REGULATIONS FOR THE PURCHASE OF POWER FROM SMALL POWER PRODUCERS (SPPs)

(For Electricity Generated from Non-Conventional Energy, Waste, Residual Fuels and Co-generation)

Definitions

"Small Power Producer" (SPP) means:
any private, government and state enterprise which produces electricity using the processes defined in Item B and supplies electricity to a Power Utility.

"Power Utility" (PU) means:
the Electricity Generating Authority of Thailand (EGAT),
the Metropolitan Electricity Authority (MEA), and/or
the Provincial Electricity Authority (PEA).

"Regulations for Synchronization of Generators to the System of a Power Utility" means:
regulations that govern synchronization of generators to the system of a Power Utility prescribed in the announcement offering to purchase electricity during each purchasing period.

A. Objective of Purchasing Electricity from SPPs

1. To encourage participation by SPPs in electricity generation.
2. To promote the use of indigenous by-product energy sources and renewable energy for electricity generation.
3. To promote more efficient use of primary energy.
4. To reduce the financial burden of government investment in electricity generation and distribution.

B. Characteristics of Qualifying Facilities

A Power Utility (PU) will purchase electricity from any SPP who has the following qualifying electricity generation processes:

1. Electricity generation using non-conventional energy such as wind, solar and minihydro energy (but excluding generation using petroleum, natural gas, coal and nuclear energy).

(Translation)

REGULATIONS FOR THE PURCHASE OF POWER FROM SMALL POWER PRODUCERS

**(For Electricity Generated From Non-Conventional Energy,
Waste or Residual Fuel
and
Cogeneration)**

**Electricity Generating Authority of Thailand (EGAT)
Metropolitan Electricity Authority (MEA)
Provincial Electricity Authority (PEA)**

January 1998

(Revision August 2001)

Note :

This is an English version of Regulations for the purchase of power from Small Power Producers. It should be noted that the original Thai text will prevail over the English in case of conflict.

PREFACE

The National Energy Policy Council has concluded that electricity generation from non-conventional energy, waste or residual fuels and cogeneration increases efficiency in the use of primary energy and by-product energy sources, and helps to reduce the financial burden of the public sector with respect to investment in electricity generation and distribution. The Council therefore has approved a Policy that allows Small Power Producers to generate and supply electricity and has drawn up the regulations for the purchase of electricity from Small Power Producers using such electricity generating processes.

Small Power Producers, requiring additional detail, should make enquiries directly to the Domestic Power Purchase Division, Electricity Generating Authority of Thailand, 53 Moo 2, Charansanitwong Road, Amphur Bang Kruay, Nonthaburi Province, Telephone 436-8510 during office hours.

ELECTRICITY GENERATING AUTHORITY OF THAILAND

METROPOLITAN ELECTRICITY AUTHORITY

PROVINCIAL ELECTRICITY AUTHORITY

CONTENTS

Attachment No. 10 : Announcement : Purchase Price for Power Supplied by Small Power Producers with Firm Contract Using Renewable Energy Entering into the Voluntary Program of the Energy Conservation Promotion Fund under the Promotion of Small Power Producers Using Renewable Energy Project

2. Electricity generation using the following fuels:

   2.1 Waste or residues from agricultural activities or from industrial production processes.

   2.2 Products derived from waste and residues from agricultural and industrial production processes.

   2.3 Garbage (e.g. municipal waste).

   2.4 Dendrothermal sources (e.g. tree plantations).

   Any SPP using the above fuels may use commercial fuels such as petroleum, natural gas and coal as supplementary fuels provided that thermal energy produced by such supplementary fuels each year does not exceed 25% of the total thermal energy used in electricity generation in that particular year.

3. Electricity generation by co-generation using any types of fuels that meet the following requirements for power generation.

   3.1 The process involves the continuous use of energy by using a Topping Cycle or a Bottoming Cycle thermal process.

   3.2 The thermal energy to be used in thermal processes other than electricity generation, must be no less than an average of 10% of the total energy production during each particular year.

   3.3 For any SPP who installs a new co-generation system after this announcement is made, or any SPP who already has constructed a co-generation system before this announcement is made, but has made an improvement in a system to increase efficiency and production capacity, and whose total investment cost for modification of the electricity and steam production system exceeds one half of the installation cost of a new system of the same size, the requirement stated hereafter must also be satisfied. That is, if petroleum and/or natural gas is used either as a primary or supplementary fuel, on an annual average, the sum of the electricity produced and one half of the thermal energy used in the thermal process, must be at least 45% on average, of the total energy from the petroleum and/or natural gas used (based on Lower Heating Value).

C. Electricity System Standards for SPP's

SPP's wishing to generate and supply electricity to a PU are required to comply with the standards safety and for interconnection to the system set forth in the Regulations for Synchronization of Generators to a PU system.

D. Procedures and Criteria for Purchasing Electricity from SPPs

1. The PU shall make an announcement offering to purchase electricity from SPP's periodically, specifying the total capacity requirement and the purchase prices offered for each purchasing period.

2. SPPs wishing to supply electricity to a PU must submit a proposal to supply electricity to the Head Office of Electricity Generating Authority of Thailand at 53 Moo 2, Charansanitwong Road, Tambon Bang Kruay, Amphur Bang Kruay, Nonthaburi Province.

3. The PU shall elect to purchase electricity from an SPP on the basis of its evaluation of the following supplementary documents which must be duly attached to the proposal:

   3.1 Evidence of Certificate of Incorporation as a juristic entity and the Memorandum of Association of such juristic entity.

   3.2 A layout drawing showing the location of the power plant.

   3.3 Installation site of the generator.

   3.4 Description of the electricity generation process.

   3.5 The proportional amount of thermal energy used in electricity production with respect to the total amount of energy used in the total thermal process.

   3.6 Details of the generator(s), Name Plate Ratings and their specifications.

   3.7 The Single Line Diagram and the Metering and Relaying Diagram for interconnection to the PU system.

   3.8 The electrical capacity and energy to be supplied to the PU system at the connection point, together with the SPP's plan for electricity generation and consumption as well as power consumption of other nearby juristic entities using power generated by the SPP.

   3.9 The contracted period during which the SPP shall generate and supply electricity to the PU system.

   3.10 The quantity of back up power required by the SPP form the PU.

   3.11 The number of staff involved with operation of the generating system together with details on their qualifications and their professional engineering licenses.

   3.12 The fuel consumption per year and the average Lower Heating Value of the fuel used in electricity production and co-generation.

4. The PU will announce the results of its evaluation within 90 days of the closing date for submission of proposals to supply electricity for each purchasing period. The announcement will be made at the Head Office of EGAT, Amphur Bang Kruay, Nonthaburi Province.

5. The SPP shall sign an Electricity Purchase/Sales Contract with the PU within one year of the date of the above-mentioned announcement. Any SPP's failure to enter into the said contract, shall result in the cancellation of the proposal to supply electricity from the SPP. The PU thereafter reserves the right to consider proposals form other SPPs.

E. Conditions for Purchasing Electricity from SPPs

Conditions for purchasing electricity from SPPs are as stated below:

1. EGAT will be the sole purchaser of electricity.
2. EGAT will purchase electricity from any SPP that uses the types of electricity generating processes as specified in Item B.
3. In the event that the combined proposed capacity of all SPPs exceeds the quantity the PU wishes to purchase during each purchasing period, the PU reserves the right not to purchase the excess, or to select only proposals of SPPs which are the most suitable and appropriate to the PU's requirements.
4. The total capacity supplied by any SPP to the PU system shall not exceed 60 MegaWatts (MW) at the connection point. The PU will also take into consideration the capability and security requirements of the system, in accordance with the Regulations for Synchronization of Generators to the System of the Power Utility.
5. The SPP is required to obtain authorization, or a letter certifying that permission has been granted for the construction of the generation facility, and for the generation and supply of electricity from the relevant authorities concerned. All the above documents must be submitted to the PU within 18 months after the execution of the Electricity Purchase/Sales Contract and before the commencement of electricity supply.
6. The PU reserves the right to determine the date to commence purchasing electricity from any SPP.
7. The PU willl operate the SPP's Protective System and reserves the right to determine when any SPP should operate it on its own. For the latter case, the SPP is required to strictly adhere to the PU's Switching Order for the safety of the operators of both the SPP and the PU.
8. For system security, the PU has the right to inspect and/or request the SPP to check, rectify and improve its power distributing equipment whenever deemed necessary if it may affect the PU's system.
9. On the Electricity Purchase/Sale Contract signing date, the SPP is required to deposit a performance bond amounting to 5% of the present value of the total receivable capacity payment as stated in the Contract, evaluated using a discount rate equivalent to the interest rate on a 12-month fixed deposit account at Krung Thai Bank Ltd.

The performance bond shall be made in one of the following ways:

9.1 By cheque issued by a local bank, or a cheque guaranteed by a local bank (aval) for a period of no less than that the SPP shall comply with the contract.

9.2 By bonds of the Thai Government or bonds of which the principal amount and interest are guaranteed by the Ministry of Finance, and which legally belong to the SPP. These bonds shall be registered as pledges, with the PU being the pledge.

9.3 By a Bank Guarantee or any other reputable financial institution, for a period of no less than that the SPP shall comply with the contract.

F. Purchasing Point and Connection Point

1. The "Purchasing Point" is defined as the metering point where the SPPs will supply electricity to the PU.
2. The "Connection Point" means the place at which the SPP's system is connected to the PU system, as determined by the PU. The Connecting Point may be the same as the Purchasing Point.

The PU will purchase electricity from the SPP at the Purchasing Point.

G. Expenses of the SPPs

The SPPs are responsible for the following expenses :

1. **Cost of System Interconnection:** which includes the costs of the transmission and distribution system of the SPPs and the PU, the meters, the protective devices and other expenses arising from undertaking purchasing electricity from the SPPs.

   The SPP shall pay for the said expenses before supplying electricity to the PU.

2. **Cost of Equipment Inspection:** which refers to cost of inspection of the SPP's equipment and devices that are connected to the PU system under Item E.8 (either in accordance with the PU's regulations or as requested by the SPP), and the expenses to be incurred from corrective actions that may arise that are in addition to the normal practices of the PU.

The SPP shall pay the PU for the above expenses within 30 days of receipt of an invoice.

H. Conditions for Eligibility for Capacity Payment

1. The electricity capacity to be supplied to the PU throughout the contracted period must be specified and is to be no less than 5 years.
2. The power supply of the SPP must be in accordance with conditions set forth in Item I.

I. Requirements for Power Plant Operation and Shut-down for Maintenance for SPPs Eligible for Capacity Payment

SPPs are required to meet the following conditions:

1. Conditions for Generating Electricity

1.1 The SPPs must generate and supply electricity to the PU during the PU's system peak months of March, April, May, June, September and October, and the total hours of electricity production supplied to the PU must be no less than 7,008 hours per year.

For the types of generation processes defined under Item B.2, the annual hours must be no less than 4,672 hours per year and generation and sales must include the period of March, April, May and June.

1.2 The monthly capacity factor must not be less than 0.51 but no more than 1.0, except when otherwise requested by the PU.

1.3 In case of need, the SPP must be able to generate and supply power in accordance with the PU's requirement (but not exceeding the quantity indicated in the contract). In this case, the PU is required to notify the SPP at least 30 minutes in advance. The power factor must be between 0.85 leading and 0.85 lagging, as instructed by the PU.

1.4 The quality of electricity generated must be in accordance with the "Regulations for the Synchronization of Generators to the System" of the PU.

2. Conditions for Shut-down of Power Plants for Inspection and Maintenance

2.1 Shut-down for maintenance shall take place during the off-peak months of the system which include the months of January, February, July, August, November and December. In the case of an emergency, the total shut-down time for maintenance during the peak demand period (18.30-21.30 hours) of the peak months shall not exceed 30 hours for a 12-month cycle.

2.2 The SPP is required to notify the PU in advance about shut-downs for maintenance as follows:

Maintenance Shut-Down Duration	Advance Notice
less than 1 day	24 hours
1 day or more (not including major overhaul)	1 week
major overhaul	6 months

Shut-downs for major overhaul must be approved by EGAT.

2.3 The total period of shut-down for maintenance must not exceed 840 hours or 35 days in a 12-month cycle.

2.4 The SPP can accumulate and carry forward the number of shut-down hours to a following year for total amount not exceeding 1,080 hours (45 days). The carried forward hours can only be used for one major overhaul in a given period.

2.5 For system security and safety reasons, the PU may disconnect the power plant of the SPP from the PU system.

2.6 Shut-down periods as indicated in items I. 2.3 to I. 2.5, are to be deducted from the number of hours in that particular period of that particular month in calculating capacity according to Attachment No. 1.

J. Criteria in Determining Purchasing Rates for Supply of Electricity from SPPs

Purchasing rates for the supply of electricity from SPPs are to be listed in the announcement for each purchasing period. The purchasing rates are determined as follows:

1. Criteria in Determining Capacity Payment

The capacity payment is determined from EGAT's long-run avoided capacity cost in purchasing electricity from SPPs. The capacity payment is then determined from the contracted term that the SPP will generate and supply electricity to the PU as follows:

Length of Contract	Capacity Payment
Not exceeding 5 years	No capacity payment
Exceeding 5 years to 25 years	Equivalent to the long-run avoided capacity cost during the contracted term that the SPP generated and supplies electricity.

2. Criteria in Determining Energy Payment

2.1 For any SPP who is eligible for capacity payment, the energy payment is determined from EGAT's long-run avoided energy cost resulting from purchasing electricity from the SPP.

2.2 For any SPP who is not eligible for capacity payment, the energy payment is determined from EGAT's short-run avoided energy cost resulting from purchasing electricity from the SPP.

The energy payment is based on the "time of day" as follows:

Energy Payment During the Peak Load	is equivalent to the fuel cost and the operating and maintenance costs of the power plant which will be avoided or which will reduce electricity generation during peak load.
Energy Payment During the Partial Peak Load	is equivalent to the fuel cost and operating and maintenance costs of the power plant which will be avoided or which will reduce electricity generation during partial peak load.
Energy Payment During the Off Peak Load	is equivalent to the fuel cost and operating and maintenance costs of the power plant which will be avoided or which will reduce electricity generation during off peak load.

If the SPP's meters are unable to measure the energy supplied during the above times of day, the energy payment will be equal to the average rates of the three periods.

2.3 Adjustment of Energy Payment Rates.

In the event that there is a change in the cost of fuels used in calculating the avoided cost, the PU will adjust the existing energy payment rates accordingly. The adjusted rates, whether it be an increase or a decrease, shall be according to the cost of fuels for electricity generation in power plants used by EGAT in determining the adjustment on purchasing prices for power supplied by SPPs.

3. In the event that an SPP, eligible for capacity payment, wishes to be considered for purchasing rates other than those specified in the announcement of the PU for each purchasing period, that SPP should submit its proposal to the PU accordingly. The PU will consider the proposed rates on an individual basis and as it deems appropriate. This, however, is on the condition that the present value of the payment for electricity sales proposed by the SPP shall not exceed the payment according to the rates specified in the PU's announcement for that particular purchasing period.

K. Failure to Perform According to the Electricity Purchase/Sales Contract

In the event that either party of the contract fails to perform according to the contract, the following measures shall take effect.

1. If the PU is unable to purchase electricity at any particular period, in calculating the capacity, the number of hours that the PU is unable to purchase electricity shall be deducted from the number of hours during that period of that month or that year (as indicated in Attachment No. 1).

2. In case that the SPP is unable to supply electricity within Monthly Capacity Factor between 0.51 and 1.0 under the conditions stated in Item I. 1.2, the PU shall pay the SPP capacity payment for that month at 50% of the capacity rate specified in the PU's announcement for purchasing power from SPP in that particular purchasing period.

3. In case that the SPP is unable to increase its generation for supplying within the duration period in accordance with the PU's instruction as specified in Item I. 1.3, the PU shall pay the SPP capacity payment for that month by deducting 4 percent per day of the capacity rate specified in the PU's announcement for every day that the SPP is unable to follow the PU's instruction (the act that the SPP is unable to follow the PU's instruction or the duration of the supply period being incomplete, regardless the number of times in a day, shall be counted as one day).

   In case that the SPP is unable to follow the PU's instruction, the SPP can consider that day as a day off or shut down for repair and maintenance in accordance with conditions specified in Item I.2 by notifying the PU within 48 hours. The PU shall not count the amount of energy and number of hours in Peak and Partial Peak periods of the above-mentioned day as the actual capacity of that particular month.

4. At the end of each year, in the event that the number of hours of generation and supply of SPP is less than 7008 hours, the PU shall recall the capacity payment the PU had paid to the SPP in that year at the rate of 0.0625 percent per hour for the hours that the SPP was unable to supply the power (a period exceeding 30 minutes will be counted as 1 hour). However, the capacity payment, after recalled by the PU, shall not be less than zero (0) Baht.

5. In case that the SPP is unable to generate and supply power according to the contract, the PU shall give the SPP 18 months in which to rectity the facility. If the SPP is unable to improve its performance, the PU shall adjust the contracted capacity to a new one that the SPP can actually supply.

6. In case that the SPP wishes to reduce its contracted capacity, after having been generating and supplying power to the PU for more than half of the term of the contract, it can do so on the condition that the advance notice is given to the PU as follows:

Reduction of Capacity			Advance Notification		
Less than	5	MW	Within	12	months
From	5 to 25	MW	Within	24	months
Exceed	25 to 60	MW	Within	36	months

L. Guarantee for Termination of Contract by SPP's Eligible for Capacity Payment

The SPP shall deposit security acceptable to the PU as prescribed in Items E 9.1-9.3

1. Amount of Security

The amount of security requirement will be equivalent to 10% of the capacity payment that the SPP will receive in the first 5 years of the contract term.

The SPP shall submit security before the beginning of sale and purchase of electricity. The PU shall refund the security at the end of the contract term or when the PU has completely recalled the capacity payment from the SPP in case the contract is terminated before the expiry date.

2. Termination

In case that the SPP terminates the contract before the expiry date, the PU shall recall the capacity payment in the amount equivalent to the difference between the capacity payment the SPP has already received since the beginning of sale and purchase date, and the capacity payment determined by the capacity rate corresponding to the actual term when such contract is terminated. Such capacity payment shall comply with the details specified in the announcement for that particular purchasing period.

The capacity payment that is recalled above, will include the interest equal to that calculated from the 12-month fixed deposit interest rate of Krung Thai Bank, Ltd., announced on the termination date plus an additional amount as follows:-

For termination within 5 years, an additional of 10%

For termination after 5 years, an additional of 5%

M. Terms of Payment

The PU shall pay the SPP in arrears for the energy purchased that month within 30 days of receipt of an invoice.

N. Damage to the Power System

The SPP is required to install protective devices to prevent damage to the system. The said devices must meet the requirements prescribed in the "Regulations Governing Synchronization of Generators" to the PU system.

Each party is responsible for damage caused by faulty electrical devices or other causes that arise from his own system.

O. Request for Back-up Power

For the SPP wishing to use electricity from the PU as Back-up Power, the procedure to follow and the rates of Back-up power, shall be as specified in the PU's announcement on the use of Back-up Power.

P. Problems Arising from the Regulations and the Electricity Purchase/Sales Contract

1. Problems Arising from Complying with the Regulations

The SPP, who encounters problems arising from complying with the Regulations, or the SPP, who wishes to file a petition or an appeal in connection with these Regulations, should do so to the National Energy Policy Council.

The petition or appeal should be addressed to: The Chairman, The National Energy Policy Council, the National Energy Policy Council Office, 78 Ratchadamnoen Nok Road, Dusit, Bangkok 10300. Decisions made by the Council shall be considered as final.

2. Problems Arising from Implementation of the Electricity Purchase/Sale Contract

The SPP who encounters problems as a result of implementation of the contract, or who wishes to file a petition or an appeal in connection with fulfilling the conditions of the contract, should refer the matter to Arbitration. If decisions cannot be reached by Arbitration, the matter will be referred to the Thai court.

Q. Amendments to the Regulations

All Amendments to the Regulations shall be made only with the approval of the National Energy Policy Council.

Attachment No.1

CALCULATIONS OF POWER DEMAND

1. Actual Capacity Calculation

$$\text{Actual Capacity} = K_p \times \frac{\text{Energy sales (kWh) during Peak Load of that month deducted by the energy (kWh) according to the second paragraph of the revised Item K3}}{\text{number of hours during Peak Load of that month deducted by the number of hours during Peak Load according to Item I.2.6, K.1 and the second paragraph of the revised K.3}} + K_{pp} \times \frac{\text{Energy sales (kWh) during Partial Peak Load of that month deducted by the energy (kWh) according to the second paragraph of the revised Item K3}}{\text{number of hours during Partial Peak Load of that month deducted by the number of hours during Partial Peak Load according to Item I.2.6, K.1 and the second paragraph of the revised K.3}}$$

K_p and K_{pp} are constants to be stated in the announcement offering to purchase electricity from SPPs for each purchasing period.

There will be no calculation of capacity payment if the meters of the SPP are unable to measure the electricity sold to the PU in each period of day.

2. Billing Capacity Calculation

2.1 When Actual Capacity is Equal to Contracted Capacity:

Billing Capacity = Actual Capacity

2.2 When Actual Capacity is Less than Contracted Capacity:

Billing Capacity = Actual Capacity - 0.2 × (Contracted Capacity - Actual Capacity)

2.3 When Actual Capacity is Greater than Contracted Capacity:

2.3.1 As a Result of the SPP's Generation Planning:

Billing Capacity = Contracted Capacity

2.3.2 As a Result of the Request Made by the Power Utility:

Billing Capacity = Contracted Capacity + 3.0 × [the excess of capacity requested by the power utility over the Contracted Capacity Multiplied by the length of the requested period/(No. of hours in the month)

Attachment No.2

ADDITIONAL EXPLANATIONS

1. Supplementary fuels include fuels used for boiler start-up and for maintaining flame stability.

2. Thermal energy obtained from each type of fuel is calculated from the average Lower Heating Value per one unit of weight or volume multiplied by the total weight or volume of the fuel consumed in that year.

3. The conversion factor used in transforming electricity into thermal energy in these Regulations is:

   1 kWh = 859.845 Kilocalorie (at 100% efficiency)

4. Monthly Capacity Factor is the total energy (kWh) supplied by the SPP to the PU in one month divided by the contracted capacity times the number of hours in that month.

5. The number of hours in a one-year cycle and a one-month cycle is the total number of hours in that particular year or month, minus the number of hours in Item I. 2.6 and Item K. 1.

Attachment No.3

ANNOUNCEMENT

Subject : Regulations for the Purchase of Power from Small Power Producers (SPPs)

1. Capacity Requirement from Each SPP

EGAT will purchase not exceeding 60 MW of capacity from each SPP to be supplied to the Power Utility (PU) system at the connection point. In the event that the proposed capacity exceeds 60 MW, the PU will consider the capability and security required by the system; EGAT will consider this matter on a case by case basis but the capacity purchased from each SPP shall not exceed 90 MW.

2. Operations of Power Generation and Distribution

In order to maintain the overall system security, the SPP shall be able to reduce its power supply during the PU system's off peak demand period, i.e. from 21.30-08.00 hrs., to no less than 65% of the capacity indicated in the contract. In this case, EGAT will notify the SPP at least 30 minutes in advance.

The SPP located in the eastern area of the Gulf of Thailand, i.e. Cha-choeng-sao, Prachinburi, Chonburi, Rayong, Chantaburi, and Trad provinces must be able to reduce its power supply during the PU system's off peak demand period to no less than 40% of the capacity specified in the contract until the construction of the 500 kV transmission system is completed in around the year 2001. After that the reduction of the capacity supply will be adjusted to no less than 65% of the contracted capacity. In this regard, EGAT will notify the SPP at least 30 minutes in advance.

3. Minimum Take Liability

EGAT will purchase power from the SPP in the amount of no less than 80% of the SPP's availability in a particular year. If EGAT is unable to purchase up to the amount specified in any particular year, EGAT shall purchase the remaining amount in the subsequent year. In the event that the amount specified cannot be completely absorbed in the second year, EGAT shall pay the SPP the remaining energy payment using the average rate of energy payment in the second year. The SPP shall resupply EGAT with the remaining amount in subsequent years.

4. Evaluation Criteria

Appropriateness of Project

(1) Appropriateness of the project with respect to technical and engineering aspects
(2) Experience of the SPP (the Bidder), partners, parent companies
(3) Financial status and availability of income sources of the project, including electricity customers and steam customers.

Availability and Appropriateness of Fuels

(4) Reliability of fuel procurement
(5) Suitability of fuel reservation and fuel transportation

Appropriateness of Site Location

(6) Appropriateness of the project site location as regards the security of the power system and the interconnection to the PU system
(7) Environmental impact and the local public consent, including identifiable benefits resulting from the project

Appropriateness in Other Aspects

(8) Date to commence purchasing electricity, which will be based on precedence in time
(9) Modifications of the Model Electricity Purchase/Sales Contract.

REQUIRED SUPPLEMENTARY INFORMATION

1. Technical Information

(1) The proportional amount of thermal energy to be used in thermal processes other than electricity generation in relation to the total energy production.

(2) The proportional amount of the sum of the electricity produced and one half of thermal energy to be used in thermal processes in relation to the energy from petroleum and / or natural gas (based on Lower Heating Value).

(3) Details of the power plant designing and construction, e.g. By which company is the power plant designed? Has there ever been any construction resembling the proposed one before?

(4) Schedules of the designing period, the equipment delivery, the construction and the operation start-up.

(5) The date to commence electricity purchasing, which will be part of the Electricity Purchase/Sales Contract execution.

(6) Heat Balance Diagram.

2. Information on Location

(1) Whether the SPP (the bidder) is the owner of the land where the power plant construction will be located or the land is to be rented or furnished by other means.

(2) Whether the land is in the area where water resources, fuels, labour as well as other construction and power generating facilities can be easily supplied.

(3) Whether the location of the power plant is in proximity to locations of power users and steam customers, and to the Power Utility connection point, by attaching a layout drawing details of the location and distance of the power plant.

(4) Feasibility for the expansion of power generating capacity in the future and plan of the plant expansion if the SPP has planned out the power generating capacity expansion.

(5) Public relations plans to make known the power plant construction to the public in the project locality; if the bidder has prior experience in public relations work, evidence together with details of the implementation and results accomplished should be submitted.

3. Requests for Authorization

(1) The bidder is required to present evidence certifying that requests for authorization to the concerned authorities have been made for the construction of the generation facility, and for the generation and supply of electricity, including the study of environmental impact.

(2) Indicate the period of time during which the authorization for the construction of the generation facility, and for the generation and supply of electricity is expected to be granted.

4. Finance and Income

(1) Provide financial statements, e.g. income statement, balance sheet and cash flow, including the previous annual reports (at least three years backwards) of the bidder and partners. If the documents cannot be provided, reasons must be given and other evidence of financial status must be provided so as to enable the evaluation of the bidder's financial status and actual ability to operate the project.

(2) Illustrate the project financing plan.

(3) Provide evidence of the project sponsors' intention to offer a loan to the project.

(4) Provide the name list of electricity and steam users, together with the purchase amount of electricity and steam.

5. Main Fuels and Procurement of Supplementary Fuels

(1) Provide evidence of fuel procurement, period of securing the fuels, transportation, transportation routes, and fuel storage.

(2) Plan for the use of supplementary fuels instead of main fuels, including details of such supplementary fuels procurement.

(3) Specifications of main fuels and supplementary fuels, e.g. gross calorific value, ash and sulphur contents in case of coal.

(4) Fuel properties which have impact on environment and proposed alleviation measures.

6. By-products and Waste from the Power Plant

(1) Illustrate qualities and characteristics of waste created by the power plant, and the disposal plan.

(2) If by-products from the power plant can be of use, what the disposal plan will be -- To whom will they be delivered or sold? What are the criteria of the purchase contract? What will the price be?

7. Administration and Management

(1) Detailed plan of the administration and management, e.g. the power plant monitoring will be done by the bidder or by sub-contracting another party to operate the work. In the latter case, who will be contracted and what will be the principles specified in the hiring contract?

(2) Illustrate the plan for the power plant maintenance.

Attachment No.4

ANNOUNCEMENT

Subject : Purchase of Power from Small Power Produces (for Electricity generated from Non-Conventional Energy Residual Fuels), Waste, Garbage or Wood Chips

Pursuant to the Electricity Generating Authority of Thailand (EGAT)'s *Announcement on the Purchase of Power from Small Power Producers (SPPs) (First Request), dated 30 March 1992,* with the total capacity requirement of 300 MW and to the subsequent announcements on the expansion of the capacity requirement and the period of acceptance of proposals, with the total capacity of 1,444 MW and the closing date of acceptance of proposals on 29 December 1995, EGAT hereby offers to expand the capacity requirement from SPPs under the following conditions:

1. Characteristics of Electricity Generating Processes

1.1 Electricity generation using non-conventional energy, or

1.2 Electricity generation using the following fuels:

1.2.1 Waste or residue from agricultural activities or waste from production process of industrial or agricultural products;

1.2.2 Products derived from waste or residue from agricultural activities or from production process of industrial or agricultural products;

1.2.3 Garbage;

1.2.4 Dendrothermal fuels (e.g. tree plantations).

Any SPP using the above fuels may use commercial fuels such as supplementary, natural gas and coal as supplementary fuels provided that thermal energy produced by such supplementary fuels each year does not exceed 25% of the total thermal energy used in electricity generation in that particular year.

2. Capacity Requirement

EGAT will purchase not exceeding 60 MW of capacity from each SPP to be supplied to the Power Utility (PU) system at the connection point. In the event that the proposed capacity exceeds 60 MW, the PU will consider the capability and security required by the system; EGAT will consider this matter on a case by case basis but the capacity purchased from each SPP shall not exceed 90 MW. (EGAT has suspended power purchase in the eastern area of the Gulf of Thailand -- Cha-Choeng-Sao, Prachinburi, Chonburi, Rayong, Chantaburi and Trad provinces -- until the construction of the 500 kV transmission system is completed, which is expected to be around the year 2001.)

3. Operation of Power Generation and Distribution

In order to maintain the overall system security, the SPP shall be able to reduce its power supply during the PU system's off peak demand period, i.e. from 21.30-08.00 hrs., to no less than 65% of the capacity indicated in the contract. In this case, EGAT will notify the SPP at least 30 minutes in advance.

4. Minimum Take Liability

EGAT will purchase power from the SPP in the amount of no less than 80% of the SPP's availability in a particular year. If EGAT is unable to purchase up to the amount specified in any particular year, EGAT shall purchase the remaining amount in the subsequent year. In the event that the amount specified cannot be completely absorbed in the second year, EGAT shall pay the SPP the remaining energy payment using the average rate of energy payment in the second year. The SPP shall resupply EGAT with the remaining amount in subsequent years.

5. Purchase Prices

EGAT will purchase power from SPPs at the rates specified in the EGAT's *Announcement on Purchase Price for Power Supplied by SPPs, dated 3 September 1996.*

6. Bid Security

6.1 The SPP shall submit to EGAT a Bid Security in the amount equivalent to Baht 500/kW based on the SPP's proposed capacity sales to EGAT. Such a security shall be one of the following:

6.1.1 Cheque issued by a reputable local bank acceptable to EGAT;
6.1.2 Letter of guarantee from a reputable local bank acceptable to EGAT;
6.1.3 Letter of guarantee from a reputable local financial institution acceptable to EGAT.

6.2 The Bid Security as per Item 6.1 shall be valid for a period of no less than 18 months as from the proposal submission date.

6.3 EGAT shall return the Bid Security to each unselected SPP within 30 days following the announcement of the proposal selection results.

6.4 In case the SPP wishes to withdraw its proposal from the selection consideration or the SPP, having been selected, fails to execute the Electricity Purchase/Sales Contract as agreed to during negotiations for a reason arising from the SPP, EGAT shall retain the Bid Security.

6.5 EGAT shall return to the selected SPP the Bid Security on the signing date to the Electricity Purchase/Sales Contract. The SPP shall then deposit a contract performance guarantee, as prescribed in Item E 9 of the *Regulations for the Purchase of Power from SPPs,* to EGAT on the contract signing date, or within 30 days in case that the negotiation on the said contract cannot be finalized due to a reason arising from EGAT.

7. Affirmance of Offers in the Proposal

The SPP shall affirm the offers specified in the proposal and shall not alter any information therein for a period of 18 months as from the stamped date of receipt of the proposal by EGAT.

8. Period and Venue of Acceptance of Proposal

Proposals to supply electricity from SPPs will be accepted from 1 November 1996 onwards at EGAT's Head Office, Amphur Bangkruay, Nonthaburi.

9. Announcement of Results

EGAT will notify selected SPPs of the results of its evaluation within 90 days as from the stamped date of the proposals, except in case SPPs wish to negotiate on conditions other than those prescribed in Regulations and the Model Electricity Purchase/Sales Contract.

10. Contract Implementation

The SPP shall sign an Electricity Purchase/Sales Contract with EGAT within one year as from the date of the EGAT's announcement of results.

Effective as of 1 November 1996.

Announced on 3 September 1996

(Mrs.Pimolsri Siripaibul)
Deputy General Manager, Account and Finance
Acting for General Manager
Electricity Generating Authority of Thailand

Attachment No.5

ANNOUNCEMENT

Subject : Purchase Price for Power Supplied by Small Power Producers

Pursuant to the Regulations for the Purchase of Power from Small Power Producers (for electricity generated from non-conventional energy, waste or residual fuels, and cogeneration), dated 25 May 1992, the Regulations for the Purchase of Power from Small Power Producers No. 2 1994, and the Announcement dated 3 September 1996 on the Purchase Price for Power Supplied by Small Power Producers, the Electricity Generating Authority of Thailand (EGAT) hereby abrogates the Announcement dated 3 September 1996 on the Purchase Price for Power Supplied by Small Power Producers and this Announcement will supersede.

Purchase Price for SPPs entering into an Electricity Purchase/Sales Contract with Specified Capacity to be Supplied to the Power Utility throughout a Contract Term more than 5 years (Firm) :

Capacity Payment (CP_o)

Term of Contract	Capacity Payment categorised by types of fuel (Baht/kW/month)		
	Natural Gas	Fuel Oil/Others	Coal
Greater than 5 years but not exceeding 10 years :	164	203	229
Greater than 10 years but not exceeding 15 years :	204	253	285
Greater than 15 years but not exceeding 20 years :	227	281	317
Greater than 20 years but not exceeding 25 years :	302	374	422

Energy Payment (EP_o)

Type of Fuel	EP_o (Baht/kWh)
Natural Gas	0.85
Fuel Oil/Others	0.71
Coal	0.62

The fixed parameters of K_p and K_{pp} as stated in the Announcement of the Purchase Price of Power from Small Power Producers dated 10 November 1991 has been annulled. The calculation of actual capacity is made with fixed parameter of

$$K_p = \frac{3.0}{13.5} \quad \text{and} \quad K_{pp} = \frac{10.5}{13.5}$$

Purchase Price for SPPs entering into an Electricity Purchase/Sales Contract with Unspecified Capacity or with Contract Term not exceeding 5 years (Non-Firm) :

Capacity Payment

There shall be no capacity payment.

Energy Payment

Energy Payment = Baht 0.87 per kWh

SPPs who wish to have the Power Utility consider Purchasing Rate other than the aforesaid rates, taking into consideration the appropriateness of their projects, may submit their proposals accordingly; however, the proposed present value of the payment for electricity sales shall not exceed the present value of the payment value of the payment receivable from the rates specified above.

Formulae for Price Adjustment :

The above-mentioned capacity payment will be adjusted in accordance with the U.S. dollar exchange rate as per the following formulae :

1. In case Natural Gas is Used as Fuel

$$CP_t^{GAS} = CP_o^{GAS} \quad [0.80(FX_t/27) + 0.20] \quad \text{Baht/kW/month}$$

2. In case Fuel Oil / Others is Used as Fuel

$$CP_t^{FO} = CP_o^{FO} \quad [0.70(FX_t/27) + 0.30] \quad \text{Baht/kW/month}$$

3. In case Coal is Used as Fuel

$$CP_t^{coal} = CP_o^{coal} \quad [0.70(FX_t/27) + 0.30] \quad \text{Baht/kW/month}$$

Where CP_t^{GAS} = capacity payment in case natural gas is used as fuel in the month t (Baht/kW/month)

CP_t^{FO} = capacity payment in case fuel oil/others is used as fuel in the month t (Baht/kW/month)

CP_t^{coal} = capacity payment in case coal is used as fuel in the month t (Baht/kW/month)

FX_t = the average U.S. dollar exchange rate of the buying and selling rate made via telegram on the last day of month t that the commercial banks apply to customers as published by the Bank of Thailand (Baht/U.S.Dollar)

Formulae for Energy Payment Adjustment

1. For a firm Electricity Purchase/Sales Contract

Rates of energy payment will be adjusted when the price of fuel changes from the base (the price on 1 August 1995) as per the following formula

$$EP_t = (EP_o + ES_t) \quad \text{Baht/kWh}$$

1.1 In case Natural Gas is used as Fuel

$$ES_t^{GAS} = \frac{1}{10^6} (P_t - P_o) \times \text{Heat Rate} \quad \text{Baht/kWh}$$

Where ES_t^{GAS} = the price adjustment factor in case natural gas is used as fuel in the month t (Baht/kWh)

P_t = the price of natural gas that PTT sold to SPPs in the month t (Baht/million Btu)

P_o = the price of natural gas that PTT sold to SPPs in August 1995 which is used as the base for calculation at the rate of 77.0812 Baht/MillionBtu

Heat Rate = the average fuel consumption in order to generate energy = 8,600 Btu/kWh

1.2 In case Fuel Oil/Others is used as Fuel

$$ES_t^{FO} = \frac{1}{39,400} (P_t - P_o) \times \text{Heat Rate} \quad \text{Baht/kWh}$$

Where ES_t^{FO} = the price adjustment factor in case fuel oil/others is used as fuel in the month t (Baht/kWh)

39,400 = Conversion Factor of Fuel Oil (Btu/Litre)

P_t = The average price of fuel oil purchased by EGAT in the month t (Baht/Litre)

P_o = The average price of fuel oil purchased by EGAT in August 1995 which is used as the base for calculation at the rate of 2.9242 Baht/Litre)

Heat Rate = the average fuel consumption in order to generate energy = 8,600 Btu/kWh

1.3 In case Coal is used as Fuel

$$ES_t^{COAL} = \frac{1}{26.5877 \times 10^6} [(P_t \times FX_t) - P_o] \times \text{Heat Rate} \quad \text{Baht/kWh}$$

Where ES_t^{COAL} = the price adjustment factor in case coal is used as fuel in the month t (Baht/kWh)

26.5877×10^6 = Conversion Factor of Coal (Btu/Ton)

P_t = Japanese Benchmark Price of Steam coal in the month t (U.S. Dollar/Ton)

FX_t = the average U.S. dollar exchange rate of the buying and selling rate made via telegram on the last day of month t that the commercial banks apply to customers as published by the Bank of Thailand (Baht/U.S.Dollar)

P_o = Japanese Benchmark Price of Steam Coal in August 1995 which is used as the base for calculation amounting to 1,007 Baht/ton

Heat Rate = the average fuel consumption in order to generate energy = 8,600 Btu/kWh

2. For a Non-Firm Electricity Purchase/Sales Contract

Rates of energy payment will be adjusted when the cost of fuel oil purchased by EGAT changes by more than 5 Stangs/Litre from the base price (Baht 2.7681/Litre).

Announced on 5 November, 1997

(Viravat Chlayon)
Governor, Electricity Generating Authority of Thailand

Attachment No.6

Electricity Charges
(Effective as of January 1, 1997)
Standby Rate

CASE I Standby rate for primary self-generated customer which requires back-up power in case of disruption of its generation or maintenance shut-down or schedule maintenance outage as notified to EGAT through a single demand meter.

1.1 Month of unused Standby service
Monthly Rate

Electricity charges will be calculated from contract demand only.

1.1.1 Contract demand at 30 KW but less than 2,000 KW

1.1.1.1 At Voltage level of 69 KV and over
Demand charge for back-up power per kilowatt 52.71 Baht

1.1.1.2 At Voltage level of 22-33 KV
Demand charge for back-up power per kilowatt 58.88 Baht

1.1.2 Contract demand at 2,000 KW and over

1.1.2.1 At Voltage level of 69 KV and over
Demand charge for back-up power per kilowatt 67.29 Baht

1.1.2.2 At Voltage level of 22-33 KV
Demand charge for back-up power per kilowatt 85.51 Baht

1.2 Month of Standby service
Monthly Rate

Electricity charges compose of demand charge and energy charge as followings.

1.2.1 If actual demand is less than the contract demand

Demand charge : Determined by applying normal rate to actual demand plus applying standby rate to the difference of contract demand and actual demand as item 1.1.

Energy charge : Determined by applying normal rate to amount of energy consumption.

1.2.2 If actual demand is greater than the contract demand

Demand charge : Determined by applying normal rate to actual demand which is not over the contract demand plus applying two times of normal rate to the excess contract demand.

Energy charge : Determined by applying normal rate to the actual energy consumption.

Minimum charge : Minimum charge should not be less than the demand charge on item 1.1.

CASE II For the customers who generate electricity for its own use together with cogeneration complied with SPP regulations, and basically receive electricity supplied by their own generation and require back-up power in case of disruption of its generation or maintenance shut-down or scheduled maintenance outage as notified in advance to EGAT through a single demand meter.

2.1 Month of unused standby service
Monthly Rate

Electricity charges determined from contract demand through applying 15 percent of normal rate.

2.1.1 Contract demand at 30 KW but less than 2,000 KW

2.1.1.1 At Voltage level of 69 KV and over
Demand charge for back-up power per kilowatt 26.36 Baht

2.1.1.2 At Voltage level of 22-33 KV
Demand charge for back-up power per kilowatt 29.44 Baht

2.1.2 Contract demand at 2,000 KW and over

2.1.2.1 At Voltage level of 69 KV and over
Demand charge for back-up power per kilowatt 33.46 Baht

2.1.2.2 At Voltage level of 22-33 KV
Demand charge for back-up power per kilowatt 42.76 Baht

2.2 Month of Standby service
Monthly Rate

Electricity charges compose of demand charge and energy charge as below.

2.2.1 Actual demand is less than the contract demand

Demand charge : Determined by applying normal rate to actual demand plus the different of contract demand and actual demand apply to the rate on item 2.1.

Energy charge : Determined by applying normal rate to actual energy used.

2.2.2 If actual demand is greater than the contract demand

Monthly rate

Demand charge : Determined by applying normal rate to actual demand which is not over the contract demand plus applying two times of normal rate to the excess contract demand.

Energy charge : Determined by applying normal rate to the actual energy consumption.

Minimum charge : Minimum charge should not be less than the demand charge on item 2.1.

Conditions and Criteria

1. While the customer has to set a contract for back-up power and specify the contract demand for standby power, the Utility will consider providing appropriate demand for particular generator.

2. The Annual Load Factor should not be over 15 percent otherwise the contract for standby power would be cancelled, and normal rate would be applied for the consecutive month.
3. In any month if actual demand is greater than the contract demand, the Utility will consider the actual demand to be the standby contract demand for the consecutive month.

4. Annual Load Factor will be determined from annual consumption of standby power once a year through the formula below

$$\text{Load factor (\%)} = \frac{\text{Total annual energy} \times 100}{\text{Yearly maximum demand} \times \text{hours of yearly period}}$$

Criterions for electricity charge

1. The electricity charge per unit can be charged in accordance with the utility's uncontrollable and chargeable expenses (Ft). The rate adjustment will be shown on the electricity bill.
2. The electricity charge as shown does not include VAT which is under the responsibility of the buyers.

Attachment No.7

STANDBY TARIFF

Effective Date : October 1, 2000

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1) For the month that customer does not use electricity :

The contracted demand in standby power purchase agreement is charged at rates below :

Voltage Level	Standby Demand Charge (Baht/kW)	
	Cogeneration	Non-Cogeneration
69 kV and over	26.36	52.71
11-33 kV	29.44	58.88
Below 11 kV	33.22	66.45

There is no energy charge.

2) For the month that customer uses electricity :

2.1 The actual demand is **less than or equal** to the contracted demand stipulated in the standby power purchase agreement.

The actual demand is charged at normal demand rate of the time-of-use tariff and the demand up to contracted demand is charged at standby rate in the table above.

Energy is charged at normal energy rate of the time-of-use tariff.

2.2 The actual demand is **more than** the contracted demand stipulated in the standby power purchase agreement.

The actual demand, which is equal to contracted demand, is charged at normal demand rate of the time-of-use tariff and the demand, which exceeds contracted demand, is charged at twice of normal demand rate of the time-of-use tariff

Energy is charged at normal energy rate of the time-of-use tariff.

Minimum Charge : Minimum charge must not less than total charge by 1.

Notification

1. An annual load factor is not more than 15%. If the annual load factor exceeds 15%. EGAT will terminate the standby tariff in the standby power purchase agreement and charge to normal energy rate of the time-of-use rate in the following month.

2. The annual load factor is calculated as follows:

$$\text{Annual Load Factor} = \frac{\text{Yearly energy consumption x 100}}{\text{Annual maximum demand x Total hours in 1 year}}$$

3. The customer who wants to use the standby tariff must contact EGAT to sign a standby power purchase agreement. EGAT will consider the amount of standby power to provide the appropriated quantity rather than the quantity requested by the customer.

4. For the month that customer uses electricity, the customer will be charged at time-of-use rate instead of time-of-day rate. The actual demand, to be charged, is the maximum demand in peak period rather than the whole-day period.

5. If the actual maximum demand on peak period of each month exceeds the demand stipulated in the standby power purchase agreement 6 times, EGAT will amend the contracted demand to actual maximum demand instead of the stipulated demand in the following month.

6. After amending the contracted demand, if the actual maximum demand on peak period of each month lower than the amended demand, the customer may reduce contracted demand to the average of the maximum demand of the following 6 months. If the customer does not use standby power for 6 months, the amended demand will be the former contracted demand in standby power purchase agreement in the following month.

7. The minimum charge should not less than 70% of the total amount of maximum demand charge for the last 12-month period ending with the current month. According to the cabinet resolution on February 16, 2000, the minimum charge is 0 until September 2002. And there is no charge for standby power for the month that customer does not use electricity until September 2002.

8. A power factor charge of Baht 14.02 will be made on each kilo voltage-ampere reactive (kVAr) in excess of kVAr equivalent to power factor 0.85 and customer must pay monthly service charge of Baht 228.17.

9. The customer must pay Value Added Tax add on the above rates.

Attachment No.8

ANNOUNCEMENT

Subject : Purchase Price for Power Supplied by Small Power Producers with Non-Firm Contract

Pursuant to the cabinet resolution on 10 July, 2001 concerning the power purchase price for Small Power Producers (SPPs), EGAT hereby abrogates the Announcement of Purchase Price for Power Supplied by Small Power Producers dated 5 November, 1997 in section of purchase price for power supplied by SPPs with non-firm contract and this announcement will supersede as follows.

Power Purchase Price for SPPs with non-firm contract

Capacity Payment (CP_t)

No capacity payment

Energy Payment (EP_t)

Energy Payment per unit 1.59 Baht

Purchase price will be changed when the price of natural gas that PTT sold to SPPs changes from the base price of 151.4548 Baht/millionBtu more or less than 1.0000 Baht/millionBtu by using the following calculation.

$$\mathbf{EP_t^{NF} = \frac{[(P_t \times Heat\ Rate/10^6) + O\&M/2] \times (1+T)}{(1-L)}} \quad \textbf{Baht/kWh}$$

where :

EP_t^{NF}	=	Energy Payment in the month t
P_t	=	the price of natural gas that PTT sold to SPPs in the month t (Baht/millionBtu)
Heat Rate	=	the average fuel consumption in order to generate energy
	=	8,600 Btu/kWh
O&M	=	the operating and maintenance expenses = 0.05 Bhat/kWh
L	=	percentage of loss from transmission system = 4%
T	=	Income tax rate = 15%

Effective as of 10 July, 2001.

Announced on 1 August, 2001

(Vitaya Kotcharug)
Governor, Electricity Generating Authority of Thailand

Attachment No.9

ANNOUNCEMENT

Subject : Purchase Price for Power Supplied by Small Power Producers with Firm Contract Using Renewable Energy

Pursuant to the cabinet resolution on July 10, 2001 concerning the power purchase price for Small Power Producers (SPPs), EGAT hereby changes the Announcement of Purchase Price for Power Supplied by Small Power Producers dated 5 November, 1997 in section of the power purchase price for SPPs with Firm contract and using non-commercial fuels as follows:

- non-conventional energy such as wind, solar, minihydro energy ; or
- waste or residues from agricultural activities or industrial production processes ; or
- products derived from waste or residues from agricultural or industrial production processes ; or
- garbage (e.g. municipal waste) ; or
- dendrothermal sources (e.g. tree plantations).

Power purchase price for SPPs entering into an Electricity Purchase/Sale contract with specified capacity to be supplied to the Power Utility throughout a Contract Term more than 5 years (Firm) and using renewable energy will be as follows

Capacity Payment (CP_t)

$$CP_t^{others} = CP_o\,(0.80\,(FX_t/38) + 0.20) \quad \text{Baht/kW/month}$$

where:

CP_t^{others} = Capacity Payment in the month t (Baht/kW/month)

CP_o^{others} = Base Capacity Payment (Baht/kW/month)

Term of Contract	Capacity Payment (CP_0) (Baht/kW/month)
Greater than 5 years but not exceeding 10 years	217
Greater than 10 years but not exceeding 15 years	270
Greater than 15 years but not exceeding 20 years	301
Greater than 20 years but not exceeding 25 years	400

FX_t = the average U.S.dollar Exchange Rate of the buying and selling rate made via telegram on the last day of the month t that the commercial banks apply to customers as published by the Bank of Thailand (Baht/U.S. dollar).

Energy Payment (EP_t)

$EP_t^{others} = EP_o^{others} + ES_t^{others}$ Baht/kWh

where :

EP_t^{others} = Energy Payment in the month t (Baht/kWh)

EP_o^{others} = Base Energy Payment = 1.49 Baht/kWh

ES_t^{others} = the price adjustment factor in case of using other fuels in the month t (Baht/kWh)

= $(1/10^6) \times (P_t - P_o) \times$ Heat Rate (Baht/kWh)

P_t = the price of natural gas that PTT sold to SPPs in the month t (Baht/millionBtu)

P_o = the price of natural gas that PTT sold to SPPs in January 2001 which is used as the base for calculation at the rate of 151.4518 Baht/millionBtu

Heat Rate = the average fuel consumption in order to generate energy = 8,600 Btu/kWh

Effective as of 10 July, 2001.

Announced on 1 August, 2001

(Vitaya Kotcharug)
Governor, Electricity Generating Authority of Thailand

Attachment No.10

ANNOUNCEMENT

Subject : Purchase Price for Power Supplied by Small Power Producers with Firm Contract Using Renewable Energy Entering into the Voluntary Program of the Energy Conservation Promotion Fund under the Promotion of Small Power Producers Using Renewable Energy Project

Pursuant to the cabinet resolution on July 10, 2001 concerning the power purchase price for Small Power Producers (SPPs), EGAT hereby changes the Announcement of Purchase Price for Power Supplied by Small Power Producers dated 5 November, 1997 in section of the power purchase price for SPPs with Firm contract and using non-commercial fuels as follows:

- non-conventional energy such as wind, solar, minihydro energy ; or
- waste or residues from agricultural activities or industrial production processes ; or
- products derived from waste or residues from agricultural or industrial production processes ; or
- garbage (e.g. municipal waste) ; or
- dendrothermal sources (e.g. tree plantations).

Power purchase price for SPPs entering into the Voluntary Program of the Energy Conservation Promotion Fund under the Promotion of Small Power Producers using Renewable Energy Project and Power purchase price for the additional capacity of SPPs with contracts prior to 16 June, 2000 entering into the Voluntary Program of Energy Conservation Promotion Fund will be as follows

Capacity Payment (CP_t)

$$CP_t^{others} = CP_o\,(0.80\,(FX_t/38) + 0.20) \quad \text{Baht/kW/month}$$

where:

CP_t^{others} = Capacity Payment in the month t (Baht/kW/month)

CP_o^{others} = Base Capacity Payment (Baht/kW/month)

Term of Contract	Capacity Payment (CP_0) (Baht/kW/month)
Greater than 5 years but not exceeding 10 years	217
Greater than 10 years but not exceeding 15 years	270
Greater than 15 years but not exceeding 20 years	301
Greater than 20 years but not exceeding 25 years	400

FX_t = the average U.S.dollar Exchange Rate of the buying and selling rate made via telegram on the last day of the month t that the commercial banks apply to customers as published by the Bank of Thailand (Baht/U.S. dollar).

Energy Payment (EP_t)

$EP_t^{others} = EP_o^{others} + ES_t^{others}$ Baht/kWh

where :

EP_t^{others} = Energy Payment in the month t (Baht/kWh)

EP_o^{others} = Base Energy Payment = 1.49 Baht/kWh

ES_t^{others} = the price adjustment factor in case of using other fuels in the month t (Baht/kWh)

= $(1/10^6) \times (P_t - P_o) \times$ Heat Rate (Baht/kWh)

P_t = the price of natural gas that PTT sold to SPPs in the month t (Baht/millionBtu)

P_o = the price of natural gas that PTT sold to SPPs in January 2001 which is used as the base for calculation at the rate of 151.4518 Baht/millionBtu

Heat Rate = the average fuel consumption in order to generate energy = 8,600 Btu/kWh

Effective as of 10 July, 2001.

Announced on 1 August, 2001

(Vitaya Kotcharug)
Governor, Electricity Generating Authority of Thailand