Federal Ministry
for Economic Affairs
and Energy

Thailand

Solar PV Policy Update

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1. Overall targets and status of PV in Thailand

In 2013, the Department of Alternative Energy Development and Efficiency (DEDE) revised the Alternative Energy Development Plan (AEDP), the country's long-term strategy for renewable energy development, and increased the target for photovoltaic (PV) from 2,000 MW to 3,000 MW to be installed by 2021. With 1.5 GW of solar farms constructed or under construction in 2014, the National Energy Policy Council (NEPC) decided on more aggressive plans, and moved the target date forward from 2021 to the end of 2015.

Towards the end of the year NEPC then decided to formulate a total target of 3,800 MW, comprising 2,800 MW solar farms, 800 MW solar farms on government land or managed by agricultural cooperatives, and 200 MW PV rooftop. A current status of the different programmes can be taken from the Table 1 below.

2. Free-field installations (solar farms)

According to ERC, a total of 1,615.50 MW free-field installations was contracted by May 2015, of which 1.36 GW are already installed on the ground. 172 projects with a total of 989.675 MW were accepted to receive PPAs in May[1], the projects will receive a feed-in tariff (FiT) of 5.66 Baht/kWh (currently 15.2 €Cent) that will be granted for a period of 25 years. Targeted scheduled commercial operation date (SCOD) for the awarded PPAs is December 31, 2015.

Looking at the numbers, the newly approved projects as well as the connected projects (in total 2.6 GW) still fall short of the target of 2,800 MW. Currently, there are no announcements of DEDE or the Ministry of Energy (MoE) on how to bridge the gap.

Table 1 Current Status of Solar Programmes

Status of solar programme		No. of Projects	Capacity (MW)	Target (MW)
1) Free-field installations (solar farms) [2]	Commercial Operation Date (COD) achieved	196	1,367.10	
	PPA - signed	5	99.72	
	PPA - accepted	26	148.67	
	Subtotal	227	1,615.50	
	PPA - applied for and recently approved [1]	172	989.68	
	Total	399	2,605.17	**2,800**
2) Free-field government and agricultural cooperatives				**800**
3) Residential rooftop[3],[4]	Commercial Operation Date (COD) achieved	248	1.47	
	PPA signed	2,486	19.50	
	PPA - accepted	308	2.29	
	Total	3,042	23.26	**100**
4) Commercial rooftop[3],[4]	Commercial Operation Date (COD) achieved	84	49.19	
	PPA signed	109	48.88	
	PPA - accepted	27	7.69	
	Total	220	105.76	**100**

Sources: [1] Ministry of Energy. 2015. Press release on 11 May 2015. http://old1.energy.go.th/index.php?q=node/27714. Accessed May 20, 2015.
[2] ERC. 2015. ERC database. http://www.erc.or.th/ERCSPP/default.aspx?x=0&muid=23&prid=41. Accessed on May 12, 2015.
[3],[4] PEA (December 2014) and MEA (December 2014) data analysed by ERI

3. Government and Agricultural Cooperatives programme (Free-field installations)

In August 2014 the Government announced a "Government and Agricultural Cooperatives" programme with an overall target of 800 MW. This programme aims at realizing solar farms with up to 5 MW in size in the form of Public Private Partnerships with the governmental sector or agricultural cooperatives as public partners. However, the details were not revealed until 13th March 2015, when the Energy Regulatory Commission (ERC) published the regulation (original document) in the Government Gazette after NEPC's approval.

Still, Deputy Permanent Secretary of the Ministry of Energy Dr. Twarath Sutabutr stated that the purchase of power under this programme has not been announced, yet, as the Managing Committee on Power Generation from Renewable Energy Promotion[1] is still working on the code and conditions of applicants. In addition, the Committee is designing the zoning/ breakdown of quota to FiT with the Thai transmission line capability as there are restrictions of the transmission system in many areas. The code and conditions as well as the call for applications will be announced later.

Detailed regulation concerning the Government and Agricultural Cooperatives PV Programme:

The regulation announces the purchase of power from solar free-field installations located on land owned by the government and agricultural cooperatives with an installed capacity of 5MWp or less. Power will be purchased via a FiT at a rate of 5.66 Baht/kWh. This rate is applicable for the power sale that does not exceed a capacity factor of 16%[2].

The PPA term is 25 years starting from the SCOD specified in the PPA, the commercial operation date (COD), or the actual operation

[1] The Committee comprises representatives from the utilities and the Ministry of Energy, as well as National Economic and Social Development representatives and the Attorney General. Its purpose is to coordinate, follow up, and ensure that the implementation of measures promoting power generation from renewable energy is in compliance with NEPC's resolutions and policies

[2] The capacity factor is meant to limit the amount of kWhs fed to the grid at the specified purchase price of the feed-in tariff. It expresses the percentage of the total energy produced annually compared with a multiple of installed capacity and number of hours in a year. With a capacity factor of 16% a maximum of 1,401,600 kWh per kW installed (in a year with 365 days) or 1,405,440 kWh per kW installed in a year with 366 days) will be remunerated with the FiT. All exceeding kWhs will be remunerated with a 12 months average of the wholesale electricity rate that EGAT sells to PEA (Baht/unit) (at the voltage level of 11-33 kV) plus fuel tariff surcharge average wholesale (Baht/unit).

date, depending on which comes first. The PPA must be signed within 120 days from the date of notice from the electricity distribution authority. In case a PPA has already been signed but the project cannot dispatch power to the system, the SCOD can be postponed by sending a letter to the related distribution authority 30 days prior to the SCOD. The distribution authority will then consider to move the SCOD. However, the SCOD must not be later than June 30, 2016.

MW[4]. On 15th August 2014, the NEPC announced to reopen the residential programme for further applications to fulfil the 100 MW target by allocating 69.36 MW quota for the residential rooftop market, later raising it to 78.63 MW. Find an overview of the current FiTs in table 2.

Table 2 Feed-in Tariff for Commercial and Residential Rooftop Installations

Capacity (MW)	FiT (Baht/kWh)	FiT Premium*(Baht/kWh)
Residential Rooftop 0-10 kWp	6.85 (18.44 €Cent)	0.50 (1.40 €Cent)
Commercial Rooftop 10-250 kWp	6.40 (17.23 €Cent)	0.50
Commercial Rooftop 250-1000 kWp	6.01 (16.19 €Cent)	0.50

(*) Only for Southern border provinces including Yala, Pattani, Narathiwat and 4 districts in Songkla province (i.e. Chana, Thepa, Saba Yoi and Na Thawi),
Source: ERC

The electricity distribution authority, which can be the Provincial Electricity Authority (PEA), the Metropolitan Electricity Authority (MEA) or Sattahip Electricity Authority[3], will be the focal point handling the applications.
In order to prevent the trading of PPAs it is not allowed to transfer the rights and obligations in the application or in the PPA itself to others, unless the applicant receives the consent of the electricity distribution authority according to its guidelines, and the transfer is approved by ERC.

However, if PPAs or rights and obligations are traded, it is not allowed

- to change the number of shareholders in a way that causes the original shareholders of the project to constitute less than one half of the project consortium.
- to change the distribution of shares among the new shareholders in a way that causes the original shareholders to hold less than 51 percent of shares during the first 3 years after COD.

4. Solar Rooftop

Next to the ambitions in the free-field sector, the first solar rooftop policy for the country was announced in 2013 with a target of 100 MW of commercial and 100 MW of residential rooftop systems. While the quota for commercial rooftop PV was reached quickly (~106 MW is realized) and the programme closed for further applications, the residential rooftop market yet has to pick up speed. In the residential sector first systems that got approved to receive FiT from the first FiT application process amounted to around 30

On 9th January 2015, ERC published the regulation (original document) of the residential rooftop programme in the Government Gazette. On 2nd February 2015, ERC announced the call for applications (original document and its amendment) which includes details on how to apply for the remaining residential PV rooftop capacity. Companies can apply (from 9th February) until 30th June 2015.

Main application details for the residential rooftop PV programme:

- ERC called for applications to purchase power from residential solar PV rooftop < 10kWp.
- ERC will purchase power via a FiT at a rate of 6.85 Thai Baht/kWh. The rate is applicable for power sales that do not exceed a capacity factor of 14.84%[5].
- The Commercial Operation Date (COD) must not be later than December 31, 2015
- The PPA must be signed within 60 days from the date of notice from PEA/MEA.
- The terms for the PPA are negotiated for 25 years starting from the Scheduled Commercial Operation Date (SCOD) specified in

[3] The Sattahip Electricity Authority is a distribution authority owned by the Thai Navy as the Navy has been awarded a concession from the Ministry of Interior to distribute electricity to government offices, residential housing, and industrial factories in neighbouring vicinity.

[4] Source: ERI

[5] The capacity factor is meant to limit the amount of kWhs fed to the grid at the specified purchase price of the feed-in tariff. It expresses the percentage of the total energy produced annually compared with a multiple of installed capacity and number of hours in a year. With a capacity factor of 14.84% a maximum of 1,299.98 kWh per kW installed (in a year with 365 days) or 1,303.55 kWh per kW installed in a year with 366 days) will be remunerated with the FiT. All exceeding kWhs will be remunerated with a 12 months average of the wholesale electricity rate that EGAT sells to PEA (Baht/unit) (at the voltage level of 11-33 kV) plus fuel tariff surcharge average wholesale (Baht/unit).

the PPA, the COD, or the actual operation date, depending on which comes first.

- The applications can be submitted to PEA/MEA until the quota is reached but not later than June 30, 2015.
- PEA will announce the selected applications from time to time, but not later than July 31, 2015.
- It is prohibited to transfer the rights and obligations in the application or in the power purchase agreement to others, unless the applicant receives the consent of the PEA according to PEA's guidelines, and the transfer is approved by ERC
- ERC will assign the PPAs for the remaining 78.632 MW according to a quota for each region/province. A detailed overview is provided in Table 3.

5. "Solar Quick Win" initative by the National Reform Committee

In January 2015, the National Reform Council (NRC) spoke in favour of a program that aims at simplifying the installation of rooftop equipment and allows all citizens to install rooftop equipment and connect it to the power network. The "Solar Quick Win" policy framework includes the proposal to implement a net-metering system in Thailand and setting a long-term target of 10,000 MW for rooftop solar.

The rationale of the proposal is to put a greater emphasis on Solar PV rooftop systems, which are considered by NRC to be one of the solutions to Thailand’s energy problem. NRC argues that PV rooftops aim “at enabling the public to generate power for self-consumption and sell an unused amount of power to off takers without any quantity or quota restrictions. This will present new market opportunities and eliminate the resale of power generation licenses. Home and building owners as well as housing and industrial estate operators should then be able to prepare long-term investment plans for the installation of PV rooftop systems.”

This policy framework still has to go through several policy processes until to be finally adopted. In a first step, DEDE, PEA/MEA/EGAT and ERC were charged by the Energy Policy Administration Committee to define a pilot area for first installations of up to 10kW in size for a maximum of 500kW total installed capacity. Find the original proposal here as well as an unofficial GIZ translation here.

Table 3 Regional quota for residential rooftop PV

Utility	Area District	Capacity (MW)
MEA	Bangkok, Nonthaburi and Samutprakarn	35.691
	MEA total	**35.691**
PEA North	Chiangmai, Chiangrai ,Maehongsorn, Lampoon, Lampang and Payao	1.768
	Pitsanulok, Uttaradit, Prae, Kampaengphet, Sukhothai, Tak, Pichit and Nan	3.800
	Lopburi, Nakornsawanm, Phetchaboon, Singburi, Chainart and Utaithani	4.217
PEA North-East	Udonthani, Nongkai,Nongbualampu, Sakonnakorn, Nakornphanom, Konkaen, Loei and Bungkarn	2.314
	Ubonratchathani, Yasothorn, Amnartcharoen, Roi-Et, Srisaket, Kalasin, Mahasarakam and Mukdaharn	1.834
	Nakornratchasrima (Korat), Chaiyaphum, Surin and Burirum	4.087
PEA Central	Ayutthaya, Pathumthani, Saraburi, Aungthong, Prachinburi, Nakornnayok and Srakaew	3.120
	Chonburi, Rayong, Chanthaburi, Trad and Chachoengsao	4.431
	Nakornprathom, Supanburi, Kanchajaburi, Samutsakorn and Amphur Banpong Ratchaburi	3.418
PEA South	Phetchaburi, Ratchaburi (except Amphur Banpong), Samutsongkram, Prachuapkirikan, Chumpon, Ranong	4.385
	Nakornsrithammarat, Suratthani, Phuket, Trang, Krabi, Pang-nga	4.465
	Yala, Pattani, Songkla, Narathiwat, Patalung and Satun	4.841
	PEA total	**42.941**

Source: ERC regulation

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