

What is Thailand's power system like?

Thailand's power system is characterised by a high share of natural gas-fired capacity and low solar- and wind-based generation capacity. The current plan calls for increasing these variable renewable energy (VRE) sources some 7.5 gigawatts by 2036.

Why is power system flexibility important in Thailand?

With the growing share of renewable energy and emerging technologies, establishing and maintaining adequate flexibility is an important part of Thailand's power system development and modernisation, and the country's clean energy transition. Power system flexibility is crucial for ensuring security of supply.

How much power does Thailand have?

Thailand's total generation installed capacity, as of March 2017, was about 55,600 MW. (The total capacity reported is the total generation installed capacity including independent power systems. Thus, the number in this report is higher than other official national power development plans (PDPs) which excludes the independent power systems).

Is Thailand's power system a single node?

Given limited details, the power system is modelled as a single node. Part of Thailand's electricity demand is met by power plants in the Lao People's Democratic Republic (Lao PDR) and Myanmar; however, these plants are modelled as part of the Thai system and not treated as interconnection capacity.

Can the Thai power system reduce its emissions?

Building upon the current PDP, this report analyses how the Thai power system can decrease its emissions to meet the targets by increasing the amount of wind and solar PV in its system, and how it can integrate these variable renewable energy sources efficiently.

Does Thailand have an enhanced single-buyer system?

Thailand has an enhanced single-buyer system, which means that the vertically integrated utility buys power from both its own generation assets and from independent power producers. This study is conducted in the context of the enhanced single-buyer system, and identifies contractual flexibility within this scope.

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This study examines flexibility from both the technical and contractual angle, and their interactions, using the current context of Thailand's power system.

oThailand's system has inherent technical flexibility through gas & hydro generation and transmission network. The system can technically integrate up to 15% share of VRE by 2030 (19GW solar, 6GW wind)
oPower plant retrofits, pumped storage hydro and battery storage can provide flexibility services but they

establishing and maintaining adequate flexibility is an important part of Thailand's power system development and modernisation, and the country's clean energy transition. Power system flexibility is crucial for ensuring security of supply. Thailand's power sector has two main avenues to enhance its flexibility. One is to

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the distributed energy systems (DESS), known as small power producers (SPPs) and very small power producers (VSPPs), are connected to the distribution system of PEA and MEA. The transmission system in Thailand already covers 99% of residential areas (Figure 6.1). Thailand's Electricity Situation

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Thailand Power System 2 Basic facts Area: 513,000 km² (198,000 sq mi), Population: 66,188,503 (2017)
Number of electricity consumers (2017): 22.51 million households

Thailand's peak energy demand was around 30GW in 2015 and is expected to grow to and on the latest generation and transmission 51.5GW by 2036. Annual electricity demand is expected to grow 70% from 2015 to 2036 (EGAT, 2015; Ministry of Energy, 2015). Table 1: Flexibility enablers in Thailand's power system*

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