

Remuneration scheme for renewable energy facilities following the last three renewable capacity auctions in Spain

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The Spanish government has held three auctions (calls for applications) for the award of specific remuneration (subsidy payments) within the framework of the Electricity Industry Act 24/2013 to certain facilities that produce electricity from renewable energy sources. Different types of facilities have benefitted from these three auctions. This paper summarises the results of the three auctions, with a particular focus on the remuneration scheme resulting from the last two.

1. Introduction

It is well-known that the passing of Royal Decree Act 9/2013, of 12 July, adopting urgent measures to ensure financial stability in the electricity industry, was a milestone in the reform of the electricity industry. This piece of legislation gave the Spanish government a mandate to approve a new legal and economic body of rules for electricity production facilities based on renewable technologies, cogeneration and waste. It also introduced the specific principles on which the rules applicable to such facilities would be based; such principles were later incorporated into the Electricity Industry Act 24/2013, of 26 December, which defines the new remuneration scheme for production based on renewable technologies, cogeneration and waste. This new framework was established, firstly, in Royal Decree 413/2014, of 6 June, which regulates the production of electricity based on renewable energy, cogeneration and waste and secondly, through the approval of Ministerial Order IET/1045/2014, of 16 June, approving the remuneration parameters for standard facilities, applicable to certain electricity production

facilities based on renewable energy, cogeneration and waste. A number of additional provisions have approved other standard facilities and their remuneration parameters.

Art. 14(7) of the Electricity Industry Act 24/2013 authorises the government, on an exceptional basis, to establish a specific remuneration scheme to encourage production based on renewable energy, high-efficiency cogeneration and waste when certain energy objectives derived from EU directives or regulations must be fulfilled or when such a structure would lead to a reduction in energy costs and dependence on imported energy, setting the terms according to which it must be realised.

To date (3 November 2017), the Spanish government has called three auctions to award specific remuneration within the framework of the Electricity Industry Act 24/2013 to certain facilities that produce electricity from renewable energy sources. Different types of facilities have benefitted from these three auctions. This document summarises the results of the three auctions, with particular attention to the remuneration scheme resulting from the last two.

2. Auctions held under the new remuneration scheme for renewable energy facilities

2.1. First auction: 200 MW of capacity for new biomass facilities and up to a maximum of 500 MW of capacity for onshore wind power facilities on the mainland grid

The first auction was held on 14 January 2016.

The specific legislative framework applicable to this first auction was made up of the following legislation: Royal Decree 947/2015, of 16 October, providing for a call to award the specific remuneration scheme to new facilities that produce electricity from biomass on the mainland grid and wind power facilities; Ministerial Order IET/2212/2015, of 23 October, regulating the procedure for the allocation of the specific remuneration scheme in the call for new facilities that produce electricity from biomass on the mainland grid and wind power facilities, made under Royal Decree 947/2015, of 16 October, and approving its remuneration parameters; the State Secretariat for Energy's Decision of 30 November 2015, announcing the auction for the allocation of the specific remuneration scheme to new facilities that produce electricity from biomass on the mainland grid and wind power facilities and setting the procedure and rules for the same, made under the provisions of Royal Decree 947/2015 of 16 October and Ministerial Order IET/2212/2015 of 23 October.

The auction was for a maximum of 200 MW of capacity for new biomass facilities in groups b.6 or b.8 or type-1 hybrid facilities (provided such hybrid facilities do not use group c.2 black liquors as fuel) and a maximum of 500 MW of capacity for subgroup b.2.1 facilities (onshore wind power facilities), which could be new facilities or repowering of existing ones. The regulatory lifespan of the successful bidders is calculated as

twenty-five years for biomass facilities (groups b.6 and b.8) and twenty years for wind power facilities (group b.2). As provided in the annex to Order IET/2212/2015, successful wind power facilities will only receive an investment subsidy but not an operating subsidy (sale of energy).

The 18 January 2016 Decision of the Directorate-General for Energy Policy and Mines gave the outcome of this auction for the allocation of the specific remuneration scheme to new facilities that produce electricity from biomass on the mainland grid and wind power facilities, pursuant to the provisions of Royal Decree 947/2015 of 16 October. The auction resulted in the following discounts in the standard value of the initial investment in standard facilities for each technology:

- a) Biomass technology –ITR-0101– 100% discount in the standard value of the initial investment in standard facilities.
- b) Wind power technology –ITR-0102– 100% discount in the standard value of the initial investment in standard facilities.

The list of successful bidders was published in annex I to this decision, giving the name of the company, the identification code for the regulated standard facility and the awarded capacity (kW); annex II set out the remuneration parameters for the standard facilities applicable to the successful production facilities. In both cases, the standard value of the initial investment was zero and the investment subsidy for the period 2015-2020 was also zero. Pursuant to article 5, the values of the remaining remuneration parameters for standard facilities with definitive operating licences for a given year will be the same as the remuneration parameters for standard facilities for such year as set out in the annex to Ministerial Order IET/2212/2015 of 23 October.

2.2. *Second auction: up to 3000 MW for wind power, photovoltaic and other facilities on the mainland grid*

The second auction was held on 17 May 2017.

The specific legislative framework applicable to this second auction was made up of Royal Decree 359/2017, of 31 March, providing a call for the award of the specific remuneration scheme to new facilities that produce electricity from renewable energy sources on the mainland grid; Order ETU/315/2017, of 6 April, regulating the allocation of the specific remuneration scheme to new electricity production facilities based on renewable energy sources pursuant to Royal Decree 359/2017 of 31 March and approving the remuneration parameters; the State Secretariat for Energy's Decision of 10 April 2017, laying down the procedure and rules of the auction for the allocation of the specific remuneration scheme to new facilities that produce electricity from renewable energy sources, pursuant to the provisions of Royal Decree 359/2017, Order ETU/315/2017 of 6 April.

This auction auctioned 2000 MW of renewable capacity that could be extended by an additional 1000 MW if the successful bidders offered competitive prices (which they did). The call was aimed at new electricity production facilities based on renewable energies included in category (b) of the classification set out in Royal Decree 413/2014 of 6 June and located on the Spanish mainland (wind power, photovoltaic and other). Pursuant to information provided by the auction manager and validated by the Spanish Competition and Markets Authority, the Directorate-General for Energy Policy and Mines published the outcome of the auction and determined the remuneration parameters for standard facilities, which were calculated in accordance with Royal Decree 413/2014.

The full 3000 MW of capacity was awarded, with the maximum discount in the standard value of the standard facility initial investment value. The auction resulted in the following specific percentage discounts in the standard value of the initial investment in standard facilities for each technology:

- Wind power technology -ITR-0103- 64.43% discount
- Photovoltaic technology -ITR-0104- 51.22%
- Technologies other than wind power and photovoltaic -ITR-0105- 99.98%

These percentages coincide with the initial maximum permitted discounts.

Annex I to the 19 May 2017 Decision of the Directorate-General for Energy Policy and Mines, publishing the outcome of the auction for allocation of the specific remuneration scheme under the provisions of Royal Decree 359/2017 of 31 March and Order ETU 315/2017 of 6 April, corrected in the Official Journal of Spain on 31 May, gave the names of the successful bidders and the capacity allocated to each one. Most of the capacity was allocated to wind power facilities.

The remuneration parameters for standard facilities applicable to the 2017-2019 regulatory half-period are set out in annex II to the 19 May Decision:

Technology	Identification code for the regulated standard facility	Identification code for the standard facility	Year of definitive operating licence	Standard value of the initial investment (€/MW)	Investment subsidy (Rinv) 2017-2019 (€/MW)
Wind power	ITR-0103	IT-04013	2017	438.840	0
		IT-04014	2018	438.840	0
		IT-04015	2019	438.840	0
Photovoltaic	ITR-0104	IT-04016	2017	585.360	0
		IT-04017	2018	585.360	0
		IT-04018	2019	585.360	0
Technologies other than wind power and photovoltaic	ITR-0105	IT-04019	2017	400	0
		IT-04020	2018	400	0
		IT-04021	2019	400	0

Pursuant to article 5 of Order ETU/315/20147, the values for the remaining remuneration parameters for standard facilities with definitive operating licences for a given year will be the same as the remuneration parameters for standard facilities for such year as set out in the annex to Order ETU/315/2017 of 6 April¹.

These parameters will be revised and updated pursuant to the provisions of article 14(4) of Act 24/2013 and Royal Decree 413/2014. Neither the regulatory lifespan nor the standard value of the standard facility initial investment shall be subject to revision.

2.3. Third auction: up to 3000 MW for wind power and photovoltaic facilities on the mainland grid

The third and, to date, final auction of specific remuneration for renewable energy facilities was held on 26 July 2017. The legislative framework for this auction was the

¹ Together with the investment subsidy (Rinv) referred to in the table, other remuneration parameters are the operating subsidy (Ro), the investment incentive for reductions in production costs (Iinv), the regulatory lifespan, the number of equivalent annual operating hours, as the case may be, the annual upper and lower limits of the daily or intraday market price, operating costs or reasonable profitability, among others.

same as the previous one, with the specific features provided in the following legislation: Royal Decree 650/2017, of 16 June, establishing a cap of 3.000 MW of installed capacity on new electricity production facilities based on renewable energy sources on the mainland grid that can opt for the remuneration scheme; Order ETU/615/2017, of 27 June, determining the procedure for allocation of the specific remuneration scheme, the relevant remuneration parameters, and other applicable aspects for the auction of 2000 MW of installed capacity, called under Royal Decree 650/2017 of 16 June; the Secretary of State for Energy's Decision of 30 June 2017, announcing the auction for allocation of the specific remuneration scheme for new facilities that produce electricity from renewable energy sources, made under the provisions of Royal Decree 650/2017 of 16 June; and the Decision of the General Directorate for Energy Policy and Mines, setting the auction for allocation of the specific remuneration scheme, approving the percentage discount in the standard value of the standard facility initial investment for each technology and approving the remuneration parameters applicable for the 2017-2019 regulatory half-period to the standard facilities associated to the successful bidders.

Following the 17 May 2017 auction, wind power and photovoltaic technologies demonstrated a greater capacity for competing with conventional technologies on the market, not only by price but also by the large amount of capacity on offer. Based on the bids that were submitted, it was observed that there was still a large amount of renewable technology capacity that had not benefitted from the auction and could be put into operation. The additional capacity for other technologies, however, was quite limited. Therefore, a new maximum limit was offered for new electricity production facilities based on renewable energies in subgroup b.1.1 (photovoltaic) and group b.2 (wind power), pursuant to the classification set out in article 2 of Royal Decree 413/2014 of 6 June, on the mainland grid.

The beneficiaries had to be new electricity production facilities in categories "b.1.1" or "b.2" on the mainland grid. These categories comprise facilities whose primary energy source is only solar radiation through photovoltaic technology (subgroup b.1.1) and facilities whose primary energy source is wind power (onshore or offshore, subgroup b.2).

The 27 July 2017 Decision of the General Directorate for Energy Policy and Mines, giving the outcome of the auction for allocation of the specific remuneration scheme pursuant to the provisions of Royal Decree 650/2017 of 6 June and Order ETU/615/2017 of 27 June, published the approval of the following discounts in the standard value of the initial investment in standard facilities for each technology:

- For wind power technology (ITR-0103), the percentage discount in the standard value of the standard facility initial investment resulting from the auction was 87.08%.

- For photovoltaic technology (ITR-0104), the percentage discount in the standard value of the standard facility initial investment resulting from the auction was 69.88%.

The remuneration parameters applicable for the regulatory half-period 2017-2019 to the standard facilities associated with the successful bidders are set out in annex II to the Decision of 27 July 2017, calculated pursuant to the provisions of article 5 of Order ETU/315/2017 of 6 April, in application of the provisions of the single article of Order ETU/615/2017 of 27 June.

Technology	Identification code for the regulated standard facility	Identification code for the standard facility	Year of definitive operating licence	Standard value of the initial investment (€/MW)	Investment subsidy (Rinv) 2017-2019 (€/MW)
Wind power	ITR-0103	IT-04022	2017	155.040	0
		IT-04023	2018	155.040	0
		IT-04024	2019	155.040	0
Photovoltaic	ITR-0104	IT-04025	2017	361.440	0
		IT-04026	2018	361.440	0
		IT-04027	2019	361.440	0

Pursuant to article 5 of Order ETU/315/2017 in application of the provisions of the single article of Order ETU/615/2017 of 27 June, the values for the remaining remuneration parameters for standard facilities with definitive operating licences for any given year will be the same as the remuneration parameters for standard facilities for such year as set out in the annex to Order ETU/315/2017 of 6 April, with the particularity provided in such article 5 for operating costs.

3. How the auction method works

As stated above, since the Electricity Industry Act 24/2013, the allocation of specific remuneration to electricity production facilities based on renewable energies has been carried out through an auction system. Pursuant to this system, what is auctioned is a capacity (kW) with the right to receive the specific remuneration scheme of new facilities, resulting in a percentage discount in the standard value of the regulated standard facility initial investment which will give the standard value of the standard facility initial investment.

The auctions were carried out on a sealed-bid basis with uniform discount, i.e., the percentage discount applicable to each successful bid is the percentage discount offered by the last matched bid. The bidders could present bids relating to the percentage discount in the standard value of the regulated standard facility initial investment, pursuant to the rules set out in the decision announcing the auction. The outcome of the auction gave the capacity awarded to each bidder for each technology as well as the percentage discount in the standard value of the regulated standard facility initial investment.

The remuneration parameters for the standard facility are based on the parameters for the regulated standard facility and the result of the auction, pursuant to the provisions of the order regulating the relevant call. The latter value and the remaining remuneration parameters for the standard facility will give the investment subsidy for the standard facility, applying the remuneration methodology set out in title IV of Royal Decree 413/2014 of 6 June, which regulates the production of electricity based on renewable energy, cogeneration and waste.

The facilities associated with the successful bids in the auction to allocate the specific remuneration scheme will receive the specific remuneration regulated in Royal Decree 413/2014.

4. Specific remuneration of successful facilities

This document focuses on the remuneration scheme for facilities that were awarded capacity in the last two auctions on 17 May and 27 July 2017.

The remuneration for such facilities shall be the result of applying the following formulas:

$\text{Remuneration}_{\text{facility}} = \text{Remuneration from sales}_{\text{market price}} + \text{Specific remuneration}$ <p>(Throughout the regulatory lifespan of the standard facility)</p>	
$\text{Remuneration}_{\text{specific}} =$	Investment subsidy + Operating subsidy
$\text{Subsidy}_{\text{investment}} =$	Limit per installed power capacity unit = Non-recovered investment costs of standard facility
$\text{Subsidy}_{\text{operating}} =$	Operating costs of standard facility - Market revenue of standard facility

Within the framework of Royal Decree 413/2014, each standard facility has a set of remuneration parameters that are calculated by way of a ministerial order with reference to the activity of an efficient and well-managed company. These parameters define the specific

remuneration scheme and allow it to be applied to the facilities associated with such standard facility.

The specific remuneration regime of the facilities that succeeded in the most recent auctions is set out in articles 3 to 8 of Order ETU/315/2017, of 6 April, regulating the allocation of the specific remuneration scheme to new electricity production facilities based on renewable energy sources pursuant to Royal Decree 359/2017 of 31 March and approving the remuneration parameters, which Order ETU/615/2017 of 27 June also refers to.

Order ETU/315/2017 complements the above formulas, defining the remunerative values for each standard facility in the terms resulting from the auction; that is, applying the relevant percentage discount to the parameters wherever necessary.

The aforementioned order sets out a classification of regulated standard facilities based on the year of the definitive operating licence, regulatory lifespan, standard value of the initial investment in euros per megawatt and number of equivalent annual operating hours, among other necessary parameters for the application of the specific remuneration scheme. Each group of facilities is matched with a standard facility, which is individually assigned a code. Annex I to the Order defines the standard facilities, the remuneration parameters taken into account and the remuneration appropriate to each one, differentiating between regulated standard facilities with a definitive operating licence obtained in 2017, 2018 or 2019. The details of such annex, which must be consulted in order to calculate the remuneration for each facility, are not analysed in this paper, which, however, does highlight some of the most significant points to take into account in performing the calculation.

For the facilities that succeeded in the abovementioned auctions, a reasonable pre-tax investment subsidy for the regulated standard facility during the first regulatory period will be around the average yield on the 10-year government bond, calculated as the average of the secondary market prices during the months of April, May and June 2013 plus a spread of 300 basis points, which means that the reasonable profitability level used for the calculation is 7.503.

Section 3 of the referenced annex contains a simplified formula for calculating the investment subsidy for the standard facilities. This formula calculates the investment subsidy for a standard facility with year of definitive operating licence “a”, based on the investment subsidy for the regulated standard facility in year “a” and the percentage discount on the standard value of the regulated standard facility initial investment (obtained from the auction):

$$R_{invIT_j,a} = R_{invITR_j,a} - m_{ITR_j,a} * Red_{ITR_j}^2$$

² Where:

R_{invITR_j,a}: Investment subsidy for the regulated standard facility “j” for the year of the definitive operating licence “a”, expressed in €/MW, obtained from section 1 of the annex to the appropriate order.

In order to calculate the remuneration parameters in connection with the operating subsidy, Order ETU/130/2017 of 17 February, which updates the standard facility remuneration parameters applicable to certain electricity production facilities based on renewable energy, cogeneration and waste must also be taken into account, for purposes of their application to the regulatory half-period beginning on 1 January 2017. This order updates the remuneration parameters for standard facilities for the regulatory half-period between 1 January 2017 and 31 December 2019 and sets, as the case may be, values for the operating subsidy that would be applicable during the first quarter of 2017. This order estimates market prices for 2017, 2018 and 2019 at 42.84 €/MWh, 41.54 €/MWh and 41.87 €/MWh, respectively.

RinvIT_{j,a}: Investment subsidy for the standard facility with definitive operating licence obtained in year “a”, associated with regulated standard facility “j”, expressed in €/MW.

RedITR_j: Percentage discount in the standard value of the regulated standard facility standard investment “j”, expressed per unit.

mITR_{j,a}: Applicable coefficient for calculating the investment subsidy for the standard facility associated with the regulated standard facility “j” with definitive operating licence obtained in year “a”.