



TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
5th Floor, Singareni Bhavan, Red Hills, Lakdi-ka-pul, Hyderabad 500 004

O. P. Nos. 80 & 81 of 2022

Dated 27.03.2024

Present

Sri. T. Sriranga Rao, Chairman
Sri. M. D. Manohar Raju, Member (Technical)
Sri. Bandaru Krishnaiah, Member (Finance)

O.P.No.80 of 2022

Northern Power Distribution Company of Telangana Limited (TSNPDCL)

O.P.No.81 of 2022

Southern Power Distribution Company of Telangana Limited (TSSPDCL)

... Applicants

In the matter of determination of Grid Support Charges (GSC) for FY 2023-24.

The Southern Power Distribution Company of Telangana Limited (TSSPDCL) and the Northern Power Distribution Company of Telangana Limited (TSNPDCL) (hereinafter collectively referred to as "Applicants" or "TSDISCOMs") have filed original petitions (O.P.) on 30.11.2022 under Section 64 of the Electricity Act, 2003 and as per the provisions of "*Terms and Conditions for Determination of Tariff for Wheeling and Retail Sale of Electricity*" Regulation No.4 of 2005, for determination of Aggregate Revenue Requirement (ARR), Retail Supply Tariff (RST) along with Cross Subsidy Surcharge (CSS) and Grid Support Charges (GSC) for the Retail Supply Business for FY 2023-24. In this regard, the Commission has already issued a separate Order dated 24.03.2023, with the same O.P. numbers, determining ARR, FPT and CSS for FY 2023-24.

With regard to determination of Grid Support Charges, the Commission, in exercise of its powers under the Electricity Act, 2003 and after consideration of TSDISCOMs submissions, objections and suggestions of the stakeholders, the issues raised during the Public Hearing, responses to the same by the TSDISCOMs and all other relevant material available on record, hereby passes the following:

COMMON ORDER

CHAPTER-1

INTRODUCTION

1.1 BACKGROUND

Filings for FY 2022-23

- 1.1.1 TSDISCOMs in their Retail Supply Tariff (RST) Filings for FY 2022-23 have proposed to levy Grid Support Charges (GSC) on the captive consumers in their area by considering the methodology adopted in erstwhile APERC order dated 08.02.2002 and which happened to be upheld by Hon'ble Supreme Court by its Judgment dated 29.11.2019, towards the benefits being availed by CPPs during parallel operation with the distribution licensees' grid network as below:

“Persons operating Captive Power Plants (CPPs) in parallel with T.S. Grid have to pay ‘Grid Support Charges’ for FY 2022-23 on the difference between the capacity of CPP in kVA and the contracted Maximum Demand in kVA with Licensee and all other sources of supply, at a rate equal to 50% of the prevailing demand charge for HT Consumers. In case of CPPs exporting firm power to TSTRANSCO, the capacity, which is dedicated to such export, will also be additionally subtracted from the CPP capacity.”

- 1.1.2 The Commission in the RST Order dated 23.03.2022 for FY 2022-23 considering the suggestions of the stakeholders, finds it appropriate to refer the matter of Grid Support Charges to the Grid Coordination Committee (GCC). The relevant paras in RST Order for FY 2022-23 dated 23.03.2022 are reproduced below:

“Commission’s View

- 3.10.79 *The Commission while determining the ARR and retail supply tariffs for FY 2022-23 is guided by the provisions of the Act, Tariff Policy, 2016 and the Regulations of this Commission. The Commission in Chapter 6 of the Order has dealt in detail the tariff proposals of the DISCOMs.*
- 6.25.5 *The stakeholders have vehemently opposed the DISCOMs proposal of GSC. The stakeholders have also raised certain issues purported to be incorrectness in the rationale provided by the DISCOMs. The stakeholders have also requested the Commission to undertake third party analysis before deciding on the levy of GSC as well as the quantum of such GSC. The Commission finds merit in the stakeholders’ suggestion to undertake a detailed study.*
- 6.25.6 *In accordance with Clause 5.1 of the Regulation No.4 of 2018, a Grid Coordination Committee has been constituted with representation from wide spectrum of generating companies, transmission licensees, distribution licensees, electricity traders, OA consumers etc. Clause 5.2(v) of the Regulation No.4 of 2018 specifies that “the Grid*

Coordination Committee shall be responsible for such matters as may be directed by the Commission from time to time". The Commission finds it appropriate to refer the matter to the Grid Coordination Committee for a detailed study on the issue of parallel operation of CPPs and consequent levy of GSC."

- 1.1.3 Accordingly, the Commission vide letter dated 13.04.2022 directed Grid Coordination Committee (GCC) (constituted in accordance with Clause 5.1 of Regulation No.4 of 2018) for a detailed study on the issue of Parallel Operation of Captive Power Plants (CPPs) and consequent levy of GSC and submit a detailed report on or before 30.05.2022:
- 1.1.4 Based on the request of the GCC, the due date for submission of report was extended upto 30.07.2022. Subsequently, GCC has submitted vide its letter dated 05.08.2022 a report on the issue of parallel operation of CPPs and consequent levy of GSC. As directed by the Commission vide letter dated 05.09.2022, GCC has given a power point presentation on its GSC report on 07.09.2022. The Commission has observed that the report is incomplete and directed the GCC vide letter dated 16.09.2022 to submit its final report with specific recommendation on levy of GSC duly proposing the methodology for calculation of GSC to the Commission on or before 30.09.2022. Further as per the request of GCC, the Commission vide letter dated 25.10.2022 granted further extension of time to GCC and directed to submit final report on or before 30.10.2022. Later on, GCC vide letter dated 28.12.2022, has submitted its Final Report (Appendix-A).

Filings for FY 2023-24

- 1.1.5 Whereas the TSDISCOMs have revised its GSC proposal in their RST filings for FY 2023-24 and proposed to levy GSC on all the generators (captive generating plants, co-generation plants, third-party generation units, merchant power generation units, roof-top power plants, etc.) who are not having PPA/ having PPA for partial capacity with TSDISCOMs as follows:

Grid Support Charges = Total Installed Capacity x Rate of GSC

Rate of GSC (Rs./kW/month):

- i) The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.
- ii) Conventional generators shall pay Rs.50/kW/month.
- iii) Renewable Energy plants including Waste Heat Recovery (WHR) plants, the plants based on municipal solid waste and the co-gen plants

- shall pay Rs.25/kW/month.
- iv) Rooftop solar plants under net metering/gross metering policy shall pay Rs.15/kW/month.
 - v) Co-gen sugar mills shall pay charges of Rs.25/kW/month, for a period of four (4) months or actual operation period whichever is higher.
 - vi) These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two (2) months.
 - vii) To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.
- 1.1.6 The Commission by considering stakeholders suggestions, has decided to again refer the matter of 'Grid Support Charges/Parallel Operation Charges' to the 'Grid Coordination Committee' for undertaking detailed analysis as the licensees proposed a different methodology and applicability as that proposed earlier in RST for FY 2022-23 for which Grid Coordination Committee has already submitted its final report on 28.12.2022.

The relevant paras in Retail Supply Tariffs order for FY 2023-24 dated 24.03.2023 are reproduced below:

- 3.15.80 By considering stakeholders suggestions, the Commission has decided to again refer the matter of 'Grid Support Charges/Parallel Operation Charges' to the 'Grid Coordination Committee' for undertaking detailed analysis as the licensees proposed a different methodology and applicability as that proposed earlier in RST for FY 2022-23 for which Grid Coordination Committee has already submitted its final report.*
- 7.5.4: The Commission has referred the proposal of TSDISCOMs for levy of GSC for the FY 2022-23 to the Grid Coordination Committee for a detailed study and suitable recommendations on the parallel operation of CPPs and consequent levy of GSC. The Committee has submitted its report together with recommendations on 05.08.2022.*
- 7.5.5: Now TSDISCOMs in their RST filings have changed the methodology and applicability of GSC, since the present proposal of TSDISCOMs is different from the previous filings, it is felt desirable to refer TSDISCOMs proposal again to the Grid Coordination Committee for detailed study and recommendations.*
- 7.5.6: The Commission directs the Grid Coordination Committee to study TSDISCOMs present proposal and to submit detailed study report together with recommendations.*
- 1.1.7 The Commission vide letter dated 10.05.2023 directed Grid Coordination Committee (GCC) for a detailed analysis on the issue of Levy of GSC for FY 2023-24 and to submit a detailed report on or before 15.06.2023. Further as per the request of GCC for extension of time, The Commission vide letter dated 04.07.2023 granted extension of time to GCC and directed to submit detailed

report on or before 16.08.2023. Subsequently, GCC has submitted its final report on 07.10.2023 (Appendix-B).

1.2 STAKEHOLDER'S CONSULTATION PROCESS

Public Notice

- 1.2.1 The TSDiscoms, as directed by the Commission, published the Public Notice (Annexure-I) on 30.12.2023 in two (2) Telugu, two (2) English and One (1) Urdu daily newspapers duly indicating the gist of the filings and inviting objections/suggestions on the filings of the TSDiscoms in the matter of GSC from all the stakeholders and general public at large also informing that in this regard the Commission shall conduct Public Hearing on 08.01.2024 from 11:00 hours onwards at TSERC Court Hall, Hyderabad. The daily newspaper clippings of the Public Notice are placed at Annexure-I.
- 1.2.2 It was also notified in the Public Notice that, objections/suggestions, if any, on the filings together with supporting material may be sent to concerned TSDiscom in person or through registered post so as to reach on or before 27.12.2023 by 5 pm and a copy of the same also be filed with the Commission Secretary, TSERC.
- 1.2.3 The filings have been made available by TSDiscoms along with supporting material to the public at large including all the stakeholders. The Public Notice, filings along with GCC reports and supporting material were also hosted on the websites of the TSDiscoms as well as on the website of the Commission viz., www.tssouthernpower.com; www.tsnpdcl.in; and www.tserc.gov.in.

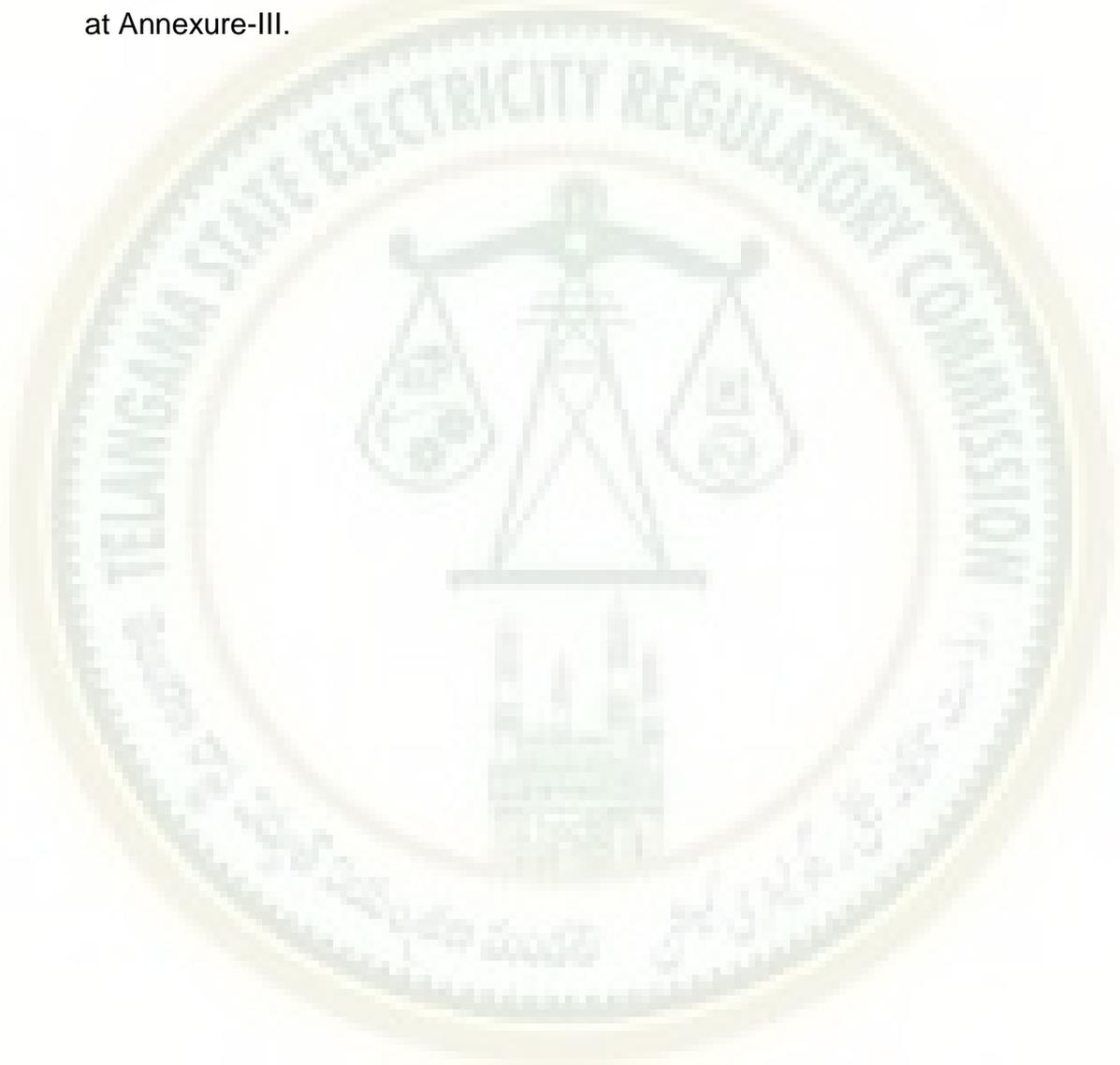
Response to Public Notice

- 1.2.4 In response to the Public Notice, objections/suggestions were received from twenty-one (21) stakeholders/organisation of consumer category. The list of stakeholders who submitted written objections/suggestions is enclosed at Annexure-II.
- 1.2.5 The TSDiscoms were directed to give its response by 27.12.2023 in writing to all the stakeholders who have filed their written objections/suggestions on the petitions in writing and with a copy to the Commission.

Public Hearing

- 1.2.6 The Commission has conducted the Public Hearing on 08.01.2024 at 11:00

hours in the Court Hall of TSERC. During the Public Hearing, TSSPDCL on behalf of TSDISCOMs made a brief presentation on the filings and then the Commission heard the stakeholders desiring to be heard. At the end, as directed by the Commission, the TSDISCOMs responded on the issues raised by the stakeholders during the Public Hearing. As directed during the public hearing TSDISCOMs have also made a written submission of the same. The list of stakeholders who attended the Public Hearing on 08.01.2024 is enclosed at Annexure-III.



CHAPTER-2 FILINGS OF TSDISCOMS AND RECOMMENDATIONS OF GRID COORDINATION COMMITTEE

2.1 FILINGS FOR FY 2022-23

2.1.1 The TSDISCOMs in their Retail Supply Tariff (RST) Filings for FY 2022-23 have proposed to levy Grid Support Charges (GSC) on the captive consumers in their area and stated the following for its justification:

“The parallel operation is defined as activity where one electrical system operates with the connectivity to another system in similar operating conditions. The CPPs opt for parallel operation to seek safety, security and reliability of operation with the support of a much larger and stable system as afforded by the grid.

Context for Parallel Operation with the Grid

The circumstances under which a captive power plant seeks to operate in parallel with a large interconnected grid are as follows:

- *CPPs having surplus capacity over and above their own requirement, connected in parallel with the grid in order to sell power to the grid or bank such surplus energy, which is a general phenomenon in seasonal industries. TSSPDCL Tariff, CSS Proposals for FY2022-23*
- *CPPs having load of such nature that results in large momentary peaks, starting currents and runs the plant in parallel to avail the support of grid beyond the contract demand.*
- *Process industries with CPP’s runs in parallel in order to avail continuous power supply, in the event of failure of CPP generating units.*
- *Black start of CPP, where the start-up power is required to restart the units. (source CSERC discussion paper on PoC determination dt.01.06.2008)*

Advantages and Disadvantages of Parallel Operation

The Advantages and Disadvantages of Parallel Operation have been explained in detail, in the Hon’ble CSERC order dated 31.12.2008, the excerpt of which is as follows:

“10.1 Advantages to CPPs:

- (1) The fluctuations in the load are absorbed by the utility grid in the parallel operation mode. This will reduce the stresses on the captive generator and equipments. The bulk consumer can operate his generating units at constant power generation mode irrespective of his load cycle.*
- (2) Fluctuating loads of the industries connected in parallel with the grid inject harmonics into the grid. The current harmonics absorbed by the utility grid is much more than that by CPP generator. These harmonics flowing in the grid system are harmful to the equipments and are also responsible for polluting the power quality of the system.*

- (3) *Negative phase sequence current is generated by unbalance loads. The magnitude of negative phase sequence current is much higher at the point of common coupling than at generator output terminal. This unbalance current normally creates problem of overheating of the generators and other equipments of CPP, if not running in parallel with grid. When they are connected to the grid, the negative phase sequence current flows into the grid and reduces stress on the captive generator.*
- (4) *Captive power plants have higher fault level support when they are running in parallel with the grid supply. Because of the higher fault level, the voltage drop at load terminal is less when connected with the grid. TSSPDCL Tariff, CSS Proposals for FY2022-23*
- (5) *On account of increase in plant load factor of captive generator, additional revenues can be generated by the CPPs by sale of surplus power to the utility.*
- (6) *In addition to the above, CPPs enjoy the following advantages also:*
 - (i) *In case of fault in a CPP generating unit or other equipment, bulk consumers can draw the required power from the grid and can save their production loss.*
 - (ii) *The grid provides stability to the plant to start heavy loads like HT motors.*
 - (iii) *The variation in the voltage and frequency at the time of starting large motors and heavy loads, is minimized in the industry, as the grid supply acts as an infinite bus. The active and reactive power demand due to sudden and fluctuating load is not recorded in the meter.*
 - (iv) *The impact created by sudden load throw off and consequent tripping of CPP generator on over speeding is avoided with the grid taking care of the impact.*
 - (v) *The transient surges reduce the life of equipment of the CPP. In some cases, the equipment fails if transient is beyond a limit. If the system is connected to the grid, it absorbs the transient load. Hence, grid enhances the life of CPP equipments.*

... ..

10.4 Disadvantage of Parallel Operation to Utility:

- (1) *Load fluctuations of captive consumer are passed on to the utility's system thereby the efficiency of utility's system may be affected, which may also impact on utility's other consumers.*
- (2) *In case of an ungrounded (or grounded through resistance) system supply, fault on interconnecting line (consumer's side) results in interruption of system. For single phase to ground fault which are 80 to 85% of the short circuit fault level, the grounding of the system is achieved through the neutral or step-down transformer of the utility, when the generator runs in parallel with*

the utility's grid. This supply is likely to cause damage to the terminal equipments at utility's sub-stations and line insulators, as voltage on the other two healthy phases rise beyond the limit, under such conditions. TSSPDCL Tariff, CSS Proposals for FY 2022-23

- (3) The utility has to sustain the impact of highly fluctuating peak loads like that of arc furnace, rolling mill, etc. for which it does not get any return on the capital invested to create system reserve.*
- (4) The variation in reactive power requirement increases the system losses and lowering of the voltage profile. Utility has to bear the cost of such effects.*
- (5) The lower voltage profile and fluctuations affect the service to the neighbouring consumers due to deterioration in quality of supply, thus resulting in revenue loss to the utility.*
- (6) Non-recording of high fluctuating / sudden active and reactive demand by the meter results in financial losses.”*

APERC Order on the determination of Grid Support Charges

Hon'ble APERC in its order dated 08.02.2002 approved the proposals of APTRANSCO to levy Grid Support charges for parallel operation of CPPs the excerpt of which is mentioned below:

“Grid Support Charges on a petition moved by the APTRANSCO, the Commission initiated proceedings to elicit the views of the affected parties through public notice and public hearing. After ascertaining the reactions of consumers who might get affected and other organizations, the Commission approved the proposals of APTRANSCO to levy Grid Support Charges for parallel operation of Captive Power Plants (CPPs) with the Grid by Order dated 08.02.2002 in O.P.No.1/1999. This charge will be applicable on the difference between the total capacity of a CPP in kVA and the Contracted Maximum Demand in kVA with the Licensee and all other sources of supply, at a rate equal to 50% of the prevailing demand charge for HT consumers (Rs.170 per kVA/month, on the date of issue of the Order).In case of CPPs exporting firm power to APTRANSCO, the capacity which is dedicated to such export will also be additionally subtracted from the CPP capacity”.

Hon'ble AP High Court had set aside the above order passed by APERC and the appeals were preferred by the APTRANSCO and APERC before Supreme Court. Hon'ble Supreme Court in its order on Determination of Grid support charges dated 29.11.2019 upheld the Hon'ble APERC's order quoted above concerning Grid support charges, the excerpt of which is as below:

- 12. ... the service of grid support became a component for which APTRANSCO was required to be compensated as CPPs running in parallel obtains benefits to keep the system and grid up and running, it is important to invest and maintain the system periodically and the grid support cannot be given free to a nexus of third party private*

Generators and HT consumer. The significant benefit which a CPP gets is in case of outage of CPP generator power is drawn from the grid, and in case of tripping, the entire load is transferred on to the grid. Such disturbance is catered by way of grid support and equipment installed by the APTRANSCO/DISCOM and involves investment through public exchequer.

14. *The Commission vide order dated 8.2.2002, held that grid support charges would be payable at the rate of 50 percent of prevailing demand charges on the differential of CPP capacity and CMD. The High Court has set aside the order passed by the Commission. Hence, the appeals have been preferred by the APTRANSCO and APERC.*

64. *Any Government Order or Incentive Scheme does not govern the Grid Support Charges. Grid Code is the basis for levy of the Grid Support Charges, which came to be approved by the Commission on 26.5.2001. The same is also reflected in the impugned order.*

... .. The Grid Support Charges can be levied, and the order dated 8.2.2002 of the Commission is, thus on the parity of the reasonings, has to be upheld considering the provisions of Section 21(3) of the Reforms Act, 1998. Under Section 11 read with Section 26 of the Reforms Act, 1998, all fixed charges under the distribution and Grid Support Charges are leviable only at the instance of a distribution company, and because of the discussion above, the Commission has the powers to determine it. In the agreements also there is a power where the Board could have fixed the Grid Support Charge unilaterally, but because of Reforms Act, 1998 came to be enacted, the application was filed in the Commission. After that, the Commission has passed the order in accordance with the law. We find no fault in the same. Thus, the order of the Commission concerning the Grid Support Charges has to be upheld.”

2.1.2 Finally, TSDISCOMs have proposed the Grid Support Charges for FY 2022-23 to be levied on the captive consumers in their area by considering the methodology adopted in erstwhile APERC order dated 08.02.2002 and which happened to be upheld by Hon'ble Supreme Court by its Judgment dated 29.11.2019, towards the benefits being availed by CPPs during parallel operation with the distribution licensees' grid network as below:

“Persons operating Captive Power Plants (CPPs) in parallel with T.S. Grid have to pay ‘Grid Support Charges’ for FY 2022-23 on the difference between the capacity of CPP in kVA and the contracted Maximum Demand in kVA with Licensee and all other sources of supply, at a rate equal to 50% of the prevailing demand charge for HT Consumers. In case

of CPPs exporting firm power to TSTRANSCO, the capacity, which is dedicated to such export, will also be additionally subtracted from the CPP capacity.”

2.2 SUMMARY OF GSC REPORT DATED 28.12.2022

2.2.1 The summary of deliberations and recommendations of GCC in the Final Report dated 28.12.2022 are as given below:

- a) GCC analysed the impact of CPP connectivity to the Grid and whether Grid Support is required for Parallel Operation of CPP, through Power System Simulator for Engineering (PSS/E) software which is used at national level for Power System Planning.
- b) It also analysed the CPP behaviour for evaluation of short-circuit capacity, stability of CPP with one Unit and stability with Single Line/Internal Faults using PSS/E software in two cases:-
 - i) Connected in Parallel with Grid
 - ii) Operated in isolation

Methodology for Calculation of GSC:

Grid Support Charges (GSC)	Differential Capacity x Rate of GSC (Rs./kVA/month)
Differential Capacity	Total Capacity of CPP in KVA –Contracted Maximum Demand in kVA with the Licensee - All other sources of supply - CPPs exporting firm power to TSTRANSCO
Rate of GSC	25% of the prevailing demand charge for respective HT consumers

Justification for levying on differential capacity:

- a) The Captive generating plant is defined in the Electricity Act 2003 as “Captive generating plant” means a power plant set up by any person to generate electricity primarily for his own use and includes a power plant set up by any co-operative society or association of persons for generating electricity primarily for use of members of such cooperative society or association”
- b) As per the above definition the generation from other sources of supply (if any taken) and the firm power exported to the TSTRANSCO (if any) cannot be considered as captive.
- c) Further as per the Electricity Rules 2005 clause (3) Requirements of Captive generation plant the captive user is explained as below:
 - “b. “Captive User” shall mean the end user of the electricity generated in a Captive Generating Plant and the term “Captive Use” shall be construed accordingly”
- d) As per the above definition and explanation, the wheeling quantum of the captive consumer from the respective captive plant will be treated as captive only.

- e) *Considering the above, the proposed method for arriving captive capacity for levy of GSC by TSDISCOMs is justifiable.*

Justification for Rate of Grid Support Charges:

- i) *Keeping in view of the power crisis at that time, the Central Government and the then AP state government have notified Captive power policy. The CPPs were promoted by the government and permissions were accorded by State government/State ERC.*
- ii) *Accordingly, various consumers have installed CPPs to meet their power requirement by operating the CPPs in parallel with the grid by duly de-rating their respective CMD with the DISCOMs considerably.*
- iii) *In view of the above, the then APTRANSCO has proposed GSC for the first time to recover the fixed charges of the respective HT consumers at a rate of prevailing HT demand charges. The then State ERC after deliberations with all the stake holders finalized the rate to levy of GSC with the following methodology in Tariff order 2002-03*

“The Commission approves the proposals of APTRANSCO to levy Grid Support Charges where parallel operation of CPPs is permitted, on the difference between the total capacity of CPP in kVA and the Contracted Maximum Demand in kVA with the Licensee and all other sources of supply, but at a rate equal to 50% of the prevailing Demand Charge for HT Consumers, (which at present is Rs.170 per kVA/month). In case of CPPs exporting firm power to APTRANSCO, the capacity, which is dedicated to such export, will also be additionally subtracted from the CPP capacity”, to strike balance between the CPPs and DISCOMs.

- iv) *It may be noted that, even though there is certain quantum of power wheeled through APTRANSCO grid as per the power purchase and wheeling agreements entered between APTRANSCO and certain generators at that point of time, the respective export quantum cannot be considered as “firm export power to APTRANSCO” in the above methodology as the wheeled quantum is uncertain and will vary in accordance with the load requirement.*
- v) *Aggrieved by the above order, certain generators approached various legal forums. The matter is pending before various legal forums from 2002 to 2019. Finally, Hon'ble Supreme Court upheld the power of State ERC to decide upon the wheeling charges and GSC matters in the year 2019.*
- vi) *Since the Hon'ble Supreme Court upheld the tariff order 2002-03, the same methodology for GSC was proposed in RST 2022-23 by TSDISCOMs.*
- vii) *These previous events are well deliberated and all the members accepted for technical support of grid and requested that charges shall be reasonable, in line with other States.*
- viii) *Keeping in view of conclusions in the meetings, GCC recommend 25% of the prevailing demand charge for respective HT consumers instead of 50% of the prevailing demand charge proposed by DISCOMs, to strike balance between CPPs & DISCOMs.*

2.3 FILINGS FOR FY 2023-24

2.3.1 TSDISCOMs in their RST filings for FY 2023-24 have revised its GSC proposal and proposed to levy GSC on all the generators (captive generating plants, co-generation plants, third-party generation units, merchant power generation units, roof-top power plants, etc.) who are not having PPA/having PPA for partial capacity with TSDISCOMs as follows:

$$\text{Grid Support Charges} = \text{Total Installed Capacity} \times \text{Rate of GSC}$$

Rate of GSC (Rs./kW/month):

- i) The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.
- ii) Conventional generators shall pay Rs.50/kW/month.
- iii) Renewable Energy plants including Waste Heat Recovery (WHR) plants, the plants based on municipal solid waste and the co-gen plants shall pay Rs.25/kW/month.
- iv) Rooftop solar plants under net metering/gross metering policy shall pay Rs.15/kW/month.
- v) Co-gen sugar mills shall pay charges of Rs.25/kW/month, for a period of four (4) months or actual operation period whichever is higher.
- vi) These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two (2) months.
- vii) To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.

2.3.2 The Commission in its Retail Supply Tariff Order for FY 2023-24 has decided to again refer the matter of Grid Support Charges/Parallel Operation Charges to grid Co-ordination Committee as the Discoms have changed the methodology for levy of GSC and also considering the suggestions of stakeholders. The GCC has submitted its report on 07-10-2023.

2.4 SUMMARY OF GSC REPORT DATED 07.10.2023

2.4.1 The gist of the GSC report dated 07.10.2023 submitted by GCC: Keeping in view conclusions mentioned in the earlier report 28.12.2022 and also based on the conclusions of the GCC meeting held on dated 05.08.2023, the specific methodology proposed by GCC is as follows:

Methodology for Calculation of GSC & Rate of Grid Support Charges:

Grid Support Charges (GSC)	Total Installed Capacity x Rate of Grid Support Charges (Rs./kW/month)
Rate of GSC	i. The parallel operation/grid support charges are to be applied to the total

	<p>installed capacity of the generators connected to the Grid.</p> <p>ii. Conventional generators shall pay Rs.50 per kW per month.</p> <p>iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 kW per month.</p> <p>iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.</p> <p>v. Co-gen sugar mills shall pay charges of Rs.25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.</p> <p>vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.</p> <p>vii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.</p>
--	--

Justification for levying of Grid Support Charges:

- a) Earlier the proposal by TSDISCOMs is on differential capacity i.e., installed capacity minus contracted demand with DISCOM for FY 2022-23. Certain times the running capacity is lower than installed capacity. Further the contracted demand with DISCOMs may also vary for different generators, which created an ambiguity in considering the differential capacity.
- b) In this regard, methodology in various states (Madhya Pradesh, Gujarat Andhra Pradesh) was referred and it is known that GSC is levied on Installed Capacity of the generators. In line with the other states and to avoid the uncertainties, installed capacity was considered for levying GSC.
- c) In the ARR & Tariff filings for FY 2023-24 of TSDISCOMs, the GSC was also proposed on renewable power plants (solar, wind, hydel & roof-top solar) stating the following reasons:
 - i) On grid solar/wind inverter takes energy, reference voltage & frequency from the grid for the process of conversion of the DC power generated from solar panels/wind turbines to AC power.
 - ii) Further, the energy generated from the solar panels/wind turbines is uncertain and depends on the environmental conditions hence there is always uncertainty in energy output from the solar plants/wind plants. In case of sudden drop in generation from the solar plant/wind plant, the load will have to be supported by the grid instantaneously and in case of excess generation the grid acts as a cushion in consuming the same instantaneously.
 - iii) Moreover, the AC power from the output of the inverter is prone

to be having a larger number of harmonics resulting in the distorted sinusoidal waveform. The grid absorbs such harmonics thus aiding the solar PV plants/wind plants.

- iv) The consumers having installed solar panels may cause unbalance in the system as per their nature of consumption and likely possibility of exporting/importing energy in one or 2 phases but not all phases. Thus, in all the above instances, the solar power plants/roof-top PV systems/ wind plant take the support of the grid and hence the levy of GSC is justified.

Justification for Rate of Grid Support Charges:

- a) The GCC further reported that many stakeholders during public hearing on ARR & Tariff proposals offered their comments that the rate of GSC proposed is exorbitantly high though the said proposal was on the differential of power plant installed capacity and the contracted maximum demand with the DISCOM and such methodology is not in vogue in any Other State. TSDISCOMs have studied the methodologies for levy of GSC in various States.
- b) The TSDISCOMs adopted the methodology existing in Andhra Pradesh which is based on the R&M cost including Artisans' salary of DISCOMs & STU approved by the APERC. Based on the above methodology, the calculation of GSC for Telangana State is detailed below:

TABLE-1: Details of Approved Contracted Capacity of TSDISCOMs for FY 2022-23

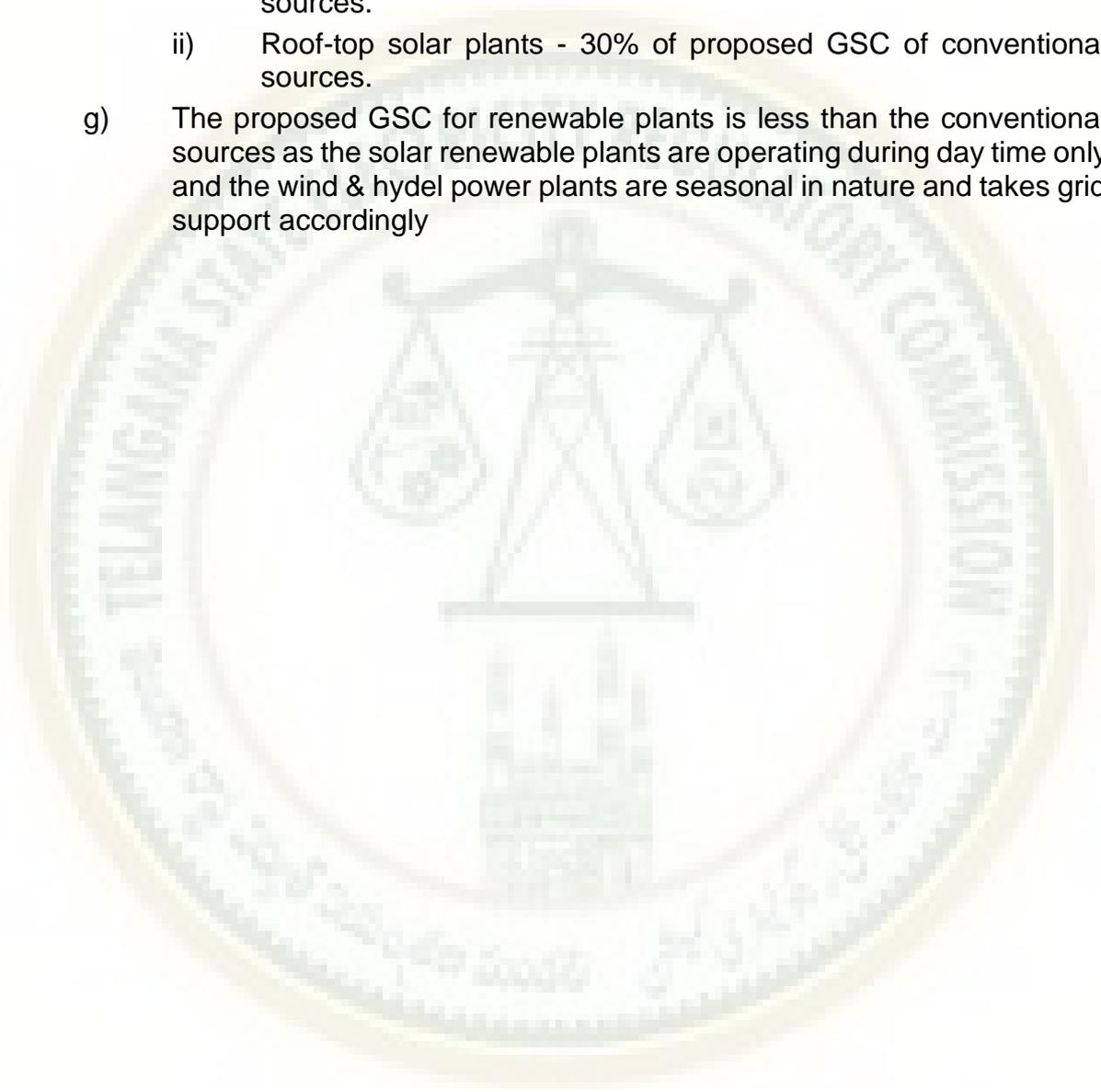
Particulars	Units	Telangana Contracted Capacity (FY 2022-23 Tariff Order)
TSGenco Thermal	MW	4043
TSGenco Hydel	MW	2325
CGS	MW	3112
Other LT	MW	3039
NCES	MW	3837
Total (A)	MW	16355

TABLE-2: Details of Approved R&M and Artisan Employee Costs for FY 2022-23

Particulars	Units	R&M + Artisans Employee Cost
Approved (TSDISCOMs)	Rs. in crore	788
Approved (TSTRANSCO)	Rs. in crore	204
Total (B)	Rs. in crore	991
Per month Cost C=B/12	Rs. in crore	82.58
Proposed GSC (on Contracted Capacity) (D=C/A)	Rs./kW/Month	50

- c) The proposal of TSDISCOMs i.e., GSC for conventional generators on Installed Capacity for FY 2023-24 is Rs.50/kW/Month, is lower than the earlier recommendation of the GCC, which is 25% of the prevailing demand charge for respective HT consumers (Approx. Rs.119/kW/Month), on differential capacity for FY 2022-23.

- d) Further, various exemptions were also proposed by the TSDISCOMs, as sought by certain members in the GCC meetings.
- e) Even though the proposal is on installed capacity, it is advantageous to the conventional generators as various exemptions are brought in to the proposal duly considering the requests made by the conventional generators as well as co-generation and seasonal generators.
- f) The GSC proposed for renewable plants is as follows:
 - i) Solar, wind, hydel - 50% of proposed GSC of conventional sources.
 - ii) Roof-top solar plants - 30% of proposed GSC of conventional sources.
- g) The proposed GSC for renewable plants is less than the conventional sources as the solar renewable plants are operating during day time only and the wind & hydel power plants are seasonal in nature and takes grid support accordingly



CHAPTER-3

ISSUES RAISED BY STAKEHOLDERS, RESPONSES OF PETITIONER AND COMMISSION'S VIEWS

3.1 OBJECTIONS/SUGGESTIONS

3.1.1 In response to the Public Notice, twenty-one (21) stakeholders/consumer organizations have filed their written objections/suggestions on the proposals of TSDISCOMs and on the GCC report dated 07.10.2023 for levy of GSC for FY 2023-24. The TSDISCOMs have filed the replies on the objections/suggestions received from the stakeholders/consumer organizations. All the objections/suggestions raised by the stakeholders/consumer organizations in writing as well as during the Public Hearing held on 08.01.2024 and responses of TSDISCOMs have been consolidated and summarized issue-wise. The Commission has concluded all the objections/suggestions of the stakeholders and the responses to them by the TSDISCOMs.

3.1.2 Before dwelling into the present objections/suggestions of stakeholders on the GCC report, the stakeholders submissions, TSDISCOMs replies and Commission's view given in the RST Order for FY 2022-23 and RST Order for FY 2023-24 in the matter of grid support charges are reproduced below for ready reference:

A: RST Order for FY 2022-23 dated 23.03.2022

"Stakeholder's Submissions

Proposed levy of Grid Support Charges

3.10.11 *The proposal of DISCOMs to levy Grid Support Charges (GSC) for Captive Power Plants (CPPs) operating in parallel with the State grid is based on the judgment of the Hon'ble Supreme Court in C.A. No.4569 of 2003 and batch passed on 29.11.2019 upholding the Order of erstwhile APERC for levy of grid supporting charges from FY 2002-03 to FY 2008-09. The Commission may consider to include co-generation plants within the ambit of definition of plants operating parallel with the grid to avoid misinterpretation of certain cogeneration plants that they are not CPPs. Cogeneration plants, though different from CPP so far as the operation is concerned, are not different on the aspect of operation in parallel with the grid. The levy of GSC needs to be reckoned from FY 2014-15 pursuant to the judgements of APTEL and Supreme Court. When disputes pertaining to past period are settled, making applicability of the order with retrospective effect is common practice.*

3.10.12 *Though the CPPs are not profit centers, substantive investments were made by the industry units to meet the power shortages and were also insisted by the erstwhile APSEB for the same reason to meet the power*

shortages. The current proposal of GSC by the DISCOMs is just the same as the case initially approved vide erstwhile APERC Order dated 08.02.2002 in O.P.No.1 of 1999 wherein GSC was proposed at 50% of the then applicable Demand Charges of Rs.170/kVA/month. In the present context, the proposal for levy of GSC is not supported by any data substantiating that grid is suffering to this extent because of parallel operation of CPPs. It is to be noted that earlier Order was issued before enactment of Act where there was a lot of grid indiscipline and there was no concept of SLDC and open access. The Act promulgated in 2003 does not differentiate between CPP and IPP as far as grid connectivity is concerned. The original levy of GSC in the year 1999 was when the generation shortfall was prevailing and the DISCOMs were going through occasional Restriction and Control (R&C) periods and frequency fluctuations, etc. and the regulators consideration for GSC had merits. However, the grid of Telangana has since improved/made many strides in size, availability and attained stability.

- 3.10.13 There is no provision in the Act or in any Regulation of the Commission to determine the GSC. Further, the National Electricity Policy, 2005 lay emphasis on grid connectivity of captive generators. As per the Act, the transmission and distribution licensees are only mandated to levy transmission/wheeling charges upon the CPPs availing open access for transmission and wheeling of power from generation to consumption point. In case the captive user has its own dedicated transmission line, even the aforesaid charges cannot be levied.
- 3.10.14 The levy of GSC is under the purview of TSSLD only and TSTransco and DISCOMs have nothing to do with GSC. The support for the grid at the times of increases/decreases of consumer demand is being provided by all the generators including state generators, IPPs, CPPs and co-generation plants and DISCOMs are no way providing any support.
- 3.10.15 The transmission system of the TSTransco/DISCOMs has to be designed in such a way that it takes care of fluctuating load and moreover, variation of load of a consumer having CPP is much less than a consumer without CPP. It is to be noted that unbalanced voltage of the grid is a source of negative phase sequence which is absorbed by the CPP. The parallel operation of CPPs with the grid is highly beneficial, otherwise, during a fault the grid voltage would have collapsed.
- 3.10.16 As per the Supply Code, Industries having CPPs can draw emergency power up to the capacity of largest generating unit by paying required tariff. Therefore, it is not a support of the grid as claimed by the DISCOMs. The drawl of power for generation purposes is limited to the Contracted Maximum Demand (CMD) as per the Supply Agreement with the DISCOM, otherwise penalty is attracted. Further, overdrawal from the grid is prevented by proper setting of the relay at the grid substation. Due to injection of power by CPPs the load on the transformers in the grid reduces resulting in lower transformer loss. It is incorrect to state that the active and reactive power demand due to sudden and fluctuating load is not recorded in the meter as the billing is done for all consumers

by integration over 15 minutes period and this is also applicable for CPPs which does not result in any undue advantage.

- 3.10.17 The CPPs act as distributed generator at the load center for which T&D loss has been reduced to great extent. Further, since all the cost of the transmission utilities is being covered under the ARR approved by the Commission, there is no scope for levying such additional charges. On the contrary to the claim of the DISCOMs the grid is being benefited and the CPPs are facing lot of problems due to irregularities of grid operation. The DISCOMs/TSTransco are not taking any measures to install suitable equipment to filter harmonics.*
- 3.10.18 GSC to standalone CPPs cannot be levied as the TSTransco is availing various advantages of grid support from CPPs by way of utilizing surplus power from CPPs in a power deficit situation, receiving VAR support and fault MVA support for the grid.*
- 3.10.19 TSTransco being the State Transmission Utility (STU) has the responsibility to maintain the network as per Section 39 and 40 of the Act. As per Grid Code, all the users or prospective users of STU are to be treated equal. Further, Section 9 of the Act does not differentiate between CPP and IPP as far as grid connectivity is concerned and hence both have to be treated equally. Moreover, industries owning arc furnaces and rolling mills but without CPPs creates much bigger problems and create pollution in the state grid as compared to an industry having CPP. The fluctuation in the load, generation of odd harmonics are technical issues which are common for industries with CPPs and without CPPs.*
- 3.10.20 Section 2(32) of the Act defines grid as the high voltage backbone system of interconnected transmission lines, substation and generating plants which implies that CPPs and generators are part and parcel of the grid. Therefore, it is not justifiable as to how one part of the grid is asking support charges from other part. Under such condition of dynamism all the constituents of the integrated grid system are mutually benefited as well as become victims of the vagaries created. Thus, the very concept of levying GSC seems to be absurd.*
- 3.10.21 CPPs involve heavy capital investments and are necessitated to provide fillip to the main consumption industry utilizing captive power at reasonable rate as opposed to fluctuating and ever-increasing grid tariff. The proposed levy of GSC aims to stifle the consuming industries by this arbitrary levy, which in turn erodes the viability of the principal industry to a point that it must perforce cease operations.*
- 3.10.22 CPPs have repeatedly expressed their willingness to provide additional protections in their facilities as desired by the grid to see that no unwanted load throwbacks or fault currents or reactive power surges happen. Further, majority of CPPs also pay for the operation and maintenance expenses of switching substation.*
- 3.10.23 The method of computation of GSC proposed by the DISCOMs is not justified and consequent rate is exorbitantly high. The Commission may consider to appoint an independent third party for conducting a thorough study of the grid for the necessity, evaluation and derivation of a reasonable rate towards GSC. Till such independent study is conducted*

and results discussed with stakeholders through a consultation process, the GSC may not be implemented. In case the proposed GSC is considered, a CPP having installed capacity of 100 MW has to pay GSC of Rs.2.97 crore per month and Rs.35.63 crore per annum. The proposed levy of GSC at such a high rate will have adverse impact on for large process industries which depend upon captive power at reasonable cost and results in closure of operations and in loss of direct and indirect employment aside from loss of revenue to the exchequer.

- 3.10.24 The prevailing parallel operation charges, which are equivalent to proposed GSC, in the other states such as Chhattisgarh, Gujarat, Jammu & Kashmir, Rajasthan, Tamil Nadu and Madhya Pradesh are in the range of Rs.20- 30/kVA/month and the same have been approved only after due prudence check through third party analysis if the grid suffers any forbearance in providing parallel operations of CPPs. In the States of Odisha, West Bengal Kerala and Karnataka there are no such parallel operation charges. The Commission may also refer to the Order of Odisha Electricity Regulatory Commission (OERC) dated 31.03.2014 in Case No.46 of 2012 wherein OERC has not allowed the levy of GSC on CPPs.
- 3.10.25 Even assuming that GSC is applicable, the DISCOMs have not specified the total CPPs capacity in their proposals and the impact such levy may have on such CPPs. Further, while arriving at the CPP capacity, auxiliary consumption has to be excluded along with the capacity that the CPP exports.
- 3.10.26 Since the settlement of deviations from schedule and related issues are being settled in accordance with the Deviation Settlement Mechanism in case of CPPs availing OA a similar methodology may be devised for such CPPs that do not avail OA so that the grid is adequately compensated for forbearance, if any, in providing parallel operation to CPPs. However, the proposed levy of GSC by the DISCOMs is arbitrary, excessive and is not supported by quantifiable data.
- 3.10.27 The DISCOMs are only allowed a charge only if they demonstrate the actual costs incurred, however, in the proposed case there are no extra costs incurred by the DISCOMs for the purported effects of operation of CPPs in parallel with grid.
- 3.10.28 Most of the CPPs installed capacities are much higher when compared to their captive load. When the installed capacity/operating capacity of captive load is much lower than installed capacity of power plant, it is unfair to impose GSC based on the installed capacity of CPP. Accordingly, the Commission may consider the captive demand for levy of GSC.
- 3.10.29 Some of the stakeholders submitted that GSC cannot be a substitute for demand or capacity charges which are determined on a wider basis by the Commission. Accordingly, the proposed levy of GSC based on applicable demand charge is arbitrary, excessive and results in undue enrichment of the DISCOMs at the expenses of CPPs. It is further to be noted that GSC based on CPP capacity in kVA lacks merit while the entire power systems in the premises of CPP are approved by CEIG in kW, in addition to this even the export contracts either bilateral or under

the exchanges are settled in MW. Accordingly, the quantification of GSC, if any has to be in kW.

- 3.10.30 *The above proposed levy of GSC is unjustified in the following cases:*
- (a) *An industry with CPP connected to the grid for the purpose of importing additional power from another source under OA.*
 - (b) *An industry with CPP connected to the grid to avail start-up power for which a contracted demand is arranged and paid by the consumer.*
- 3.10.31 *The Commission may allow the CPPs to delink from the grid in case the GSC were to be unwieldy and unviable to the extent of power out of the CPP capacity that they can run in island mode.*
- 3.10.32 *Levy of GSC on CPPs that operate in parallel with the grid on need basis say twice or thrice during an year is unjustified.*
- 3.10.33 *The effect of grid support is different in different classes of consumers like industries with continuous parallel operation and standby permission. In this regard, the Commission may look in to the proposal for levy of uniform GSC.*
- 3.10.34 *The Commission may reject the DISCOMs proposal for levy of GSC. If at all the levy of GSC is to be considered then it may be relevant to consider such levy only in such cases where the loads impose instantaneous/intermittent demands on the grid.*
- 3.10.35 *Parallel operation with the grid arises in the context of CPP's based on coal, gas, biomass etc. having surplus capacity over and above their own requirement and for process industries having CPPs which run parallel to the grid to avail continuous power supply in the event of CPPs failure to generate. Accordingly, infirm sources of energy like solar and wind are not to be brought under the ambit of the same. Implementation of GSC would be unjust on consumers who have set up solar power to promote renewable sources of energy.*
- 3.10.36 *The erstwhile APERC's Order dated 08.02.2002 on determination of GSC was issued before enactment of the Act and was issued in the context of CPPs generating firm power. The formula suggested in the above referred Order also reflects the fact that CPP capacity could be higher than consumers contracted demand, which is possible in case of coal, gas, biomass and bagasse based CPPs. The same formula is not suitable to be applied to solar CPPs wherein the solar plant capacity would be lower than the contract demand in most cases. While the Hon'ble Supreme Court has upheld the APERC Order, the same cannot be applied to renewable sources of power which are infirm in nature. Levy of GSC on existing solar CPPs is against economic principles.*
- 3.10.37 *It is important to note that consumers operating CPPs based on solar are governed by contract demand limit. Consumers availing power from solar CPP are not allowed to reduce the contract demand corresponding to installed capacity of the solar CPP. On the contrary, consumers continue to pay demand charges for the contract demand even after availing solar power from CPP. The DISCOMs are already compensated for this through the demand charges levied in the consumer's bill. This is unlike the consumers whose CPPs are not governed by contract*

demand limits or consumers who would avail contract demand from grid only to cater to demand over and above their load.

- 3.10.38 The consumers operating CPPs based on solar cannot draw the power over and above the contract demand maintained with the utility at any given point of time and in case the demand exceeds for a moment, temporary charges are applicable as per the provisions of the Regulations. In the case of rooftop solar plants, the capacity of the solar power plant is governed by the capacity restriction which is up to a maximum of 80% of the contract demand availed from the utility by the consumer. Thus, as per the formula proposed by DISCOMs, the difference of capacity of CPP in kVA and contracted demand in kVA with the DISCOMs and all other sources works out to be negative. Accordingly, the GSC in case of renewable sources from solar/wind cannot be applied.*
- 3.10.39 Renewable energy plants installed in the state were installed as per the terms and conditions and charges as applicable at the particular point of time and any new charges to be imposed on these older installations will be violation of law and is against the established principle by the Supreme Court that “a vested right cannot be taken away by a retrospective law”. The Supreme Court stressed on doctrine of fairness and how it would be unfair to fasten an obligation based on an amendment in law in the future. It also provided that a legislation which impose new obligations should be treated as prospective, but the same which confers a benefit, could be construed as retrospective considering the intent of the lawmakers.*
- 3.10.40 The current capacity of rooftop solar capacity in the State is 210 MW as on December 2021 against the target 2000 MW as per Telangana Solar Policy, 2015 and accordingly there is a huge potential for growth of solar rooftop. Levy of GSC at this juncture would be detrimental to the growth of the segment and also will create a hurdle in achievement of the sustainability goals.*
- 3.10.41 The Supreme Court also stated that “if de-licensing of generation is the prime object of the Act, the courts while interpreting the provisions of the statute must guard itself from doing so in such a manner which would defeat the purpose thereof. It must bear in mind that licensing provisions are not brought back through the side door of Regulations”. The Commission may also take note of the approach adopted by other State Electricity Regulatory Commissions in not levying GSC on CPPs based on renewable sources.*
- 3.10.42 The Commission may not allow GSC to be levied on existing consumers or prospective consumers who wish to install solar CPPs. In case the Commission approves the levy of GSC, the formula may be modified to reflect the infirm nature of solar plant and contract demand limitations applicable to solar power plants. Further, such levy of GSC may be limited to prospective consumers only.*
- 3.10.43 The object and purpose to levy such charges shall be limited to the projects who have co-generation or who are having captive power generation together with their processing unit. The judgment of the Hon'ble Supreme Court in C.A.No.4569 of 2003 is only in respect to the*

aforesaid category of projects. Therefore, HMR project cannot be fastened with GSC even if it procures power through open access as it would not fall within aforesaid two categories.

3.10.44 As per the terms and conditions of the Concession Agreement for HMR project, any additional liability of tariff to HMR in view of the directives dated 27.04.2016 given by the GoTS, under Section 108 of Act shall be borne by the Government by way of granting subsidy under Section 65. Further, as per the terms of the Concession Agreement, the DISCOMs have to grant open access as and when sought without levy of GSC. Any deviation from the commitments given by the GoTS through the Concession Agreement in respect of the power supply will hit by the Doctrine of Promissory Estoppel.

DISCOMs Replies

Grid Support Charges

3.10.55 The full Bench of APTEL in Appeal No.120 of 2009 relating to Parallel Operation Charges (Grid Support Charges) in Chhattisgarh by Order dated 18.02.2011 stated that the State Commission is empowered to deal with the question as to whether the levy of parallel operation charges is permissible or not. Further, Hon'ble Supreme Court in its Judgment dated 29.11.2019 in C.A. No.8969 of 2003 held that the State Electricity Regulatory Commission is vested with the power to determine the grid support charges. The licensee has proposed GSC in line with the same methodology approved by the erstwhile APERC in its Order dated 08.02.2002 which was upheld by the Supreme Court. The abovementioned Supreme Court order was issued after the enactment of Act. DISCOMs are not in a position to dispute the findings of the Hon'ble Supreme Court.

3.10.56 The same is also supported by various APTEL judgments (dt. 29.09.2015- Renuka Sugars v/s. GERC, PGVCL, Gujarat TRANSCO; dt. 18.02.2012- Chhattisgarh State Power Distribution v/s. Godawari Power & Ispat Ltd) and SERC orders. Further, a research paper titled "Grid Support charges on Captive power plant", by K. Balaraman, Ananthapadmanabha, R. Nagraja, K. Parthasarthy; presented at IIT Madras – National Power System Conference 2004 also supports technically the application of GSC on CPPs.

3.10.57 The definition of the captive power plant as mentioned at clause 3 in the Electricity Rules, 2005 is reproduced as below: "No power plant shall qualify as a 'captive generating plant' under section 9 read with clause (8) of section 2 of the Act unless-

- (a) in case of a power plant
 - (i) not less than twenty six percent of the ownership is held by the captive user(s), and
 - (ii) not less than fifty one percent of the aggregate electricity generated in such plant, determined on an annual basis, is consumed for the captive use.
- (b) in case of a generating station owned by a company formed as special purpose vehicle for such generating station, a unit or units of such generating station identified for captive use and not the

entire generating station satisfy (s) the conditions contained in paragraphs (i) and (ii) of sub-clause (a) above.”

- 3.10.58 In order to consider a power plant as captive there is no discrimination made based on the type of the fuel used and the processes involved. As such all the plants which satisfy the above conditions are treated as CPPs and charges will be levied accordingly as directed by the Commission. Co-generation plants are also considered as CPPs. Further modification of the term “Captive Power Plant (CPP) as “Captive Power Plant (CPP) and Co-generation plant” with respect to levy of GSC is at the discretion of the Commission.*
- 3.10.59 The GSC are being proposed by the DISCOMs for consumers who are having parallel operation of CPPs. The DISCOM’s consumers connected at 132 kV and above are not paying transmission charges and SLDC charges separately but only the retail supply tariffs as determined by the Commission from time to time.*
- 3.10.60 The said GSC are also part of recovery of fixed charges incurred by the Distribution licensee and these charges are proposed to be levied on the CPPs who intend to use and benefit from parallel operation. Hence the proposal of GSC for FY 2022-23 are well within the provisions of Act.*
- 3.10.61 The entire network cost of State excluding OA portion is borne by the DISCOMs and said recovery of cost is under purview of the DISCOMs only.*
- 3.10.62 The CPPs continue to get connected to the licensee network system and operate their plant in synchronism with the grid due to the following reasons and certain benefits which cannot be physically measurable.*
- (a) The fluctuations in the load are absorbed by the utility grid in the parallel operation mode. This will reduce the stresses on the captive generator and equipment.*
 - (b) Fluctuating loads of the industries connected in parallel with the grid inject harmonics into the grid. The current harmonics absorbed by the utility grid is much more than that by the CPP generator. These harmonics flowing in the grid system are harmful to the equipment and are also responsible for polluting the power quality of the system.*
 - (c) Negative phase sequence current is generated by unbalanced loads. The magnitude of negative phase sequence current is much higher at the point of common coupling than at the generator output terminal. This unbalanced current normally creates a problem of overheating of the generators and other equipment of CPP, if not running in parallel with the grid. When they are connected to the grid, the negative phase sequence current flows into the grid and reduces stress on the captive generator.*
 - (d) CPPs have higher fault level support when they are running in parallel with the grid supply. Because of the higher fault level, the*

- voltage drop at the load terminal is less when connected with the grid.*
- (e) In case of faults in a CPP generating unit or other equipment, bulk consumers can draw the required power from the grid and can save their production loss.*
 - (f) The grid provides stability to the plant to start heavy loads like HT motors.*
 - (g) The variation in the voltage and frequency at the time of starting large motors and heavy loads, is minimized in the industry, as the grid supply acts as an infinite bus. The active and reactive power demand due to sudden and fluctuating load is not recorded in the meter.*
- 3.10.63 The impact created by sudden load throw off and consequent tripping of CPPs on over speeding is avoided with the grid taking care of the impact. Thus, the grid acts as the supporting system for the CPPs for its successful operation in terms of electrical performances. However, the grid support being an ancillary service extended by the licensee to the consumers, it has to be charged to the consumers who utilize the grid support.*
- 3.10.64 The GSC are not for drawl of power from the licensee, but for utilization of parallel operation benefits by captive generators. However, if the captive plant capacity is less than or equal to contracted maximum demand with licensee, such captive power plant capacity will not attract grid support charges.*
- 3.10.65 The DISCOMs have not denied CPPs access to the network, the captive generators who intended to use and benefit from parallel operation need to compensate through GSC.*
- 3.10.66 The faults are to be isolated within a short span to safeguard the grid and highlevel protection systems are in use and to safeguard the grid connected elements. Such fault isolation techniques adopted by grid are not dependent on the parallel operation with CPP.*
- 3.10.67 High power industries with fluctuating loads are to be stabilized to safeguard the grid, from blackout. The demand put on the system is to be considered average value and the integration period of 15 mins is considered to avoid maximum no. of fluctuation to safeguard the grid. However, there is a proposal for amendment from CEA to reduce the indication period further to 5 mins to enhance the grid stability. Whether it is a generator or a consumer has to comply with the grid standards.*
- 3.10.68 A consumer with or without CPP could inject harmonics into the grid and this may affect the power quality of CPP but may never absorb the Harmonics as it is producing power into the system. The harmonics would be mostly absorbed by the loads and can pollute the power quality of the system. DISCOMs have installed suitable meters (ABT meters) at the consumer end to measure the harmonics. If any consumer is going over and above the threshold value, DISCOMs are instructed to mitigate the harmonics to the consumer. If not, the supply is being disconnected.*
- 3.10.69 There is a clear difference between a CPP and the other generators. The CPPs supply power to their own needs and balance/deficit power can be*

drawn/injected back into the grid. However other generators can supply a constant required amount of power into the grid; thus support the stability of the grid. The mutual benefit of the grid is mostly applicable for CPPs.

- 3.10.70 An in-house CPP producing power will be drawn by the loads within the premises. In such cases if the load is more than the CPP the balance power would be drawn from the utility's grid. They would have the contract for the balance load from the utility. If it is not in house CPP, and CPP is located at some other location and drawal point at other end, the total power for the load would be drawn from the utility grid only. In such a scenario transformer loss will still be incurred by the utility.*
- 3.10.71 DISCOMs wants to state that the UI charges are levied to the tune upto 12% of the deviation charges in the case where a generator or a distribution company deviates from their said injection or drawal schedule. However, if the same generator or a particular CPP deviates from its said injection schedule say upto a quantum of more than 12% then this level of deviation is absorbed by the grid. In this case grid acts as a stabilizer. Thus, UI charges amount for only a fraction of the quantum of deviation, whereas GSC help to further develop the grid to absorb the rest of deviations. The surplus of CPP would be based on mutual agreement. There has never been a power deficit situation in the system as power utilities have had sufficient power purchase agreements from the past 7 years. Further the faults in the system are very minimal and being isolated as per the standards and contribution for feeding faults MVA of CPPs is not upto considerable level.*
- 3.10.72 As per the proposed grid charges conditions, the GSC will not be levied on the entire capacity of CPP and it will be levied only on differential capacity between CPP capacity and CMD with DISCOM. However, if the CPP capacity is less than or equal to CMD with the DISCOM, such captive power plant capacity will not attract GSC.*
- 3.10.73 The proposed GSC are very negligible in respect of generation of CPPs.*
- 3.10.74 As per the proposed GSC, in case of CPPs exporting firm power to TSTransco, the capacity which is dedicated to such export will also be additionally subtracted from the CPP capacity while calculating GSC.*
- 3.10.75 The benefits of the parallel operation with the grid are enjoyed by the CPP throughout the year. However, if the parallel operation is required twice or thrice per year, the system is kept ready through out the year to serve the parallel operation for their CPP capacity as and when required.*
- 3.10.76 The proposed GSC will not applicable to solar rooftop services as its solar plant capacity is less than or equal to CMD with the DISCOM.*
- 3.10.77 DISCOMs have never intended to obstruct the development and growth of renewable energy in the State by application of GSC. However, application of such charges is equally important to manage the grid stability which is the ultimate aim to get good quality and reliable power. DISCOMs understands the environmental benefits of promoting*

renewable energy and have always actively participated in promoting green energy.

Commission's View

3.10.79 The Commission while determining the ARR and retail supply tariffs for FY 2022-23 is guided by the provisions of the Act, Tariff Policy, 2016 and the Regulations of this Commission. The Commission in Chapter 6 of the Order has dealt in detail the tariff proposals of the DISCOMs.

6.25 PARALLEL OPERATION CHARGES/ GRID SUPPORT CHARGES
DISCOMs proposals

6.25.1 The parallel operation is defined as activity where one electrical system operates with the connectivity to another system in similar operating conditions. The CPPs opt for parallel operation to seek safety, security and reliability of operation with the support of a much larger and stable system as afforded by the grid. The circumstances under which a CPP seeks to operate in parallel with a large interconnected grid are as follows:

- i) CPPs having surplus capacity over and above their own requirement, connected in parallel with the grid in order to sell power to the grid or bank such surplus energy, which is a general phenomenon in seasonal industries.
- ii) CPPs having load of such nature that results in large momentary peaks, starting currents and runs the plant in parallel to avail the support of grid beyond the contract demand.
- iii) Process industries with CPP's runs in parallel in order to avail continuous power supply, in the event of failure of CPP generating units.
- iv) Black start of CPP, where the startup power is required to restart the units. 165

(Source: CSERC Discussion paper on PoC determination dt. 01.06.2008)

6.25.2 The advantages and disadvantages of parallel operation as discussed in detail in CSERC Order dated 31.12.2008 are as follows:

"10.1 Advantages to CPPs:

- (1) The fluctuations in the load are absorbed by the utility grid in the parallel operation mode. This will reduce the stresses on the captive generator and equipments. The bulk consumer can operate his generating units at constant power generation mode irrespective of his load cycle.
- (2) Fluctuating loads of the industries connected in parallel with the grid inject harmonics into the grid. The current harmonics absorbed by the utility grid is much more than that by CPP generator. These harmonics flowing in the grid system are harmful to the equipments and are also responsible for polluting the power quality of the system.
- (3) Negative phase sequence current is generated by unbalance loads. The magnitude of negative phase sequence current is much higher at the point of common coupling than at generator output terminal. This unbalance

current normally creates problem of overheating of the generators and other equipments of CPP, if not running in parallel with grid. When they are connected to the grid, the negative phase sequence current flows into the grid and reduces stress on the captive generator.

- (4) Captive power plants have higher fault level support when they are running in parallel with the grid supply. Because of the higher fault level, the voltage drop at load terminal is less when connected with the grid.
- (5) On account of increase in plant load factor of captive generator, additional revenues can be generated by the CPPs by sale of surplus power to the utility.
- (6) In addition to the above, CPPs enjoy the following advantages also:
 - (i) In case of fault in a CPP generating unit or other equipment, bulk consumers can draw the required power from the grid and can save their production loss.
 - (ii) The grid provides stability to the plant to start heavy loads like HT motors.
 - (iii) The variation in the voltage and frequency at the time of starting large motors and heavy loads, is minimized in the industry, as the grid supply acts as an infinite bus. The active and reactive power demand due to sudden and fluctuating load is not recorded in the meter.
 - (iv) The impact created by sudden load throw off and consequent tripping of CPP generator on over speeding is avoided with the grid taking care of the impact.
 - (v) The transient surges reduce the life of equipment of the CPP. In some cases, the equipment fails if transient is beyond a limit. If the system is connected to the grid, it absorbs the transient load. Hence, grid enhances the life of CPP equipments.

... ..

10.4 Disadvantage of Parallel Operation to Utility:

- (1) Load fluctuations of captive consumer are passed on to the utility's system thereby the efficiency of utility's system may be affected, which may also impact on utility's other consumers.
- (2) In case of an ungrounded (or grounded through resistance) system supply, fault on interconnecting line (consumer's side) results in interruption of system. For single phase to ground fault which are 80 to 85% of the short circuit fault level, the grounding of the system is achieved through the neutral or step-down transformer of

the utility, when the generator runs in parallel with the utility's grid. This supply is likely to cause damage to the terminal equipments at utility's sub-stations and line insulators, as voltage on the other two healthy phases rise beyond the limit, under such conditions.

- (3) The utility has to sustain the impact of highly fluctuating peak loads like that of arc furnace, rolling mill, etc. for which it does not get any return on the capital invested to create system reserve.*
- (4) The variation in reactive power requirement increases the system losses and lowering of the voltage profile. Utility has to bear the cost of such effects.*
- (5) The lower voltage profile and fluctuations affect the service to the neighboring consumers due to deterioration in quality of supply, thus resulting in revenue loss to the utility.*
- (6) Non-recording of high fluctuating / sudden active and reactive demand by the meter results in financial losses."*

6.25.3 The erstwhile APERC in its Order dated 08.02.2002 approved the levy of GSC for parallel operation of CPPs. The AP High Court had set aside the said Order of APERC and appeals were preferred before the Supreme Court. The Supreme Court in its Judgment 29.11.2019 upheld the APERC's Order.

6.25.4 Based on the above, the DISCOMs find that there is a need to levy GSC on the captive consumers, for the benefits availed during parallel operation of CPP with the grid network. The DISCOMs have proposed the GSC in line with the approval of the erstwhile APERC as under:

"Persons operating Captive Power Plants (CPPs) in parallel with T.S. Grid have to pay 'Grid Support Charges' for FY 2022-23 on the difference between the capacity of CPP in kVA and the contracted Maximum Demand in kVA with Licensee and all other sources of supply, at a rate equal to 50% of the prevailing demand charge for HT Consumers. In case of CPPs exporting firm power to TSTRANSCO, the capacity, which is dedicated to such export, will also be additionally subtracted from the CPP capacity."

Commission's view

6.25.5 The stakeholders have vehemently opposed the DISCOMs proposal of GSC. The stakeholders have also raised certain issues purported to be incorrectness in the rationale provided by the DISCOMs. The stakeholders have also requested the Commission to undertake third party analysis before deciding on the levy of GSC as well as the quantum of such GSC. The Commission finds merit in the stakeholders' suggestion to undertake a detailed study.

6.25.6 In accordance with Clause 5.1 of the Regulation No.4 of 2018, a Grid Coordination Committee has been constituted with

representation from wide spectrum of generating companies, transmission licensees, distribution licensees, electricity traders, OA consumers etc. Clause 5.2(v) of the Regulation No. 4 of 2018 specifies that “the Grid Coordination Committee shall be responsible for such matters as may be directed by the Commission from time to time”. The Commission finds it appropriate to refer the matter to the Grid Coordination Committee for a detailed study on the issue of parallel operation of CPPs and consequent levy of GSC.”

B: RST Order for FY 2023-24 dated 24.03.2023

“Grid Support Charges

- 3.15.9 *In line with the Commission's ruling in Retail Supply Tariff Order 2022-23, the Grid Coordination Committee has initiated the detailed study on the matter of parallel operation of CPPs and consequent levy of GSC, however, admittedly, the proposal for levy of GSC for FY 2022-23 has not attained finality as on date.*
- 3.15.10 *In the 3rd meeting of the Grid Coordination Committee (GCC) held on 16.07.2022 the Objector had submitted its written submissions that grid support charges with a request to withdraw the proposal.*
- 3.15.11 *The Objector runs a 150 MW Independent/Merchant thermal power plant and export the entire generated power through Grid at all times.*
- 3.15.12 *Earlier TSDISCOMs proposed to levy the grid support charges on captive generating plants considering captive load burden on Grid. It is surprising to note that now TSDISCOMs proposed to levy such charges on all generating plants including Independent power generating plants and Merchant power generating plants without explaining any reason/basis for levy of such charges.*
- 3.15.13 *The IPPs and Merchant power generating plants are meant to generate and export entire power to grid and accordingly always supportive to grid but never opt grid support to run the plant.*
- 3.15.14 *The TSDISCOMs have no role in maintaining Grid security and have to comply with the directions issued by SLDC/RLDC. Hence, in the present scenario, there is no need to propose GSC by TSDISCOMs and TSDISCOMs have no role in seeking GSC.*
- 3.15.15 *It is also pertinent to note that this Commission is constituted under the Act, and thus the earlier AP Electricity Reform Act, 1998 under which GSC were earlier determined is neither applicable nor relevant to IPPs and Merchant Power generating plants. The Act, 2003 specifically lays down the charges and tariffs to be collected, and no charges beyond what is prescribed can be levied. Admittedly, there is no charge such as GSC mentioned in the Act or the regulations, let alone under S.62 under which the present petitions are filed, and as such, any such proposal to levy GSC is without jurisdiction.*
- 3.15.16 *It is thus submitted that the scope of present ARR for Retail Supply Business for FY 2023-24 should be strictly confined in terms of Section 62 of the Act r/w Regulation 4 of 2005 as adopted under Regulation I of 2014, and Section 42 of the Act for the purpose of determination of CSS*

and any proposal of TSDISCOMs to levy GSC is itself misconceived and patently without jurisdiction.

- 3.15.17 *The TSDISCOMs proposed to levy Grid Support Charges for FY2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees. Whereas there is no mention of basis and methodology by TSDISCOMs for the proposed GSC of Rs.50 KW per Month.*
- 3.15.18 *There is no revenue or costs that are shown to be associated corresponding to the levy of GSC. As such, once the entire costs are recovered by the proposed RST alone, any further levy of GSC amounts to illegal and unjust enrichment of the Applicant TSDISCOMs at the cost of generating companies.*
- 3.15.19 *The proposed levy of GSC appears to be lifted from the APERC's RSTO for FY 2022-23, and such levy itself has been stayed by the APTEL vide order dated 20.05.2022 in DFR No.186/2022, and orders dated 01.07.2022 in DFR Nos.240/2022, 241/2022 and 271/2022. There is no provision in the statute that empowers TSDISCOMs to levy Grid Support Charges on the Merchant power plants.*
- 3.15.20 *Another objector has suggested the following:*
- a) *The GSC Fee has not considered the exemption of CMD from the installed capacity.*
 - b) *The Formula for the GSC i.e., Rs.50 for conventional generators is not mentioned, so is the case with non-conventional GSC. The formula may be disclosed upfront to avoid any arbitrariness.*
 - c) *Exemption is available in case of shut down for any reason that exceeds two months, which pre-supposes that the period of two months is continuous. Instead the same may be taken as overall period of two months of shut down during the year i.e., period of shut down during the year, if the aggregate period of such shut down exceeds 2 months.*

TSDISCOMs Replies

Grid Support Charges

- 3.15.37 *The grid support charges are being proposed by the Distribution Licensee for consumers who are having parallel operation of Captive Power Plants with grid. The Distribution Licensee's 132 kV & above level HT consumers are not paying Transmission charges & SLDC charges to respective entities even though connected to 132 kV & above level. These consumers are paying retail supply Tariffs as approved by the Commission from time to time which is inclusive of all costs (Incl SLDC & Transmission Charges).*
- 3.15.38 *The advantages of parallel operation with the grid are benefited by the CPPs in addition to other facilities of other consumers. In view of the additional benefits than the normal other consumers, the CPPs who*

intended to use and benefit from parallel operation need to compensate through Grid Support charges.

- 3.15.39 The said Grid Support charges are also part of Retail Supply Tariffs and these charges are proposed to levy on the CPPs who intended to use and benefit from parallel operation. Hence the proposal of Grid Support charges for FY 2022-23 are well within the provisions of Act.*
- 3.15.40 However, the full Bench of Tribunal in Appeal No.120 of 2009 relating to Parallel Operation Charges (Grid Support Charges) in Chhathisgarh by Order dated 18.02.2011 stated that the State Commission is empowered to deal with the question as to whether the levy of parallel operation charges is permissible or not. This aspect has been dealt with by this Tribunal in judgment dated 12.09.2006 in Appeal No.99 of 2006. In the said judgment, this Tribunal upheld the levy of parallel operation charges by the State Commission. Further, the Apex Court of India by its judgment dated 29.11.2019 in Civil Appeal No 8969 of 2003 (Grid Support Charges Batch matters) held that the State Electricity Regulatory Commission is vested with the power to determine the grid support charges.*
- 3.15.41 The licensee has not denied CPPs access to grid or availing of parallel operation benefits.*
- 3.15.42 It is clarified that the captive generators who intended to use and benefit from parallel operation need to pay the Grid Support charges, in line with the justifications mentioned in the previous sections.*
- 3.15.43 The Captive Power Plants continue to get connected to the licensee network system and operate their plant in synchronism with the grid due to the following reasons.*
- 3.15.44 The fluctuations in the load are absorbed by the utility grid in the parallel operation mode. This will reduce the stresses on the captive generator and equipment.*
- 3.15.45 Fluctuating loads of the industries connected in parallel with the grid inject harmonics into the grid. The current harmonics absorbed by the Captive Power Plants continue to get connected to the licensee network system and operate their plant in synchronism with the grid due to the following reasons.*
- 3.15.46 The fluctuations in the load are absorbed by the utility grid in the parallel operation mode. This will reduce the stresses on the captive generator and equipment.*
- 3.15.47 Fluctuating loads of the industries connected in parallel with the grid inject harmonics into the grid. The current harmonics absorbed by the utility grid is much more than that by the CPP generator. These harmonics flowing in the grid system are harmful to the equipment and are also responsible for polluting the power quality of the system.*
- 3.15.48 Negative phase sequence current is generated by unbalance loads. The magnitude of negative phase sequence current is much higher at the point of common coupling than at the generator output terminal. This unbalanced current normally creates a problem of overheating of the generators and other equipment of CPP, if not running in parallel with the grid. When they are connected to the grid, the negative phase*

sequence current flows into the grid and reduces stress on the captive generator.

- 3.15.49 Captive power plants have higher fault level support when they are running in parallel with the grid supply. Because of the higher fault level, the voltage drop at the load terminal is less when connected with the grid.*
- 3.15.50 In case of faults in a CPP generating unit or other equipment, bulk consumers can draw the required power from the grid and can save their production loss.*
- 3.15.51 The grid provides stability to the plant to start heavy loads like HT motors.*
- 3.15.52 The variation in the voltage and frequency at the time of starting large motors and heavy loads, is minimized in the industry, as the grid supply acts as an infinite bus. The active and reactive power demand due to sudden and fluctuating load is not recorded in the meter.*
- 3.15.53 The impact created by sudden load throw off and consequent tripping of CPP generators on over speeding is avoided with the grid taking care of the impact. Thus, the grid acts as the supporting system for the CPPs for its successful operation in terms of electrical performances. However, the grid support being an ancillary service extended by the licensee to the consumers, it has to be charged to the consumers who utilize the grid support.*
- 3.15.54 The full Bench of Tribunal in Appeal No.120 of 2009 relating to Parallel Operation Charges (Grid Support Charges) in Chhattisgarh by Order dated 18.02.2011 stated that the State Commission is empowered to deal with the question as to whether the levy of parallel operation charges is permissible or not. This aspect has been dealt with by this Tribunal in judgment dated 12.09.2006 in Appeal No.99 of 2006. In the said judgment, this Tribunal upheld the levy of parallel operation charges by the State Commission. Further, the Apex Court of India by its judgment dated 29.11.2019 in Civil Appeal No 8969 of 2003 (Grid Support Charges Batch matters) held that the State Electricity Regulatory Commission is vested with the power to determine the grid support charges. Hence, the levy of grid support charges is well within the provisions.*
- 3.15.55 The grid support charges are not for drawl of power from the Distribution Licensee, but for utilization of parallel operation benefits by captive generators.*
- 3.15.56 The licensee has not denied CPPs access to the network; the captive generators who intended to use and benefit from parallel operation need to compensate through Grid Support charges.*
- 3.15.57 The advantages of parallel operation with the grid are benefited by the CPPs in addition to other facilities of other consumers. In view of the additional benefits than the normal other consumers, the CPPs who intended to use and benefit from parallel operation need to compensate through Grid Support charges. The said Grid Support charges are also one of the components in Retail Supply Tariffs and these charges are proposed to levy on the CPPs who intended to use and benefit from*

parallel operation. Hence the proposal of Grid Support charges for FY 2022-23 are well within the provisions of Act.

3.15.58 *The above benefits are elaborated by TSDISCOMs during the GCC meetings with the stakeholders.*

3.15.59 *The proposed grid support charges of 50% of 475 per KVA per month during the FY 2022-23 RST filings, was supposed to be levied on differential capacity only i.e., difference between CPP capacity and CMD with Distribution Licensee. Whereas in other states, these grid support charges are calculated in entire capacity of Captive Power Plant (CPP).*

3.15.60 *Considering the interest of all stakeholders involved, the licensee has revised its GSC proposal.*

Commission's View

3.15.80 *By considering stakeholders suggestions, the Commission has decided to again refer the matter of 'Grid Support Charges/Parallel Operation Charges' to the 'Grid Coordination Committee' for undertaking detailed analysis as the licensees proposed a different methodology and applicability as that proposed earlier in RST for FY 2022-23 for which Grid Coordination Committee has already submitted its final report."*

3.2 NO JUSTIFICATION FOR LEVY OF GSC ON IPPs

Stakeholder's Submissions

3.2.1 TSDISCOMs proposed to levy the GSC on all the generators instead of co-located CPP plants. Presentation of TSDISCOMs covered about the levy of GSC on CPPs only and has no justification for levy of GSC on IPPs. The way of levy GSC should not be like "Some are generating the harmonics and we will charge every one"

TSDISCOMs Reply

3.2.2 In respect of other generators who are not CPPs, the transients and reactive power transfer are bound to take place between the Grid and generators as long as they operate in tandem with the Grid, more particularly with Wind and Solar generators that use inverters. Moreover, the disturbance, caused by the IPPs due to their outages which are also connected to the grid, is being addressed by the grid support. So, the Grid support is required for all generators and it is a distinguishable service and hence, it is made applicable to all generators.

3.2.3 Further, it is admitted fact that CPP runs in parallel with the Grid and get many advantages because of that, TSDISCOMs opines that confining levy of GSC to CPPs only does not provide for a level playing field as other generators connected to the grid also enjoy the same benefits as that of CPPs. Hence,

TSDISCOMs proposes to bring other generators under the ambit of GSC. So, the grid support cannot be extended free to a nexus of IPPs and other generators.

3.2.4 As there is no differentiation of connectivity to the grid as far as IPP, CPP and Non-CPP and are considered requiring technical grid support for all types of power plants.

3.2.5 The GSC are being proposed by the distribution licensees on generators who are having parallel operation of power generation with grid, typically, any direct or indirect impact on transmission system due to faults, at generator units running in parallel with grid, will be loaded on to the distribution licensees and are required to compensate the transmission system and SLDC.

3.2.6 Hence, TSDISCOMs request the Commission to consider and approve levy of GSC to all the generators who are being benefited from the support of grid.

3.3 RATIONALE BEHIND THE PROPOSALS OF TSDISCOMs

Stakeholder's Submissions

3.3.1 The TSDISCOMs GSC proposals have no basis and simply borrowed from other States. There is no justification on the proposed methodology.

3.3.2 The proposed charge for total installed capacity is very high. GSC should be on actual consumption and made applicable to only CPPs having captive consumption. The export capacity by the CPP should be excluded from GSC.

3.3.3 It is seen that the generators having PPAs with TSDISCOMs are excluded from levy of GSC.

3.3.4 Previously the grid size was small, the impact of CPPs was significant, now the grid size is larger, impact of CPPs is negligible. Lot of protective systems are installed in CPP, and there will be no injection of reverse currents into the grid. Remedial measures will be taken if technical experts suggest so.

3.3.5 The stakeholder has also suggested that since imbalances of harmonics are happening only due to captive power plants GSC can be levied on captive power plants.

TSDISCOMs Reply

3.3.6 The detailed analysis and reasons, for levy of GSC by TSDISCOMs, was

already submitted to the Grid Co-Ordination Committee (GCC) and TSDISCOMs presented their views and analysis to all the stakeholders during the past GCC meetings with the stakeholders and also during the public hearings organized by the Commission regarding the ARR filings of TSDISCOMs.

- 3.3.7 The GCC has already conducted a detailed technical study on grid support required for the CPPs and Solar & Wind projects. GCC has studied the technical fault analysis at generator end and the grid support availed by such generator for restoration in the fault instances. From this study it was concluded that the power plant requires technical support from the grid, which was included in the report submitted by GCC to the Commission.
- 3.3.8 Grid support is required irrespective of size of the grid. It is pertinent to mention that the parallel operation is a service which extends support to the system and at the same time it causes voltage dip in the system, harmonics, additional reactive power requirement irrespective of the size of the grid. By parallel operation the CPP has many advantages and hence they are liable to pay the charges for service being provided.
- 3.3.9 It is to note that GCC has conducted the detailed analysis on grid support for renewable and rooftop solar generators and submitted a report in October 2023, where they have observed that the on-grid solar/wind inverter takes energy, reference voltage & frequency from the grid for the process of conversion of the DC power generated from solar panels/wind turbines to AC power. Further, the energy generated from the Solar panels/Wind turbines is uncertain and depends on the environmental conditions hence there is always uncertainty in energy output Solar plants/Wind plant. In case of sudden drop in from the solar plant/wind plant, the load will have to be supported by the grid instantaneously and in case of excess generation, the Grid acts as a supporting system for consuming the same instantaneously.
- 3.3.10 Moreover, the AC power from the output of the inverter, is prone to be having a larger number of harmonics resulting in the distorted sinusoidal waveform. The Grid absorbs such harmonics thus aiding the solar PV plants/wind plants.
- 3.3.11 The consumer having installed solar panels may cause imbalance in the system

as per their nature of consumption and likely possibility of exporting/importing energy in one or two phases but not in all phases. Thus, in all the above instances, the solar power plants/roof-top PV systems, wind plants takes support of the grid and hence the levy of GSC is essential and justified.

3.4 APPLICABILITY OF GSC TO GENERATORS RUNNING IN ISLAND MODE

Stakeholder's Submissions

3.4.1 The stakeholder has stated that their unit is kept in islanded mode when the power supply is unstable. The unit is getting connected to grid only when power is exported. Hence CPP capacity should used for levy of GSC and not installed capacity.

TSDISCOMs Reply

3.4.2 GCC has conducted the detailed analysis on parallel operation of CPPs and submitted a report in December 2023 where they have studied grid connection and isolated mode of conventional CPP plants. It was observed that in case of grid connection mode, with outage of one unit at CPP, grid & other units of CPP are stable, no prominent swings detected in the other units, whereas in Isolated mode with outage of one unit at CPP, other units become unstable. Hence, the stability of machines of CPP improves by parallel operation with grid. When the CPPs operate in isolation from grid which means no connectivity with the grid, the GSC will not be applicable.

3.4.3 As per the analysis and technical study conducted by the GCC, the power plants operating in parallel to the grid are taking the support from the larger grid in the event of faults and other parameters which are affecting the grid and concluded that the GSC are to be levied.

3.4.4 Hence, TSDISCOMs request the Commission to consider the same and approve the levy of GSC to all the generators who are being benefitted from the support of grid.

3.5 LEVY OF GSC ON SOLAR PLANTS

Stakeholder's Submissions

3.5.1 Solar plants are constructed near to load centres, and support to TSDISCOMs during summer peak demand thus contributing to saving cost to TSDISCOMs from buying power from exchanges. SPPs generate power during day time

meeting the day demand and reduce the burden on power purchase cost of TSDISCOMs.

- 3.5.2 Plants with PPAs are exempted though they have same technicalities. All the solar power plants are having certified devices meeting the IEEE standards, so solar power plants can be exempted from the levy of GSC. This would help the employees getting affected due to shut down of solar power plants.

TSDISCOMs Reply

- 3.5.3 For the TSDISCOMs the peak load hours are from 6.00AM to 10.00 AM and from 6.00PM to 10.00 PM, and the solar generation during DISCOMs peak load hours is nominal.
- 3.5.4 It is to reiterate that GCC has conducted the detailed analysis on grid support for renewable and rooftop solar generators and submitted a report in October 2023, where they have observed that the on-grid solar/wind inverter takes energy, reference voltage & frequency from the grid for the process of conversion of the DC power generated from solar panels/wind turbines to AC power. Further, the energy generated from the solar panels/wind turbines is uncertain and depends on the environmental conditions hence there is always uncertainty in energy output from the solar plants/wind plant. In case of sudden drop in from the solar plant/wind plant, the load will have to be supported by the grid instantaneously and in case of excess generation the grid act as a supporting system for consuming the same instantaneously.
- 3.5.5 Moreover, the AC power from the output of the inverter is prone to be having a larger number of harmonics resulting in the distorted sinusoidal waveform. The grid absorbs such harmonics thus aiding the solar PV plants/wind plants.
- 3.5.6 The consumer having installed solar panels may cause imbalance in the system as per their nature of consumption and likely possibility of exporting/importing energy in one or two phases but not in all phases. Thus, in all the above instances, the solar power plants/roof-top PV systems, wind plant takes support of the grid and hence the levy of GSC is essential and is justified.
- 3.5.7 Hence, TSDISCOMs request the Commission to consider and approve the levy of GSC to all the generators who are benefitting from the support of grid.

3.6 PUBLIC NOTICE AND JUSTIFICATION OF TSDISCOMS ON THE PROPOSALS FOR LEVY OF GSC

Stakeholder's Submissions

- 3.6.1 The public notice is not clear regarding O.P. numbers of the petitions admitted. No justification has been given pertaining to levy of GSC in TSDICOMs filings. They have simply copied from the proposals of other states. The proposals in FY2022-23 referred to committee and there was no edge on the filings of FY 2022-23.

TSDISCOMs Reply

- 3.6.2 The details are available in the public notice published in the daily newspapers and the same are also uploaded in the TSERC website. The detailed analysis and reasons for levy of GSC by TSDISCOMs is already submitted to the GCC and TSDISCOMs have presented their views and analysis to all the stakeholders during the past GCC meetings with the stakeholders and also during the public hearings organized by TSERC regarding the ARR filings of TSDISCOMs.
- 3.6.3 The committee report on the FY 2022-23 filings was submitted to the Commission, and as per the instructions of the Commission, GCC has organized multiple meetings with committee members representing various generators where the views/objections were received, and the TSDISCOMs have timely addressed such views/objections orally during the meetings and also through written submissions to GCC for further response to the participants.
- 3.6.4 GCC has analysed the views of members and data collected from various sources including CERC order Dt: 31.12.2008 issued based on the study conducted by Electrical Research & Development Association (ERDA). The analysis also included levy of parallel operation charges/grid support charges by various states across the nation and their methodology and technical study on impact of CPP connectivity and renewable and rooftop solar generators to the grid.

3.7 TECHNICAL STUDY IN THE GCC REPORT

Stakeholder's Submissions

- 3.7.1 GSC is a charge on connectivity and GSC is not proposed to be levied on

Generators with PPA. The claim that grid voltage supports the plants connected to grid is not correct as solar power plants are connected to grid at grid voltage. Solar power cannot be injected when the grid is down. The solar power generators draw reactive power while injecting active power into the grid. The solar power generators are injecting reactive power during night hours. Solar power generators take the reference from grid voltage. Solar inverter steps up and connects to the same voltage.

- 3.7.2 It is not clear from the report as to how support is taken from grid when a radial line from the grid trips and why the study is focused only on solar generators.
- 3.7.3 The stakeholder has also expressed that their objections were never forwarded to the GCC for clarification by the TSDISCOMs else GCC would have given an opportunity to the objectors before finalising the report. The conclusions have come out without the presence of all members.

TSDISCOMs Reply

- 3.7.4 The GSC is meant for providing service to the CPPs, IPPS and other generators hence they are liable to pay the charges for service being provided. As per the GCC study on solar plants, it was observed that solar plants in Telangana are grid tie inverters and always need a grid support (voltage reference) for injection of active power. The proposal for levy of GSC is for the technical support received by the generator due to the connectivity with larger grid.
- 3.7.5 GCC studied the technical fault analysis at generator end and the grid support availed by such generator for restoration in the fault instances. From the study it was confirmed that the power plant requires technical support from the grid, which was included in the report submitted by GCC to the Commission.
- 3.7.6 Grid voltage reference is mandatory to inject power from the inverter to the grid and there cannot be injection of power during the times of different voltage levels of the inverter with the grid. This kind of technical support from grid, at large, is required for the solar power plants throughout the year. Levy of GSC for power plants are not only meant for reactive power drawal from the grid but also for the other technical support.
- 3.7.7 As per the GCC study on solar plants, it was observed that during tripping of radial line from grid causing severe voltage instability and isolation from the

grid. Further, it can be observed that solar plants in Telangana are grid tie inverters and always need a grid support (voltage reference) for injection of active power. The GCC has also conducted the detailed analysis on parallel operation of conventional CPPs and submitted a report in December 2023.

- 3.7.8 GCC has organized multiple meetings with the stakeholders including representation from various generators. In these meetings the necessity of grid support, for renewable generators, was contested by some of the members. Hence to clarify those objections, GCC has carried out the technical study on renewable generators for the technical grid support required which was detailed in the GCC report. GCC has organized multiple meetings with committee members representing various generators where the views/objections were received, and the TSDISCOMs have timely addressed such views/objections orally during the meetings and also through written submissions to GCC for further response to the participants.
- 3.7.9 TSDISCOMs have also addressed the views/objections of consumers regarding the levy of GSC in the ARR filings of TSDISCOMs.

3.8 IMPACT OF FLUCTUATIONS AND HARMONICS

Stakeholder's Submissions

- 3.8.1 All the fluctuations and harmonics are due to the type of load but not due to Generators. Demand charges are paid as per the CMD. Only power electronic, nonlinear loads generate harmonics. The third harmonic is harmful, all other odd harmonics are displaced near the load. Every inverter generates harmonics depending on the load. Mainly three kinds of industries viz., steel, automobile and petrochemical industries generate harmonics. It is not clear as to how the TSDISCOMs can place all the industries under the same category. On the other hand, TSDISCOMs should insist to install filters before connecting to grid.
- 3.8.2 The third harmonic can be controlled by the grid operators and can be minimized by connecting various filters to the grid. It is also TSDISCOM's essential duty to identify the major types harmonic injectors, record the time and place of happening.
- 3.8.3 The stakeholder has also stated that there are no ungrounded systems and negative phase sequence currents flow through the plant loads first but not to

the grid. The motors draw high starting currents and it is TSDISCOM's obligation to supply power required by the loads as per the GTCS.

TSDISCOMs Reply

- 3.8.4 The GSC are being proposed by the distribution licensees on generators who are having parallel operation of power generation with grid. Typically, any direct or indirect impact on transmission system due to faults at generator units running in parallel with grid will be loaded on to the distribution licensees and are required to compensate the transmission system and SLDC.
- 3.8.5 The generators are benefited from the technical support of the grid for parallel operation with the grid (stability, reactive power management, fault level support). Thus, the GSC is not to be compared with the demand and capacity charges. It is true that the harmonics are being injected by the induction furnaces, rectifier units and other power electronic devices, certain captive users having such loads are injecting into the grid. In addition, solar power plants are also injecting harmonics into the grid.
- 3.8.6 As the grid support is not limited to the above advantages to the power plants and having many other advantages while running the power plants in parallel to the grid, the TSDISCOMs proposes GSC on all types of generators.
- 3.8.7 TSDISCOMs have been identified the type of loads in each area of their jurisdiction and planning against the loading conditions, as a result the TSDISCOMs can supply reliable quality power to all the stakeholders. TSDISCOMs are planning and supplying power in consumers prospective.
- 3.8.8 As specified in CEA (Technical Connectivity to the Grid) Regulation, 2019, the users prone to generate harmonics, have to filter them before injecting/drawing power to/from the grid. The grid operator can only monitor the harmonics being injected into the grid, but it is the responsibility of all the grid user to minimize the harmonics as per the CEA regulation, In practical, the grid network resistance is very less as compared to the individual power plants, so the fluctuations flow through the grid first and part of them flows through the plant equipment.
- 3.8.9 As per the GCC study and technical analysis, it was observed that due to higher fault level of the grid at the point of common coupling, the flow of pollutants like

harmonics, negative phase sequence currents are absorbed by the grid due to low impedance path of the grid as compared to that of CPP generators.

- 3.8.10 TSDISCOMs proposed to levy GSC on CPP, IPPs and other generators who take support from the grid in terms of voltage stability, reactive power management, fault level support and grid reference voltage & load fluctuations but not limited to harmonics.
- 3.8.11 The GSC are being proposed by the distribution licensees on generators who are having parallel operation of Power generation with grid. Typically, any direct or indirect impact on transmission system due to faults at generator units running in parallel with grid will be loaded on to the distribution licensees and are required to compensate the transmission system and SLDC. The high starting currents drawn from the grid by the loads of users are supported by the TSDISCOMs even when there is a loss of consumption and demand in the energy meters due to instantaneous high starting currents are not being sensed by the meters as the meters consider only the average samplings in the respective integration periods.

3.9 OTHER ISSUES

Stakeholder's Submissions

- 3.9.1 The TSDISCOMs are getting Rs.10~12/unit as revenue from their tariffs and paying only Rs.2/unit to the solar generators against power purchases.
- 3.9.2 The proposal for levy of GSC on generators is double charging, which are already covered under demand charges.
- 3.9.3 The stakeholder also stated as to why TSDISCOMs, TSTRANSCO and TSGENCO are not going for solar generating plants to support green energy.
- 3.9.4 Proper detailed technical study by the experts would have relevance and the cost of technical study can be borne by the stakeholder.

TSDISCOMs Reply

- 3.9.5 As per the RST Order for FY 2023-24 approved by the Commission, the Average CoS for FY 2023-24 is Rs.7.02/kWh and the average recovery of cost through revenue realisation is Rs.5.81/kWh, resulting a deficit of Rs.1.21/kWh.
- 3.9.6 The GSC are being proposed by the distribution licensees on generators who

are having parallel operation of power generation with grid, typically, any direct or indirect impact on transmission system due to faults at generator units running in parallel with grid will be loaded on to the distribution licensees and are required to compensate the transmission system and SLDC.

- 3.9.7 As per the GCC study on solar plants, it can be observed that solar plants in Telangana are grid tied inverters and always need a grid support (voltage reference) for injection of active power. The IPPs, CPPs are benefited from the technical support of the grid for parallel operation with the grid (stability, reactive power management, fault level support). Thus, the GSC is not to be compared with the demand charges.
- 3.9.8 TSGENCO has installed solar power plants at various locations in the state of Telangana, TSDISCOMs are purchasing the green energy from the generators on top priority beyond the targets fixed by the Commission. Hence the TS power utilities are supporting green energy.
- 3.9.9 GCC after considering the views/suggestions of all the participants in the GCC meetings, submitted a report in October 2023, where they have stated that after the technical analysis and study, it was agreed that the generators (conventional, renewable and roof-top solar generators) receive technical support of grid for parallel operation keeping in view of stability, reactive power management, fault level support and the majority of the GCC members agreed for levy of GSC.

Commission's View

The Commission takes note of the submissions of the stakeholder and the TSDISCOMs and the matter is dealt in next Chapter-4.

CHAPTER-4

ANALYSIS AND CONCLUSION ON DETERMINATION OF GRID SUPPORT CHARGES FOR FY 2023-24

4.1 GRID SUPPORT CHARGES FOR FY 2023-24

- 4.1.1 Grid networks are the most economical and effective method in serving the high density loads. These networks provide maximum reliability and operating flexibility. Because the grid is getting power from several transmission lines, the consumers will not face outage due to switching off a transmission line for scheduled maintenance. Voltage regulation is improved since power flow to the consumer is through integrated grid operation. The grid can handle abrupt load changes and disturbances associated with large motor starting without severe voltage dips. The fault in one unit does not disrupt voltage outside the sensitive load tolerance limits because of very high inertia of the strong grid network.
- 4.1.2 Consumers having higher contracted loads and who have installed Captive Power Plants to meet their whole or part of their requirement of demand, generally will reduce their contracted demand with the distribution licensees. Their major demand requirement will be met from their CPP. The CPPs continue to run their plants in parallel with the grid due to the following reasons.
- a. The grid provides stability to the power plants when their industries start motors of large capacity.
 - b. The dip in the voltage and frequency at the time of starting the large motors is minimised as grid acts as an infinite Bus.
 - c. The slow responses of governors and excitation system will make the CPP sluggish without the support of grid.
 - d. The shocks created and consequent tripping of the generator on over speeding is avoided in the event of sudden load throw off's of the CPP.
 - e. The connection with grid helps CPP's connected to system with fluctuating loads (like steel mills and arc furnaces) in stabilising their units.
- 4.1.3 Thus, the grid acts as the supporting system for the CPPs for its successful operation in terms of electrical performances. Initially, the consumers were having contracted demand to meet their peak demand and the distribution licensees were getting their fixed charges. These fixed charges were able to cover the cost of infrastructure provided by the utilities. The consumers have started installing CPPs and reducing their contracted demands with the distribution licensees. This resulted in loss of revenue to the utilities and at the

same time CPPs are taking support from the grid at no cost or least cost.

- i) The fluctuations in the load are absorbed by the utility grid in the parallel operation mode which will reduce the stresses on the captive generator and equipment. The bulk consumer can operate his generating units at constant power generation mode irrespective of his load cycle.
- ii) Fluctuating loads of the industries connected in parallel with the grid inject harmonics into the grid. The current harmonics absorbed by the utility grid is much more than that by CGP generator. These harmonics flowing in the grid system are harmful to the equipment and are also responsible for polluting the power quality of the system.
- iii) Negative phase sequence current is generated by unbalance loads. The magnitude of negative phase sequence current is much higher at the point of common coupling than at generator output terminal. When they are connected to the grid, the negative phase sequence current flows into the grid and reduces stress on the captive generator.
- iv) CPPs have higher fault level support when they are running in parallel with the grid supply. Because of the higher fault level, the voltage drop at load terminal is less when connected with the grid.
- v) The grid provides stability to the plant to start heavy loads like HT motors.
- vi) The variation in the voltage and frequency at the time of starting large motors and heavy loads, is minimized in the industry, as the grid supply acts as an infinite bus. The active and reactive power demand due to sudden and fluctuating load is not recorded in the meter.
- vii) The impact created by sudden load throw off and consequent tripping of CGP generator on over speeding is avoided with the grid taking care of the impact.
- viii) If the system is connected to the grid, it absorbs the transient load. Hence, grid enhances the life of CGP equipment.

4.1.4 Grid support being an ancillary service extended by the utility to the consumers, it has to be charged to the CPPs who utilise the grid support.

Methodology and Rate of Grid Support charges:

4.1.5 It is observed from the GCC report that the GSC is calculated by including the Artisans cost in the R&M cost.

4.1.6 However, as per the judgement of Hon'ble APTEL the parallel operation of the generators will affect the grid equipment which in turn will affect the R&M cost of the transmission licensee and distribution licensees and the Commission is of the view that the Artisans' cost should not be considered for arriving GSC.

4.1.7 In view of the above, the Commission has computed the GSC of Rs.15.50/kW/month by considering the total generation capacity connected to Telangana grid as on end of 31.03.2023 and actual R&M charges of TSTRANSCO and TSDISCOMs as shown below:

FY 2022-23	Actual R&M Cost (Rs. in crore)
TSSPDCL	154.00
TSNPDCL	116.44
TSTRANSCO	47.17
Total [A]	317.61
Contracted Capacity in MW [B]	17076.46
Grid Support charges Rs/kW/month [C=(A*10[^]/12)/(B*1000)]	15.50

4.1.8 In view of the above the Commission decides the GSC as detailed below:

Grid Support Charges (GSC) = power consumed by the co-located load x Rate of GSC (Rs./kW/month)	
Rate of GSC	Rs.15.50 per kW per month

Applicability

4.1.9 **Co-located captive plants**: The Hon'ble APTEL in its order dated 08.10.2015 in Appeal No.167 of 2014 held that GSC can only be levied on the CPPs which are inter-connected with their load and the utility grid by a point of common coupling. The relevant extract is given below:

"We further hold that the impugned petition, being Petition No.52/2013, is in reality, and letter and spirit, a clarificatory petition which cannot be said to be time barred. We further hold that the POCs can only be levied on the CPPs which are inter-connected with their load and the utility grid by a point of common coupling. Since, the Tawa Plant of the Appellant/petitioner is not inter-connected with its load/consumer and the utility grid by a point of common coupling, and hence, the POCs cannot be levied on the Tawa Plant of the Appellant".

Provided that GSC cannot be levied on:

A. Captive Power Plants (both Renewable and Conventional) which are not co-located.

B. IPPs (both Renewable and Conventional).

C. Solar Roof Top plants.

D. Generators which have PPAs with TSDISCOMs.

4.1.10 The reasoning for non-applicability of GSC on the above are given below:

A. **Non-Captive Plants**: As per Hon'ble APTEL order dated 14.12.2023 in Appeal No.228 of 2022 & I.A.No.1962 of 2023, I.A.No.722 of 2022, I.A.No.1014 of 2023 an IPP can be categorized as CPP only if the generating station is self-consuming more than 51% of what it generates, in case the IPP is consuming less than 51% of energy, it cannot be termed as a CPP and thus will not be liable to pay GSC.

B. Similarly, renewable energy plants including waste heat recovery (WHR) plants, the plants based on municipal solid waste (MSW), and the co-generation plants which do not qualify the conditions as stipulated under Rule 3(1)(a)(ii) of the Electricity Rules, 2005, cannot be termed as a CPP and thus will not be liable to pay GSC.

C. **Solar Roof-top**: The Commission has observed that the solar roof-top capacity in the State of Telangana is about 383 MW and believes that the State needs to encourage further capacity enhancement of roof-top solar power plants in Telangana. Thus, the GSC cannot be levied on Roof-top solar plants either under net-metering or gross-metering policy.

Capacity on which GSC can be levied:

- 4.1.11 Hon'ble APTEL order dated 14.12.2023 in Appeal No.228 of 2022 & I.A.No.1962 of 2023, I.A.No.722 of 2022, I.A.No.1014 of 2023 states that GSC cannot be levied on the entire installed capacity as that would mean levying GSC even for the capacity which is sold to 3rd parties.
- 4.1.12 Hence, in view of the above the Commission is of the considered view that GSC can be levied on captive power plants and the levy shall be limited to only the power consumed by the co-located load.
- 4.1.13 At this stage, when the Retail Supply Tariffs are already fixed for FY 2023-24 and the Financial Year is at the fag end , the commission is not willing to determine GSC for FY 2023-24 and directs TSDISCOMs to file a separate petition for determination of GSC for FY 2024-25 onwards duly following the methodology approved in this order.

This Order is corrected and signed on this the 27th day of March, 2024.

Sd/-	Sd/-	Sd/-
(BANDARU KRISHNAIAH)	(M. D. MANOHAR RAJU)	(T. SRIRANGA RAO)
MEMBER	MEMBER	CHAIRMAN

//CERTIFIED COPY//

APPENDIX-A
Grid Coordination Committee Report dated 28.12.2022





**TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA::HYDERABAD - 82**

Website:www.tstransco.in CIN No.U40102TG2014SGC094248

From
Chair Person,
Grid Coordination Committee &
Director/Grid Operations,
TSTRANSCO,VidyutSoudha,
Khairatabad, Hyderabad-500082.
E-mail:ce.sldc@tstransco.in

To
Secretary,
Telangana State Electricity Regulatory
Commission (TSERC),
#11-4-660, 5th Floor,
Singareni Bhavan, Red Hills,
Hyderabad-500004.
E-mail:secy@tserc.gov.in

Lr.No.Dir(GO)/CESLDC/SESLDC/DEPP2/ADE-1/F.GCC/D.No. 76 /22,Dt:27.12.2022

Sir,

Sub: TSTRANSCO – SLDC - GCC – Direction by Hon'ble TSERC - Detailed study on the issue of Parallel Operation of CPPs and Consequent levy of Grid support charges - Final Report - Submitted - reg.

- Ref: 1) Lr. No. Secy/TSERC/JD (TE)/F.No.E-406508/D.No.509/22,Dt:16.09.2022.
2) Lr. No. Secy/TSERC/JD (TE)/F.No.E-406508/D.No.572/22,Dt:25.10.2022.
3) Lr. No. Secy/TSERC/JD (TE)/F.No.E-406508/D.No.638/22,Dt:14.11.2022.

In the references cited, Hon'ble TSERC directed Grid Coordination Committee (GCC) for submitting final report with specific recommendation on levy of Grid Support Charges (GSC) duly proposing the methodology for calculation of GSC.

In compliance to the above, GCC is here with submitting the final report with the following specific recommendation.

Methodology for Calculation of GSC:

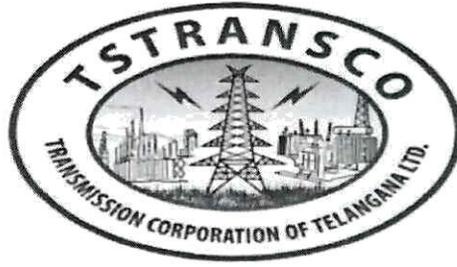
Grid Support Charges (GSC)	Differential Capacity x Rate of GSC (Rs./ kVA/ month)
Differential Capacity	Total Capacity of CPP in KVA –Contracted Maximum Demand in kVA with the Licensee - All other sources of supply - CPPs exporting firm power to TSTRANSCO
Rate of Grid Support Charges	25% of the prevailing demand charge for respective HT consumers

The final report is herewith submitted.

Encl: Final Report.

Yours faithfully,

msm
27/12
**Chair Person/GCC &
Director/Grid Operations
TSTransco**



TRANSMISSION CORPORATION OF TELANGANA LIMITED
STATE LOAD DESPATCH CENTRE

FINAL REPORT
ON
PARALLEL OPERATION
OF
CPPs & CONSEQUENT LEVY
OF
GRID SUPPORT CHARGES

Submitted By

TELANGANA STATE GRID
COORDINATION COMMITTEE

DECEMBER-2022

CONTENTS

Sl.No.	CHAPTER	PAGE NO.
1.	INTRODUCTION	2-3
2.	STAKE HOLDERS VIEWS	4
3.	GCC ANALYSIS AND STUDY	5-18
4.	PRESENTATION OF GCC ANALYSIS AND STUDY REPORT TO MEMBERS	19-24
5.	CONCLUSION	25-26
6.	SPECIFIC RECOMMENDATION	27-31

1. INTRODUCTION

Hon'ble TSERC vide letter dated 13.04.2022 directed Grid Coordination Committee(GCC) for a detailed study on the issue of Parallel Operation of CPPs and consequent levy of Grid Support Charges(GSC) and to submit a detailed report on or before 30.05.2022.

Further as per the request of Chair Person GCC for extension of time, Hon'ble TSERC vide letter dated 14.06.2022 granted extension of time to GCC and directed to submit detailed report on or before 30.07.2022. Copies enclosed as **Annexure -A**.

The background of the subject is as follows.

TSDISCOMs requested commission to allow levy of Grid Support Charges(GSC) for FY2022-23 based on the previous APERC order dated 08.02.2002 and Hon'ble Supreme Court judgement dated 29.11.2019 by mentioning the following content:

“Persons operating Captive Power Plants (CPPs) in parallel with T.S. Grid have to pay ‘Grid Support Charges’ for FY 2022-23 on the difference between the capacity of CPP in kVA and the Contracted Maximum Demand in kVA with Licensee and all other sources of supply, at a rate equal to 50% of the prevailing demand charge for HT Consumers. In case of CPPs exporting firm power to TSTRANSCO, the capacity, which is dedicated to such export, will also be additionally subtracted from the CPP capacity.”

The commission has taken note of above submissions made by TSDISCOMs along with other Retail Supply Tariff (RST) proposals and invited comments/suggestions/objections from stake holders, wherein they have requested the commission to undertake third party analysis before deciding on the levy of GSC as well as the quantum of such GSC.

Considering the above, Commission has decided to refer the matter to Grid Coordination Committee with a direction for a detailed study on the issue of parallel operation of CPPs and consequent levy of Grid Support Charges(GSC) and to submit a detailed report.

The directions of Hon'ble TSERC were complied by the GCC. Accordingly a study carried out and conclusions are explained under various chapters of this report.

2. STAKE HOLDERS VIEWS

To understand the issue GCC convened the 2nd GCC meeting through virtual mode on 11.05.2022 for taking the views of all the members.

Brief summary of 2nd GCC Meeting:

Initially TSDISCOMs presented their proposal to the forum and explained the circumstances under which the proposals were submitted to Hon'ble TSERC. GCC sought the views of the members of the committee on the proposals of TSDISCOMs. Accordingly the views of the members were recorded in the minutes. Certain members not represented in the second GCC meeting.

Further GCC also requested members to submit their written views on the deliberations. Accordingly, TSDISCOMs and Representative of Generating Companies – Thermal (other than state generating companies) submitted their written views.

It was understood from the deliberations that there are two issues to be studied by GCC. **One is Necessity of Grid Support (Technical Analysis) and the other is Quantum of charges/Reasonability of charges.**

It was decided to conduct next meeting, to further deliberate the subject on the above two dimensions. It is also conveyed that, in next meeting Member Convener, GCC will putforth the analysis to Committee Members.

With the above observations the second GCC meeting was concluded and the minutes was communicated to GCC members on 28.05.2022. Copy of 2nd GCC minutes of meeting is enclosed as **Annexure – B.**

3. GCC ANALYSIS AND STUDY

The committee analysed the views of members and data collected from various sources including Hon'ble CSERC order Dt: 31.12.2008 issued based on the study conducted by Electrical Research & Development Association(ERDA). The detailed report of ERDA study was obtained from Hon'ble CSERC and procedures being followed by various states collected from the authorized websites of respective state ERCs. The following are the topics analysed by GCC.

- a.** Proposals of TSDISCOMs regarding Grid Support Charges
- b.** Views of the Members
- c.** Levy of Parallel Operation Charges/ Grid Support Charges by various states across the Nation and their Methodology.
- d.** Analysed the M/s Electrical Research & Development Association (ERDA) study report on evaluation of Parallel Operation Charges in respect of Chattisgarh State during the year 2008.
- e.** Technical Study of Impact of CPP connectivity to the Grid.

The above topics are studied keeping in view of two aspects which were flagged during the 2nd GCC meeting, that are

A. Necessity of Grid Support.

B. Reasonability of Charges for Grid Support.

A. Necessity of Grid Support :

GCC analysed the impact of CPP connectivity to the Grid and whether Grid Support is required for Parallel Operation of CPP, through Power System Simulator for Engineering (PSS/E) software which is used at national level for Power System Planning.

The details are as follows.

PSS/E is a reputed software used as common platform across nation for planning studies, load flow analysis, dynamic studies and short circuit studies etc.. It is also being used in the day- to- day Power System operations for analyzing the impact of planned shut downs and contingency analysis etc.

GCC analysed the CPP behaviour using PSS/E software in two cases that is :-

- i) Connected in Parallel with Grid**
- ii) Operated in isolation**

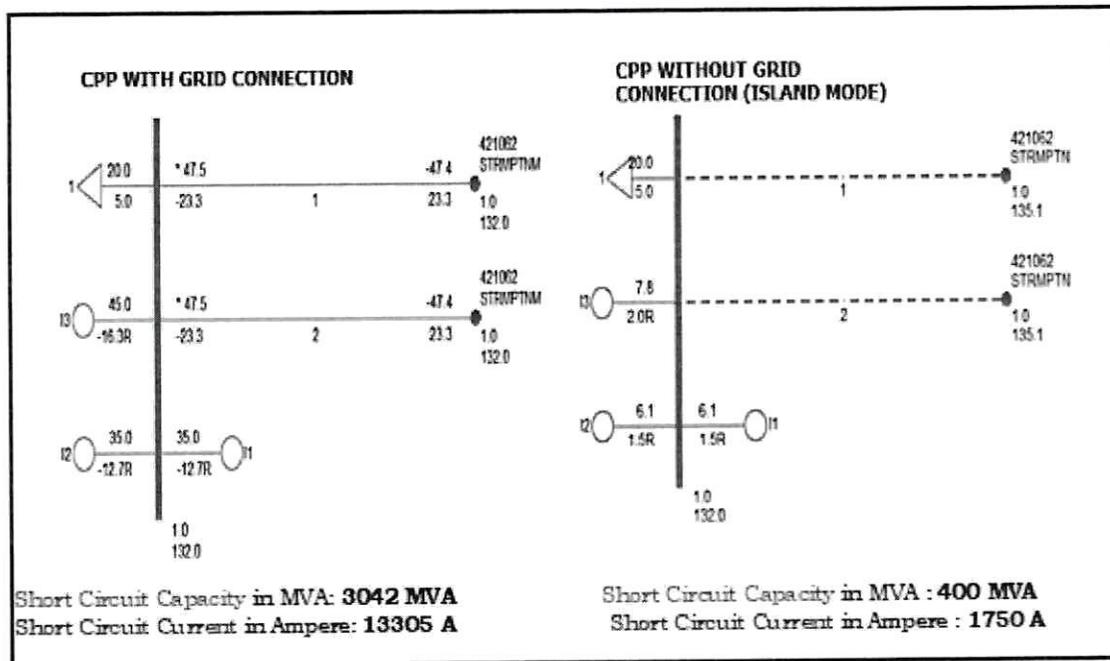
The following cases with Grid connection and Isolated mode of CPP plant are studied utilizing Generator and Exciter Models from Transmission Planning Criteria-2013 issued by Central Electricity Authority. The following assumptions considered while evaluating the issue using the Power System Simulator for Engineering (PSS/E) Software.

- a.** Isolated Telangana network is considered.
- b.** Three No. Units, 1 No. 50 MW & 2 No.'s 32 MW each capacity for CPP is considered.
- c.** All CPP units are operated in parallel.
- d.** CPP Generation is evacuated via double circuit with Grid.
- e.** For isolated case , above **(d)** is considered as opened.

Evaluation of Short Circuit Capacity:

The simulation was carried out to know how the short circuit capacity of CPP is with Grid Connection and without Grid Connection.

The short circuit level of CPP with and without Grid connectivity is computed using Power System Simulator for Engineering (PSS/E) as follows.



It is understood from the simulation studies that

- Basically the fault level has the significance of service provided by utility to captive power plants in terms of voltage regulation, stability, reliability and absorbing the load variation / fluctuation, etc. Most of the ancillary services are thus provided by the utility to the CPP through better fault level.
- Due to higher fault level of the grid at the point of common coupling, the flow of pollutants like harmonics, negative phase sequence current, etc. are absorbed by the grid due to low impedance path of the grid as compared to that of CPP generator.
- As the fault level of grid is higher, it results in better voltage regulation to CPP load.

It is understood from the above simulation studies that

Grid Connection Mode: With Outage of one unit at CPP, it is found that Grid & other units of CPP are stable, no prominent swings detected in the other units, with loss of generation at CPP.

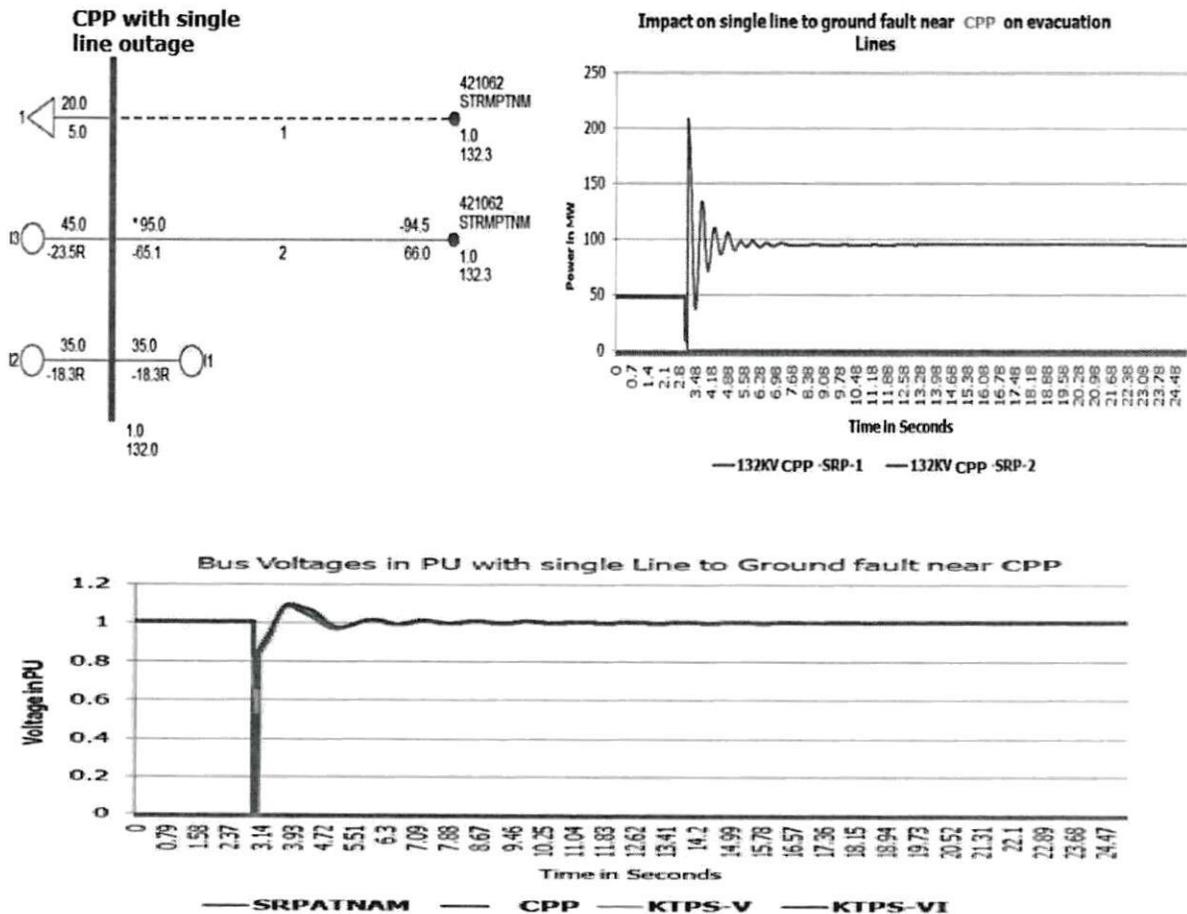
Isolated Mode: With Outage of one unit at CPP, other units are found unstable.

Hence it may be observed that stability of machines of CPP improves with Grid connection.

Evaluation of Stability with Single Line / Internal Faults:

The stability was further evaluated with line outage.

Grid Connection Mode:

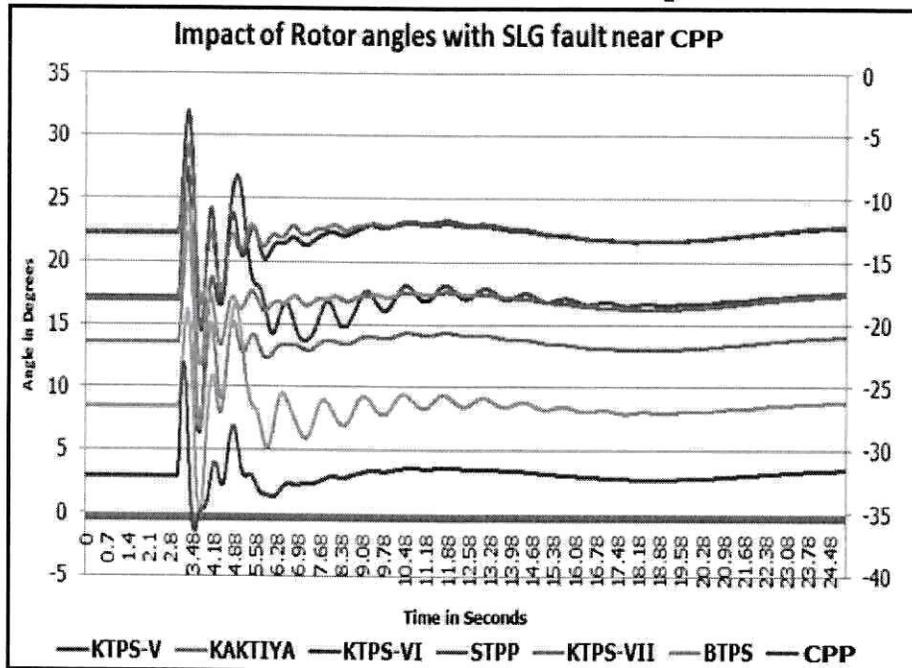


CPP Evacuation single Line Outage:

- Voltage is recovered after fault is cleared.
- Generators are found stable after fault.
- Other Evacuation line can cater load.

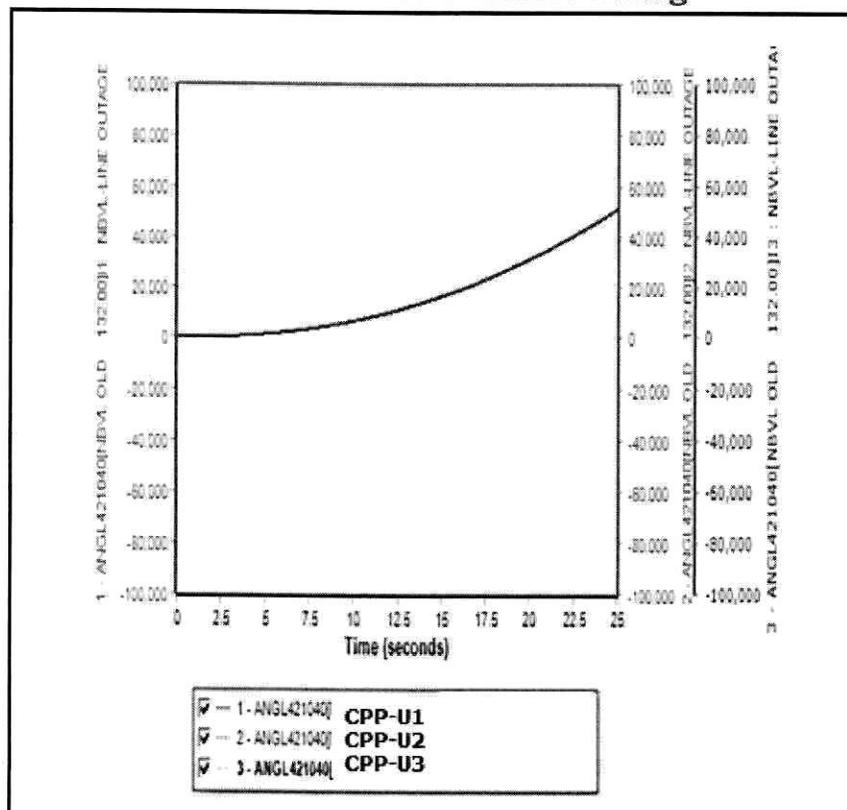
Line Outage near CPP end

Grid Connection Mode: Stable Operation



Internal cable/Line fault at CPP isolated

Isolated Mode: Unstable Swing



Thus it is observed from the above simulation studies that the units of CPP are having better stability, higher short circuit levels in the Grid Connection Mode, which implies that certain benefits were received by CPP which improves their operation of load, life of the equipment, stability of CPP units.

Finally it is noted from the three cases of PSS/E simulations that there is impact of connectivity of CPP to Grid or in other words, Grid Support is necessary for Parallel Operation of CPPs.

B.GCC STUDY ON REASONABILITY OF CHARGES FOR GRID SUPPORT:

Grid Support Charges based on various methods adopted in different States:

Scenario 1:

Andhra Pradesh Methodology:

Explanation: The parallel operation of the generators will affect the grid equipment which in turn will affect the R&M cost of the Transco and the DISCOMs.

Therefore, based on the total generation capacity connected to AP state grid as of 31.12.2021 and R&M charges of APTransco and the DISCOMs, the Commission has determined the Grid support charges/parallel operation charges.

Extract of Order Enclosed as Annexure-C(1).

Andhra Pradesh Method	Similar Methodology applied to Telangana
<p><u>R&M Cost Method:</u></p> <p>Methodology:</p> <p>POC = (Discoms R&M + Transco R&M) / (12 x Total Installed Capacity)</p> <p>POC charges = Total installed capacity of CPP x Rate of POC (Rs./ kW/ month)</p> <p>Approved Transco R&M Cost: Rs.224.39 Cr</p> <p>Approved Discoms R&M Cost: Rs.830 Cr</p> <p>Total Installed Capacity:16854MW</p> <p>POC Determined: Rs.52.13/kW/Month</p> <p>Tariff being implemented is as follows.</p> <p>a) RS. 50/kW/month for conventional generators</p> <p>b)RS. 25/kW/month for RE Generators</p> <p>c)RS. 15/kW/month for Rooftop Solar Generators</p>	<p><u>R&M Cost Method:</u></p> <p>for FY 2022-23</p> <p>Approved Transco R&M Cost including Artisans Employee cost :Rs.204 Cr</p> <p>Approved Discoms R&M Cost including Artisans Employee cost :Rs.788 Cr</p> <p>Total Installed Capacity:16355 MW</p> <p>Equivalent Value: Rs.50/kW/Month</p>

Scenario2:

Chhattisgarh Method -1:

Explanation:The parallel operation charges are calculated considering the base MVA support provided by the utility to the CPP, base MVA support provided by the CPP to the utility grid and 'no load losses' of power transformers in financial terms.

Commission agrees with the recommendation of ERDA and comes to the conclusion that the rates of parallel operation charges should be as derived on the basis of Base MVA Support method.

Copy of Order enclosed as Annexure-C(2) & C(3).

Chhattisgarh Method -1	Similar Methodology applied to Telangana
<p><u>Base MVA Method:</u></p> <p>Fault level in electrical system is analogous with the shock absorbing capacity of mechanical system. The fault level in MVA corresponds to the fault current flowing through the power system in the event of a short circuit in the system. The higher fault level is the significance of better voltage profile. In this method, base MVA support on the basis of fault level has been calculated.</p> <p>Steps for calculating PoC charges -</p> <p>1.Base MVA (A) = Fault level at Point of Common Coupling (PCC) x Transient Reactance</p>	<p>On the Same principles of Base MVA Method with some assumptions, the POC arrived as Rs.102/kVA/Month</p>

Where, fault level at PCC is equal to the difference between the fault level in MVA with grid interconnection and fault level contributed by CPP.

2.MVA support required by CPP from grid is equal to the installed capacity (B) of the CPP.

3.Minimum of support available and support required by CPP(C). $C = (A)$ or (B), whichever is minimum

4.Total support provided by utility to CPP in financial terms, $D = \text{Transmission related fixed charges per kVA per month} \times \text{minimum support required "C"} \times 1000$

5.Base MVA support provided by CPP to utility, $E = (\text{Installed capacity of CPP} \times \text{Fault level contributed by CPP}) / (\text{Fault level in MVA at PCC})$

6.Total support provided by CPP to utility to CPP in financial terms,

$F = \text{Transmission related fixed charges per kVA per month} \times \text{Base MVA support provided by CPP "E"} \times 1000$

7.Net grid support charges per month to be paid to utility by CPP, $G = \text{Base MVA support provided by utility in financial terms} - \text{Base MVA support provided by CPP in financial terms}$ i.e., $G = D - F$.

8.The average cost of no load loss is to be paid additionally as the no load loss of

power transformer is always present irrespective of quantum of load, installed capacity, Contracted Demand, export etc.

9. Rate of Parallel Operation Charge (POC)
in Rs. per kVA per Month = (Charges for net support received by CPP in Rs. / Installed capacity in kVA) + No load charges per kVA

POC Charges = Rate of POC in Rs. per KVA per month X (Installed capacity of CPP in KVA – Contracted demand taken by CPP from utility in KVA – Contracted export power by CPP to utility in KVA)

Tariff being implemented is
Rs.21/kVA/Month

Scenario3:

Chhattisgarh Method – 2:

Explanation: The power generated by CPP can be utilized for auxiliary consumption, captive load, non-captive load, supply to utility and for interstate sale. In case of elimination of supply for auxiliary consumption, supply to utility and power for interstate sale, the balance remains power supply to captive and non-captive loads of CPP, and this can be specifically identified as an element for payment of POC.

Actual number of Units consumed by captive and non-captive loads =
Gross units generation - Auxiliary Consumption (subject to maximum of 10%) units - actual number of units sold to licensee under PPA – actual number of units sold through Inter-state open access

Keeping in view of difficulties in implementing the Parallel Operation charges calculation with the previous(Base MVA) method, certain petitions were filled. Accordingly, Hon'ble CSERC issued the order to follow the below method for calculation of Parallel Operation charges.

Extract of Order Enclosed as Annexure-C(4)

Chhattisgarh Method - 2 (Captive and Non Captive Consumption)	Similar Methodology applied to Telangana
<p><u>Methodology:</u> POC Rate (Ps./kWh) = CSPTCL ARR / Total Connected Load / Load Factor</p> <p>POC Charge = Actual no. of units consumed by captive and non-captive loads x Rate of POC (Ps./ kWh)</p> <p>Approved Transmission Cost:Rs.979.67 Cr Total Installed Capacity:8586MW POC Determined: Ps.13.02/kWh</p> <p>Tariff being implemented is Ps.13/kWh</p>	<p>for FY 2022-23 Approved Transmission Cost=3398.66 Cr</p> <p>Transmission Capacity Approved:16355MW</p> <p>Equivalent Value: Ps.23.72/kWh</p>

Scenario4:

Gujarat Method:

Explanation: Parallel operation is beneficial to the CPP and at the same time, it is true that some benefit is also accrued to the grid. Considering the Pari passu it is proposed to levy 50% of the transmission and distribution related fixed costs on the CPP.

Extract of Order Enclosed as Annexure-C(5).

Gujarat Method	Similar Methodology applied to Telangana
<p>Methodology: Based on Fixed Cost of Transco & Discom System and Connected Load</p> <p><u>Steps for calculating PoC charges –</u></p> <p>1.Fixed costs in Rs./kVA/Month (A) = Total fixed cost of Transmission and Distribution System ÷ Total connected load in the system (MVA)/12/1000</p> <p>2.Rate of Parallel Operation Charge (POC) in Rs. per kVA per Month = 50% x A</p> <p>3.Revenue from POC collected from CPPs, has to be allocated between the transmission and distribution systems in proportionate of their fixed costs</p> <p>4. POC charges = Installed capacity of CPP x Rate of POC (Rs./ kVA/ month)</p> <p>Transmission & Distribution Cost: Fixed Cost: Rs.1797.95Cr Connected load: 28275.29MVA</p> <p>Tariff being implemented is Rs.26.5/kVA/Month</p>	<p>for FY 2022-23 Transmission & Distribution Cost: Fixed Cost:Rs.13286 Cr</p> <p>Connected load:42882MVA Determined Value= Rs.258/kVA/Month</p> <p>POC Rate = 50% of Determined Value</p> <p>Equivalent Value:Rs.129/kVA/Month</p>

TSDISCOMs Latest Proposal to GCC.

The Captive Power Plants continue to get connected to the licensee network system and operate their plant in synchronism with the grid due to certain benefits which cannot be physically measurable. Thus, the grid acts as the supporting system for the CPPs for its successful operation in terms of electrical performances. However, the grid support being an ancillary service extended by the licensee to the consumers, it has to be charged to the consumers who utilize the grid support.

Further, TSDISCOMs explained the reasons in the 3rd GCC meeting for revision of proposal is that, earlier proposal to Hon'ble TSERC is on differential capacity i.e., Installed Capacity minus Contracted Demand with Discom was as per the Hon'ble APERC Order of year 2002. Even it is on differential capacity, most of the generators thought that DISCOMs proposed very high charges. By keeping those considerations, DISCOMs proposed in line with other states, is as follows.

TSDISCOMs proposal	
Grid Support Charges (GSC)	Total installed capacity of generator x Rate of GSC (Rs./ kW/ month)
Rate of Grid Support Charges	15% of Demand Charge (Conventional generators) 10% of Demand Charge for HT (Rooftop Solar under net metering/gross metering, RE plants including WHRP, Municipal solid waste, Co-gen, etc.) 50% of Fixed Charge for LT(Rooftop Solar under net metering/gross metering)

4. PRESENTATION OF GCC ANALYSIS AND STUDY REPORT TO MEMBERS

GCC organized a 3rd meeting on 16.07.2022 at 14:00Hrs at Vidyut Soudha, to present analysis and study report to members and further deliberate the issue of Parallel Operation of CPPs and consequent levy of Grid Support Charges(GSC).

During the meeting Member Convener, GCC explained the brief background of the subject, the views expressed by members in the 2nd GCC meeting, data collected from various sources, Hon'ble Chhattisgarh State Electricity Regulatory Commission Report, data submitted by TSDISCOMs, Analysis and Study report carried out by SLDC along with advantages to CPPs and advantages to Utility in Parallel Operation of CPP with Grid. The subject is putforth in the meeting for deliberation by members.

The following are the views/opinions expressed by GCC Members.

A) Representative of Generating Companies – Thermal (other than state generating companies):

General Manager/Commercial/ Nava Bharat Energy India Limited, Representative of Thermal Generating Companies, presented the following views:

Grid support is required for a shorter period. For export of surplus power & for import of start-up power grid support is required. The fluctuations/harmonics are not only absorbed by the grid but also by CPPs.

Representative requested for a Detailed System Study by Third Party for analysing the issue of Grid Support.

Regarding charges member expressed the following views.

Grid Support Charges are being collected in different states by different methods and at the same time there is no charges being collected in so many states like Karnataka, Odisha, West Bengal etc.

i) Recently Andhra Pradesh issued order for Parallel Operation Charges as Rs.50/kW/month considering R&M Cost. Based on this method TSDISCOMs arrived Rs.50/kW/month including Artisan Employee Cost. It is Requested for excluding the Artisan Employee Cost.

ii) Requested for delink this percentage from the Demand Charges and arrive a fixed number. Few of the states have in the range of Rs.20 to Rs.30 and Andhra Pradesh has Rs.50/kW/month.

iii) Requested to limit the charges to Captive Load of the CPP, as the entire installed capacity is not used for captive consumption purposes.

In summary, representative submitted the following to GCC:

1. Not to impose Grid Support Charges on CPPs.
2. For Detailed System Study by Third Party.
3. Delinking the charges from percentage of Demand Charges and arrive a fixed Number.
4. For more than 2 months in a year if the plant is under shut down, exempt the levy of the charges for the Shut Down Period.
5. In case Hon'ble TSERC considers the proposals of DISCOMs, to Limit Grid Support Chages to Rs.20 to Rs.25 (max) per kW per month.

6.Limit the levy of Grid Support Chages to Captive Load of the CPP.

7.Exempt the export capacity from purview of levy of Grid Support Charges.

Further, Representative of Thermal Generating Companies vide letter dated 21.07.2022 submitted their written submissions.

B) TSDISCOMs

TSSPDCL

Member Convener, GCC requested TSDISCOMs to explain the reason for submitting the revised proposal dated 07.07.2022.

TSDISCOMs explained that, earlier proposal to Hon'ble TSERC is on differential capacity i.e., Installed Capacity minus Contracted Demand with Discom, was as per the Hon'ble APERC Order of year 2002. Even it is on differential capacity, most of the generators thought that DISCOMs proposed very high charges. By keeping those considerations, DISCOMs proposed in line with other states. Final proposal submitted to GCC on 07.07.2022, for submitting the same to Hon'ble TSERC.

The request of Member representing Generating Companies – Thermal, to refer the matter for analysis to third party, is highly objectionable. Hon'ble Supreme Court issued judgement after thorough analysis. The views of member is such that not honouring the judgement of Hon'ble Supreme Court. Further informed the forum that many other states are also levying Grid Support Charges.

TSNPDCL

It was informed the forum that Grid Support charges are facilitation charges and not penalty, as pointed out by Member representing Generating Companies – Thermal. There are various judgements including Hon'ble Supreme Court Judgement. Grid Support Charges are certainly leviable on CPPs.

Further, TSDISCOMs vide letter dated 26.07.2022 communicated their written submissions with regard to the proposal of levy of Grid Support Charges.

C) CESS, Siricilla – CESS agreed that Grid Support is required. Regarding Charges proposals of DISCOMs are agreed.

D) Representative of Generating Companies – Solar:

Renew Power Ltd. representatives informed that, technically Grid Support is required. But even running in island mode when the plant trips, for startup definitely Grid Support is required. Further requested Solar Captive Power Plants has to be exempted from levy of Grid Support Charges.

E) Representative of State Generating Companies - TSGenco:

TSGenco informed forum that, Grid Support is required. With respect to charges TSGenco agreed with the proposal of DISCOMs.

F) Representative of STU & Person Nominated by Hon'ble TSERC under clause 5.3(n) – Chief Engineer/Transmission:

Chief Engineer/Transmission/TSTransco informed forum that, Grid Support is required & agree with DISCOMs Proposal.

G) Southern Regional Load Despatch Centre – Representative of SRLDC informed the forum that, they will be limiting to technical part only.

Beyond doubt Grid Support is required, interms of studies regional level, national level PSS/E software is only used. Further the PSS/E software is used across nation for technical studies.

With respect to short circuit level, definetly there is contribution from CPP also but the level of contribution as compared to grid would be in different scale.

Interms of Voltage support and interms of stability also Grid support is required. Even for the black start also it is required.

With respect to charges it was informed that, we will not be able to comment.

H) Southern Regional Power Committee - Representative of SRPC informed the forum that, Grid Support is required. Further vide mail dated 19.07.2022 SRPC communicated their Observations/Comments on the agenda. In the written observations it is mentioned that, by parallel operation of CPPs with Grid there are many advantages to CPPs in meeting technical requirements during operation similar to other generating stations connected to the integrated grid and CPPs also contribute to the grid during parallel operation (may not be much appreciable as the capacity connected is meager considering the large grid).

Parallel Operation Charges may be included in the connectivity charges as reliability charges.

I) Singareni Thermal Power Plant – Representative of STPP informed that Grid Support is required.

J) NSL Krishnaveni Sugars Ltd., Representative of Bagasse Generating Companies

Grid support is needed, with respect to charges Rs./kVA/Month (Gujarat Method) will be preferable.

K) MRF Ltd., Representative of Open Access Consumers

As far as stability is concerned, Grid support is required.

L) There is no representation from the following members of GCC:

a) M/s PTC India Ltd. – Trader Member

b) Gowthami Bio Energies Pvt. Ltd., Representative of Biomass Generating Companies

c) Mytrah Vayu (Godavari) Ltd., Representative of Wind Generating Companies

d) SLS Power Corporation Ltd., Representative of Mini Hydel Generating Companies

Copy of 3rd GCC minutes of meeting enclosed as Annexure – D.

5. CONCLUSION

GCC being a forum consisting members representing various entities connected to the Grid and analysed the subject in a thorough manner in accordance with directions of Hon'ble TSERC.

GCC organized two coordination meetings and the members were actively involved in the deliberations of the subject and expressed their opinions/submitted their written views.

GCC organized the first meeting on Dt:11.05.2022 on the subject to understand the issue and for taking the views of members. GCC analysed the views expressed/submitted by members, TSDISCOMs Proposals on the issue and Data from various Sources. A detailed presentation was presented by Member Convener, GCC during the second meeting held on Dt:16.07.2022. The issue was discussed elaborately.

The summary of deliberations and recommendations are as follows:

- a) After going through the Analysis and Study Report, all the members present are accepted for Technical Support of Grid for Parallel Operation keeping in view of Stability, Reactive Power Management, Fault level support to CPPs.**
- b) In respect of Grid Support Charges, majority members are accepted for levy of charges for Parallel Operation and expressed that the charges shall be reasonable.**
- c) TSDISCOMs proposed levy of charges for full capacity of CPP instead of differential capacity by reducing the initial proposed 50% of Demand Charge to 15% of Demand charge.**

Further TSDISCOMs have introduced Grid Support Charges to the following Generators.

- i) 10% of Demand Charge for HT (Rooftop Solar under net metering/gross metering, RE plants including WHRP, Municipal solid waste, Co-gen, etc.)**
 - ii) 50% of Fixed Charge for LT (Rooftop Solar under net metering/gross metering)**
- d) Some of the members requested to limit the levy of charges to Captive Load (for avoidance of doubt Captive Capacity) of the CPP.**

6. SPECIFIC RECOMMENDATION

Further to the detailed Report submitted by Grid Coordination Committee(GCC) vide letter Dt:05.08.2022 on the issue of Parallel Operation of CPPs and consequent levy of Grid Support Charges(GSC), Hon'ble TSERC vide letter dated 05.09.2022 directed GCC to give detailed presentation on the Report on 07.09.2022.

Accordingly, GCC presented the Report to Hon'ble TSERC in a detailed manner. Subsequently, Hon'ble TSERC vide letter dated 16.09.2022 opined that the report of GCC is incomplete and directed the GCC to submit its final report with specific recommendation on levy of Grid Support Charges duly proposing the methodology for calculation of GSC to the commission on or before 30.09.2022.

Further as per the request of Chair Person GCC for extension of time, Hon'ble TSERC vide letter dated 25.10.2022 granted extension of time to GCC and directed to submit final report on or before 30.10.2022. Subsequently, GCC requested to grant an additional 20days time for submission of final report.

In this Connection GCC submits the following:

Keeping in view of conclusions during GCC meeting held on Dt:16.07.2022, indicated at items (a), (b) & (d) of above chapter to limit the Grid Support Charges to a reasonable amount, in line with other states and also Hon'ble TSERC direction to limit the GCC recommendation to the extent of terms of reference to the committee about finalisation of Methodology and Charges with reference to proposal of Discoms during

Retail Supply Tariff Proposals, the specific methodology proposed by GCC is as follows.

Methodology for Calculation of GSC:

Grid Support Charges (GSC)	Differential Capacity x Rate of GSC (Rs./ kVA/ month)
Differential Capacity	Total Capacity of CPP in KVA –Contracted Maximum Demand in kVA with the Licensee - All other sources of supply - CPPs exporting firm power to TSTRANSCO
Rate of Grid Support Charges	25% of the prevailing demand charge for respective HT consumers

Justification for levying on Differential capacity:

- The Captive generating plant is defined in the Electricity Act 2003 as

“Captive generating plant” means a power plant set up by any person to generate electricity primarily for his own use and includes a power plant set up by any co-operative society or association of persons for generating electricity primarily for use of members of such cooperative society or association”
- As per the above definition the generation from other sources of supply (if any taken) and the firm power exported to the TSTRASNCO (if any) cannot be considered as captive.
- Further as per the Electricity Rules 2005 clause (3) Requirements of Captive generation plant the captive user is explained as below:

“b. “Captive User” shall mean the end user of the electricity generated in a Captive Generating Plant and the term “Captive Use” shall be construed accordingly”

- As per the above definition and explanation, the wheeling quantum of the captive consumer from the respective captive plant will be treated as captive only.
- Considering the above, the proposed method for arriving captive capacity for levy of Grid support charges by TSDISCOMS is justifiable.
- Further, the list of captive power plants and working sheet for arriving differential capacity are herewith enclosed for perusal of Hon’ble TSERC.

Justification for Rate of Grid Support Charges:

- Keeping in view of the power crisis at that time, the central government and the then AP state government have notified Captive power policy. The CPPs were promoted by the government and permissions were accorded by State government /State ERC.
- Accordingly, various consumers have installed CPPs to meet their power requirement by operating the CPPs in parallel with the grid by duly de-rating their respective CMD with the DISCOMs considerably.
- In view of the above, the then APTRANSCO has proposed grid support charges for the first time to recover the fixed charges of the respective HT consumers at a rate of prevailing HT demand charges. The then State ERC after deliberations with all the stake holders finalized the rate to levy of grid support charges with the following methodology in Tariff order 2002-03

“The Commission approves the proposals of APTRANSCO to levy Grid Support Charges where parallel operation of CPPs is permitted, on the difference between the total capacity of CPP in kVA and the Contracted Maximum Demand in kVA with the Licensee and all other sources of supply, but at a rate equal to 50% of the prevailing Demand Charge for HT Consumers, (which at present is Rs.170 per kVA/month). In case of CPPs exporting firm power to APTRANSCO, the capacity, which is dedicated to such export, will also be additionally subtracted from the CPP capacity”, to strike balance between the CPPs and DISCOMs.

- It may be noted that, even though there is certain quantum of power wheeled through APTRANSCO grid as per the power purchase and wheeling agreements entered between APTRANSCO and certain generators at that point of time, the respective export quantum cannot be considered as “firm export power to APTRANSCO” in the above methodology as the wheeled quantum is uncertain and will vary in accordance with the load requirement.
- Aggrieved by the above order, certain generators approached various legal forums. The matter is pending before various legal forums from 2002 to 2019. Finally, Hon'ble Supreme Court upheld the power of State ERC to decide upon the wheeling charges and grid support charges matters in the year 2019.
- Since the Hon'ble Supreme Court upheld the tariff order 2002-03, the same methodology for grid support charges was proposed in RST 2022-2023 by TSDISCOMs.

➤ **These previous events are well deliberated and all the members accepted for technical support of grid and requested that charges shall be reasonable, in line with other states.**

Keeping in view of conclusions in the meetings, GCC recommend 25% of the prevailing demand charge for respective HT consumers instead of 50% of the prevailing demand charge proposed by Discoms, to strike balance between CPPs & Discoms.

*** * * * ***

Details of CPPs of TSSPDCL

Sl.No.	Name of the Captive Power Plant	SC.No	Type of fuel	Name of the Connecting Substation	Voltage level	Installed Capacity (MW)	Power factor	Installed Capacity (MVA)	Contracted Maximum Demand with Discom (MVA)	Export Capacity/Sale to Discoms (MVA)	Differential Capacity (MVA)
1	M/s Penna Cement Industries Ltd	NLG718	Coal (77) + WHRP (7)	132KV Ganeshpahad Switching station	132KV	84	0.8	105.00	10	0	95.00
2	M/s Home Industries Limited	SPT351	Coal (88.5) + WHRP (13.5)	132KV Vepalasingaram SS	132KV	102	0.8	127.50	10	0	117.50
3	M/s Sitapuram Power Limited (now Zuari Cements Limited)	SPT543	Coal	132/33 kV Sitapuram Switching SS	132KV	43	0.8	53.75	2.5	0	51.25
4	M/s The India Cements Ltd	NLG162	Coal (50.4 MW) + WHRP (9.625 kVA)	132/33 kV Wadapally SS	132KV	58.1	0.8	63.01	16	0	47.01
5	M/s Deccan Cements	SPT415	WHRP	132 kV Ganeshpahad Switching Sub Station	132KV	6.31	0.8	7.89	10.25	0	
6	M/s Bharath Electronics limited	SGR2363	Solar	220/132 KV Yeddumailaram SS	132KV	16.25	0.9	18.06	0.07	0	17.99
7	M/s Heritage Food Limited	SDP1950	Solar	33/11 KV Adavi Masjid SS	33KV	2.34	0.9	2.60	0.07	0	2.53
8	M/s Unshodaya Enterprises Limited	MBN1159	Solar	132/33 KV Midjil SS	33KV	10	0.9	11.11	0.07	0	11.04
9	M/s Vishaka Industries	NLG1053	Solar	132/33 KV Madgulapally SS	33KV	2.5	0.9	2.78	0.07	0	2.71
10	M/s Pennar industries	VKB1746	Solar	33/11KV Mominpet SS	33KV	2.5	0.9	2.78	0.07	0	2.71
11	M/s Tropical Flavour	RJN1982	Solar	132/33KV Amangal SS	33KV	1.2	0.9	1.33	0.07	0	1.26
12	M/s BVM energy & Residency Pvt Ltd	SGR2007	Solar	33/11KV Hatnoor SS	33KV	5	0.9	5.56	0.07	0	5.49
13	M/s Sarwottam Care Pvt Ltd	MCL2803	Solar	33/11 KV Ravikole SS	33KV	3	0.9	3.33	0.07	0	3.26
14	M/s Infosys Ltd	HBG2975	Solar	33/11 KV Singapore city SS	33KV	6.636	0.9	7.37	0.07	0	7.30
15	M/s JNTU	SGR2103	Solar	132/33 KV Annasagar SS	33KV	4	0.9	4.44	0.5	0	3.94

Details of CPPs of TSSPDCL

Sl.No.	Name of the Captive Power Plant	SC.No	Type of fuel	Name of the Connecting Substation	Voltage level	Installed Capacity (MW)	Power factor	Installed Capacity (MVA)	Contracted Maximum Demand with Discom (MVA)	Export Capacity/Sale to Discoms (MVA)	Differential Capacity (MVA)
16	M/s Bharath Dynamics Ltd	SGR2448	Solar	33 /11KV Nandigama SS.	33KV	5.1	0.9	5.67	0.07	0	5.60
17	M/s DRES Energy Pvt Ltd	MCL3069	Solar	220/132/33 KV Shapur SS, 33 /11KV D.P.Pally SS.	33KV	7.1	0.9	7.89	0.07	0	7.82
18	M/s DRES Energy Pvt Ltd	SGR2311	Solar	132/33 KV Sadasivpet SS, 33/11 KV Kamkole SS	33KV	8	0.9	8.89	0.07	0	8.82
19	M/s Mishra Dhatu Nigam Ltd	SRN3118	Solar	33/11 KV Lenin Nagar SS	33KV	4	0.9	4.44	0.07	0	4.37
20	M/s Bharath Dynamics Ltd	SRN3180	Solar	33/11 kV Mangalapally SS	33KV	5	0.9	5.56	0.07	0	5.49
21	M/s Sneha Renewable Energies	SPT1041	Mini Hydel	33/11 kV Keethavarigudem	33 kV	0.9	0.9	1.00	0.07	0	0.93
22	M/s SNS starch	GDL917	Bio Mass	33/11KV Kodandapur SS	33KV	4	0.9	4.44	1	0	3.44
23	M/s Bravo Energies Pvt Ltd	SPT1038	Mini Hydel	33/11 KV Huzurnagar SS	33KV	1.2	0.9	1.33	0.07	0	1.26
24	M/s Bambino Pasta Food industries Ltd	YDD846	Solar	132/33KV Bibingar SS	33KV	2	0.9	2.22	1.503	0	0.72
25	M/s BHEL	CBC2856	Solar	132/33KV RC Param SS	33KV	1.5	0.9	1.67	0.07	0	1.60
26	M/s Rain Cements Limited	SPT105	WHRP		132 kV	4.5	0.9	5.00	12.5	0	
27	M/s Sai Deepa Rock Drills Pvt Ltd	YDD1170	Solar	33/11 KV Pedda thanda SS	33KV	1.1	0.9	1.22	0.07	0	1.15
28	M/s NVNR-I	YDD1315	Solar	132 /33 KV Ramannapet SS.	33KV	15	0.9	16.67	0.07	0	16.60
29	M/s NVNR-II	YDD1316	Solar	132 /33 KV Ramannapet SS.	33KV	15	0.9	16.67	0.07	0	16.60
30	NCL Industries	SPT209	WHRP		132 kV	11	0.9	12.22	25.35	0	
						421		499	66	0	443

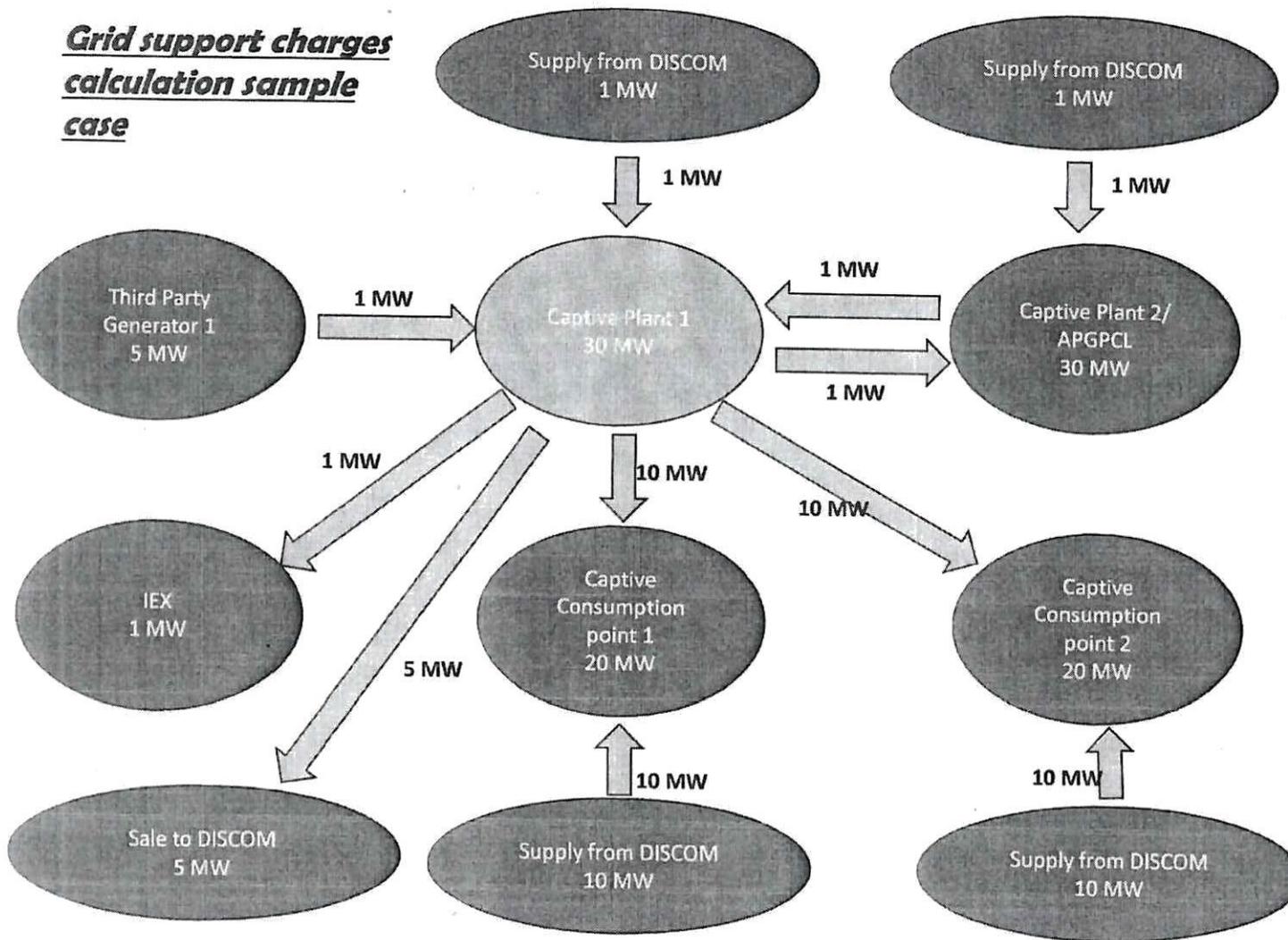
Details of CPPs of TSNPDCL

Sl.No	Name of the Captive Power Plant	S.C.No.	Type of fuel	Voltage level	Name of the Connecting Substation & Voltage Level	Installed capacity in MW	Power factor	Installed Capacity (MVA)	Contracted Maximum Demand with Discom (MVA)	Export Capacity/Sale to Discoms (MVA)	Differential Capacity (MVA)
1	M/s. Sirpur Paper Mills Ltd.	<u>KMB-001 (New)</u> ADB-009 (Old)	80% Coal 20% Bio-Mass	132KV	132/33KV SS Sirpur	24.50	0.8	30.63	6.000	0	24.625
2	M/s. Orient Cement	<u>MCL-007 (New)</u> ADB-018 (Old)	Coal	132KV	132/33KV SS Bellampally	50.00	0.8	62.50	6.000	0	56.500
3	M/s Luxmi Tulasi Agro Paper Limited	<u>BKM-049 (New)</u> KMM-305 (Old)	80% Coal 20% Bio-Mass	33KV	132/33KV SS Aswaraopet	16.00	0.8	20.00	0.800	0	19.200
4	M/s Kesoram Cements	<u>PDL-002 (New)</u> KRN-002 (Old)	Coal	132KV	132/33KV SS Malyalpally	15.70	0.8	19.63	6.200	0	13.425
5	M/s Navabharat Ventures Ltd.	<u>BKM-001 (New)</u> KMM-026 (Old)	Coal	132KV	220/132/33KV SS Seetharampatnam	114	0.8	142.50	2.000	0	140.500
6	M/s Heavy Water Plant	<u>BKM-013 (New)</u> KMM-039 (Old)	93.4 MW Coal 12 MW Solar	220KV	220/132KV SS Managuru	93.4	0.8	116.75	8.000	0	108.750
7	M/s ITC Ltd.	<u>BKM-011 (New)</u> KMM-036 (Old)	80% Coal 20% Bio-Mass	132KV	220/132 KV SS Seetharampatnam	145.2	0.8	181.50	15.000	0	166.500
8	M/s Gayathri Sugars Limited	KMR134	Bagasse	33 KV	132/33KV SS Kamareddy	9	0.8	11.25	1.000	7.50	2.750
9	M/s. Ramagundam Fertilizers & Chemicals Ltd.	PDL-250	Gas Turbine Generator	220KV	220/132 KV RSS Malyalalpally	27.5	0.8	34.38	30.000	0	4.375
10	M/s. Valens Molecules Pvt. Ltd., (Formerly M/s POSH Chemicals P Ltd.)	KMR-053/75 KVA	Solar	33KV	33/11 KV SS Rajampet	1	0.9	1.11	0.075	0	1.036

Details of CPPs of TSNPDCL

Sl.No	Name of the Captive Power Plant	S.C.No.	Type of fuel	Voltage level	Name of the Connecting Substation & Voltage Level	Installed capacity in MW	Power factor	Installed Capacity (MVA)	Contracted Maximum Demand with Discom (MVA)	Export Capacity/Sale to Discoms (MVA)	Differential Capacity (MVA)
11	M/s. Hyderabad Institute of Oncology Pvt. Ltd.	KMM-1173/70 KVA	Solar	33KV	33/11 KV SS Beerolu	1	0.9	1.11	0.070	0	1.041
12	STPP	ADB-132/28MVA	Solar	33KV	132/33 KV SCCL SS	10	0.9	11.11	28.000	0	
13	Manuguru, Bhadradi Kothagudem Dist.	BKM-163	Solar	132KV	220/132/33 KV Manuguru SS	30	0.9	33.33	0.150	0	33.183
14	Ramagundam, Peddapally Dist	<u>PDL-001 /46 MVA</u>	Solar	132KV	132/33 KV OCM SS	50	0.9	55.56	46.000	0	9.556
15	Yellandu, Bhadradi Kothagudem Dist.	BKM-169	Solar	132KV	132/33 KV Yellandu SS	39	0.9	43.33	0.300	0	43.033
16	Bhupalapally, Jayashankar Bhupalapally Dist.	BPL-098	Solar	33KV	132/33 KV Chelpur SS	10	0.9	11.11	0.150	0	10.961
17	Kasipet Mine, Mandamarri area, Mancheri Dist.	MCL-127	Solar	33KV	132/33 KV Bellampally SS	15	0.9	16.67	0.100	0	16.567
18	Mandamarri, Mancheri Dist.	ADB-132/28MVA	Solar	132KV	132/33 KV SCCL SS	28	0.9	31.11	28.000	0	3.111
19	Kothagudem, Bhadradi Kothagudem Dist.	BKM-180	Solar	132KV	220/132/33KV SS Seetharampatnam	37	0.9	41.11	0.250	0	40.861
						716.30		864.68	178.10	7.50	695.97

Grid support charges calculation sample case



For Captive plant 1 :

Installed capacity: 30 MW
Power from all sources : 3 MW

Taken from 3 sources

1. DISCOM: 1MW
2. Captive plant 2: 1 MW
3. Third party Generator: 1MW

Auxiliary consumption : 3 MW

Open Access to

Captive consumption point 1: 10 MW

Captive consumption point 2: 10 MW

Captive plant 2/APGPCL: 1 MW

IEX sale: 1 MW

Sale to DISCOM: 5 MW

The capacity for which the Grid support charges is to be levied =

installed capacity - Power from all sources (not captive generation for that particular plant) - power sold through IEX (not captive consumption)- Firm export to Grid (not captive consumption).

$$= 30 \text{ MW} - 3 \text{ MW} - 1 \text{ MW} - 5 \text{ MW}$$

$$= 21 \text{ MW}$$

APPENDIX-B
Grid Coordination Committee Report dated 07.10.2023





**TRANSMISSION CORPORATION OF TELANGANA LIMITED
VIDYUT SOUDHA::HYDERABAD - 82**

Website:www.tstransco.in CIN No.U40102TG2014SGC094248

From
Chair Person,
Grid Coordination Committee &
Director/Grid Operations,
TSTRANSCO,Vidyut Soudha,
Khairatabad, Hyderabad-500082.
E-mail:ce.sldc@tstransco.in

To
Secretary,
Telangana State Electricity Regulatory
Commission (TSERC),
#11-4-660, 5th Floor,
Singareni Bhavan, Red Hills,
Hyderabad-500004.
E-mail:secy@tserc.gov.in

Lr.No.Dir(GO)/CESLDC/SESLDC/DEPP2/ADE-1/F.GCC/D.No.72/23,Dt:07.10.2023

Sir,

Sub: TSTRANSCO – SLDC - GCC – Direction by Hon'ble TSERC – Levy of Grid Support Charges for FY 2023-24 - Detailed analysis - Final Report - Submitted - reg.

- 1) Lr.No.Dir(GO)/CESLDC/SESLDC/DEPP2/ADE-1/F.GCC/D.No. 76/22,
Dt:27.12.2022
2) Lr. No. Secy/TSERC/JD (TE)/F.No.E-565019/D.No.321/23, Dt:10.05.2023.
3) Lr.No.Dir(GO)/CESLDC/SESLDC/DEPP2/ADE-1/F.GCC/D.No. 34/23,
Dt:20.06.2023
4) Lr. No. Secy/TSERC/JD (TE)/F.No.E-565019/D.No.449/23, Dt:04.07.2023.

In the reference (1) cited, Grid Coordination Committee (GCC) submitted final report after detailed analysis, on Levy of Grid Support Charges (GSC) for FY 2022-23. Subsequently, Hon'ble TSERC vide references (2) & (4) cited, directed GCC for a detailed analysis on the issue Levy of Grid Support Charges (GSC) for FY 2023-24 and to submit a final report.

In compliance to the above, GCC conducted 2No. Coordination meetings for deliberating the issue elaborately by the forum. The summary of deliberations and recommendations are as follows:

- After going through the Technical Analysis and Study, all the members present are accepted for Technical Support of Grid for Parallel Operation keeping in view of Stability, Reactive Power Management, Fault level support for Conventional, Renewable Energy, Rooftop Solar Generators.
- In respect of Charges, majority members are accepted for levy of Grid Support Charges.
- It was agreed by majority members that, GCC may initially support the Discoms Proposal and based on the experience, we may request for any changes in future.

P.T.O.

TSERC HYDERABAD
INWARD
- 9 OCT 2023
No. 104

In this Connection, GCC is here with submitting the final report with the following specific recommendation.

Methodology for Calculation of GSC:

Grid Support Charges (GSC)	Total Installed Capacity X Rate of Grid Support Charges (Rs./kW/month)
Rate of Grid Support Charges	<ul style="list-style-type: none">i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.ii. Conventional generators shall pay Rs.50 per kW per month.iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 per kW per month.iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.v. Co-gen sugar mills shall pay charges of Rs.25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two monthsvii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.

The final report is herewith submitted.

Encl: Final Report.
(Book Containing 100 Pages)

Yours faithfully,


**Chair Person/GCC &
Director/Grid Operations
TSTransco**



TRANSMISSION CORPORATION OF TELANGANA LIMITED
STATE LOAD DESPATCH CENTRE

FINAL REPORT
ON
LEVY OF
GRID SUPPORT CHARGES FOR
FY 2023-24

Submitted By

TELANGANA STATE GRID
COORDINATION COMMITTEE

OCTOBER-2023

CONTENTS

Sl.No.	CHAPTER	PAGE NO.
1.	INTRODUCTION	02-03
2.	STAKE HOLDERS VIEWS	04-05
3.	GCC TECHNICAL ANALYSIS AND STUDY	06-12
4.	PRESENTATION OF GCC ANALYSIS AND STUDY TO MEMBERS	13-16
5.	CONCLUSION	17
6.	SPECIFIC RECOMMENDATION	18-22

1. INTRODUCTION

Hon'ble TSERC vide letter dated 10.05.2023 directed Grid Coordination Committee(GCC) for a detailed analysis on the issue of Levy of Grid Support Charges(GSC) for FY 2023-24 and to submit a detailed report on or before 15.06.2023.

Further as per the request of Chair Person GCC for extension of time, Hon'ble TSERC vide letter dated 04.07.2023 granted extension of time to GCC and directed to submit detailed report on or before 16.08.2023. Copies enclosed as **Annexure -A**.

The background of the subject is as follows.

TSDISCOMs requested commission to allow levy of Grid Support Charges(GSC) for FY2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees as follows.

**Grid Support Charges = Total Installed Capacity X Rate of GSC
(Rs./kW/month)**

Rate of GSC:

- i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.
- ii. Conventional generators shall pay Rs.50 per kW per month.

- iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 kW per month.
- iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.
- v. Co-gen sugar mills shall pay charges of Rs.25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.
- vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.
- vii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.

The commission has taken note of above submissions made by TSDISCOMs along with other Retail Supply Tariff (RST) proposals and invited comments/suggestions/objections from stake holders, after considering the stake holder submissions, Commission has decided to refer the matter to Grid Coordination Committee for undertaking detailed analysis as the licensees proposed a different methodology and applicability.

Considering the above, GCC was directed for a detailed analysis on the issue and to submit a detailed report. The directions of Hon'ble TSERC were complied by the GCC. Accordingly a Technical Analysis, Study carried out and conclusions are explained under various chapters of this report.

2. STAKE HOLDERS VIEWS

To understand the issue GCC convened the 4th GCC meeting at Vidyut Soudha on 12.06.2023 for taking the views of all the members.

Brief summary of 4th GCC Meeting:

Initially TSDISCOMs presented their proposal to the forum and explained the circumstances under which the proposals were submitted to Hon'ble TSERC. It was mentioned that this time the levy is on Installed Capacity of the Generators. Further it was mentioned that the proposal is based on R&M Cost including Artisan Employee Cost.

In this regard, GCC sought the views of the members of the committee on the proposals of TSDISCOMs. During the deliberations certain members sought for a study from stability point of view for Renewable Energy Plants. Accordingly GCC noted the issue. The views of the members were recorded in the minutes. Certain members not represented in the fourth GCC meeting.

Further GCC also requested members to submit their written views on the deliberations. Accordingly, TSDISCOMs and Representative of Generating Companies – Thermal (other than state generating companies) submitted their written views.

It was understood from the deliberations that additionally TSDISCOMs brought all non conventional generators (Cogeneration Plants, Renewable Energy Plants, Rooftop Power Plants etc.) under this ambit. It was identified that **Necessity of Grid Support (Technical Analysis)** for Renewable Energy Plants is to be studied by GCC.

It was decided to conduct next meeting, to further deliberate the subject on the above dimension. It is also conveyed that, in next meeting Member Convener, GCC will putforth the technical analysis for Renewable Energy Plants to Committee Members.

With the above observations the fourth GCC meeting was concluded and the minutes was communicated to GCC members on 12.07.2023. Copy of 4th GCC minutes of meeting is enclosed as **Annexure – B**.

3. GCC TECHNICAL ANALYSIS AND STUDY

The committee analysed the views of members and based on the request of certain members of the GCC a technical Study was conducted using PSS/E Software for Solar Power Plants.

Technical study (Steady State & Transient Behaviour) conducted by SLDC using Power System Simulator for Engineering (PSS/E) Software is presented. This study consists Steady State Behaviour and Transient Behaviour of Grid connected Solar plants.

3.1 STEADY STATE BEHAVIOUR OF SOLAR PLANTS

A. REAL TIME BEHAVIOUR OF SOLAR PLANT AT VARIOUS GRID VOLTAGES

It is assumed that Solar Power Plants are operating at Unity Power Factor.

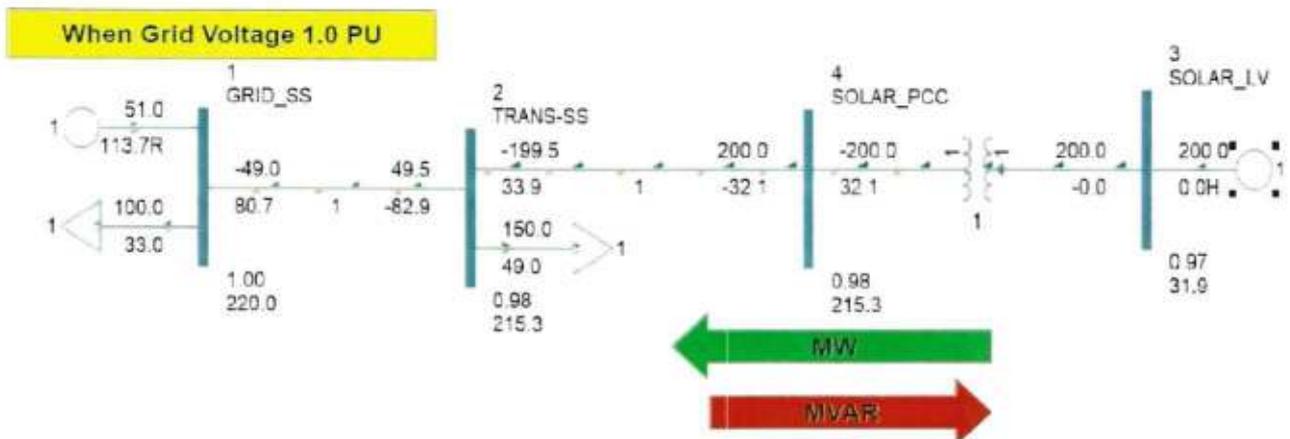


Fig. 1

Grid Voltage 1.05 PU

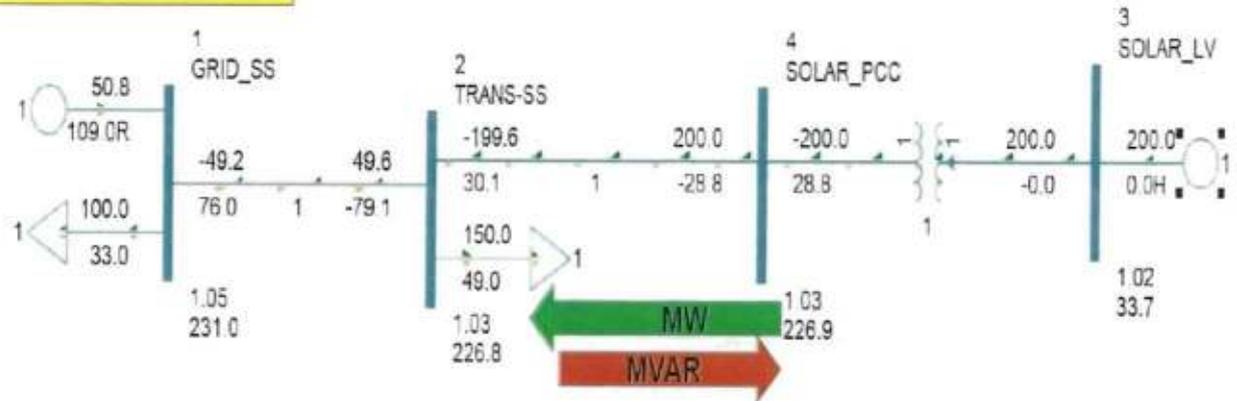


Fig.2

Grid Voltage 0.95 PU

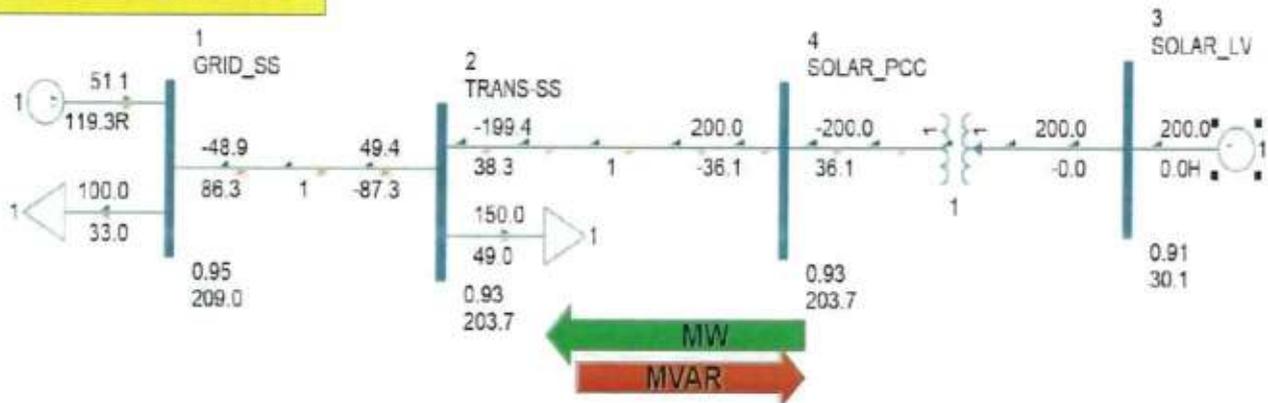


Fig.3

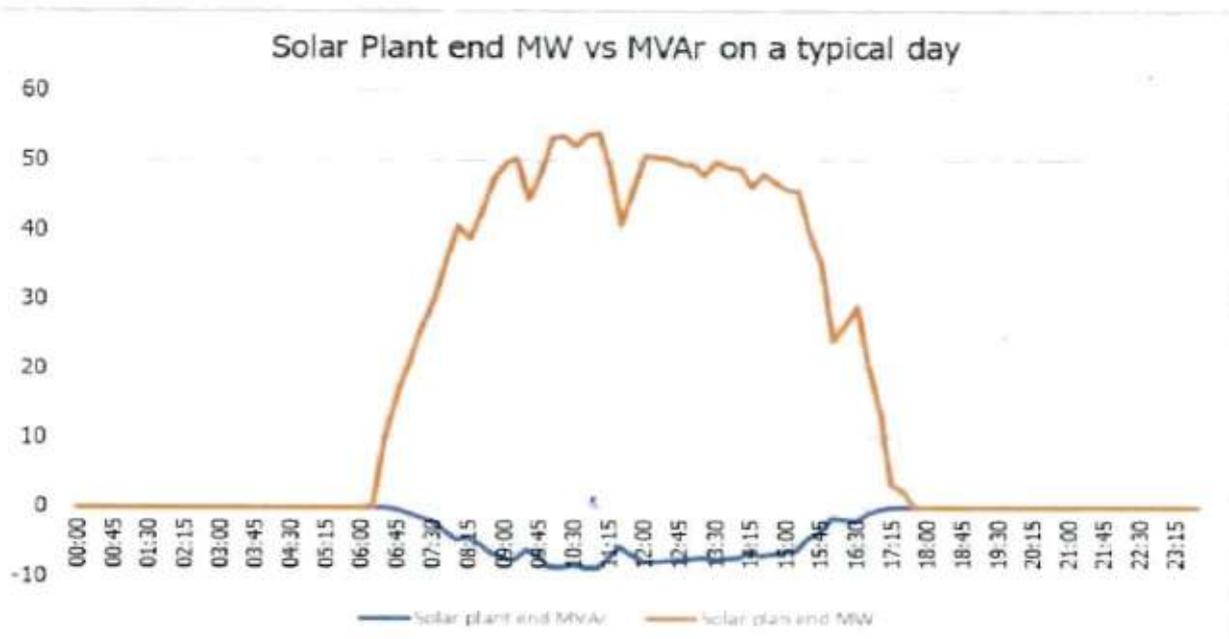


Fig.4

From the above figures it is observed that, all the time the Solar Power Plant is drawing reactive from Grid irrespective of voltage at the Grid sub station.

B. EXPECTED BEHAVIOR OF SOLAR PLANT AT VARIOUS GRID VOLTAGES

When Grid Voltage 1.0 PU

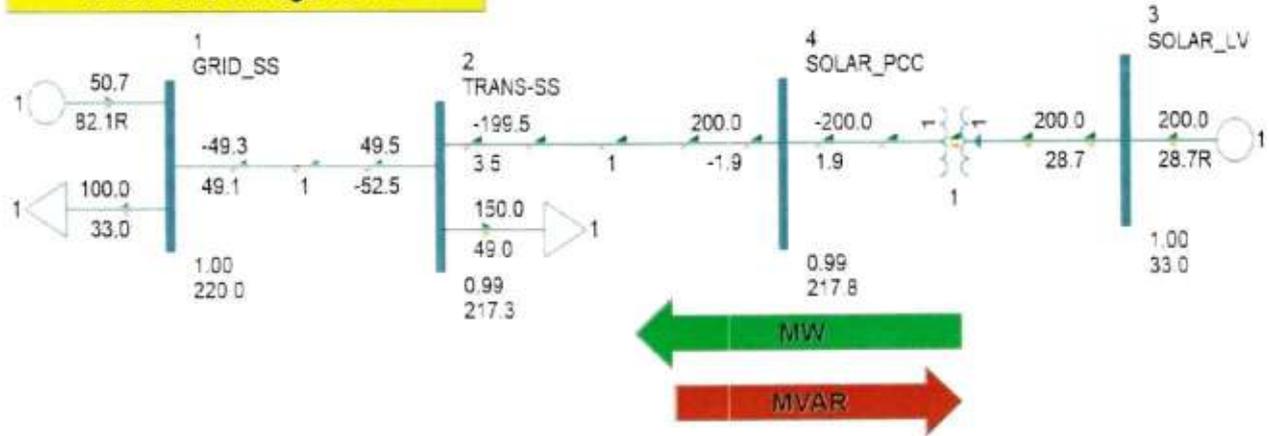


Fig.5

When Grid Voltage 1.05 PU

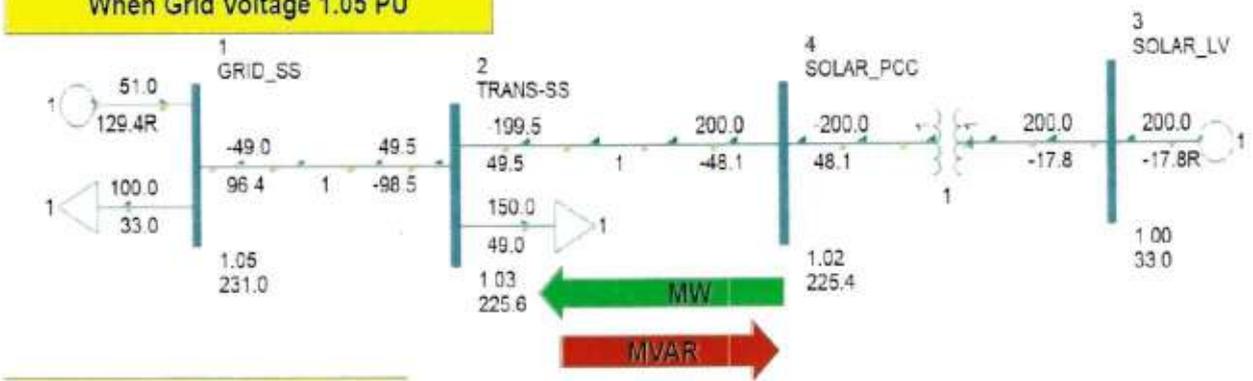


Fig.6

When Grid Voltage 0.95 PU

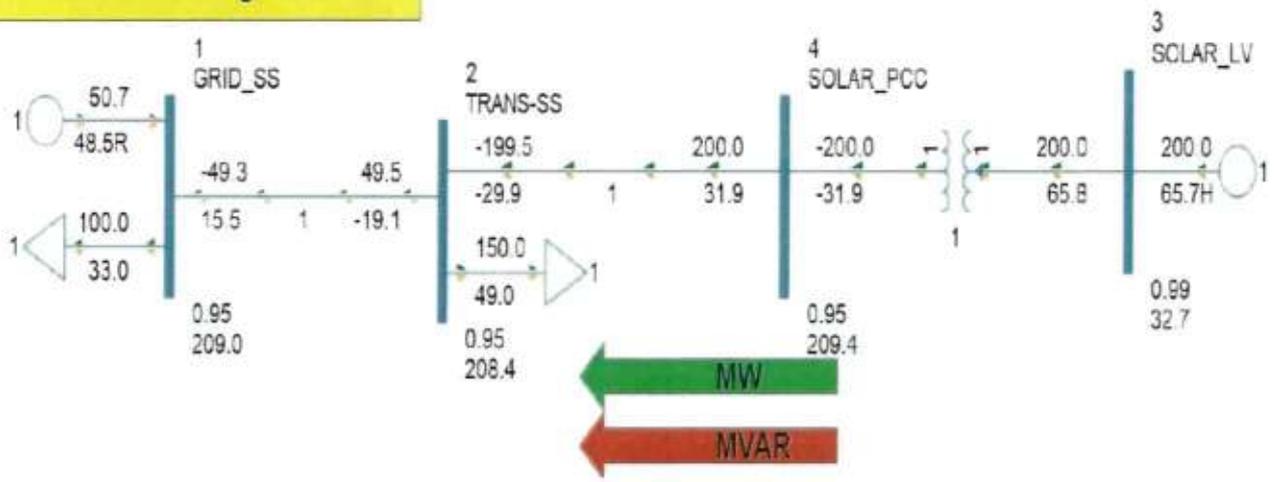


Fig.7

From the above figures it is observed that, the Solar Power Plant is injecting Reactive Power when the grid voltage is Lower than nominal voltage and drawing Reactive Power when the grid voltage is equal to or Higher than nominal voltage.

3.2 TRANSIENT BEHAVIOUR OF SOLAR PLANTS

With the outage of Grid Connection/Source failure to the Solar power plant it is seen from simulation studies that the Power Angle of bus is getting diverged and also Voltage instability is observed.

**ANGLE DYNAMICS PLOT
DURING TRIPPING OF RADIAL LINE FROM GRID CAUSING SEVERE
INSTABILITY AND SOLAR PLANT ISOLATION FROM GRID**

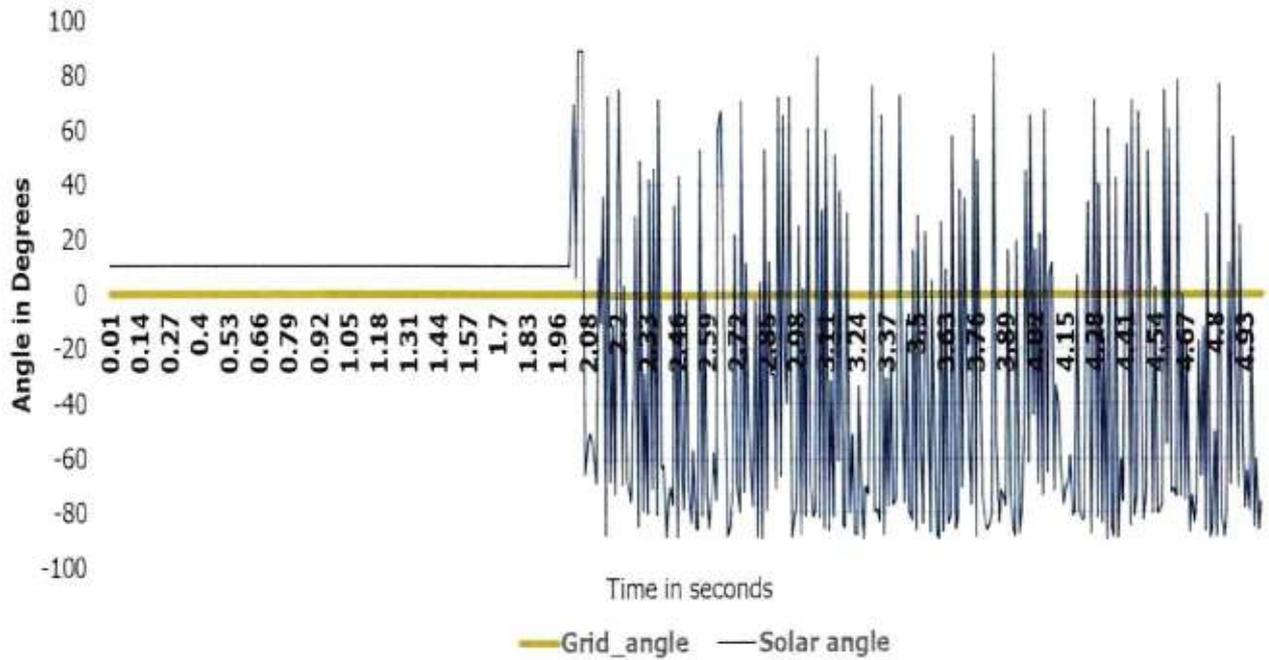


Fig.8

**DURING TRIPPING OF RADIAL LINE FROM GRID CAUSING SEVERE VOLTAGE
INSTABILITY AND ISOLATION OF SOLAR PLANT**

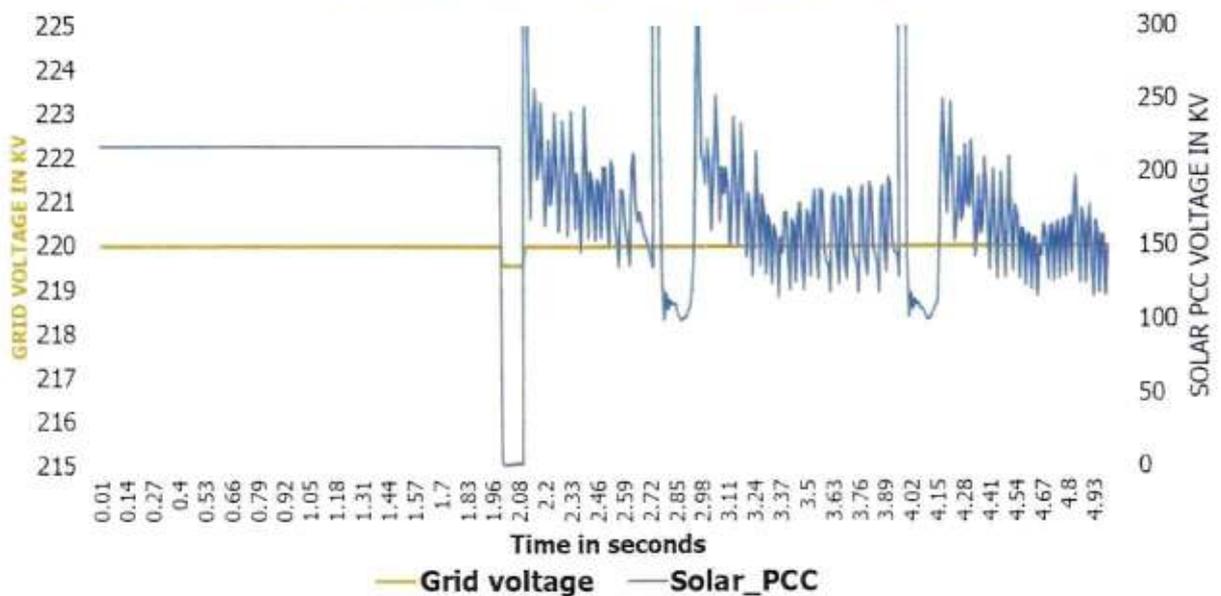


Fig.9

It can be observed from the above that Present Solar plants in Telangana are Grid tied Inverters and always need a Grid support (Voltage reference) for injection of Active Power.

3.3. RELEVANT REGULATORY PROVISIONS

1) Extract of Central Electricity Authority (Technical Standards for Connectivity to the Grid) Amendment Regulations, 2013 [Part-II B2(i)]

“The generating station shall be capable of supplying dynamically varying reactive power support so as to maintain power factor within the limits of 0.95 lagging to 0.95 leading.”

2) Extract of Telangana Electricity Regulatory Commission (State Electricity Grid Code) Regulation, 2018

“ Regulation 9.3. (a) All the generating units may operate within their reactive capability curves and the network voltage profile shall be maintained within voltage limits specified.

Regulation 17.4.1. The reactive power compensation and / or other facilities shall be provided by users, as far as possible, in the areas prone to low or high voltages systems thereby avoiding the need for exchange of reactive power to / from the In-STS and to maintain the In-STS voltage within the specified range at all times.

Regulation 17.4.4. The users shall endeavour to minimize the reactive power drawl at an interchange point when the voltage at that point is below 97% of rated voltage and shall not inject reactive power when the voltage is above 103% of rated voltage.

Regulation 49.5. The generating stations shall generate / absorb reactive power as per instructions of SLDC, within the capability limits of the respective generating units. ”

3.4 GCC ANALYSIS AND STUDY - Final Report Dt: 27.12.2022

It is to state that the committee in the earlier report Dt:27.12.2022 submitted the analysis with respect to two aspects that are

A. Necessity of Grid Support.

B. Reasonability of Charges for Grid Support.

And also analysed procedures being followed by various states and various topics dealt in the earlier report are listed below for reday reference.

- a.** Proposals of TSDISCOMs regarding Grid Support Charges
- b.** Views of the Members
- c.** Levy of Parallel Operation Charges/ Grid Support Charges by various states across the Nation and their Methodology.
- d.** Analysed the M/s Electrical Research & Development Association (ERDA) study report on evaluation of Parallel Operation Charges in respect of Chattisgarh State during the year 2008.
- e.** Technical Study of Impact of CPP connectivity to the Grid.

4. PRESENTATION OF GCC ANALYSIS AND STUDY TO MEMBERS

GCC organized a 5th meeting on 05.08.2023 at 15:00Hrs at Vidyut Soudha, to present technical analysis to members and further deliberate the issue of Levy of Grid Support Charges(GSC) for FY 2023-24.

During the meeting Member Convener, GCC explained the brief back ground of the subject, the views expressed by members in the 4th GCC meeting, Technical Analysis and Study carried out by SLDC for Renewable Energy Plants. The subject is putforth in the meeting for deliberation by members.

The following are the views/opinions expressed by GCC Members.

A) TSDISCOMs

TSSPDCL

Divisional Engineer/RAC/TSSPDCL informed that the generation is not constant from a solar power plant, because of which there is disturbance in the grid and utilities are absorbing these variations in generation.

During the variation/dip in the generation at solar power plants at certain points of time, the concerned captive user or third party user is drawing the power from Grid at that time. So the user is taking the power from Grid even though there is no generation during particular spells.

As the utilities are absorbing the variations in the solar generation, it is to request the Committee for considering levy of Grid Support Charges on solar power plants including Roof Top Solar Power Plants to Hon'ble TSERC.

TSNPDCL

It was informed that the deliberations of the 4th GCC holds good and agree with the TSSPDCL comments/views.

Earlier, TSDISCOMs vide letter dated 23.06.2023 communicated their written submissions with regard to the proposal of Levy of Grid Support Charges for FY 2023-24. Further, Vide e-mail dated 18.08.2023 submitted additional comments (Copy enclosed as Annexure – C).

B) Representative of Generating Companies – Thermal (other than state generating companies):

General Manager/Commercial/ Nava Bharat Energy India Limited, Representative of Thermal Generating Companies, presented the following views:

It was informed that the written views were already submitted. Further, it is to inform that Grid support is required for injection/drawl and this we are not objecting. The objection is only on charges.

Earlier, Representative of Thermal Generating Companies vide letter dated 23.06.2023 submitted their written submissions. Further, Vide letter dated 16.08.2023 reiterated the written submissions.

C) CESS, Siricilla – CESS informed that the proposals of DISCOMs are agreed.

D) Representative of Generating Companies – Solar:

Renew Power Ltd. representatives informed that, we will submit the written views if any.

E) Representative of State Generating Companies - TSGenco:

TSGenco informed forum that, they agree with the TSDISCOMs proposals, as there is need to compensate for the services.

F) Representative of STU & Person Nominated by Hon'ble TSERC under clause 5.3(n) – Chief Engineer/Transmission:

It was informed that, Grid Support Charges are to be collected.

G) Southern Regional Load Despatch Centre – Representative of SRLDC informed the forum that, injection of reactive power during night hours and absorption of reactive power during peak generation hours is clear with respect to solar generators.

It is to mention that, Discoms trying to charge the power plants for the services they given to the power plants. But, levying of charges may not give right direction to RE Developer. That may compensate the Discoms for the reactive energy charges being paid by Discoms.

From the Grid perspective, if the same behaviour continues the system is going to face low voltage in the peak generation hours and high voltage during night hours. At the ISTS level if the power plant is not going to establish dynamically varying reactive power (0.95lag to 0.95lead), they are not allowed for connectivity.

Further neutralising the reactive power by the solar power plants at the Point of Common Coupling (PCC) by adopting suitable reactive power compensation mechanisms must be looked into.

In addition to the above, it was informed that appropriate mechanism of billing of reactive energy exchanges with Grid (like 5paise/KVArh) may also be looked into, inline with the Indian Electricity Grid Code -2023.

H) Mytrah Vayu (Godavari) Ltd., Representative of Wind Generating Companies - The representative informed that, we will submit the written views if any.

I) NSL Krishnaveni Sugars Ltd., Representative of Bagasse Generating Companies

Representative of Bagasse Generating Companies informed that, we will submit the written views if any.

J) There is no representation from the following members of GCC:

- a) Singareni Thermal Power Plant
- b) Gowthami Bio Energies Pvt. Ltd., Representative of Biomass Generating Companies
- c) SLS Power Corporation Ltd., Representative of Mini Hydel Generating Companies
- d) M/s PTC India Ltd. – Trader Member
- e) MRF Ltd., Representative of Open Access Consumers
- f) Southern Regional Power Committee

Copy of 5th GCC minutes of meeting enclosed as Annexure - D.

5. CONCLUSION

GCC being a forum consisting members representing various entities connected to the Grid and analysed the subject in a thorough manner in accordance with directions of Hon'ble TSERC.

GCC organized two coordination meetings and the members were actively involved in the deliberations of the subject and expressed their opinions/submitted their written views.

GCC organized the first meeting on Dt:12.06.2023 on the subject to understand the issue and for taking the views of members. GCC analysed the views expressed/submitted by members, TSDISCOMs Proposals on the issue and Data from various Sources. A detailed presentation was presented by Member Convener, GCC during the second meeting held on Dt:05.08.2023. The issue was discussed elaborately.

The summary of deliberations and recommendations are as follows:

- a) After going through the Technical Analysis and Study, all the members present are accepted for Technical Support of Grid for Parallel Operation keeping in view of Stability, Reactive Power Management, Fault level support for Coventional, Renewable Energy, Rooftop Solar Generators.**
- b) In respect of Charges, majority members are accepted for levy of Grid Support Charges.**
- c) It was agreed by majority members that, GCC may initially support the Discoms Proposal and based on the experience, we may request for any changes in future.**

6. SPECIFIC RECOMMENDATION

Further to the detailed Report and Final Reports submitted by Grid Coordination Committee(GCC) vide letters Dt:05.08.2022 & Dt:27.12.2022 on the issue of Parallel Operation of CPPs and consequent levy of Grid Support Charges(GSC), Hon'ble TSERC vide letter dated 10.05.2023 directed Grid Coordination Committee(GCC) for a detailed analysis on the issue of Levy of Grid Support Charges(GSC) for FY 2023-24 and to submit a detailed report on or before 15.06.2023.

Further as per the request of Chair Person GCC for extension of time, Hon'ble TSERC vide letter dated 04.07.2023 granted extension of time to GCC and directed to submit detailed report on or before 16.08.2023.

In this Connection GCC submits the following:

Keeping in view of conclusions mentioned in the earlier report dated 27.12.2022 and also based on the conclusions of the GCC meeting held on Dt:05.08.2023, the specific methodology proposed by GCC is as follows.

Methodology for Calculation of GSC:

Grid Support Charges (GSC)	Total Installed Capacity X Rate of Grid Support Charges (Rs./kW/month)
Rate of Grid Support Charges	i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid. ii. Conventional generators shall pay Rs.50 per kW per month. iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 kW per month.

	<p>iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.</p> <p>v. Co-gen sugar mills shall pay charges of Rs.25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.</p> <p>vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.</p> <p>vii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.</p>
--	---

Justification for levying of Grid Support Charges:

- Earlier the proposal by TSDISCOMs is on differential capacity i.e., Installed Capacity minus Contracted Demand with Discom for FY 2022-23. Certain times the running capacity is lower than Installed Capacity. Further the Contracted Demand with Discoms may also vary for different generators, which created an ambiguity in considering the differential capacity.

In this regard, various states methodology (Madhya Pradesh, Gujarat Andhra Pradesh) was referred, where in it is known that GSC is levied on Installed Capacity of the generators. In line with the other states and to avoid the uncertainties, installed capacity was considered for levying GSC.

- In the ARR & Tariff filings for FY 2023-24 by TSDISCOMs, the GSC was also proposed on Renewable power plants (Solar, Wind, Hydel & Rooftop Solar) due to the following reasons:

- The on Grid Solar/Wind inverter takes energy, reference voltage & frequency from the grid for the process of conversion of the DC power generated from solar panels/wind turbines to AC power. Further, the energy generated from the Solar panels/Wind turbines is uncertain and depends on the environmental conditions hence there is always uncertainty in energy output from the Solar plants/Wind plants. In case of sudden drop in generation from the Solar plant/Wind plant, the load will have to be supported by the grid instantaneously and in case of excess generation the Grid acts as a cushion in consuming the same instantaneously.
- Moreover the AC power from the output of the inverter is prone to be having a larger number of harmonics resulting in the distorted sinusoidal waveform. The Grid absorbs such harmonics thus aiding the Solar PV plants/Wind plants.
- The consumers having installed Solar panels may cause unbalance in the system as per their nature of consumption and likely possibility of exporting/importing energy in one or 2 phases but not all phases.
- Thus in all the above instances, the Solar power plants/Rooftop PV Systems/Wind plant take the support of the Grid and hence the levy of Grid Support Charges is justified.

Justification for Rate of Grid Support Charges:

- As many stakeholders during public hearing on ARR & Tariff proposals offered their Comments that the rate of GSC proposed is exorbitantly high though the said proposal was on the differential of Power Plant Installed Capacity and the Contracted Maximum Demand with the

DISCOM and such methodology is not in vogue in any other State. The TSDISCOMs have studied the methodologies for levy of GSC in various states.

- The TSDISCOMs adopted the methodology existing in Andhra Pradesh State which is based on the R&M cost including Artisans' salary of DISCOMs & STU approved by the Hon'ble APERC. Based on the above methodology, the calculation of GSC for Telangana state is detailed below.

Particular	Units	Telangana Contracted Capacity (FY 2022-23 Tariff Order)
TSGENCO Thermal	MW	4043
TSGENCO Hydel	MW	2325
CGS	MW	3112
Other LT	MW	3039
NCES	MW	3837
Total (A)	MW	16355

TABLE-1: Details of Approved Contracted Capacity of TSDISCOMs for FY 2022-23

Particular	Units	R&M+ Artisans Employee Cost
Approved (TS DISCOMs)	INR Cr.	788
Approved (TSTRANSCO)	INR Cr.	204
Total (B)	INR Cr.	991
Per month Cost C=B/12	INR Cr.	82.58
Proposed GSC (on Contracted Capacity) (D=C/A)	Rs./kW/ Month	50

TABLE-2: Details of Approved R&M and Artisan Employee Costs for FY 2022-23

- The proposal by TSDISCOMs for conventional generators for FY 2023-24 is Rs.50/kW/Month on Installed Capacity, is lower than the earlier recommendation of the GCC, which is 25% of the prevailing demand charge for respective HT consumers (Approx. Rs.119/kW/Month), on Differential Capacity for FY 2022-23.
- Further, various exemptions are also been proposed by the TSDISCOMs, as sought by certain members in the GCC meetings.
- Even though the proposal is on Installed Capacity, it is advantageous to the Conventional Generators as various exemptions are brought in to the proposal duly considering the requests made by the Conventional Generators as well as Co-generation and Seasonal Generators.
- The GSC proposed for Renewable Plants are as follows:
 - 1.Solar, Wind, Hydel - 50% of proposed GSC of Conventional sources.
 - 2.Rooftop Solar Plants - 30% of proposed GSC of Conventional sources.
- The proposed GSC for Renewable Plants are less than the Conventional sources as the solar renewable plants are operating during day time only and the Wind & Hydel power plants are seasonal in nature and takes grid support accordingly.

* * * * *



TELANGANA STATE ELECTRICITY REGULATORY COMMISSION
D.No.11-4-660, 5th Floor, Singareni Bhavan, Red Hills, Hyderabad - 500 004

From Commission Secretary (FAC),
O/o:TSERC, 5th Floor,
Singareni Bhavan, Red Hills,
Hyderabad - 500 004 (TS)

To
The Chairperson Grid Coordination
Committee & Director (Grid operations)
TSTRANSCO, Vidyut Soudha,
Khairathabad, Hyderabad - 500 082 (TS).

Lr.No.Secy/TSERC/JD(TE)/F.No.E-565019/D.No. ³⁶¹ /23, Dt. ¹⁰ 09-05-2023

Sir,

Sub:-TSERC-TSDISCOMs filed for determination of Grid Support Charges for FY 2023-24. Undertaking detailed analysis on the issue of parallel operation of CPPs and consequent levy of GSC-Reg.

CE/SLDC TSTRANSCO	Inward No. 1071
11 MAY 2023	
SE/SLDC SE/EBC PESHI	CE/SLDC

Ref:- 1) TSERC Common Order in O.P. No's. 80 of 2022 and 81 of 2022 and batch dated 24.03.2023 in the matter of RST & CSS for FY 2023-24 and True up petitions.

@@@

It is to inform that TSDISCOMs requested the Commission to allow levy of Grid Support Charges (GSC) and Parallel operation charges for FY 2023-24 on all the generators (captive generating plants, cogeneration plants, 3rd party generation units, merchant power generation units, rooftop power plants etc.) who are not having PPA/having PPA for partial capacity with TSDISCOMs as follows

Grid Support Charges = Total Installed Capacity x Rate of GSC Rate of GSC (Rs./kW/month):

- | | | |
|-----------|------|---|
| DE/PPLNG | i) | The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid. |
| DE/SCADA | ii) | Conventional generators shall pay Rs.50/kW/month. |
| DE/SHIFT | iii) | Renewable Energy plants including Waste Heat Recovery (WHR) plants, the plants based on municipal solid waste and the co-gen plants shall pay Rs.25/kW/month. |
| DE/MOPP-2 | iv) | Rooftop solar plants under net metering/gross metering policy shall pay Rs.15/kW/month. |
| DE/RE-II | | |
| DE/DSGS | | |
- SE/SLDC

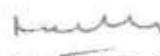
- v) Co-gen sugar mills shall pay charges of Rs.25/kW/month, for a period of four (4) months or actual operation period whichever is higher.
- vi) These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two (2) months.
- vii) To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.

2. The Commission has taken note of above submissions made by TSDISCOMs along with other RST proposals and invited comments/suggestions/objections from stake holders, after considering the stakeholder submissions, Commission has decided to refer the matter to Grid Coordination Committee for undertaking detailed analysis as the licensees proposed a different methodology and applicability, as that proposed earlier in RST for FY 2022-23 for which Grid Coordination Committee has already submitted its final report

3. In view of the above, I am directed by the Commission to communicate the above decision to Grid Coordination Committee with a direction for a detailed analysis on the issue and to submit a detailed report to this office on or before **15.06.2023**.

Yours faithfully,

Encl: TSDISCOMs proposals,
Comments & suggestions received
from stakeholders
and replies of TSDISCOMs.


COMMISSION SECRETARY (FAC)

Copy to the:

P.O O/o Chairman
P.S. to Member (Technical)
P.S. to Member (Finance)
Chairman & Managing Director/TSTRANSCO/Hyderabad
Chairman & Managing Director/TSSPDCL/Hyderabad
Chairman & Managing Director/TSNPDC/ Warangal
✓ Chief Engineer TSSLDC, Vidyut Soudha



TELANGANA STATE ELECTRICITY REGULATORY COMMISSION

D.No.11-4-660, 5th Floor, Singareni Bhavan, Red Hills, Hyderabad - 500 004

From
Commission Secretary (FAC),
O/o:TSERC, 5th Floor,
Singareni Bhavan, Red Hills,
Hyderabad - 500 004 (TS)

To
The Chairperson Grid Coordination
Committee & Director (Grid operations)
TSTRANSCO, Vidyut Soudha,
Khairathabad, Hyderabad - 500 082 (TS).

Lr.No.Secy/TSERC/JD(TE)/F.No.E-565019/D.No. 449 /23, Dt. 04-07-2023
Sir,

Sub:-TSERC-TSDISCOMs filed for determination of Grid Support Charges for FY 2023-24- Undertaking detailed analysis on the issue of parallel operation of CPPs and consequent levy of GSC- Extension of 2 months' time i.e., up to 16.08.2023 for submission of final report- Accorded-Reg.

Ref:- 1) TSERC Common Order in O.P. No's. 80 of 2022 and 81 of 2022 and batch dated 24.03.2023 in the matter of RST & CSS for FY 2023-24 and True up petitions.

2). Lr.No.Secy/TSERC/JD(TE)/F.No. E-565019/ D.No. 321/23, Dt 10.05.2023

3). Lr.No. Dir(GO)/CESLDC/SESLDC/DEPP2/ADE-1/ D.No. 34 / 23, Dt 20.06.2023

4). NBV/FIN/150/2023-24, Dt 23.06.2023 of Nava Limited

@@@

With reference to the above cited, I am directed by the Commission to inform that the request made by Grid-Coordination Committee has been considered and 2 months' time extension from 15.06.2023 i.e., up to 16.08.2023 is granted to GCC for submission of final report.

CE/SLDC
TSTRANSCO
Inward No. 1179
5 JUL 2023
SE/SLDC
SE/EBC
SE/CHI
CE/SLDC

DE/PPLNG
DE/SCADA
DE/SHIFT
DE/MOPP-2
DE/RE-II
DE/DSGS
SE/SLDC

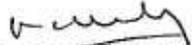
(P.T.O)

2. Further a copy of written submissions made by M/s Nava Limited (Formerly Nava Bharat Ventures Limited) received under reference 4th cited is herewith transmitted for taking necessary action at your end.

3. Therefore, the Committee is requested to submit its final report to this office on or before 16.08.2023.

Yours faithfully,

Encl: As above


COMMISSION SECRETARY (FAC)

Copy to the:

P.O O/o Chairman

P.S. to Member (Technical)

P.S. to Member (Finance)

Chairman & Managing Director/TSTRANSCO/Hyderabad

Chairman & Managing Director/TSSPDCL/Hyderabad

Chairman & Managing Director/TSNPDCL/Warangal

Chief Engineer TSSLDC, Vidyut Soudha

Minutes of the Fourth Grid Coordination Committee (GCC) Meeting held on 12.06.2023 at Vidyut Soudha:

Introduction:

The Fourth Meeting of Grid Coordination Committee (GCC) was held on 12th June'2023 at Vidyut Soudha. The list of participants is at **Annexure-I**.

Superintending Engineer/SLDC welcomed Sri. B.Narsinga Rao, Director(Grid Operations) & Chair Person, GCC, Sri. S.V. Kumar Raju, Chief Engineer/SLDC & Member Convener, GCC and all the members of GCC to the 4th GCC Meeting. Further, requested all the members to introduce them selves to the forum. Accordingly, members introduced their details to the forum.

1. Grid Support Charges for FY 2023-24

The TSDISCOMs have proposed to levy Grid Support Charges for FY 2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees as follows:

Grid Support Charges = Total Installed Capacity X Rate of GSC (Rs./kW/month)

Rate of GSC:

- i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.
- ii. Conventional generators shall pay Rs.50 per kW per month.
- iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 per kW per month.
- iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.
- v. Co-gen sugar mills shall pay charges of Rs.25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.
- vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.
- vii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.

Hon'ble TSERC vide letter Dt:10.05.2023 directed GCC for detailed analysis on the issue of levy of Grid Support Charges for FY 2023-24 and to submit a detailed report.

The issue is putup for deliberations of the members.

Deliberation:

Superintending Engineer/SLDC informed forum that last GCC meeting was held on 16.07.2022 and based on the conclusions a report was submitted by GCC to Hon'ble Telangana State Electricity Regulatory Commission(TSERC). Earlier the decision of levy of Grid Support Charges (GSC) was on Captive Power Plants only. Before taking the decision by Hon'ble TSERC, TSDISCOMs resubmitted their proposal in the ARR filing of Retail Supply Business for FY 2023-24 including all the generators under this ambit with different Rate of GSC for different generators (including Renewable Generators and Roof Top Solar).

Now, Hon'ble TSERC issued a direction to GCC for a detailed analysis on the issue and to submit a detailed report about levy of Grid Support Charges for FY 2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees.

In this regard, TSDISCOMs are requested to present their Grid Support Charges Proposal for FY 2023-24 to the forum initially. After the explanation of TSDISCOMs, individual member will be requested for presenting their views before GCC.

A) TSSPDCL:

TSSPDCL explained that, earlier proposal to Hon'ble TSERC is on differential capacity i.e., Installed Capacity minus Contracted Demand with Discom for FY 2022-23. There was an ambiguity in considering the differential capacity because the running capacity is lower sometimes compared to installed capacity. Further the contracted demand with Discoms also different for different generators. In this regard to avoid these sort of uncertainties and after referring the various states methodology (like Andhra Pradesh, Gujarat, Madhya Pradesh) it is understood that GSC is levied on Installed Capacity of the generators. Hence it was considered GSC based on installed capacity.

Further the methodologies of various states were also studied.

In Madhya Pradesh, Fault MVA Calculation methodology was considered. In Gujarat Fixed Charges were considered and in Andhra Pradesh R&M cost (including artisan cost) was considered. Based on this TSDISCOMs arrived certain charges.

Mean while TSDISCOMs was thought that not only conventional plants but also non-conventional plants are also taking Grid Support. Hence non conventional generators are also brought under this ambit and very nominal charges were proposed.

Like wise, there is no round the clock generation from RE plants (if you take Solar generation it is taking grid support during day time only as night time there will be no generation).

So it was considered to levy Rs.25 per kW per month (i.e., 50% that of conventional plants). On Rooftop solar plants it was considered to levy Rs.15 per kW per month.

TSDISCOMs arrived the charges based on R&M cost including Artisan Employee cost approved by Hon'ble TSERC, which comes around Rs.50/KW/Month which is also matching with the determined tariff by other state ERCs (like AP).

In view of the foregoing analysis, TSDISCOMs submitted the proposal to Hon'ble TSERC for levying Grid Support Charges for FY2023-24 as follows.

Conventional generators shall pay Rs.50 per kW per month, Renewable energy plants shall pay Rs.25 per kW per month and Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.

In this regard, it is to mention that GCC Committee also come to a conclusion that conventional generators are taking the support of grid and SLDC technical officials through their technical study also confirmed that every generator requires grid support to run the plant in synchronism with the grid. So it is inevitable to levy GSC on all the power plants. Further Hon'ble Supreme Court also vide their judgement dated 29.11.2019 passed order that, levy of grid support charges is inevitable on all the power plants connected to the grid.

TSDISCOMs request GCC to consider our proposal and putforth the submission of TSDISCOMs before Hon'ble TSERC for levy of GSC for FY 2023-24.

B) TSNPDCL:

TSNPDCL endorsed the views submitted by TSSPDCL and requested GCC to putforth the submission of TSDISCOMs before Hon'ble TSERC.

Further, TSDISCOMs submitted their written views vide letter dated 23.06.2023. Copy enclosed as **Annexure-II**.

Superintending Engineer/SLDC sought the views of the members of the committee on the issue. The following are the views expressed by the members.

The deliberations of the members and subsequent written submissions by members is placed below with respect to the opinions of members of GCC.

C) Representative of Generating Companies – Thermal(other than state generating companies):

General Manager/Commercial/ Nava Bharat Energy India Limited, Representative of Thermal Generating Companies, presented the following views:

The proposal of TSDISCOMs is being different than that of earlier one which is 50% of Demand charges and limited to captive power plants only and also the present proposal of Rs.50 did not find any base. This proposal is on all generating plants including IPPs. We request to Appoint a independent third party and study whether grid support is required or not, in detail and conclude the decision. Hon'ble Commission may take a final decision based on the report of independent third party.

However these charges are already factored in tariffs, hence these additional charges are not required. Also CPPs may take Grid support while taking some load (drawing power) in terms of earlier deliberations.

In addition to the above, present proposal is on all the power plants including IPPs and Merchant Power Plants. IPPs are always exporting, what type of support they are getting from Grid. Hence it is not proper to levy charges on IPPs where as CPPs are supported for their load, in the terms which was deliberated earlier. Without grid support any generating plant cannot export their power. IPPs and Merchant Power Plants are to be separated from this purview.

In some states, the proposals of DISCOMs were not considered by Commission. Grid Support is required for import and export of power and at the same time it is statutory right to all the power plants to get connected to Grid.

Further we request to set aside these proposals of levy of Grid Support Charges as already power plants are suffering with DSM charges, Demand Charges and other levies. We request not to levy any charges interms of Grid Support.

Regarding charges member expressed the following views.

In the states like Kamataka, Kerala, Odisha, West Bengal the Discoms are not collecting Grid Support Charges. In some states the petition itself is rejected by ERCs. Andhra Pradesh state ERC order on Grid Support Charges is also stayed by APTEL.

It is requested that if Discoms propose to levy GSC, appoint a independent third party for complete study on the issue and based on the conclusions of independent third party study, to arrive whether Grid Support Charges is required in Telangana or not. Finally it is to mention that the expenditure is already factored in the Tariff Order, these additional charges are not required.

It was clarified by Superintending Engineer/SLDC, that we all accepted in the previous deliberations that technically grid support is required and there is no going back. Further it was mentioned that all generators(not only merchant power plants, Singareni and Genco) are getting support. Here the issue is change in Discoms proposal, that is inclusion of Renewable Power Plants.

Further, Representative of Thermal Generating Companies vide letter dated 23.06.2023 submitted their written submissions. Copy enclosed as **Annexure-III**.

D) CESS, Siricilla – CESS agrees and support the proposals of DISCOMs for levy of GSC for FY 2023-24.

E) Representative of Generating Companies – Solar:

Renew Power Ltd. representatives informed that, earlier the proposal was for CPPs as they are dynamic in operation(rotating machines) and they are getting support. As the solar plants are static in nature, what is the reason for inclusion of RE plants in the present proposal by Discoms. In my opinion Grid Support charges are not required for RE Plants as the solar plants are static in nature.

Further to mention that Grid Support Charges are not required for RE Plants as the expenditure is already considered in the ARR proposals of utilities. Even if any power is drawn(auxiliary supply) from the grid by RE Plants, they are paying as per the tariffs. Further Deviation Settlement Mechanism for RE Plants (Solar, Wind) is also came in to force. Considering all these Grid Support Charges are not required for RE Plants.

On a query by Superintending Engineer/SLDC regarding whether grid support is required or not, it was replied that technically Grid Support is required in both the ways (import & export). Further, from stability point of view a study is required for RE plants.

The RE plants shall be exempted from these charges, for promoting/encouraging RE Plants.

F) Representative of State Generating Companies - TSGenco:

TSGenco informed forum that, Grid Support is required and accept the proposal of DISCOMs.

G) Representative of STU & Person Nominated by Hon'ble TSERC under clause 5.3(n) – Chief Engineer/Transmission:

Divisional Engineer/Transmission informed forum that, Grid Support is required & agree with DISCOMs Proposal.

H) Southern Regional Load Despatch Centre – Representative of SRLDC informed the forum that, we are not able to comment on the subject (charges) but beyond doubt Grid Support is required.

I) Southern Regional Power Committee - Representative of SRPC informed the forum that, views if any will be communicated in writing afterwards.

J) Singareni Thermal Power Plant – Representative of STPP informed that Grid Support is required. Further with respect to levy of charges it was stated that,

a) RE generators are not to be levied these charges (implementation of GSC for RE plants does not seems to be convinced).

b) With respect to conventional generators, the running capacity some times may be lower than installed capacity. Hence it may be looked in to changing the levy on to the running capacity instead of installed capacity.

K) M/s PTC India Ltd. – Trader Member

It was informed that, no views on the subject.

L) MRF Ltd., Representative of Open Access Consumers

It was informed that, they agree for the Grid support charges.

M) Mytrah Vayu (Godavari) Ltd., Representative of Wind Generating Companies

The representative informed that, the views expressed by M/s Renew Power Ltd. will be considered and no more views to add on it.

N) SLS Power Corporation Ltd., Representative of Mini Hydel Generating Companies

It was informed that, SLS is having 6units each of 4MW and units may run some months during water availability period and stopped for some months. Particularly during December & January to July months very less no.of days the units will run.

In this regard, it is to state that running capacity is less compared to installed capacity. The levy of charges on installed capacity may lead to paying huge amounts.

It was clarified by TSSPDCL that, if the non operation period is more than two months the grid support charges are not applicable.

Further, SLS Power Corporation Ltd. vide letter dated 29.06.2023 submitted feedback and requested to reconsider the imposition of Grid Support Charges by taking into account the unique circumstances of M/s SLS. Copy enclosed as **Annexure-IV**.

O) There is no representation from the following members of GCC:

a) NSL Krishnaveni Sugars Ltd., Representative of Bagasse Generating Companies

b) Gowthami Bio Energies Pvt. Ltd., Representative of Biomass Generating Companies

Finally, Superintending Engineer/SLDC requested the participants, who have expressed their views to submit their written views to this committee. Once again GCC will meet on this subject for further deliberation.

Further to the above deliberations, with the permission of Chairperson GCC, the following points informed to the members of GCC for compliance as well as information dissemination.

2. Renewable Energy Deviation Settlement Mechanism (RE DSM)

- SLDC informed the representative of RE generators and Discoms, the following in respect of Deviation Settlement Mechanism for Solar and Wind power generation.
- a) To ensure to send Energy Meter Readings (MRI dumps) to Energy Billing Centre/SLDC before 5th of every month by all the RE Generators.
- b) To Ensure the internal clock of Energy Meters of RE generators to have Real time/ Automatic GPS time synchronization facility.
- c) To get register through their QCA, with SLDC duly submitting all documents such as Bank Guarantees, KYC details, Registration fees and other related documents at the earliest.

3. CEA (Technical Standards for Connectivity to the Grid) Regulations - Compliance by Solar & Wind Generators

- SLDC requested all Solar & Wind generators to submit the supporting documents along with check list, for verifying the status of Compliance of various provisions of CEA Technical Standards for Connectivity to the Grid.

SLDC Once again requested the representative of Solar generators, to submit the reports with in 30 days and the representative agreed to inform to all Solar generators regarding submission of CEA Compliance report.

4. RGMO Response Analysis:

- RGMO Performance Analysis of Previous 9 RGMO incidents during the period from September'2022 to March'2023 of TSGENCO generating stations and Singareni Thermal Power Project (STPP) were reviewed.

Deliberation:

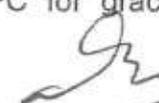
Superintending Engineer/SLDC reviewed the RGMO performance analysis of State embedded generators (Genco & STPP power plants).

Further it was informed to generators that the response of certain units was not in line with relevant regulatory standards. In this regard, the necessity of RGMO response was explained and also requested all the generators to take appropriate actions for improving the response.

The Response and its analysis in tabular format is enclosed as **Annexure-V**.

5. Conclusion:

Superintending Engineer/SLDC thanked Chair Person GCC and all the members for their participation with a special thanks to SRLDC and SRPC for gracing the meeting.


12/11
Chief Engineer/SLDC

ANNEXURE-I

4th Grid Coordination Committee (GCC) Meeting regarding Levy of Grid Support Charges for FY 2023-24 - Direction by Hon'ble TSERC, on 12.06.2023 at 15:00Hrs at Main Meeting Hall, 6 th floor, Vidut Soudha, TSTransco						
Sl.No	NAME	DESIGNATION	ORGANIZATION	E-MAIL ID	MOBILE NUMBER	SIGNATURE
1	VENKATESHMM	DGM	SLDC GRID-India	VENKATESHMM@GRID-INDIA	9449599160	
2	N.S.MALINI	EE	SRPC	srpc.operation@gmail.com	9845545123	
3	S.Ramakrishna	TD/CES	CES/Sircilla		9440814058	
4	S.Sudhakar	DE/RAC	TSSPDCL	ractsspdcl@gmail.com	9440816245	
5	G.Lam Mohan	Asst/Gen	SLSPCL	slspcl24@gmail.com	9603010003	
6	P.Venka Brahma	DESM	SCCL	venkapp@gmail.com	9182013919	
7	Ch Bhaskar	DE	RAC TSNDCL	de_rac@tsndcl.in	9440511239	
8	V. Ruchika	Asst/IR	TSSPDCL	ruchoir@tspdcl.in	8232953519	
9	P.SRINIVAS	GM-Genl	NAVA SANG	psrinivasa@gmail.com	9844693925	
10	Sandeep Votra	AVP	PTC India Ltd	Sandeep@ptc.india.com	9871546492	
11	P.Srinivas	Asst/RAC	TSSPDCL	de_rac@tsmpdcl.in	9990610685	
12	B. Sivaram	Asst/IR	TSSPDCL	seipet@tsdcl@gmail.com	9440622266	
13	S.Nagajun Reddy	Dy. Man	TSW-Mylach	nagajun.reddy@tsw.in	9885104519	
14	Pavan Bhargava	DM	Kerem	pavan.bhargava@kerem.com		
15	Col Vikram Singh	NVP	Kerem	vikram.hangal@kerem.com	957677027	
16	Pavithra Srinivas	Asst	Kerem	pavithra.p@kerem.com		

4th Grid Coordination Committee (GCC) Meeting regarding Levy of Grid Support Charges for FY 2023-24 - Direction by Hon'ble TSERC, on 12.06.2023 at 15:00Hrs at Main Meeting Hall, 6th floor, Vidyut Soudha, TSTransco

Sl.No	NAME	DESIGNATION	ORGANIZATION	E-MAIL ID	MOBILE NUMBER	SIGNATURE
16	B. Bala Raju	Division Engineer	TSGENCO	ge1.se@tsgenco.co.in	9981695275	
17	D. Krishna Lakshmi	DE/HR	TSTransco	d.krishnalakshmi@tstransco.in	9490826702	
18	S. Narasinga Rao	DE/REGD	TSTransco	de.re2@tstransco.in	9948274027	
19	T. DURGA PRASAD	DE/REGD	TSTransco	cdtrana@tstransco.in	9990153177	
20	K. Yagna Prasad	DE/PP-1	TSTransco	de.pp1@tstransco.in	9440677442	
21	B. Narsinga Reddy	Asst. Commr	MRE/UG	narsinga884@outlook.com	9849325462	
22	J. Chandrashekar	SE/REG	TSTransco	reg1@tstransco.in	9928191264	
23	V.V. Subramangam	SE/EE	TSTransco	de.ck1@tstransco.in	9991058622	
24	K. Murali Krishna	DE/REG	- do -	de.re1@tstransco.in	9292868523	
25	B. Ravikiranth	DE/DS&S	TSTransco	adv.clerk@gmail	9440679445	
26	C. Mallikarjunachand	ADE/REG	TSTransco	de.re2@tstransco.in	7382634561	
27	G. Anitha	ADE/PP-2	TSTransco	cesldc.telangana@gmail.com	8985967543	
28	M. Chandrashekar	Asst/DE	TSTransco	ts.cesldc@gmail.com	7382296091	
29	G. Lakshmi Prasad	ADE/REGD	TSGENCO	ge1.se@tsgenco.co.in	9993122182	
30	Ch. Kiran	ADE/PP-3	TSTransco	kirannurisu@gmail.com	9550840855	

4th Grid Coordination Committee (GCC) Meeting regarding Levy of Grid Support Charges for FY 2023-24 - Direction by Hon'ble TSERC, on 12.06.2023 at 15:00Hrs at Main Meeting Hall, 6th floor, Vidyut Soudha, TSTransco

Sl.No	NAME	DESIGNATION	ORGANIZATION	E-MAIL ID	MOBILE NUMBER	SIGNATURE
31	T. Jyothirani	ADG-1/RE-1	TSTRANSCO	t.jyothet@gmail.com	7330861185	
32	B. Raja Thimappa	DE/Inopp.	TSTRANSCO	bandaru71970@gmail.com	9440487105	
33	N. Raja Shekar	AE/AS SLOC	TSTRANSCO	nyjshk5.234@gmail.com	8179976722	
34	L. Sarveshwar	ACE/In/SLOC	TSTRANSCO	Sarvesh.kulaha@gmail.com	9640777328	
35	Dr. B. Narasinga Rao	Director (Grid Ops)	TSTRANSCO	dr.gridoperation@tstran.in		
36	Sri S.V. Kumar Raju	Chief Eng/SLOC	TSTRANSCO	ce.sloc@tstran.co.in	9848782047	
37	Sri. P. Suresh Babu	SE/SLOC	TSTRANSCO	ce.sloc@tstran.co.in	9440679482	
38	Sri. P. Praveen Kumar	AGG-1/In/SLOC	TSTRANSCO	ce.sloc@tstran.co.in	9491066576	
39						
40						
41						
42						
43						
44						
45						

Director/Grid Operation
TSTRANSCO, V.S. Hyd.
Inward No. 61
23 JUN 2023
CE/SLDC
CE/PS
CE.Telecom
Peshi

**SOUTHERN POWER DISTRIBUTION COMPANY
OF TELANGANA LIMITED**

From
Chief General Manager (RAC)
TSSPDCL, Corporate Office,
6-1-50, Mint Compound,
Hyderabad - 500 063.

DE/PPLNG
DE/SCADA
DE/SHIFT
DE/MCPP-2
DE/RE-II
DE/DSGS

To
The Chairperson,
Grid Coordination Committee,
TSTRANSCO, Vidyuth Soudha
Khairathabad, Hyderabad-82.

Lr. No.CGM(RAC)/SE(RAC)/DE(RAC)/F.No.GSC/D.No.199/23, Dt:23-06-2023.

SE/SLDC

Sir,

CE/SLDC
TSTRANSCO
Inward No. 93
23 JUN 2023
SE/SLDC
SE/ESC
PESH

Sub: TSSPDCL - RAC - 4th Grid Coordination Committee (GCC) meeting held on 12.06.2023 - Detailed analysis on the issue of levy of Grid Support Charges for FY 2023-24 -Information Submitted - Reg.
Ref: 4th Grid Coordination Committee (GCC) meeting held on 12.06.2023.

@@@@@

It is to be submitted that, the 4th Grid Coordination Committee (GCC) meeting was conducted on 12.06.2023 with all the stake holders on the detailed analysis on the issue of levy of Grid Support Charges for the FY 2023-24 proposed by TSDISCOMs in the ARR filing for Retail Supply Business for the FY2023-24.

Further, during the meeting, it was requested to submit the justifications for levying Grid Support Charges for the FY 2023-24.

In this regard, the justifications on levying the Grid Support Charges for the FY 2023-24 as proposed by TSDISCOMs in the ARR filing for Retail Supply Business for the FY2023-24 are herewith submitted for favour of information and taking further necessary action please.

1. The DISCOMs proposed to levy GSC for captive Power plants (CPPs) & Co-generation plants operating in parallel with the grid in the ARR filings for FY2022-23 @ 50% of the applicable demand charges on the differential of power plant installed capacity and the contracted demand with the DISCOM in line with the same methodology approved by the erstwhile APERC in its order dated 08.02.2002 which was upheld by the Hon'ble Supreme court in its judgment dated 29.11.2019 in C.A.No.8969 of 2003 & batch.
2. As many stake holders during public hearing on ARR & Tariff proposals offered their Comments that the rate of GSC proposed in exorbitantly high though the said proposal was on the differential of Power plant installed cap & the

contracted max demand with the DISOCM and such methodology is not in vogue in any other State. The TSDISCOMs have studied the methodologies for levy of GSC in various states.

3. The TSDISCOMs adopted the methodology existing in A.P.State which is based on the R&M cost including Artisans' salary of DISCOMs & STU approved by the APERC. Based on the above methodology, the calculation of GSC for Telangana state in detailed below.

Particular	Units	Telangana Contracted Demand (FY 23 Tariff Order)
TSGENCO Thermal	MW	4043
TSGENCO Hydel	MW	2325
CGS	MW	3112
Other LT	MW	3039
NCES	MW	3837
Total	MW	16355

Particular	Units	R&M + Artisans EC	R&M + EC (Net)	Net O&M	Net O&M (less consumer)	Fixed Cost
Approved(TS DISCOMs)	INR Cr.	788	5569	5900	4788	
Approved (ISTRANSCO)	INR Cr.	204	1075	1130	1130	
Total	INR Cr.	991	6644	7030	5918	13286
Proposed GSC (on Contracted demand)	INR/kW/month	50	339	358	302	677

4. In the ARR & Tariff filings for FY 2023-24 by TSDISCOMs, the GSC was also proposed on Renewable power plants (Solar, Wind, Hydel & RTS) due to the following reasons:

- The on grid solar/wind inverter takes energy, reference voltage & frequency from the grid for the process of conversion of the DC power generated from solar panels/wind turbines to AC power. Further, the energy generated from the solar panels/wind turbines is uncertain and depends on the environmental conditions hence there is always and uncertainty in energy output from the solar plants/wind plants. In case of sudden drop in generation from the solar plant/wind plant, the load will

have to be supported by the grid instantaneously and in case of excess generation the grid acts as a cushion in consuming the same instantaneously.

- Moreover the AC power from the output of the inverter is prone to be having a larger number of harmonics resulting in the distorted sinusoidal waveform. The grid absorbs such harmonics thus aiding the solar PV plants/wind plants.
 - The consumers having installed Solar panels may cause unbalance in the system as per their nature of consumption and likely possibility of exporting/importing energy in one or 2 phases but not all phases.
 - Thus in all the above instances, the solar power plants/Rooftop PV Systems/wind plant take the support of the grid and hence the levy of grid support charges is justified.
5. The GSC proposed for renewable plants are as follows
1. Solar, Wind, Hydel - 50% of proposed GSC of Conventional sources.
 2. RTS plants - 30% of proposed GSC of Conventional sources.
6. The proposed GSC for Renewable Plants are less than the Conventional sources as the solar renewable plants are operating during day time only and the Wind & Hydel power plants are seasonal in nature and takes grid support accordingly.
7. The above proposals were already approved by the neighboring A.P. state Regulatory commission and being implemented since FY 2022-23. Hence, the TSDISCOMs proposed the GSC for parallel operation of plants with the same Methodology for approval by Hon'ble TSERC.

Yours faithfully



CHIEF GENERAL MANAGER (RAC)

**NAVA LIMITED**

(Formerly Nava Bharat Ventures Ltd)

Corp. Office: Silicon House, No. 8-3-318/1, Plot 78,
Road No. 14, Banjara Hills, Hyderabad - 500 034, Telangana, India.NBV/FIN/ 150/2023-24
June 23, 2023**The Chairperson, Grid Coordination Committee,
Transmission Corporation of Telangana Limited,
Vidyut Soudha, Khairtabad,
Hyderabad- 500 082**

Dear Sir,

Sub: Written submissions against the discussions held on 12.06.2023 during 4th Grid Coordination Committee (GCC) meeting on detailed study in the matter of parallel operation of CPPs, IPPs and Merchant power plants and consequent levy of grid support charges (GSC) -Reg..

Ref 1:3rd GCC meeting held on 21.07.2022 and our written submissions submitted vide letter No.NBV/FIN/171/2022-23 dated 21.07.2022

Ref:2: Discussion held during 4th Grid Coordination Committee Meeting at 15:00 Hrs on 12th June 2023

With reference to the above-mentioned subject, as a Member of Grid Coordination Committee, we are herewith submitting our detailed analysis and findings on the proposal of TSNPDCL and TSSPDCL for determination of Grid Support charges for parallel operation of Captive power generating plants and Merchant power plants, in Telangana.

According to the attached findings, we are of the opinion that Grid support charges are not at all required to collect from the CPPs, IPPs and Merchant power generating plants in the State of Telangana and accordingly submitting the findings to the Hon'ble Chairperson of GCC for onward submission of the same to the Hon'ble State Commission.

Thanking you,

Yours faithfully,

For NAVA LIMITED*(Formerly Nava Bharat Ventures Limited)***Srinivas P****Member-Grid Coordination Committee**

Encl: As above.

Copy to: The Secretary, Telangana State Electricity Regulatory Commission.

Submitted to: The Chairperson, Grid Coordination Committee,

Sub: 4th Grid Coordination Committee (GCC) meeting held on 12.06.2023 on study on the issue of parallel operation of CPPs and consequent levy of Grid Support Charges(GSC), Findings and written submission of the member represented from Nava Limited (Formerly Nava Bharat Ventures Limited) on behalf of Captive Power Plants, IPPs and Merchant power generating plants in Telangana -Reg...

By the following findings and advantages, the member is of the opinion that grid support charges are not at all required to collect from the CPPs and IPPs/Merchant power plants in the state of Telangana and requested the DISCOMS to withdraw the proposal.

- 1. While filing the ARR, the Applicant Licensees propose to levy Grid Support Charges for FY 2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees as follows:**

*Grid Support Charges = Total Installed Capacity X Rate of GSC
(Rs./kW/month) Rate of GSC:*

- i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.*
- ii. Conventional generators shall pay Rs. 50 per kW per month.*
- iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 kW per month.*
- iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.*
- v. Co-gen sugar mills shall pay charges of Rs. 25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.*
- vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.*



vii. To the extent of PPA capacities of the generators with the DISCOMs shall be exempted from payment of these charges.

2. In the above matter, this Hon'ble Telangana Commission has invited the stakeholders to file their comments/suggestions/objection, if any, on or before 31.01.2023 and accordingly we submitted the objections and the Hon'ble Commission has deferred the GSC matter and again referred it to Grid Coordination Committee

During the 4th GCC meeting we submitted the objections on levy of Grid Support Charges which are set out below for this Hon'ble Commission's kind consideration and disposal:

I. HISTORY OF GRID SUPPORT CHARGES (GSC):

1. Grid Support Charges (GSC) were initially levied by the erstwhile Hon'ble APERC vide Order in O.P.No. 1 of 1999 dated 08.02.2002 in the context of the AP Electricity Reform Act, 1998. The GSC order was implemented vide Tariff Order FY 2002-03 from 01.04.2002. The same was challenged before the Hon'ble High Court for the erstwhile State of A.P which was decided in favour of the generators/Captive Power Producers (CPPs) and the levy of grid support charges was set aside. An Appeal was filed by APTransco (Civil Appeal No. 4569 of 2003) in the Hon'ble Supreme Court. The Hon'ble Supreme Court, vide its judgement dated 29.11.2019 affirmed the orders of the erstwhile Commission.
2. It is pertinent to note that the prevailing conditions during 2002 and the present are totally different. When the Act is not in existence, there was no concept of Open Access, Transmission and Wheeling. The same were allowed by means of mutually agreed agreements at that time.
3. It is also pertinent to note that the erstwhile APERC was constituted under the AP Electricity Reform Act, 1998, and passed the order in O.P.No.1 of 1999 in exercise of its powers under the said Act.
4. **Earlier TS DISCOMS proposed to levy the grid support charges on captive generating plants considering captive load burden on Grid . But surprisingly that now the DISCOMS proposed to levy such charges on all generating plants including Independent power generating plants and Merchant power generating plants without explaining any reason/basis for levy of such charges.**



5. The IPPs and Merchant power generating plants are meant for generate and export entire power to grid and accordingly always supportive to grid but never opt grid support to run the plant.

II. THE IMPACT OF THE ELECTRICITY ACT, 2003:

1. In 2003, the Electricity Act, 2003 ("Act") came into force. The Act brought in substantial changes to the previous regime, including the establishment of State Commissions, delicensing of Generation, unbundling of transmission and distribution, specification of tariffs and charges, crystallized the scheme of Open Access, brought in procedures and standards to enforce discipline, etc. However, it left the Commissions established by States under earlier State enactments (such as the AP Electricity Reform Act, 1998) untouched and treated them to be Commissions established under the Act, essentially conferring them with powers under both Acts, in as much as the State enactments were not in derogation to the Act.
2. Open Access was introduced under Section 42 of the Act, in pursuance to which APERC Regulation Nos.2 of 2005 and 2 of 2006 were also promulgated by the erstwhile Commission.

No jurisdiction to Propose or Levy GSC:

3. Under the provisions of the Act, separate entities, being the SLDC/RLDC/NLDC were created to take care of the Grid. SLDC/RLDC is responsible for maintaining grid security, Load forecasting, scheduling and dispatching and balancing of generation and demand (load). The ARR of SLDC was already approved in the MYT Tariff 2021-23. The DISCOMs have no role in maintaining Grid security and have to comply with the directions issued by SLDC/RLDC. Hence, in the present scenario, there is no need to propose GSC by DISCOMs and the DISCOMs have no role in seeking GSC at all.
4. The Applicant DISCOMs are responsible for their distribution business only and can at most levy wheeling charges, and nothing more. Any GSC as sought to be levied would have to be proposed and substantiated by TSSLDC, being the entity tasked with grid security under the Act. Therefore, DISCOMs have nothing to do with GSC. The ARR of the Applicant DISCOMs Distribution Business is recovered through wheeling charges as approved in the relevant MYT orders. As the present the ARR and the FPT is to recover the costs of the Applicants' Retail Supply Business, and the Applicant DISCOMs have no role in proposing GSC, and certainly not at 132 KV voltage.



5. It is also pertinent to note that this Hon'ble Commission is constituted under the Act, and thus the earlier AP Electricity Reform Act, 1998 under which GSC were earlier determined is neither applicable nor relevant in the present day. The Act, 2003 specifically lays down the charges and tariffs to be collected, and no charges beyond what is prescribed can be levied. Admittedly, there is no charge such as GSC mentioned in the Act or the regulations, let alone under S.62 under which the present petitions are filed, and as such, any such proposal to levy GSC is without jurisdiction.
6. It is thus submitted that the scope of present ARR for Retail Supply Business for FY 2023-24 should be strictly confined in terms of Section 62 of the Act r/w Regulation 4 of 2005 as adopted under Regulation 1 of 2014, and Section 42 of the Act for the purpose of determination of CSS and any proposal of the Applicant DISCOMs to levy GSC is **itself misconceived and patently without jurisdiction.**

Without Prejudice to above submissions of the very authority and jurisdiction to levy GSC, the following further submissions are made.

In relation to the Proposal made by the Applicant Discoms:

7. The Applicant Discoms have proposed Grid Support Charges for all generators, including captive, cogeneration, merchant power plants/IPP, rooftop power plants etc., which is completely against the reasoning of GSC in the first place.
8. The Applicant Discoms have arbitrarily and without any substantiation proposed different rates of GSC for different types of generators. There is no reason stated as to why or on what basis such differentiation is made.
9. There is no justification at all for how rates of GSC have been arrived at. The proposed levy has no basis and is grossly excessive, arbitrary, and so requires to be rejected.
10. There is no mention of basis and methodology by DISCOMS for the proposed GSC of Rs.50 KW per Month. The proposed levy of GSC at such a high rate will be a death knell for large process industries which depend upon captive power at reasonable cost. The proposed GSC will hit at the core viability of the principal industry resulting in closure of operations and in loss of direct and indirect employment aside from loss of revenue to the exchequer.



11. The proposed levy of GSC appears to be lifted from the Hon'ble APERC's RSTO for FY 2022-23, which levy itself has been stayed by the Hon'ble APTEL vide order dated 20.05.2022 in DFR No.186/2022, and orders dated 01.07.2022 in DFR Nos.240/2022, 241/2022 and 271/2022.
12. There is no revenue or costs that are shown to be associated corresponding to the levy of GSC. As such, once the entire costs are recovered by the proposed RST alone, any further levy of GSC amounts to illegal and unjust enrichment of the Applicant Discoms at the cost of generating companies.

In relation to Captive Power Plants:

13. Captive Power Generation is delicensed under the Electricity Act so as to lessen the burden on the Grid in meeting the distributed loads. The provision in Para 5.2.26 of National Electricity Policy, 2005 notified by Govt of India laid emphasis on grid connectivity of captive generators even under open access regime which is reproduced below:"

"Under the Act, captive generators have access to licensees and would get access to consumers who are allowed open access. Grid inter-connection for captive generators shall be facilitated as per Section 30 of the Act. This should be done on priority basis to enable captive generation to become available as distributed generation along with the grid."

In the spirit of this legislation and rules framed thereunder, determination of Grid Support or Parallel Operation Charge should follow the principles of transparency, actual forbearance and fair computation based on time tested methodology. The proposed levy does not meet any of these criteria and is arbitrary.

14. In the case of CPPs availing Open Access for transmission and wheeling of power from the generation point to the consumption point, charges are levied as determined by the regulator from time to time. Even in these cases there is an established mechanism of UI charges which essentially address the so-called grid support or parallel operation. The proposed levy by the TSDISCOMs is therefore quite arbitrary, excessive and is not supported by quantifiable data.
15. The Transmission system of the Transco/Discom should be so designed that it should take care of fluctuating load of the consumer as it is the duty of the transmission licensee under Section 40 of Electricity Act, 2003. In relation to CPPs it is also submitted as follows:



- a) CPPs absorb some amount of harmonics whereas a consumer without CPP inject full quantum of harmonics generated to the grid.
- b) The unbalanced voltage of the grid is a source of negative phase sequence current which is absorbed by the generators of CPP.
- c) Fault level depends upon the generation capacity connected to the grid. The parallel operation of CPPs with the grid is infact beneficial with some degree of voltage support that the CPPs extend to the Grid
- d) As per Regulations of Supply Code, Industries having CPPs can draw emergency power up to the capacity of largest generating unit by paying required tariff. CPP's drawl of power is limited to "start-up power" that too when there is total loss of generation of the CPP. The drawl of power for production purposes, is limited to the CMD as per the Power Supply Agreement with the DISCOM. Otherwise, penalty is attracted. Overdrawl is prevented by proper setting of the relays at the Grid Sub-station.
- e) It is wrong to state that active and reactive power demand due to sudden and fluctuating load are not recorded in the meter. Billing is done for all consumers by integration over 15 minutes period and this is also applicable for CPPs and so it does not result in any undue advantage.
- f) Due to injection of power by CPPs the load on the transformers in the grid reduces resulting in less transformer loss.
- g) The CPP are acting as distributed generator at the load center for which the transmission and distribution loss has been reduced to great extent.
- h) As per Section 7 of the Electricity Act, 2003 any generating company may establish operate and maintain a generating station if it complies with State Grid Code and standards of grid connectivity as referred in Section 73 (b) of the Act. Both Tariff Policy and National Electricity Policy emphasizes the need for unhindered connectivity of CPPs to the grid. The proposed and arbitrary quantum of Grid Support Charge makes the captive power generation unviable and the spirit of the act and the rules framed thereunder are thus vitiated.
- i) There is no provision in the statute that empowers the DISCOMS to levy Grid Support Charges on the CPPs. They, on the other hand are benefited as CPPs absorbed some amount of harmonics. On the



contrary consumer without CPPs transmit full quantum of harmonics to the grid. The DISCOMs/TRANSCO is not taking any step to install suitable equipment to filter the harmonics and injecting those pollutants to the grid for which the CPPs are forced to suffer. The grid voltage is always unbalanced due to various categories of consumers and hence is a source of negative phase sequence current which cause stress on the generators of CPPs.

j) It is relevant to mention the observation and comments of The Hon'ble Orissa Electricity Regulatory Commission in a similar matter, in its Order dated 31.03.2014 in Case No. 46/2012, the excerpt of which is as follows:

i) Para- 15 of Order:

"We heard the parties at length and also perused the technical report submitted by OPTCL. The present installed capacity of the CGPs in the State as submitted by OPTCL is 5173 MW which is more than or equal to capacity of other generators connected to Odisha Grid including Odisha share of power from Central Generation Stations. We agree with the contention of CCPPO that the pollutants of the Grid like fluctuations in frequency and voltage, negative phase sequence, distortion due to harmonics etc. are the resultant effect of all synchronous machines like generators and motors of the Grid system. These pollutants are injected in to the grid not only by CGPs but also by other independent generators and machines like motors and arc furnaces of the consumers. Holding industry having CGPs only responsible for this is not correct".

ii) Para-16 of Order:

"After going through the submission of various stake holders of the grid system we conclude that the behaviour of industries having CGPs and also without CGPs varies case to case basis. There are ample provisions in the Odisha Grid Code to regulate the behaviour of entities connected to the OPTCL system. Hence, a generic method of calculation of Grid Support Charges for all industries may not be proper. The Petitioner has failed to submit a State-wide study before us on which a decision could have been taken. One solution fits all can't be applicable here. So implementation of a model of another State in our State will not be proper."



iii) Para- 17 of Order:

“There are enough provisions in Odisha Grid Code, 2006 to maintain quality supply in the grid system. Regulation 4.7 of Odisha Grid Code discuss elaborately the ideal behaviour of constituents of the Grid. OPTCL should play the role of watchdog and analyze the pollutant injected by various constituents of the grid system. CGPs and industries injecting pollution should be directed to take up remedial measures like installation of capacitors, filters for harmonics, etc. so that grid pollution will be minimized. The non-compliance by any industry or industry having CGP of the Grid Code should be dealt as per Regulation 1.18 of OGC, 2006. Therefore, the prayer of OPTCL for levy of Grid Support Charges is not acceptable.”

Further, when GSC was proposed by APERC during the year 1999 and 2002, the Electricity Act was not in force. The Act is in force from 2003 and Section 9 of Electricity Act does not differentiate between CPP and IPP as far as grid connectivity is concerned and hence both should be treated equitably from the viewpoint of grid connectivity and support.

- k) The proposed levy of GSC aims to stifle the consuming industries by this arbitrary levy, which in turn erodes the viability of the principal industry to a point that it must perforce cease operations.
- l) CPPs have repeatedly expressed their willingness to provide additional protections in their facilities as desired by the grid to see that no untoward load throwbacks or fault currents or reactive power surges happen.
- m) The levy of GSC in 1999 was proposed when the generation shortfall was prevailing, and the TSDISCOMS were going through occasional R&C periods and frequency fluctuations, etc. when the Regulator considered that the proposed levy had merits. However, the TS Grid has since improved / made many strides in Grid size, availability of power and attained stability and is one of the few Grids in the country being engaged in export of power on a steady basis. Aggregate capacity of the CPPs now is relatively marginal compared to the Grid Size and no real forbearance could be possible warranting such huge and arbitrary levy.



- n) In our case, the CPPs installed capacities are much higher when compared to our captive load to ensure higher availability for captive use. Since our installed and operating capacity of captive load is much lower than installed Capacity of Captive Power plant, it is required to connected with grid for export of surplus power through open access.
- o) Grid Support Charges cannot be a substitute for Demand or Capacity Charges which are determined on a wider basis by the regulator. So the proposed levy of Grid Support Charges based on applicable demand charge is arbitrary, excessive and results in undue enrichment of the TSDISCOMs at the expense of CPPs.
- p) It may be noted that, before determination of GSC/POC, The Hon'ble Chhattisgarh State Electricity Regulatory Commission (CSERC) has assigned this responsibility to an independent third party M/s.Electrical Research & Development Association (ERDA) to study various system data and system parameters of representative selected CPPs. Accordingly ERDA has measured various system parameters like harmonics, unbalance current, plant load factor, load cycle, fault level calculations etc. by measurement on selected CPPs and relevant substation and finally ERDA has suggested working out the parallel operation charges on sound technical basis taking into consideration advantages and disadvantages to both CPPs & CSEB and submitted its recommendation to CSERC. Similarly The Hon'ble OERC has also appointed an independent third party for system study before determination of GSC.
- q) For the various reasons cited above, the Grid situation requires to be thoroughly reviewed with reference to the fact whether the Grid suffers any forbearance in providing parallel operations of CPPs.

Suggestion/recommendation of the Member -Grid Coordination Committee

That, in view of the above findings, the member is of the opinion that;

- i. Grid support charges are not at all required to collect from the CPPs, IPPs/Merchant power plants in Telangana and submits the recommendation to the Hon'ble Commission through the Chairperson of Grid Coordination Committee to reject the proposal levy of Grid Support Charges as there is no such provision in the Statute/Electricity Act, whereas the STU /Transmission and Distribution Licensees are duty bound under Section 39 and 40 of the Electricity Act, 2003 and the National Electricity Policy, 2005 to provide connectivity to the CPPs like any generating station



- ii. In the event the Hon'ble Commission holds the proposal of GSC is valid, within the powers and jurisdiction and are leviable, it is requested that an independent reputed third party should be engaged to conduct a thorough system study and technical issues concerning power load throwbacks by CPPS/consuming industries, power harmonics in parallel operation of CPPs, size of the CPPs and judiciously arrive at a reasonable decision as has been done by other state Commissions/governments

For Nava Limited
(Formerly Nava Bharat Ventures Ltd)


Srinivas P
General Manager-Commercial

Place: Hyderabad:
Date: 23.06.2023





SLS Power Corporation Limited

121/1, 1st Main Road, 2nd Stage West of Chord Road, Mahalakshmiapuram
Near G.D.Naidu Hall, Bangalore - 560 086 Ph. +91 08 23195162, 23195163
Fax : +91 08 23195164 E-mail: slspowercorporation@gmail.com

ANNEXURE-IV

CIN: U40109AP2005PLC047008

SLSPCI/2023-24/028

Dt. 29.06.2023

The Chief Engineer, TSTRANSCO,
State Load Dispatch Centre,
Vidyuth Soudha, Khairatabad,
Hyderabad, - 500 082.

Respected Sir,

**Subject: Feedback and Request for Reconsideration of Proposed Grid Support
Charges for FY 2023-24**

I am writing to provide feedback on the proposed grid support charges discussed during the Fourth Grid Coordination Committee (GCC) Meeting, which took place on 12.06.2023 at Vidyut Soudha.

Firstly, the TSDISCOMs have proposed levying grid support charges for the FY 2023-24, applicable to all generators. According to the proposal, renewable power plants will be required to pay Rs. 25 per kW per month.

As representatives of SLS Power Corporation Ltd, we would like to bring our situation to your attention. Our installed capacity stands at 24 MW (6 x 4MW), with a current running capacity of 13 MW. Our plant load factor (PLF) is at a maximum of 22%.

It is important to note that our plant operates at its maximum load (variable ranging from 10-13 MW) for only four months, specifically from August to November. During the remaining months (December to July), based on water inflow, the load is limited to 10-15% of the installed capacity, thereby running a single unit only.

We would like to highlight that we primarily require grid support during the start-up phase, specifically for a power requirement of 150 KVA. Currently, we are already paying demand charges for this start-up power, as well as STU and CTU charges for the generation unit, along with DSM charges for under-injection.

Implementing the proposed grid support charges would significantly impact us. Therefore, we are unable to accept this proposal and cannot bear the additional financial burden it would impose on us. We are already facing financial crises due to the non-feasibility of the plant, which is running at 50% PLF compared to the design PLF.

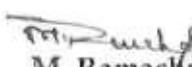


We kindly request that you reconsider the imposition of the grid support charges and take into account the unique circumstances of our power plant. We believe that a fair evaluation of our situation would support our request to be exempted from these charges.

Thank you for your attention to this matter. We look forward to your favorable response.

Sincerely,

For SLS Power Corporation Ltd.


M. Ramachandra
Director



ANNEXURE-V

**ABSTRACT OF LAST 9 RGMO INCIDENT DETAILS OF TSGENCO STATIONS IN THE MONTHS of
SEPT 2022, JAN 2023, FEB 2023 and MARCH 2023.**

GENERATING STATION NAME	INSUFFICIENT RESPONSES	PARTIAL RESPONSES	GOOD RESPONSES	OUTAGES	AVERAGE RESPONSE for 8 INCIDENTS	AVERAGE PERCENTAGE (%)	REASONS
KTPP-U1	6	2	0	1 incident	insufficiently responded	21%	Mills changeover, poor quality of Coal(JAN, FEB 2023). Hunting of HP Turbine control valves(MAR 23)
KTPP-U2	6	3	0		insufficiently responded	24%	
KTS-U9	3	4	2		Partially responded	53%	
KTS-U10	3	0	6		Good responded	81%	
KTPS Stage VI	1	3	2	3 incidents	Partially responded	37%	
KTPS Stage VII	1	3	4	1 incident	Partially responded	60%	Due to ESP Ash Evacuation problem unit coal bflow was restricted(JAN 23)
BTPS STATION I&II	Data entered in SRLDC Google spreadsheets however not communicated by TSGENCO Head office/Generating Stations.						

ABSTRACT OF LAST 9 RGMO INCIDENT DETAILS OF SINGARENI THERMAL POWER PLANT IN THE MONTHS of SEPT 2022, JAN 2023, FEB 2023 and MARCH 2023.

GENERATING STATION NAME	INSUFFICIENT RESPONSES	PARTIAL RESPONSES	GOOD RESPONSES	Negative Response	OUTAGES	AVERAGE RESPONSE for 9 INCIDENTS	AVERAGE PERCENTAGE (%)	REASONS
STPP U1	0	0	0	6	3 incidents	Partially responded	-5%	*
STPP U2	2	3	0	1	3 incidents	Partially responded	12%	Not communicated by STPP

* STPP U1 is being operated at fullload (600MW) due to high turbine vibrations during the incidences to maintain vibrations on lowside unit is being operated at VWQ also.

'External:' 5th Grid Coordination Committee (GCC) meeting held on 05.08.2023 - Submission of written comments/views - regarding

Rac Tsspdcl <ractsspdcl@gmail.com>

Fri 8/18/2023 5:59 PM

To:CHIEF ENGINEER(SLDC) <ce.sldc@tstransco.in>;

⚠ ALERT:! mail from outside of TSTRANSCO Organization. Do not click links or open attachments unless you recognize the Sender and know the content is Safe.

Respected Sir,

It is to submit that, in continuation to the 4th Grid Coordination Committee (GCC) meeting held on 12.06.2023, the views of TSSPDCL in levying the Grid support charges for F.Y 2023-24 are submitted vide Letter dated:23.06.2023.

In continuation to the above, the following additional comments are submitted.

A) The generation from Solar Power plants is not constant and varies from 0 to 100% of capacity of solar plants. During the variation/dip in the generation at solar power plants at certain points of time, the concerned captive user or third party user is drawing the power from Grid at that time. So the user is taking the power from Grid even though there is no generation during particular spells.

B) Further, during the generation period, the solar power plant is injecting active power to the grid and drawing reactive power from the grid without any constraints. This results in huge reactive energy charges which are borne by the DISCOMs to pay to the SRLDC. Also due to poor power factor the utility transformers are overloaded even at 70% of loading.

In view of the above, the Grid Coordination Committee (GCC) is requested to consider the levy of Grid Support Charges on Solar power plants including Roof Top Solar power plants as proposed in the ARR filings for F.Y.2023-24 before the Hon'ble TSERC .

Your Faithfully
Chief General Manager(RAC)
TSSPDCL

1000

Minutes of the Fifth Grid Coordination Committee (GCC) Meeting held on 05.08.2023 at Vidyut Soudha:

Introduction:

The Fifth Meeting of Grid Coordination Committee (GCC) was held on 05th August'2023 at Vidyut Soudha. The list of participants is at **Annexure-I**.

Superintending Engineer/SLDC welcomed Sri. S.V.Kumar Raju, Chief Engineer/SLDC & Member Convener, GCC and all the members of GCC to the 5th GCC Meeting. Further, requested all the members to introduce them selves to the forum. Accordingly, members introduced their details to the forum.

1. Confirmation of the Minutes of the Fourth GCC

Fourth GCC meeting was held on 12.06.2023 at Vidyut Soudha and the minutes were issued on 12.07.2023.

The Minutes of the Fourth GCC Meeting were confirmed.

2. Grid Support Charges (GSC) for FY 2023-24 – Further Deliberation

In the Fourth GCC meeting, GCC heard the views of members regarding levy Grid Support Charges for FY 2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees.

Grid Support Charges = Total Installed Capacity X Rate of GSC (Rs./kW/month)

Rate of GSC:

- i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.
- ii. Conventional generators shall pay Rs.50 per kW per month.
- iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 per kW per month.
- iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.
- v. Co-gen sugar mills shall pay charges of Rs.25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.

vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.

vii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.

Hon'ble TSERC vide letter Dt:10.05.2023 directed GCC for detailed analysis on the issue of levy of Grid Support Charges for FY 2023-24 and to submit a detailed report. Further, Hon'ble TSERC vide letter dated 04.07.2023 granted extension of time to GCC and directed to submit detailed report on or before 16.08.2023.

The issue is put up for deliberation.

Deliberation:

SLDC informed forum that 4th GCC meeting was held on 12.06.2023 and based on the deliberations it was concluded that Technical Study is required in respect of Grid Support for RE Generators. We have already discussed about the Grid Support of Conventional Generators. This time Discoms proposed levy of GSC on RE Generators also.

The GCC was explained about the 4th GCC deliberations and the Proposal of Discoms for FY 2023-24, where in all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees, are brought under the ambit of Grid Support Charges.

Based on the request of certain members of the GCC a technical Study was conducted using PSS/E Software for Solar Power Plant. Accordingly a presentation (**Annexure-II**) was prepared for explanation of Study.

The following is the summary of Technical Study. This study consists Steady State Behaviour and Transient Behaviour of Grid connected Solar plants.

- A Single Machine Infinite Bus(SMIB) Example was taken for Studying both Steady State and Transient behaviour.

Steady State Behaviour:

- During generation period, the solar power plant is injecting active power to grid and drawing reactive power from grid. This is causing Utility Transformers to operate at poor power factor and consequently leading to overloading of transformers even at 70% of Loading.
- During non generation period, the solar power plants are drawing active power from grid to meet their auxiliaries and injecting reactive power to grid (because they are unable to control their reactive power). Overall injection by these solar power plants is one of the cause for high voltages and levy of reactive energy charges at ISTS level.
- The Steady State behaviour like MW vs MVAR, Voltage Profile of solar power plant & Utility Substation are presented.

Transient Behaviour:

- The existing solar inverters are Grid-Tied and during source failure these plants are de-energized. It was observed that, Solar plants in Telangana always need a Grid support (Voltage reference) for injection of active Power.
- The transient behaviour of Solar Power Plants in terms Power Angle of bus and Voltage instability were also explained.

In addition to the above, expected behaviour as per Hon'ble TSERC Regulations and CEA (Technical Standards for Connectivity to Grid) Regulations, of solar power plants were also explained.

A) TSSPDCL:

Divisional Engineer/RAC/TSSPDCL informed that the generation is not constant from a solar power plant, because of which there is disturbance in the grid and utilities are absorbing these variations in generation.

During the variation/dip in the generation at solar power plants at certain points of time, the concerned captive user or third party user is drawing the power from Grid at that time. So the user is taking the power from Grid even though there is no generation during particular spells.

As the utilities are absorbing the variations in the solar generation, it is to request the Committee for considering levy of Grid Support Charges on solar power plants including Roof Top Solar Power Plants to Hon'ble TSERC.

B) TSNPDCL:

It was informed that the deliberations of the 4th GCC holds good and agree with the TSSPDCL comments/views.

C) Representative of Generating Companies – Thermal(other than state generating companies):

It was informed that the written views were already submitted. Further, it is to inform that Grid support is required for injection/drawl and this we are not objecting. The objection is only on charges.

Further, Representative of Thermal Generating Companies vide letter dated 16.08.2023 submitted their written submissions. Copy enclosed as **Annexure-III**.

D) CESS, Siricilla

Agrees with Discoms Proposals.

E) Representative of Generating Companies – Solar:

Renew Power Ltd. representatives informed that, we will submit the written views if any after wards.

F) Representative of State Generating Companies - TSGenco:

TSGenco informed forum that, they agree with the TSDISCOMs proposals, as there is need to compensate for the services.

G) NSL Krishnaveni Sugars Ltd., Representative of Bagasse Generating Companies informed that, we will submit the written views if any.

H) Representative of STU & Person Nominated by Hon'ble TSERC under clause 5.3(n) – Chief Engineer/Transmission:

It was informed that, Grid Support Charges are to be collected.

I) Mytrah Vayu (Godavari) Ltd., Representative of Wind Generating Companies

The representative informed that, we will submit the written views if any.

J) Southern Regional Load Despatch Centre – Representative of SRLDC informed the forum that, injection of reactive power during night hours and absorption of reactive power during peak generation hours is clear with respect to solar generators.

It is to mention that, Discoms trying to charge the power plants for the services they given to the power plants. But, levying of charges may not give right direction to RE Developer. That may compensate the Discoms for the reactive energy charges being paid by Discoms.

From the Grid perspective, if the same behaviour continues the system is going to face low voltage in the peak generation hours and high voltage during night hours. At the ISTS level if the power plant is not going to establish dynamically varying reactive power (0.95lag to 0.95lead), they are not allowed for connectivity.

Further neutralising the reactive power by the solar power plants at the Point of Common Coupling (PCC) by adopting suitable reactive power compensation mechanisms must be looked into.

In addition to the above, it was informed that appropriate mechanism of billing of reactive energy exchanges with Grid (like 5paise/KVArh) may also be looked into, inline with the Indian Electricity Grid Code -2023.

SLDC informed forum that, the written views if any may be submitted to GCC on or before by 9th of this month, so as to consolidate and for submission of report to Hon'ble TSERC by GCC.

It was concluded that from studies, that like conventional generators Grid Support is essential for renewable generators also. Now, the proposal of Discoms is that, when support is being given to the generators they are claiming for the charges.

Of course when the services are provided the Discoms need to be compensated through charges. The charges proposed by Discoms were also based on the existing tariffs determined by other Regulatory Commissions.

In view of the above, GCC may initially support the Discoms Proposal and based on the experience, we may request for any changes in future.

K) There is no representation from the following members of GCC:

- a) Singareni Thermal Power Plant
- b) Gowthami Bio Energies Pvt. Ltd., Representative of Biomass Generating Companies
- c) SLS Power Corporation Ltd., Representative of Mini Hydel Generating Companies
- d) M/s PTC India Ltd. – Trader Member
- e) MRF Ltd., Representative of Open Access Consumers
- f) Southern Regional Power Committee

3. Conclusion:

Earlier GCC recommended for conventional plants that, grid support is required and some charges are also recommended for levy of GSC. Now, Renewable Energy Plants are introduced in the proposal. RE generators also requires grid support and it is observed that there is a deviation from CEA Regulations. Some amount of compensation is to be levied.

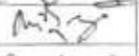
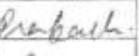
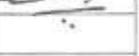
Member Convener, GCC based on these views and majority opinion will be recommending about the technical support and charges to Hon'ble TSERC.


17/8/23
Chief Engineer/SLDC

ANNEXURE-I

5th Grid Coordination Committee (GCC) Meeting regarding Levy of Grid Support Charges for FY 2023-24 - Direction by Hon'ble TSERC, on 05.08.2023 at 15:00Hrs at Main Meeting Hall, 6 th floor, Viduyt Soudha, TSTransco						
Sl.No	NAME	DESIGNATION	ORGANIZATION	E-MAIL ID	MOBILE NUMBER	SIGNATURE
1	T. MADHUSUDHAN	CGM/IPC	TSPDCL	cgmir@tspndcl.in	9491044275	
2	S. Rama Krishna	MD/CESS	CESS/SMDCL		9440814058	
3	VENKATESH M	DGM	SR-DC GRD-TRAN	venkatesh.m@grid-2023.in	9449599160	
4	CH. CHAKRAPANI	CGM/RAC	TSSPDCL	chactsspdcl@gmail.com	8985322897	
5	S. SUMI KUMAR	DE/RAC	TSSPDCL	sactsspdcl@gmail.com	91440816245	
6	SRINIVAS P	GM/AMR	NAVAR CHART	psrinivas@navar.in	9848699935	
7	RAJURAMAN B	HEAD - POWER TECHNICAL	MEL SUPPLYS	rajuraman.b@mel.com	9674444541	
8	Sahasra R	DM	RENW	sahasra@renw.com	8584748551	
9	B. Bala Raju	DE	TSGENCO	ge1-se@tsgenco.in	7981695275	
10	V. Buechi Reddy	AAO/IPC	TSPDCL	aaospdcl@tspndcl.in	8332958339	
11	C. Matilanjuna Chaudh	AO/SLD	TSTRANSCO	de-re2@tstransco.in	7382634584	
12	B. Ravi Kumar	DE/SLDS	TSTRANSCO	adceia@gmail.com	9440679448	
13	L. SARVESHWAR	AO/MD	TSTRANSCO	sarvesh.lakota@gmail.com	9640777527	
14	K. Venkatesh	AO/SLD	TSTRANSCO	venkatesh.k@tstransco.in	7382997039	
15	M. Chandan Babu	AO/DS	TSTRANSCO	maraganita@gmail.com	7382296996	

5th Grid Coordination Committee (GCC) Meeting regarding Levy of Grid Support Charges for FY 2023-24 - Direction by Hon'ble TSERC, on 05.08.2023 at 15:00Hrs at Main Meeting Hall, 6th floor, Vidyut Soudha, TSTRansco

Sl.No	NAME	DESIGNATION	ORGANIZATION	E-MAIL ID	MOBILE NUMBER	SIGNATURE
16	P. Praveen Kumar	ADE/SLDC	TSTRANSCO	ce.slidc@tstransco.in	9491066576	
17	N. Raja Shekar	AE/SLDC	TSTRANSCO	nsjskfr.239@gmail.com	8179976722	
18	S. Prakash	ARE-Manager	JRW	prakash.sanka@jrw.in	9553841733	
19	T. DURGA PRASAD	DE/SSJUS	TSTRANSCO	ce.trans@tstransco.in	9490153127	
20	N.V. Subramanyam	DE-3/EE/SLDC	TSTRANSCO	de.elec@tstransco.in	9491058620	
21	P. Chandan Kumar	SE/SLDC	TSTRANSCO	ce.elec@tstransco.in	858591684	
22	P. Suresh Babu	SE/SLDC	TSTRANSCO	ce.slidc@tstransco.in	960699237	
23	S.V. KUMAR RAJ	CE/SLDC	TSTRANSCO	kumarraj1205@gmail.com	7898782047	
24						
25						
26						
27						
28						
29						
30						



ANNEXURE-II

5th GCC Meeting on 05.08.2023

**Levy of Grid Support Charges for FY 2023-24
– Direction by Hon'ble TSERC**

GRID COORDINATION COMMITTEE

INTRODUCTION:

- Hon'ble TSERC directed Grid Coordination Committee(GCC) for a detailed analysis on the issue of levy of Grid Support Charges for FY 2023-24 proposed by Discoms in the ARR filing of Retail Supply Business for FY 2023-24 and to submit a detailed report.
- Accordingly, Grid Coordination Committee(GCC) Convened 4th GCC meeting on 12.06.2023 regarding the Grid Support Charges for FY 2023-24 and heard the views of members.
- During the meeting it was informed that, earlier Discoms proposed the levy of GSC on Captive Power Plants only. Now, the Discoms proposed levy of GSC on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with TSDISCOMs.

Grid Support Charges = Total Installed Capacity X Rate of GSC (Rs./kW/month)

- i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.
- ii. Conventional generators shall pay Rs.50 per kW per month.
- iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 per kW per month.
- iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.
- v. Co-gen sugar mills shall pay charges of Rs.25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.
- vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.
- vii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges.

➤ The Levy of GSC on other than conventional like solar, bagasse etc. is the present issue.

➤ During the deliberations of 4th GCC meeting some of the stake holders requested for technical study of solar plants. In this regard, the technical study (Steady State & Transient Behaviour) conducted using PSS/E Software is presented.

**STEADY STATE AND TRANSIENT BEHAVIOR
OF
GRID TIED SOLAR POWER PLANT**

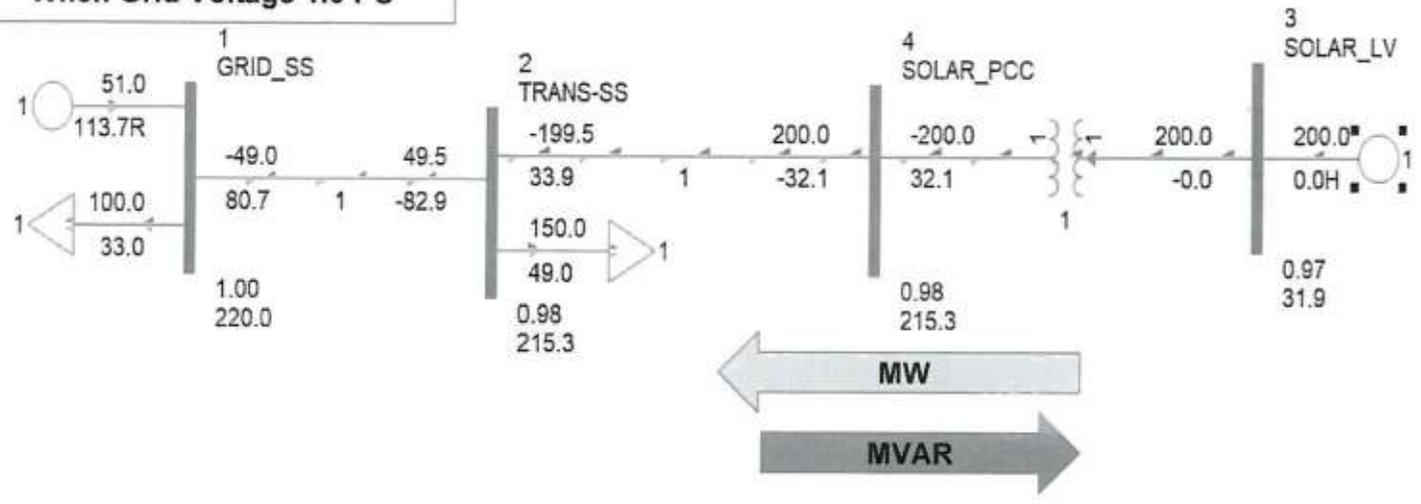
Contents:

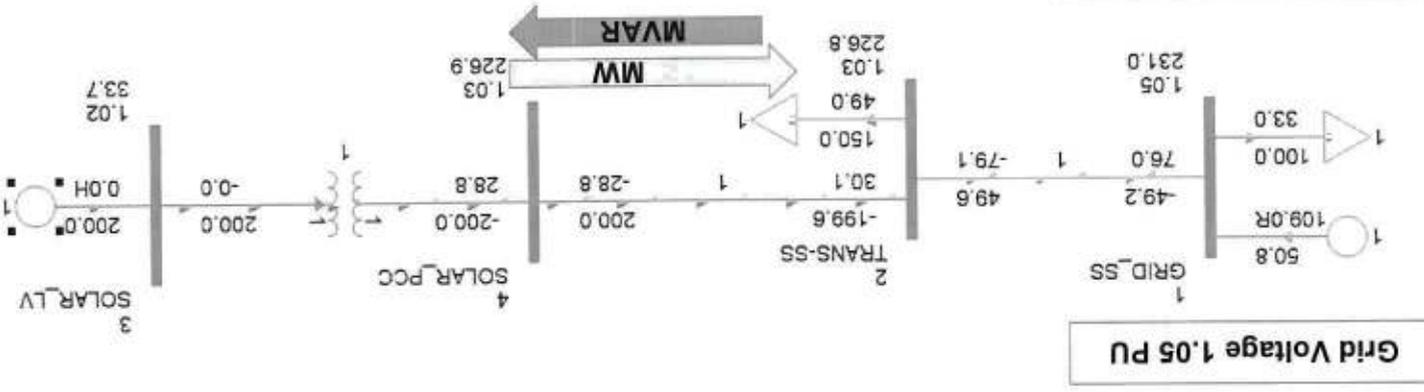
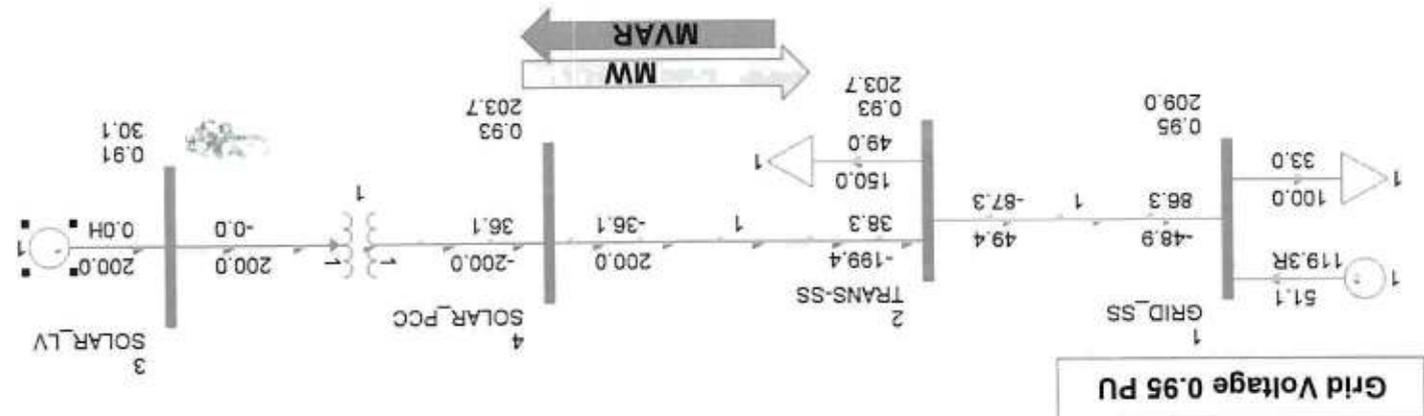
- 1) Solar Plant behavior during Steady State
- 2) Solar Plant behavior during Transient State
- 3) Conclusion

STEADY STATE BEHAVIOUR
OF
SOLAR PLANTS IN TELANGANA GRID
DURING SOLAR GENERATION PERIOD

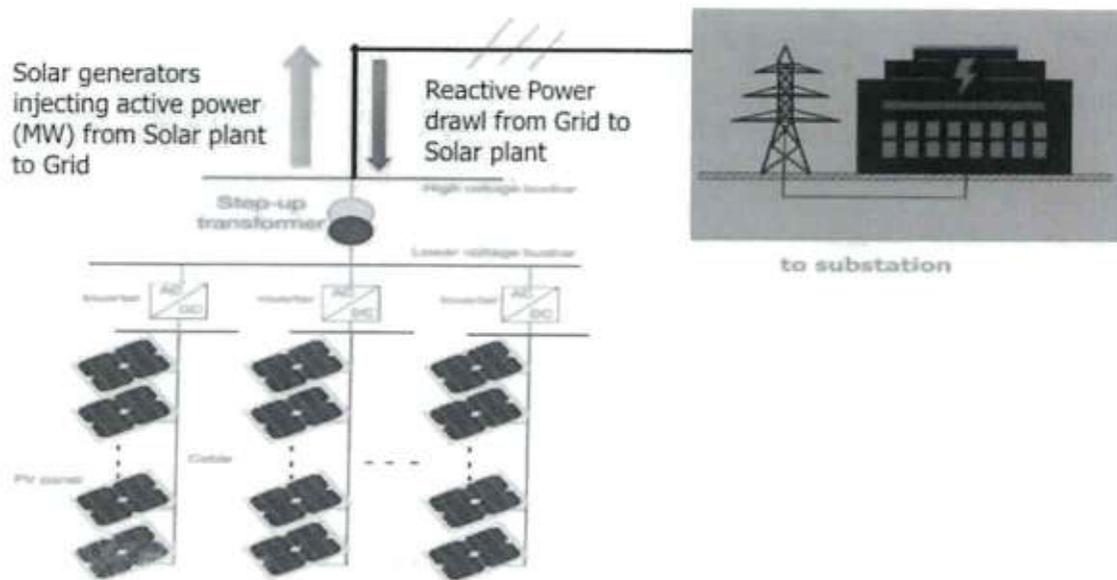
REAL TIME BEHAVIOUR OF SOLAR PLANT AT VARIOUS GRID VOLTAGES

When Grid Voltage 1.0 PU

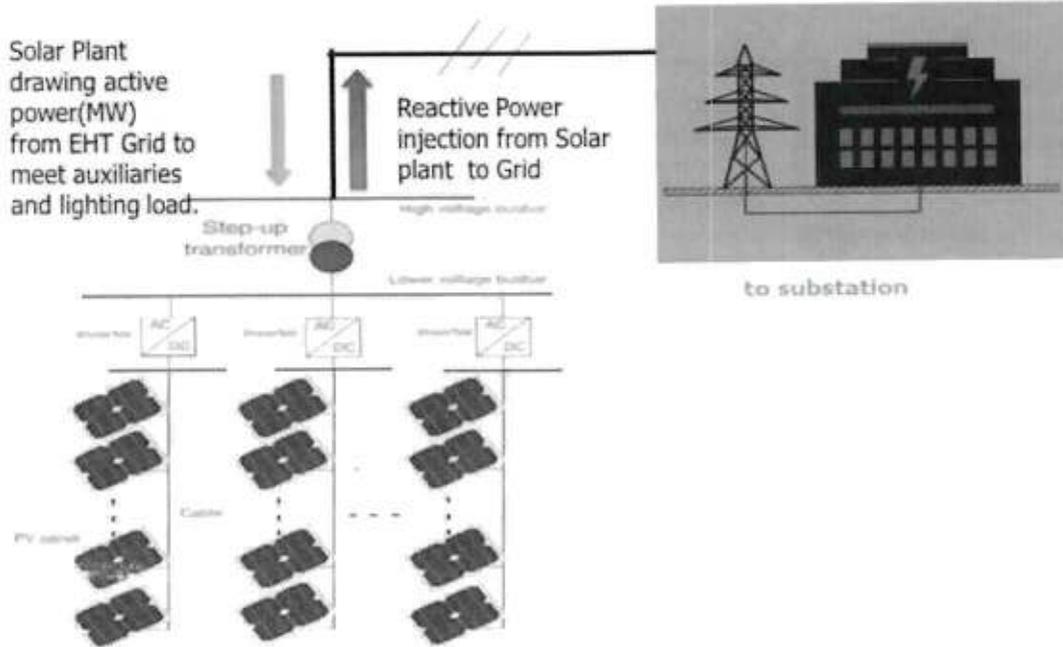


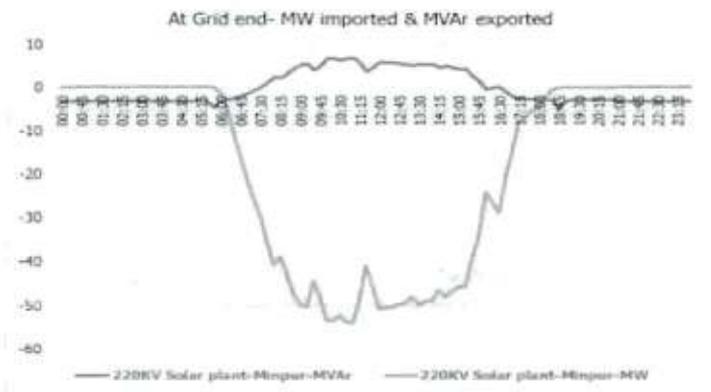
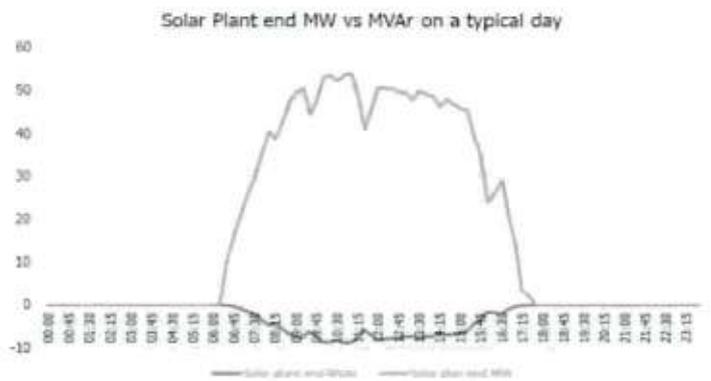
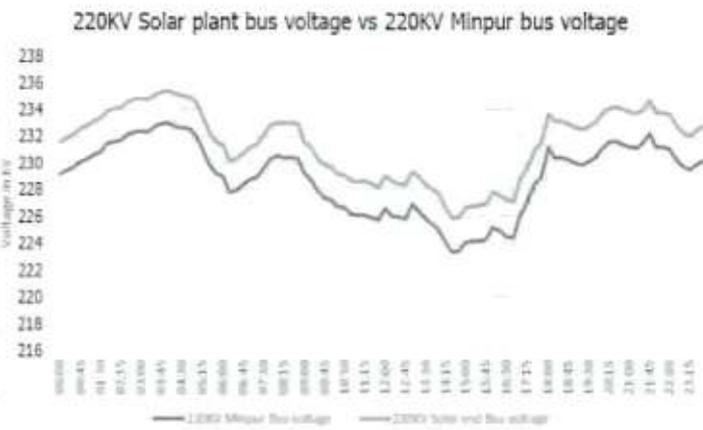


DURING PEAK SOLAR GENERATION PERIOD

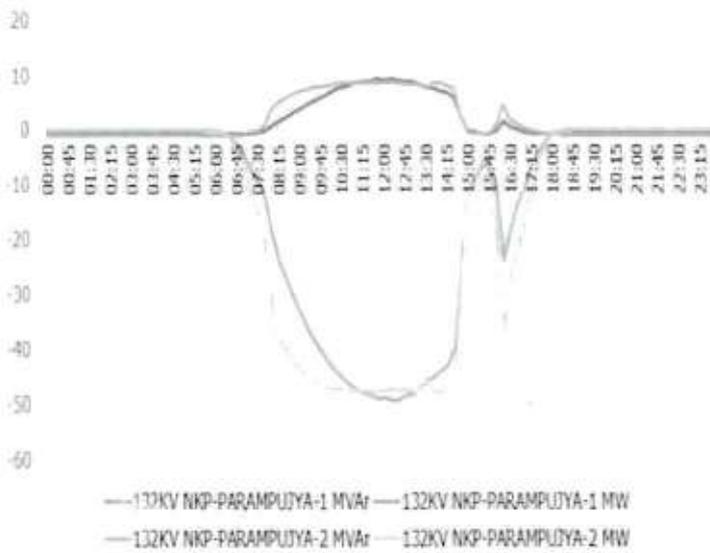


DURING NON- SOLAR GENERATION PERIOD

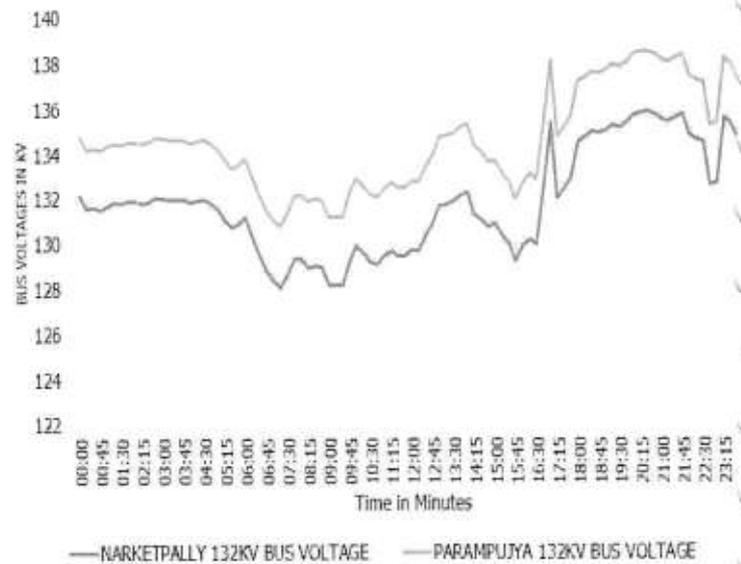




132KV PARAMPUJYA-NARAKETPALLY-D/C AS ON A TYPICAL DAY

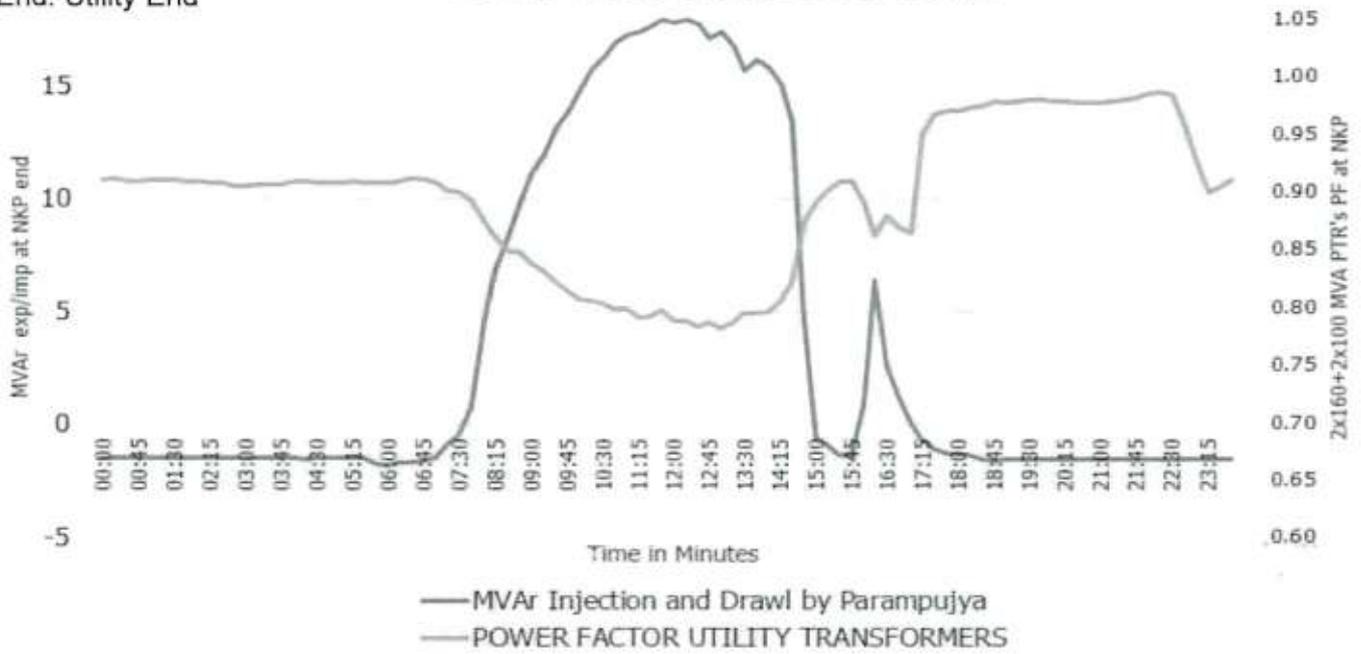


132KV BUS VOLTAGE AS ON A TYPICAL DAY



+ve MVar -Export
 -ve MVar-Import
 End: Utility End

MVar Injection and Drawl by Parampujya vs Utility Transformers Power Factor



EXPECTED BEHAVIOR AS PER CEA & TSERC REGULATIONS

46 9/100 P.13

46 9/100 P.13

STANDANRDS:

TSERC GRID CODE Regulation:

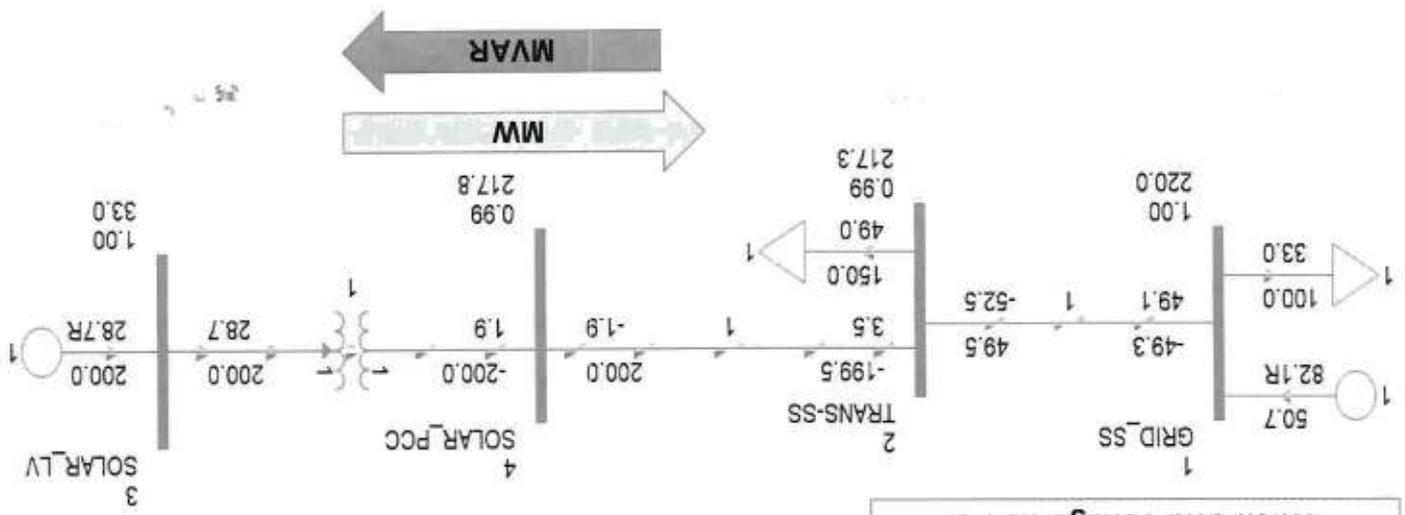
- Clause 9.3: All the generating units may operate within their reactive capability curves and the network voltage profile shall be maintained within voltage limits specified.
- Clause 49.5: The generating stations shall generate / absorb reactive power as per instructions of SLDC, within the capability limits of the respective generating units.
- Clause 17.4 : The reactive power compensation shall be provided by generators in low or high voltages systems to maintain the Grid voltage within the specified range at all times.
- Clause 17.4.4 : The Generators shall minimize the reactive power drawl from the Grid, when the voltage at the interconnection point is below 97% of rated voltage and shall not inject reactive power when the voltage is above 103% of rated voltage.

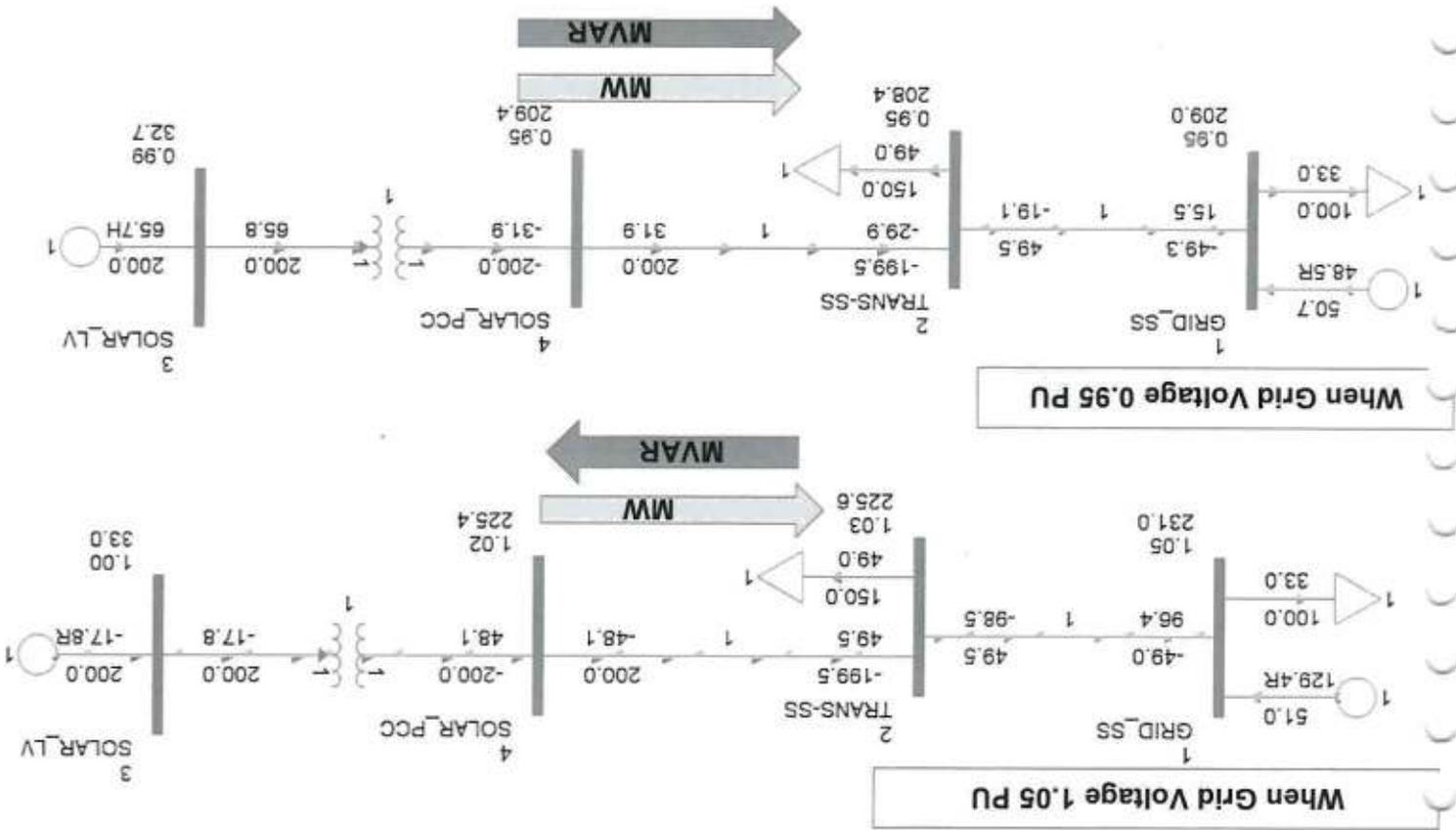
➤ **CEA Grid Connectivity Standards Regulations-2007 & Amendments:**

As per section B.2(i) of Part-II , Wind and Solar Generators shall be capable of supplying **dynamically varying** reactive power support so as to maintain power factor within limits of 0.95 Lagging to 0.95 Leading.

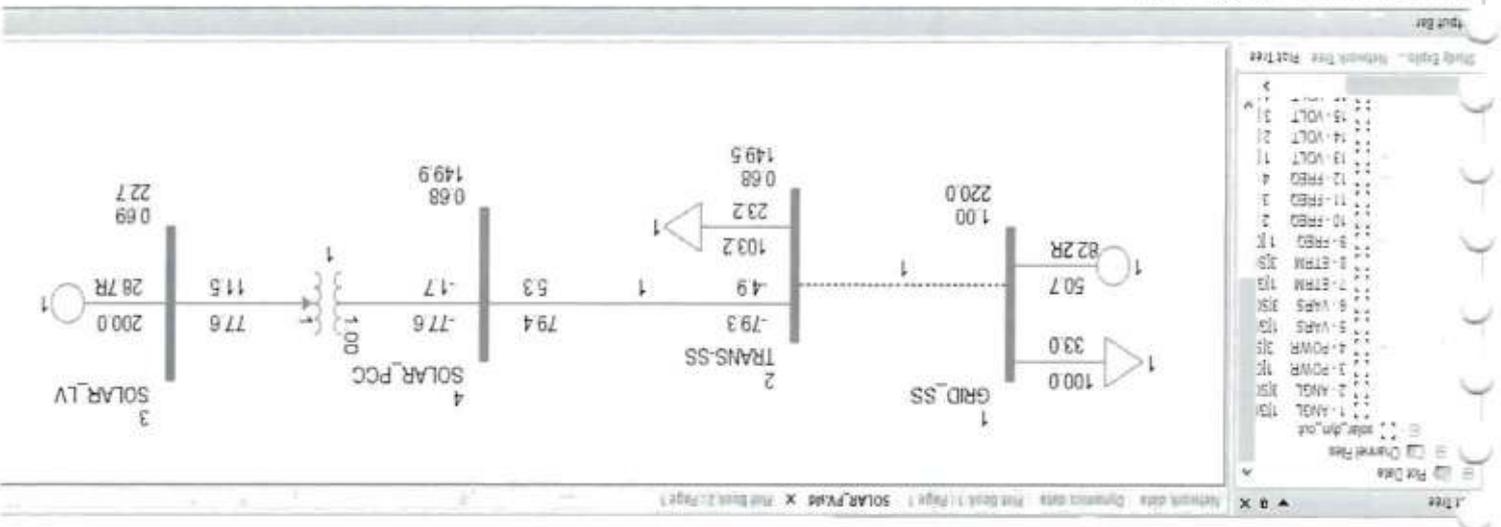
EXPECTED BEHAVIOR OF SOLAR PLANT AT VARIOUS GRID VOLTAGES

When Grid Voltage 1.0 PU





TRANSIENT BEHAVIOR
OF
SOLAR PLANTS IN TELANGANA DURING
SOLAR INJECTION PERIOD



Network not converged at TIME = 4.99

Network not converged at TIME = 5.0

*** Circuit "1" from 2 [TRANS-SS 220.00] to 1 [GRID_SS 220.00]: "from" end line shunt set to (0.0000,-0.20000E+08) ***

Channel output file is "C:\Users\admin\Desktop\GCC_RE_DYNAMICS\GCC_RE_DYNAMICS\solar_dyn_out.outx"

4 diagonal and 3 off-diagonal elements

Network not converged at TIME = 2.0

OUT OF STEP CONDITION AT TIME = 2.0000:

X----- F R O M -----X				X----- T O -----X							
BUS#-SCT	X--	NAME	--X BASKV	BUS#-SCT	X--	NAME	--X BASKV	CKT	MW	MVAR	VOLTAGE
2		TRANS-SS	220.00	4		SOLAR_PCC	220.00	1	0.0	0.0	0.0000

*** Circuit "1" from 2 [TRANS-SS 220.00] to 1 [GRID_SS 220.00]: "from" end line shunt set to (0.0000, 0.0000) ***

*** Status of circuit "1" from 2 [TRANS-SS 220.00] to 1 [GRID_SS 220.00] is set to out-of-service ***

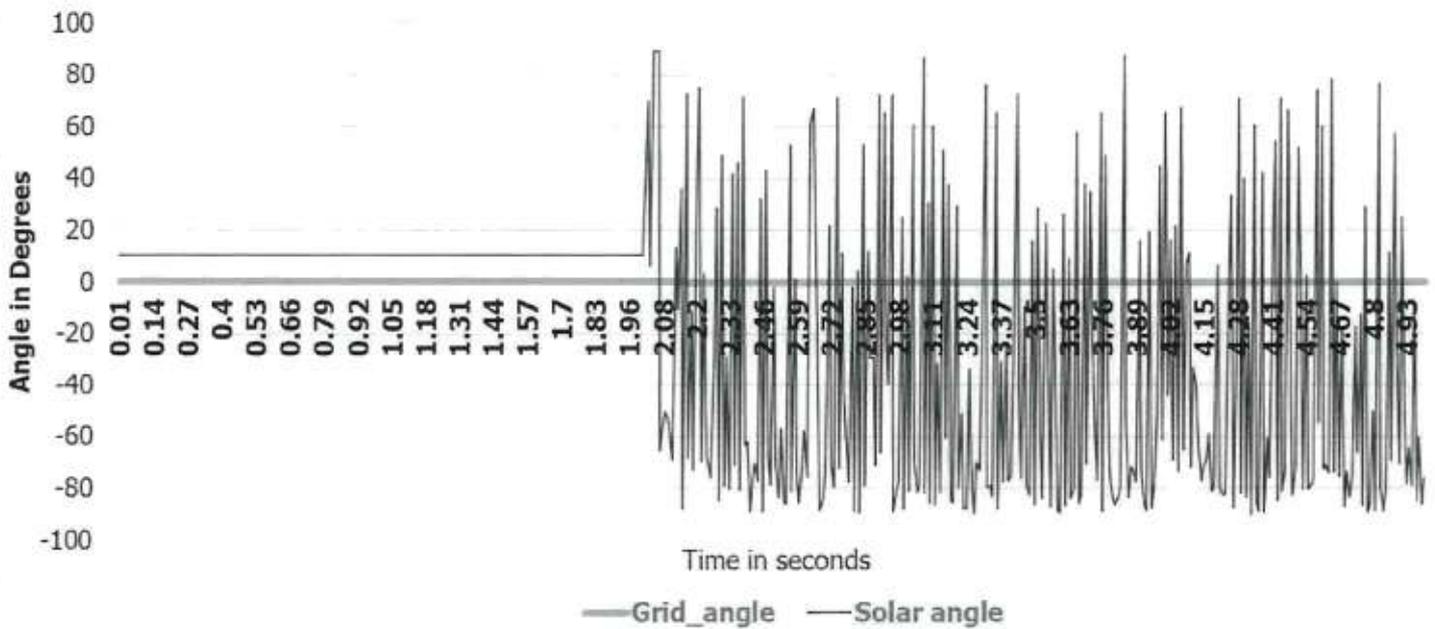
Channel output file is "C:\Users\admin\Desktop\GCC_RE_DYNAMICS\GCC_RE_DYNAMICS\solar_dyn_out.outx"

Bus 1 [GRID_SS 220.00] is isolated

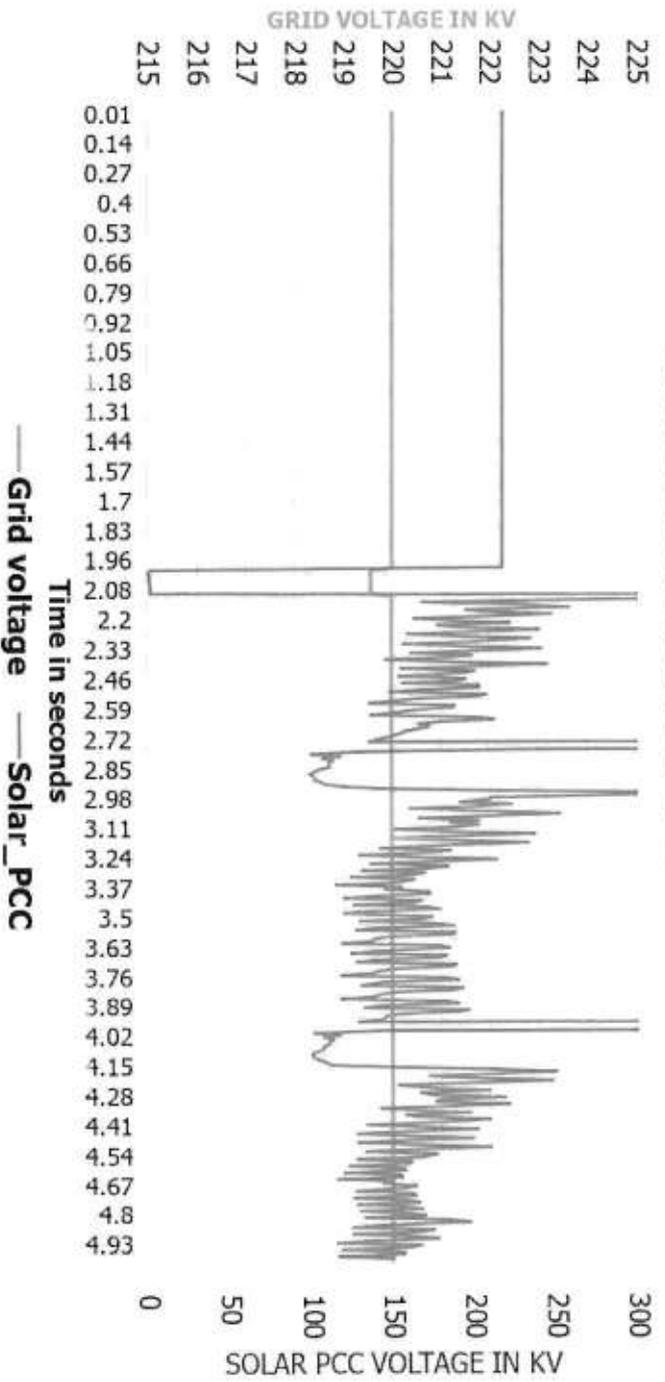
4 diagonal and 2 off-diagonal elements

Network not converged at TIME = 2.1

**ANGLE DYNAMICS PLOT
DURING TRIPPING OF RADIAL LINE FROM GRID CAUSING SEVERE
INSTABILITY AND SOLAR PLANT ISOLATION FROM GRID**



**DURING TRIPPING OF RADIAL LINE FROM GRID CAUSING SEVERE VOLTAGE
INSTABILITY AND ISOLATION OF SOLAR PLANT**



Observations:

Present Solar plants in Telangana are Grid tied Inverters and always need a Grid support(Voltage reference) for injection of active Power.

Conclusions:

- 1) During generation period, Solar plants are only injecting active power into Grid and drawing reactive power from Grid. This is causing Grid Transformers to operate at poor power factor.
- 2) During non-generation period, Solar plants are absorbing active power (for auxiliary supply) from Grid and injecting reactive power into Grid. This excess reactive power reserves in EHT Grid is causing high voltage and penalization of reactive energy charges with ISTS.
- 3) No reactive power support/exchange with Grid during high voltage and low voltage scenario.
- 4) At present during light load conditions and in case of tripping of larger Units, inertia support is not extracted from these solar plants. This will lead fall of frequency at higher rate.

THANK YOU



NAVA LIMITED

(Formerly Nava Bharat Ventures Ltd.)

Corp. Office: Silicon House, No. B-3-318/1, Plot 78,
Road No. 14, Banjara Hills, Hyderabad - 500 034, Telangana, India.

NAVA/FIN/ 253 /2023-24
August 16, 2023

**The Chairperson, Grid Coordination Committee,
Transmission Corporation of Telangana Limited,
Vidyut Soudha, Khairtabad,
Hyderabad- 500 082**

Dear Sir,

Sub: Written submissions against the discussions held on 12.06.2023 and 05.08.2023 during 4th and 5th Grid Coordination Committee (GCC) meetings on detailed study in the matter of parallel operation of CPPs, IPPs and Merchant power plants and consequent levy of grid support charges (GSC) -Reg..

Ref 1:3rd GCC meeting held on 21.07.2022 and our written submissions submitted vide letter No.NBV/FIN/171/2022-23 dated 21.07.2022

Ref:2 Our Letter No.NBV/FIN/150/2023-24 dated 23.06.2023

Ref:3 Discussion held during 5th Grid Coordination Committee Meeting at 15:00 Hrs on 5th August 2023

With reference to the above-mentioned subject, as a Member of Grid Coordination Committee, we are herewith submitting our detailed analysis and findings on the proposal of TSNPDCL and TSSPDCL for determination of Grid Support charges for parallel operation of Captive power generating plants and Merchant power plants, in Telangana.

According to the attached findings, we are of the opinion that Grid support charges are not at all required to collect from the CPPs, IPPs and Merchant power generating plants in the State of Telangana and accordingly submitting the findings to the Hon'ble Chairperson of GCC for onward submission of the same to the Hon'ble State Commission.

Thanking you,

Yours faithfully,

For NAVA LIMITED

(Formerly Nava Bharat Ventures Limited)


Srinivas P

Member-Grid Coordination Committee

Encl: As above.

Copy to: The Secretary, Telangana State Electricity Regulatory Commission.

Regd. Off: Nava Bharat Chambers, B-3-1109/1, 3rd Floor, Raj Bhavan Road, Somajiguda, Hyderabad - 500 082, Telangana, India. CIN: L27101TG1972PLC001549
T +91 40 40345999, +91 40 23403501

E nava@navalimited.com; investorservices@navalimited.com

W www.navalimited.com

ISO 9001 | ISO 14001 | ISO 45001 | ISO 50001

Submitted to: The Chairperson, Grid Coordination Committee,

Sub: 4th and 5th Grid Coordination Committee (GCC) meeting held on 12.06.2023 and 05.08.2023 respectively on study on the issue of parallel operation of CPPs and consequent levy of Grid Support Charges(GSC), Findings and written submission of the member represented from Nava Limited (Formerly Nava Bharat Ventures Limited) on behalf of Captive Power Plants, IPPs and Merchant power generating plants in Telangana -Reg...

By the following findings and advantages, the member is of the opinion that grid support charges are not at all required to collect from the CPPs and IPPs/Merchant power plants in the state of Telangana and requested the DISCOMS to withdraw the proposal.

- 1. While filing the ARR, the Applicant Licensees propose to levy Grid Support Charges for FY 2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees as follows:**

*Grid Support Charges = Total Installed Capacity X Rate of GSC
(Rs./kW/month) Rate of GSC:*

- The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.*
- Conventional generators shall pay Rs. 50 per kW per month.*
- Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs.25 kW per month.*
- Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.*
- Co-gen sugar mills shall pay charges of Rs. 25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.*
- These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.*



vii. To the extent of PPA capacities of the generators with the DISCOMs shall be exempted from payment of these charges.

2. In the above matter, this Hon'ble Telangana Commission has invited the stakeholders to file their comments/suggestions/objection, if any, on or before 31.01.2023 and accordingly we submitted the objections and the Hon'ble Commission has differed the GSC matter and again referred it to Grid Coordination Committee

During the 4th and 5th GCC meeting we submitted the objections on levy of Grid Support Charges which are set out below for this Hon'ble Commission's kind consideration and disposal:

I. HISTORY OF GRID SUPPORT CHARGES (GSC):

1. Grid Support Charges (GSC) were initially levied by the erstwhile Hon'ble APERC vide Order in O.P.No. 1 of 1999 dated 08.02.2002 in the context of the AP Electricity Reform Act, 1998. The GSC order was implemented vide Tariff Order FY 2002-03 from 01.04.2002. The same was challenged before the Hon'ble High Court for the erstwhile State of A.P which was decided in favour of the generators/Captive Power Producers (CPPs) and the levy of grid support charges was set aside. An Appeal was filed by APTransco (Civil Appeal No. 4569 of 2003) in the Hon'ble Supreme Court. The Hon'ble Supreme Court, vide its judgement dated 29.11.2019 affirmed the orders of the erstwhile Commission.
2. It is pertinent to note that the prevailing conditions during 2002 and the present are totally different. When the Act is not in existence, there was no concept of Open Access, Transmission and Wheeling. The same were allowed by means of mutually agreed agreements at that time.
3. It is also pertinent to note that the erstwhile APERC was constituted under the AP Electricity Reform Act, 1998, and passed the order in O.P.No.1 of 1999 in exercise of its powers under the said Act.
4. **Earlier TS DISCOMS proposed to levy the grid support charges on captive generating plants considering captive load burden on Grid . But surprisingly that now the DISCOMS proposed to levy such charges on all generating plants including Independent power generating plants and Merchant power generating plants without explaining any reason/basis for levy of such charges.**



5. **The IPPs and Merchant power generating plants are meant for generation and export entire power to grid and accordingly always supportive to grid but never opt grid support to run the plant.**
6. **DISCOM's proposal of grid support charges on Merchant power plants are meaningless and no basis.**

II. THE IMPACT OF THE ELECTRICITY ACT, 2003:

1. In 2003, the Electricity Act, 2003 ("Act") came into force. The Act brought in substantial changes to the previous regime, including the establishment of State Commissions, delicensing of Generation, unbundling of transmission and distribution, specification of tariffs and charges, crystallized the scheme of Open Access, brought in procedures and standards to enforce discipline, etc. However, it left the Commissions established by States under earlier State enactments (such as the AP Electricity Reform Act, 1998) untouched and treated them to be Commissions established under the Act, essentially conferring them with powers under both Acts, in as much as the State enactments were not in derogation to the Act.
2. Open Access was introduced under Section 42 of the Act, in pursuance to which APERC Regulation Nos.2 of 2005 and 2 of 2006 were also promulgated by the erstwhile Commission.

No jurisdiction to Propose or Levy GSC:

3. Under the provisions of the Act, separate entities, being the SLDC/RLDC/NLDC were created to take care of the Grid. SLDC/RLDC is responsible for maintaining grid security, Load forecasting, scheduling and dispatching and balancing of generation and demand (load). The ARR of SLDC was already approved in the MYT Tariff 2021-23. The DISCOMs have no role in maintaining Grid security and have to comply with the directions issued by SLDC/RLDC. Hence, in the present scenario, there is no need to propose GSC by DISCOMs and the DISCOMs have no role in seeking GSC at all.
4. The Applicant DISCOMs are responsible for their distribution business only and can at most levy wheeling charges, and nothing more. Any GSC as sought to be levied would have to be proposed and substantiated by TSSLDC, being the entity tasked with grid security under the Act. Therefore, DISCOMs have nothing to do with GSC. The ARR of the Applicant DISCOMs Distribution Business is recovered through wheeling charges as approved in the relevant MYT orders. As the present the ARR and the FPT is to recover



the costs of the Applicants' Retail Supply Business, and the Applicant DISCOMs have no role in proposing GSC, and certainly not at 132 KV voltage.

5. It is also pertinent to note that this Hon'ble Commission is constituted under the Act, and thus the earlier AP Electricity Reform Act, 1998 under which GSC were earlier determined is neither applicable nor relevant in the present day. The Act, 2003 specifically lays down the charges and tariffs to be collected, and no charges beyond what is prescribed can be levied. Admittedly, there is no charge such as GSC mentioned in the Act or the regulations, let alone under S.62 under which the present petitions are filed, and as such, any such proposal to levy GSC is without jurisdiction.
6. It is thus submitted that the scope of present ARR for Retail Supply Business for FY 2023-24 should be strictly confined in terms of Section 62 of the Act r/w Regulation 4 of 2005 as adopted under Regulation 1 of 2014, and Section 42 of the Act for the purpose of determination of CSS and any proposal of the Applicant DISCOMs to levy GSC is **itself misconceived and patently without jurisdiction.**

Without Prejudice to above submissions of the very authority and jurisdiction to levy GSC, the following further submissions are made.

In relation to the Proposal made by the Applicant Discoms:

7. The Applicant Discoms have proposed Grid Support Charges for all generators, including captive, cogeneration, merchant power plants/IPP, rooftop power plants etc., which is completely against the reasoning of GSC in the first place.
8. The Applicant Discoms have arbitrarily and without any substantiation proposed different rates of GSC for different types of generators. There is no reason stated as to why or on what basis such differentiation is made.
9. There is no justification at all for how rates of GSC have been arrived at. The proposed levy has no basis and is grossly excessive, arbitrary, and so requires to be rejected.
10. There is no mention of basis and methodology by DISCOMS for the proposed GSC of Rs.50 KW per Month. The proposed levy of GSC at such a high rate will be a death knell for large process industries which depend upon captive power at reasonable cost. The proposed GSC will hit at the core viability of the principal industry resulting in closure of operations and in loss



of direct and indirect employment aside from loss of revenue to the exchequer.

11. The proposed levy of GSC appears to be lifted from the Hon'ble APERC's RSTO for FY 2022-23, which levy itself has been stayed by the Hon'ble APTEL vide order dated 20.05.2022 in DFR No.186/2022, and orders dated 01.07.2022 in DFR Nos.240/2022, 241/2022 and 271/2022.
12. There is no revenue or costs that are shown to be associated corresponding to the levy of GSC. As such, once the entire costs are recovered by the proposed RST alone, any further levy of GSC amounts to illegal and unjust enrichment of the Applicant Discoms at the cost of generating companies.

In relation to Captive Power Plants:

13. Captive Power Generation is delicensed under the Electricity Act so as to lessen the burden on the Grid in meeting the distributed loads. The provision in Para 5.2.26 of National Electricity Policy, 2005 notified by Govt of India laid emphasis on grid connectivity of captive generators even under open access regime which is reproduced below:"

"Under the Act, captive generators have access to licensees and would get access to consumers who are allowed open access. Grid inter-connection for captive generators shall be facilitated as per Section 30 of the Act. This should be done on priority basis to enable captive generation to become available as distributed generation along with the grid."

In the spirit of this legislation and rules framed thereunder, determination of Grid Support or Parallel Operation Charge should follow the principles of transparency, actual forbearance and fair computation based on time tested methodology. The proposed levy does not meet any of these criteria and is arbitrary.

14. In the case of CPPs availing Open Access for transmission and wheeling of power from the generation point to the consumption point, charges are levied as determined by the regulator from time to time. Even in these cases there is an established mechanism of UI charges which essentially address the so-called grid support or parallel operation. The proposed levy by the TSDISCOMs is therefore quite arbitrary, excessive and is not supported by quantifiable data.
15. The Transmission system of the Transco/Discom should be so designed that it should take care of fluctuating load of the consumer as it is the duty



of the transmission licensee under Section 40 of Electricity Act, 2003. In relation to CPPs it is also submitted as follows:

- a) CPPs absorb some amount of harmonics whereas a consumer without CPP inject full quantum of harmonics generated to the grid.
- b) The unbalanced voltage of the grid is a source of negative phase sequence current which is absorbed by the generators of CPP.
- c) Fault level depends upon the generation capacity connected to the grid. The parallel operation of CPPs with the grid is infact beneficial with some degree of voltage support that the CPPs extend to the Grid
- d) As per Regulations of Supply Code, Industries having CPPs can draw emergency power up to the capacity of largest generating unit by paying required tariff. CPP's drawl of power is limited to "start-up power" that too when there is total loss of generation of the CPP. The drawl of power for production purposes, is limited to the CMD as per the Power Supply Agreement with the DISCOM. Otherwise, penalty is attracted. Overdrawl is prevented by proper setting of the relays at the Grid Sub-station.
- e) It is wrong to state that active and reactive power demand due to sudden and fluctuating load are not recorded in the meter. Billing is done for all consumers by integration over 15 minutes period and this is also applicable for CPPs and so it does not result in any undue advantage.
- f) Due to injection of power by CPPs the load on the transformers in the grid reduces resulting in less transformer loss.
- g) The CPP are acting as distributed generator at the load center for which the transmission and distribution loss has been reduced to great extent.
- h) As per Section 7 of the Electricity Act, 2003 any generating company may establish operate and maintain a generating station if it complies with State Grid Code and standards of grid connectivity as referred in Section 73 (b) of the Act. Both Tariff Policy and National Electricity Policy emphasizes the need for unhindered connectivity of CPPs to the grid. The proposed and arbitrary quantum of Grid Support Charge makes the captive power generation unviable and the spirit of the act and the rules framed thereunder are thus vitiated.



- i) There is no provision in the statute that empowers the DISCOMS to levy Grid Support Charges on the CPPs. They, on the other hand are benefited as CPPs absorbed some amount of harmonics. On the contrary consumer without CPPs transmit full quantum of harmonics to the grid. The DISCOMS/TRANSCO is not taking any step to install suitable equipment to filter the harmonics and injecting those pollutants to the grid for which the CPPs are forced to suffer. The grid voltage is always unbalanced due to various categories of consumers and hence is a source of negative phase sequence current which cause stress on the generators of CPPs.
- j) It is relevant to mention the observation and comments of The Hon'ble Orissa Electricity Regulatory Commission in a similar matter, in its Order dated 31.03.2014 in Case No. 46/2012, the excerpt of which is as follows:

i) Para- 15 of Order:

"We heard the parties at length and also perused the technical report submitted by OPTCL. The present installed capacity of the CGPs in the State as submitted by OPTCL is 5173 MW which is more than or equal to capacity of other generators connected to Odisha Grid including Odisha share of power from Central Generation Stations. We agree with the contention of CCPPO that the pollutants of the Grid like fluctuations in frequency and voltage, negative phase sequence, distortion due to harmonics etc. are the resultant effect of all synchronous machines like generators and motors of the Grid system. These pollutants are injected in to the grid not only by CGPs but also by other independent generators and machines like motors and arc furnaces of the consumers. Holding industry having CGPs only responsible for this is not correct".

ii) Para-16 of Order:

"After going through the submission of various stake holders of the grid system we conclude that the behaviour of industries having CGPs and also without CGPs varies case to case basis. There are ample provisions in the Odisha Grid Code to regulate the behaviour of entities connected to the OPTCL system. Hence, a generic method of calculation of Grid Support Charges for all industries may not be proper. The Petitioner has failed to submit a State-wide study before us on which a decision could have been taken. One solution fits all can't be applicable here. So



implementation of a model of another State in our State will not be proper.”

iii) Para- 17 of Order:

“There are enough provisions in Odisha Grid Code, 2006 to maintain quality supply in the grid system. Regulation 4.7 of Odisha Grid Code discuss elaborately the ideal behaviour of constituents of the Grid. OPTCL should play the role of watchdog and analyze the pollutant injected by various constituents of the grid system. CGPs and industries injecting pollution should be directed to take up remedial measures like installation of capacitors, filters for harmonics, etc. so that grid pollution will be minimized. The non-compliance by any industry or industry having CGP of the Grid Code should be dealt as per Regulation 1.18 of OGC, 2006. Therefore, the prayer of OPTCL for levy of Grid Support Charges is not acceptable.”

Further, when GSC was proposed by APERC during the year 1999 and 2002, the Electricity Act was not in force. The Act is in force from 2003 and Section 9 of Electricity Act does not differentiate between CPP and IPP as far as grid connectivity is concerned and hence both should be treated equitably from the viewpoint of grid connectivity and support.

- k) The proposed levy of GSC aims to stifle the consuming industries by this arbitrary levy, which in turn erodes the viability of the principal industry to a point that it must perforce cease operations.
- l) CPPs have repeatedly expressed their willingness to provide additional protections in their facilities as desired by the grid to see that no untoward load throwbacks or fault currents or reactive power surges happen.
- m) The levy of GSC in 1999 was proposed when the generation shortfall was prevailing, and the TSDISCOMS were going through occasional R&C periods and frequency fluctuations, etc. when the Regulator considered that the proposed levy had merits. However, the TS Grid has since improved / made many strides in Grid size, availability of power and attained stability and is one of the few Grids in the country being engaged in export of power on a steady basis. Aggregate capacity of the



CPPs now is relatively marginal compared to the Grid Size and no real forbearance could be possible warranting such huge and arbitrary levy.

- n) In our case, the CPPs installed capacities are much higher when compared to our captive load to ensure higher availability for captive use. Since our installed and operating capacity of captive load is much lower than installed Capacity of Captive Power plant, it is required to connected with grid for export of surplus power through open access.
- o) Grid Support Charges cannot be a substitute for Demand or Capacity Charges which are determined on a wider basis by the regulator. So the proposed levy of Grid Support Charges based on applicable demand charge is arbitrary, excessive and results in undue enrichment of the TSDISCOMs at the expense of CPPs.
- p) It may be noted that, before determination of GSC/POC, The Hon'ble Chhattisgarh State Electricity Regulatory Commission (CSERC) has assigned this responsibility to an independent third party M/s.Electrical Research & Development Association (ERDA) to study various system data and system parameters of representative selected CPPs. Accordingly ERDA has measured various system parameters like harmonics, unbalance current, plant load factor, load cycle, fault level calculations etc. by measurement on selected CPPs and relevant substation and finally ERDA has suggested working out the parallel operation charges on sound technical basis taking into consideration advantages and disadvantages to both CPPs & CSEB and submitted its recommendation to CSERC. Similarly The Hon'ble OERC has also appointed an independent third party for system study before determination of GSC.
- q) For the various reasons cited above, the Grid situation requires to be thoroughly reviewed with reference to the fact whether the Grid suffers any forbearance in providing parallel operations of CPPs.

Suggestion/recommendation of the Member -Grid Coordination Committee

That, in view of the above findings, the member is of the opinion that;

- i. Grid support charges are not at all required to collect from the CPPs, IPPs/Merchant power plants in Telangana and submits the recommendation to the Hon'ble Commission through the Chairperson of Grid Coordination Committee to reject the proposal levy of Grid Support Charges as there is no such provision in the Statute/Electricity Act, whereas the STU /Transmission and Distribution Licensees are duty



bound under Section 39 and 40 of the Electricity Act, 2003 and the National Electricity Policy, 2005 to provide connectivity to the CPPs like any generating station

- ii. In the event the Hon'ble Commission holds the proposal of GSC is valid, within the powers and jurisdiction and are leviable, it is requested that an independent reputed third party should be engaged to conduct a thorough system study and technical issues concerning power load throwbacks by CPPS/consuming industries, power harmonics in parallel operation of CPPs, size of the CPPs and judiciously arrive at a reasonable decision as has been done by other state Commissions/governments

For Nava Limited
(Formerly Nava Bharat Ventures Ltd)


Srinivas P
Member -GCC

Place: Hyderabad:
Date: 16.08.2023



Paper clippings appeared on 04.12.2023 in THE HANS INDIA, THE NEW INDIAN EXPRESS and THE ETEMAAD (Urdu) daily newspapers

BEFORE THE HONOURABLE TELANGANA STATE ELECTRICITY REGULATORY COMMISSION D.No.11-4-660, 5 th Floor, Singareni Bhavan, Red Hills, Hyderabad 500 004			
 SOUTHERN POWER DISTRIBUTION COMPANY OF TELANGANA LIMITED (TSSPDCL)		 NORTHERN POWER DISTRIBUTION COMPANY OF TELANGANA LIMITED (TSNPDCL)	
PUBLIC NOTICE		PUBLIC NOTICE	
<p>1. Notice is hereby given to all that the Distribution Company viz., Southern Power Distribution Company of Telangana Limited (TSSPDCL) holding Distribution and Retail Supply License No. 13 of 2000 as on 29.12.2000 filed petition before the Telangana State Electricity Regulatory Commission (TSERC) for the retail supply business for approval of ARR & FPT and CSS for FY2023-24 including grid support charges. The Commission has already decided the retail Supply tariff along with ARR and CSS for FY 2023-24. Hence the present notice is limited to levy of grid support charges. These filings have been taken on record by the Hon'ble Commission in O.P.No. 81 of 2022.</p> <p>2. Copies of the filings along with Grid Coordination Committee report referred are available in the office of Chief General Manager (RAC), TSSPDCL, Corporate Office, First floor, Mint Compound, Hyderabad-500063 and the Superintending Engineer, Operation circles of the Distribution Company at Banjara Hills, Hyderabad (South), Hyderabad (Central), Medchal, Cybercity, Habsiguda, Secunderabad, Rajendranagar, Saroornagar, Vikarabad, Mahabubnagar, Gadwal, Nagarkurnool, Narayanpet, Wanaparthy, Medak, Siddipet, Sangareddy, Nalgonda, Yadadri and Suryapet. Interested persons may inspect/peruse the said filings and take note thereof during office hours at any of the said offices at free of cost. These proposals are also available on www.tssouthernpower.com in downloadable form and the same may be accessed at www.tserc.gov.in. A copy of these filings along with Grid Coordination committee report can be obtained from the above offices from 04.12.2023 onwards on payment of charges for photocopying.</p> <p>3. Objections/Suggestions, if any, together with supporting material may be sent to the Chief General Manager (RAC), TSSPDCL, Corporate Office, First floor, Mint Compound, Hyderabad-500063 in person or through Registered Post so as to reach by 05:00 PM on or before 27.12.2023. A copy of the same must also be filed with the Commission Secretary, TSERC, at the address mentioned above. The Objections/Suggestions should be duly signed and should carry full name, postal address, e-mail id and contact number of the person(s)/ stakeholder(s) sending the Objections/Suggestions. If the Objections/ Suggestions are filed on behalf of any organization or any category of consumers, it should be clearly mentioned. If the objector also wants to be heard in person it may also be specifically mentioned.</p> <p>4. The Objection/Suggestion should accompany the following statement.</p>		<p>1. Notice is hereby given to all that the Distribution Company viz., Northern Power Distribution Company of Telangana Limited (TSNPDCL) holding Distribution and Retail Supply License No. 14 of 2000 as on 29.12.2000 filed petition before the Telangana State Electricity Regulatory Commission (TSERC) for the retail supply business for approval of ARR & FPT and CSS for FY2023-24 including grid support charges. The Commission has already decided the retail Supply tariff along with ARR and CSS for FY 2023-24. Hence the present notice is limited to levy of grid support charges. These filings have been taken on record by the Hon'ble Commission in O.P.Nos. 80 of 2022.</p> <p>2. Copies of the filings along with Grid Coordination Committee report referred are available in the office of Chief General Manager (IPC&RAC), TSNPDCL, H.No.2-5-31/2, Vidyuth Bhavan, Nakkalagutta, Hanumakonda-506001 and the Superintending Engineer, Operation circles of the Distribution Company at Warangal, Hanumakonda, Mahabubabad, Jaya Shankar (Bhupalpally), Jangaon, Karimnagar, Jagtial, Peddapally, Khammam, Bhadradi Kothagudem, Nizamabad, Kamareddy, Adilabad, Nirmal, Mancheril and Komarambheem (Asifabad). Interested persons may inspect/peruse the said filings and take note thereof during office hours at any of the said offices at free of cost. These proposals are also available on www.tsnpdcl.in in downloadable form and the same may be accessed at www.tserc.gov.in. A copy of these filings along with Grid Coordination committee report can be obtained from the above offices from 04.12.2023 onwards on payment of charges for photocopying.</p> <p>3. Objections/Suggestions, if any, together with supporting material may be sent to the Chief General Manager (IPC&RAC), TSNPDCL, H.No.2-5-31/2, VidyuthBhavan, Nakkalagutta, Hanumakonda-506001 in person or through Registered Post so as to reach by 05:00 PM on or before 27.12.2023. A copy of the same must also be filed with the Commission Secretary, TSERC, at the address mentioned above. The Objections/ Suggestions should be duly signed and should carry full name, postal address, e-mail id and contact number of the person(s)/stakeholder(s) sending the Objections/ Suggestions. If the Objections/Suggestions are filed on behalf of any organization or any category of consumers, it should be clearly mentioned. If the objector also wants to be heard in person it may also be specifically mentioned.</p> <p>4. The Objection/Suggestion should accompany the following statement.</p>	
Name & full address of the Objector along with e-mail id and contact number	Brief details of Objection(s)/ Suggestion(s) against levy of Grid Support Charges (TSSPDCL)	Whether copy of objection/ Suggestion & proof of delivery at Licensee's office enclosed (Yes/No)	Whether Objector wants to be heard in person (Yes/No)
Name & full address of the Objector along with e-mail id and contact number	Brief details of Objection(s)/ Suggestion(s) against levy of Grid Support Charges (TSNPDCL)	Whether copy of objection/ Suggestion & proof of delivery at Licensee's office enclosed (Yes/No)	Whether Objector wants to be heard in person (Yes/No)
<p>5. The gist of the filings of the TSDISCOMs for their proposals on levy of Grid Support charges for FY 2023-24 along with Grid Coordination Committee report are indicated in the Schedule-I as given below.</p> <p>6. Further, in this matter the Telangana State Electricity Regulatory Commission intends to conduct a Public Hearing at TSERC Court Hall, 5th floor, Singareni Bhavan, Lakdikapal, Hyderabad on 08.01.2024 (Monday) from 11.00 hrs onwards.</p> <p>Place: Hyderabad Sd/-CHAIRMAN & MANAGING DIRECTOR Date: 04-12-2023 <i>Southern Power Distribution Company of Telangana Limited</i></p>		<p>5. The gist of the filings of the TSDISCOMs for their proposals on levy of Grid Support charges for FY 2023-24 along with Grid Coordination Committee report are indicated in the Schedule-I as given below.</p> <p>6. Further, in this matter the Telangana State Electricity Regulatory Commission intends to conduct a Public Hearing at TSERC Court Hall, 5th floor, Singareni Bhavan, Lakdikapal, Hyderabad on 08.01.2024 (Monday) from 11.00 hrs onwards.</p> <p>Place: Hanumakonda Sd/-CHAIRMAN & MANAGING DIRECTOR Date: 04-12-2023 <i>Northern Power Distribution Company of Telangana Limited</i></p>	
SCHEDULE-I			
<p>Parallel operation charges/Grid Support Charges proposal by TSDISCOMs & the recommendations by the Grid co-ordination Committee:</p> <p>It is proposed to levy Grid Support Charges for FY 2023-24 on all the generators (Captive Generating Plants, Cogeneration Plants, Third party Generation units, Merchant Power Generation units, Rooftop Power Plants etc.) who are not having PPA/having PPA for partial capacity with the licensees as follows:</p> <p>Grid Support Charges = Total Installed Capacity X Rate of GSC (Rs./kW/month)</p> <p>Rate of GSC:</p> <p>i. The parallel operation/grid support charges are to be applied to the total installed capacity of the generators connected to the Grid.</p> <p>ii. Conventional generators shall pay Rs. 50 per kW per month.</p> <p>iii. Renewable energy plants including waste heat recovery plants, the plants based on municipal solid waste, and the co-gen plants shall pay Rs. 25 kW per month.</p> <p>iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs. 15 per kW per month.</p> <p>v. Co-gen sugar mills shall pay charges of Rs. 25 per kW per month, for a period of 4 months or actual operation period, whichever is higher.</p> <p>vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.</p> <p>vii. To the extent of PPA capacities of the generators with the TSDISCOMs shall be exempted from payment of these charges.</p>			

Annexure-II
**List of Stakeholders who Submitted the Written Objections/
Suggestions**

Sl. No.	Name and address of the stakeholder
1	M/s Bhavana Power Private Limited, Sri V.V.Rao, Director & Authorized Signatory, Mobile No.+91 96760 51555
2	Telangana Solar Open Access Developers Association (TSOADA), # 8-9-224/4/A. Plot No.11&12, Sy.No.01, Room No.412, Madhura Naga, Yousufguda, Hyderabad 500 038.
3	M/s Sri Suryanarayana Swamy Solar Power Pvt. Ltd., Flat No.1-110/1, Jayalaxmi Traders, Azad Nagar, Kodad, Suryapet District 508 206.
4	M/s Srinivasa Green Energies Private Limited, Flat No.G1, 6-117/A/1781/A, People's Nest, 100 feet Main Road, Pragathi Nagar, Bachupally (M), Medchal Malkajigir District, Hyderabad 500 090.
5	M/s Peritus Corporation Private Limited, 601, Cyber Heights, Plot # 13, Road No.2, Banjara Hills, Hyderabad 500 034.
6	M/s Arhyama Solar Powr Pvt. Ltd., Margi Building, Room No.201 & 202, 8-3-224/4/A/11&12, F/4, Yousufguda main road, Madhuranagar, Hyderabad 500 038.
7	The Federation of Telangana Chambers of Commerce and Industry (FTCCI), Federation House, Federation Marg, 11-6-841, Red Hills, Hyderabad 500 004
8	M/s My Home Industries Private Limited, 9 th Floor, 3 rd Block, My Home Hub, Madhapur, Hyderabad 500 081.
9	M/s Nava Limited, Silicon House, Road Number 14, Resham Bagh, Banjara Hills, Hyderabad 500 034.
10	M/s Nava Bharat Energy India Limited, 6-3-1109/1, Nava Bharat Chambers, Raj Bhavan Road, Somajiguda, Hyderabad 500 082.
11	M/s Orient Cement, 5-9-22/57/D, 2 nd and 3 rd & 4 th Floor, G.P.Birla Centre, Adarsh Nagar, Hyderabad 500 063.
12	M/s The India Cements Limited, Dhun Building, No.827, 4 th Floor, Mount Road, Anna Salai, Chennai 600 002.
13	M/s Sai Adhithya Green Energy Pvt. Ltd., H.No.1-8-19/3, Vidyuthnagar, New Dilsukhnagar, Hyderabad 500 060.
14	M/s Sarvotham Care, 1-20-248, Umajay Complex, Rasoolpura, Secunderabad 500 003.
15	M/s Ushodaya Enterprises Private Limited, Eenadu Corporate Office, Ramoji Film City, Anajpur Village, Rangareddy Dist 501 512.
16	M/s Surana Solar Systems Private Limited, 5 th Floor, Surya Towers, S.P.Road, Secunderabad 500 003.
17	M/s Bhagyanagar India Limited, 5 th Floor, Surya Towers, S.P.Road, Secunderabad 500 003.
18	M/s Zuari Cement Limited, Adventz Centre, 2 nd & 3 rd Floor, No.28, Cubbon Road, Bangalore 560 001.
19	M/s ITC Limited, Virginia House, 37, J.L.Nehru Road, Kolkata 700 071.
20	M/s Rain Cements Limited, Rain Center, 34, Srinagar Colony, Hyderabad 500 073.
21	M/s Penna Cement Industries Limited, Lakshmi Nivas 705, Road # 3, Banjara Hills, Hyderabad 500 034.

Annexure-III
List of Stakeholders who participated in Public Hearing held on
08.01.2024

Sl. No.	Name and address of the stakeholder
1	The Federation of Telangana Chambers of Commerce and Industry (FTCCI), Federation House, Federation Marg, 11-6-841, Red Hills, Hyderabad 500 004
2	M/s My Home Industries Private Limited, 9 th Floor, 3 rd Block, My Home Hub, Madhapur, Hyderabad 500 081.
3	M/s Nava Limited, Silicon House, Road Number 14, Resham Bagh, Banjara Hills, Hyderabad 500 034.
4	M/s Orient Cement, 5-9-22/57/D, 2 nd and 3 rd & 4 th Floor, G.P.Birla Centre, Adarsh Nagar, Hyderabad 500 063.
5	M/s Sarvotham Care, 1-20-248, Umajay Complex, Rasoolpura, Secunderabad 500 003.
6	M/s ITC Limited, Virginia House, 37, J.L.Nehru Road, Kolkata 700 071.
7	M/s Enersol Infra Private Limited, Plot No.270E/A, Road No.10, Jubilee Hills, Hyderabad 500 033.

