

# EPP0 – Draft Power Development Plan 2024 (PDP2024)

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## Slide 1

Draft Power Development Plan of Thailand (PDP2024)

## Slide 2

Presentation Outline

1. Overview of PDP revision toward a low-carbon society
2. Electricity demand forecast
3. Draft Power Development Plan 2024

## Slide 3

Overview of PDP revision toward a low-carbon society

## Slide 4

Aligning the plan with global energy trends aimed at reducing CO<sub>2</sub> emissions and promoting clean energy to address global warming.

Reasons for revising PDP2018 Rev.1:

- GDP growth lower than forecast due to COVID-19
- Electricity supply exceeded demand during the past 2–3 years
- Structural changes in electricity demand (growth of IPS, rooftop solar, EVs, new technologies)

## Slide 5

Approach to revising the new PDP:

- National greenhouse-gas reduction targets
- National Energy Plan
- Global energy transition direction

Objective: Carbon Neutrality by 2050 and Net-Zero GHG emissions by 2065

## Slide 6

Key principles of PDP2024:

- Security: Maintain power system reliability
- Economy: Reasonable electricity costs
- Ecology & Efficiency: Reduce environmental impact and improve system efficiency

## Slide 7

Policy to promote electricity generation from clean energy and alternative technologies to reduce CO<sub>2</sub> emissions

## Slide 8

Advantages of Small Modular Reactors (SMR):

- Replace fossil plants to reduce CO<sub>2</sub>
- Lower accident risk
- Modular capacity expansion
- Shorter construction time
- Suitable for remote or small-grid areas

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## Slide 9

Modern technology policies:

- Renewable Energy Forecasting
- Demand Response (low cost, fast deployment)
- Energy Storage Systems
- Smart Grid, EV Smart Charging

These technologies support Carbon Neutrality goals

## Slide 10

Section 2: Electricity Demand Forecast (Load Forecast)

## Slide 11

Principles and methodology for Thailand's electricity demand forecasting

## Slide 12

Forecast methodology:

- Residential electricity surveys
- Sectoral and national econometric models
- Consideration of disruptive technologies
- Mixed End-Use and Econometric models

## Slide 13

Long-term demand forecast aligned with economic growth using NIDA model (2021 update)

## Slide 14

Business-as-Usual (BAU) electricity demand forecast based on GDP, population, household surveys, and official statistics

## Slide 15

BASE case: Additional demand from confirmed government projects and policies not yet reflected in GDP forecasts

## Slide 16

Additional demand sources:

- High-speed rail
- Mass transit systems
- Eastern Economic Corridor (EEC)
- Electric vehicles (EVs)
- Energy Efficiency Plan (EEP)

## Slide 17

Summary of national electricity demand forecasting framework

## Slide 18

GDP growth assumptions (average 3.1% during 2025–2037)

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## **Slide 19**

Population growth assumptions (average 0.04%)

## **Slide 20**

High-Speed Rail (HST) electricity demand assumptions and methodology

## **Slide 21**

Mass Rapid Transit (MRT) electricity demand assumptions (Bangkok and 6 regional cities)

## **Slide 22**

Eastern Economic Corridor (EEC) incremental electricity demand

## **Slide 23**

Electric Vehicle (EV) electricity demand assumptions and load profile management

## **Slide 24**

Energy Efficiency Plan (EEP): Electricity demand reduction targets

## **Slide 25**

Forecast of Electricity Demand

## **Slide 26**

BAU electricity demand comparison: PDP2018 vs PDP2024

## **Slide 27**

Peak electricity demand comparison: PDP2018 vs PDP2024

## **Slide 28**

Electricity demand in the 3 utilities system (PDP 2018 vs PDP2024 BAU and BASE cases)

## **Slide 29**

Peak demand in the 3 utilities system: PDP2018 vs PDP2024

## **Slide 30**

System load factor projections: PDP2018 vs PDP2024

## **Slide 31**

Regional electricity demand profiles (BASE case)

## **Slide 32**

Section 3: Draft Power Development Plan 2024

## **Slide 33**

Key assumptions used in PDP2024

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Security criterion: Loss of Load Expectation (LOLE)

## **Slide 35**

Renewable energy allocation and procurement targets

## **Slide 36**

Demand Response targets (Smart Grid and peak reduction)

## **Slide 37**

CO<sub>2</sub> emission targets for power generation sector

## **Slide 38**

Hydrogen blending (5%) in natural gas for power generation

## **Slide 39**

Results of the Draft PDP2024 Preparation

## **Slide 40**

Installed capacity by fuel type in 2023

## **Slide 41**

Draft generation capacity expansion plan (2024–2037)

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Dependable capacity versus peak demand

## **Slide 43**

Electricity generation mix by fuel type

## **Slide 44**

Comparison of generation mix in 2037

## **Slide 45**

New generation and energy storage capacity additions

## **Slide 46**

Regional new power plant summary

## **Slide 47**

New renewable energy projects by technology

## **Slide 48**

Northern region dependable capacity

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## **Slide 49**

Northeastern region dependable capacity

## **Slide 50**

Central region dependable capacity

## **Slide 51**

Metropolitan area dependable capacity

## **Slide 52**

Southern region dependable capacity

## **Slide 53**

System reliability (LOLE results)

## **Slide 54**

Projected CO<sub>2</sub> emissions from the power sector

## **Slide 55**

Average electricity tariff comparison

## **Slide 56**

Benefits of PDP2024

## **Slide 57**

Benefits of PDP2024:

- Secure, affordable, sustainable power system
- Higher renewable share
- CO<sub>2</sub> reduction aligned with national targets

## **Slide 58**

Ending Slide: “We build for everyone”