

Ministerial Decree 11/04/2008

Ministry of Economic Development - Criteria and methods to stimulate the production of electricity from solar energy source through cycles
(Official Journal 30/04/2008 No 101)

THE MINISTER OF ECONOMIC DEVELOPMENT

in consultation with

THE MINISTER OF THE ENVIRONMENT AND THE PROTECTION OF LAND AND SEA

Since art. 7, paragraph 1 of legislative decree of 29 December 2003, n. 387, bringing the implementation of the Directive 2001/77/EC on the promotion of electricity produced from renewable energy sources in the internal electricity market, establishes that within six months from the date of entry into force of the same legislative decree, the Minister of Productive Activities [now Minister of Economic Development], in consultation with the Minister of the Environment, in agreement with the Unified Conference, adopts one or more decrees, by means of which the criteria for the incentive of electricity generation by solar energy source are defined;

since art. 7, paragraph 2, of legislative decree of 29 December 2003, n. 387, establishes criteria for stimulating the production of electricity from solar energy source

seen the legislative decree of 16 March 1999, n. 79, on the implementation of Directive 96/92/EC bringing common rules for the internal market in electricity, and its subsequent amendments and updates;

seen the decision of the Interministerial Committee for Economic Planning of 6 August 1999, n. 126, regarding the approval of the White Paper for the exploitation of renewable energy;

seen the decision of the Interministerial Committee for Economic Planning on 19 December 2002, n. 123, regarding the revision of guidelines for national policies and measures for reducing greenhouse gas emissions, as required by the law ratifying the Kyoto Protocol (Law No. 120/2002), and subsequent updates;

considered having to adopt a specific decree to define the criteria to encourage the production of electricity from the solar source through thermodynamic cycles;

considered having to promote the production of electricity from solar energy source through thermodynamic cycles for possible interesting developments of this technology both nationally and internationally, providing the definition of appropriate forms of incentives;

acquired the agreement with the Unified Conference, as referred to in art. 8 of legislative decree of 28 August 1997, n. 281, confirmed in the meeting held on 26 March 2008;

releases the following decree:

Art.1. Aims.

1. This decree establishes criteria and modes to promote the production of electric power from the solar source by means of thermodynamic cycles in implementation of the art.7 of the legislative decree 29 December 2003, n.387.

Art.2. Definitions.

1. For the purposes of this decree are valid the definitions reported on the art.2. of the legislative decree 16th March 1999, n.79 and following modifications, and the definitions reported on the art.2 of the legislative decree 29th December 2003, n.387 as well as the following:

a) solar thermodynamic plant [solar thermal power plant]: a thermoelectric power plant in which the heat used in the thermodynamic cycle is produced using solar energy as source of heat at high temperature; [Note: there is not an inferior limit for the "high" temperature]

b) gross production of a solar thermodynamic plant, or a hybrid plant: the sum of the amounts of the electric energies produced from all the generators interested [generators applicable under this decree], as it results from the measure at the consignment grid connection of the plant or at the consignment grid connections of the generators, and communicated to the Ufficio tecnico di finanza [Finance Technical Office: the local finance office that overlooks the production of goods subjected to taxes for manufacturing like fuels, electricity ect.]

c) net production of a solar thermodynamic plant, or a hybrid plant, P_{ne}: the gross production decreased the electric energy absorbed from the auxiliary services and the power transformer's losses, as communicated to the Finance Technical Office;

d) hybrid solar thermodynamic plant, in the following hybrid plant: power plant that produces electric energy utilising other sources, renewable and not renewable, in addition to the solar source as source of heat at high temperature

e) solar part of an hybrid plant: part of the plant that generates heat utilising solar energy as unique source of heat at high temperature;

f) attributable solar production of a solar thermodynamic plant, or a hybrid plant, P_s: net production of electric energy attributable to the solar source, also in presence of the thermal storage, calculated subtracting from the total net production [the net production of the solar thermodynamic plant] the amount attributable to other sources according the effective operation conditions of the plant, provided that the latter [the amount attributable to the other sources] overcomes 15% of the total production, as resulting from the fiscal counters [fiscal counters of natural gas or other fuels]

g) fraction of integration (F_{int}) of a solar thermodynamic plant: the fraction of the net production not attributable to the solar source, as expressed from the relationship:

$$F_{int} = 1 - P_s/P_{ne}$$

h) solar interceptor: component of the solar thermodynamic plant, or the hybrid plant, that intercepts the solar radiation and sends it, by means of the heat transfer fluid, to the device that converts it into heat at high temperature or, to the thermal storage [The Italian expression "captatore solare", doesn't have a correspondence in English; it is a general terminology which include all kind of devices capable to intercept the solar radiation and convert it in heat at high temperature, as it can be also seen in the following paragraph k). A close translation of "captatore solare" is "solar interceptor" ; according the description in the original text the solar interceptor includes the reflecting surfaces and the solar receiver: in case of parabolic trough and Fresnel linear collectors the "solar interceptor" corresponds to the ordinary solar collector assembly, in case of the heliostats of a power tower system the "solar interceptor" also includes the solar receiver on the top of the tower, in case of parabolic dish concentrator or compound concentrators also includes the solar receiver placed in the focal area. The phrase "the device that converts it into heat at high temperature" is translated literally from Italian; the mentioned device should be

the steam generator or the heat exchanger that permits to the heat to be used into the thermodynamic cycle. In case of DSG the device should be the receiver or the system of different receivers in the various sections of the solar field].

i) area of the solar interceptor : area of the plane section of the solar interceptor that intercepts the solar rays [the collector or heliostat aperture] ;

j) intercepting surface: the sum of the areas of all solar interceptors of the solar thermodynamic plant, or the hybrid plant;

k) thermal storage system: part of solar thermodynamic plant capable to store the thermal energy collected from the solar interceptors for further use for the production of the electric energy

l) nominal thermal capacity of the thermal storage system C_{nom} : amount of thermal energy, expressed in thermal kWh [kWh_{th}], nominally storable in the thermal storage system, defined according the following relationship:

$$C_{nom} = M_{acc} * C_p * (\Delta)T$$

where:

M_{acc} is the total mass of the storage media (kg)

C_p is the average specific heat of the storage media into the interval of the used temperatures ($kWh/kg/^\circ C$)

$(\Delta)T$ is the difference between maximum and minimal temperatures of utilisation of the storage media ($^\circ C$) [Note: temperature values are not mentioned, the difference between the max storage temperature and the max temperature into the thermodynamic cycle is not mentioned...]

m) storage media: material used for the storage of the thermal energy into the storage system

n) heat transfer fluid: fluid used in the solar thermodynamic plant to transfer the heat collected from the solar interceptors

o) responsible entity: legal entity [natural person or juridical person], which has the requirements referred to in art.3, responsible of realisation and/or operation of the solar thermodynamic plant, including hybrid plant, according the dispositions of this decree, and which has the right to require and obtain the incentive tariffs referred to in art. 6 and the increments referred to in art. 8;

p) implementing entity is the Gestore dei servizi elettrici - GSE S.p.A. [Manager of the Electric Services - www.gse.it], former Gestore della rete di trasmissione nazionale S.p.a [former Manager of the National Transmission Grid] as referred to in the "Presidente del Consiglio" [Prime Minister] decree of 11 May 2004, in the following GSE;

q) start operation date of a solar thermodynamic plant or a hybrid plant, is the first useful date since all the following conditions are satisfied:

q1) the plant is connected to the electric system [connected technically and formally to the grid] and it makes the first operation with, in case of hybrid plant, the contribution of the solar part of the plant:

q2) all the counters needed for the account of the energy produced and exchanged or delivered to the grid result to be installed [and in operation];

q3) all the contracts regarding exchange or deliver of the electricity result to be entered into force

q4) all the obligations related to the rules for the access to the grid, if due, result to be satisfied

Art.3 Requirements of the legal entities that can take advantage from the incentive tariffs.

1. Natural persons and juridical persons responsible of solar thermodynamic plants, or hybrid plants, can take benefit of the incentive of the production of electric energy produced by means of the above mentioned plants, provided that, the plants are designed, realised and operated in accordance with the provisions of this decree.

Art.4 Minimal technical requirements of the components and the plants.

1. Solar thermodynamic plants, or hybrid plants, can access to the incentives, as referred to this decree, if they started operation, as result of new construction, after the date of the entry into force of the regulations as referred to in art.9, paragraph 1.

2. Solar thermodynamic plants, or hybrid plants, can access to the incentives related to the this decree if they respect the following requirements:

a) they are equipped with a thermal storage system with storage nominal capacity not inferior to 1,5 kWh thermal per square meter of intercepting surface;

b) they don't utilise, neither as heat transfer fluid nor as storage media, substances and preparations [material derivate] classified as high toxic, toxic or harmful as recognised from the 67/548/CEE and 1999/45/CE directives and their further modifications [new realises of the mentioned directives]; the mentioned requirement is not requested in case of plants settled in areas classified as industrial

c) their intercepting surface is larger than 2500 m²

3. Solar thermodynamic plants, or hybrid plants, must be connected to the public electric grid or to small isolated grids. Each single plant will have a unique point of connection to the grid, not shared with others plants.

Art.5 Procedures for the access to the incentive tariffs.

1. The legal entity that intents to realise and/or operate a solar thermodynamic plant, or a hybrid plant, and to access to the incentive tariffs as referred to in art.6 forwards to the grid manager [it could be the national grid manager TERNA Spa in case the tension of consignment is above 150 kV or the local grid manager ENEL Distribuzione, or equivalent in the other cases, or both, the national and local grid managers] the request for the access to the incentive tariffs as referred to in art.6 and requires, at the same grid manager, the connection to the grid according to the art. 3, paragraph 1, or according to the art. 9, paragraph 1, of legislative decree 16 March 1999, n.79, and according to the content of the art.14 of the legislative decree 29 December 2003, n. 387. At the request are attached: the preliminary project, a technical sheet reporting the characteristics of the plant and the characteristics of the used technologies; the intercepting surface, the estimation of the global efficiency of the thermodynamic cycle, of the concentrating system [the term "concentrating system" is not defined above, it should correspond to the solar field or to the heliostat array including the receiver] and of the electricity production system [it should correspond to the efficiency of the electrical machinery, alternators and main transformers]; any element [any data] useful to determinate the net production and to determinate the net production referable to the non solar source or to the attributable [solar] production; the indication of what type of conventional sources or renewable sources are used in the hybrid plants.

2. The Authority for Electricity and Gas [also named AEEG - Electricity & Gas Regulator] defines, where needed, the modes and the times according which the grid manager [see above] communicates the position of consignment point and realises the connection of the plant to the electric grid.

3. After the plant completion, the responsible entity forwards to the grid manager the communication of work completed.

- 4.** Within 60 days after the start operation date the responsible entity is obliged to send to the implementing entity [the GSE S.p.A. see above] the final documentation of entrance in operation listed in **Annex 1**. Non-compliance with this mentioned obligation implies not to have access to the incentive tariffs as referred to in art. 6.
- 5.** Within 60 days after the date of reception of the request, as referred to in paragraph 4, completed of the entire documentation mentioned in paragraph 4, the GSE S.p.A. checks the respect of the dispositions of this decree and the compliance with the content communicated and approved according to paragraph 9 of this article, and communicates to the responsible entity the recognised tariff.
- 6.** The payment methods of the tariff as referred to in art. 6 are fixed in the measure as referred to in art. 9, paragraph 1.
- 7.** According to art. 12, paragraph 7, of the legislative decree 29 December 2003, n.387, also the solar thermodynamic plants, can be realised in areas classified as agricultural from the city plans in force, without the need to change the destinations of the areas where they will be settled. For the hybrid plants [hybrid solar plants] shall be valid the measures as referred to in art. 8 of the legislative decree 29 December 2003 n. 387.
- 8.** The implementing entity sets an informatics platform for the communications among the responsible entities and the implementing entity itself.
- 9.** On request of the responsible entity, the GSE, within 90 days from receiving the request, makes a preventive verification of the compliance of the projects of the solar thermodynamic plants, or the hybrid plants, at the measures of this decree, and informs about the interested entity [the responsible entity] certifying the eligibility of the plant according the incentive scheme as referred to in this decree.

Art. 6 Incentive tariffs and entitlement period.

- 1.** For the net electric energy produced by a solar thermodynamic plant, or a hybrid plant, realised in Italy in compliance to this decree and whose operation started in the period between the data of entry into force of the measure as referred to in art. 9. paragraph 1, and 31 December 2012, the responsible entity has the right to receive a fixed incentive tariff to be added to the selling price of the produced energy. The tariff is recognised for a 25 years period time since the start operation date and it is fixed constant throughout the period. [It is fixed without any adjustments for inflation]
- 2.** The incentive tariffs, defined in the table below, are recognized only for the attributable solar production.

Incentive tariffs (Euro/kWhe solar generated)

Fraction of integration [1]	Up to 0,15	between 0.15 and 0,50	above 0,50
Incentive to be added to the selling price	0.28 [2]	0.25	0.22

1 As defined in Art.2 , paragraph 1 , g)

2 Only in this case the incentive tariff is recognised to the entire production of the plant (like in Spain)

- 3.** The electricity produced by solar thermodynamic plants, realised in accordance with this decree and came into operation in each year of the period between 1 January

2013 and 31 December 2014, has the right to receive the incentive tariff as referred to in paragraph 2, reduced by 2% for each years of calendar after 2012 with rounding commercial third decimal digit, being valid the period time of 25 years.

4. By means of subsequent decrees of Minister of Economic Development in consultation with the Minister of the Environment, in agreement with the Joint Conference, to be adopted every two years with effect from 2013, the incentive tariffs are redefined for plants entering in operation after 2014, taking in account of the price trend of energy products and components [collectors, materials ect.] for solar thermodynamic plants. In absence of the above mentioned decrees, the tariffs, set by this decree for plants coming into operation in 2014, will continue to be applied also for plants entered in operation beyond 2014.

Art. 7. Withdrawal and value of electricity generated by solar thermodynamic plants.

1. The electricity produced by solar thermodynamic plants is withdrew with the terms and conditions set by the Authority for Electricity and Gas according to art 8. and to art. 13 of the Legislative Decree on December 29, 2003, n. 387, or sold on the market.

2. The economic benefits as referred to in paragraph 1 are additional to the tariffs as referred to in art. 6.

Art. 8. Conditions for accumulation of the incentive tariffs with other incentives.

1. The incentives tariffs as referred to in art. 6 are applicable to energy production of solar thermodynamic plants, or hybrid plants, that received, for their implementation, public incentives of nature national, regional, local or communitarian [European] provided that: in case the public incentives have been obtained as grants related to assets [as grants on the investment cost] they do not exceed 10% of the investment cost or in case the public incentives have been obtained as grants related to interest with anticipated capitalization they do not exceed 25% of the investment cost.

In case the public incentives have been granted, in assets or interest, in excess, respectively 10% and 25% of the investment cost, the incentives tariffs , as referred to in art. 6, being valid the dispositions of the first paragraph, are consequently reduced, according the terms fixed by the Authority for Electricity and Gas in the measure as referred to in art.9, paragraph 1.

2. The incentive tariffs as referred to in art. 6 can not be accumulated with the Green Certificates as referred to in art. 2, paragraph 1, letter o) of Legislative Decree on December 29, 2003, n. 387.

3. For hybrid plants, whose source of integration is made up of other renewable source, the incentive tariffs as referred to in art. 6 can be accumulated with incentives recognised to the production of energy from renewable source according to the rules in force [the Green Certificates Mechanism] and will be calculated on the share on the source.

Art. 9. Procedures for the payment of the incentive tariffs

1. By measure issued within sixty days from the date of entry into force of this decree, the Authority for Electricity and Gas fixes procedures, timing and conditions for the payment of incentive tariffs as referred to in art. 6 and fixes the procedures for verification of compliance with the provisions of this decree, with particular reference to the provisions in art. 5, 8 and 10.

2. With its own measures the Authority for Electricity and Gas determines the ways in which the funds for the payment of incentive tariffs, as referred to in art. 6, and for the management of activities under this decree, found coverage in revenue from the

A3 component tariff of the rates of electricity. [The A3 component is the addendum established to cover the costs of the green electricity, whose value is fixed from the AEEG Authority; the A3 component is paid with the bills from the customers.]

Art. 10. Checks and controls.

1. Notwithstanding any other consequences provided by the law, false statements related to the provisions of this decree imply the loss of entitlement to the incentive tariffs on the whole production and for the entire period of the same incentive tariff. The GSE defines and implements ways to control what is reported by the responsible entities, including through checks on installations.

Art. 11. National target of the cumulative nominal power to install.

1. The national target of the cumulative power of solar thermodynamic plants, including the solar part of the hybrid plants, to be installed by 2016, corresponds to 2,000,000 m² of cumulative intercepting surface.

Art. 12. Upper limit of the cumulative nominal power of all the plants that can obtain the incentive.

1. The maximum cumulative electric power of all solar thermodynamic plants, including the solar part of the hybrid plants [the electric power referred to the solar part of a solar hybrid plant can be a fraction of the plant as p.e. in a ISCC plant], that, under this decree, may obtain the incentive tariff as referred to in art. 6, corresponds to 1,500,000 m² of cumulative intercepting surface, except for the dispositions in the following paragraph 2.

2. The implementing entity, on its website, notify the date when the limit of cumulative intercepting surface, as referred to in paragraph 1, will be reached. All the plants entering into operation within fourteen months after this date, will be entitled to receive the incentive tariffs, as referred to in art. 6, in addition to plants that contribute to the achievement of cumulative power referred to in paragraph 1. The mentioned period of fourteen months is increased to twenty-four months only for plants whose responsible entities are public. [You have 14 months to complete and operate the plant after the limit of 1.5 million of square meter has been passed; 20 months in case you are a public entity. The date is communicated from the implementing entity, the GSE S.p.A on its website]

Art. 13. Monitoring of diffusion and dissemination of results and information activities.

1. By October 31 each year, the implementing entity forwards to the Ministry of Economic Development, to the Ministry of the Environment, to the Regions and autonomous Provinces, the Authority for Electricity and Gas and to the Observatory as referred to in art. 16 of Legislative Decree on December 29, 2003, n. 387, a report related to the activity performed and the results achieved following the implementation of this decree.

2. If, within thirty days following the date of transmission, the implementing entity doesn't receive comments from the Ministry of Economic Development or from the Ministry of the Environment, publishes the report as referred to in paragraph 1 on its website.

Art. 14. Final provision.

1. This Decree enters into force from the day following the date of publication in the Official Gazette of the Italian Republic.

Rome, 11 April 2008
The Minister of Economic Development Bersani
The Minister of the Environment Pecoraro Scanio

Annex 1 DOCUMENTS TO BE ATTACHED TO THE REQUEST FOR GRANTING OF THE INCENTIVE TARIFFS (Art 5, paragraph 4)

Final documentation of entry into operation of the plant

1. Documentation of the final draft, made in compliance with pertinent technical standards, signed by a professional. [professional engineer or technician enrolled in the professional albo]. The final documentation of the project must be accompanied by detailed graphics and at least five photographs recorded electronically aimed to provide, through different shots, a comprehensive view of the plant, its details and the framework in which it is settled.
2. Technical data sheet showing location and technical characteristics of the plant, including the intercepting surface, the type of solar interceptor and its features, the characteristics of the thermal storage system, the modes of integration in conventional plants if any, the total production and the expected production [annual], the expected attributable production, the fraction of integration, the data as referred to in art. 5, paragraph 1, the modes by which the compliance with the requirements as referred to in this decree are assured.
3. Certificate of trial of the plant.
4. Authenticated act of personal identity [standard document that usually states the identity of a person by means of a signature of a notary or other public officer], signed by the responsible entity, which stands:
 - a) the nature of the responsible entity, with reference to art. 3;
 - b) the type of implementation of the system (solar thermodynamic plant or hybrid plant);
 - c) the compliance of plant and related components to the provisions in art. 4;
 - d) the date of entry into operation of the plant;
 - e) to incur or not incur under the conditions as referred to in art. 8.
5. A copy of the statement of opening of electric factory [typical declaration to be sent to the Finance Custom Office due for all kind of power plant].