



European  
Commission

**Joint Research Centre**

Directorate for Energy, Transport and Climate  
Energy Security, Distribution and Markets Unit

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## **ANNEX I TO CONTRACT TBC**

**NL-Petten: Detailed Level Market Design of the Hellenic Forward, Day-Ahead and Intraday Markets and respective Market Codes and high-level IT Functional Design Specifications – Lot 1**

**– Tender Specification – Part 2 - Terms of Reference –**



## **1. CONTEXT**

The Directorate for Energy, Transport and Climate (Directorate C) is one of the seven Directorates of the Joint Research Centre (JRC) of the European Commission. The Directorate C is based in Petten (the Netherlands), Seville (Spain) and Ispra (Italy), and has a multidisciplinary team of more than 300 scientific, technical and support staff. The mission of the JRC-C is to provide support to Community policies and technology innovation to ensure sustainable, safe, secure and efficient energy production, distribution, and use, and to foster sustainable and efficient transport in Europe.

The Energy Security, Distribution and Markets Unit of the JRC-C is carrying out quantitative techno-economic analysis to evaluate energy security, as well as working on issues relevant to ensuring the uninterrupted physical availability of energy products on the market at an affordable price for all consumers. The Unit assesses how different policy options help shape an energy system resilient to shocks and adverse trends whilst satisfying society's energy needs. In this context, the Unit has an active role on investigating implementation issues of the EU Internal Energy Market.

JRC is currently providing support to SRSS on the necessary regulatory reforms by the Hellenic Republic in order the electricity market of the latter to comply with the EU Target Model. In the context of this activity JRC is tasked to provide the following:

- the drafting of the Detailed Level Market Design for the Forward, Day-Ahead, and Intraday Markets, as well as the respective Market Codes, and
- the drafting of the high-level IT functional design specifications for the Forward, Day-Ahead and Intra-Day Markets of the new Market Management System (MMS) as well as the high-level IT functional design specifications for the Nomination Platform (Nomination interfaces between the above Markets).

In this respect JRC is interested in acquiring support on the implementation of the above tasks. The work will be conducted in close cooperation with SRSS and the responsible Hellenic Authorities (the Hellenic Regulatory Authority for Energy – RAE, and the Market Operator – LAGIE).

### **1.1. Background**

According to the provisions of Hellenic Law 4336/2015, the Hellenic State has to implement significant energy reforms, including the adaption of the Hellenic electricity market to the EU Target Model by the end of 2017. Consequently, the Hellenic Parliament voted recently the “Target Model law for the Hellenic State” (Law 4425/2016) which provides the general framework for the implementation of the Target Model in the Hellenic wholesale market.

The Hellenic authorities envisage the creation of a Forward Market with forward contracts on electricity, both Over-The-Counter (OTC) and centrally-traded (organized Forward Market), a reformed, energy only Day Ahead Market and an Intra-day Market which is a fundamental aspect of the EU Target Model.



It is noted that apart from Law 4425/2016, and the Guidelines of the Hellenic Regulatory Authority for Energy (RAE), the Hellenic Authorities have already conducted an extensive consultation on the High-Level Design of the above markets, with a main characteristic being the adoption of a Central Dispatch System. The above sources, along with all related EU and Hellenic legislative provisions will form the basis for the Detailed Level Design of the Hellenic Electricity Market, the compilation of the respective Market Codes and the high-level IT functional design specifications. All not-publically available sources will be provided by JRC to the Contractor under a Confidentiality Agreement. It is noted that some of these sources may be available only in Greek.

## **2. PURPOSE AND OBJECTIVES**

The primary driver for the work is to support the reform of the Hellenic Electricity Market in order the latter to comply with the EU Target Model. In this respect, the work aims to the prescription of the Detailed Level Design of the Forward, Day-Ahead and Intraday Market, the compilation of the respective Market Codes and the high-level IT functional design specifications.

Given the specific details of the Hellenic Electricity Market and System, the developed Detailed Level Designs, Market Codes and high-level IT specifications should fully comply with the EU Target Model, and particularly with the EU Regulation 2015/1222 (CACM). Initiatives with Regional significance as well as other regulatory interventions by the Hellenic Authorities and developments in the Hellenic Market should also be taken into account. In this respect, close cooperation between the Contractor, JRC, SRSS, RAE and LAGIE is expected.

## **3. DESCRIPTION OF THE TASKS TO BE COMPLETED UNDER THIS TENDER**

### **Task 1. Forward Market**

#### **Task 1.1 – Detailed Level Design of the Forward Market**

The Detailed Level Design of the Forward Market will include, but not limited to, the description of traded products (products with Physical Delivery Obligation), the time gates, operational procedures, the clearing algorithm, the cascading mechanism, the interface of the accepted portfolio-based offers and bids with the Day-Ahead Market (Unit-based Nominations), the settlement procedures based on the economic signals given by the Day Ahead Market, monitoring procedures, the participation fee structure, invoicing and the interfaces with the clearing and settlement entity. Moreover, the possibility of OTC settlement functionality implementation in the Forward Market platform, along with the possibility of the participation of Renewable Energy Sources, Pumping and Demand Response in the Forward Market, should also be investigated. In addition, according to the Law 4425/2016, Article 14, paragraph 6, in the detailed level design and respective market code, to avoid liquidity issues in the Day-Ahead market, there may be a provision for a maximum percentage of portfolio to be used for bilateral contracts by each supplier. Checks on compliance with this percentage should be included in the detailed level design of the Day-Ahead Market.



The final outcome of Task 1.1 will be a reasoned Report on the Detailed Level Design of the Forward Market.

### **Task 1.2 – Market Code of the Forward Market**

This task entails the compilation of the Market Code of the Forward Market based on the respective Detailed Level Design, providing the terms and conditions of operation of the Forward Market. The Code will include all the necessary details required for the proper, transparent and efficient participation in the Forward Market, and set of rules of its operation and penalties for non-compliance. The Forward Market Code will also include, but not limited to, the definitions of market participants, their registration and participation process, the type and timing of transaction orders, the market participants' rights and obligations, further details on the Market Operator's responsibilities, the cooperation framework between Market Operators and other parties, regarding data exchange requirements and interfaces, the rules and procedures regarding the clearing and settlement of transactions, details of the necessary accounts for managing transactions, transparency requirements, the settlement of disputes between the Participants and the Operators.

## **Task 2. Day-Ahead Market**

### **Task 2.1 – Detailed Level Design of the Day-Ahead Market**

The Detailed Level Design of the Day-Ahead Market will include, but not limited to, the Nomination interfaces (Nomination Platform), with the Forward Market, and OTC contracts as well as the Nomination interfaces (Nomination Platform) with the Intra-Day Market, time gates, the description of traded products, validation of orders by the Market Operator, procedures for the internal trading and the clearing algorithm according to CACM requirements (PCR), cross-border market coupling, monitoring procedures, the participation fee structure, invoicing and the interfaces with the clearing and settlement entity. Specific provisions on the participation of Renewable Energy Sources and Demand Response should also be included. In addition, according to the Law 4425/2016, Article 14, paragraph 6, in the detailed level design and respective market code, to avoid liquidity issues in the Day-Ahead market, there may be a provision for a maximum percentage of portfolio to be used for bilateral contracts by each supplier. The method to check the compliance with this percentage should be included in the detailed level design of the Day-Ahead Market.

The final outcome of Task 2.1 will be a reasoned Report on the Detailed Level Design of the Day-Ahead Market.

### **Task 2.2 – Market Code of the Day-Ahead Market**

This task entails the compilation of the Market Code of the Day-Ahead Market based on the respective Detailed Level Design. The Code will include all the necessary details required for the proper, transparent and efficient participation in the Day-Ahead Market, and set of rules of its operation and penalties for non-compliance. The Day-Ahead Market Code will also include, but not limited to, the definitions of market participants, their registration and participation process, the type and timing of transaction orders, the market participants' rights and obligations, further details on the Market Operator's responsibilities, the cooperation framework between Market Operators and other parties, regarding data exchange



requirements and interfaces, the rules and procedures regarding the clearing and settlement of transactions, details of the necessary accounts for managing transactions, transparency requirements, the settlement of disputes between the Participants and the Operators.

### **Task 3. Intraday Market**

#### **Task 3.1 – Detailed Level Design of the Intraday Market**

The Detailed Level Design of the Intra-Day Market will include, but not limited to, the Nomination interfaces (Nomination Platform) with the Day-Ahead and the Balancing Market, time gates, the description of traded products, the clearing algorithm, monitoring procedures, the participation fee structure, invoicing and the interfaces with the clearing and settlement entity. Specific provisions on the participation of Renewable Energy Sources and Demand Response should also be included.

The Detailed Level Design should prescribe among others, procedures for internal Intra-Day sessions or/and Regional cross-border Intraday sessions (initially with Italy), and the interoperability of the Intraday sessions with the future pan-European Intraday continuous trading.

The final outcome of Task 3.1 will be a reasoned Report on the Detailed Level Design of the Intraday Market.

#### **Task 3.2 – Market Code of the Intraday Market**

This task entails the compilation of the Market Code of the Intraday Market based on the respective Detailed Level Design. The Code will include all the necessary details required for the proper, transparent and efficient participation on the Intraday Market, and set of rules of its operation and penalties for non-compliance. The Intraday Market Code will also include, but not limited to, the definitions of market participants, their registration and participation process, the type and timing of transaction orders, the market participants' rights and obligations, further details on the Market Operator's responsibilities, the cooperation framework between Market Operators and other parties, regarding data exchange requirements and interfaces, the rules and procedures regarding the clearing and settlement of transactions, details of the necessary accounts for managing transactions, transparency requirements, the settlement of disputes between the Participants and the Operators.

### **Task 4 – High-level IT functional design specifications**

This task entails the compilation of a high-level report on the IT functional design specifications for the Forward, Day-Ahead and Intra-Day Markets, as well as the high-level IT functional design specifications for the Nomination Platform (Nomination interfaces between the above Markets), pointing out which functions should be implemented and how the different elements/features should interact, based on the detailed level market design and the market codes. The report will include, but not limited to, the high-level IT functional / technical specifications and background information on the Forward, Day-Ahead and Intra-Day Markets, concerning their nomination interfaces via the Nomination Platform, their timing, the procured products, the provisions for the submission of Offers and Declarations by the Participants, the required data and the clearing process and results.





#### 4. DELIVERABLES

The contractor shall deliver the following documents:

- i. A Report on the Detailed Level Design of the Forward Market.
- ii. The Market Code of the Forward Market.
- iii. A Report on the Detailed Level Design of the Day-Ahead Market.
- iv. The Market Code of the Day-Ahead Market.
- v. A Report on the Detailed Level Design of the Intraday Market.
- vi. The Market Code of the Intraday Market.
- vii. A Report on the High-level IT functional design specifications of the Forward, Day-Ahead and Intra-Day Markets and the Nomination Platform (Nomination interfaces between the above Markets)

All documents shall be in English.

Interim drafts of the above (i-vi) Reports and Codes will be delivered at the latest nine (9) weeks after the signature of the Contract, whereas the interim draft of the (vii) Report will be delivered at the latest eleven (11) weeks after the signature of the Contract. JRC-Directorate C, Energy Security, Distribution and Markets Unit (JRC-C.3) shall have fourteen (14) days from the reception of the above (i-vi) interim drafts to make observations or suggest modifications. The Contractor shall have twenty-one (21) days to submit additional information and include these suggestions/modifications in the final draft Reports and Codes. Following the submission of the above (vii) interim report JRC-Directorate C, Energy Security, Distribution and Markets Unit (JRC-C.3) shall have seven (7) days to make observations or suggest modifications. The Contractor shall have fourteen (14) days to submit additional information and include these suggestions/modifications in the final draft Report. The submitted final drafts will be reviewed by JRC-C.3 inside seven (7) days upon which the Contractor will have fourteen (14) days to deliver the final Reports and Codes.

The production and delivery stage shall not exceed overall four and a half (4 1/2) months from the contract's entry into force and shall follow the milestones table below.

Deliverable	Deadline
Interim Report on the Detailed Level Design of the Forward Market.	Week 9
Interim Market Code of the Forward Market.	Week 9
Interim Report on the Detailed Level Design of the Day-Ahead Market.	Week 9
Interim Market Code of the Day-Ahead Market.	Week 9
Interim Report on the Detailed Level Design of the Intraday Market.	Week 9
Interim Market Code of the Intraday Market.	Week 9
Interim Report on the High-level IT functional design specifications of the Forward, Day-Ahead and Intra-Day Markets and Nomination Platform	Week 11
Final Draft Report on the Detailed Level Design of the Forward Market.	Week 14
Final Draft Market Code of the Forward Market.	Week 14



Final Draft Report on the Detailed Level Design of the Day-Ahead Market.	Week 14
Final Draft Market Code of the Day-Ahead Market.	Week 14
Final Draft Report on the Detailed Level Design of the Intraday Market.	Week 14
Final Draft Market Code of the Intraday Market.	Week 14
Final Draft Report on the High-level IT functional design specifications of the Forward, Day-Ahead and Intra-Day Markets and Nomination Platform	Week 14
Final Report on the Detailed Level Design of the Forward Market.	Week 17
Final Market Code of the Forward Market.	Week 17
Final Report on the Detailed Level Design of the Day-Ahead Market.	Week 17
Final Market Code of the Day-Ahead Market.	Week 17
Final Report on the Detailed Level Design of the Intraday Market.	Week 17
Final Market Code of the Intraday Market.	Week 17
Final Report on the High-level IT functional design specifications of the Forward, Day-Ahead and Intra-Day Markets and Nomination Platform	Week 17

## 5. OTHER CONDITIONS

All delivered documents will be in English.

The contracting authority has included a template in annex of these technical specifications, which shall be used by the tenderer in all its reports as to conform to the corporate visual identity of the European Commission. Any major deviations are subject to prior approval from JRC-C.

The final study reports of all tasks shall include:

- an abstract of no more than 200 words and an executive summary of maximum 6 pages;
- the following standard disclaimer:

“The information and views set out in this study/database/model are those of the author(s) and do not necessarily reflect the official opinion of the Commission. The Commission does not guarantee the accuracy of the data included in this study. Neither the Commission nor any person acting on the Commission’s behalf may be held responsible for the use which may be made of the information contained therein.”

- specific identifiers which shall be incorporated on the cover page provided by the Contracting Authority.

This disclaimer shall be accompanied by the following sentence “*Reproduction is authorised provided the source is acknowledged*”. However, before displaying the above mentioned sentence either of the following conditions must be fulfilled:



- no third-party textual or artistic material is included in the publication without the copyright holder's prior consent to further dissemination and reuse by other third parties;

or

- an additional notice specifies that the reproduction of the third-party textual or artistic material included in the study is prohibited.

The contractor shall provide an executive summary in English and with the aforementioned standard disclaimer and possible specific identifiers. The executive summary of maximum 6 pages, shall provide information on the (i) purpose / motivation / problem statement, (ii) methodology / procedure / approach, (iii) results / findings and (iv) conclusion / implications / recommendations of the study.

### **Meetings**

The study will be followed by Energy Security, Distribution and Markets Unit (JRC internal working group) with the participation of the contractor. Conference calls are organised by JRC-C.3 with the contractor and possibly SRSS and Greek stakeholders every two weeks. At the latest one week after each telephone call, the contractor shall provide meeting minutes, to be approved by JRC within one week.

In addition to the telephone conferences, the following two-day meetings are planned between JRC and the contractor in Greece, with possible participation of other project stakeholders:

<b>When</b>	<b>Physical Meeting</b>
Week 1	Meeting 1 – Kick-off
Week 11	Meeting 2 – Presentation of Interim Drafts of Reports and Codes and discussion on comments
Week 15	Meeting 3 – Presentation of Final Drafts of Reports and Codes and High-level IT functional design specifications. Discussion on comments

The physical presence of the contractor in those meetings is required.

### **Place of performance**

The tasks will be performed on the Contractor's premises with the exception of the meetings.

## **6. REPORTING**

The reports and any other document shall be written in English language and shall be submitted in electronic format via e-mail using both Microsoft Word 2010<sup>®</sup> for Windows format and in Adobe Portable Document Format<sup>®</sup> (PDF). A copy of the final deliverables shall be provided on electronic format.





## **7. DURATION**

The maximum duration of the tasks shall not exceed 4 1/2 calendar months as from the moment the contract has entered into force.

## **8. LANGUAGE**

The language of all deliverables, meetings, presentations and exchanges will be English. If necessary, the references and sources can be given in the original language, followed immediately by a translation given in English between parentheses.

It is expected that the written text in the deliverables is of a high standard language, ideas are expressed in clear and logically structured way. The text of all deliverables will be strictly assessed according to these criteria in the review process.

## **9. PRICING CONDITIONS**

One total fixed price including all costs related to the performance of the contract shall be provided in the tender. This total fixed price is to include all costs related to performance of the tasks as described in the contract. All physical meetings shall be held in Greece.

## **10. OWNERSHIP OF THE DELIVERABLES**

It is under the Contractor's responsibility to obtain the necessary rights and ensure that all sources utilized for producing the deliverables of the present service's contract may be used by the Commission with unlimited access. All costs incurred in the licensing of the necessary property rights shall be included in the price of the tender.