

# Key Country Update [ THAILAND ]

## Pathway to Energy Transition in Thailand

# 1

# National Energy Plan Framework (NEP)

On 4<sup>th</sup> August 2021 : NEPC approved national energy plan (NEP) framework. The goal is to support Thailand moving towards clean energy and reduce carbon emissions to net zero (Carbon Neutrality).

## Policy Direction to National Energy Plan



## แผนพลังงานชาติ National Energy Plan

EPPO is preparing the details of the National Energy Plan, in line with Carbon Neutrality.

1



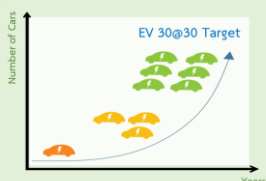
**RE > 50% w ESS**



2



**EV 30@30**



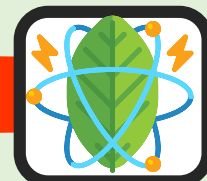
3



**EE > 30%**



4



**4D1E**

**DIGITALIZATION**

**DECARBONIZATION**

**ELECTRIFICATION**

**DECENTRALIZATION**

**DE-REGULATION**

# Carbon Neutrality

**in the year 2050**

# Reduction of CO<sub>2</sub> Emission in the **new PDP**

## Fossil Fuel

with low carbon technologies

- ▶ **Combined Cycle Power Plant (NG+H<sub>2</sub>)**



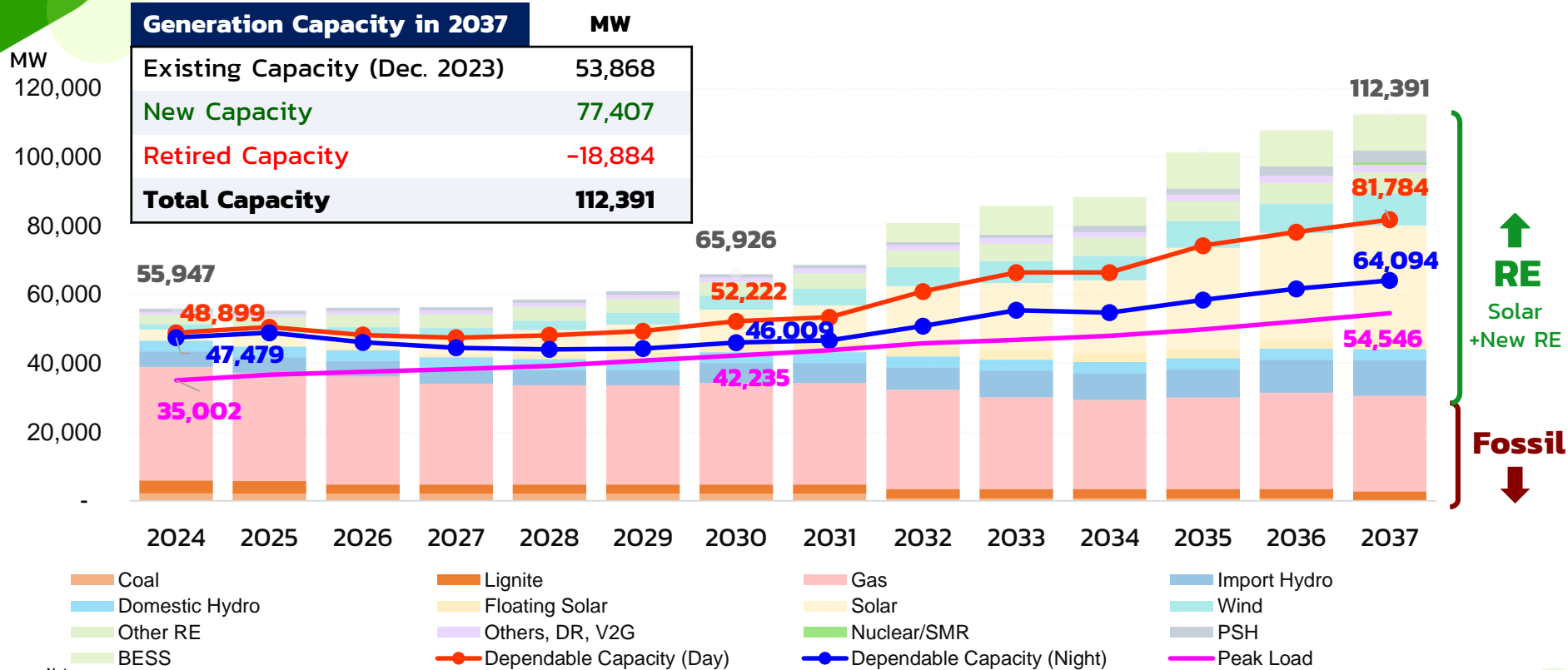
## Clean Energy

- ▶ **Pumped Storage Hydro Power Plant**
- ▶ **Import Hydro Power Plant**
- ▶ **Solar / Solar+BESS**  
(Solar Farm/Solar Rooftop/Solar Floating)
- ▶ **Other RE**  
(Wind/Small Hydro/Biomass/Biogas/Waste)
- ▶ **Nuclear Energy**  
Small or Micro Modular Reactor: SMR/MMR)

## Other Technologies

- ▶ **Battery Energy Storage System (BESS)**
- ▶ **Demand Response (DR) / Distributed Energy Resource (DER)**

# Power Generation (On-Grid) by Fuels



**Note:**

- Dependable capacity including with energy storage system (ESS).
- Country's peak demand (On-grid) shifts to the night time from 2028 and onwards: Apr – May 02.00 – 02.30 p.m. (2024 – 2027) and Apr – May 08.00 – 10.30 p.m. (2028 – 2037).
- Dependable capacity is based on the duration of peak demand (On-grid) in each year.
- Dependable factors of renewable energy are based on PDP2018 Rev.1.

## Period

### 2021-2030

Increase electricity production from clean energy according to the PDP2018 Rev.1

### 2031-2037

Set targets for production and purchase of electricity based on potential for the renewable energy production provided by DEDE

Unit : MW

	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	Total
Solar	45	10	34	300	400	898	800	1,300	1,600	1,700	7,087
Solar Rooftop, Public		10	10	10	10	10	10	10	10	10	90
Solar Floating	45	0	24			298	50		280	300	997
Solar Farm + BESS				100	100	100	100	200	200	200	1,000
Solar Farm				190	290	490	640	1,090	1,110	1,190	5,000
Wind					250	250	250	450	650	650	2,500
Biogas						106.5	100				206.5
Biomass						150	150	90			390
Municipal solid waste					200	200					400
Industrial waste						130	70				200
Import						469				1,400	1,869
Small Hydro		10.81	4.14	1.27	9.84	5.25	5.05	6.51	3.45	5.18	52
<b>Total</b>	<b>45</b>	<b>21</b>	<b>38</b>	<b>301</b>	<b>860</b>	<b>2,209</b>	<b>1,375</b>	<b>1,847</b>	<b>2,253</b>	<b>3,775</b>	<b>12,704</b>

By the conclusion of the plan in **2037**, the share of electricity generation from renewable energy sources should be no less than **50%**



# 5 A glimpse into new AEDP



## Electricity



**Solar**  
41,763 MW



**Wind**  
9,375 MW



**Small Hydro**  
347 MW



**Biomass**  
5,490 MW



**Biogas**  
1,682 MW



**Waste**  
1,391 MW



**Large Hydro**  
2,918 MW



## Heat



**Solar**  
200 ktoe



**Biomass**  
15,551 ktoe



**Biogas**  
700 ktoe



**Waste**  
600 ktoe



**New resource**  
10 ktoe



## Biofuel



**Ethanol**  
1.55 Mil lit/D



**Biodiesel**  
2.46 Mil lit/D



**Pyrolysis oil**



**Compressed Biogas**



**SAF**  
1.85 Mil lit/D



**Hydrogen**  
1,395 ton

## Community Power Plant

Current Implementation

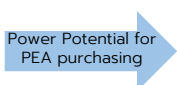
### Source

Biomass  
+  
Biogas



43 Pilot  
projects

Power Potential for  
PEA purchasing



149.50 MW  
Average price  
3.1831 THB/unit

## Solar Rooftop for People (Residential) project



Target  
90 MW



MEA areas



PEA areas



Rate  
2.20 THB/Unit



Purchasing duration 10 years  
(starting 2022 onward)

## Power Purchasing from RE

Power purchasing from RE (no fuel cost groups) in FiT  
type during 2022-2030

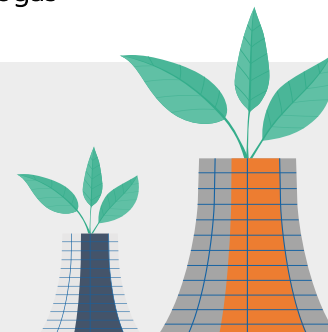
REs	FiT Rate (THB/Unit)	Duration (years)	Remark
Biogas	2.0724	20	Non-Firm contract
Wind	3.1014	25	Non-Firm contract
Solar Ground	2.1679	25	Non-Firm contract
Solar + BESS	2.8331	25	Partial-Firm contract

### Principles

- Contract Capacity  $\leq$  90 MW
- Non-Firm contract for Solar Ground Wind and Biogas
- Partial-Firm contract for Solar+BESS

## RE Heat Subsidy

Provide subsidy to invest in  
machines/equipment to produce heat from  
biomass and biogas in the form of Co-pay



# A glimpse into new EEP

**Target : To reduce Energy Intensity (EI) 36% by 2037 (based year 2010)**

5 Sectors (35,497 ktoe)	Mandatory , Promotion , Compulsory type of measures
Industry ( 12,432 ktoe)	<ul style="list-style-type: none"> <li>• Building Energy Code/Factory Energy Code</li> </ul>
Business (3,542 ktoe)	<ul style="list-style-type: none"> <li>• MRV process in building/factory</li> <li>• Incentive for machines/equipments efficiency improvement</li> </ul>
Resident (1,774 ktoe)	<ul style="list-style-type: none"> <li>• Residential Energy Code (เกณฑ์บ้านประหยัดพลังงาน)</li> <li>• Energy-efficient house design</li> <li>• High Efficiency Label in various products</li> </ul>
Agriculture (710 ktoe)	<ul style="list-style-type: none"> <li>• Farming Energy Code</li> <li>• Smart Farming</li> </ul>
Transportation (17,039 ktoe)	<ul style="list-style-type: none"> <li>• Green Vehicle tax</li> <li>• EV</li> </ul>



## Building Energy Code (BEC)



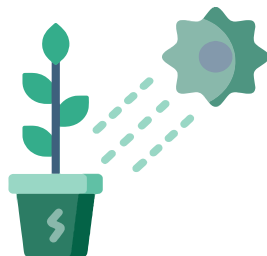
New or retrofitted buildings being constructed with total area equal to **2,000 m<sup>2</sup> or more** must be designed under the Energy Conservation Act requirements.

## Standard and Labelling



- ✓ 4 Groups
- ✓ 19 Products

- \* Construction products
- \* Agricultural machines
- \* Business and industrial products
- \* Home products



## Smart Farm

Subsidy to change/improve equipment or machines or materials for higher efficiency, to use RE technologies or apply technology/innovation for farm management

### Target groups



Poultry



Pig Farming



Dairy



Aquaculture Farm

## Direct Subsidy to improve equipment/machine efficiency

Direct subsidy to stakeholders to change/improve equipment or machines or materials for higher efficiency



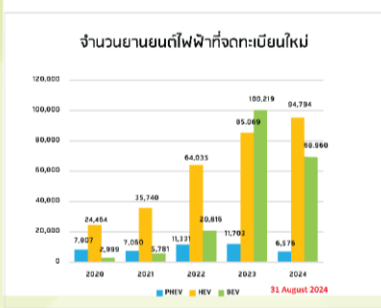
### Results

373	Participants
497	Measures
269.08 MTHB	Subsidy
1,290 MTHB	Investment

# Status of xEV New/Accumulated Registration in Thailand

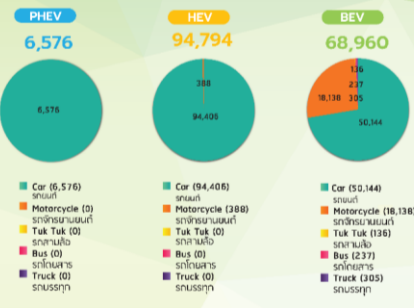
**New Number of xEV Registration**  
จำนวนยานยนต์ไฟฟ้าจดทะเบียนใหม่

Between 2020-2024  
ระหว่างปี 2563 - 2567



**New Number of xEV Registration in 2024**  
จำนวนยานยนต์ไฟฟ้าจดทะเบียนใหม่

1 January - 31 August 2024  
จาก 1 มกราคม - 31 สิงหาคม 2567



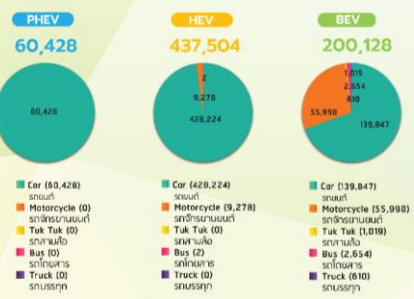
**Accumulated Number of xEV Registration**  
จำนวนยานยนต์ไฟฟ้าสะสม

Between 2020-2024  
ระหว่างปี 2563 - 2567



**Accumulated Number of xEV Registration in 2024**  
จำนวนยานยนต์ไฟฟ้าสะสม

As of 31 August 2024  
ณ วันที่ 31 สิงหาคม 2567



**ยอดจดทะเบียน รถไฟฟ้า 100% ปี 2023 / 2566**  
รวม 76,314 คัน  
www.autolife-thailand.tv

Rank	Model	Registrations
1	BYD Atto 3	19,214
2	NETA V	12,777
3	BYD Dolphin	9,410
4	ORA Good Cat	6,712
5	Tesla Model Y	5,881
6	MG 4 Electric	4,833
7	MG EP+	4,475
8	Tesla Model 3	2,324
9	BYD Seal	1,810
10	MG ZS EV	1,753

**ยอดจดทะเบียนรถไฟฟ้า 100% ปี 2023 ยอดจดทะเบียน รถไฟฟ้า 100% รวม**  
ปี 2020 : 1,056 คัน  
ปี 2021 : 1,935 คัน  
ปี 2022 : 9,729 คัน  
ปี 2023 : 76,314 คัน เพิ่มขึ้น 66,585 คัน **+684.4%**  
คิดเป็น **12.02%** ของรถ 1 คันรวม 634,948 คัน

- EV registrations in Thailand between 2019-2023 increase thanks to EV 3.0 and EV 3.5 measures.
- The share of EV registrations for passenger car push to 12% in 2023.

**Source:** Electric Vehicle Association of Thailand (EVAT) with data from Department of Land Transport (DLT)



### Smart and Sustainable Industry

#### Applicable Projects\*

- ❖ Energy-efficient equipment replacement
- ❖ Equipment replacement to utilize renewable energy
- ❖ GHG Reduction project (must be certified by TGO\*\*)
- ❖ Environmental impact reduction project



### Benefits

- ❖ Exemption on import duty on machinery
- ❖ 3-year corporate income tax (CIT) exemption – 50% of the investment cost



### Energy Service Companies (ESCO)

- ❖ Provide turnkey solutions for energy efficiency project
- ❖ Project implemented can be in the form of guaranteed saving, shared saving, or chauffrage



### Benefits

- ❖ Exemption on import duty on machinery
- ❖ 8-year corporate income tax (CIT) exemption – no CIT exemption cap

\*At least 1M Baht in investment (or 500k Baht for SME)

\*\*Thai Greenhouse Gas Organization



# Thank you

