



ANDHRA PRADESH CENTRAL POWER DISTRIBUTION CORPORATION LIMITED
Dr. Y.S.R Vidyuth Soudha, Corporate office, ITI Road, Vijayawada-520 008

From
The Chief General Manager/RAC,
Corporate office,
APCPDCL, Vijayawada

To
Sri U.M.Kumar,
Secretary, AP Textile Mills Association,
2nd floor Manoharam Skin Clinic, 4/2,
Lakshmipuram, Guntur-522 007

Lr.No.CGM/RAC/GM/PP&RAC/CP/VJA/F.No.76/D.No. 366 /24, Dt: 18 .01.2024

Sir,

Sub: APCPDCL - Replies to further objections raised by Sri U.M.Kumar, Secretary, AP Textile Mills Association, on ARR & Tariff Proposals of Retail Supply Business for the FY 2024-25 - Reg.

Ref: Party's representation, dt.06.01.2024.

Referring to the further objections raised by Sri U.M.Kumar, Secretary, AP Textile Mills Association, on ARR & Tariff Proposals of Retail Supply Business for the FY 2024-25, the reply is furnished as hereunder.

Objections & Replies:

1. The Objector herein is an association of textile mills in the State of Andhra Pradesh.
2. Some of the members of the Association have wind and/or hydel captive generating plants. The energy generated by the captive generated plants is wheeled under open access to the industrial units. In view of the inherently infirm nature of the wind/hydel captive power plants, the captive user industrial undertakings invariably have a CMD with the distribution licensee to meet the full extent of the demand of their loads. The demand charges are paid. The wheeling of captive energy does not entail any increase in the recorded demand of the industrial units. The wheeled captive energy only substitutes for energy otherwise drawn from the licensees as and when, and to the extent, wind / hydel generation is available varying from time to time.

Reply: Demand charges being collected by the distribution licensee would fulfill the part of fixed cost obligations of the licensee such as fixed charges of generators, transmission charges and distribution charges. As the tariff is not rationalized based on fixed cost obligations and variable cost obligations of the licensee, the licensee recovers the remaining portions of the fixed cost obligation from the energy charges determined by the Hon'ble commission. If the consumer avails the supply other than the licensee using the licensee's network by paying only demand charges determined by the commission, the licensee will under recover the distribution cost incurred by it, which include O&M expenses, Return on Capital Employed, depreciation etc. Hence, it is justifiable to levy wheeling charges to recover the distribution cost from the consumer who avails open access using the licensee's network.

Some preliminary observations on the ARR/FPT filed

3. There is no proposal in the ARR/FPT filing for Grid Support Charges for FY-24-25. There is only a passing mention in the newspaper advertisement that all other terms and conditions as in the tariff schedule for FY 2023-24 are applicable, though no such statement appears anywhere in the ARR/FPT proposals.

Reply: As per APCPDCL ARR filings 2024-25, it was proposed to continue the retail supply tariff schedule for the existing financial year 2024-24 and also duly taking into account the new proposals.

4. Per APCPDCL, Form 9 shows a revenue from current tariffs as 9090.61 crs. and revenue changed through proposed tariff as 3047.26 crs, from which the revenue from proposed tariff works out to 12137.87. However, from Form 10 it is seen that the revenue from the proposed tariff is 9141.34 crs. The difference cannot be reconciled. The licensees are required to explain and reconcile the statements in Form 5 and Form 10.

Reply: The revenue charged through proposed tariff mentioned in form-9 is arrived as per the directions in G.O.MS.No-161, Dt.15-11-2021. The Revenue charged through proposed tariff Rs.3047.26 includes the full cost recovery as per the GO MS NO-161. The Revenue from present tariff is Rs.9090.61 Crores.

The Revenue from proposed tariff is Rs.9141.34 Crores.

The addl. Revenue Impact due to proposed tariff is Rs.50.73 Crores.

5. Per APCPDCL, the statements in Form 5 shows the revenue from grid support charges as NIL for FY 2023-24 and FY 2024-25. The statement in Form 10 relating to revue from proposed tariff also shows the revenue from grid support charges for FY 2024-25 as NIL. However, in Form 5 at item I, the "Revenue from Cross Subsidy Surcharge & Grid Support Charges" is shown as' 20.50 cr for FY 2023-24 and 21.53 cr for FY 2024-25. There is no indication or any details as how much of this is from grid support charges.

The licensees may be directed to explain the contradictions and inconsistencies and absence of information so as to enable us to make such further submissions as may be necessary.

Reply: The grid support charges are furnished in Form No-9(I) including Cross Subsidy Surcharge and are projected as Rs.20.53 Crs (CSS - Rs.17.29 Crs & GSC – Rs. 3.21 Crs) for FY 2023-24 and Rs. 21.53 Crs (CSS - Rs.18.16 Crs & GSC – Rs. 3.67 Crs) for FY 2024-25.

Objections as to Grid Support Charges

6. Even though the licensees had proposed grid support charges only for co-located captive power plants in the ARR/FPT for FY 2022-23, this Hon'ble Commission decided upon levy of grid support charges on all generating companies in the State based on their installed capacities excluding only the capacities which were tied up in PPAs with the AP-Discoms. The same was continued for FY 2023-24.
7. The issues with regard to the nature, applicability, scope and effect of grid support charges have not received the detailed consideration of this Hon'ble Commission. Since the tariff for each year is a separate and distinct proceeding and cause of action, the Hon'ble Commission may be pleased to carry out a detailed study and consideration on the issues relating to grid support charges based on the submissions herein.

8. The levy of Grid Support Charge is often supported by the observations of the Hon'ble Appellate Tribunal in its judgement dated 18.02.2011 in Chattisgarh State Power Distribution vs Godawari Power & Ispat Ltd. The issues in that case were as to the capacity of the CPP for the levy of Grid Support Charges and as to whether such dispute was a consumer dispute. The CPP in that case was a co-located captive power plant. In paras 17 and 18 of the Judgement, observations were made as to the basis for levy of grid support charges enumerating certain features considered to be advantages to a co-located CPP. The levy of grid support charges itself was not in issue in that case.

The purported premise is that the co-located CPPs enjoy certain benefits by operating in parallel with the grid for which they pay nothing. Hence a grid support charge requires to be levied.

Each of the so-called benefits are analyzed as below. What is stated for CPP hereunder is applicable with greater force and effect for non-co-located captive plants or for generating plants supplying electricity to consumers under open access: -

- 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 equipments. The bulk consumer can operate his generating units at constant power generation mode irrespective of his load cycle.*

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

Consider an industry with load fluctuating between 8 to 10 MW where the CPP capacity, is 12 MW and the industry has a 2 MW contracted demand for start up. Clearly the CPP itself can meet the fluctuation of the loads without resort to the grid or even the contracted demand. In such cases, levy of charge on 10 MW (i.e 12MW - 2 MW) is wholly unfair, unreasonable and unjustifiable.

Consider another case of an industry with load fluctuating between 10 MW to 15MW where the CPP capacity is 10 MW and contracted demand is 5 MW. It is alleged that the CPP can run constantly at 10MW and the variations within 5 MW alone are taken by the grid. But the contracted demand with the licensee is already 5 MW and the load fluctuations over 10 MW are within the contracted demand for which demand charges are being paid. In such cases also, levy of charge on the CPP capacity of 10 MW is wholly unfair, unreasonable and unjustifiable. '

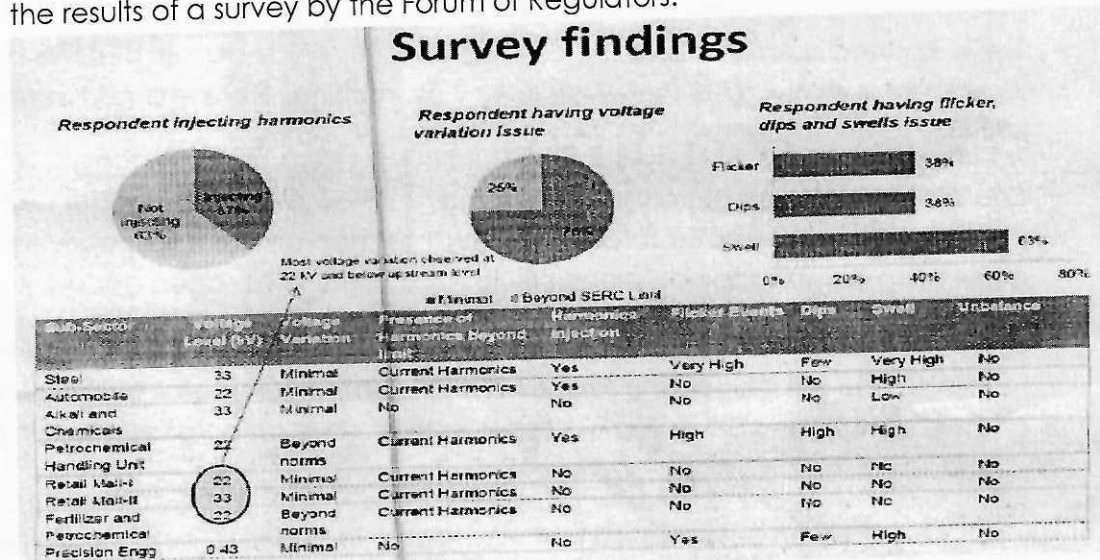
In case the 10 MW is sourced from another State of IEX under open access, there would be no such charges even though in that case also the 10 MW under OA is utilized fully and the fluctuations alone are met from the contracted demand.

b) Absorption of harmonics

The proposition is that certain kinds of loads inject harmonics into the grid. These harmonics flowing in the grid system are harmful to the equipments and are also responsible for polluting the power quality of the system.

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

Harmonics arise primarily from non-linear loads. Motors generally do not generate any significant harmonics except if they are, for any reason, over fluxed. It is not at all related to the generating capacity on which the charge is irrationally proposed. Not all loads inject harmonics into the grid as alleged. The Issue may be related to certain specific kind of industries such as steel mills or arc furnaces or industries using power electronics which need to be properly and distinctly identified. Following are the results of a survey by the Forum of Regulators:



It may be noticed that there are only three categories of industries that are found to inject harmonics into the grid. Painting all other categories of industries with the same brush is unreasonable and irrational.

The Grid Code specifies the limits of harmonics for consumers. If the harmonics are within the specified limits, there is no issue.

An overview of the regulatory requirements with respect to harmonics and the inconsistencies therein are as follows:

State	SERC Limits	CEA Regulation
Tamil Nadu	CEA grid connectivity standard	<ul style="list-style-type: none"> • THD – 5% with single harmonic content not exceeding 3% for 33 to 132 kV. • THD – 2.5% with single harmonic content not exceeding 2% for 220 kV. • THD – 2% with single harmonic content not exceeding 1.5% for 400 kV. • THD – 1.5% with single harmonic content not exceeding 1% for 765 kV.
Gujarat	THD – 5% with single harmonic content not exceeding 3%	
Maharashtra	HIT & LT (Industrial only) need to control harmonics at the levels prescribed by IEEE STD 519-1992	
Delhi	Not specified	
Madhya Pradesh	<ul style="list-style-type: none"> a. IEC Std. 1000-4-7 or IEEE Std. b. THD not exceed 1% at the interconnection point of EHV system in accordance with IEC Std. 1000-4-7 c. Cumulative THD_v – 3% (for 220 kV and 132 kV) d. Cumulative THD_v – 8% (for 11 & 33 kV) 	
Andhra Pradesh	<ul style="list-style-type: none"> a. Cumulative THD_v – 3% (for 132 kV and above) b. Cumulative THD_v – 8% (for 11 & 13 kV) c. THD_v – 5% with single harmonic content not exceeding 3%, THD_i – not exceeding 1% at drawl from transmission 	
Karnataka	<ul style="list-style-type: none"> a. THD 3% at 33 kV and 3.5% at 11 kV with no individual harmonic higher than 2.5% b. THD_v – 9% (for 400 V and 45 kV), 4% (for 400 V and 45 V), 3% (for 220V and above) c. THD_v – 5% (69 kV and below), 2.5% (69 kV up to 161 kV), 1.5% (161kV and above), 2% (HVDC terminals) 	

It is the essential responsibility of the DISCOMs to identify injection of excessive injection of harmonics. If the harmonics are excessive, the Grid Code / Grid Standard must be enforced and the consumer must be asked to reduce the harmonics by installing filters or other means.

It cannot be that excess harmonics, if at all there are any, are allowed, and a charge is levied. Such a charge must then be essentially be penal. Since this is specific to certain kinds of industries only, there cannot be such a penal charge on all industries generally just because some industries violate the standards.

- 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 generator output terminal. This unbalance current normally creates problem of overheating of the generator 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.*

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

Where there is some CMD with the licensee, the question as to whether the effect of unbalanced loads is within the CMD or not is to be carefully considered.

- d) *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.*

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the generating capacity which is irrationally sought to be made the subject of a charge.

It is also an issue relating to starting currents and momentary loads which depend on the load and its nature in specific types of industries. It is stated too broadly. What is to be seen and considered is whether, in relation to specific types of industries, any alleged support from the grid is inconsistent with the contracted demand that the industry has with the licensee having regard to the provisions of the GTCS and the Grid Code and Grid Standards.

Fault level is relevant only when a fault occurs. The Grid Code / Grid Standard provides for the time within which faults may be cleared. Typically, it is less than 0.06 seconds in case of fault and 0.10 seconds in case of overloads. On fault, it is not a case of grid support being taken. Rather it is a case where a fault current flows for a short duration necessary to clear the fault and isolate it. Even in a domestic connection, faults do occur randomly, and it cannot be said that any grid support is being availed during the short period required for a fuse to blow or an MCB to trip.

It is also true that the CPP itself adds to the fault handling capacity of the grid. In the event of an earth fault in the grid at any location nearby to the CPP, fault current is also drawn from the CPP because of the low impedance path to the CPP, and the CPP itself may trip in such circumstances of earth fault in the grid. So, while waxing on the fault handling support of the grid to the industrial loads, it must not be forgotten that the CPP is also affected by faults in the grid.

- e) The grid provides stability to the plant to start heavy loads like HT motors.

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the generating plant which is irrationally sought to be made the subject of a charge.

Where the capacity of the CPP is intended for the entire industrial load, it is usually dimensioned to take the starting current of motors generally. The industry also has some contracted demand with the licensee.

The General Terms & Conditions of Supply (GTCS) of the AP Discoms provide as follows: -

5.11.9 General Wiring Conditions - AC Motor installations: The motor shall be provided with control gear so that the maximum demand of the consumer's installation does not in any case exceed the limit given in the following schedule:

Nature of supply	Size of installation	Limit of Maximum Current Demand
Single Phase	Up to and including 1-1/2 BHP	5 x full load current
Three Phase	Up to and including 3 BHP	5 x full load current
	Above 3 BHP and up to and including 15 BHP	2 x full load current
	Above 15 BHP and Up to and including 100 BHP	1-1/2 x full load current
	Above 100 BHP	1-1/4 x full load current

While DOL starting currents may be high for large motors, soft-start alternatives (star-delta starting, fluid or variable speed drives etc) are there to reduce the starting currents, and these must be enforced. In any case, what needs to be seen and considered is that, in a given case, whether the starting currents of motors alleged to be drawn from the grid are inconsistent with the arranged contracted demand with the licensee. If it is consistent, then the licensee is already compensated through demand charges and there is no justification whatsoever for anything more.

- f) 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.

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

As stated supra, high starting currents for motors are recognized and permitted by the GTCS. What requires to be considered is, again, whether such starting currents are consistent with the contracted demand that the industry has with the licensee.

On the issue of active and reactive power demand not being recorded in the meter, it is only because the metering methodology approved is to integrate over a 15minute duration. There is no concept of instantaneous demand measurement. Demand is itself computed from the energy during the 15minute interval. It cannot be denied that the active and reactive energy is duly recorded in the meter. Therefore, the demands due to fluctuating loads are also included and part of the derriand measurement over the 15minute integrating interval. Even in the cases where there is no CPP, the instantaneous demands due to load fluctuations are never separately measured, and these are subsumed in the measurement of demand as computed from the energy measured during the 15minute interval.

- g)** *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.*

Load throw off is a random and rare event. When load is thrown off, the power generated flows to the grid till the generation is brought down within a few minutes by measures such as venting of steam and reduction of firing in the boiler. There is no "impact" on the grid as such. On the contrary, during the few minutes following the load throw off, the licensee receives inadvertent power free of charge. Such compensation by way of free "power itself is more than sufficient for the alleged "impact" or event.

- h)** *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 the CPP equipment.*

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

Transient surges are significantly absorbed by the CPP itself as the impedance path to the CPP is the lowest. There may or may not be any spill over to the grid depending on the nature of the load and the capacity of the CPP (higher CPP capacity means lesser spill over to the grid). Further, transient surges are load nature related, specific to specific types of loads in specific kinds of industries. Over-generalization is unwarranted and unreasonable.

- 9.** In addition, the following are other purported benefits / advantages of parallel operation as stated by some distribution companies.

- a)** *On account of increase in plant load factor of captive generator, additional revenues can be generated by the CPP by sale of surplus power to the utility.*

This is meaningless. There is never any simultaneous import and export of power. In the case of surplus power export, the loads are fed entirely from the CPP, and in addition the CPP exports surplus power for sale through the grid.

- b)** *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.*

This is only where the consumer industry has arranged for a standby from the grid by taking a contracted demand from the licensee for which the industry continuously pays demand charges to the licensee. In such circumstances, it is not understandable as to how this is a advantage to the generating plant. On the other hand, in this case, the licensee gets continuous revenue for the billing demand even though the contracted demand is utilized only when the CPP trips.

- c)** *Load fluctuation 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.*

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

The statement is an unwarranted and unreasonable over generalization. It is not correct to say that load fluctuations are not handled by the CPPs because the generation of the CPPs can be matched to the load fluctuations. In the case of fluctuations in the nature of starting currents or the like, the submissions supra may be considered. In any case, the issue that also needs to be considered is whether the load fluctuations alleged to be passed on to the grid are consistent with the contracted demand arranged with the licensee or not.

The statement about effect on the efficiency of the utility's system is vague and hypothetical. There is no data or details as to how precisely, how often and to what extent the utility's efficiency is affected.

- d) *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/o 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 generators runs in parallel with the utility's grid. This supply is likely to cause damage to the terminal equipment's at utility's substations and line insulators, as voltage on the other two healthy phases rise beyond the limit, under such conditions.*

This is entirely hypothetical. Supply system is grounded.

- e) *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.*

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

As stated supra, if it is shown by real and factual data that certain kinds of loads and/or certain kinds of industry impact the grid as alleged, then the issue must be restricted to those cases only. It is wrong and unreasonable to paint all other industries and/or kind of loads with the same brush.

- f) *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.*

This is clearly an issue related to the load and its nature. It is not related at all to the generating capacity of the CPP which is irrationally sought to be made the subject of a charge.

The statement is also vague. It also needs to be recognized that a CPP with a synchronous generator supplies reactive power to the grid which aids and improves the voltage profile of the grid.

- g)** *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.*

This is an entirely vague statement without any factual basis in relation to CPPs or the generation capacity of the CPP.

- h)** Non-recording of high fluctuating/ sudden active and reactive demand by the meter results in financial losses.

This is incorrect, the submissions made supra with regard to metering may be considered.

- 10.** It is essential that the CMD of the consumer with the licensee gives a bundle of rights with respect to most of the incidents alleged within the limits prescribed by the GTCS, Grid Code or Grid Standards. This cannot be ignored.

- 11.** In the case of generating plants supplying to a distantly located consumer under open access, almost all the alleged incidents are related to the point of interconnection of the loads with the grid. None of such incidents occur at the interconnecting point of the generating plant with the grid. Neither the generating plant nor the generation capacity is at all responsible for any of these events. It is wholly arbitrary and irrational to mulct the generating plant or the generation capacity with such a charge.

- 12.** From the above submissions it is also clear that the fluctuations harmonics etc. mentioned by the licensees are all load related specific also to particular kinds of loads specific to particular kinds of industries.

There is no case whatsoever made out in respect of the CPP installed capacity with respect to any of these issues so as to warrant or justify levy of a charge on the installed capacity of a CPP.

- 13.** Moreover, it may be seen and considered that, if Open Access is availed from another State or through IEX, instead of having a CPP, the alleged incidences would occur even in that case, but there would be no such charges levied.

- 14.** It is therefore submitted that the levy of any charges based on the capacity of the CPP or any generating plant is unreasonable and unjustified. If there are no sales of surplus power at a given time, the levy of charge on idle generation capacity is also most irrational and unreasonable. Even if the contracted demand from all sources and the export sale demand is deducted from the installed capacity, the very basis of generation capacity as a starting point is irrational and incorrect.

Reply (6 to 14) :

In the Tariff Order for Retail Sale of Electricity for FY 2022-23, it is stated that, confining the levy of Grid support Charges only to captive power plants does not provide for a level playing field as other generators connected to the grid also enjoy the same benefits as that of CPPs and accordingly it was decided to bring other generators, except those having PPAs with DISCOMs under the ambit of Grid support Charges.

Submissions as to the rate of Grid Support Charges

15. Grid Support Charges have been fixed by the Hon'ble Commission based the R&M charges in the Transmission & Distribution ARR's.
16. Consider the case of a consumer with a non-co-located wind or hydel captive power plant. Such a consumer has a CMD with the licensee for his full load requirements. He pays demand charges which includes for the transmission and distribution network costs, including R&M. For the energy availed under open access he pays transmission/ wheeling charges which also includes for the transmission / distribution network costs including R&M. Thereby he already pays for transmission twice over for the transmission / distribution costs including R&M. Now, if grid support charges is levied, the R&M costs are sought to be recovered for a third time. It is a triple whammy which is most arbitrary, unreasonable and irrational.

Reply(15&16):

The justification for collection of demand and wheeling charges was provided at reply to para no.2. Further, in the Tariff Order for Retail Sale of Electricity for FY 2023-24, it is stated that "the Grid support charges being collected by the DISCOMs from the consumers will be accounted for while arriving at the ARR for Retail Supply Business and hence the double payment does not arise.

Participation at Public Hearing - Oral Submissions

The Objector desires to be heard at length through counsel, Sri K. Gopal Choudary and Sri T. Sri Charan, Advocates, at the Public Hearing.

Since the public hearing is common to several proceedings, there may be undue constriction of time to allow a full and fair hearing to the objector in respect of grid support charges. In such a case, it is requested that a specific date for hearing the Objector at length is fixed in the interest of justice.

Further, it is to inform that, the Honorable APERC is conducting public hearings on ARR filings for FY 2024-25 & Distribution Business for 5th control period through video conference from Conference Hall, APEPDCL, Visakapatnam. The hearings will be held in respect of all the three DISCOMs on 29-01-2024, 30-01-2024 and 31-01-2024 from 10.30 AM to 1.00 PM and from 2.00 PM to 4.30 PM. APCPDCL has facilitated Video Conference at all offices of Superintending Engineer / Operation at district headquarters and at all remaining offices of Executive Engineer / Operation. Specification of the date and time for objector is under the purview of Honourable Commission.

Yours faithfully


**Chief General Manager /RAC
APCPDCL::Vijayawada**

Copy submitted to

The Secretary, APERC, 11-4-660, 4th Floor, Singareni Bhavan, Red Hills, Hyderabad.