the Asian Development Bank (ADB) to serve as advisers for preparing a framework for the issuance for PEA's ESG bonds.
- Form a working group for ESG Bond issuance for efficient and successful issuance consistent with the goals of sustainable development as well as national directions and development strategy
- Ensure regular meetings of the focus groups to jointly examine and select good projects for ESG Bond issuance and jointly prepare a fund mobilization framework for ESG Bond issuance containing procedures and activity periods to enable ESG Bonds to be issued in time
- Integrate data for managing networks and assets for greater efficiency of submittal systems by executing the GMDM plan along with a plan to collect data, classify asset items, and record data.

Performance Outcomes [3-3]

- We are in the process of preparing an international-standard Sustainable Finance Framework, due for completion by June 2024. To this end, PEA will be seeking comments from external reviewers with in-depth proficiency in finance for sustainability and ESG criteria. These reviewers will provide independent views in line with the framework for such fund mobilization under internationally recognized standards. The Second Party Opinion (SPO) will be submitted to PEA for use in issuing ESG Bonds.
- 100-percent success in commanding GMDM, meeting the goal
- 100-percent success in commanding a database for long-term asset management planning together with planning for assets in substations, meeting the goal.

Work Improvement Planning [3-3]

- Since funding for sustainability is constantly evolving, the fund mobilization framework constantly needs improvement to align with emerging international standards
- Improve and develop eco-friendly projects to ensure they have a carbon neutrality roadmap in PEA's drive toward net zero emission through ESG Bond issuance
- Evolve allocation reporting and environmental impact reporting for investors, to be publicized via PEA's official website.

10 APPENDIX

Power Stability and Availability

Forecasting the Number of Electricity Customer by Tariffs [EU10]

Group	Actual	Forecast (No. of Customers)						
	2023	2023	2024	2025	2026	2027	2028	2029
Residential	19,364,315	19,399,761	19,749,846	20,136,287	20,511,948	20,887,829	21,288,403	21,664,878
Percent increment	1.34	1.53	1.80	1.96	1.87	1.83	1.92	1.77
Small General Service	1,793,780	1,791,959	1,874,668	1,946,253	2,028,727	2,115,506	2,202,691	2,278,033
Percent increment	2.72	2.61	4.62	3.82	4.24	4.28	4.12	3.42
Medium General Service	92,794	92,674	94,918	97,896	101,159	104,592	107,259	109,429
Percent increment	8.15	8.01	2.42	3.14	3.33	3.39	2.55	2.02
Large General Service	7,976	7,981	8,253	8,607	8,932	9,293	9,667	9,882
Percent increment	3.02	3.09	3.41	4.29	3.78	4.04	4.02	2.22
Specific Business Service	14,815	15,252	15,548	16,285	17,290	17,759	18,043	18,740
Percent increment	13.66	17.02	1.94	4.74	6.17	2.71	1.60	3.86
Non-profit Organization	1,047	1,061	1,061	1,061	1,061	1,061	1,061	1,061
Percent increment	0.48	1.82	0.00	0.00	0.00	0.00	0.00	0.00
Agricultural Pumping	5,714	5,898	6,093	6,232	6,426	6,599	6,818	7,023
Percent increment	1.71	4.98	3.31	2.28	3.11	2.69	3.32	3.01
Temporary Service	433,868	433,924	451,896	476,222	503,811	525,006	539,788	555,872
Percent increment	2.57	2.58	4.14	5.38	5.79	4.21	2.82	2.98
Total Excluding Free-of-charge Electricity	21,714,309	21,748,510	22,202,283	22,688,843	23,179,354	23,667,645	24,173,730	24,644,918
Percent increment	1.52	1.68	2.09	2.19	2.16	2.11	2.14	1.95
Free-of-charge Electricity	292,374	290,718	303,930	312,252	323,765	338,051	352,322	366,481
Percent increment	4.39	3.80	4.54	2.74	3.69	4.41	4.22	4.02
Total	22,006,683	22,039,228	22,506,213	23,001,095	23,503,119	24,005,696	24,526,052	25,011,399
Percent increment	1.55	1.70	2.12	2.20	2.18	2.14	2.17	1.98

Remarks: Large general services include stand-by electricity and interruptible electricity supply

Forecasting the Electricity Energy Consumption by Tariffs [EU10]

Group	Actual	Forecast (GWh)						
	2023	2023	2024	2025	2026	2027	2028	2029
Residential	41,113	40,523	41,530	42,320	43,099	43,880	44,663	45,271
Percent increment	7.45	5.91	2.48	1.90	1.84	1.81	1.78	1.36
Small General Service	15,228	15,072	15,613	16,162	16,798	17,466	18,133	18,699
Percent increment	4.94	3.86	3.59	3.52	3.94	3.98	3.82	3.12
Medium General Service	23,564	23,517	24,326	25,206	26,168	27,182	28,261	29,095
Percent increment	4.93	4.72	3.44	3.62	3.81	3.87	3.97	2.95
Large General Service	59,164	59,561	61,600	64,255	66,690	69,392	72,233	73,877
Percent increment	-2.89	-2.24	3.42	4.31	3.79	4.05	4.09	2.28
Specific Business Service	4,400	4,467	4,816	5,136	5,485	5,645	5,739	5,962
Percent increment	25.44	27.37	7.81	6.64	6.80	2.91	1.67	3.88
Non-profit Organization	82	82	82	82	82	82	82	82
Percent increment	6.56	6.19	0.00	0.00	0.00	0.00	0.00	0.00
Agricultural Pumping	485	497	511	517	531	544	560	569
Percent increment	44.84	48.03	3.30	0.83	2.82	2.39	3.03	1.49
Temporary Service	1,008	1,007	1,049	1,105	1,181	1,244	1,291	1,330
Percent increment	9.26	9.10	4.14	5.38	6.89	5.27	3.86	2.98
Distribution Units Excluding free-of-charge Electricity	145,044	144,726	149,527	154,783	160,034	165,435	170,962	174,885
Percent increment	2.87	2.64	3.32	3.51	3.39	3.37	3.34	2.29
Free-of-charge Electricity	3,932	3,749	3,918	4,084	4,249	4,410	4,570	4,725
Percent increment	9.89	4.78	4.50	4.24	4.03	3.81	3.61	3.41
Consumption in PEA Areas	148,976	148,475	153,445	158,867	164,283	169,845	175,532	179,610
Percent increment	3.04	2.69	3.35	3.53	3.41	3.38	3.35	2.32
IPS-Solar Rooftops		263	407	551	707	864	1,027	1,189
Percent increment			54.76	35.38	28.41	22.12	18.84	15.85
Consumption in PEA Power Systems	148,976	148,212	153,038	158,316	163,576	168,981	174,505	178,421
Percent increment	3.04	2.51	3.26	3.45	3.32	3.30	3.27	2.24
High-speed Trains (stations)							159	159
Percent increment								0.00
High-speed Trains (rails)							288	296
Percent increment								2.87
Mass Transit Trains for 6 key Cities								9
Percent increment								
EEC			65	2,531	2,531	2,531	3,844	4,605
Percent increment				3811.52	0.00	0.00	51.88	19.80
EVs			309	656	1,143	1,792	2,538	3,400
Percent increment				112.55	74.14	56.81	41.61	33.95
Total New Demand			374	3,187	3,674	4,323	6,829	8,469
Percent increment				753.33	15.27	17.67	57.96	24.02
Total Consumption in Systems Including Future Projects	148,976	148,212	153,412	161,503	167,250	173,304	181,334	186,890
Percent increment	3.04	2.51	3.51	5.27	3.56	3.62	4.63	3.06

Remarks: Large general services include stand-by electricity and interruptible electricity supply

Forecasting the Electricity Energy Purchases [EU10]

Data	Actual	Forecast						
	2023	2023	2024	2025	2026	2027	2028	2029
Purchased from EGAT	145,381	144,821	150,186	158,100	160,217	162,213	168,969	173,446
Electrical power (GWh)								
Peak power (MW)	24,239	24,239	23,413	24,546	25,038	25,695	26,869	27,759
Purchased from VSPPs	11,794	11,716	11,838	12,448	16,400	20,796	22,535	23,911
Electrical power (GWh)								
Peak power (MW)	911	911	957	1,014	1,434	1,737	1,801	1,801
Purchased from Solar PV Rooftops	95.12	103.10	108.77	113.22	115.54	117.86	120.19	122.51
Electrical power (GWh)								
Peak power (MW)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Purchased from DEDE	53.62	86.63	96.63	129.83	139.25	150.46	150.46	173.24
Electrical power (GWh)								
Peak power (MW)	4.17	4.17	7.33	11.17	12.26	13.56	13.56	14.16
PEA-generated	95.60	101.17	101.17	101.17	101.17	101.17	101.17	101.17
Electrical power (GWh)								
Peak power (MW)	7.57	7.57	6.11	6.11	6.11	6.11	6.11	6.11
Total	**157,420**	**156,828**	**162,331**	**170,892**	**176,973**	**183,378**	**191,876**	**197,754**
Electrical power (GWh)	3.21	2.83	3.51	5.27	3.56	3.62	4.63	3.06
Percent increment								
Peak power (MW)	**25,162**	**25,162**	**24,384**	**25,577**	**26,490**	**27,452**	**28,690**	**29,580**
Percent increment	6.42	6.42	-3.09	4.90	3.57	3.63	4.51	3.10

Remarks: DEDE = Dept. of Alternative Energy Development and Efficiency
The 2023-2029 projections are those for short-term power demand used for preparing the 2024-2025 PEA budget (dated 20 November 2023).
Below are the scope and assumptions underlying this forecast:

1) Cumulative power distribution from January to August 2023
2) GDP estimated by NESDC based on data of 5 October 2023
3) Load profile data as of April 2019 and generation profile as of 2021, identical to those used for drafting the PDP2024 plan
4) % loss assumed to be constant at 5.49% year-round
5) VSPP capacity data
   - Existing VSPP data: Purchased units are assessed by % plant factors, obtained from PEA's data on actual units and capacities for 2022
   - SCOD data and new VSPPs, including new VSPPs and People-Sector Solar Projects: Purchased units are assessed by % plant factors, based on EPPO (Policy and Planning Division) data
6) Project data for new demand are the same set as those underlying the PDP2024 draft plan, which paid attention only to investment projects and public policy with explicit action plans and those not yet under consideration for GDP estimates:
   - High-speed trains (HST)
   - Mass transit trains for 6 key cities
   - EEC
   - EVs
7) As for the data on power demand outside conventional power systems, consideration is limited to IPS-Solar Rooftop projects, whose power demand units are estimated using % plant factors and the Gen Profiles of new solar rooftop projects obtained from EPPO (Policy and Planning Division).
   - The scope and assumptions for forecasting the number of electricity customers are
     1) Calculate consumed units per past year
     2) Projected consumed units per customer per year, assumed fixed through the forecast year
     3) Compute forecast number of users by using the projected power demand per customer per year

Power Loss

Type	Percent of Loss to Total Energy				
	2019	2020	2021	2022	2023
Total target loss	5.20	5.54	5.40	5.40	**5.40**
Total loss	5.37	5.47	5.45	5.21	**5.36**
Technical loss	3.97	4.10	4.02	4.01	**4.26**
Non-technical loss	1.40	1.37	1.43	1.20	**1.10**

Remarks: 1) Technical loss consists of loss through 115-kV transmission lines, 22-33 kV transformers, distribution system transformers, and low-voltage distribution systems
2) Total target loss refers to the state enterprise assessment criterion.

SAIFI and SAIDI [EU28] [EU29]

Type of Index	2019	2020	2021	2022	2023
SAIFI (EU28)					
Target SAIFI	3.17	2.74	2.25	1.83	**1.48**
Actual SAIFI	3.10	2.65	2.19	1.76	**1.46**
Target SAIFI for 12 key cities	1.174	1.036	0.893	0.893	**0.893**
Actual SAIFI for 12 key cities	1.036	0.893	0.661	0.547	**0.478**
SAIDI (EU29)					
Target SAIDI	75.78	57.58	44.80	35.25	**27.74**
Actual SAIDI	73.82	57.52	44.51	34.98	**27.58**
Target SAIDI for 12 key cities	14.853	13.364	10.558	10.558	**10.558**
Actual SAIDI for 12 key cities	13.364	10.558	8.522	6.039	**6.144**

Remarks:
- PEA's SAIFI and SAIDI excluded the three southernmost provinces
- PEA's SAIFI and SAIDI excluded events resulting from severe accidents, force majeure, catastrophes, and severe interruptions from power generation sources
- PEA's SAIFI and SAIDI for 12 key cities are limited to power interruptions, outages by request, and emergency operation resulting from circuit breakers
- Target SAIFI and SAIDI refer to the state enterprise assessment criterion
- PEA specified the target SAIFI and target SAIDI for 12 key cities.

Projects to Improve the Quality of Life through Electrification [EU6]

Ongoing Project	Objective	Detail of Operation	Project Target	Outcome	Investment (Million baht)
New Rural Household Electrification Project – 2nd Stage	Extend power access for thorough consumption by new households under public policy	• Construction of extended power service zones for 141,960 new households	Operating in all areas, except for those under the jurisdiction of MEA, where people do not yet have access to electricity	• Construction of extended power service zones for 158,184 new households • Project progress of 111.43% (Status in 2023)	6,565
			Total budget		**6,565**

Workforce

New Hires and Turnover [401-1]

Item		New Hires						Turnover					
		2021		2022		**2023**		2021		2022		**2023**	
		Persons	**%**	**Persons**	**%**	**Persons**	**%**	**Persons**	**%**	**Persons**	**%**	**Persons**	**%**
Change		1,168	100.00	1,165	100.00	**870**	**100.00**	1,365	100.00	1,240	100.00	**1,062**	**100**
Sex	Male	909	77.83	906	77.77	**583**	**67.01**	994	72.82	880	70.97	**769**	**71.71**
	Female	259	22.17	259	22.23	**287**	**32.99**	371	27.18	360	29.03	**293**	**28.29**
Age Span	Under 30 years	695	59.50	905	77.68	**712**	**81.84**	22	1.61	43	3.47	**37**	**5.43**
	30 - 50 years	467	39.98	260	22.32	**156**	**17.93**	44	3.22	58	4.68	**50**	**7.10**
	50 years and over	6	0.514	0	0	**2**	**0.23**	1,299	95.16	1139	91.85	**975**	**87.48**
Work Area	Head Office	185	15.84	221	18.97	**147**	**16.90**	152	11.14	149	12.02	**131**	**13.36**
	Northern	251	21.49	164	14.08	**167**	**19.20**	300	21.98	287	23.15	**232**	**21.07**
	Northeastern	258	22.09	206	17.68	**124**	**14.25**	321	23.52	304	24.52	**267**	**24.33**
	Central	258	22.09	343	29.44	**268**	**30.80**	327	23.96	281	22.66	**217**	**20.56**
	Southern	216	18.49	231	19.83	**164**	**18.85**	265	19.41	219	17.66	**215**	**20.68**

Dismissed Personnel by Cause 2023

Cause	Persons
Retirement before 60	-
Retirement at 60	922
Death	54
Discharge	13
Resignation	64
Expulsion	6
Layoff	3
Employment termination	-
Total	**1,062**

Employees Returning to Work and Retention Rates after Newborn Care Leave [401-3]

Type of Leave	2021			2022			**2023**		
	Male	Female	Total	Male	Female	Total	**Male**	**Female**	**Total**
Employees eligible for newborn care leave	20,870	7,298	28,168	20,893	7,197	28,090	**20,704**	**7,182**	**27,886**
Employees exercising the right to apply for newborn care leave	457	209	666	506	233	739	**574**	**228**	**802**
Employees returning to work after newborn care leave	440	163	603	483	176	659	**558**	**194**	**752**
Employees returning to work after newborn care leave and continuing to work for 12 months	408	157	565	453	209	662	**505**	**232**	**737**
Return-to-work rate [1] after newborn care leave at the end of the leave (%)	96.28	77.99	90.54	95.45	75.54	89.17	**97.21**	**85.09**	**93.77**
Retention rate [2] after newborn care leave at the end of the leave (%)	99.76	100	99.82	99.13	100	99.40	**99.80**	**99.57**	**99.73**

Remarks: (1) Return-to-work rate means the ratio between the number returning to work after the newborn care leave period to the number exercising their rights to newborn care leave times 100

(2) Retention rate means the ratio between the number returning to work after the newborn care leave period and still continuin to work 12 months after returning to the number returning to work at the end of such period in the previous reporting cycle times 100.

Number and Proportion of the Workforce by Diversity [405-1]

Item		Persons (Percent)				
Board of Directors		Board of Directors	Personnel			Total (1)
			Executives	Experts	Practitioners	
Total		14	7,851	4,563	15,469	27,886
Sex	Male	12 (85.71%)	5,543 (24.70%)	3,056 (13.21%)	12,105 (62.09%)	20,704 (74.36%)
	Female	2 (14.29%)	2,311 (30.74%)	1,507 (19.04%)	3,364 (50.22%)	7,182 (25.64%)
Age Span	Under 30 years	0 (0%)	1 (00.02%)	2 (00.05%)	4,174 (99.93%)	4,177 (16.22%)
	30 - 50 years	2 (14.29%)	4,071 (24.08%)	1,917 (11.44%)	10,580 (64.48%)	16,568 (62.91%)
	50 years and over	12 (85.71%)	3,782 (53.15%)	2,644 (35.93%)	715 (10.92%)	7,141 (20.87%)
Nationality	Thai	- (-%)	7,531 (26.26%)	4,351 (14.66%)	14,869 (59.08%)	26,751 (95.93%)
	Chinese	- (-%)	310 (52.17%)	201 (31.17%)	93 (16.66%)	604 (2.17%)
	Others	- (-%)	- (-%)	1 (100.00%)	- (-%)	1 (0.003%)
	Unspecified	- (-%)	13 (2.40%)	10 (1.86%)	507 (95.75%)	530 (1.90%)

Remarks: (1) Excluding the Board of Directors

Average Annual Employee Training Hours [404-1]

Training Hours	2021	2022	2023
Average training hours (hours/person/year)	57.84	35.04	**48.10**
Average Training Hours by Gender (hours/person/year)			
Male	47.74	20.41	**45.00**
Female	86.72	77.52	**57.04**
Average Training Hours by Group (hours/person/year)			
Executives	96.40	60.71	**138.86**
Experts	140.47	118.75	**84.75**
Practitioners	36.48	19.13	**7.71**

Remarks: (1) Executives: Deputy Governors, Assistant Governors, Department Directors/Managers Level 1, Deputy Department Directors, Division Directors, Center Directors, Electric Vocational School Directors, Managers Level 2-3 or equivalents, Deputy/Assistant Division Directors, Deputy/Assistant Center Directors, Deputy/Assistant Electric Vocational School Directors, Deputy Managers Level 1-2, Branch Managers, Assistant Managers Level 3, Section Heads, Sub-Branch Managers, and Assistant Section Heads
(2) Experts: Experts Level 12-13, Researchers Level 9-11, Specialists Level 9, Specialists Level 8, Researchers Level 7-8, and Professional Officers Level 7
(3) Practitioners: Researchers/Professional Officers Level 4-6 and Professional Officers Level 2-3.

Percentage of Employees Regularly Audited for Performance and Career Development [404-3]

Audited Employee	Audit / Performance Assessment Detail			
	Policy Work / Work Assigned by Superior	Own Responsibility	Creative Work	Value-Based Behavior and Work Behavior
By gender (percent)				
Male	94.45	94.45	94.45	94.45
Female	95.96	95.96	95.96	95.96
By personnel group (percent)				
Executives	94.40	94.40	94.40	94.40
Experts	94.16	94.16	94.16	94.16
Practitioners	95.26	95.26	95.26	95.26

Remarks: (1) Executives: Deputy Governors, Assistant Governors, Department Directors/Managers Level 1, Deputy Department Directors, Division Directors, Center Directors, Electric Vocational School Directors, Managers Level 2-3 or equivalents, Deputy/Assistant Division Directors, Deputy/Assistant Center Directors, Deputy/Assistant Electric Vocational School Directors, Deputy Managers Level 1-2, Branch Managers, Assistant Managers Level 3, Section Heads, Sub-Branch Managers, and Assistant Section Heads
(2) Experts: Experts Level 12-13, Researchers Level 9-11, Specialists Level 9, Specialists Level 8, Researchers Level 7-8, and Professional Officers Level 7
(3) Practitioners: Researchers/Professional Officers Level 4-6 and Professional Officers Level 2-3.

Safety, Occupational Health, and Work Environment

Collection of Data for Contractors under the Safety, Occupational Health, and Work Environment System [403-8]

Employees and Contractors under the Safety, Occupational Health, and Work Environment System					
Employees		Contractors		Contractor Employees	
27,866 Persons	100 Percent	5,911 Persons	100 Percent	25,221 Persons	100 Percent
Employees and Contractors under the Safety, Occupational Health, and Work Environment System Who Underwent Internal Audit					
Employees		Contractors		Contractor Employees	
27,866 Persons	100 Percent	5,911 Persons	100 Percent	25,221 Persons	100 Percent
Employees and Contractors under the Safety, Occupational Health, and Work Environment System Who Underwent External Audit / Certification					
Employees		Contractors		Contractor Employees	
128 Persons	0.46 Percent	319 Persons	5.40 Persons	152 Persons	0.60 Percent

Work Injuries [403-9]

Fatalities and Injuries of Employees and Contractors Whose Work or Operating Sites (or Both) are PEA-controlled	Injury Type (/)											Total Persons Involved in Events for $\sqrt{DI}$ Calculation	Total Persons Involved in Events Excluded from $\sqrt{DI}$ Calculation	Total (persons)	Work Hours	Fatality/ Injury Rate (Calculated for 200,000 work hours)
	Electrocution	Collision with Material	Vehicle	Fall from High Place	Burn	Slipping / Sliding	Collapsing Structure	Crumbling/Falling Object	Material cuts or stabs	Squeezing / pulling	Chemical / Poisonous animal					
Employees' Fatalities and Injuries																
Fatalities from work injuries	0	0	0	0	0	1	0	0	0	0	0	0	1	1		6,000
High-impact work injuries (excluding fatalities)	8	1	3	1	0	0	0	1	0	1	0	14	1	15	67,880,956	1,225
Recordable work injuries	8	3	9	2	0	0	1	0	1	1	0	19	13	32		7,225
Fatalities and Injuries of Contractors Whose work / Operating Sites (or both) are PEA-controlled																
Fatalities from work injuries	10	0	2	1	0	0	0	0	0	0	0	13	13	26		78,000
High-impact work injuries (excluding fatalities)	18	4	2	2	0	0	4	2	1	2	0	25	10	25	78,422,656	10,564
Recordable work injuries	40	13	8	6	0	1	7	4	3	4	0	46	35	81		88,564

Remarks:
- High-impact work injuries (excluding fatalities) mean level-3 to level-4 injuries under PEA's criteria that call for 180 days or more of lost workdays, excluding deaths
- Recordable work injuries include all work injuries along with deaths, high-impact injuries, lost and no-lost workdays
- Fatality/work injury rates are based on 200,000 man-hours
- To arrive at employees' and contractors' work hours, use "number of employees x number of workhours per day x number of workdays per week x number of weeks per year" and include the outcome with the hours worked by employees and contractors on duty as of 31 December 2022
- To arrive at contractors' work hours, use "number of contractors x number of workhours per day x number of workdays per week x number of weeks per year" as of 31 December 2022
- Computation of $\sqrt{DI}$ represents PEA's reporting. Disabling Injury Index (D.I.I) = IFR x ISR /1000 under ANSI (the US national standard), representing the relationship between the number of accidents in PEA's operation and the severity of PEA's work accidents, compared with the workhours of those who work for PEA. In other words, $\sqrt{DI}$ measures the quality of safety among state enterprises engaging in the same business (PEA, MEA and EGAT). It originated with a value designated by the State-Owned Enterprise Policy Office.
- The information presented in this section does not yet align with the GRI 403-9 guidelines. PEA will adjust the data presentation in the next reporting year

Work-Related Health Problems [403-10]

	Types of Health Problems			Persons	Fatality Rate (%)
	Stress, Depression or Anxiety	Musculoskeletal Disorders	Occupational Lung Disease		
Employees' Work-related Fatalities and Health Problems					
Fatalities due to work-related health problems	0	0	0	0	0
Recordable work-related health problems*	0	0	0	0	0
Fatalities and Work-related Health Problems of Contractors Who are Not Employees but Whose Work or Workplaces, or Both, are PEA-controlled (Contractor Employees)					
Fatalities due to work-related health problems	0	0	0	0	0
Recordable work-related health problems*	0	0	0	0	0

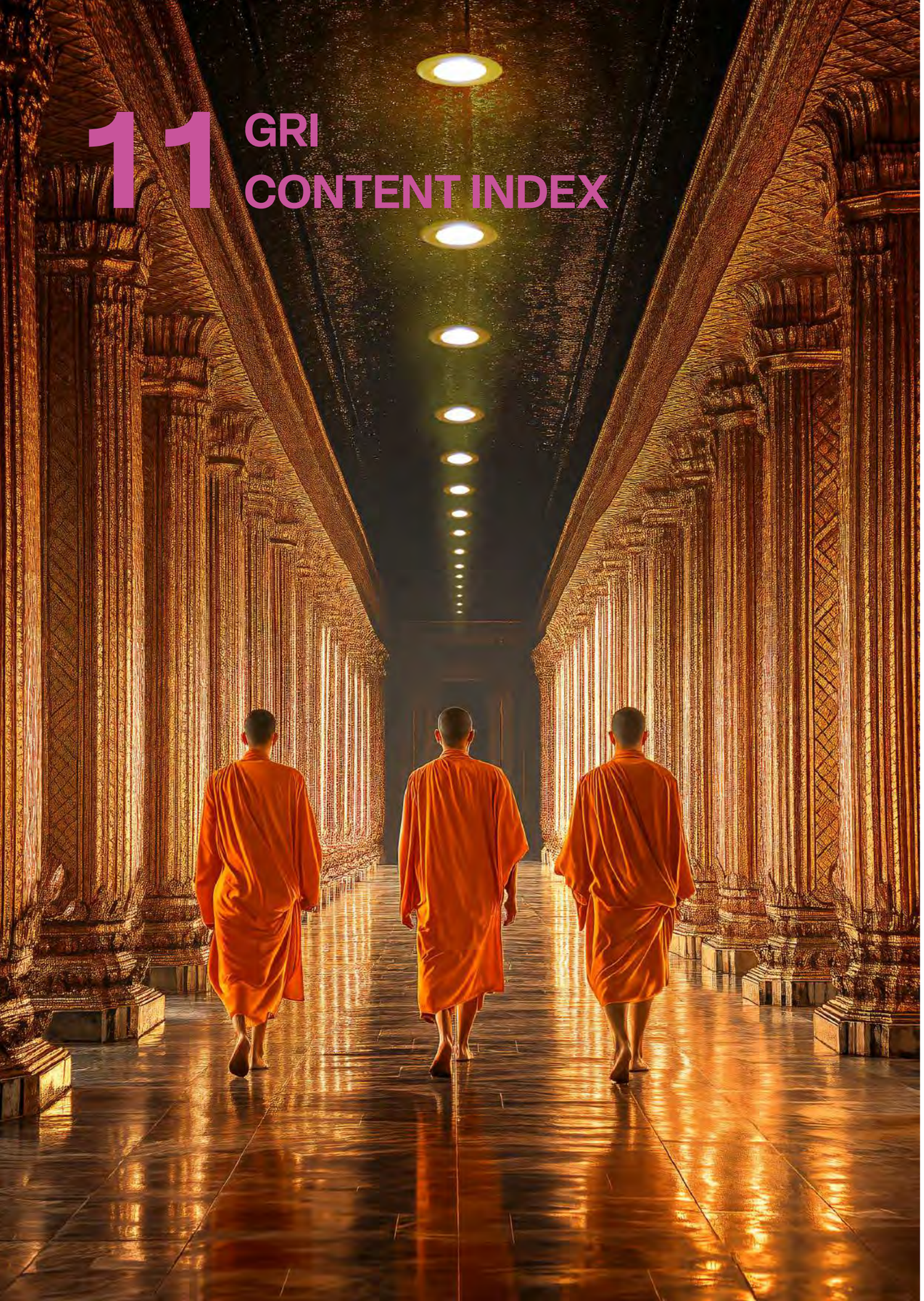
Remarks: * **Recordable work-related health problems** indicate poor health resulting in death, lost workdays, limited work or worksite transfer, medical care besides first-aid, insanity, or severe injuries as diagnosed by physicians or licensed medical occupational health practitioners.

Environmental Indicators

Scope	Indicator	Item	Unit	Volume				
				2019	2020	2021	2022	2023
1	PEA's electricity generation	Diesel firing	Liters	13,290,417	11,709,758	8,122,485.33	7,914,815	**13,607,913.93**
	Substation, electricity system, and engineering maintenance	SF6 consumption	Kg	560	820	480	360	**200.00**
	Fuel consumption by vehicles	Diesel consumption in vehicles	Liters	21,167,266	20,882,952	19,780,029	18,627,208	**32,135,722.00**
	Refrigerant leaks	R-22 consumption	Kg	2,037.62	1,454	956.76	1,057.19	**960.26**
		R-410A consumption	Kg	387	44	-	31	**9**
		R-134A consumption	Kg	153	32	-	20	**-**
		R-32 consumption	Kg	149	39	-	38.90	**682.19**
2	PEA's services	Electricity consumption in offices [302-1]	kWh	136,115,090	143,544,716	142,813,195	146,708,695	**164,894,521.15**
	Loss units in distribution	Loss units in power distribution	kWh	7,837,142,184.70	7,809,717,354.10	8,049,384,018.10	7,939,860,740.40	**8,443,469,915.00**
3	PEA's services	Volume of A4 paper consumption	Reams	129,731	127,498	132,538	131,547	**142,704**
		Volume of thermal paper consumption	Kg	38,292,340	6,133,184	6,351,278	1,682,879	**1,465,722**
		Volume of tap water consumption	m^3	1,268,641	1,513,664	1,580,738	1,682,742	**1,432,837**
	Substation, electricity system, and engineering maintenance	Purchased transformer fuel	Liters	670,218	1,641,600	1,683,400	1,571,800	**937,400.00**
	Electricity pole production from concrete products	Iron	Kg	-	8,969,515.52	9,289,747.21	10,521,531.40	**10,355,732.75**
		Cement	Kg	-	27,269,741.35	29,368,324.13	32,575,580.45	**26,858,715.82**
		Sand	Kg	-	55,986.73	58,362.84	59,855.49	**52,689.82**
		Gravel	Kg	-	19,835,741.82	84,397.32	87,072.81	**75,286.60**

Greenhouse Gas Emissions Summary[305-1][305-2][305-3][305-4]

GRI Index	Item	Unit	2019		2020	2021	2022	2023
302-1	Power units purchased	GWh	146,019.00		142,676.84	147,736.61	152,518.49	**157,419.58**
	Power units sold	GWh	138,170.66		134,885.17	139,687.23	144,578.62	**148,976.11**
	Total Loss	GWh	7,848.34		7,791.67	8,049.38	7,939.87	**8,443.47**
	Total Loss (%)	%	5.37%		5.46%	5.45%	5.21%	**5.36%**
	Electricity consumption in offices	GWh	-		-	-	-	**164,894.52**
305-1	Direct (Scope 1) GHG emissions	tCO_2e	140,397.56		143,435.56	151,671.48	141,947.14	**139,668.53**
	Biogenic CO2 Emissions	tCO_2e	-		-	-	-	**5,995.59**
305-2	Indirect (Scope 2) GHG emissions	tCO_2e	4,645,759.08		4,770,545.90	4,758,454.19	4,901,492.83	**5,152,966.95**
305-3	Other indirect (Scope 3) GHG emissions	tCO_2e	14,392,260.04		14,070,040.70	14,601,361.59	15,059,560.53	**15,560,002.88**
	Categories 1 Purchased goods and services	tCO_2e	5,265.42		9,426.15	44,445.03	33,623.54	**46,767.08**
	Categories 2 Capital goods	tCO_2e	-		-	-	-	**-**
	Categories 3 Fuel- and energy-related activities (not included in Scope 1 or Scope 2)	tCO_2e	14,386,894.96		14,059,356.05	14,556,916.56	15,025,936.99	**15,513,195.20**
	Categories 4 Upstream transportation and distribution	tCO_2e	-		-	-	-	**-**
	Categories 5 Waste generated in operations	tCO_2e	99.66		1,258.50	-	-	**40.60**
	Categories 6 Business travel	tCO_2e	-		-	-	-	**-**
	Categories 7 Employee commuting	tCO_2e	-		-	-	-	**-**
	Categories 8 Upstream leased assets	tCO_2e	-		-	-	-	**-**
	Categories 9 Downstream transportation and distribution	tCO_2e	-		-	-	-	**-**
	Categories 10 Processing of sold products	tCOve	-		-	-	-	**-**
	Categories 11 Use of sold products	tCO_2e	-		-	-	-	**-**
	Categories 12 End-of-life treatment of sold products	tCO_2e	-		-	-	-	-
	Categories 13 Downstream leased assets	tCOve	-		-	-	-	**-**
	Categories 14 Franchises	tCO_2e	-		-	-	-	**-**
	Categories 15 Investments	tCO_2e	-		-	-	-	**-**
305-4	GHG emissions intensity (Electricity sold/GHG Scope 1 and Scope 2)	kCO_2e/kWh	0.0346		0.0364	0.0352	0.0349	**0.0355**
	GHG Scope 1+2+3	**tCO_2e**	**19,178,416.68**		**18,984,022.16**	**19,511,487.26**	**20,103,000.50**	**20,852,638.37**



11 GRI CONTENT INDEX

Statement of use	Provincial Electricity Authority (PEA) has reported in accordance with the GRI Standards for the period start 1 January and end of 31 December 2023.
GRI 1 used	GRI 1: Foundation 2021
Applicable GRI Sector Standard	Not Applicable

GRI Standard / Other Source	Disclosure	Location	Omission	
			Reason	Explanation
General Disclosures				
GRI 2: General Disclosures 2021	2-1 Organizational details	22, 31		
	2-2 Entities included in the organization's sustainability reporting	235		
	2-3 Reporting period, frequency, and contact point	234-235		
	2-4 Restatements of information	30		
	2-5 External assurance	231-232		
	2-6 Activities, value chain and other business relationships	25-29 32		
	2-7 Employees	32-33		
	2-8 Workers who are not employees	32-33		
	2-9 Governance structure and composition	30, 146-152		
	2-10 Nomination and selection of the highest governance body	153-154		
	2-11 Chair of the highest governance body	154		
	2-12 Role of the highest governance body in overseeing the management of impacts	34, 155		
	2-13 Delegation of responsibility for managing impacts	35, 155		
	2-14 Role of the highest governance body in sustainability reporting	155, 235		
	2-15 Conflicts of interest	156		
	2-16 Communication of critical concerns	155, 162-163		
	2-17 Collective knowledge of the highest governance body	157		
	2-18 Evaluation of the performance of the highest governance body	158		
	2-19 Remuneration policies	158-160		
	2-20 Process to determine remuneration	158-160		

GRI Standard / Other Source	Disclosure	Location	Omission	
			Reason	Explanation
	2-21 Annual total compensation ratio	161		
	2-22 Statement on sustainable development Strategy	2-5		
	2-23 Policy commitments	24, 33, 36-38, 84, 91-92, 98, 110-111, 119, 123-124, 133, 143, 157, 183, 196, 199, 204		
	2-24 Embedding policy commitments	30, 35		
	2-25 Processes to remediate negative impacts	162-164, 172		
	2-26 Mechanisms for seeking advice and raising concerns	162-163, 165		
	2-27 Compliance with laws and regulations	161		
	2-28 Membership associations	33		
	2-29 Approach to stakeholder engagement	64-69		
	2-30 Collective bargaining agreements	97		
Material Topics				
GRI 3: Material Topics 2021	3-1 Process to determine material topics	49		
	3-2 List of material topics	50-53		
Stakeholders Engagement				
GRI 3: Material Topics 2021	3-3 Management of material topics (Responding to Stakeholders)	58-60		
Circular Economy System and Environmental Management				
	3-3 Management of material topics (Circular Economy System and Environmental Management)	71-75		
Energy and Asset Management				
GRI 3: Material Topics 2021	3-3 Management of material topics (Energy and asset management)	76-78, 80		
GRI 302: Energy 2016	302-1 Energy consumption within the organization	79, 220-223		
	302-3 Energy intensity	79		
	302-4 Reduction of energy consumption	79		
GHG Emission and Climate Change Mitigation Strategies				
GRI 3: Material Topics 2021	3-3 Management of material topics (GHG Emission and Climate Change Mitigation Strategies)	80-84, 87		
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	85, 222-223		
	305-2 Energy indirect (Scope 2) GHG emissions	85, 222-223		
	305-3 Other indirect (Scope 3) GHG emissions	85, 222-223		
	305-4 GHG emissions intensity	85, 222-223		
	305-5 Reduction of GHG emissions	86		
Occupational Health and Safety				
GRI 3: Material Topics 2021	3-3 Management of material topics (Occupational health and safety)	100-102, 108		
GRI 403: Occupational Health and Safety 2018	403-1 Occupational health and safety management system	102		
	403-2 Hazard identification, risk assessment, and incident investigation	103-105		
	403-3 Occupational health services	103		
	403-4 Worker participation, consultation,and communication on occupational health and safety	106-107		
	403-5 Worker training on occupational health and safety	108		
	403-6 Promotion of worker health	101-102		
	403-7 Prevention and mitigation of occupational health and safety impacts directly linked by business relationships	101-102		
	403-8 Workers covered by an occupational health and safety management system	217		
	403-9 Work-related injuries	218		
	403-10 Work-related ill health	219		
Community Health and Safety Preservation				
GRI 3: Material Topics 2021	3-3 Management of material topics (Customer health and safety)	109-115		
GRI 416: Customer Health and Safety 2016	416-1 Assessment of the health and safety impacts of product and service categories	111		
	416-2 Incidents of non-compliance concerning the health and safety impacts of products and services	114		
Customer Relationship Management				
GRI 3: Material Topics 2021	3-3 Management of material topics	116-120		

GRI Standard / Other Source	Disclosure	Location	Omission	
			Reason	Explanation
Data Security, Integrity of Information Technology and Customer Data Protection				
GRI 3: Material Topics 2021	3-3 Management of material topics (Customer privacy)	121-132		
GRI 418: Customer Privacy 2016	418-1 Substantiated complaints concerning breaches of customer privacy and losses of customer data	129		
Human Rights Assessment				
GRI 3: Material Topics 2021	3-3 Management of material topics (Human Rights Assessment)	88-99		
GRI 202: Market Presence 2016	202-1 Ratios of standard entry level wage by gender compared to local minimum wage	95		
	202-2 Proportion of senior management hired from local Community	97		
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	214		
	401-2 Benefits provided to full-time employee that are not provided to temporary or part-time employees	93-94		
	401-3 Parental leave	215		
GRI 404: Training and Education 2016	404-1 Average hours of training per year per employee	136, 216		
	404-2 Programs for upgrading employee skills and transition assistance programs	135		
	404-3 Percentage of employees receiving regular performance and career development reviews	217		
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	216		
	405-2 Ratio of basic salary and remuneration of women to men	96		
GRI 406: Non-discrimination 2016	406-1 Incidents of discrimination and corrective actions taken	99		
Electrical Accessibility and Affordability				
GRI 3: Material Topics 2021	3-3 Management of material topics (Electrical Accessibility and Affordability)	137-139		
	Number of new electricity users	209		
GRI G4 Sector Disclosure: Electric Utilities-Specific Information Disclosure of Electric Utilities Sector according to GRI (Access)	EU26 Percentage of Population Unserved In Licensed Distribution Or Service Areas	138		
Good Corporate Governance, Risk Management, and Regulatory Compliance Practices				
GRI 3: Material Topics 2021	3-3 Management of material topics (Anti-corruption)	140-142, 166-170		
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	166		
	205-2 Communication and training about anti-corruption policies and procedures	167-168		
	205-3 Confirmed incidents of corruption and actions taken	169		
GRI 206: Anti-competitive Behavior 2016	206-1 Legal actions for anti-competitive, anti-trust, and monopoly practice	161		
Stability and Reliability of the electrical Power Provision				
GRI 3: Material Topics 2021	3-3 Management of material topics (Reliability of the electrical system)	188-191		
GRI G4 Sector Disclosure: Electric Utilities-Specific Information Disclosure of Electric Utilities Sector according to GRI (Availability and Reliability)	EU6 Management approach to ensure short and long-term electricity availability and reliability	213		
	EU10 Planned capacity against projected electricity demand over the long term, broken down by energy source and regulatory regime	190, 209-212		
	EU28 Power outage frequency	190, 213		
	EU29 Average power outage duration	190, 213		
Adapting to Readiness to Change Business Models				
GRI 3: Material Topics 2021	3-3 Management of material topics (Adapting to Readiness to Change Business Models)	192-194		
Innovation Management, Research and Development with Digital Technology				
GRI 3: Material Topics 2021	3-3 Management of material topics Research and development activity and expenditure aimed at providing development (former EU8)	195-205		
Supply Chain Management				
GRI 3: Material Topics 2021	3-3 Management of material topics (Supply Chain Management)	206-207		

12 EXTERNAL ASSURANCE

LRQA Independent Assurance Statement

Relating to Provincial Electricity Authority's Sustainability Report for the calendar year 2023

This Assurance Statement has been prepared for Provincial Electricity Authority in accordance with our contract but is intended for the readers of this Report.

Terms of engagement

LRQA was commissioned by Provincial Electricity Authority (PEA) to provide independent assurance on its Sustainability Report 2023 ("the report") against the assurance criteria below to a limited level of assurance and at the materiality of professional judgement of the verifier, using LRQA's verification procedure. LRQA's verification procedure is based on current best practice, is in accordance with ISAE 3000 and uses the following principles of - inclusivity, materiality, responsiveness and reliability of performance data.

Our assurance engagement covered PEA's main operations of procuring and distributing electricity to electricity users in the area of 74 provinces in Thailand (except Bangkok, Nonthaburi, and Samut Prakarn) and specifically the following requirements:

- Confirming that the report is in accordance with: GRI Standards (2021)
- Evaluating the accuracy and reliability of PEA's performance data and information for only the selected GRI indicators listed below: [1]
  - Environmental: GRI 305-1 Direct (Scope 1) GHG emissions, GRI 305-2 Energy indirect (Scope 2) GHG emissions, GRI 305-3 Other indirect (Scope 3) GHG emissions (Category 1 – Purchased goods and serviced, Category 3 – Fuel-and energy-related activities (not included in Scope 1 or Scope 2), Category 5 – Waste generated in operations.)
  - Social: GRI 403-9 Work-related injuries.
  - EU 26 Percentage of Population Unserved in Licensed Distribution of Service Areas.
  - EU 28 Power Outage Frequency.
  - EU 29 Average Power Outage Duration.

Our assurance engagement excluded the data and information of PEA's suppliers, contractors and any third parties mentioned in the report.

LRQA's responsibility is only to PEA. LRQA disclaims any liability or responsibility to others as explained in the end footnote. PEA's responsibility is for collecting, aggregating, analysing and presenting all the data and information within the report and for maintaining effective internal controls over the systems from which the report is derived. Ultimately, the report has been approved by, and remains the responsibility of PEA.

LRQA's Opinion

Based on LRQA's approach, nothing has come to our attention that would cause us to believe that PEA has not, in all material respects:

- Met the requirements above
- Disclosed accurate and reliable performance data and information as no errors or omissions were detected in the selected GRI indicators listed above
- Covered all the issues that are important to the stakeholders and readers of this report.

The opinion expressed is formed on the basis of a moderate level of assurance and at the materiality of the professional judgement of the verifier.

Note: The extent of evidence-gathering for a moderate assurance engagement is less than for a high assurance engagement. Moderate assurance engagements focus on aggregated data rather than physically checking source data at sites. Consequently, the level of assurance obtained in a moderate assurance engagement is substantially lower than the assurance that would have been obtained had a high assurance engagement been performed.

LRQA's approach

LRQA's assurance engagements are carried out in accordance with our verification procedure. The following tasks though were undertaken as part of the evidence gathering process for this assurance engagement:

- Assessing PEA's approach to stakeholder engagement to confirm that issues raised by stakeholders were captured correctly. We did this through interviews with responsible personnel and reviewing documents and associated records.

1 https://www.globalreporting.org/standards/

- Reviewing PEA's process for identifying and determining material issues to confirm that the right issues were included in their Report.
- Auditing PEA's data management systems to confirm that there were no significant errors, omissions or mis-statements in the report. We did this by reviewing the effectiveness of data handling procedures, instructions and systems, including those for internal verification. We also spoke with those key people responsible for compiling the data and drafting the report.
- Visiting PEA's operation offices and 1 concrete pole factory, to validate site data and information as sampled for the selected GRI indicators. These visits included: Head Office in Bangkok, PEA Chonburi (Central Region), PEA Chiangmai (Northern Region), PEA Nakorn Ratchasima (Northeastern Region), PEA Petchburi (Southern region), and Ayutthaya Concrete Pole Factory.

Observations

Further observations and findings, made during the assurance engagement, are:

- Stakeholder inclusivity: We are not aware of any key stakeholder groups that have been excluded from PEA's stakeholder engagement process. PEA's stakeholder engagement processes were appropriate and inclusive and the content of PEA's Sustainability Report reflects the views and expectations of these stakeholders.
- Materiality: PEA has established comprehensive criteria for determining which issue/aspect is material and that these criteria are not biased to the company's management and are relevant to the operations.
- Responsiveness: PEA has processes in place to respond to various stakeholder groups. Communication and engagement processes were sufficient and responsive.
- Reliability: Data management systems are established and communicated; however, improvements are required for traceability of records (EU26), uniformity of data collection relating to GHG's fugitive emission in the coolant system, and collection of recordable injury; first-aids. We believe that PEA should maintain the internal verification of data and information to ensure reliability and accuracy of reported data in future reports.

LRQA's standards, competence and independence

LRQA ensures the selection of appropriately qualified individuals based on their qualifications, training and experience. The outcome of all verification and certification assessments is then internally reviewed by senior management to ensure that the approach applied is rigorous and transparent. This verification is the only work undertaken by LRQA for PEA and as such does not compromise our independence or impartiality.

Wiriya Rattanasuwan
LRQA Lead Verifier

Dated: 8th November 2024

On behalf of LRQA (Thailand) Limited,
252/123 Muang Thai-Phatra Complex Tower B, 26th floor,
Unit 252/123 (C) Ratchadaphisek Rd., Huaykwang Sub-district,
Huaykwang District, Bangkok 10310, Thailand.

LRQA reference: BGK00001124

13 ABOUT THIS REPORT

Background [2-3]

PEA has published an annual sustainability report for seven consecutive years. This Sustainability Report 2023 was prepared under GRI Standards to disclose the organization's sustainability performance in the economic, social, and environmental aspects, covering the reporting period from 1 January to 31 December 2023. In addition, PEA has adopted the Electric Utilities Sector Reporting Guidelines, developed by the Global Reporting Initiative (GRI), to ensure the reporting is accurate, complete, and consistent with its business operations.

To illustrate commitment to sustainable development, PEA has aligned its operations with the 17 Sustainable Development Goals (SDGs) set out by the United Nations, featured throughout this publication.

Reporting Scope [2-2]

This report discloses information and impacts of PEA's operations across its value chain. The reporting scope spans Head Office and regional offices, power plants, to substations as well as stakeholders. The scope excludes operational activities conducted by PEA's affiliates.

Sustainability Report Assurance

PEA's Board of Directors and senior management are responsible for monitoring, reviewing, and advising on the reporting processes, as well as approving key information disclosed in this report. Their involvement ensures the completeness and integrity of the report contents and creates share value for all shareholders.[2-14]

PEA engaged a third-party service for external assurance and enhance the credibility of the report in line with the reporting guidelines of the GRI Standards.[2-5]

Reporting Quality Improvement

All stakeholders are encouraged to provide feedback on the Sustainability Report 2023 through a reader survey. The feedback will be analyzed to further improve and enhance our future sustainability reporting. This ensures that the reporting efficiently meets the needs and expectations of all stakeholders.

Enquiry [2-3]

For questions or additional suggestions, please contact the Sustainability and Stakeholder Engagement Management Division, Stakeholder Engagement and Corporate Communication for Sustainability Department, Provincial Electricity Authority Head Office, LED Building.

Mailing address: 200 Ngamwongwan Road, Ladyao, Chatuchak, Bangkok 10900
E-mail: strategy.ssm@pea.co.th or peassm@pea.co.th
Phone: 0 2590 9916
Fax: 0 2590 9919.

PEA
PROVINCIAL ELECTRICITY AUTHORITY

200 Ngamwongwan Road, Ladyao, Chatuchak, Bangkok 10900
Tel : 66(0) 2590 9916 Fax: 66(0) 2590 9919
1129 PEA Contact Center

sustainability.pea.co.th

questionnaire