(Unofficial Translation)

Regulations for the Purchase of Power from Very Small Power Producers (for the Generation Using Renewable Energy)

Definitions:

"Very Small Power Producer (VSPP)"	means	a generator of a private entity, state agency, state-owned enterprise or an individual with his own generating unit, whose power generating process is as described in Section B and who sells no more than 10 MW of electrical power to the Distribution Utility.
"Distribution Utility"	means	Metropolitan Electricity Authority (MEA) and/or Provincial Electricity Authority (PEA)
"Regulations for Synchronization of Generators with Net Output under 10 MW to the Distribution Utility System ("Technical Regulations")	means	regulations that govern synchronization of generators of very small power producers with net output under 10 MW to the system of the Distribution Utility.
"Renewable Energy"	means	energy that exists in nature and can be reproduced in a short period of time after being depleted, such as solar energy, wind energy, hydro power, sea or ocean wave energy, geothermal energy, biomass energy, biogas energy, including secondary energy produced from aforementioned renewable energy, such as biofuel and fuel cells. However, this shall not include non-renewable energy of which the resources are limited, for example, energy obtained from coal, oil shale, tar sands, crude oil, oil, natural gas and nuclear power.

A. Objectives of Power Purchase from Very Small Power Producers

1. To promote the participation of VSPPs in electricity generation;
2. To promote efficient use of domestic natural resources and reduce dependency on electricity generation using commercial fuels, which will help decrease expenditure on fuel import from foreign countries and lessen the environmental impact;

3. To open up an opportunity for people in remote areas to participate in electricity generation;

4. To alleviate the government's investment burden in the electricity generation and distribution systems.

B. Characteristics of the Power Generating Processes of VSPPs

The Distribution Utility will purchase electricity from qualified VSPPs whose generating processes fall into one of the following categories:

1. **Electricity generated from renewable energy sources** such as wind, photovoltaics, mini-hydroelectricity, micro-hydroelectricity, sea or ocean waves, geothermal energy and biogas.

2. **Electricity generated from the following fuels:**

   2.1 agricultural waste or residues, or residues from agricultural or industrial production processes;

   2.2 products converted from agricultural waste or residues, or residues from agricultural or industrial production processes;

   2.3 municipal waste;

   2.4 dendrothermal (wood from fuel tree plantation).

   A VSPP using any of the fuels listed above may use commercial fuels such as oil, natural gas and coal as supplementary fuels. However, the accumulated thermal energy contributed from the commercial fuels in a given year must not exceed 25% of the total thermal energy used for electricity generation in that year.

3. **Electricity generated from energy derived from the fuel production process, utilization or transportation,** namely:

   3.1 waste energy, such as waste steam from industrial or agricultural production processes;

   3.2 loss energy, such as heat from the engine exhaust;

   3.3 by-product energy, such as mechanical energy that is a by-product from the reduction of natural gas pressure.

   This, however, excludes the direct use of non-renewable energy for electricity generation.

C. Electrical System Standards of VSPPs

A VSPP who wishes to generate and sell electricity to the Distribution Utility must comply with the safety and interconnection standards as stipulated in the Regulations for Synchronization of Generators with Net Output under 10 MW to the Distribution Utility System ("Technical Regulations").

D. Procedures and Criteria for Consideration of Power Purchase from VSPPs

1. A prospective VSPP who wishes to sell electricity to the Distribution Utility must submit a completed Application for Sale of Electricity and System Interconnection at the district office of MEA or at the provincial office of PEA where the VSPP plans to make the interconnection to buy/sell electricity.

2. The respective Distribution Utility will consider purchasing power from the VSPP based on the details provided in the aforementioned application form.

3. In the event that the contracted sales capacity of a VSPP is greater than 6 MW, the Distribution Utility will consider the purchase on a case by case basis; relevant documents will be forwarded to the Electricity Generating Authority of Thailand for consideration as well. In this connection, if any sales offer is declined, a report of all analysis must be provided. In case of any dispute, the applicant wishing to sell electricity shall submit an appeal to the Energy Policy and Planning Office.

4. The Distribution Utility will notify the applicant in writing whether the application is accepted within 45 days as from the date the utility receives all the required information specified in the application form. The utility will then provide the applicant with details of interconnection costs within 15 days as from the date of acceptance notification.

5. The VSPP must then sign a power purchase agreement with the Distribution Utility within 60 days as from the date of acceptance notification. If the VSPP fails to sign the agreement within this time frame, the application submitted will be considered void.

6. The VSPP who has signed the power purchase agreement can dispatch power into the grid only after the Distribution Utility has checked whether the interconnection as well as the installed connection equipment meets the standards specified in the application form. The Distribution Utility shall complete the testing within 30 days as from the date the VSPP has completed the installation of all required equipment and has informed the Distribution Utility to undertake the testing of its power system prior to dispatching power into the grid. In the event that the VSPP is a new customer of the utility, the utility's existing regulations for new customers will apply.

7. The VSPP must have obtained a license as required by law and present it to the Distribution Utility prior to the commencement of the sale of electricity.

E. Conditions for Purchasing Power from VSPPs

Conditions for purchasing power from VSPPs are as follows:

1. The Distribution Utility is the purchaser of power.

2. The Distribution Utility will purchase power from generators whose generating processes are as described in Section B.

3. The amount of net power each VSPP dispatches into the distribution system at the connection point shall not exceed 10 MW. The Distribution Utility will, however, consider the capability and security of the distribution system in determining the level of net power acceptable on a case-by-case basis, in accordance with the Technical Regulations.

4. For security of the distribution system, the Distribution Utility reserves the right to check and/or request a VSPP to check, correct and adjust the VSPP's interconnection equipment related to the utility's distribution system whenever it is deemed necessary.

F. Power Purchasing Point and Connection Point

1. A **"Purchasing Point"** means the point at which the meter that measures the amount of power sold by a VSPP to the Distribution Utility is located.

2. A **"Connection Point"** means the point at which a VSPP's system is connected to the Distribution Utility's system. The location of this point is to be determined by the Distribution Utility and may be the same point as the Purchasing Point.

The Distribution Utilities will purchase power from a VSPP at the purchasing point.

G. Costs Incurred for VSPPs

A VSPP shall be responsible for the following costs:

1. Costs of system interconnection comprising the costs of upgrading the distribution system from the connection point to the VSPP's generation system, costs of a meter, costs of protective equipment and the protective equipment testing (unless the generation system already has embedded protective features). VSPPs connected to the low-voltage distribution system are exempted from paying the costs of synchronization pattern checking.

A VSPP shall pay for the entire costs of interconnection before the Distribution Utility starts the interconnection process.

2. **Costs of equipment checking** meaning the costs of checking a VSPP's equipment for power dispatch that will affect the utility system pursuant to Section E.4 (regardless of whether the checking is done in accordance with the Distribution Utility's regulations or at the request of the VSPP), and the incurred operating costs that are additional to the utility's normal operating costs. A VSPP is required to be responsible for the costs of equipment checking only in the case where the utility finds, after checking, that it is a problem attributable to the VSPP.

   (See details in Attachment 1)

   A VSPP shall pay the costs of equipment checking to the Distribution Utility within 30 days as from the date it receives a bill from the utility.

H. Principle of the Tariff Rate Determination for Selling and Purchasing Power to/from VSPPs

The principle of determining the energy charge for selling and purchasing power to/from VSPPs are developed based on the following principles:

1. The energy charge for electricity that the Distribution Utility sells to a VSPP equals to the retail energy charge under the retail tariff structure that is applicable to the VSPP's customer category, plus the retail F_t (automatic tariff adjustment) charge for that month.

   The VSPPs shall still pay for other non-energy components of the total electricity tariffs in accordance with the VSPPs' respective customer categories.

2. For a VSPP whose sales capacity to the grid is less than 6 MW, the energy charge for electricity that the Distribution Utility buys from the VSPP will be divided into two parts for the purchase in each month as follows:

   2.1 In case the sales units that a VSPP sells to the Distribution Utility is less than or equal to the sales units that the Distribution Utility sells to the VSPP in a given month, the Distribution Utility will pay for the energy in this part at the rate equal to the energy charge under the retail tariff structure or the average retail energy charge that the Distribution Utility sells to the VSPP in that given month, plus the retail F_t charge.

   2.2 In case the sales units that a VSPP sells to the Distribution Utility is more than the sales units that the Distribution Utility sells to the VSPP in a given month, the Distribution Utility will pay for the portion of energy that is equal to that sold by the Distribution Utility to the VSPP in that given month, at the rate specified under Item 2.1.

   For the portion of sales units that is over the amount that the Distribution Utility sells to the VSPP, the purchasing prices are set in two scenarios as follows:

2.2.1 For a VSPP using the normal tariff rate, the energy charge for the sales units will equal to the average bulk supply tariff rate, at all voltage levels, that the Electricity Generating Authority of Thailand sells to the Distribution Utility, plus the average wholesale F_t charge.

2.2.2 For a VSPP using the TOU rate, the energy charge for the sales units will equal to the bulk supply tariff rate, at the voltage levels of 11-33 kilovolts, that the Electricity Generating Authority of Thailand sells to the Distribution Utility, plus the average wholesale F_t charge.

3. For a VSPP whose sales capacity to the grid is greater than 6 MW, the energy charge for electricity that the Distribution Utility buys from the VSPP will be as follows:

3.1 For a VSPP using the normal tariff rate, the energy charge for the sales units will equal to the average bulk supply tariff rate, at all voltage levels, that the Electricity Generating Authority of Thailand sells to the Distribution Utility, plus the average wholesale F_t charge.

3.2 For a VSPP using the TOU rate, the energy charge for the sales units will equal to the bulk supply tariff rate, at the voltage levels of 11-33 kilovolts, that the Electricity Generating Authority of Thailand sells to the Distribution Utility, plus the average wholesale F_t charge.

4. For a VSPP with the contracted sales capacity greater than 1 MW at the Purchasing Point, the amount of energy to be calculated under Item 2.2.1 and Item 2.2.2 and Item 3 will be deducted by 2% of the sales units in excess of the amount that the Distribution Utility sells to the VSPP. This is to be used as the project operating cost for the purchase of power from VSPPs.

5. In the case where a VSPP wishes to use the standby power of the utility, the procedures and the tariff rate of standby power shall be in accordance with the announcement on the standby power of the utility.

In this regard, the Electricity Generating Authority of Thailand will provide the information about the average bulk supply tariff rate, at all voltage levels of the Distribution Utility, and the average wholesale F_t charge to the Distribution Utility within 5 working days as from the date of placing the monthly electricity bill to the Distribution Utility. The latter will notify the VSPPs of the purchase of power, indicating the average retail energy charge, the bulk supply tariff or the average bulk supply tariff, including the sales units and purchase units to/from the VSPPs in each month so that the VSPPs could issue the bill and receipt or the receipt/tax invoice to the Distribution Utility.

I. Settlement Conditions

1. In the case where a VSPP buys electricity from the Distribution Utility, the Distribution Utility will record the amount of consumption and issue a bill to the VSPP. The VSPP must pay the electricity bill for the billing period to the utility

within 15 days as from the date of receipt of the bill. For the case of a large-scale power consumer, the existing regulations of the Distribution Utility shall apply.

2. In the case where a VSPP sells electricity to the Distribution Utility, the Distribution Utility will record the amount of sales units (credit), calculate the tariff in each month and notify the VSPP to issue a bill. In this regard, the Distribution Utility may inform the VSPP to request the payment from the utility on a monthly basis or when the accumulated credit of the VSPP reaches 3,000 Baht – in which case the utility must pay the due amount to the VSPP within 30 days as from the date of receipt of the written request for payment from the VSPP.

J. Damages to the Power System

VSPPs and the Distribution Utility must install protective equipment to prevent damages to the power system in compliance with the Technical Regulations.

If damages occur as a result of faulty equipment or other reasons attributable to either party, that party must be responsible for the costs of the damages.

K. Problems Arising from Compliance with the Regulations and Power Purchase Agreements

1. Problems Arising from Compliance with the Regulations

VSPPs who encounter problems arising from compliance with the Regulations or who wish to file a petition or an appeal against the implementation pursuant to the Regulations can submit the petition to the National Energy Policy Council (NEPC) by addressing it to the Chairman of the National Energy Policy Council, the Energy Policy and Planning Office, 121/1-2 Phetchaburi Road, Ratchathewi District, Bangkok 10400. The decision made by the NEPC shall be treated as final.

2. Problems Arising from Compliance with Power Purchase Agreements

VSPPs who encounter problems arising from compliance with the power purchase agreements or who wish to file a petition or an appeal against the implementation pursuant to the power purchase agreements may submit the petition to Arbitration. If a decision cannot be reached by Arbitration, the matter shall be referred to a Thai court for a final decision.

L. Amendments to the Regulations

Any amendments to the Regulations shall be made only with the approval of the National Energy Policy Council.

Interconnection Costs for Very Small Power Producers (VSPPs) with Contracted Sales Capacity Less Than 6 MW

Item	Cost (Baht)	
	MEA	**PEA**
Cost of distribution system construction and modification (Implementation duration)	Depend on the distance and transformer size (HV case)	Depend on the distance and transformer size (HV case) (40-55 days)
Cost of synchronization pattern checking (HV case) (Implementation duration)	Max. 15,000* (3-5 days)	Max. 15,000* (3-5 days)
Cost of protective equipment testing (HV case) (Implementation duration)	Max. 50,000* (3-5 days)	Max. 50,000* (3-5 days)
Cost of additional meter installation		
- Low Voltage	1,600-20,000	1,600-20,000
- High Voltage	10,000-25,000	10,000-25,000

Remarks:

1. For new users, the interconnection costs will be in line with the existing regulations of the Distribution Utility.
2. * For under 6-MW generators, the costs will decrease in proportion to the generator size.
3. If a renewable energy VSPP connecting to a high-voltage system and owing a generator with over 500 kW generating capacity wants to install a Synchronizing Check Relay at a PEA sub-station, PEA will charge for the cost incurred, estimated at 200,000 Baht per set.

Interconnection Costs
for Very Small Power Producers (VSPPs)
with Contracted Sales Capacity Greater Than 6 MW

Item	Cost (Baht)	
	MEA	**PEA**
Cost of distribution system construction and modification (Implementation duration)	Depend on the distance and transformer size (HV case)	Depend on the distance and transformer size (HV case) (40-55 days)
Cost of synchronization pattern checking (HV case) (Implementation duration)	Max. 15,000 (3-5 days)	Max. 15,000 (3-5 days)
Cost of protective equipment testing (HV case) (Implementation duration)	Max. 50,000 (3-5 days)	Max. 50,000 (3-5 days)
Cost of additional meter installation - Low Voltage - High Voltage	 1,600-20,000 10,000-25,000	 1,600-20,000 10,000-25,000
Installation cost for a Synchronizing Check Relay at a utility's sub-station (per set)	-	200,000

Remarks: For new users, the interconnection costs will be in line with the existing regulations of the Distribution Utility.

Attachment 2

Additional Issues for Power Purchase Consideration

1. If a power user using the Time of Day (TOD) rate wants to sell electricity to the Distribution Utility pursuant to the policy on power purchase from VSPPs, the prospective user has to switch to use the Time of Use (TOU) rate.

2. For a VSPP who is an existing customer of the Distribution Utility, the latter will apply an appropriate tariff category to the VSPP in the event that, within 12 months, the amount of electricity the VSPP buys from the Distribution Utility decreases.

3. For a VSPP who is a new customer, the Distribution Utility will classify the VSPP under an appropriate customer category and will install an appropriate meter accordingly. Consideration will be based on the information on the proposed sale of electricity to the system and the peak demand as indicated by the VSPP in the Application for Sale of Electricity and System Interconnection to the Distribution Utility system.

4. With regard to the Power Factor calculation, the Distribution Utilities' existing criteria for their customers will apply.