

# पावर सिस्टम ऑपरेशन कॉर्पोरेशन लिमिटेड

(भारत सरकार का उद्यम)

## POWER SYSTEM OPERATION CORPORATION LIMITED

(A Govt. of India Enterprise)



पंजीकृत एवं केन्द्रीय कार्यालय : प्रथम तल, बी-9, कुतुब इंस्टीट्यूशनल एरिया, कटवारिया सराय, नई दिल्ली-110016  
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To,

All the concerned.

Date: 02<sup>nd</sup> Nov 2018

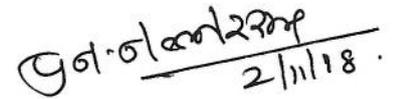
**Subject: Clarification no-1 and Amendment no. 1 on Expression of Interest (EOI) for Testing of primary frequency response of generators as per IEGC clause 5.2(g)**

Madam/Sir,

In compliance to the IEGC 5<sup>th</sup> amendment regulation, National Load Despatch Centre (NLDC) on behalf of RLDCs has formulated a procedure for carrying out the primary frequency response tests. The notice inviting Expression of Interest (EOI) from interested agencies was released in leading daily newspapers of 1st October 2018 and 3rd October 2018 edition of Indian Trade Journal (ITJ). The detailed EOI document was also released on POSOCO website. To discuss the issues related to EOI, a pre-bid conference was organized on 24<sup>th</sup> October 2018 at National Load Despatch Centre. The Minutes of Meeting (MoM) of the above mentioned conference was released on POSOCO website on 24<sup>th</sup> October 2018. In line with above, kindly find enclosed Clarification no-1 and Amendment no. 1 on EOI for Testing of primary frequency response of generators as per IEGC clause 5.2(g).

Thanking You.

Yours faithfully

  
2/11/18

(N. Nallarasana)  
DGM(SO)-NLDC

**(Annexure-1) CLARIFICATION No. I TO THE WRITTEN QUERIES OF THE BIDDERS ON EOI FOR TESTING OF PRIMARY FREQUENCY RESPONSE OF GENERATING UNITS AS PER INDIAN ELECTRICITY GRID CODE CLAUSE 5.2 (G)**  
**Specification no: POSOCO/NLDC/SO/2018/01**

<b>SL No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
1	Clause a, section background in EOI  (Page 1 of 6)	Who would release the RFP to shortlisted agencies (Power Plant Operators or POSOCO or RLDC or SLDC)?	POSOCO will issue the RFP to shortlisted agencies.
2	Clause b.1.b, section Intent in EOI  (Page 2 of 6)	Is this requirement defined in IEGC? Please confirm.  b) Primary frequency Response is "The additional MW output required from Generation Units (or Demand reduction) which must be realizable in real time operation to contain and correct System Frequency deviation to an acceptable level. Hence Primary frequency response test itself will demonstrate frequency regulating capability of turbine generator. What is the objective of this test and what additional information is expected from this test other than what is achieved in primary frequency response test?"	The matter was reviewed in the context of highly meshed all India grid where islanding is a remote possibility. As far as behavior under black start feature is concerned, hydro units undergo regular annual black start and islanded operation drills.  Please refer Amendment no.1 to the EOI
3	Clause b.2, section Intent in EOI  (Page 2 of 6)	In addition to grid code compliance verification, typically primary frequency response recorded test data would be useful to derive and validate the turbine governing system dynamic model and parameters. It would be helpful to create more accurate dynamic database for POSOCO to perform power system simulations required for planning and operation studies. This approach is followed in many utilities across globe.  Does the bidder also need to submit the dynamic models for the turbine governing system?	Considering the importance of creating a dynamic database to perform power system simulations required for planning and operation studies, the EOI is amended. Please refer to the Amendment no. I to EOI document.

21/08/18

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**Specification no: POSOCO/NLDC/SO/2018/01**

<b>SL No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
4	Clause b.1.b, section Intent in EOI  (Page 2 of 6)	How would the adequacy of practical event data to be considered for study would be decided? Please elaborate any minimum specifications like (frequency deviation, number of signals to be provided, sampling rate, total duration of data, etc.) for site event data to be considered for analysis.	The sample high resolution PMU based frequency plot for events involving large generation/load changes during last one year would be provided to the agencies prior to the testing of generator.
5	Clause e, section shortlisting  Criteria in EOI  (Page 3 of 6)	Any expected timelines for EOI evaluation process and release of formal RfP?	POSOCO shall make all efforts to expedite evaluation process and release of RFP to shortlisted agencies as early as possible.

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**Specification no: POSOCO/NLDC/SO/2018/01**

<b>Sl No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
6	Clause i, section conflict of Interest in EOI (Page 5 of 6)	<p>Typical approach followed across globe is:</p> <ul style="list-style-type: none"> <li>• Test is performed by test agency (OEM or third party) and usually witnessed by grid authorities. The test data is handed over to grid authorities immediately after tests.</li> <li>• Presence of OEM would be required to make changes to the control settings of the governing systems for testing purpose. We, as OEM, have carried out several such tests to support the generating companies and grid operators.</li> <li>• It is suggested to allow OEM also to participate and not treat this as conflict of interest as OEM participation (controls engineer) would have to support the test anyways. This will also help to expedite the tests, analysis and tuning requirement if any.</li> </ul>	<p>Refer clause-I of EOI. The said clause do not bar any OEM to participate in bidding process subject to conditions mentioned therein. Further, Testing agencies who are OEM shall not be allotted such generators for carrying out tests if they have a conflict of interest during carrying out tests. The testing agencies would have conflict of interest while carrying out test on particular generator if the agency or any of its affiliates were involved in designing/preparation of technical specifications of the generator's OEM/Erection/Testing and commissioning of the generator.</p> <p>Also refer Clause F[5] of TOR wherein it is stated that respective power stations shall facilitate the tests by providing the following facilities: <i>Carrying out all connections, changes of controls and other activities in the power station.</i></p>
7	Clause B.b, Section work for the Agency conducting the test in Annexure A of EOI (Page 2 of 6)	<ul style="list-style-type: none"> <li>• Primary frequency Response is "The additional MW Output required from Generation Units (or Demand reduction) which must be realizable in real time operation to contain and correct the potential Power System Frequency deviation to an acceptable level. Hence Primary frequency response test itself will demonstrate frequency regulating capability of turbine generator.</li> <li>• What is the objective of this test and what additional information is expected from this test other than what is achieved in primary frequency response test?</li> </ul>	Refer Sl. No. 2 above.

21/11/18

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**Specification no: POSOCO/NLDC/SO/2018/01**

<b>SL No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
8	<p>Clause c, Section Requirements on the Test Methodology in Annexure A of EOI</p> <p>(Page 2 of 6)</p>	<ul style="list-style-type: none"> <li>• Ability of turbine generator to regulate frequency depends upon MW increase/decrease in response to system frequency deviation and it is independent of turbine generator is connected to large grid or small islanded grid.</li> <li>• System frequency variation is caused by change in load or generation. Hence it is obvious that primary frequency response performed using simulated frequency signal are adequate to demonstrate frequency regulating capability of turbine generator.</li> <li>• Please elaborate what additional information is expected by performing tests using simulated frequency variation corresponding to small simulated subsystem island"</li> </ul>	Refer Sl. No. 2 above.
9	<p>Clause d.i.1, Section procedure in Annexure A of EOI</p> <p>(Page 4 of 6)</p>	Heading of the Section refers to "Grid connected operation", however Item # [1] refers to "Islanded system". Please clarify.	The error is typographical in nature and the same has been amended by removing the phrase "...and while operating in an islanded system..." from Clause D.i.1
10	<p>Clause d.i.3, Section procedure in Annexure A of EOI</p> <p>(Page 4 of 6)</p>	Is there any limit with respect to maximum frequency step to be injected?	The maximum frequency step to be injected may be limited to such that it causes maximum 5% change in output for thermal generating units and 10% for hydro generating units which should generally be within limits prescribed by most manufacturer .

21/11/18

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**Specification no: POSOCO/NLDC/SO/2018/01**

<b>Sl No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
11	Clause d.i.6, Section procedure in Annexure A of EOI (Page 4 of 6)	Sampling rate of 0.1Hz corresponds to 1 sample at every 10sec which appears low. It is generally less than or max 1 sec. Please clarify.	The error is typographical in nature and the same has been corrected through Amendment no.1
12	Clause d.i.6, Section procedure in Annexure A of EOI (Page 4 of 6)	Test performing agency will provide the observation related to PFR test and any non-compliance will be communicated to Plant Operator. Plant Operator need to co-ordinate with OEM to identify modification required to ensure compliance with grid code. Test performing agency will perform re-test after implementation of modifications to verify the improvement and compliance with grid code. Please confirm that this interpretation is correct.	In case of non-compliance, the same may be recorded in the report. However if any oscillatory response can be rectified by small fine-tuning, the same may be carried out in consultation with generator owners to achieve stable output/response and this aspect may be recorded.
13	Clause d.ii, Section procedure in Annexure A - EOI (Page 4 of 6)	According to this section, steps required to perform island test are same as PFR test in grid connected operation. How these tests are different from PFR tests in grid connected operation? What additional information is expected from these tests?	Refer Sl. No. 2 above.
14	Clause e.ii, Section Analysis and Report in Annexure A of EOI (Page 4 of 6)	Please elaborate regarding load models?	Refer Sl. No. 2 above.
15	Clause e.iv, Section Analysis and Report in Annexure A of EOI (Page 4 of 6)	Typically, expected minimum MW response requirement is defined in grid codes and the compliance is demonstrated through testing. International standards are more generic however grid code requirements are more specific considering regional grid specific requirements. Different testing agency can have different benchmark/standards. It is suggested to have common benchmark to verify compliance and to ensure consistency.	The test results should be in line with the Table as brought out at Clause E[5] of TOR.

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**Specification no: POSOCO/NLDC/SO/2018/01**

<b>SL No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
16	Clause e.iv , Section Analysis and Report in Annexure A of EOI  (Page 4 of 6)	It is suggested to include requirement related to submission of validated turbine governor model and its parameters using PFR test data as part of Test report. This will be useful to POSOCO/RLDC/SLDC for planning and operational studies.	Refer Sl. No. 3 above.
17	Clause f, Section facilities to be provided by the Respective Power Plant Owners in Annexure A of EOI  (Page 6 of 6)	Power Plant Owner shall ensure that appropriate OEM Controls Technical Advisor support is available to support the Test team. Please confirm.	Refer Sl. No.6 above..
18	Clause 1.a, Schedule - 1 of section - II (Application and Schedules)  (Page 1 of 3)	Would a copy of General Power of Attorney be adequate? Please confirm.	Copy of general power of attorney duly attested by an authorized person of agency mentioning name designation shall be accepted.
19	General query.	It is suggested to include test related to generator and excitation system for example - Generator Model Validation Test, Reactive Capability Test, AVR Step Test, PSS Test, OEL/UEL Functional test. This will help to ensure overall compliance with grid code and provide validated dynamic models for generator and excitation system useful for planning and operational studies. These tests can be performed within the same timeframe and provide additional useful information that can be used for planning studies.	Refer Sl. No. 3 above.

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**Specification no: POSOCO/NLDC/SO/2018/01**

<b>Sl No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
20	Annexure-A to EOI, Page 3/6: C.4	<p>There must be features in the test equipment to automatically abort the test if the plant operating conditions indicate abnormal behaviour consequential to test."</p> <p>Q: Does this mean the test equipment should implement closed-loop control which reads turbine operating parameter from transducers? In our opinion, this would not be very practical since not all turbine operating parameters can be readily accessible. In addition, this poses potential risk of tripping the unit as it may interfere the turbine control circuit. Instead of implementing a closed-loop control in the test equipment, we usually have an emergency switch (software and hardware) to abort the test if the plant operator sees anything abnormal. Since turbine mechanical response is relatively slow, the P a g e I 2plant/unit operator. Please confirm if this is acceptable.</p>	<p>The intention of the feature is to isolate the unit from simulated injected signal when any instability arises due to test. This has been kept to avoid any unwanted threat to grid due to the test. Emergency switch off software/Hardware may be used to abort the test if the power plant owner informs about any instability/abnormal behavior in plant.</p>
21	Page4/6: D.i.[6].	<p>"The test shall be repeated with revised settings if possible without taking shutdown of the unit"</p> <p>Q: Is the contractor responsible for revising governor settings? Due to the large number of generators and large variety of governors, the test engineers cannot be proficient in operating and programming every type of governor. In this case, governor OEM engineer should be present to change parameter settings in the governor. It should be the power plant/POSOCO responsibility to hire an OEM field service engineer to attend the test for each unit. Please confirm if this will be the case.</p>	<p>Revised settings to be carried out in consultation with plant owner shall be for fine tuning only to achieve stable response. The repeated test shall be completed on the same working day. However the testing agency may record the changes in settings that have been carried out time to time as per the request/consultation with plant owner. Also, response of unit on account of each change in setting shall be recorded in report.</p>
22	Page4/6: D.ii.	<p>"The above tests will be repeated with simulated frequency signal corresponding to the islanded system of the order of 2000MW"</p> <p>Q: Shall POSOCO or Plant specify or provide the simulated</p>	<p>Refer Sl. No. 2 above.</p>

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**Specification no: POSOCO/NLDC/SO/2018/01**

<b>SL No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
		frequency signal curve to be injected to governor? Should the same or different simulated frequency curve be injected to different units depending on their locations/connections to the grid?	
23	Page:5/6: E.[2].	"Description of the test method adopted and the load models used during the tests"  Q: Please clarify "load models used during the tests", does this mean the generator load level or loading profile?	Please refer Amendment no.1 to the EOI
24	Page 5/6: E.[4].	"The international benchmarks/standards referred for assessing the speed and stability of the primary response of the unit shall be mentioned in the report"  Q: Is POSOCO going to give the international benchmarks/standards for contractors to follow?	Refer Sl. No. 15 above.
25	Page 6/6: F.[4].	"Providing the signals (required for conducting the tests) at a common connection point where the test equipment is to be placed."  Q: Can we assume the power plant is responsible for identifying the correct point of connection and provide all the necessary detail information about the injection point (e.g. whether it is a voltage or current signal and the signal ranges allowed for external injection, etc.) so that the signal injection point will be readily available for the contractor before showing up on site?	Please refer Clause no. F[5] of TOR document.
26	General Question:	Based on our experiences, many generators, especially steam turbine generators, may implement governor controls that are not responsive to grid frequency deviations (or only provide initial response but roll back to original MW level quickly). For example, this includes standalone steam turbine units operating	The basic philosophy of this complete testing procedure is to provide independent results from the testing process. Testing agency shall document in final report all actual findings as well as findings including any change in setting suggested by plant owner.

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**(Annexure-1) CLARIFICATION No. I TO THE WRITTEN QUERIES OF THE BIDDERS ON EOI FOR TESTING OF PRIMARY FREQUENCY RESPONSE OF GENERATING UNITS AS PER INDIAN ELECTRICITY GRID CODE CLAUSE 5.2 (G)**  
**Specification no: POSOCO/NLDC/SO/2018/01**

<b>SL No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
		MW control or pressure control mode, or combine cycle units' steam turbine typically operating in sliding pressure control (valve 100% open). If this is found to be the case, what would POSOCO expect the contractor to do? Should the contractor just report actual findings onsite or work with the plant owner engineers to change the control logic if allowed and practical?	
27		Is any specific format for EOI submission or we have to follow the details asked to submit as per your EOI notice only	The EOI need to be submitted in the format as given in Application and Schedules section of the EOI document.
28		We understand after EOI evaluation you will consider the selected vendor for RFP stage . Is you are going to give complete work to only single vendor or you may go to split the work to 2 or 3 vendors	As per CERC Regulation 5.2 (g) of Part 5 of the Principal Regulations:  <i>"Provided that periodic checkups by third party should be conducted at regular interval once in two years through independent agencies selected by RLDCs or SLDCs as the case may be..."</i> Presently there are over 100 plants (refer Clause B.1 of TOR) on which tests are to be carried out . Further the bidders are requested to give self-declaration regarding their capability to carry out tests. Considering the number of units and capability of the shortlisted agencies, POSOCO may decide to allocate the tests on more than one agency, taking into account other terms and conditions as per RFP documents to complete the tests in the given timeframe as mandated by CERC.
30		If OEM of turbine control system and turbine-generator are different then will this be considered as COI for both turbine control OEM and turbine-generator OEM?	Conflict of interest in the bidding process is clearly mentioned at Clause-I of the EOI. Conflict of interest during carrying out tests is also clearly mentioned at Clause-I of EOI which states that <i>"Agency(ies) finalized to carry out tests may be considered to have a conflict of interest during carrying out tests if the agency or any of its</i>

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**(Annexure-1) CLARIFICATION No. I TO THE WRITTEN QUERIES OF THE BIDDERS ON EOI FOR TESTING OF  
PRIMARY FREQUENCY RESPONSE OF GENERATING UNITS AS PER INDIAN ELECTRICITY GRID CODE CLAUSE 5.2  
(G) Specification no: POSOCO/NLDC/SO/2018/01**

<b>Sl No.</b>	<b>Clause Ref.</b>	<b>Bidders Queries</b>	<b>Clarification</b>
			<i>affiliates were involved in designing/preparation of technical specifications of the generator's OEM/Erection/Testing and commissioning of the generator."</i>
31		<p>Have these 342 units been setup or these will be set up later?</p> <p>We will have to do only testing work. No equipment is to be supplied.</p>	<p>Please refer the detailed EOI and TOR document as released on POSOCO website. Units mentioned are already in operation. Yes, in the scope of EOI , testing has to be carried out as per TOR and no equipment need to be supplied.</p>

--- End of Clarification No-I -----

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**(Annexure-2) AMENDMENT NO. -I to Expression of Interest (Eoi) - Testing of primary frequency response of generators as per IEGC clause 5.2(g) – Specification no: POSOCO/NLDC/SO/2018/01**

Sl. No.	SECTION/ CLAUSE NO.	EXISTING PROVISION	AMENDED PROVISION
1.	B.1(b) ,Intent of EOI, (Page 2 of 6)	<u><i>Primary Response of the Machine to a simulated frequency signal corresponding to islanded conditions. The focus would be on the governor frequency control.</i></u>	Deleted
2.	B.b SCOPE OF WORK FOR THE AGENCY(ies) CONDUCTING THE TEST, (Page 2 of 6) of TOR	<u><i>b. Primary frequency Response of the Machine to a simulated frequency signal corresponding to islanded conditions. The focus would be on the governor frequency control.</i></u>	Deleted
3	C.1 REQUIREMENTS ON THE TEST METHODOLOGY (Page 3of 6) of TOR	<u><i>The generating unit under test shall be subjected to simulated frequency variation to assess its capability to contribute in system frequency control while operating in synchronism either with a large grid or with a small simulated subsystem island.</i></u>	<u><i>The generating unit under test shall be subjected to simulated frequency variation to assess its capability to contribute in system frequency control while operating in synchronism either with a large grid.</i></u>
4	C.2 REQUIREMENTS ON THE TEST METHODOLOGY (Page 3of 6) of TOR	<u><i>The power plant shall also remain synchronized to the main grid even during the test of island operation capability, and the generated power output shall be varied within the capability limit of the unit under test.</i></u>	Deleted
5	D.i.[1], Primary Frequency Response Test - Grid connected operation (Page 1 of 6) of TOR	<u><i>The objective of the test is to assess the Primary Response of the Generating Unit under test while operating in a large system and while operating in an islanded system.</i></u>	<u><i>The objective of the test is to assess the Primary Response of the Generating Unit under test while operating in a large system.</i></u>

**(Annexure-2) AMENDMENT NO. -I to Expression of Interest (Eoi) - Testing of primary frequency response of generators as per IEGC clause 5.2(g) – Specification no: POSOCO/NLDC/SO/2018/01**

Sl. No.	SECTION/ CLAUSE NO.	EXISTING PROVISION	AMENDED PROVISION
6	D.ii, Primary Frequency Response Test - Island operation (Page 2 of 6) of TOR	<u>Primary Frequency Response Test - Island operation</u>  <u>The above tests will be repeated with simulated frequency signal corresponding to the islanded system of the order of 2000MW.</u>	Deleted
7	B.b SCOPE OF WORK FOR THE AGENCY(ies) CONDUCTING THE TEST, (Page 2 of 6) of TOR	New clause to be inserted at B.b. (Page 2 of 6) of TOR.	New clause to be inserted: <u>Model validation testing to derive and validate the turbine governing system dynamic model and parameters.</u>
8	C.1 REQUIREMENTS ON THE TEST METHODOLOGY  (Page 3 of 6) of TOR	New clause to be inserted at the end of C.1 (Page 3 of 6) of TOR.	New clause to be inserted: <u>Model Validation Testing needs to be carried out at generating station which entails the derivation and/or validation of turbine governing system modelling data through physical testing of actual plant. All model validation testing should be performed for at least three power levels decided in consultation with the plant owner..</u>
9	D.i.6 Primary Frequency Response Test - Grid connected operation (Page 4 of 6) of TOR	<u>The recorded results (e.g. frequency , MW and control signals) should be sampled at a minimum rate of 0.1 Hz to assess the unit performance from initial transients (seconds) to the final steady state conditions (5-15 minutes depending upon the plant design).</u>	<u>The recorded results (e.g. frequency , MW and control signals) should be sampled using high speed recording equipment of the testing agency at a minimum rate of 10 Hz to assess the unit performance and for turbine governor model validation from initial transients to the final steady state conditions (5-10 minutes depending upon the plant design).</u>

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**(Annexure-2) AMENDMENT NO. -I to Expression of Interest (Eoi) - Testing of primary frequency response of generators as per IEGC clause 5.2(g) – Specification no: POSOCO/NLDC/SO/2018/01**

Sl. No.	SECTION/ CLAUSE NO.	EXISTING PROVISION	AMENDED PROVISION
10	E.[2] (Page 5 of 6) of TOR	<u>[2]Description of the test method adopted and the load models used during the tests.</u>	<u>[2]Description of the test method adopted.</u>
11	E.[3] . (Page 5 of 6) of TOR	<u>[3]Graphical illustrations of the response of the tested unit under various conditions as specified in this document.</u>	<u>[3]Graphical illustrations along with high resolution data(in .csv/.xls format) of the response of the tested unit under various conditions as specified in this document.</u>
12	Schedule-5	Schedule-5 : Check List	Renamed as Schedule-6. Revised Schedule-6 is also enclosed.
13	Schedule-5	Schedule-5 : Check List	Schedule-5 :Undertaking regarding deviations to Terms of Reference(TOR)
14	Section E[1] (Page 5 of 6) of TOR	<u>[1]Brief description of the tested unit including the type of unit, capacity, governor type, initial settings etc.</u>	<u>[1]Brief description of the tested unit including the type of unit, capacity, governor type, turbine governor modelling block diagram used with parameters (pre-validated and post-validated), initial settings etc.</u>
15	Section C, (Page 3 of 6) of TOR	<u><b>C.REQUIREMENTS ON THE TEST METHODOLOGY</b></u> <u>The test methodology and equipment deployed shall be such as to enable assessment/evaluation of the power plant frequency control capability in normal grid connected operation (frequency response test- Restricted Governor Mode and Free Governor Mode) and in islanded grid.</u>	<u><b>C.REQUIREMENTS ON THE TEST METHODOLOGY</b></u> <u>The test methodology and equipment deployed shall be such as to enable assessment/evaluation of the power plant frequency control capability in normal grid connected operation (frequency response test- Restricted Governor Mode and Free Governor Mode).</u>

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**(Annexure-2) AMENDMENT NO. -I to Expression of Interest (Eoi) - Testing of primary frequency response of generators as per IEGC clause 5.2(g) – Specification no: POSOCO/NLDC/SO/2018/01**

Sl. No.	SECTION/ CLAUSE NO.	EXISTING PROVISION	AMENDED PROVISION
16	Section D, (Page 4 of 6) of TOR	<u><b>PROCEDURE</b></u> <u><i>The tests shall be conducted to assess the frequency response of the generating unit for two operating scenarios viz. (a) grid connected operation; (b) islanded operation.</i></u>	<u><b>PROCEDURE</b></u> <u><i>The tests shall be conducted to assess the frequency response of the generating unit for grid connected operation.</i></u>

--- End of Amendment No-I -----

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(Schedule-5)

**Expression of Interest (EOI) for  
Testing of Primary Frequency Response of Generating Units as per IEGC Clause 5.2(g)**

**Undertaking regarding deviations to Terms of Reference(TOR)**

Applicant's Name & Address:

To

**Deputy General Manager(System Operation)**  
NLDC,Power System Operation Corporation Limited  
B-9 (1st Floor), Qutab Institutional Area,  
Katwaria Sarai, New Delhi -110016

Dear Sir,

The following are the deviations to Terms of Reference (TOR) (Annexe-A to EOI) :

Sl. No.	Reference Clause in the TOR	Deviation
1		
2		
3		
4		
5		

Except for the above we confirm that the entire work shall be performed as per TOR document, read in conjunction with amendments (if any). Further, we agree that any deviations introduced in this attachment and or in any other part of the bid will be resolved prior to issuance of Request for Proposal (RFP).

Date : (Signature) .....

Place : (Printed Name) .....

(Designation) .....

(Common Seal) .....

**Expression of Interest (EOI) for  
Testing of Primary Frequency Response of Generating Units as per IEGC Clause 5.2(g)**

**Check List**

Applicant's Name & Address:

To  
**Deputy General Manager(System Operation)**  
NLDC,Power System Operation Corporation Limited  
B-9 (1st Floor), Qutab Institutional Area,  
Katwaria Sarai, New Delhi -110016

Dear Sirs,

Sl. No.	Item Description	Reference	Declaration (Strike out Whichever is not applicable)
1.	2.	3.	4.

Following Schedules mentioned at Sl. No. 1 to 5 below (one original & two copies)

1.	Application		Yes/No
2.	Schedule for Credentials/ Information/ Details etc. filled in	<a href="#">Schedule-1</a> of Application	Yes/No
3.	Information regarding Ex-employees of POSOCO	<a href="#">Schedule-2</a> of Application	Yes/No
4.	Undertaking regarding conflict of interest	<a href="#">Schedule-3</a> of Application	Yes/No
5.	Declaration regarding capability for carrying out testing of Primary Response	<a href="#">Schedule-4</a> of Application	Yes/No
6.	Undertaking regarding deviations to Terms of Reference(TOR)	<a href="#">Schedule-5</a> of Application	Yes/No

Date : (Signature) .....

Place : (Printed Name) .....

(Designation) .....

(Common Seal) .....