

# Thailand

## Solar PV Policy Update 05/2016

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### 1. Overall targets and status of PV in Thailand

The latest Alternative Energy Development Plan 2015-2036 ([AEDP 2015](#)), proposed by the Department of Alternative Energy Development and Efficiency (DEDE) was approved by the National Energy Policy Council (NEPC) on 17<sup>th</sup> September 2015 ([original document](#)). The overall renewable energy (RE) target to be achieved is a 30% share in final energy consumption by 2036, inclusive of RE share in electricity, heat and fuel consumption. Within electricity, the target is to have 15-20% of energy consumption from RE, which is supposed to equal a total installed RE capacity of 19,684.4 MW (including hydro power). For solar energy, the specific target is to reach an installed capacity of 6,000 MW by 2036. A timeline for Thailand's solar PV policy is illustrated in figure 2.

According to the Energy Regulatory Commission (ERC) latest update the total installed capacity in Thailand is 2,021 MW. Out of the total there are 1,932 MW of free-field installations/solar farms, while solar rooftops account for 89 MW (see Table 1). However, there are more solar farm and solar rooftop projects that are currently under construction with a commercial operation date (COD) deadline within June 2016. 2015 has been a record year for

Thailand, the total market of newly installed projects grew by more than 50 percent to 722 MW up from 470 MW in 2014 (see Figure 1).

The market is expected to continue developing dynamically in 2016 mostly driven by the Governmental agency and agricultural co-operatives programme (Agro-Solar, see chapter 3). New developments can also be expected in the rooftop sector where the authors see a trend towards commercial self-consumption projects (chapter 5).

Facilitator

## 2. Thailand's Solar Photovoltaic Hard Facts

**Table 1. Current Status of Solar Programmes in Thailand**

Status of solar programmes in MW		COD achieved	PPAs signed and accepted, but no COD yet	Total COD and PPA	COD Date	AEDP Target
1) Free-field installations (solar farms) <sup>[1]</sup>	Adder & FiT Scheme (2006-2015)	1,932	670	2,602	June 30, 2016	2,800
	<b>New!</b> Government and Agricultural Cooperatives Phase 1	-	281 <sup>[3]</sup>	281	December 31, 2016	800
	<b>New!</b> Government and Agricultural Cooperatives Phase 2 (Not announced)	-	-	-	-	-
2) Solar Rooftop <sup>[2]</sup>	Phase 1 (2013) & Phase 2 (2015)	89	77	166	June 30, 2016	200
	<b>New!</b> Self-consumption pilot scheme	-	-	-	-	100
<b>Total</b>		<b>2,021</b>	<b>1,028</b>	<b>3,040</b>		<b>3,900</b>

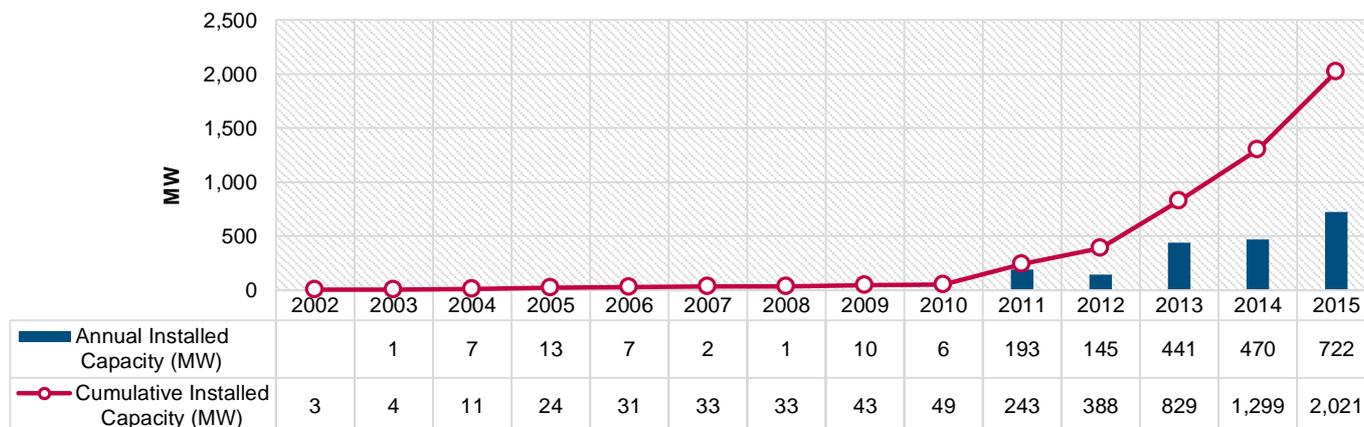
Source: ERC

[1] EGAT&MEA data as of December 31, 2015/PEA data as of 25 January 2016

[2] MEA Data as of 31 December 2015, PEA Data as of 22 January 2016

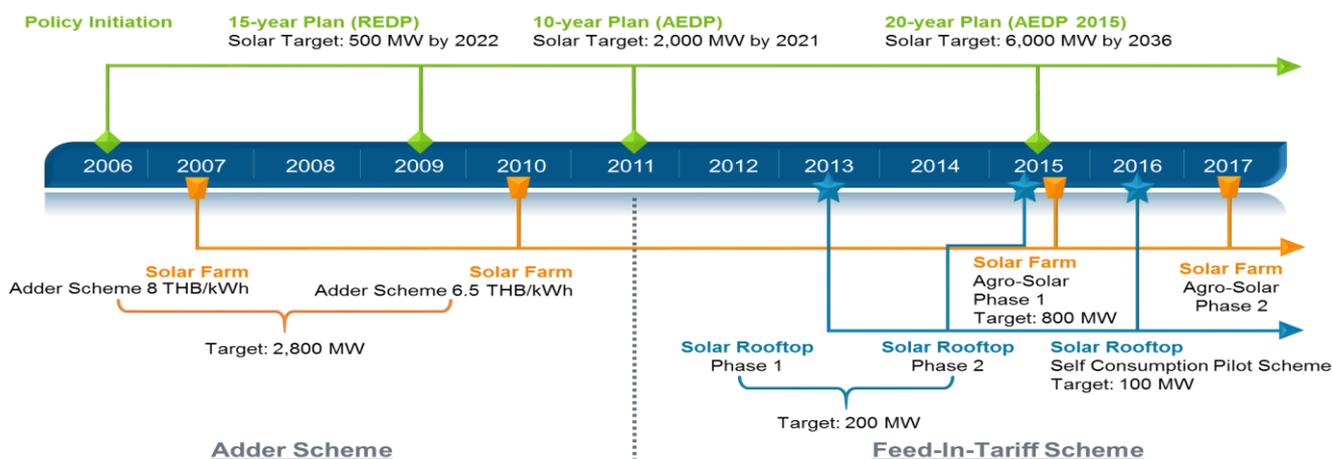
[3] ERC ([Link](#))

**Figure 1. Thailand's Solar PV Installed Capacity**



Source: 2002-2014 data from DEDE ([Link](#)), 2015 data from ERC

**Figure 2. Thailand's Solar PV Policy Timeline**



### 3. Governmental agency and agricultural co-operatives programme (Agro-Solar)

**Background:** In August 2014 the Government announced the “Governmental Agency and Agricultural Cooperatives Programme” (Agro-Solar) 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 (PPP) with the governmental sector or agricultural cooperatives as public partners. However, the details were not revealed until 13<sup>th</sup> March 2015, when the Energy Regulatory Commission (ERC) published the regulation ([original document](#)) in the Government Gazette after NEPC’s approval. Following the approval ERC announced the detailed application process on 17<sup>th</sup> September 2015 ([original document](#)).

**Current Status:** There were some controversies with regards to selecting eligible projects in December 2015. So ERC decided to postpone the process, until NEPC could resolve the issue. On March 11, 2016 the NEPC had a resolution for ERC to re-announce eligible projects and to extend the scheduled commercial operation date (SCOD) date to 31<sup>st</sup> December 2016 ([News article](#)).

On April 1, 2016 ERC re-announced the process and defined new dates ([original document](#)), as shown in the following table:

**Table 2. New dates for Agro-solar programme**

Actions	Initial dates	New dates
Submission of applications to ERC	1-10 Nov. 15	Same dates
Announcement of eligible projects	11 Dec. 15	18 Apr. 16
Drawing process and results	15 Dec. 15	21 Apr. 16
Official announce of selected projects	24 Dec. 15	26 Apr. 16
Phase 1 SCOD	30 Sep. 16	31 Dec. 16
Phase 2 Submission of applications	-	Late 2016 – Early 2017
Phase 2 SCOD	1 Jan. – 30 Jun. 18	Same dates

Source: ERC, 2016

#### Detailed regulation for Agro-Solar

The regulation from 13<sup>th</sup> March 2015 ([original document](#)) announced the purchase of power from solar free-field installations located on land owned by the government and agricultural cooperatives with an installed capacity of 5 MW or less. Power will be purchased via a Feed-in Tariff (FiT) at a rate of 5.66 THB/kWh. This rate is applicable for power sale which does not exceed a capacity factor of 16%<sup>1</sup>.

<sup>1</sup> 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 MW installed (in a year with 365 days) or 1,405,440 kWh per

**Eligible applicants:** Applicants must be certain government agencies or agricultural cooperatives, which will function as project owner and PPA holder. The project owner can have project supporters through public-private partnerships (PPP). Project supporters must be companies registered in Thailand and each company is allowed to support more than one project but no more than 50 MW in total.

#### Group 1 – Governmental agencies:

- Governmental agencies
- Universities regulated by the government
- Governmental organizations (excl. public organization and state enterprises)
- Local administration

#### Group 2 – Agricultural cooperatives:

- Agricultural cooperatives
- Land settlement cooperatives
- Fishing cooperatives

**Targets:** The two groups will split the quota of 800 MW into 400 MW each. Each agency or cooperative will be allowed to host only one project per each depending department per one area.

**Power purchase agreement (PPA):** The PPA duration is 25 years starting from the SCOD specified in the PPA, the COD or the actual operation date, depending on which comes first. The PPA must be signed within 120 days from the date of notice from ERC. 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.

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.
- Change the distribution of shares among the new shareholders in a way that causes the original shareholders to hold less than 51% of shares during the first 3 years after COD.

MW 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 (THB/unit) (at the voltage level of 11-33 kV) plus fuel tariff surcharge average wholesale (THB/unit).

Following ERC's announcement on 17<sup>th</sup> September 2015, the application process will be separated into 2 phases:

### Agro-Solar Phase 1

The target for phase 1 was initially planned for a total of 600 MW for regions with transmission line currently available (North, East, West and Central). However, ERC's re-announcement after NEPC's resolution ([original document](#)) revised phase 1 target down to 300 MW. The announcement included 167 eligible projects, or 798.62 MW, from agricultural cooperatives. Out of those projects, there were 67 projects with a total MW of 271.32 which were selected from the drawing process, shown in Table 2. The COD for all projects in phase 1 must not exceed 30<sup>th</sup> December 2016 according to the latest NEPC resolution ([News Article](#)). This is the second time the COD has been extended; previously from 30<sup>th</sup> September 2016 and 30<sup>th</sup> June 2016 ([original document](#)).

### Agro-Solar Phase 2

In order to fulfil the programme's overall target of 800 MW, phase 2 will have a target of 519 MW (500 MW plus 19 MW leftover from phase 1). The SCOD is determined to be between 1<sup>st</sup> January 2018 and 30<sup>th</sup> June 2018. [The application period for phase 2 will be announced either late 2016 or early 2017.](#)

**Table 2. Selected projects in phase 1**

Region	Projects	MW
<b>1. Metropolitan Electricity Authority (MEA)</b>	<b>6</b>	<b>21.65</b>
<b>2. Provincial Electricity Authority (PEA)</b>		
North	1	5
North-East	-	-
South	-	-
East	17	70.47
West	18	76
Central	25	108.20
<b>PEA Total</b>	<b>61</b>	<b>259.67</b>
<b>Phase 1 Total</b>	<b>67</b>	<b>281.32</b>

Source: ERC ([Link](#))

## 4. Solar Rooftop FiT

### Solar rooftop phase 1

The first solar PV rooftop FiT policy for the country was announced in 2013 with a target of 100 MW for commercial rooftops (10-1,000 kW) and 100 MW of residential (0-10 kW) rooftop systems ([original document](#) and [unofficial GIZ translation](#)). While the quota for commercial rooftop PV was reached quickly and the programme was closed for further applications, only ~21 MW of PPAs were signed in the residential sector. Even though the original COD deadline was set to be 31 December 2013, currently there are still systems remaining, that haven't been erected, so NEPC on 11<sup>th</sup> March 2016 extended the COD deadline to 30 June 2016.

### Solar rooftop phase 2

On August 15, 2014 the NEPC announced to reopen the residential programme (Solar rooftop phase 2). ERC on the 2<sup>nd</sup> February 2015 allocated 78.63 MW to fulfil the 100 MW target in the residential sector ([original document](#) and its [amendment](#)). Find an overview of the latest FiTs for solar PV rooftop in table 4.

In the application process, there were 3,293 projects (25.39 MW) applied with MEA and 8,352 projects (67.83 MW) applied with PEA ([links](#)). In total there were 11,645 projects combining for 93.21 MW which exceeded the 78.63 MW intended target. The list of accepted applicants can be found on [MEA website](#) and [PEA website](#). The original COD deadline was 31<sup>st</sup> December 2015, however NEPC on the 11<sup>th</sup> March 2016 extended the final COD deadline to 30 June 2016.

**Table 3. FiT for Commercial and Residential Rooftop Installations**

Capacity	FiT (THB/kWh)
Residential Rooftop (0-10 kW)	6.85 (18.44 €Cent/kWh)
Commercial Rooftop (10-250 kW)	6.40 (17.23 €Cent/kWh)
Commercial Rooftop (250-1000 kW)	6.01 (16.19 €Cent/kWh)

Source: NEPC ([Original document](#))

## 5. Rooftop PV Self-Consumption Pilot Scheme (Solar Quick Win)

**Background:** In January 2015, the National Reform Council (NRC) spoke in favour of a program that aims at simplifying the installation of rooftop solar and allows all citizens to install such systems 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 ([Original proposal](#) and [unofficial GIZ translation](#)). 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". As first steps, the Energy Policy Administration Committee on 7<sup>th</sup> May 2015 charged DEDE, MEA and PEA to initiate the project by defining a pilot area for implementation ([original document](#)).

**Current status:** DEDE had several focus group meetings with stakeholders to draft the initial concepts for pilot project. The final concept was drafted and submitted to NEPC for approval on 11<sup>th</sup> March 2016. For which they announce a self-consumption pilot scheme not a net-metering scheme, initial details is outlined in the following section. It is expected that ERC will be announcing the detailed regulation within June-July 2016.

### Initial details

**Overview:** Electricity generated from the rooftop PV system must be consumed on-site and any excess electricity fed into the grid will not be compensated for.

**Quota:** A total of 100 MW is allocated for the pilot scheme. PEA and MEA each allow for 50 MW (10 MW for residential-scale; 40 MW for commercial scale)

**System Size:** The definition for system sizes is the same for previous solar rooftop schemes. 0-10 kW for residential buildings and 10 kW-1,000 kW for commercial buildings.

**Timeline:** As shown in table 5.

**Table 4. Timeline for Rooftop PV Self-Consumption Pilot Scheme**

Actions	Dates
ERC to announce details	June - July 2016
MEA and PEA call for applications	July - August 2016
COD deadline	January 2017
Monitoring and Evaluation	January-May 2017

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### Previous Versions

November 2015  
[Solar PV Policy Factsheet Update 10/2015](#)

May 2015  
[Solar PV Policy Factsheet Update 05/2015](#)

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