

19. That, the other State Regulators have already appreciated the contribution of State-Grid towards CGPs and their co-located loads, and accordingly made Regulations/ orders thereon.

Example: TNERC vide Regulation-26 of Grid Connectivity and Open Access Regulation-2014 (Tamilnadu Govt Notification dated 07.07.20140)

*Regulation-26: " If the Captive Generating Plants (CGPs) opt for parallel operation with the licensee's grid for safe and secure operation of their generators and to provide quality, reliable power supply to their load, the CGPs shall pay a parallel operation charges of Rs.30,000/- per month for each MW capacity (or part thereof) of the generator. This charge is applicable to the generators availing only parallel operation with the grid without availing open access. The application fees and procedure for parallel operation of generators with grid shall be same as that of grid connectivity of generators"*

20. That in some states, consent for payment of the POC (or GSC, as the case may be) by the Bulk Consumer is a pre-requisite for connectivity permission by the STU.

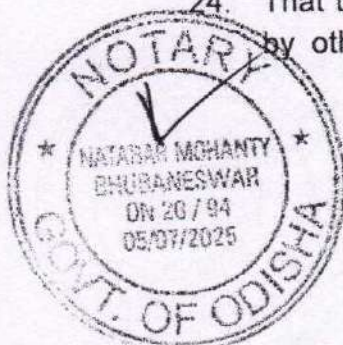
Example: Gujarat Tariff Regulation

21. Hon'ble MPERC, Bhopal had initiated a suo-motu proceeding(Petition No-73/2012 Order dated. 31.12.2012) on its own and decided the rate of POC charges after getting a technical study done through ERDA(Electrical Research Development Association) adopting Base MVA Method.
22. Similar provision also exists in states like Chatisgarh, Andhra Pradesh and Telengana .
23. That the Tariff Regulations of the state of Rajasthan incorporates POC at Regulation-93 as below:-

"93. Parallel Operation Charges

- (1) The connectivity of CPP to Grid or State transmission system shall be governed by the connection conditions stipulated under State Grid Code and Connectivity Regulations of Central Electricity Authority notified in accordance with sub-section (b) of Section 73 of the Act.
- (2) The Commission may stipulate from time to time the '**parallel operation charges**' to be applicable for parallel operation of the CPP with the grid separately.

24. That the principle of collection of POC (GSC) is well appreciated and addressed by other State Regulators and incorporated either in **Open Access** or **Tariff**



*Biswaraj Mohanty*

**Regulations** and made consent for payment of POC (GSC) a pre-condition for Grid Connectivity among others.

25. That the prevailing Rates of POC in other States of India is as given hereunder for kind appreciation of Hon'ble Commission.

Name of State	POC(GSC) Charges in Rs/MVA/Month
Chhattisgarh	Rs 21.00/KVA/Month
Gujarat	Rs 26.50/KVA/Month
Madhya Pradesh	Rs 20.00/KVA/Month
Tamilnadu	Rs 30,000/Month for MW

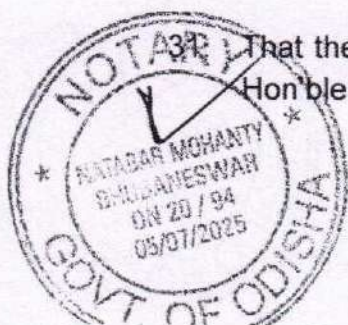
26. That Grid support in a hidden support extended by the Grid to the CGPs running in parallel with it, many a times at the risk to the safety of the terminal equipment of the State Grid which may hamper the life of the equipment / leading to failure and that might warrant replacement of Grid equipment at frequent interval. Hence, OPTCL has a right to recover the cost for the benefit derived by those CGPs.
27. That, the matter was urged by OPTCL before Hon'ble OERC during the filing of ARR for the F/Y-2017-18(vide Case No-64/2016) by proposing a claim of Rs 1.0 Lakh/MW/Annum on the installed capacity of the CGPs.
28. That the Honourable Commission, while pronouncing the tariff order had expressed its due concern and observed at para-264 of ARR order for the F/Y-2017-18, which is reproduced below:

Para-264: "xxxxxxx. *The claim of OPTCL appears to have a ground in this matter since CGPs are dependent on the Grid for various reasons such as emergency drawal and VAR support etc. xxxxxxxxxxxxxxxx. However, this issue can be deliberated if OPTCL comes through a separate petition with relevant information.*"

29. That, based on the above observation of the Commission, OPTCL has engaged an independent agency M/s PRDC(Power Research Development Company) to carry out an in depth study of the CGPs in the state, analyse and quantify the benefits they accrue in Rupee terms by virtue of being connected to the OPTCL system.
30. That M/s PRDC have submitted their study report during March-2019 suggesting the Base MVA Method for fixation of Grid Support charges inter-alia other issues etc.

That the Consultant is obliged to make a presentation of the study report before Hon'ble Commission for kind appreciation of Hon'ble Commission and its Officers.

*Padmanabhan Ushar*



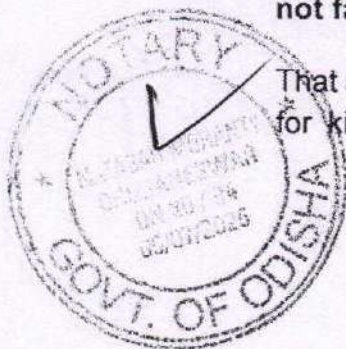
32. That we have gone through the report and deliberated on the issue at our level and are of the opinion that, Bulk Consumers with CGPs enjoy a lot of advantages for being embedded to the State Grid and ought to pay for it.
33. That the same is being collected by other state utilities since 2006 or so whereas CGPs of the state of Odisha have made substantial savings for the free services they have received from OPTCL since their date of commercial operation.
34. That the Consultant had carried out in depth study of Odisha Power System with requisite software to arrive at a conclusion which not only justifies OPTCL's claim but also corroborates the same.
35. That M/s PRDC has carried out the following basic studies to arrive at the considered conclusion.
  - (i) Load Flow Study (LFA)
  - (ii) Short-circuit Study
  - (iii) Transient Analysis and have submitted a detailed report thereon.

That the Consultant has taken the data from SLDC on 24.05.2018 considering the maximum Generation Condition with a few assumptions for simulation on a digital platform with appropriate software.

36. That, the Load Flow Study (LFA) signifies that, OPTCL is a stable and robust Grid even during extreme conditions the parameters like voltage, frequency, Active Power and Reactive Power are well within permissible limits and no over loading of the elements are observed. It also satisfies (n-1) contingency when any of its 132KV, 220KV or 400KV Circuit or 400/220KV ICT is out of service without any contingency situation. The Grid is also stable when any generator has tripped. No over loading of other lines are noticed and no load shedding is required for Grid safety and stability.
37. That the **Short Circuit Study** signifies the contribution of fault current (SC MVA) contributed by the Grid during fault conditions at the PCC(Point of Common Coupling) which not only protects the Generator winding, associated equipment and cables of the CGPs. This also saves the CGP generator from tripping, it allows them to go ahead with their load requirement without any interruption.

The above situation is a win-win situation for the CGPs. In fact, the benefit extended goes unnoticed by the beneficiary as a hidden one. **The same is also not factored in the ARR of OPTCL.**

That some of the case studies of short-circuit study is as placed in a tabular format for kind appreciation of Hon'ble Commission. For a fault at the PCC, Grid is



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contributing substantial fault current and contribution of CGPs is minimal except in rare cases.( Page-23-26,Table-14.2(a) & 14.2(b) of the study report (copy enclosed)

Table-1

SL NO	CGP name	Voltage (KV)	3-ph to G in KA at PCC	SLG KA at PCC	Grid	3-ph to G in KA from GRID	SLG KA in KA from GRID
1	ACC, Bargarh	132	3.827	4.603	Bargarh	1.754	3.867
2	NBVL Meramundali	132	10.991	11.179	Kharagprasad	9.459	8.539
3	Aarati Steel	132	3.773	4.275	Meramundali	1.373	1.195
					Choudwar	1.901	1.884
4	Essar Power Ltd	220	5.085	5.472	Pradeep	4.681	4.587
5	JSL Duburi	220	19.571	21.413	New Duburi	17.122	17.149
6	RSP	220	16.816	15.576	Tarkera	14.646	12.195

38. With reference to above table-1 it is inferred that during fault conditions i.e. Single Line to ground(SLG) and Three Phase to Ground(Bolted fault) major quantum of fault current flows from the Grid side which not only relieves the CGP equipment, rather saves failure of the same . Benefit accrued by the CGP owners is in terms of long life of equipment and uninterrupted power flow for maintaining their production activity courtesy, OPTCL Grid System. This also explains the adequate current carrying capacity of Breakers installed in Grid system of OPTCL.

39. That the **Transient Study conducted by the Consultant** reveals whether Load-Generation Balance(Voltage and frequency stability) is attained or not after imbalance in the system. Such situation happens when the Bulk Load of CGP is either thrown off or the Generator trips suddenly inflicting imbalance on the system. The same also could be triggered due loss of transmission element (Line) of OPTCL.

This also signifies State Grid's inertia and ability to absorb jerks / shocks when Bulk load of the CGP is thrown off for whatsoever reason and avoids tripping of the CGP Generator due to over speeding.

This also saves from over-heating of generator terminals and associated cables.



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