# 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 *<u>Disadvantage of Parallel Operation to Utility</u>:*

(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* |

*<u>Justification for levying on differential capacity</u>:*

*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 TSTRASNCO (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.*

*<u>Justification for Rate of Grid Support Charges</u>:*

*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:

*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.

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 |

| | |
|---|---|
| | installed capacity of the generators connected to the Grid.<br>ii. Conventional generators shall pay Rs.50 per kW per month.<br>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.<br>iv. Rooftop solar plants under net metering/gross metering policy shall pay Rs.15 per kW per month.<br>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.<br>vi. These charges shall not be applicable when the plants are under shutdown for any reason and when such shutdown period exceeds two months.<br>vii. To the extent of PPA capacities of the generators with TSDISCOMs shall be exempted from payment of these charges. |

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 in 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.