



EUROPEAN UNION
DELEGATION TO THE REPUBLIC OF SERBIA

CONTRACTING AUTHORITY'S CLARIFICATIONS No. 1

Project title:

Study on modalities to include electricity from RES into the distribution network and smart grids

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No.	Question	Answer
1.	<p>Could you please clarify what do you mean by the term "local distribution company"? How many local distribution companies do exist? Since all distribution companies in Serbia have been merged into one entity, Distribution System Operator (ODS) "EPS Distribucija", does the term local distribution company refer to the operational branches of "EPS Distribucija"?</p>	<p>Term "local distribution company" refers to a distribution area that had been an independent legal entity before the Distribution System Operator (DSO) "EPS Distribucija" was founded.</p> <p>There are five distribution areas: Novi Sad, Belgrade, Kragujevac, Kraljevo and Niš.</p> <p>Each distribution area is made of branches. For example, ED Kraljevo, ED Raška and ED Nova Varoš are branches of Kraljevo distribution area.</p> <p>There are 33 branches in total.</p>
2.	<p>Could you please briefly characterize the level of integration of the local distribution companies into one in terms of development planning, dispatch control centers, operational procedures, practices, etc.</p>	<p>Integration of local distribution companies within the DSO is an ongoing activity in terms of development planning, dispatch control centers, operational procedures and practices. As explained before, local distribution companies had been independent legal entities before the DSO was founded in 2015.</p> <p>Local distribution companies differ in area, terrain and level of grid development. Accordingly, it is not feasible to completely unify their procedures and practices.</p> <p>However, distribution grid code has already been adopted and approved by the regulator. The last version of the distribution grid code was adopted in August 2017 while some changes were made in March 2019.</p> <p>Development plans are carried out for each distribution area separately and</p>

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		<p>merged into a single one.</p> <p>The National distribution dispatch center (NDDC) was established in Novi Sad when the DSO was founded in 2015. Each distribution area has its own distribution dispatch center (DDC).</p> <p>The Procedures and practices of DDCs for operation and maintenance are pretty much unified because they are performed in accordance with the transmission system operator grid code.</p>
3.	<p>Sub-task 3.2</p> <p>Output of the Sub-task 3.2. as per ToR is the following: "Under this task software for power system analysis should be developed by the Contractor and make available to all distribution companies of EPS group".</p> <p>Question: Having in mind that development of the software for power system analysis is long and very expensive process, whose costs are far beyond overall budget for this project, as well as knowing that in the market there are several very good software solutions for power system analysis which are widely used by the TSOs/DSOs all over the world, is it possible to deliver under this sub-task one of the existing software solutions for power system analysis such as for example PowerFactory or PSS/E</p>	<p>It is not required to develop the software with high sophisticated interfaces related to data input, record manipulation, results of calculation display, etc. The following is required by the Terms of Reference:</p> <p><i>"The software application should include the following modules in integrated environment:</i></p> <ol style="list-style-type: none"> 1. <i>Load flow</i> 2. <i>Short circuit/fault analysis</i> 3. <i>Transient (rotor angle) stability"</i> <p>The main requirement is that the software application should include three modules in the integrated environment. This basic functional requirement should be achieved by the contractor.</p> <p>The assessment of the Contracting Authority is that the budget of 1,000,000 EUR is reasonable to develop the requested software and carry out other tasks as specified by the Terms of Reference. It is up to the contractor to allocate its own resources optimally.</p> <p>The software should be developed within six month time period from the end of the Inception Phase and the software source code should be delivered to EPS.</p> <p>Already achieved software solutions could be used to build the software application in accordance with the Terms of Reference. In that case, their entire source code should be delivered to EPS so that the same executable version, as the delivered one, could be</p>

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		<p>produced by EPS compiling delivered source code files. In addition, EPS will have rights to upgrade and install the software according to its own needs without delivering it to third parties.</p>
4.	<p>Sub-task 3.2</p> <p>As per professional experience typically commercial software are being used for power system analysis. The source code of the software themselves is intellectual property of the companies that developed the software and is of no value to EPS or any distribution company. In this context could you please confirm that it is not necessary to deliver software source code to EPS in the case that a commercial software is delivered for power system analysis under the sub-task 3.2?</p>	<p>It is clearly specified in the Terms of Reference that the source code of the developed software should be delivered to EPS. Therefore, it is not possible to deliver the commercial software without the source code.</p> <p>The reasons why the delivery of the software source code is requested are as follows:</p> <ul style="list-style-type: none"> • Upgrades. Software upgrades could be roughly split into two categories: <ul style="list-style-type: none"> ○ Minor upgrades. This type of upgrades refer to: <ul style="list-style-type: none"> – Creation of particular reports based on results of calculations of existing power functions; – Software interface changes in accordance with user remarks; – Introduction of additional parameters in existing power functions. ○ Major upgrades. This type of upgrades refer to: <ul style="list-style-type: none"> – Software extension with new power functions in accordance with EPS perspective needs, such as small-signal stability or electromagnetic transients. – Changes of software application type so that, for instance, it could be used on some other device or via Internet. <p>Remark: Programming Integrated Development Environment (IDE) license has been purchased and owned by EPS for more than 15 years. EPS has experts and programming tools to do the upgrade of any software.</p> <p><u>With the source code delivered and</u></p>

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		<p><u>documented, EPS will be capable of further software development in accordance with its needs.</u></p> <ul style="list-style-type: none"> <p>Implemented methodology. By analysing the results of calculations of some commercial power system analyses software it has been shown that the methodology has not been correctly implemented within the software. Commercial software is a black box and nothing could be done to make corrections of power system calculations.</p> <p><u>With source code delivered and documented, it will be possible to make any methodological corrections.</u></p> <p>Computer simulation model's format unification. We are facing with different formats used to save power system simulation models. All commercial or non-commercial software uses its own record format. Therefore, in most cases it is not possible to use model saved by particular software with another one. There were attempts to make conversion routines, but models converted to another format required large-scale manual actions in order to achieve similar results of calculation. This especially refers to models containing control system of generators for transient stability analysis.</p> <p>Furthermore, models saved by old versions of particular software could not be loaded by new version of the same software at all or they could be partially loaded requiring a bunch of manual corrections.</p> <p><u>With its own software EPS will unify format of computer simulation models in perspective.</u></p>
5.	<p>Sub-task 3.2</p> <p>The requirement from the ToR is that “software should be installed in all branches of distribution companies and HQ which is up to 40 separate workplaces”. As per our understanding the above sentence implies that software can be installed in 40 computers in all branches and HQ</p>	<p>It is specified in the Terms of Reference:</p> <p><i>“Software should be installed in all branches of distribution companies and HQ which is up to 40 separate workplaces.”</i></p> <p>The Contractor should successfully</p>

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	<p>(or centrally in servers which will be accessible to the respective users). In either case, this kind of installation (i.e. individual license for each computer) implies large number of licenses and extraordinary high costs for their acquisition and rental, diminishing also the budget for other significant tasks. On the other hand, in the power system planning, unlike power system operations, dynamic and repetitiveness of activities is relatively low and thus the number of concurrent users is by default very low. Therefore, a typical solution is that power system software can be installed at 40 computers, but it is not necessary to have 40 licenses which will provide them all to work at the same time since this is highly unlikely and unnecessary to happen. If it is not absolutely necessary to run the software on all computers simultaneously, the best criteria for the provision of licenses for power system analysis software is the number of concurrent users.</p> <p>Question: What is the number of concurrent users that should be serviced by the supplied software for power system analysis in each local distribution company and in HQ?</p>	<p>install software at 40 separate workplaces. All problems that came up during installation at 40 separate workplaces should be resolved by the Contractor.</p> <p>Regarding concurrent usage of software, there should be no limits.</p>
6.	<p>Sub-task 3.3</p> <p>1. Can you please clarify whether a protection coordination and selectivity study via software tool is required for the implementation of activities 1-3 of Sub-task 3.3 or the work on those activities is based on the preparation of guidelines and proposed methodology for protection philosophy (types, characteristics, parameters) distribution networks with DG?</p> <p>2. Can you please clarify whether power quality indices shall be calculated via software tool for the activities 4-5 of Sub-task 3.3 or the work on those activities is based on the preparation of guidelines and proposed methodology for power quality estimation and measurements in distribution networks with DG?</p>	<ol style="list-style-type: none"> 1. No protection coordination and selectivity study via software tool is required for the implementation of activities 1-3 of subtask 3.3. Work is based on analysis of currently used relay protection systems in the distribution company, preparation of recommendations for types, characteristics and parameters of relay protection systems depending on type of DG, etc., as specified in details in the Terms of Reference. 2. Power quality indices should not be calculated via software tool for activities 4-5 of subtask 3.3. Work is based on elaboration of influence of connected DG on power quality parameters in normal working conditions and formulation of the proposal for modification of DG operation practices.
7.	<p>Task 5</p> <p>1. Could all the training activities be delivered in English language by an international expert with concurrent translation in the Serbian language? Or is it preferred to mobilize a Serbian expert to</p>	<ol style="list-style-type: none"> 1. Yes. All the training activities could be delivered in English by an international expert with concurrent translation in Serbian. 2. Five 10-day trainings will be

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	<p>perform all trainings?</p> <p>2. Could you please clarify which is the requested allocation of trainings per each local distribution company?</p>	<p>allocated in Novi Sad, Belgrade, Kragujevac, Kraljevo and Niš.</p>
8.	<p>As per the TOR in <i>Subtask 3.2 Power system analysis - The Contractor should develop software for power analysis and simulation model applicable for distribution grid of EPS Group</i>. Please clarify whether the contractor should developed a tailored software or it is just the implementation of an already commercialized developed and software (such us PSSE, DigSilent, u other to be determined during the consultancy work).</p>	<p>Please see the answer to question No.4.</p>
9.	<p>Please clarify whether the software application requested in subtask 3.2, pp 9, in addition to three specified modules, should enable geo-referenced input of data. If not, please clarify, whether there is any request related to data input.</p>	<p>Software application should not enable geo-referenced input of data.</p> <p>There is no request related to data input.</p>
10.	<p>Subtask 3.2, pp 10, prescribes that “Active power losses with and without power plants should be analysed taking into account different load levels in relevant part of the grid”. Please clarify how many different load levels should be analysed. Also, please clarify, whether these analysis should be performed with and without all (existing and planned) power plants simultaneously or different combinations of connected DGs should be treated. In case of later, please clarify how many such combinations for each load level should be analysed.</p>	<p>Two different load levels should be analysed: maximum and minimum load in the system.</p> <p>The analyses should be performed with and without all DGs (existing and planned) simultaneously connected.</p>
11.	<p>In regard with Output 3.2 the ToR prescribes the following: “It is to be noted that for the successful completion of this task/delivery of this output, the functioning and proper performance of the power system analysis software shall be verified by the representative of the Beneficiary. Only on his/her approval may the Contracting Authority approve the output and authorise the payment associated to this output”. Please clarify how functioning and proper performance of the power system analysis software will be verified by the</p>	<p>Functioning and proper performance of the power system analysis software will be verified by using several test models. EPS will construct test models by using delivered software application in order to check whether user input data interface operates properly. No import routines will be used. Test models will be as follows:</p> <ul style="list-style-type: none"> • 3 nodes, 3 lines, 2 loads and 2 generators. There will be no transformer in this test model, all of the nodes will be of the same voltage

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	<p>Beneficiary. In case of comparison with metered voltages and load flows, we wonder what will happen if input data for calculation, obtained from the Beneficiary, are not correct. In case of a dispute between the chosen Consultant and the Beneficiary regarding verification of results i.e. in regard with “functioning and proper performance of the power system analysis software” and/or in case of not giving the approval without any justified reason we wonder who will make the arbitration if not the Contracting Authority and how the Contractor will be paid eventually.</p>	<p>level and the generators will be connected directly (without step-up transformer) to the nodes.</p> <ul style="list-style-type: none"> • 10 nodes, 2 transformers, 8 loads and 3 generators. The generators will be connected to the nodes by step-up transformers. Two voltage levels will be modelled. • 100 nodes, 7 transformers, 90 loads and 10 generators. The generators will be connected to the nodes by step-up transformers. Three voltage levels will be modelled. <p>One of the generators in the models is system swing generator.</p> <p>Results of calculations have to be the same or approximately the same (differences should be less than specified relative error tolerance) as those that have already been confirmed for these test models. Differences in results will be discussed and clarified with the contractor. Goal of EPS is to get software application whose results of calculations are correct.</p> <p>Results of all three types of system calculations will be verified: load flows, short circuits and transient stability.</p> <p>EPS will not compare results of calculations with some metered voltages or load flows in the real system.</p> <p>In addition, the contractor should deliver the entire source code of the software application so that EPS can build the application in programming IDE that was used to develop it and check whether it completely corresponds to delivered executable file.</p>
12.	<p>Subtask 4.2, pp 12, prescribes that “Cost benefit analysis should be performed which will provide optimal capacity and allocation of electricity storage batteries. Cases for analysis will be provided by beneficiary”. Please clarify how many cases will be specified for C/B analysis and whether each case will contain the grid configuration, load levels and all DG generation levels.</p>	<p>It is not possible to specify precisely how many cases will be comprised in the cost-benefit analysis. This will depend on the results obtained in the study. There will be approximately three to six cases for cost-benefit analysis and each one will contain grid configuration, loads and all DG generation.</p>

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13.	<p>By subtask 3.2. Power System Analysis, it is required that Contractor develops the software for power system analysis with required features of this software as:</p> <ul style="list-style-type: none"> – Load flow – Short circuit / fault analysis – Transient (rotor angle stability) <p>In addition, it is required that Contractor develops simulation model applicable for distribution grid of EPS Group. It is required by tender that developed software source code should be delivered to EPS. Moreover, tender request is that user manual for the software is in Serbian languages only.</p> <p>We believe that some of requests mentioned above can produce distortion of competition since are they limiting the potential selection of software to only unproven, local, “homemade” software, which do not have proper references worldwide, and which, therefore, do not have a problem to give its source code, while worldwide recognized software, developed for several decades in US or EU countries are being disregarded due to the requirement of delivering a software source code.</p> <p>Q1. “There are many software for power system analysis which are already developed by world famous organizations and being in use at DSO and TSO companies worldwide. All these software packages, which do not need to be named, have already developed modules which are required by the Tender, (load Flow, Short Circuit, Transient module) and they do not need to be additionally developed from project to project, for every customer’s needs. Every DSO’s needs can be satisfied with these software packages and there is no need to give source code, so that Beneficiary can work further on its development. Beneficiary should work on the development of the models prepared in that software, but not on the source code of software as itself. There are many reasons why giving of source code is unnecessary request who limits competition to only unproven, local</p>	Please see the answer to question No. 4.

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	<p>software, which needs to be developed more and do not have long history of development. We will count some of them:</p> <ul style="list-style-type: none"> – In each of these worldwide recognized and proven software packages, their owner companies invested and are still investing big funds in its development for multiple decades. All this software has powerful simulating engines, strong database, user-friendly GUIs which are already developed. None of these companies would give a source code to Beneficiary, because it would be losing of right to own software which can now be developed by Beneficiary. – These multiple worldwide recognized and proven software packages have already developed, sold in many regions and have proven modules which are requested by the tender, with no need for additional development by Beneficiary. – In similar tenders worldwide, Contractor sells the software licenses (right to use the software) to Beneficiary. In addition, Contractor develops Beneficiary’s network models in such software packages. General purpose of this approach is that Beneficiary can use those models developed in proper software and further works in them, develop those models, do the simulations and complicated studies, but not to further develop source code of those software packages. So, conclusion is that the models have to be developed and given to the Beneficiary as a property, for further usage and development, while software licenses are needed so that Beneficiary can actually use these modules. – There is absolutely no need to give the source code to the Beneficiary. In our opinion, this would be the way to limit the competition to small, local, unproven, software without worldwide references, which are already developed or needs to be developed in the period of six months. Keeping this request in tender would actually eliminate all competitors from the list, except one, who has local “homemade” software, which has to be additionally 	

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	<p>developed. Even after that development of six months, quality of such software is not comparable to the software which are developed for decades and whose manufacturers do not give source code.</p> <ul style="list-style-type: none"> – There is no logical sense to insist on developing of software for the needs of DSO, while there are many similar software, of better quality, with quality HMI and databases, which are developed for last 20, 30 years. – Selling of software, giving up on its source code by any of worldwide famous manufacturers costs much more than estimated price of this tender. – If we want to compare this tender request with Word Program, which we are using to write this document, it would be like to ask Microsoft to give source code of Word, together with commercial licenses for its usage. It would be unnecessary request with eliminating effects for Microsoft Company for participation in such tender. <p>Having in mind everything written within this we kindly ask the Contracting Authority and Beneficiary to confirm that there is no need to give software source code of power system analysis software, together with licenses which will be given to the Beneficiary. Keeping this request is not only unnecessary and does not provide any additional favor to the Beneficiary, but it would be also eliminatory for all worldwide software manufacturers.</p>	
14.	<p>None of worldwide recognized and proven software packages for power system analysis have manual in Serbian language, as all of this software has GUI developed in English language. All these manuals have several thousands of pages. Translation of these manuals would be extremely difficult, long and expensive job (costs for translating of such documentation do not fit within the budget kept for incidental expenditure). In addition, Translation of IT and Electrical wording from English to most of the languages including Serbian is not easy task, i.e. many words stay much more understandable if</p>	<p>Please note that the development of the power system analysis software is requested. After the software development is completed, the user manual should be made in Serbian.</p> <p>Every application has its own “Help” which is not the same as user manual. In this particular case, the user manual should comprise of everything that will be used in the training, in the sequence in which the training will be conducted. Therefore, there is no need for excessive number of pages, but about 50-100 should be sufficient, according to a</p>

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	left in original English language than translated to other languages. Therefore, is it acceptable for the beneficiary that Contractor submits manuals in English version, as this is usual in similar projects worldwide?	rough estimation.
15.	Software description does not require that software has developed GUI, which is very important and is quality feature of every recognized software. Hence, we kindly ask the Beneficiary and Contracting Authority to confirm that software needs to have developed Graphical User Interface?	<p>It is specified in the Terms of Reference (Subtask 3.2)</p> <p><i>“The software application should include the following modules in integrated environment.”</i></p> <p>Since the software includes different modules, graphical user interface (GUI) should be developed.</p> <p>It is up to tenderer to choose whether GUI will be based on menus and toolbars or ribbon. Ribbon would be an advantage since it is the most recent type of GUI.</p>
16.	Within section 3.2. is required that Software should be installed in all branches of distribution companies and HQ, which is up to 40 separate workplaces (computers). Please confirm/comment that this means that software should be installed at 40 computers.	Yes, the software should be installed at 40 computers.
17.	How many concurrent user licenses of software for power system analysis has to be given to the to the Beneficiary? Since that 40 workplaces do not necessarily have to mean 40 concurrent licenses, please specify how many User Licenses shall be given to the Beneficiary.	<p>The software should be installed at 40 computers and the contractor should resolve any issue that comes up, such as system file missing, inappropriate resolution, etc.</p> <p>There is no limit related to concurrency. Having in mind the software will be developed for EPS, EPS will have the ability to install software wherever it is needed without limits related to concurrency.</p> <p>Please note no user license is specified in the Terms of Reference. The developed software will be the property of EPS and EPS will be free to install it wherever it is needed.</p>
18.	What is the type of the licenses which has to be given to the to the Beneficiary (PC-bound, network, dongle licenses...)?	Please see the answer to question No.17

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19.	By subtask 3.2. it is required that power system analysis software has modules for Load Flow, Short Circuit and Transient Stability. However, in the continuance of software description, it is required that software can “simulate DG integration into existing distribution grid”. Does previous sentence mean that integration of renewables according to Grid Code needs to have automatic module for that simulation?	<p>Simulation of DG integration into the existing grid means carrying out power system calculations, such as load flow, in order to, for instance, investigate if DG rated power could be evacuated without violating voltage limits or overloading any branch of the power grid.</p> <p>No automatic module is required that would perform calculations analysis according to Grid Code needs.</p> <p>Required modules are specified by the Terms of Reference: load flow, short circuit and transient stability.</p>
20.	Since that for integration of renewables according to Grid Code, one of the conditions is to check is related to harmonics, does harmonics calculation module has to be involved in software license?	<p>No harmonic calculation module is required.</p> <p>Required modules are specified by the Terms of Reference: load flow, short circuit and transient stability.</p>
21.	Terms of Reference, Chapter 4, Subtask 3.2: We could not find in ToR any specifications related to single line diagram of power system analysis software. Are there any requirements related to single line diagram?	Single line diagram is not requested. It would be considered an advantage.
22.	Terms of Reference, Chapter 4, Subtask 3.2: Can you please clarify how will EPS test proper software functioning?	Please see the answer to question No.11.
23.	Terms of Reference, Chapter 6.1: Can you please clarify whether MSc degrees as requested by ToR for Key Experts 1 and 2 correspond to Dipl. Ing. degrees from University of Belgrade?	<p>Yes, it corresponds to Dipl. Ing. degree from University of Belgrade and other universities with 5 year graduate studies before introduction of Bologna Process in 2006.</p> <p>Or</p> <p>Master of Science (MSc) degree gained after 2006 upon completion of basic university studies (4 years, 240 ECTS) AND master studies (minimum 1 year, 60 ECTS).</p>