Utility Green Tariff (UGT) and Energy Regulatory Commission (ERC) Sandbox as instruments for driving clean electricity transition in Thailand

Online Seminar “Thailand towards Green Energy: Green Electricity”

30th July 2024

Roles and Responsibilities of ERC in Energy Transition

- To promote green and digital technologies in the energy sector
- To support RE integration while considering system stability and sustainability
- To regulate energy business to ensure fair tariffs and transparent competition

Current Developments of ERC for Energy Transition

- Setting Utility Green Tariff (UGT)
- Promoting innovations in the energy sector through ERC Sandbox

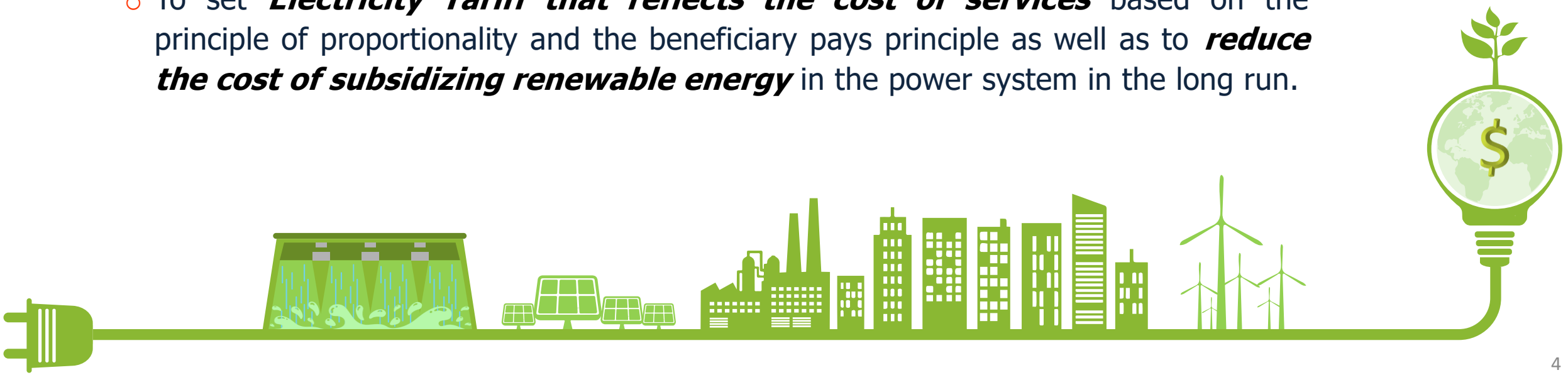
- Developing regulations for Third Party Access (TPA) in the power sector
- Regulating power procurement from RE generation under PDP framework
- Developing the regulatory energy data center
- Cooperating with international agencies

Utility Green Tariff (UGT)

Utility Green Tariff (UGT)

Objectives

- To provide ***an option*** for power ***consumers who want to declare the use of electricity generated from renewable energy*** to increase their competitiveness and to request benefits from concerned agencies, and to drive the goal to reduce Greenhouse Gas Emissions (GHG) of the organizations in Thailand.
- To ***maintain Thailand's comparative advantage*** in attracting foreign investments to ***achieve Sustainable Development Goals (SDGs).***
- To set ***Electricity Tariff that reflects the cost of services*** based on the principle of proportionality and the beneficiary pays principle as well as to ***reduce the cost of subsidizing renewable energy*** in the power system in the long run.



Utility Green Tariff (UGT)

Key Features

- ✓ Use I-REC Tracking Standard
- ✓ Utility-Scale, green energy for all
- ✓ Bundled REC and energy in one bill
- ✓ No price arbitrage; the utilities redeem REC upon delivery
- ✓ Customers have an option to finance additional RE projects (specified sources)
- ✓ Convenient (require little management) and secure (always on)

RE100 Technical Guidance 2023

Section Four: Recognized procurement types for renewable electricity

RE100 categorizes corporate procurement of renewable electricity into five broad types. They differ in terms of the party being contracted with (directly with a generator or through a more conventional contract with an electricity supplier), whether the procurement of energy and energy attributes is bundled or unbundled, and active versus passive procurement.

1 Self-generation from facilities owned by the company

2 Direct procurement (contracts with generators)

2.1 Physical power purchase agreement (physical PPA)

2.2 Financial power purchase agreement (financial/virtual PPA)

3 Contracts with electricity suppliers

3.1 Project-specific supply contract with electricity supplier ← **UGT2**

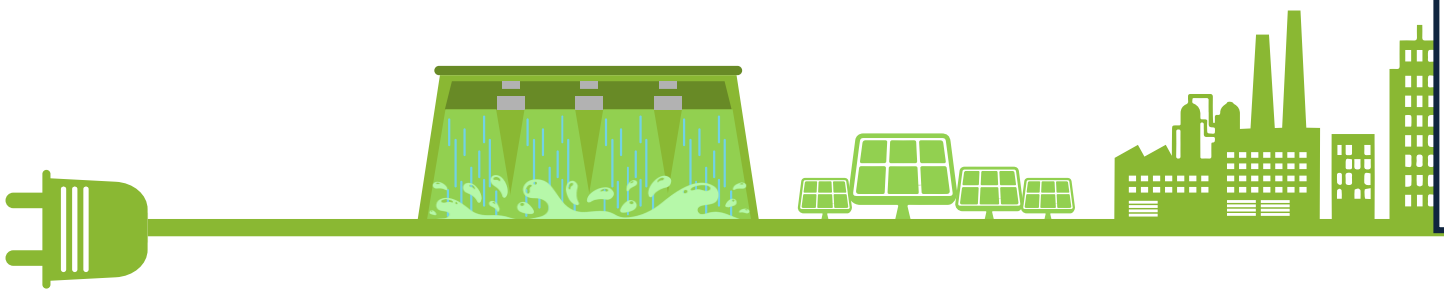
3.2 Retail supply contract with electricity supplier ← **UGT1**

4 Unbundled procurement of energy attribute certificates (EACs)

5 Passive procurement

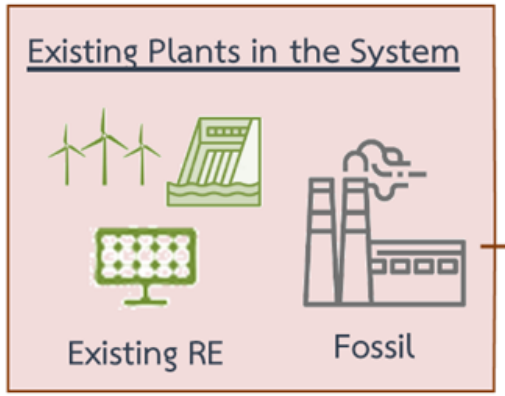
5.1 Default delivered renewable electricity from the grid, supported by EACs

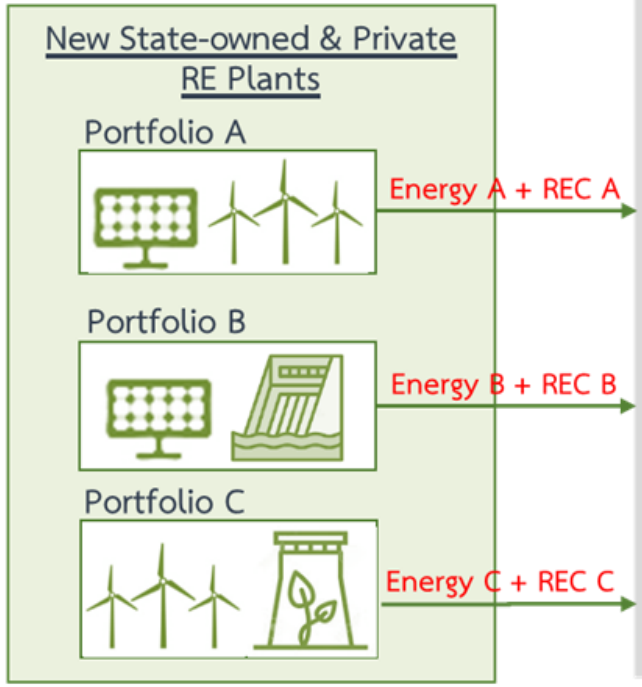
5.2 Default delivered renewable electricity from the grid in a market with at least a 95% renewable generation mix and where there is no mechanism for specifically allocating renewable electricity

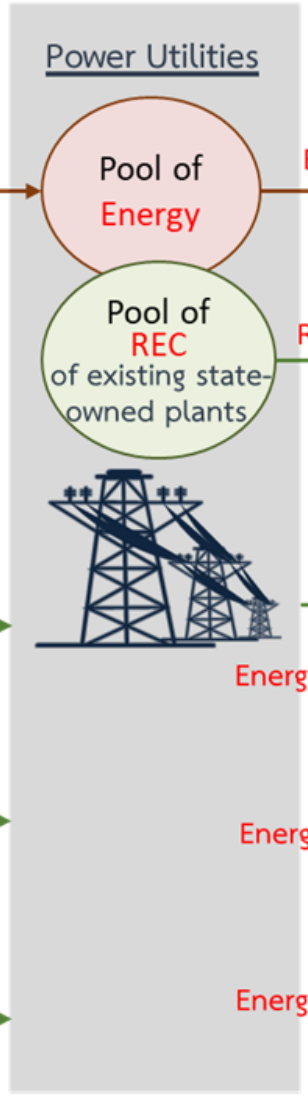


NEPC resolution (7 Nov 2022) on guidelines for determining Utility Green Tariffs

Utility Green Tariffs (UGT)







Energy

REC

Energy A + REC A

Energy B + REC B

Energy C + REC C

Normal Tariffs

- Electricity tariffs as per user categories (including F_t) (which may decrease due to suitable premium allocation, as directed by the ERC)
- GHG emissions in compliance with Grid Emission Factor (as at Mar 2020 = 0.4758 tCO_2/MWh)

General Users

1. UGT of Existing Plants (unspecified sources)

RE 1 Users

Normal tariffs as per user category (including F_t) + premium

- Premium covers REC cost, including other related components, as may be determined by the ERC in the future
- GHG emissions in compliance with Grid Emission Factor minus the portion with REC (at the amount subscribed with the Utility)
- REC sources unspecified by users

2. UGT of New or Existing Plants (specified sources)

RE 2.1 Users — 2.1 UGT rate of Portfolio A

RE 2.2 Users — 2.2 UGT rate of Portfolio B

RE 2.3 Users — 2.3 UGT rate of Portfolio C

- UGT rate covers the cost of rendering services and REC of each portfolio, including other related components, as may be determined by the ERC in the future
- GHG emissions in compliance with Grid Emission Factor minus the portion with REC
- Users can choose the plant portfolio (REC source can be specified to be the same as electricity supply source, by choosing the portfolio)

UGT 1

Utility Green Tariff Type 1: User-Unspecified RE Sources

(RE sources are not specified in the Electricity Supply Agreement (ESA))

Premium (P)

→ RECs are from EGAT's 7 hydro power plants*

UGT1 = **Normal Tariff incl. F_t** + **Premium (P)**

Where:

Premium (P) = **Market Price of REC (P_{REC})** + **Administrative Fee (P_A)**

0.0594 = 0.0500 + 0.0094

THB/kWh retail

* Existing RE plants in the system that REC belongs to the state. In 2024, this will be EGAT's 7 hydro power plants with approximate generation output of 1,300 – 3,500 GWh/year

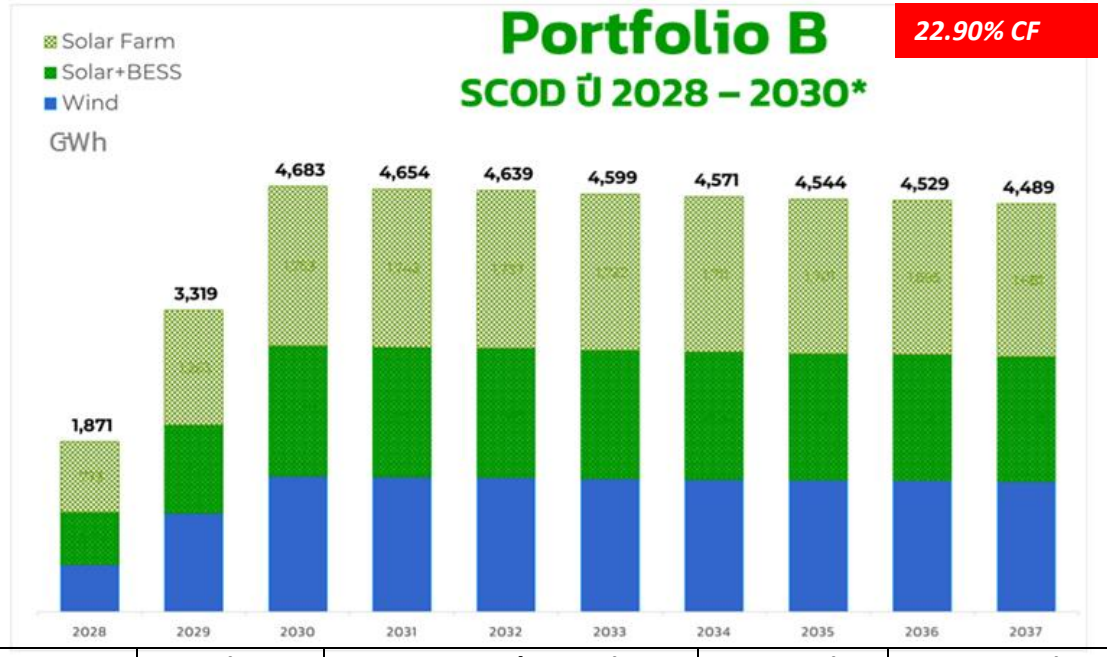
UGT 2

Utility Green Tariff Type 2: User-Specified RE Sources

(RE sources are specified in the Electricity Supply Agreement (ESA))

Portfolio Grouping

Propose to use power plant groups according to the ERC regulation on the procurement of electricity from RE sources using Feed-in Tariff (FIT) for the years 2022-2030 for the group that has no fuel costs which includes solar power plants, solar power plants with energy storage systems, and wind power plants. This will be divided into 2 groups according to the SCOD schedule, combining all types of renewable energy as follows:



*Assuming that SCOD is at year-end; so the consumers will start receiving energy in the subsequent year

RE Type	FiT (THB/kWh)	Contracted Capacity (MW)		Assumption of Plant Factor (%)	Generation Share (%) (based on estimated GWh)	
		Portfolio A	Portfolio B		Portfolio A	Portfolio B
Solar Farm	2.1679	1,182	1,185	17.0	39	38
Solar Farm + BESS	2.8331	428	566	29.2	25	31
Wind	3.1014	776	715	24.0	36	32

Remarks: Transmission loss rate = 2.14%; degradation = 0.6%/year

G2.1 should reflect the different reliability of each portfolio, which results in uneven utilization of the electricity system's capacity (system availability)

UGT 2

(THB/kWh)

AF_W Adjustment Factor (Wholesale)	G1 Electricity procured from each portfolio	G2.1 Capacity of the power system	G2.2 Energy from the power system	T Transmission Network	A_W Administrative Charge (Wholesale)	PE_W Policy Expense (Wholesale)
To adjust G according to actual generation mix and the use of the power system services at the wholesale level	?	0.7068	where consumption>generation; G 2.2 will replace G1 for the excess amount, and will be determined by fuel and energy costs as in the Ft formula	0.2418	0.0309	0.1043

Wholesale (EGAT)

Distribution Loss

Retail (MEA & PEA)

AF_R Adjustment Factor (Retail)	D Distribution Network	A_R Administrative Charge (Retail)	PE_R Policy Expense (Retail)
To adjust G according to actual generation mix and the use of the power system services at the retail level	0.5162	0.0499	0.1364

X

Different for each portfolio

(1- PF*)

The same for all Portfolios

- Fixed Rate (Reviewed by regulatory period)
- Variable Rate (adjusted by F_t period)

* PF means Plant Factor of each Portfolio

Summary of UGT Rates

UGT1 (Final) = Normal Tariff incl. F_t + **Premium (P)**

0.0594 THB/kWh retail

UGT2 (Proposed)

Portfolio A = **4.5622** THB/kWh retail

Portfolio B = **4.5475** THB/kWh retail

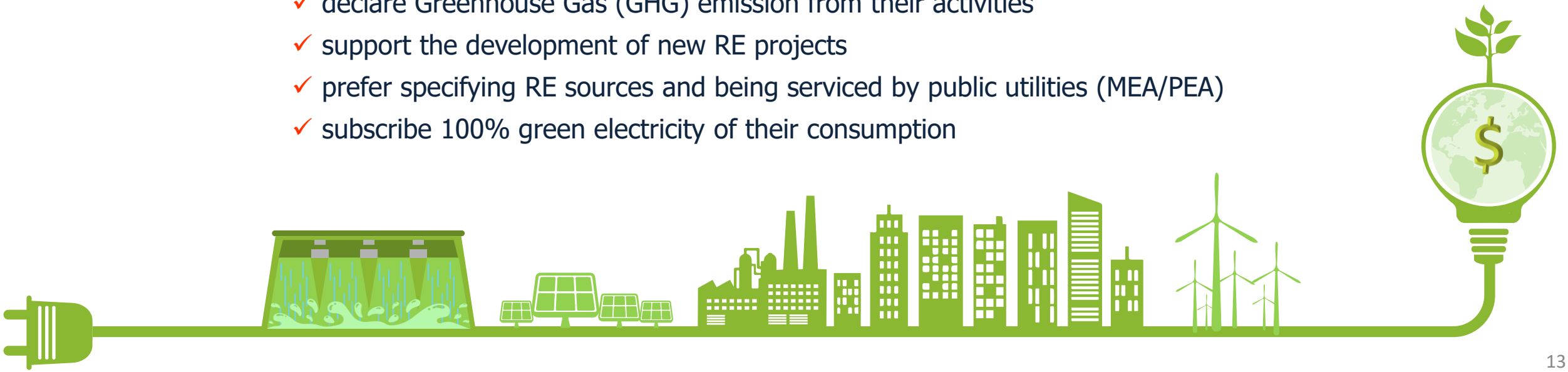
Target Groups for UGT1 and UGT2

UGT 1 For small/medium power users who

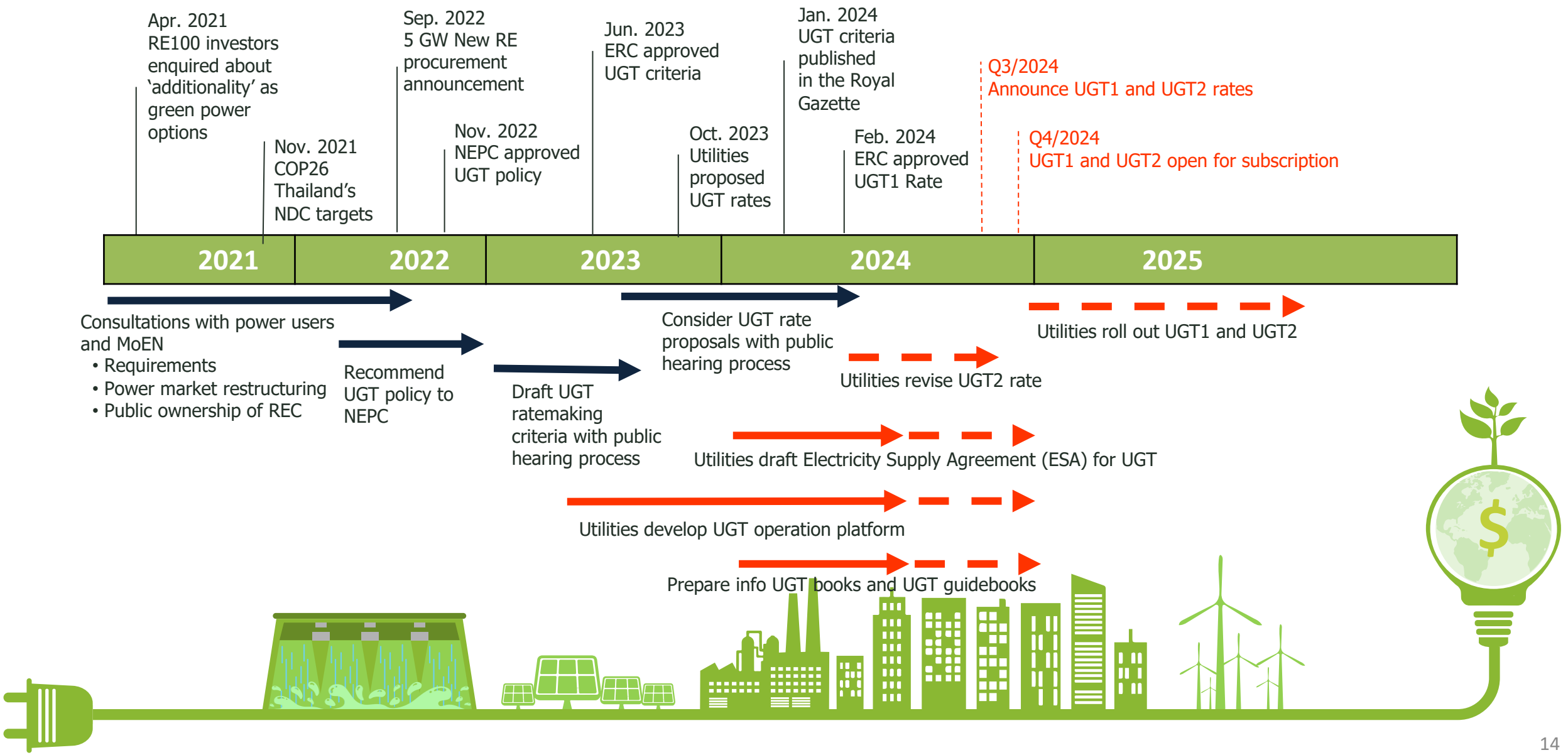
- ✓ declare Greenhouse Gas (GHG) emission from their activities
- ✓ prefer obtaining Renewable Energy Certificates (RECs) together with electricity serviced by public utilities (MEA/PEA)
- ✓ subscribe green electricity ≤100% of their consumption

UGT 2 For large power users who

- ✓ declare Greenhouse Gas (GHG) emission from their activities
- ✓ support the development of new RE projects
- ✓ prefer specifying RE sources and being serviced by public utilities (MEA/PEA)
- ✓ subscribe 100% green electricity of their consumption



Next Steps for UGT1 and UGT2



Energy Regulatory Commission (ERC) Sandbox

ERC Sandbox

To achieve Carbon Neutrality and Net Zero goals, the energy market structure has to be improved or reformed to encourage the use of renewable energy and new technologies. Regulations need to be developed to serve these goals.

In 2019, ERC took a significant step by launching the Energy Regulatory Commission Sandbox (ERC Sandbox). This platform allows small-scale, live testing and studying of innovations, thereby playing a crucial role in promoting the use of renewable energy and new technologies/businesses within its framework.

To date, three phases of ERC Sandbox have been launched to drive innovations in the energy sector.

Innovation

Certain regulatory exemption allows private firms and investors who are interested in new businesses to have opportunities to try their new methodologies and innovations.

Adaptation

The ERC sandbox raises utilities' and the private sector's awareness of the need to adapt to the current trend of energy businesses to avoid disruption.

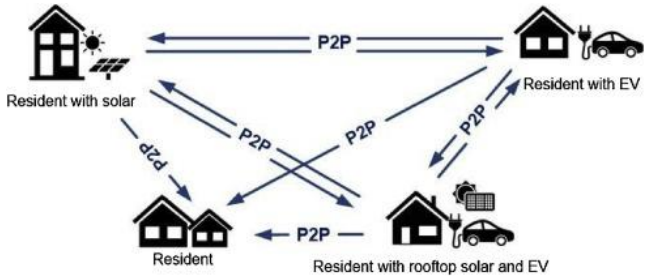
Collaboration

Energy regulator, utilities, and private firms have opportunities to share knowledge and take part in collaborative activities, such as the integration of the P2P platform.

Testing Activities under ERC Sandbox

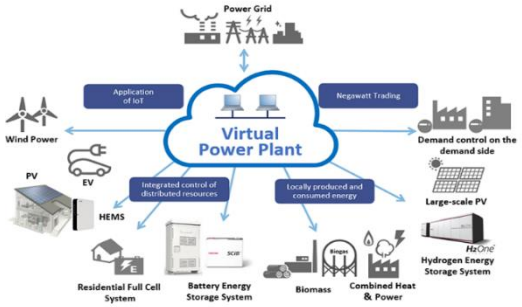
Smart Grid

Energy Trading at Residential area

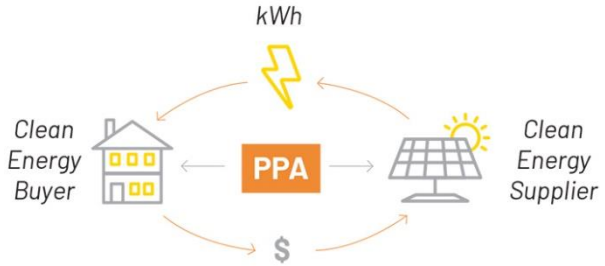


Battery + RE plants

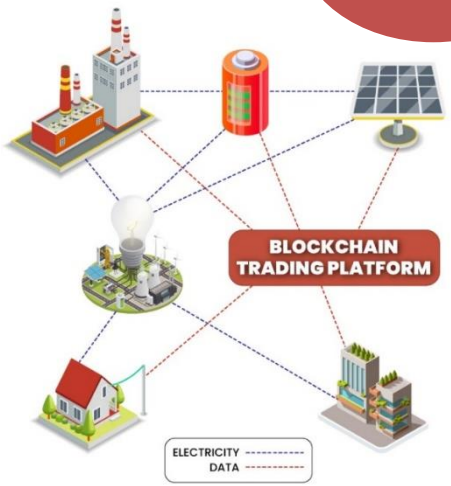
Virtual Power Plant



New PPA

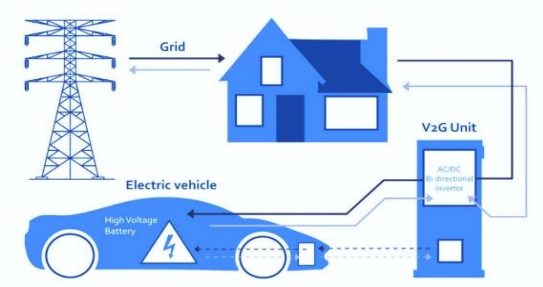


P2P Energy Trading Platform



Virtual Battery

Vehicle to Grid



Any questions are welcome.

Thank you
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