

**ORISSA ELECTRICITY REGULATORY COMMISSION**  
**BIDYUT NIYAMAK BHAWAN**  
**UNIT-VIII, BHUBANESWAR - 751 012**  
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Present : Shri K.C. Badu, Member  
Shri B.K. Misra, Member

**Case No.60/2009**

Director (Engg.), OERC Vrs. Dr. K.K. Das & Others	....	<b>Petitioner</b>  <b>Respondents</b>
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**In the matter of:      Amendment of Orissa Grid Code (OGC) with regard to  
Generation Operational Metering (Regulation 10.3).**

For the petitioner	:	Director (Engineering), OERC.
For the Respondents	:	Mr. R.P. Mahapatra, Mr. J.P. Das for OPTCL and Mr. I.C. Das on behalf of M/s Patnaik Steels & Alloys Ltd.

**Date of Hearing :      22.06.2009**

**Date of Order :      04.08.2009**

**ORDER**

Regulation 4.15 (1) of OGC specifies that the ‘connection’ point for generator (including CGP) with the transmission licensee may be at a voltage of 33 KV and above. Regulation 10.3 of OGC specifies that there should be minimum acceptable metering, communication and data acquisition system to be provided by the generators of 5 MW and above to the transmission licensee for monitoring output/response of the said power stations. One of the recent order dt.19.01.2009 in Case No.75/2008 at para 7, the Commission observed as below:

*“Representations were received in the past for raising the limit of 5 MW to a higher level for ‘connectivity’ at 33 KV level as the 33 KV feeders emanating from Grid S/Ss are handling higher capacity loads. **The Commission shall take a view** regarding raising the limit of 5 MW for connectivity at 33 KV after due consultation with all the stakeholders viz. OPTCL, the DISTCOs as well as other prospective CGPs/Generators **through a process of hearing.**”*

Hence, the Commission had issued Public Notice dt.04.02.2009 inviting suggestions/opinion for amendment of OGC as below:

- (a) Whether the limit of exemption, from the existing ‘stipulation of 5 MW’, for point to point connectivity at 33 KV system of the Transmission Licensee, should be raised?
- (b) If yes, to what extent?

- (c) Justification of raising the limit.
  - (d) The minimum limit for injection power to 33 KV grid substation for which SCADA/PLCC facility should be provided.
2. In compliance to the public notice, the Commission has received suggestions/objections from Dr. K.K. Das, Ex E.D., PGCIL, Mr. R. P. Mohapatra, Ex. Member, OSEB, Mr. Sanjib Das, Secretary, CCPPO, Sr. G.M.(R&T), OPTCL & Reliance Managed Distribution Companies (NESCO/WESCO/SOUTHCO).
- i) Dr. Das stated that the 5 MW limit for connectivity at 33 KV may be raised to around 10 MW (8 MW for safe operation) to make use of available surplus power if the 33 KV system is healthy. He justifies his argument by saying that 33 KV systems can handle safely more than 5 MW and the CGPs /small generators can assist the grid with its surplus power during power shortage condition. For providing SCADA/PLCC facility, Dr. Das submitted that it should not be insisted upon (i) if CGPs do not inject power at frequency above 50 Hz, (ii) if CGPs provide day ahead schedule to SLDC through a nodal officer, (iii) if no payment is made for injection above 50 Hz (energy to be recorded through ABT compliant meter) and (iv) if CGPs share the O& M charges of SLDC.
  - ii) Mr. Mohapatra suggests that the 5 MW limit should be raised to 20 MW. In support of his argument, submitted that major renewable/non-conventional/medium industries have power plants of capacity up to 20 MW. The connection of the said power plant to the grid at 132 KV shall be too costly and may face ROW problem. Hence, he submitted that connectivity at 33 KV with conductor size of wolf/lynx should be allowed up to 20 MW at 33 KV. He further submitted that PLCC/SCADA should not be insisted upon for 33 KV connectivity, since, alternate mode of communication can be used as per the OERC order dt.28.02.2009. *Though Sri Mohapatra has not quoted the Case No. in which such order was passed, it obviously refers to the Case No.6-20/2009 for review of CGP pricing. However, the existing OGC Regulation [Clause (iii) (g) (v) of the Connection Agreement provided in Annexure-1 to Chapter-4] provides for installation of improved method of communication.*
  - iii) Sri Das, Secretary, CCPPO says that with an integrated interstate operation in force, there is generally a fluctuation of 43.6 MW with a step change of 0.02 Hz frequency. In the isolated operation mode, he stated that Orissa can experience a fluctuation of around 12 MW with every 0.02 Hz step change in frequency. Besides that he submitted that the reactive energy of the generators below 15 MW capacity are insignificant since they run rarely with full capacity. Further he stated that the parameters of such generators can be sensed from the energy drawl figure of the distribution company from the bus to which such generators are synchronized. Hence, he suggests any generator below 10 MW should not be insisted upon to provide PLCC/SCADA.
  - iv) Mr. J.P. Das, CGM, OPTCL stated that the 5 MW limit should remain there to avoid problem in the OLTCs of the step down transformers. OPTCL argues that most of the EHT transformers are having uni-directional power flow provisions and in case of raising the 5 MW limit suitable 'reverse power relay' should be provided. Besides that, providing connectivity at 33 KV to the CGPs /IPPs shall require provision of additional 33 KV bays in the existing grids, which may cause

space constraints. It may also require provision of bus coupler bays. Allowing 33 KV connectivity above 5 MW may cause more transmission loss. The 33 KV connecting line should be maintained by the CGP /IPP/ DISCOMs, which may require provision of compatible commercial energy meter by the injector at the grid sub-station. Besides, 'system study' is required to be done for connectivity as per the CEA's Grid Connectivity Regulation. The injectors are also required to pay wheeling charges to OPTCL as it has to modify its system to handle more load. As regards exemption of the CGPs to provide PLCC/SCADA facility, OPTCL opposes the idea since it may adversely impact monitoring of real time data at SLDC control room.

- v) NESCO/WESCO/SOUTHCO has suggested that exemption from having monitoring output and response of the power stations generating units should be allowed for power stations having capacity of 15/25 MW for point to point connectivity (tie line) at 33 KV bay of 132/33 KV S/s of transmission licensee and 10 MW for non-dedicated (non-tie line) connectivity at 33 KV system of the transmission licensee. This way, they feel, that the OPTCL system will not be over burdened and bottled up surplus capacity can be harnessed which can be utilized for some portion of local area demand to reduce line losses and improve voltage profile. They have also suggested that there should be stipulation in OGC about provision of SCADA/PLCC only for CGPs above 30 MW injection at 33 KV Grid s/s. Injection by small generators have a co-relation with local area demand and as such requires no micro managements as the same is more "Self regulatory" in nature. Therefore, for injection of 30 MW and below at 33 KV grid sub-station, SCADA/PLCC should not be mandatory.
3. During hearing on 22.06.2009, Mr. Das, CGM, OPTCL stated that in case of connectivity at 132 KV for consumers having contract demand of 5 MVA and above or Generators (including CGP) of 5 MW and above; the transmission loss will be less and the system will be more reliable. He further said that most of the EHT transformers are having unidirectional power flow provision. Hence, the injection of power to the transmission system at the time of load thrown off may create problem. By this type of arrangement of injection of CGP power at 33 KV, OPTCL will have operational problem due to the unidirectional transformers available in some 132/33KV S/S. Further, if CGPs having 5MW and above is allowed to be connected in the 33 KV system of DISCOMs; OPTCL may loose revenue on account of wheeling charges. OPTCL stated that as there are some commercial implications on connecting the CGPs at 33 KV level of DISCOMs, GRIDCO may be impleaded as a party to the case.
  4. Mr. Mohapatra submitted that the limit of 5 MW may be raised to 20 MW in case of CGPs connected through a dedicated line to the 33KV bay of 132/33 KV S/s of OPTCL. Mr. Mohapatra said that the generation from the CGPs should always be less than the off peak demand and the apprehension of reverse power flow can be restricted by provision of reverse power flow relay by OPTCL in the 33 KV side of the 132/33 KV transformer. The raising of limit of injection of power shall be raised to 20 MW as normally the CGPs of industries are generating in the range of 12 to 20 MW. Also in future, the generation expected from the renewable sources may be in the range of 20-25 MW. The injection at 33 KV for this type of generators will also reduce the cost of construction and reduce the load on the power transformers of OPTCL. For this purpose, OPTCL may take steps to carry out the system study considering the 33 KV bus instead of sending the industries to

outside agencies to carry out system study. Also for communication purpose, any other mode of communication as envisaged in OGC Regulations may be allowed instead of insisting only for PLCC.

5. In his written submission dated 30.06.2009, Mr. Mohapatra stated that as the Distribution Licensees are drawing upto 25 MVA in the 33 KV feeders emanating from the grid S/S to meet their demand, the connectivity of Generating Station/CGP may be allowed to inject upto 25 MVA or 20 MW. He further stated that every step down transformer of OPTCL should be provided with reverse power relay irrespective of the transformers having the provision of uni-directional/bi-directional power flow. On-line data communication at 33 KV may be provided only for Generating Stations/CGP which inject more than 10 MW into the system. Further the choice of alternate mode of voice and data communication upto the nearest SCADA point may be decided by the Generating Station/CGP. The specification of the equipment may be decided by STU/SLDC but not the mode of communication. Further, insisting to provide PLCC would require provision of repeater units which will give rise to unsatisfactory performance in the system as well as increase the cost.

6. The Commission has considered the following issues and facts:

The issue before the Commission is regarding raising the limit of 5 MW to a higher level, in case of CGPs connected at the 33 KV level, as the feeders emanating from grid S/S are normally handling higher capacity loads. In the past, the Commission has also received various representations on this issue. The Commission has decided to take a view on the issue of raising the limit of 5 MW for the purpose of monitoring of generation by SLDC. The Commission had, therefore, issued Public Notice inviting suggestions/opinion for amendment of the OGC. It has now become imperative to not only interpret the provisions of the OGC but also to consider the enhancement of the limit of generators submitting their real time data to SLDC. The opinions/suggestions/comments received have been considered.

7. After hearing the parties and perusal of the case records and the written submissions made, the Commission directs as under :

- i) From the written submission received and the views emerging during the public hearing, it is quite apparent that the OGC does not contain any express limitation on the capacity for connectivity on a point to point basis at 33 KV bay of 132/33KV Substation of Transmission Licensee, as has been purportedly indicated in the Public Notice. There is also no specific limit of 5 MW on the capacity of Generators (including CGP) for connectivity at 33 KV level in Regulation 4.15(1) of OGC. In fact, despite the arguments extended by M/s. OPTCL for adherence to the limit of 5 MW at the 33 KV level, the Commission has come across instances where M/s. OPTCL has been considering connectivity of a 24 MW CGP with its system at the 33 KV level with the aim of injecting upto 15 MW of power with appropriate augmentation of feeder/conductor. Also, the apprehension of OPTCL regarding Reverse Power Flow is already taken care of in Chapter-9 (Protection), Clause 9.3 of OGC, which states as follows :

Clause 9.3. : GENERAL PRINCIPLES

No item of electrical equipment XXXXXXXXXXXXXXXXXXXXX

*“In case of all CGPs/PPs connected to the grid substation of the Transmission Licensee, Users capable of injecting power to the transmission system at 33 KV and above (at STU’s grid sub-station )shall provide Reverse Power Relays at the point of interconnection.”*

Also as per Clause 6 of CEA (Technical Standards of Connectivity to the Grid) Regulation, 2007, Part-IV regarding Grid Connectivity Standards applicable to the Distribution System and bulk consumers;

*“Back Energization: The consumer shall not energize transmission or distribution system by injecting supply from his generators or any other source either by automatic controls or manually unless specifically requested by the transmission or distribution licensee”.*

Therefore, the Commission does not feel it prudent and necessary at this stage to fix any explicit limits of MW and voltage for connectivity in the OGC, and would like the STU to stipulate the same for every new connection sought, following the due procedures enshrined in the relevant Acts, Codes, Regulations, Rules & Standards etc. along with the conditions of its license. In order to facilitate smooth connection to its transmission system, OPTCL is required to prepare a statement indicating the parts of its transmission system most suited to new connection and transport of further quantum of electricity and furnish the same to any person wishing to use OPTCL’s system. Therefore, OPTCL may take suitable steps to comply with its obligation under clause 18.5 & 18.7 of its General Conditions of license and place the aforesaid updated statement in its website after giving wide publicity for the information of all concerned. This is likely to reduce any potential dispute & discrimination amongst persons seeking connection to OPTCL system, through the availability of information in a transparent manner which is available openly to all stake holders.

The existing provision of the OGC Regulation 10.3(1) says that Power Stations and Generating Station of capacity below 5 MW (being connected to the OPTCL’s system) are not required to be operationally monitored by the Transmission Licensee for their output and other responses. Appendix C-5 of the said Regulation also says that the generation and drawl of power stations of 5 MW capacity and above should be monitored. For this, the Generators/CGPs shall provide to SLDC the hourly generation summation, hourly export/import in MW on a real time basis and the logged reading of generators and detailed unit tripping reports to SLDC every month or as required by SLDC. For the purpose of submitting generation and export/import data to SLDC on a real time basis the generators of 5 MW and above are required to establish a RTU and communication system. As ordered by the Commission in their order dated 15.07.09 in Case No.2/2009, the Transmission Licensee should not insist on a particular type/mode of Communication like PLCC, if the Leased Line mode of Communication is found to be technically and economically suitable and may also allow the user(s) to adopt the same in a non-discriminatory manner. In developing the desired procedure, the STU may study the practices being

followed by the CTU and other STUs in the country, and consider the recent technological developments along with cost optimization.

Further, as per OGC Regulation 4.15 (1), a Generator/CGP can be connected to the grid at voltage level of 33 (which was earlier at the level of 132 KV) KV and above. There is no specific limitation on the capacity that can be connected at 33 KV level in the existing Regulation. For the sake of clarity, it may be reiterated that the insistence on the part of the Transmission License for all connections to be made to the 132 KV system in each and every case of a consumer having more than 5 MW of contract demand or the generators (including CGP) of 5 MW and above is not in line with the existing Regulations. The connectivity of a consumer/CGP/Generator at 33 KV or at any higher voltage level should be decided mutually on a techno-commercial analysis and system study. However, keeping in view the prayer/submission of the stakeholder and considering the earlier cases of this nature, the Commission is inclined to specify that the connectivity at 33 KV may normally be allowed for any Generator including CGP upto 25 MW for dedicated line (tie line) and upto 15 MW in case of non-dedicated (non-tie) line. In case of User/Consumer, connectivity at 33 KV may normally be allowed for a contract demand upto 15 MVA for dedicated line (tie line) connecting to 33 KV bay of 132/33 KV s/s and upto 10 MVA in non-dedicated (non-tie) line.

- ii) That as regards, provision of real time monitoring of output and response of power stations and generating units of capacity 5 MW and above it may be noted that it is in consideration of the CERC's order dt.05.05.2008 in Case No.10, 11 & 37 of 2008 & following due process, a limit of 5 MW was introduced in Appendix C-5 (Monitoring of Generation and drawl of Power Stations of 5 MW and above) by an amendment to OGC on 29.10.08 in order to exempt lower capacity generators of less than 5 MW from submitting real time data and accordingly not to have data communication link. Stakeholder consultation was duly carried out during the aforesaid amendment before setting the limit of 5 MW vide Notification dt.29.10.08 in the Extraordinary Orissa Gazette. As stated in Regulation 10.3 (Generation Operational Metering) and Appendix C-5 of the OGC (Monitoring of Generation) there was originally no MW limit mentioned under Appendix C-5 of the OGC. The Commission now feels that this limit can be raised further, with the least amount of effect on the OPTCL system requirement. The Commission orders that the facilities that shall be provided, the practices that shall be employed and the data acquisition system and commercial link for monitoring the output and response of Generating Stations (including CGP) shall not apply to a generating station (including CGP) with a capacity of 25 MW and below, having point to point connectivity (tie-line or dedicated line) at the 33 KV bay of 132/33 KV S/S of transmission licensees and of 15 MW and below for non-dedicated (non-tie line) connectivity at 33 KV system of the distribution licensee. For communication purposes, the transmission licensee shall accept any developed mode of communication and shall not insist only on PLCC.
8. For the sake of clarity the issues raised in the Public Notice dt.04.02.09 (refer Para-1 above) are answered as below :

- (i) Qn. (a), (b), & (c) - Regulation 4.15 (1) of the OGC lays down that the “connection point” for a generator including a CGP with Transmission Licensee may be at a voltage of 33 KV and above. There is no express limitation in the Regulation, of capacity for connectivity of any user within the limit of 5 MVA or a generator (including CGP) of 5 MW and the Commission does not feel it prudent and necessary to fix any explicit limit of MW and voltage connectivity in the OGC. The connectivity of User (Consumer) or generator including CGP at 33KV or at any higher voltage level should be decided mutually on techno-commercial analysis and system study. The connectivity at 33 KV may normally be allowed for any Generator including CGP upto 25 MW for dedicated line (tie line) and upto 15 MW in case of non-dedicated (non-tie) line. In case of User/Consumer, connectivity at 33 KV may normally be allowed for a contract demand of 15 MVA for dedicated line (tie line) connecting to 33 KV bay of 132/33 KV s/s and upto 10 MVA in non-dedicated (non-tie) line. The justification of this has been explained in Para-7 (i) of this order.
- (ii) Qn. (d)- The facilities that shall be provided i.e., the practices that shall be employed for monitoring output and response of generating stations and generating units including a CGP shall not apply to any generating station including a CGP with a capacity upto 25 MW. The justification of this has been explained at Para 7 (ii) of this order.
9. Issues relating to differences pertaining to implementation of the OERC Distribution (Conditions of Supply) Code, 2004 if any, can only be taken up separately and not in the present proceeding.
10. The necessary amendment in the OGC may be carried out as observed above and the same may be published in the Orissa Gazette accordingly, following the prescribed procedure.

Sd/-  
**(B.K.Misra)**  
**Member**

Sd/-  
**(K.C. Badu)**  
**Member**