



**ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION**  
**4<sup>th</sup> Floor, Singareni Bhavan, Red Hills, Hyderabad 500 004**

THURSDAY, THE TWENTY SECOND DAY OF OCTOBER  
TWO THOUSAND AND TWENTY

:Present:

**Justice C.V.Nagarjuna Reddy, Chairman**  
**Sri P.Rajagopal Reddy, Member**  
**Sri Thakur Rama Singh, Member**

**O.P.No.46 of 2017**

**Between:**

- 1) Southern Power Distribution Company of Andhra Pradesh Limited (APSPDCL), beside Srinivasa Kalyanamandapam, Tiruchanur Road, Tirupati 517501.
- 2) Eastern Power Distribution Company of Andhra Pradesh Limited (APEPDCL), P&T Colony, Seethammadhara, Visakhapatnam - 530020.

**....Petitioners**

**AND**

- 1) M/s Andhra Pradesh Power Generation Corporation Limited (APGENCO), 5<sup>th</sup> Floor, Vidyut Soudha, Gunadala, Vijayawada, Andhra Pradesh - 520004.
- 2) Andhra Pradesh Solar Power Corporation Limited (APSPCL), H.No.6-3-856/A/3, Sadat Manzil Compound, Opp: Green Park Hotel, Ameerpet, Hyderabad.

**...Respondents**

The Original petition has come up for hearing through video conferencing finally on 23-06-2020 in the presence of Sri P. Shiva Rao, learned Standing Counsel for the petitioners, Sri D.V.Someswara Rao, Deputy Chief Controller of Accounts, APGENCO for the 1<sup>st</sup> respondent and Sri M. Venugopala Rao, learned objector. After carefully considering the material available on record and after hearing the arguments of both parties and the learned objector, the Commission passed the following:

## **ORDER**

The petitioner filed this original petition on 07.09.2017 under section 86 (1) (b) of the Electricity Act, 2003, praying for (a) approval of Long Term Power Purchase Agreement dated 01.07.2017 signed by the petitioners with the 1<sup>st</sup> respondent in respect of the proposed 400 MW Solar Power generated from the Ananthapuram-II Ultra Mega Solar Power Park at Talaricheruvu (V), near Tadipatri, Ananthapuram District and (b) regulation of the price in respect of purchase of solar power from the project by the petitioners.

2. The averments of the petitioners are briefly as under:
  - a. That pursuant to the permission vide letter dated 23.05.2015 from the Government of Andhra Pradesh (GoAP) to the proposal of the 1st respondent APGENCO vide its letter dated 15.11.2014 to set up 500 MW capacity solar power plants as per feasibility in Anantapuram District, A.P., APGENCO conducted the bidding for setting up a 500 MW solar park at Talaricheruvu and the bids were finalized for 400 MW with three (3) bidders and the Letters of Intent (LoI) were issued to the three firms viz. (i) M/s Vikram Solar Pvt. Ltd. for 200 MW, (ii) M/s KEC for 100 MW and (iii) M/s MCNally Bharat for 100 MW, on 09.03.2017 for executing the solar power project of 400 MW capacity and that the detailed contracts were issued on 02.05.2017.
  - b. That the 1st respondent M/s APGENCO, vide letter dated 09.06.2017, communicated the draft Power Purchase Agreement (PPA) to Andhra Pradesh Power Coordination Committee (APPC) for sale of 400 MW solar power from "Talaricheruvu Solar PV Power Plant" to the petitioners at a tariff of Rs.3.57 per unit and also requested to communicate the consent / remarks on top priority as the LoIs were already issued to three (3) firms on 09.03.2017 for executing the solar power park of 400 MW capacity and the project execution works viz. soil investigation works, finalization of designs & drawings were under progress at site and that the said tariff was the lowest at that point of time.
  - c. That the petitioners have included for FY2018-19 the said Solar Park of APGENCO in the resource plan submitted to the Commission and this capacity

is also part of the targeted capacity the GoAP envisaged in the GoAP Solar Policy issued in February, 2015.

- d. That the proposal of APGENCO for signing of PPA with the petitioners for sale of 400 MW solar power generated from the proposed Solar Park was examined by the Andhra Pradesh Power Coordination Committee (APPCC) in its meeting held on 19.06.2017 and it was decided that, *“in view of the reasons indicated by APGENCO that Solar Park works were already commenced and LoAs were issued to the successful bidders in the month of March’ 2017 prior to the then recent discovered Solar Park Tariffs of Rs.3.15 per unit & Rs. 2.44 per unit, APPCC agreed to the proposal of APGENCO to sign the PPA with APDISCOMs for purchase of solar power from 400 MW Solar Power Plant at Talaricheruvu, Ananthapuram District at the tariff of Rs.3.57 per unit. APPCC / APDISCOMs noted that APGENCO agreed to reduce the tariff further to the above in case the GoAP reduces the land cost of APGENCO Solar Park.”*
- e. That according to the above decision, the petitioners have signed the PPA with APGENCO on 01.07.2017 with a view that the power from the solar park would be helpful for the petitioners to meet their RPPO targets set by the Commission for the ensuing years.
- f. That the tariff of Rs.3.57 per unit of the said solar park is lower than the solar tariff of the earlier PPAs / PSAs entered into by APDISCOMs with M/s NTPC Solar Stage-I of N.P.Kunta solar park at Ananthapuram @ tariff of Rs.5.96 per unit and is also lower than the tariff of the solar power developers selected through competitive bidding in 2014 at the levelized tariffs ranging from Rs.6.17 per unit to Rs.7.05 per unit and that of 1000 MW NTPC Ghani solar park at the tariffs of Rs.4.63 per unit, Rs.5.12 per unit and Rs.5.13 per unit and that the tariff is also lower than that of 500 MW solar plant of SECI at the levellised tariff of Rs.4.50 per unit for 25 years.
- g. That clauses 2.2 & 2.5 of the PPA envisaged that

*“2.2 The APDISCOMs shall pay a fixed tariff to the solar developer for the Delivered Energy @ Rs.3.57 per unit for a period of 25 years from the date of COD upto 24% CUF. However the PPA is subject to approval*

*of APERC.*

*2.3 APGENCO has considered the land cost of Rs.3.5 Lakh / Acre for some part of land & Rs.2.5 Lakh / Acre for remaining land of project. APGENCO has requested GoAP to reduce the land cost. If GoAP reduces the land cost, the benefit will be passed on to the APDISCOMs.”*

3. The petitioners, while submitting that as per 86(1) (b) of Electricity Act, 2003, the PPA needs to be approved and consented by the Commission, stated that the Commission is vested with powers to regulate the power procurement process of DISCOMs through agreements, including the price at which power is to be purchased.
4. The petition was taken on the file of the Commission as O.P.No.46 of 2017 and was placed on the website of the Commission, together with its annexures, inviting views / objections / suggestions of any interested person / stakeholder, through public notice dated 6th October, 2017 and informing about the public hearing. Also vide letter dated 6th October, 2017, the Commission directed both the DISCOMs to place the public notice and the petition together with its annexures on their respective websites.
5. Pursuant to the public notice, Lion Venkata Ratnakumar, Vijayawada has submitted certain objections. Also, Sri M. Venugopala Rao, Senior Journalist & Convener, Centre for Power Studies, Hyderabad; Sri Ch. Narasinga Rao, State Secretariat Member, CPI (M), Vijayawada; Sri A. Punna Rao and Sri B. Tulasidas, Sri Penumalli Madhu, State Secretary, CPI (M), Vijayawada have submitted similar objections to which APGENCO submitted their replies and thereafter Sri M. Venugopala Rao submitted further objections on three (3) occasions and APGENCO / APDISCOMs have also submitted their replies / written submissions except to the final objections. The objections and the replies of APGENCO / APDISCOMs thereon are summarized later in this order and placed appropriately.
6. The Managing Director, APGENCO vide affidavit dated 15.06.2018 submitted that APGENCO has invited tenders under ICB route for 500 MW solar Project at Tadipatri in the year 2016. After tendering, order was placed on L1, L2 & L3 at L1 prices and Lol was issued on 09.03.2017 for 400 MW. That the Capital cost with

the tendered price is the best price at that time and the tariff works out to Rs. 3.57 / kWh, with nominal return. That subsequently, there was a certain reduction in prices and tariff has come down for plants for whom orders were placed at a later date. That, as suggested by the Commission, APGENCO has examined all possibilities for reduction of tariff and accordingly agreed to reduce its tariff from Rs. 3.57 / kWh to Rs 3.50 / kWh and that the implication of GST on solar projects being not clear, APGENCO will approach the Commission for remedy after completion of the project.

7. Vide record of proceedings dated 03.11.2018, the erstwhile Commission observed, inter-alia, that *"it is found on a study of the record by the Commission and its office that the version of the petitioners does not present a consistent version on the issues of land cost, the manner of arriving at the land cost and the agreements and the Lols etc. referred to are never placed before the Commission to know their contents. It was also seen that the request said to have been made to the State Government regarding land cost is still stated to be pending. Let the petitioners place all the relevant details and documents before the Commission explaining all the inconsistencies in their version and also pursue with the State Government for a decision on the land cost"*.
8. Pursuant to the above said direction of the Commission, the Chief Engineer / Commercial, APGENCO submitted copies of the following documents to the Commission on 28.11.2018.
  - a. Letters of Intent issued in favour of M/s Vikram Solar Pvt. Ltd., (200 MW), M/s KEC (100 MW) & M/s McNally Bharat (100 MW),
  - b. G.O.Ms.No.55, Dt.03.02.2017 (Regarding Land Allocation) and
  - c. Letter dated 08.11.2017 of Managing Director/APGENCO addressed to the Principal Secretary to GoAP, Energy, I&I Department requesting to pursue with GoAP to reduce the land cost @ Rs.10,000/- per Acre.

It is also stated in the letter that as per the suggestion of the Commission and upon negotiations, APSPCL reduced its cost and thereby the tariff has come down to Rs.3.50 per kWh. Also that the tariff is excluding GST and other

statutory levies and that if APGENCO has to pay these levies, they would approach the Commission separately with actual commitment for reimbursement of the same through tariff.

9. From November, 2018 till order in the case was reserved, the case was adjourned to enable the government to reduce land cost. In the view this Commission proposes to take, it is unnecessary to mention in detail the correspondence and proceedings on the subject. Suffice it to refer to the record of proceedings dated 17.03.2020 of this Commission. In the said proceedings, the Commission, inter-alia, observed that the case has been adjourned time and again to enable the Government to consider revision of land price, so that the benefit of lower tariff will be passed on to the consumers. That from the manner in which the official machinery of the Government is responding to the Commission's request, the Commission is convinced that they are not showing the desired interest in considering revision of land value. As the issue relates to fixation of tariff which does not brook undue delay, the Commission does not feel it fit to grant such a long adjournment. The Original Petition was accordingly heard on merits and orders were reserved by the Commission.
10. Upon perusal of the record and holding discussions by the office of the Commission with the APGENCO officials through video conference, as directed by the Commission, the respondent APGENCO was directed through e-mail dated 20.08.2020 to submit the following information and to serve a copy of the same on the petitioners.
  - a) Break up of the Capital Cost of Rs.532.91 Lakhs / MW with detailed worksheets and with documentary evidence.
  - b) Details of the amount of equity deployed into the project.
  - c) The basis for various factors taken into account for tariff determination, such as useful life of plant, O&M expenses, O&M expenses escalation, Working Capital Interest rate (with working sheet), Panel capacity degradation, spares percentage in Working Capital etc.

- d) To explain the loan amount of Rs.426.33 Lakhs / MW being equally spread for 20 years and thereafter the amount short of 90% of the Capital Cost (depreciation) being spread over the balance period of the plant contrary to the practice of charging depreciation at the rate applicable towards loan repayment.
- e) Copies of the Loan Agreements.
- f) Copy of any agreement / MoU entered into with APSPCL.
- g) Worksheet with details of calculation of Interest on loan component.
- h) The reasons as to why two O&M Charges, one for APGENCO and one for APSPCL are claimed?
- i) When the EPC contractor is taking care of O&M for the first five (5) years, why should there be any O&M Charge at all for the first five years?
- j) What are local area development charges?
- k) Statutory Audit Certificate for all the expenses claimed, clearly mentioning that the expenditure claimed is not claimed elsewhere.
- l) The annual generation details separately from each of the three developers from SCOD.

11. In response, vide letter dated 28.08.2020, the respondent APGENCO submitted the information sought (which has been discussed in this order at the Commission's analysis on tariff components) and the same was uploaded on the website of the Commission, inviting views / comments / suggestions from the stakeholders. In response, M/s Vector Green Energy Private Limited and Sri S. Praveen Kumar, Dy. Director, Central Electricity Authority, New Delhi, have submitted their responses which are discussed later in this order.

12. Further, in view of the fact that the Commercial operation of the project is already declared, the Commission insisted upon the respondent APGENCO to submit the Statutory Auditor Certificate pursuant to which APGENCO submitted the same vide

letter dated 25.09.2020. The breakup of capital expenditure from the inception of the unit till 31st March, 2020 as certified by the Statutory Auditors (M/s Jawahar and Associates, Visakhapatnam) is as follows:

S. No.	Head	Rs. Cr.	Rs.Lakhs /MW
1	EPC Cost	1805.68	451.42
2	APSPCL Charges	167.86	41.97
3	Establishment and Administration	1.60	0.40
4	Cable Cost & Miscellaneous	24.65	6.16
5	IDC	98.99	24.75
Total		2098.78	524.70

13. The summary of the objections submitted by the objectors and the replies of the petitioners and respondents is as under:

I. Sri M.Venugopala Rao and others named in para (5) supra, vide their letters dated 31.10.2017 and 1.11.2017, have submitted, inter-alia, the following objections which are similar:

- a. That a Power Purchase Agreement (PPA) should be judged fundamentally from three angles viz. (a) need for purchasing power from the project concerned for the period specified to meet demand growth; (b) cost effectiveness and various options available to get power at the lowest possible or competitive tariff in given circumstances, various options available for selecting generator / supplier of power and the legality and propriety of the procedure adopted for the same and; (c) propriety and legality of provisions in the PPA and their adverse impact on tariff to be paid by the consumers.



- b. That from the point of view of requirement and availability of power, in the tariff orders the Commission has determined availability of a huge surplus which would entail an additional burden towards fixed charges for backing down.
- c. That with the stoppage of supply of thermal power to TSDISCOMs by APGENCO, an installed capacity of 1514 MW is available additionally. There is no binding obligation on APDISCOMs to purchase this additional capacity from APGENCO, as per the existing PPAs. That in other words, APGENCO cannot generate and supply power from this additional capacity of 1514 MW and as such coal that should have been used for generation of this capacity can and should be used by it for generation of power from the remaining installed capacity of the same thermal stations to supply to APDISCOMs as per the existing PPAs.
- d. That the scope for availability of power from gas-based private power projects of GVK extension, GMR Vemagiri, Konaseema and Gauthami with a total Installed Capacity of 1499 MW with whom the DISCOMs had long-term power purchase agreements is not considered on the ground that natural gas will continue to be unavailable to them. That these projects have filed submissions before APERC that natural gas is available and that they can generate and supply power to the DISCOMs. That if these projects generate power with 80% PLF, APDISCOMs will get 4835.52 MU, which will increase availability of surplus power and that from the above facts, it is abundantly clear that there is no need to purchase 400 MW solar power from APGENCO on a long-term basis.
- e. That the DISCOMs have already far exceeded their RPPO obligations and to argue that RPPO stipulates only the minimum of NCE to be purchased by the DISCOMs and that there is maximum limit (the import appears to be there is *no maximum limit* - Italics ours) for such purchases is to misinterpret the spirit behind RPPO. That since the cost of non-conventional energy is very much higher and as such the DISCOMs may not be inclined to

purchase the same, in order to encourage generation and consumption of NCE, the system of RPPO has been introduced and implemented and the misinterpretation that since RPPO stipulates only a minimum of NCE to be purchased by the DISCOMs, the latter are free to purchase NCE to any extent arbitrarily, irrespective of requirement and availability of power, defeats the very spirit of Electricity Act and the objectives of ensuring orderly development of power sector and ensuring competitive and reasonable tariffs to the consumers. That the argument that consent of the Commission is not even required to PPAs the DISCOMs enter into with NCE developers or that the Commission has to give its consent to such PPAs automatically, negates the very objective of the regulatory process and defeats the very purpose of the existence of electricity regulatory Commissions.

- f. That the tariffs to be paid by the DISCOMs to NCE units are very much higher and are nowhere near the lower tariffs discovered through competitive biddings for solar and wind energy in the early 2017 elsewhere in the country and the average cost per unit of NCE purchase by APDISCOMs is Rs.4.76 as per the tariff order for 2017-18.
- g. That NCE units being treated as must-run ones, with no scope for backing down, and as the higher tariffs continue for the entire period of PPAs of 25 years, the DISCOMs must purchase the entire power generated by them, irrespective of their requirement and availability of relatively cheaper power from other sources under PPAs.
- h. That with generation of solar power taking place only during day time when adequate radiation of the Sun is available and generation of wind energy being seasonal and dependent on wind velocity, admittedly, those units cannot meet peak requirements of the DISCOMs.
- i. That by entering into long-term PPAs with NCE units with seasonal generation of power, the DISCOMs have to depend on other base-load stations to meet their requirement during the periods when NCE units cannot generate and it leads to some kind of imbalance, when non-NCE units have

to be backed down during the periods when NCE units generate power and that especially wind energy units create problems for grid maintenance, with scope for unexpected wild fluctuations in generation.

- j. That notwithstanding the stated objectives of reducing global warming and protecting environment for encouraging generation and consumption of NCE, entering into long-term PPAs with NCE units, especially wind and solar energy units, at higher tariffs exceeding even the average cost of power purchase by the DISCOMs, far exceeding their obligations under RPPO, requirement of power and availability of power under existing PPAs in force and agreements or PPAs with ongoing projects, leads to increasing and unwarranted surplus power and payment of fixed charges for backing down the same not only at present but also in the medium term and that since the tariffs for NCE are higher, the DISCOMs cannot compete in the market to sell their surplus power at remunerative tariffs.
- k. That the existing and ongoing thermal and other non-NCE projects and the obligations of purchasing power from them under PPAs by the DISCOMs cannot be wished away and it is imprudent to enter into long-term PPAs with NCE units to purchase unwarranted power, when adequate power is, and is going to be available from other sources under PPAs.
- l. That till a viable and economical inverter-like mechanism is developed and put to use to store NCE and use the same as and when required, the problems and adverse consequences would continue to persist. Needless to say, research and development in that direction need to be encouraged. Hence, the need for a gradual, cautious and pragmatic approach is imperative for encouraging NCE. Global warming by its very definition is global in nature and needs to be tackled accordingly in a holistic and multi-dimensional way with international cooperation. Thermal power stations alone are not responsible for global warming and environmental problems and NCE alone is not the solution to the same. That instead of going in a cautious and gradual manner to purchase NCE through real and

transparent competitive bidding periodically to get the benefit of falling tariffs, the Governments have forced, and are forcing, the DISCOMs to enter into long-term PPAs at higher tariffs to purchase NCE, with adverse consequences to the DISCOMs and their consumers.

- m. That when the process of competitive bidding is being adopted and lower tariffs are discovered for purchasing solar and wind power in the country, continuing with the unhealthy practice of entering into long-term PPAs for purchasing the same on long-term basis at higher tariffs without following real and transparent competitive bidding to get the benefit of falling tariffs is reprehensible. When the trend is towards falling of prices (Rs.2.65 per unit in Gujarat and Rs.2.44 per unit in the bidding conducted by SECI), even from the point of view of reasonable tariffs, there is no justification in APDISCOMs entering into a long-term PPA with APGENCO to purchase solar power at a higher rate of Rs.3.57 per unit.

II. The Chief Engineer, Commercial, APGENCO vide letter dated 15.12.2017 submitted their replies to the above objections as under:

- a. Reply to objection at para 19 (I) (a): Taking all issues into consideration, APDISCOMs have entered into PPA with APGENCO.
- b. Reply to objection at para 19 (I) (b): Fixed cost towards power purchases will change from time to time based on utilization of power and the fixed cost of a particular year cannot be taken as base for future assessments.
- c. Reply to objection at para 19 (I) (c): APGENCO is supplying power as per the provisions of PPAs and G.O.Ms.No.20, Dt.08.05.2014 to APDISCOMs and there is no spare capacity of 1514 MW available as TSGENCO also regulated power supply to APDISCOMs.
- d. Reply to objection at para 19 (I) (d) to (I): No comments since the issues pertain to APDISCOMs.

- e. Reply to objection at para 19 (I) (m): APGENCO has decided to develop the Solar Power Plant of 500 MW at Talaricheruvu (Village) near Tadipatri as per approval of GoAP and MNRE and tenders were invited. In 2015, M/s BHEL was the L1 contractor and as per the L1 prices & charges payable to the APSPCL for maintenance of solar park the indicative tariff worked out to be Rs.4.99 per kWh. Considering various trends in the market, the tenders were cancelled and fresh tenders were invited for 5 blocks of 100 MW each and discovered the EPC contract prices through the e-tender system. The bids were finalised for L1 bidder price for 400 MW and awarded to three (3) firms (M/s Vikram Solar Pvt. Ltd. - 200 MW, M/s KEC - 100 MW and M/s McNally Bharat - 100 MW). The indicative tariff was worked out of Rs.3.57 per kWh including charges payable to APSPCL and PPA was entered with APDISCOMs on 01.07.2017. The tenders were finalised pre GST Regime and GST has a lot of effect on the tariff. APGENCO requested to allow GST over and above Rs.3.57 on account of the change in law clause.

III. Lion Venkata Ratna Kumar, Vijayawada, vide letter dated 23.10.2017, has submitted, inter-alia, the following objections:

- a. That the tariff of Rs.3.57 per unit is costly and that there should be no difference in the tariffs for the projects established in parks at Kadapa and Anantapuram.
- b. That when APGENCO signed the PPA on 1-07-2017, there must be a reduction in the rate as the rates are coming down by 20% every year and at least 4% reduction should be there if 1% of GST effect is considered. Because APGENCO is also a government organisation, land is free and electric lines are also laid by APTRANSCO and that the rate per unit must be Rs.3 only.
- c. That whether there is any GST effect on the Soar Project and considering different rates quoted by the suppliers (i.e. Rs.2.63 per unit on 9.5.2017, Rs.2.44 on 12.5.2017 quoted by Cleantech and Rs. 2.65 per unit realised in the auction of Gujarat) and whether the tariffs are coming down or stable and that as per MNRE the effect of GST on tariff is only Rs.3 lakhs for Rs. 400

lakhs.

- d. That the rate obtained in the tenders of 5 MW solar project is stated to be Rs.3.14 and that the tariff of a 400 MW project must be Rs.3 only and APGENCO must be asked to accept this rate.

IV. The Chief Engineer, Commercial, APGENCO, vide letter dated 15.12.2017, submitted their replies to the above objections as under:

- a. Reply to the objection at para 19 (III) (a): The solar rate depends upon competition at the time of bidding, location of plant, Capacity Utilization Factor (CUF), Govt. subsidies etc. APGENCO invited the tenders for developing the 5 blocks of 100 MW each and discovered the EPC contract prices through an e-tender system. The tenders were finalised under competitive bidding and after reverse auction for L1 bidder price for 400 MW and awarded to 3 firms (M/s Vikram Solar Pvt. Ltd. - 200 MW, M/s KEC - 100 MW and M/s McNally Bharat - 100 MW. The indicative tariff was worked out of Rs.3.57 including charges payable to APSPCL.
- b. Reply to the objection at para 19 (III) (b): APGENCO finalised tenders on e-procurement platform transparently before implementation of GST in 2016. Further, there is no guarantee or standards for reduction of prices every year. The rates are dependent on various issues like change in technology, demand & supply of power etc. APGENCO is paying for land and for the electric line towards power evacuation. Hence, they are part of capital cost and it reflects in the tariff.
- c. Reply to the objection at para 19 (III) (c): The Solar tariff varies from location of the plant, CUF, land cost, maintenance charges, Govt. subsidies etc. Regarding GST, the MNRE has estimated the impact of GST is at the level of 12-16 % on grid connected solar projects during June'17. MNRE has released the estimation of effect of GST on Solar projects on 18.07.2017. Later onwards many changes occurred in GST and the MNRE has updated the effect of GST on different types of solar projects on MNRE website.

- d. Reply to the objection at para 19 (III) (d): APGENCO has arrived at the tariff duly considering capital cost after inviting tenders on a competitive bidding process and after reverse action.

V. Sri M.Venugopala Rao, vide his letter dated 26.07.2018, has submitted, inter-alia, the following additional points:

- a. That proposed purchase of power from APGENCO is unwarranted and detrimental to larger consumer interest as the prices for solar power discovered through competitive bidding process elsewhere in the country are much lower than the revised tariff of Rs.3.50 per unit proposed by AP GENCO. In the bids called for by SECI for purchase of 3000 MW solar power, the lowest price discovered is Rs.2.44 per unit. In the bids called for by NTPC for 750 MW of solar power, the lowest tariffs discovered are Rs.2.72 to Rs.2.73 per unit. The lowest tariff discovered through competitive bidding for AP Solar Park at Kadapa is Rs.2.70 per unit. Therefore, in terms of tariff, purchase of power by the Discoms from AP Genco @ Rs.3.50 per unit is absolutely unwarranted and imposes avoidable huge burdens on consumers of power during the period of proposed long-term PPA.
- b. That in the tariff order for FY2018-19, the Commission has directed that the distribution licensees shall avoid entering into any power purchase agreements which may burden them with unwarranted power.
- c. That following the interim order given by APTEL the Discoms have been purchasing power from the project of HNPCCL. That in view of availability of surplus power on such a large scale, and going by the proposals of the Discoms for sale of surplus power to a limited extent, the latter cannot sell the additional surplus power, if solar power is purchased from APGENCO. That moreover, any such purchase from APGENCO would add to the avoidable burden of payment of fixed charges for backing down unwarranted surplus power which cannot be sold. That this position makes it abundantly clear once again that solar power from APGENCO is unwarranted in terms of requirement for meeting demand and detrimental to larger consumer interest.

- d. That the stand taken by the Commission in returning the proposal of the Discoms seeking consent for initiating tender process for purchasing 1000 MW distributed solar power by requiring them to first establish the need for power in terms of the Resource Plan, Load Forecast, Power Procurement Plan and Distribution Plan (Capital Investment Plan) and State Electricity Plan for 4th Control Period, is to be taken into consideration in the instant case also. Also, that the stand taken by the Commission vide its order in O.P.No.5 of 2017, inter-alia, that the Commission while exercising its powers u/s 86(1)(b) is bound to verify whether there is a need to procure power and if so to determine the quantum and the price and terms of PPA before approval, if necessary, if it is in consumer interest, is equally applicable in the subject petition as well in consumer interest and as per the said Act.
  - e. That from the point of view of meeting shortage of power, if any, during peak hours, the proposed purchase of solar power from APGENCO is unwarranted and that the DISCOMS have not submitted any material to justify purchase of solar power from APGENCO.
  - f. That even from the point of view of the obligations of the Discoms under RPPO to purchase the determined minimum percentage of NCE, purchase of solar power from APGENCO as proposed is absolutely unwarranted. By permitting the Discoms to purchase 24.68% of NCE for the year 2018-19, already irreparable damage has been done to larger consumer interest not only for the financial year, but also for some more years to come. That continuance of the unhealthy trend of causing irreparable damage to larger consumer interest by the Discoms by purchasing more and more unwarranted power should not be permitted and consent to the subject PPA shall be rejected.
- VI. The Chief General Manager (P&MM, IPC), APSPDCL vide letter dated 03.08.2018 submitted the following replies of APDISCOMs to the above additional points.
- a. Reply to the objection at para 19(V)(a): The details of the lowest tariff discovered in the country are as follows:



S. No.	Name of the Project	State	Lowest Tariff discovered (Rs./Unit)	Date of bid conclusion
1.	Bhadla Phase-II	Rajasthan	Rs.4.34* (Bundled Scheme)	Jan, 2016
2.	Pavagada Solar Park	Karnataka	Rs.4.76* (Bundled Scheme)	April, 2016
3.	Ananthapur Solar Park	Andhra Pradesh	4.43* (VGF Scheme)	May, 2016
4.	Ananthapur Solar Park, AP Genco	Andhra Pradesh	3.50	Dec, 2016
5.	Rewa Solar Park	Madhya Pradesh	3.30	Feb, 2017
6.	250 MW Kadapa Solar Park	Andhra Pradesh	3.15*	April, 2017
7.	Bhadla Solar Park	Rajasthan	2.44*	May, 2017
8.	NTPC 750 MW NP Kunta Solar Park	Andhra Pradesh	2.72*	May, 2018
9.	SECI 750 MW Kadapa Solar Park	Andhra Pradesh	2.70*	July, 2018

\*Trading Margin Rs. 0.07/kWh extra.

M/s ACME Solar Pvt. Ltd. quoted lowest tariff of Rs.2.44 / unit for 200MW Bhadla Solar Park, Rajasthan. The CUF(Max) of the Bhadla Solar project is 29.7% (2.6074MU per MW) whereas for APGENCO Kadapa Solar Project CUF (max) is 24% (2.1 MU per MW). Further, the tariff discovered through a bidding process depends upon various factors such as solar radiation at a particular site, infrastructure development, logistics, cost of funding, prevailing prices of solar cells / modules at a particular time, counterparty risk, related policies of the State Government etc. Secretary, MNRE, Govide D.O.letter dated 14.07.2017 requested concerned States to adhere to the tariff-determined through competitive-bidding for particular projects and authorities should not be influenced in decision making by the tariff discovered for the other projects in other States. APGENCO has decided to develop the solar power plant of 500 MW at Talaricheruvu (village) near Tadipatri as per the approval of GoAP and MNRE.

- b. Reply to the objection at para 19(V)(b): APDISCOMs have entered into PPA with APGENCO on 01.07.2017 which is prior to the Commission's directions issued on 13.12.2017. APDISCOMs are seeking directions from APERC for

entering into PPAs/PSAs for the projects envisaged in the Fourth Control Period of Resource Plan.

- c. Reply to the objection at para 19(V)(c): APGENCO Solar park was considered in the resource plan submitted to APERC to meet the expected demand. In case SLDC backs down this power owing to surplus situation, DISCOMs will not pay any fixed charges as per the provisions of PPA. Further, APDISCOMs will get RECs (Renewable Energy Certificates) for the Energy procured over and above the RPPO obligation fixed by the Commission. Presently, HNPCL is not supplying power to APDISCOMs due to non-receipt of coal supplies from MCL. The matter is sub-judice.
- d. Reply to the objection at para 19(V)(d): APGENCO Solar park was considered in the resource plan submitted to APERC to meet the expected demand. This clean power certainly would help to reduce global warming and protect the environment. APDISCOMs will get RECs (Renewable Energy Certificates) for the Energy procured over and above the RPPO obligation fixed by the Commission.
- e. Reply to the objection at para 19(V)(e): Recently entered PPA / PSA's tariffs of Solar Power tariffs is less than the variable cost of some of the APGENCO, CGS and private Thermal power plants. Due to meeting of day time demand by the solar projects, the coal reserves of thermal projects can be saved and such coal reserves can be utilised for meeting the demand during peak hours.
- f. Reply to the objection at para 19(V)(f): APDISCOMs will achieve the RPPO over and above the limits prescribed by the Commission. Further, APDISCOMs will get revenue through RE Certificates for the energy over and above the RPPO limits prescribed by the Commission.

VII. Sri M. Venugopala Rao vide his letter dated 27.08.2018, has also submitted, inter-alia, the following points.

- a. That instead of waiting for power tariffs for solar power to come down substantially through competitive bidding and without adopting the process of competitive bidding for selecting projects which offer the lowest tariff, the GoAP forced the Discoms to enter into PPAs with NTPC and APGENCO to

purchase unwarranted solar power at exorbitant tariffs. That the very fact, that in Andhra Pradesh itself, NTPC has discovered a tariff of Rs.2.72 per kWh and SECI a tariff of Rs.2.70 per kWh (both with a trading margin of Rs.0.07 per kWh extra) for solar power through competitive bidding, again confirms that signing PPAs on long-term basis with NTPC and APGENCO earlier for purchase of solar power is hasty and detrimental to larger consumer interest and that mere reduction of tariff by APGENCO from Rs.3.57 to Rs.3.50 per kWh for selling power from its subject project does not justify it in terms of tariff, leaving aside the requirement of that power for the Discoms.

- b. That the contention of the Discoms that due to meeting of day-time demand by the solar projects, the coal reserves of thermal projects can be saved and that such coal reserves can be utilised for meeting the demand during peak hours is perverse. For any reason, including inadequate supply of fuel, if there is, or will be, shortage for power during specific short durations, there is no justification in entering into long-term power purchase agreements with power projects, both conventional and NCE, to meet such immediate or short-term requirements and that other options like exchanges, etc. are available in the open market to meet the latter requirements.
- c. That the contention of the Discoms that in case SLDC backs down the subject project owing to surplus position, in such cases Discoms will not pay any fixed charges as per the provisions of the PPA is also untenable. That since the NCE projects continue to be treated as must-run units by the orders issued by the Commission, they, including solar power units, cannot be backed down and that incorporating a provision in the PPA that, in case SLDC asks the subject project to back down, the Discoms need not pay fixed charges, is violative of the orders of the Commission.
- d. That the submission of the Discoms that they will get revenue through renewable energy certificates for the NCE over and above the RPPO limits prescribed by the Commission is irrational. That NCE is being purchased to meet the obligations of the Discoms under RPPO on the one hand, and to meet demand, on the other. That excess purchases of NCE cannot be

justified under the guise of getting revenue, if any, through RECs which, ipso facto, is a perverse arrangement. That revenue through sale of RECs, if any, cannot compensate for the additional expenditure the Discoms have to incur for purchasing NCE, on the one hand, and backing down non-NCE units and paying fixed costs for the same in order to purchase NCE on a must-run basis and moreover, revenue from sale of RECs is a one-time affair for a specific quantum of power, whereas purchase of unwarranted NCE is an avoidable burden on a long-term basis.

- e. That Discoms have to purchase power from HNPCL, if it fits into merit order, as a result of the interim order given by APTEL till the issue is finally resolved at the appropriate level in the adjudicating hierarchy and even thereafter depending on final outcome and the reason that HNPCL is not supplying power to them due to non-receipt of coal from MCL does not justify their entering into long-term PPA with APGENCO to purchase solar power for the simple reason that non-supply of coal from MCL must be temporary and that supply of coal can be resumed any time as per allocation made by the GoI to HNPCL.
- f. That while PPAs were entered into with generators for purchasing NCE with higher generic and other tariffs determined through bidding, there have been delays in executing the units in agreed time schedules. While the generators are getting the benefit of falling prices of wind turbines and solar panels in the market with such impermissible delays, the DISCOMs continue to pay old higher tariffs to them, without corresponding reduction in tariffs. There are instances when PPAs are submitted to ERC seeking their consent after NCE units are commissioned and started generation and supply of power to the DISCOMs, thus presenting the Commissions with a fait accompli.
- g. That existing and ongoing thermal and other non-NCE projects and the obligations of purchasing power from them under PPAs by the DISCOMs cannot be wished away. It is imprudent to enter into long-term PPAs with NCE units to purchase unwarranted power, when adequate power is, and going to be, available from other sources under PPAs.

- h. That mere inclusion of the subject project in the resource plan, by itself, does not confirm that power from the same is required by the Discoms. That it is a simplistic proposition, for the simple reason that the requirement of power depends on demand and availability, not on mere inclusion of a project in a resource plan.
- i. That the submission of the Discoms that the subject project was considered in the resource plan for the fourth control period and that power from that project is required “right now” is absolutely questionable and contrary to ground reality in terms of demand for, and availability of power. When power is not required by the Discoms during day time and thermal units are being backed down partially, purchasing solar power from APGENCO during the same period is unwarranted. Purchasing solar power from the subject project of AP Genco during that period would lead to further backing down of its thermal plants to the extent solar power is purchased from the subject project, among others, and increase availability of surplus power and fixed charges to be paid for backing down the same.
- j. That the submission of Discoms that thermal plants of APGENCO are being run at minimum technical level of PLF during day time and that power from the subject project is required during the same time is a contradiction in itself. That there may be availability of surplus power during off-peak hours and shortage for power during peak hours in a day. That the submission of the Discoms that thermal plants of AP GENCO are being run at a technically low level of PLF during day time implies that power is not required during that time to the extent the threshold level of PLF is reduced to a lower level and that is being backed down to that extent.
- k. That in case of consideration of the PPA, the Discoms are to be directed to submit break-up of different components that make up the revised tariff of Rs.3.50 per kWh at which APGENCO agreed for sale of solar power from its subject project and examine reasonableness or otherwise of the same and that especially, it is to be ascertained whether APGENCO is paying any

amount for taking land on lease for the project from Solar Power Corporation of AP and if so, whether it constitutes a component of the tariff. That the 'permissibility or otherwise of such payment needs to be examined after ascertaining whether that land originally belonged to APGENCO and later transferred to the Solar Power Corporation.

- I. The claim of the Discoms that, compared with thermal projects of AP GENCO, and the variable tariffs of some of the projects of APGENCO, CGS and private thermal projects, the tariff of the subject project, as well as some other solar power tariffs in PPAs/PSAs recently entered into, is low is untenable and such a comparison is irrational. Thermal projects are base-load stations and generate power throughout the year, except for periods when they are closed down for overhauling or unscheduled outages, if not asked by the Discoms to back down, whereas solar power units can generate power during day time only, that, too when radiation of the Sun is available. The tariff for solar power is single-part, whereas for thermal projects it is two-part.
- m. That conditions specific to different States need to be taken into account for encouraging NCE and, as such, uniform targets under RPPO to all the States are unwarranted.

VIII. The Chief General Manager (P&MM,IPC) vide letter dated 28.09.2018 furnished the following additional submissions as reply to the above points.

- a. That the Govt. of India has set a target for setting up of 100 GW solar capacity by 2022 to encourage renewable energy power in the Country in a big way. In order to support the policy of Gol and with a view to promote green energy in the State of Andhra Pradesh, GoAP vide G.O.Ms. No.8, dated 12.02.2015 have issued a new solar policy - 2015 applicable for a period of 5 years wherein GoAP targeted a minimum total solar power capacity addition of 5000 MW by FY2019-20. The APDISCOMs have been following AP solar policy milestones in order to reach the targets set by Govt. of India.
- b. That MNRE has sanctioned the APGENCO solar park along with other solar parks. APGENCO has decided to develop the solar power plant of 500 MW

at Talaricheruvu (village) near Tadipatri as per the approval of GoAP and MNRE. In 2015, APGENCO invited tenders. M/s BHEL was the L1 contractor and as per the L1 Prices & Charges payable to the APSPCL for maintenance of the solar park the indicative tariff worked out to be Rs. 4.99 per kWh. However, considering the downfall in market rates, APGENCO has cancelled the said BHEL bid.

- c. That subsequently in December 2016, APGENCO has invited fresh tenders and conducted the bidding process in a transparent manner and arrived at the tariff of Rs.3.57/kWh for establishment of solar park, which is the lowest tariff at that point of time. The LOIs were issued by APGENCO to the successful bidders on 9.3.2017 for executing the solar power projects of 400 MW capacity. Subsequently, APDISCOMs have entered PPA with the APGENCO @ the tariff of Rs 3.57/kWh on 01.07.2017 and filed this petition before APERC on 07.09.2017 to accord approval of long term PPA signed with APGENCO under Section 86(1)(b) of EA 2003.
- d. That APDISCOMs have included the said 500 MW APGENCO Solar Park in the revised State Electricity Plan and resource plan submitted to Commission and also some quantum of energy is projected in ARR 2018-19 and this capacity is also a part of the targeted capacity of the GoAP envisaged in the GoAP solar policy issued in February, 2015. The power from APGENCO Solar Park would be helpful for both the APDISCOMs to meet their RPPO targets set by APERC.
- e. That when the generation from thermal power plants had come down due to unprecedented coal shortages in the country, the solar power projects would essentially help a lot to the State of AP to some extent to meet the demand. As such if the RE source power is encouraged, coal reserves can be stored for future usage / generation. Thus solar projects are helpful to meet demand in day time to some extent. Base load plants (Thermal) would be helpful to meet the peak requirements. In general, the peak load tariff is very high compared to the day time tariff. Even in case of backing down and paying fixed charges to such generators, still thermal plants would be useful for peak load operations and for overall balancing the system stability. In view of

the Must Run Status of the solar projects, they cannot be backed down. However, in case of emergency or for Grid stability, security or safety of any equipment or personnel is endangered, APSLDC will back down the solar projects. In such an emergency case, there is no provision in the PPA for payment of tariff.

IX. Sri M. Venugopala Rao, vide his letter dated 14.11.2019, has further submitted, inter-alia, the following points.

- a. That in the order dated 15.4.2019 on load forecasts and resource plans for the 4th control period (2019-20 to 2023-24) and the 5th control period (2024-25 to 2028-29), the Commission approved additional net capacity requirement to meet the demand (MW), including 5% spinning reserve, of 161 MW of base capacity during 2023-24 only, with no addition of capacity of OTB (other than base capacity) which includes solar and wind power. That in the same order, under alternate scenario also, the Commission approved addition of base capacity of 831 MW during 2023-24 only, with no addition of capacity of OTB during the entire 4th control period. However, in its order dated 5.10.2019, the Commission gave its consent to the PSA between AP Discoms and NTPC for purchase of 750 MW and 250 MW solar power and to the PSA between AP Discoms and SECI for purchase of 750 MW solar power, ignoring the facts that it had not approved addition of any OTB capacity during the entire 4th control period and addition of base capacity including and up to 2022-23, that there is no need for that power in view of availability of substantial surplus power and that the Discoms already far exceeded their targets under RPPO and would continue to exceed the same, with the NCE available under existing PPAs in force, till the end of the 4th control period. Therefore there is no justification for purchase of unwarranted solar power of 1750 MW on a long-term basis which increases availability of surplus power with attendant disastrous consequences for many years to come.
- b. That in view of availability of enormous surplus power, ironically, for purchasing 400 MW solar from APGENCO, capacities from its thermal power projects will have to be backed down further and it needs to be noted



that APGENCO, NTPC and SECI are not setting up these solar power plants and that they purchase power from private solar units and sell the power to the Discoms and that these power utilities of the State and Central governments are acting as middlemen, while trying to give the false impression that the Discoms purchase the solar power from public sector utilities.

- c. That irrespective of requirement of power for meeting demand every year, the Discoms have been entering into long-term PPAs with NCE units, especially with wind and solar power units, indiscriminately. The Discoms have far exceeded the proposed target for 2024-25 of 22% in the year 2019-20 itself. Therefore, even from the point of view of meeting the obligations under RPPO, the Discoms do not require additional NCE till the end of the 4th control period.

X. M/s Vector Green Energy Private Limited, vide their letter dated 22.09.2020 have submitted that,

- a. The National Tariff Policy, 2016 formulated by the Ministry of Power, has specific guidance on purchase of power generated from renewable energy sources. Para 6.4(2), "States shall endeavour to procure power from renewable energy sources through competitive bidding to keep the tariff low". Additionally, the Standard Bidding Guidelines for Solar were notified in August, 2017 by the Central Government under Section 63 of the Electricity Act, 2003.
- b. Since the National Tariff Policy was already in place and it specifically provided for competitive bidding coupled with the Standard Bidding Guidelines, there was no requirement for the procurement through the direct PPA route in place of the competitive bidding process.
- c. The APDISCOMs should prioritise purchase of solar power from generators whose tariff has been determined through the open market based competitive bidding and approved by APERC.
- d. APSLDC has repeatedly stated that it has found it challenging to strengthen the state transmission network and balance its power purchase mix to absorb the currently contracted renewable energy capacity and the

intermittency involved therein. As a result APSLDC has historically resorted to forceful back down of existing capacity. It's therefore unclear as to how the State intends to address the grid constraint and power purchase mix issues in an adequate manner to not only absorb the existing contracted capacity but also this new proposed capacity. As such, APERC should freeze passing any order on addition of new capacities till such time APSLDC has demonstrated that the network is sufficiently augmented and its power purchase mix is adequately balanced to handle the entire renewable capacity without resorting to forcible back down. Alternatively, electricity from the new capacities should only be used for sale of electricity outside the State of Andhra Pradesh and shall be directly connected to the Inter State Transmission System (ISTS).

XI. Sri S. Praveen Kumar, Dy. Director, Central Electricity Authority, New Delhi vide letter dated 22.09.2020 has submitted the following:

- a. Capitalization of O&M cost in tariff calculation is unfair as O&M cost as per the contract is only for a period of 5 years, but capitalizing the cost makes Return on Equity to be paid during the entire life of the project i.e. 25 years and interest on debt component corresponding to O&M cost shall also to be paid.
- b. Only supply and erection cost may be considered for determining the EPC cost which comes out to Rs.426.294 Lakhs/MW.
- c. The O&M Cost of Rs.77.2749 Lakhs/MW may be included in the base O&M Cost and escalated further as per escalation rate provided in relevant CERC Regulations.
- d. Tariff Regulations for RE projects and benchmarking O&M Cost will resolve the issues and ensure tariff certainty for projects coming under section 62 of the Electricity Act, 2003.

14. Having regard to the objections raised by various parties the issues that need to be addressed by the Commission and more particularly relevant to the instant project are identified as under:

(i) Whether there is any need to procure Power from the instant project?

(ii) Whether the tariff of the project is reasonable in the circumstances?

15. The above issues are addressed hereunder:

Issue No. (i)

The contention raised by the objectors is that there is no need for power from this project based on the premises that (i) power surplus was estimated in the tariff orders for FY2017-18, FY2018-19 and FY2019-20, (ii) that the DISCOMs are bound to offtake power from HNPCL, (iii) that there is scope for availability of power from gas-based private power projects of GVK extension, GMR Vemagiri, Konaseema and Gauthami with a total Installed Capacity of 1499 MW with whom the DISCOMs had long-term Power Purchase Agreements, and (iv) that the obligations of purchasing power from the existing and ongoing thermal and other non-NCE projects under PPAs by the DISCOMs, cannot be ignored.

It is true that the need for power is to be first assessed before approving any PPA. However, need cannot be judged solely based on the year to year tariff orders and the consequent surplus found therein. It has to be judged based on the exercises applying the Guidelines for Load Forecasts, Resource Plans and Power Procurement issued by the Commission in December, 2006. Indeed the Commission undertook such an exercise for the fourth (4th) Control Period (FY2019-20 to FY2023-24) and fifth (5th) Control Period (FY2024-25 to FY2028-29) and has given its order on 15.04.2019. In this context, para 133 of the said order is extracted hereunder.

*133. The capacities of the projects that are included for the 4th Control Period are with due regard to the existing sources of supply such as APGENCO and CGS, the existence of PPAs consented or otherwise having been covered in any Orders of this Commission or Hon'ble APTEL or Hon'ble APEX Court, possibility of commissioning during the 4th Control Period with due regard to the circumstances surrounding them, except for those which are under enquiry before the Commission through public*

*hearing process and not yet Commissioned. However, inclusion of any project / plant under the above sources is only for the purpose of estimating the capacity availability during the Control Period and does not in any way confer regulatory approval which has to be obtained separately based on merits in accordance with law.*

It is to be understood that the capacity of the instant project, though was under enquiry before the Commission through public consultation process but was commissioned on 12.03.2019 and thus being the then existing source of supply, was included in the sources of supply considered for 4th Control Period, as also proposed by the DISCOMs, in the Commission's order dated 15.04.2019.

The situation of surplus power prevalent presently over a short horizon cannot rule out a source of supply being considered while working out the long term power procurement planning. Also, it is to be noted that the Commission's order on Load Forecasts and resource plans for the 4th and 5th control periods has attained finality.

From the respective stands of all the stakeholders as discussed above, the following undisputed facts emerge. The process of establishment of the instant project was initiated in the year 2015 and the PPA dt.1.07.2017 of the project was entered between the Petitioners and the 1st Respondent APGENCO, and the petitioners have come up before the Commission in 2017. While the matter was kept pending awaiting decision of the Government for its consideration on reduction of land cost upon which reduction of tariff was envisaged, the Power Supply Agreements (PSAs) of other Solar projects viz. (i) PSA dt.11.12.2017 in respect of 250 MW solar project of NTPC under bundling scheme at Kadapa Ultra Mega Solar Park at tariff of Rs. 3.15 per unit, (ii) PSA dt.27.07.2018 in respect of 750 MW Solar Project of SECI under VGF Scheme at Kadapa Ultra Mega Solar Park and (iii) PSA dt. 04.06.2018 in respect of 750 MW Anantapuram-I Ultra Mega Solar park for NTPC which came up before the Commission later have been permitted by the Commission vide its order dated 15.10.2019. Thus, factually speaking, the instant project is first in the order of the matters presented before the Commission for consideration and ought to have been decided first but was kept pending for the

decision of Government on reduction of land cost.

The Commission is conscious of the fact that thrusting the obligation on the DISCOMs to purchase power from the Government entity such as APGENCO, irrespective of whether the tariff is reasonable or not and whether the need to purchase power exists or not will seriously jeopardize public interest. Therefore, while considering approval of PPA, the Commission shall make a pragmatic objective and balanced approach. As noted above, the instant project was conceived ahead of three other solar projects mentioned above. Indeed, the PPA was also entered earlier than those entered in the said three cases. Pending the present case, the developer is supplying power to the DISCOMs. The parties have thus travelled very far. In this situation it would not be appropriate to decline approval on the sole basis that presently DISCOMs have surplus power and that the NCE purchases by the DISCOMs exceeded their RPPO limits, moreso the source of generation is non-conventional on which a great emphasis is laid by the MNRE for protection and preservation of environment. However at the same time the Commission would endeavour to fix reasonable tariff which in the ultimate analysis will not be burdensome to the DISCOMs and the end consumers. This issue is accordingly answered.

Issue No. (ii)

In order to consider what in the present situation is a reasonable tariff, it is necessary to refer to the pattern of tariffs discovered in the past. The following table would reveal how the fall in the tariff is gradual and not sudden as submitted by the petitioners.

S. No.	Name of the Project	State	Lowest Tariff discovered (Rs./Unit)	Date of bid conclusion
1.	Bhadla Phase-II	Rajasthan	Rs.4.34* (Bundled Scheme)	Jan, 2016
2.	Pavagada Solar Park	Karnataka	Rs.4.76* (Bundled Scheme)	April, 2016
3.	Ananthapur Solar Park	Andhra Pradesh	4.43* (VGF Scheme)	May, 2016
4.	Ananthapur Solar Park, AP Genco	Andhra Pradesh	3.50	Dec, 2016

5.	Rewa Solar Park	Madhya Pradesh	3.30	Feb, 2017
6.	250 MW Kadapa Solar Park	Andhra Pradesh	3.15*	April, 2017
7.	Bhadla Solar Park	Rajasthan	2.44*	May, 2017
8.	NTPC 750 MW NP Kunta Solar Park	Andhra Pradesh	2.72*	May, 2018
9.	SECI 750 MW Kadapa Solar Park	Andhra Pradesh	2.70*	July, 2018

\*Trading Margin Rs. 0.07/kWh extra.

APGENCO vide letter dated 27.09.2018 had submitted a levelised tariff calculation sheet for the instant Solar Power Plant duly signed by its Chief Engineer / Commercial, which claims a levelised tariff of Rs.3.50 per unit (revised claim) to be paid for 25 years during the duration of the agreement. While submitting the information sought by the Commission, APGENCO vide their letter dated 28.08.2020, giving justification for various factors, has generally relied on the CERC (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017. Before proceeding further, it is appropriate to quote the applicability of various parameters indicated in the said Regulation itself especially with reference to their adoption by this Commission in any case.

*“7 (c) ....Financial and Operational norms as may be specified would be the ceiling norms while determining the project specific tariff:*

*Provided that the financial norms as specified under Chapter-2 of these Regulations, except for capital cost, shall be ceiling norms while determining the project specific tariff.”*

As this Commission has not framed any regulations governing fixation of tariff for Solar Power Projects, it has adopted CERC Regulations as a guide and moderated its decisions as per its discretion in the circumstances in this order.

Further, the statutory auditor certificate certifying the expenditure incurred is also submitted by APGENCO as per the directions of the Commission. The various components / parameters mentioned in their tariff calculations and those certified by the statutory auditor are examined for their prudence, also from the end consumers point of view, hereunder, item-wise.

- i) **Capital Cost:** The Capital Cost shown is Rs.532.91 Lakhs/MW (Rs.2131.64 Cr.). The following are the constituent components as per the revised claim and statutory auditor's certificate:

<b>Head</b>	<b>As per revised Claim (Rs.Lakhs/MW)</b>	<b>As per statutory auditor (Rs.Lakhs/MW)</b>
EPC Cost	445.60	451.42
APSPCL Charges	46.06	41.97
Establishment and Administration	1.0	0.40
Infrastructure	1.0	0
Cable Cost & Miscellaneous	15.25	6.16
Contingency	1.0	0
<b>Total</b>	<b>532.91</b>	<b>524.70</b>

- a) EPC Cost : Let us first examine the EPC Cost. The APGENCO, in response to the daily order dated 3.11.2018 in O.P.No.46 of 2017, enclosed three numbers of letters of intent issued to three different companies namely (1) Vikram Solar Pvt. Ltd. for 200 MW, (2) M/s KEC for 100 MW and (3) M/s MCNally Bharat for 100 MW. As per the LOIs, the schedule of prices for *Design, Engineering, Manufacturing, testing at manufacturer's works, supply, packing and forwarding, transportation, unloading, storage at site, erection / installation, testing, Commissioning and Operation & maintenance for 5 years of the respective plant of the respective grid connected Solar PV power project including Civil works on EPC basis inclusive of all applicable taxes and duties*, is as tabulated below:

S. No.	Name of the Company	Amount (Rs.)	Per MW (Rs.Cr./MW)
1.	Vikram Solar Pvt. Ltd. (200 MW)	926,11,03,030	4.63
2.	M/s KEC (100 MW)	441,04,44,582	4.41
3.	M/s MCNally Bharat (100 MW)	415,29,61,000	4.15
Total		1782,45,08,612	4.45

The total amount works out to Rs.445.61 lakhs / MW.

The above price consists of three different individual contracts including a contract for operation and maintenance for five (5) years. Inclusion of the O&M expenses as part of capital cost is contrary to the tariff working principles and therefore cannot be accepted as it has tariff implications for the consumers. In view of the above, the Commission decides to keep O&M expenses out of the Capital Cost and it is treated separately as explained infra. Coming to the quantum of O&M expenses in all the three contracts, the same is found to be Rs.77.27 Cr. and it works out to Rs.19.32 Lakhs / MW.

The EPC Cost as certified by the Statutory Auditor is Rs. 451.42 Lakhs per MW. The portion of O&M expenses to the extent of Rs.19.32 Lakhs / MW has to be deducted from the Capital Cost and included under the O&M Cost. Accordingly the allowable EPC Cost works out to be Rs. 432.10 Lakhs/MW.

- b) APSPCL Charges: The respondent APGENCO has indicated an amount of Rs.46.06 Lakhs/MW (working out to Rs.184.24 Cr.) stated to be towards the charges payable to the Andhra Pradesh Solar Power Corporation Ltd.(APSPCL). Along with their letter dated 28.08.2020, APGENCO have



sent a letter dated 01.09.2017 written by the Managing Director, APSPCL enclosing draft copies of Implementation and Support Agreement (ISA) and Land Lease Agreement (LLA) to be entered with APSPCL in respect of 500 MW (since reduced to 400 MW) Solar Project being established by AP GENCO. By the said letter he has also requested APGENCO to pay the one time Solar Park development expenses at Rs.46 Lakhs/MW and first year land lease charges at Rs.1000 per Acre along with service tax to APSPCL for signing of Implementation and Support Agreement and Lease Agreement. The Implementation and Support Agreement indicate the following materially significant provisions:

- (i) Solar Power Park Developer (SPPD), APSPCL in this case, will identify and acquire land required and allot land to Solar Power Developer SPD as per MNRE guidelines at the rate of five (5) acres per MW for setting up of Solar Power Projects on lease basis for a period of 25 years.
- (ii) SPPD will also develop common infrastructure facilities in the Solar Park like 220/33 kV pooling stations, internal transmission system, water supply, road connectivity, drainage system, cable support structures and weather stations and street lighting.
- (iii) APSPCL, after considering the expenditure for development of infrastructure, will collect one time Solar Power Park development expenses towards Capital Cost for Land development and for providing common infrastructure facilities such as internal transmission lines, roads, water supply drainage system and other infrastructure facilities in the Solar Park. In addition to the one time Solar Power Park development expenses, all applicable taxes, duties, cess and other Government levies will be collected separately from Solar Power Developer.
- (iv) In addition to the one time Solar Power Park development expenses, the APSPCL will separately charge annual O&M Charges for

operation and maintenance of the facilities. In addition to the annual O&M charges, all applicable taxes, duties, cess and other government levies will be collected separately from Solar Power Developer.

- (v) APSPCL is responsible to carry out O&M of the infrastructure facilities during the agreement period.

And the Land Lease Agreement has incorporated the following materially significant points:

- (i) Solar Power Park Developer has allotted land to the Solar Power Developer from plot nos. 1 to 5 of Anantapur to Ultra Mega Solar Park.
- (ii) The lessee shall pay annual lease rent of Rs.1000 per Acre.

We have carefully examined the above provisions. It is noted that the above mentioned agreements have not been signed. Furthermore, the amount of Rs.46.06 Lakhs per MW (actually Rs.46 Lakhs per MW as per the unsigned agreement) is towards the Capital Cost of the Land development and other charges towards the Solar Park.

However, in the auditor certificate under the head “APSPCL charges” a sum of Rs.167.86 Cr. has been shown. No breakup has been given indicating the components forming part of the said charges. During the hearing process, APGENCO has filed a letter dated 04.01.2019 indicating that the APSPCL charges include land cost. The APGENCO has produced the following documents before the Commission, (i) Implementation and Support Agreement (ISA) and (ii) Land Lease Agreement (LLA). Both the above documents are unsigned. The Commission also finds a copy of the covering letter enclosed to the above documents by APSPCL when it has sent the said documents to APGENCO. In the said covering letter APSPCL requested APGENCO to pay the one time solar park development expenses @ Rs. 46 Lakh per MW and first year land lease charges @ Rs. 1000 per acre along with service tax for signing of ISA and LLA. A perusal

of the recitals of the said ISA and LLA shows that the issue of land cost is not covered thereunder. Thus, APGENCO has not been fastened with any legal obligation to pay land cost. On the contrary, the letter dated 04.01.2019 addressed by the Chief Engineer / Commercial of APGENCO to the Commission clearly shows that the land belongs to APSPCL. The only document under which consideration for allotment of land for development of the present project by APGENCO envisaged is the unsigned LLA between APGENCO and APSPCL. No other document has been filed under which APGENCO has undertaken the liability of APSPCL towards the land cost. In the absence of any such legal obligation on the APGENCO and proof of payment of land cost, the land cannot be included as a component for fixation of tariff.

In the letter dated 04.01.2019, the Chief Engineer/Commercial of APGENCO, inter-alia, stated that the lease charges of Rs.1000 per Acre are nominal and that the same are part of O&M Charges. A perusal of the unsigned Land Lease Agreement shows that neither the lease charges are described as “nominal charges” nor they are shown to have been envisaged in addition to payment of land cost by APGENCO to APSPCL. Further, there is no recital in the LLA that the lease charges are part of O&M charges. When a document such as Land Lease Agreement contains specific recitals, any stand which is either unsupported by or which may run contrary to such recitals cannot be countenanced. Hence, the Commission is not prepared to view annual lease charges as either nominal and in addition to payment of land cost or being part of O&M charges. Further, inclusion of land cost for computation of tariff is not permissible when ownership of the land remains with APSPCL at the end of the agreement period of 25 years and is not being proposed to be transferred to APDISCOMs. Evidently, being conscious of this fact, the parties envisaged annual lease amount payable by APGENCO for utilising APSPCL’s land. In the light of the above position, the Commission finds no justification to include the land cost as a tariff component.

Accordingly, the Commission decided to exclude the entire land cost of the allotted land (4018.24 Acres) which works out to Rs.119.58 Cr. (2941.68 acres at the rate of Rs.3.15 per acre and 1076.46 acres at the rate of Rs.2.50 per acre) from the APSPCL charges of Rs.167.86 Cr. Being the owner of the land, APSPCL is only entitled to recover the lease charges as per the agreement with APGENCO and we find no justification whatsoever to include land cost as a component for working out tariff. All that APSPCL is entitled to recover in this regard is only lease charges. Hence, in place of cost of land we decide to allow annual lease charges at the agreement rate of Rs.1000 per acre. As regards the balance costs, during the study, the Commission could discover a critical fact which has not been placed either by APGENCO or by APSPCL, namely the fact of APSPCL receiving from MNRE towards the grant component. The relevant part of MNRE Guidelines for development of Solar Parks issued in February, 2017 is reproduced herein below:

*“7. Based on the application made by the SPPD to SECI for grant of up to Rs. 20 lakh/MW or 30% of the project cost including Grid-connectivity cost, whichever is lower, SECI will forward a request to MNRE. MNRE will thereafter sanction a grant to SECI.*

*12. The expenditure on the development of a solar park will mainly constitute (a) expenditure on account of development of land and its infrastructure facilities and (b) Transmission network and Pooling Substation. The MNRE grant may be utilized in such a manner that a higher proportion of funds are used for internal and external transmission as that is the most essential function.*

*The SPPD, responsible for development of the solar park, shall endeavour to optimise the total expenditure to be made for the development of the solar park, such that the power generated by the prospective solar project developers is low and competitive.”*

On coming to know of the above fact relating to the provision for payment of grant, the Commission called upon the APGENCO to confirm whether the grant was received or not. Through its communication vide Lr.No.CE(Comml)/SE(C&P)/DE(C&P)/RA&PPA/400MW SPV PP/D.No. 1115/20.Dt.09.10.2020, APGENCO has furnished the following information.

*“The MNRE grant of Rs.20 Lakh/MW is received by APSPCL. APSPCL has communicated that the grant was utilized for development of Solar Park & Transmission network.”*

From the above information received from APGENCO, it is clear that a sum of Rs.20 lakhs / MW has been provided as a grant for development of the Solar park in terms of the MNRE guidelines quoted above. This amount is required to be set off against the balance sum of Rs.48.28 Cr. out of Rs.167.86 Cr. towards APSPCL charges. It therefore follows that against the said sum of Rs.167.86 Cr., what is allowable is annual lease charges at the rate of Rs.1000 per acre as a substitute for land cost as claimed by APGENCO.

- c) Establishment & Administration, Infrastructure and Contingency: In the tariff sheet filed on 27.09.2018 (which is earlier than COD i.e.12.03.2019), the respondent APGENCO claimed establishment & administration charges of Rs.1 (one) Lakh per MW (which works out to a total amount of Rs.4 (four) Crores). Also, the infrastructure cost and contingency expenditure were each claimed at Rs.1 (one) Lakh per MW.

However, as per the statutory auditor certificate, the expenditure under the head Establishment and Administration is Rs.1.6 Cr. and there is no expenditure under the other two heads i.e. infrastructure and contingency. As such, the expenditure under Establishment & Administration at Rs.0.4 Lakhs / MW is only considered by the Commission.

- d) Interest During Construction (IDC): In the tariff sheet filed on 27.09.2018 (which is earlier than COD i.e.12.03.2019), the respondent APGENCO claimed an IDC of Rs.23 Lakhs per MW (which works out to a total amount of Rs.92 Crores). Pursuant to the additional information sought by the office of the Commission, the respondent, vide letter dated 28.08.2020, furnished IDC statement claiming an amount of Rs.98.99Cr. Further, the Statutory audit certificate also certified the same expenditure. That being the case and in the interest of justice, we are inclined to allow an IDC of Rs.98.99 Cr.

in spite of the fact that this is more than what they claimed in their earlier statement dated 27.09.2018, being at best an estimate because it is much earlier to the COD of the plant. The issue stands addressed accordingly.

**ii) O&M and O&M Escalation:** In the tariff sheet filed on 27.09.2018 (which is earlier than COD i.e.12.03.2019), the respondent APGENCO claimed O&M Charges ranging from Rs.0.50 Lakhs / MW to Rs. 0.62 Lakhs per MW during the first five years and claimed an amount of Rs.7.79 Lakhs per MW with an annual escalation of 5.72% from 6th year onwards till the end of 25 years. The respondent APGENCO has also factored APSPCL O&M expenses of Rs.1.84 Lakhs per MW for the first year with an escalation of 6% till the end of the agreement period. It is brought out supra that the O&M Costs which were included as part of the Capital Cost need to be taken out of the same and has to be treated separately as O&M Costs itself. The O&M Costs obtained through competitive bidding from three different companies for the first five (5) years are as tabulated below.

O&M Contractor	Capacity (MW)	1st Year	2nd Year	3rd Year	4th Year	5th Year
		(Rs.Lakhs per MW)				
M/s MCNally bharat	100	2.20	2.31	2.43	2.55	2.68
M/s KEC	100	4.17	4.38	4.59	4.82	5.06
M/s Vikram	200	4.04	3.94	4.14	4.34	4.56
<b>Total</b>	<b>400</b>	<b>3.62</b>	<b>3.65</b>	<b>3.83</b>	<b>4.01</b>	<b>4.22</b>

Since, the above rates are obtained through competitive bidding, the same have to be adopted.

In response to the queries raised by the office of the Commission, the respondent APGENCO, through their letter dated 28.08.2020, furnished the following justification as it relates to O&M costs and O&M escalations:

- i. As per CERC Regulations 2017, the Commission shall determine the O&M expenses. For determination of tariff, APGENCO has followed clause nos. 7 & 10 (5.72% Escalation per Annum & Rs. 7 Lakhs/MW base O&M Expenses for 2016-17) of CERC Draft Regulations (Fifth*

*Amendment for 2012 Regulation) 2016, to decide the base O&M expenses for the first year i.e., 2019. Thus, the base value arrived for the FY 2019-20 is Rs. 8.27 Lakh/MW. However, APGENCO is claiming the O&M expenses of Rs. 7.74 Lakhs/MW (Rs. 5.9 Lakh/MW to APGENCO + Rs. 1.84 Lakh/MW to APSPCL including service tax @15%) only. APGENCO is claiming the O&M charges with base cost of Rs. 0.50 Lakh/MW & escalation of 5.72% for 1st five years and 6th year onwards of Rs. 7.79 Lakh/MW with 5.72% escalation.*

- ii. As per CERC Draft Regulations (Fifth Amendment for 2012 Regulation) 2016, APGENCO is claiming only one O&M charge. However, the total claim will be utilized for total project maintenance. The total project is partly maintained by APGENCO and partly maintained by APSPCL.*
- iii. Though the EPC contractor is carrying-out the O&M for the first 5 years, APGENCO is monitoring the project with minimum staff at field and at headquarters. Hence, the actual commitment of employee cost is around Rs. 0.67 Lakh/MW. But, APGENCO is claiming only Rs. 0.50 Lakh/MW through tariff.*

The above justification for higher O&M Charges together with the escalation claimed by the respondent APGENCO cannot be accepted, as the very Regulation they quoted states that it is the Commission that should determine the O&M Cost. While discharging the above said function, the Commission cannot go by any other method when the competitively obtained O&M rates are before it in this very project. That being the case, the Commission is inclined to allow only such costs as obtained above for the first five (5) years and thereafter being escalated with an escalation of 5.72% (as per CERC Regulation, 2017) whether O&M is carried out by contractors or by APGENCO till the end of agreement period. The APSPCL O&M charges being towards maintenance of the common infrastructure facilities as envisaged in the Implementation and Support Agreement have also to be allowed. Accordingly, the same are allowed as proposed, however, at an annual escalation rate of 5.72% in line with the CERC Regulations but not at

6% as proposed. Having allowed the O&M Charges for the Solar Power Plant and the common infrastructure facilities, the Commission does not find any necessity to allow separate O&M for APGENCO for the first five (5) years and accordingly these charges are not considered.

- iii) Return on Equity:** In the tariff sheet filed on 27.09.2018 (which is earlier than COD i.e.12.03.2019), the respondent APGENCO claimed Return on Equity at 11% throughout the agreement period.

In response to the queries raised by the office of the Commission, the respondent APGENCO, through their letter dated 28.08.2020, furnished the following justification as it relates to Return on Equity:

*The equity of the project of Rs.426.32 Cr. has been met by taking a loan from PFC @ 11.00% interest rate. As per clause no.10.13 of APERC Regulation 1 of 2008, the Debt Equity ratio is 70:30 irrespective of actual quantum of Debt & Equity. Accordingly, APGENCO funded the project. However, to minimise the tariff claimed, 11% on 20% Equity, instead of 14% return on 30% Equity, is claimed.*

We have examined the matter. Regulation No.1 of 2008 is not applicable to the NCE projects as is evident from the extract from the self same Regulation [proviso at 1(iii)] as hereunder:

*“Provided that determination of tariff for supply of electricity to a distribution licensee from non-conventional sources of generation shall be in accordance with such terms and conditions as stipulated in relevant separate Orders of the Commission.”*

Further, a copy of loan sanction letter dated 30.03.2020 from Power Finance Corporation (PFC) sanctioning a short-term loan of Rs.500 Cr. is submitted by the respondent along with their letter dated 28.08.2020. The date of sanction being much after the Commercial Operation date of the project and the purpose of the loan as stated in the sanction letter having been mentioned as for purchase of fuel and O&M Charges, the Commission cannot accept this as the loan obtained for meeting the equity of the project.



However, the statement that the respondent has availed a loan for meeting the equity cannot be denied and to be appropriately treated to give reasonable return in a cost plus regime.

Clause 13(2) of the Central Electricity Regulatory Commission (Terms and Conditions for Tariff determination from Renewable Energy Sources) Regulations, 2017 states as under:

*13 (2) For Project specific tariff, the following provisions shall apply:-*

*If the equity actually deployed is more than 30% of the capital cost, equity in excess of 30% shall be treated as normative loan :*

*Provided that where equity actually deployed is less than 30% of the capital cost, the actual equity shall be considered for determination of tariff.*

In the instant case, the equity for the project having been stated to be met by taking loan, just to allow the interest rate as rate of return and treating the loan as equity may not give any extra impetus for the entrepreneurship in establishing a generating station. As such, being fair and just to both parties i.e. APDISCOMs and APGENCO, the Commission decides to treat the loan as equity and allow a return of 11% on 20% equity as claimed by APGENCO being less than a return of 14% on 30% equity as provided in the CERC regulations, 2017. This, in our view, meets the ends of justice. As a natural corollary to the above, the Commission directs that a provision be added under the Article 7 “Duration of Agreement” to the effect that at the end of Agreement period of 25 years, the DISCOMs shall have the first right of refusal in the event of buyout, with the other terms and conditions under the said clause remaining unaltered.

- iv) Cost of Spares:** As seen from the three O&M contracts with M/s MCNally Bharat, M/s KEC and M/s Vikram, one of the responsibilities i.e. brief scope of works, of the contractor during the five (5) year O&M period includes supply of all types of spares, consumables and fixing / application of the same. That being the case, there is no point in factoring the cost of spares in the tariff computations for the

first five (5) years as done by the respondent APGENCO. Accordingly, the Cost of spares for the SPD (APGENCO) O&M Charges @15% is considered from 6th year onwards. However, the cost of spares in respect of APSPCL is considered at 15% on its O&M Charges from the first year onwards.

**v) Cable Cost & Miscellaneous:** In the tariff sheet filed on 27.09.2018 (which is earlier than COD i.e.12.03.2019), the respondent APGENCO claimed Rs.15.25 Lakhs / MW (Rs.61 Cr. for the project) towards cable cost and miscellaneous charges. However, as per the Statutory auditor certificate, the expenditure under this head is certified to be only Rs. 24.65 Cr. (Rs.6.16 Lakhs per MW). The Commission considered the same in the tariff calculations.

**vi) Working Capital:** APGENCO vide their letter dated 28.08.2020 submitted that the working capital is considered at Rs.13.27 Lakhs / MW only as against Rs.14.07 Lakhs / MW arrived at by working out as per clause No.17.1 of CERC Regulation, 2017 being the aggregate amount of one month O&M expenses, 2 months receivables for sale of energy @ normative CUF and Maintenance of spares @15% of O&M expenses with the parameters considered by them. The Commission has examined the matter. The treatment of spares pertaining to the O&M contracts for the first five years as forming part of the working capital has already been dealt with supra. The treatment of O&M expenses has also undergone certain changes as dealt with supra. Consequently the quantum of receivables also undergo change. All these results in a revised Working capital requirement which ranges from Rs.12.94 Lakhs/MW in the first year, Rs. 12.21 Lakhs/MW in 6th year and Rs.11.04 Lakhs/MW in 25th year, as can be seen from the Tariff Sheet Annexed to this Order.

**vii) Interest on Working Capital:** APGENCO vide their letter dated 28.08.2020 submitted that as per Clause No.17.3 of the CERC Regulations, 2017, the interest on working capital has been worked out to 12.12%, i.e. the average MCLR of SBI (9.72% for the period from 01.01.2017 to 01.07.2017) plus 300 base points. And that, APGENCO has claimed 11% only. The Commission has examined the issue. The COD of the project being 12.03.2019 as submitted by APGENCO, the period considered by them as above for arriving at the average MCLR rate is not

appropriate. However, it will be appropriate to consider the period of six months prior to COD for arriving at the average MCLR. The average MCLR when worked out in the above lines is found to be 8.53% and adding the 300 base points the interest on working capital will be 11.53%. However, the claim of APGENCO being 11% only, the Commission hereby accepts the same.

**viii) Loan Repayment:** On this issue, through e-mail dated 20.08.2020 APGENCO was directed to explain the loan amount of Rs.426.33 Lakhs / MW being equally spread for 20 years and thereafter the amount short of 90% of the Capital Cost (depreciation) being spread over the balance period of the plant contrary to the practice of charging depreciation at the rate applicable towards loan repayment. APGENCO, vide their letter dated 28.08.2020, submitted that as per the regulations, the PPA is entered on tariff basis and not on tariff determination basis and that they have considered actual cash flow for the purpose of arriving tariff. However, if depreciation is considered instead of debt serving, the difference is only marginal of 1 paisa/kWh. The Commission has examined the issue. The right approach to tariff determination is through allowing repayment by way of depreciation. As per clause 15 (2) of the CERC Regulation, 2017, the depreciation rate is 5.28% with a loan repayment period of 13 years and with a debt equity ratio of 70:30. Whereas the debt equity ratio of the APGENCO plant is 80:20. While a depreciation rate of 5.28% with a 13 year loan repayment period is sufficient for repaying the 70% debt, the same needs to be for a period of about 16 years for repayment of 80% debt. Against that backdrop, it may not be irrational to adopt a debt repayment period of 16 years. The balance short of 90% of the project cost which is allowed towards depreciation is spread over the balance life of the plant of 9 years equally and the tariff is worked out accordingly.

**ix) Interest on Loan:** In response to the queries from the Commission vide e-mail dated 20.08.2020, APGENCO vide letter dated 28.08.2020 furnished a copy of the loan sanction letter from REC which states that the loan is sanctioned at a interest rate of 9.5% with quarterly repayment. Further, they have submitted that for the purpose of tariff they have considered the repayment on a monthly basis and that the interest claimed in tariff is lower. The Commission has examined the

matter. The interest rate applicable as per clause 14 (2) of CERC Regulation, 2017 comes to 10.35% which is higher than what is claimed by APGENCO and furthermore the interest liability worked based on monthly basis is less than that worked on quarterly basis, Commission has no objection to adopt the interest rate of 9.5% and the calculations on monthly basis as can be seen from the tariff sheet enclosed.

- x) Useful life of Plant:** APGENCO, as per the tariff sheet filed on 27.09.2018 and also as per their letter dated 28.08.2020, have considered the useful life of the plant as 25 years as per CERC Regulation, 2017. The Commission observed that as per clause 2.1 (cc) of CERC Regulation, 2017 the useful life of a Solar PV Project is 25 years and adopted the same for the tariff calculations of the instant project.
- xi) Panel degradation factor:** APGENCO, vide their letter dated 28.08.2020, submitted that they have followed the Panel Warranty / Panel discounting factor for the panel degradation factor as 1% per year upto 10 years and 0.67%/year for the balance 15 years as per the guidelines dated 03.08.2017 of Ministry of Power, Govt. of India for Tariff Based Competitive Bidding process for procurement of power from grid connected Solar Power Projects. The Commission examined the same and observed that as per the said guidelines, PV modules used in grid solar power plants must be warranted for output wattage, which should not be less than 90% (ninety per cent) at the end of 10 (ten) years and 80% (eighty per cent) at the end of 25 (twenty-five) years. The Commission adopted the panel degrading factors as proposed for the tariff calculations.
- xii) Discounting factor:** AP Genco vide their letter dated 28.08.2020 submitted that they have adopted a discounting factor of 9.5% against that of 9.8% arrived at as per CERC Regulation, 2017. The Commission observed that as per clause no.10.2 of CERC Regulation, 2017, for the purpose of levellised tariff computation, the discount factor equivalent to Post Tax weighted average cost of capital shall be considered. The interest on the loan (80% of capital cost) being 9.5% and the return on the 20% equity having been considered as 11%, the discount factor works out to be 9.8%. However, as APGENCO has proposed a discount factor of

9.5%, the same is adopted by the Commission for arriving at the levelised tariff of the project.

16. Taking into account the above, the levelised tariff payable by APDISCOMs to APGENCO works out to Rs.2.95 per unit as against their modified stand of Rs.3.50 per unit and their original stand of Rs.3.57 per unit. A tariff calculation sheet is annexed to this Order.

17. Therefore, the petition is ordered with the following directions,

- (a) In clause 2.2 and wherever they occur in the subject Power Purchase Agreement (PPA), the petitioners and the 1<sup>st</sup> respondent shall substitute the words “Rs.2.95 per unit” in place of “Rs.3.57 per unit”.
- (b) A provision shall be added in the PPA under the Article 7 “Duration of Agreement” to the effect that at the end of the Agreement period of 25 years, the DISCOMs shall have the first right of refusal in the event of buyout, while the other terms and conditions under the said clause remaining unaltered.
- (c) Accordingly, in exercise of its regulatory jurisdiction, under section 86 (1) (b) of the Electricity Act, 2003 and section 21 (4) (b) of the Andhra Pradesh Electricity Reform Act, 1998, the Commission hereby approved and consented the Power Purchase Agreement between the petitioners and the 1<sup>st</sup> respondent dated 01.07.2017, subject to the conditions specified at (a) and (b) above and any consequential changes pursuant to this order;
- (d) The tariff fixed under this order shall apply with effect from the date of commercial operation (COD) and the excess payments made by the petitioners shall be adjusted by Respondent No.1 by a mutually agreed arrangement.
- (e) The parties shall bear their own costs;
- (f) The parties shall submit such agreement executed in compliance of this order to the Commission within 45 (forty five) days from today.

**Sd/-**  
**Thakur Rama Singh**  
**Member**

**Sd/-**  
**Justice C.V.Nagarjuna Reddy**  
**Chairman**

**Sd/-**  
**P. Rajagopal Reddy**  
**Member**

### Levelized tariff calculation for 400 MW APGENCO Solar Power Plant at Talaricheruvu, Ananthapuram District

### Capital Cost Components:

Component	Revised claim of Genco (Rs./Lakh) (MVA)	As per Audit Certificate (Rs./Lakh) (W)	Considered by the Commission (Rs./Lakh) (MVA)
EPC Cost	445.60	451.42	432.10
ASPC/L Charges	46.06	41.97	0.00
Establishment & Adm	1.00	0.40	0.40
Infrastructure	1.00	0.00	0.00
Cable cost & Misc	15.25	6.16	6.16
IDC	23.00	24.75	24.75
Contingency	1.00	0.00	0.00
Total Capital Cost	533.91	534.70	463.41

(All figures, except factors and items otherwise specified, are in Rs. Lakhs)

Description	Year																									
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	
Depreciation	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	22.02	7.19	7.19	7.19	7.19	7.19	7.19	7.19	7.19	7.19	7.19
Interest on Loan	34.12	31.92	29.72	27.51	25.31	23.11	20.91	18.71	16.51	14.31	12.11	9.91	7.70	5.50	3.30	1.10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
O&M Expenses as per Contracts	3.62	3.65	3.83	4.01	4.22	4.46	4.71	4.98	5.27	5.57	5.89	6.22	6.58	6.96	7.35	7.77	8.22	8.69	9.19	9.71	10.27	10.85	11.48	12.13	12.83	13.57
O&M Expenses ASBPCI.	1.84	1.95	2.06	2.17	2.30	2.43	2.57	2.72	2.87	3.04	3.21	3.39	3.59	3.79	4.01	4.24	4.49	4.74	5.01	5.29	5.60	5.92	6.26	6.61	6.99	7.39
Cost of Spares	0.28	0.29	0.31	0.33	0.34	1.03	1.09	1.15	1.22	1.29	1.36	1.44	1.52	1.61	1.70	1.80	1.90	2.01	2.13	2.25	2.38	2.52	2.66	2.81	2.9	3.06
Two Months Receipts	12.21	11.86	11.54	11.22	10.90	10.60	10.30	10.00	9.70	9.41	9.12	8.83	8.56	8.28	8.02	7.76	5.17	5.30	5.43	5.57	5.72	5.88	6.05	6.22	6.4	6.6
Working Capital	12.94	12.62	12.34	12.06	11.79	12.21	12.00	11.79	11.60	11.41	11.24	11.08	10.93	10.79	10.67	10.56	8.14	8.43	8.74	9.08	9.42	9.79	10.19	10.60	11.0	11.4
Interest on Working Capital	1.42	1.39	1.36	1.33	1.30	1.34	1.32	1.30	1.28	1.26	1.24	1.22	1.20	1.19	1.17	1.16	0.89	0.93	0.96	1.00	1.04	1.08	1.12	1.17	1.2	1.2
RETURN ON EQUITY	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20	10.20
Land Lease Charges	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Total Annual Charges	73.36	71.16	69.22	67.30	65.39	63.61	61.78	59.97	58.19	56.43	54.71	53.01	51.34	49.70	48.10	46.54	31.03	31.79	32.59	33.44	34.34	35.29	36.29	37.35	38.4	39.5
Annual Energy (M)	2.10	2.08	2.06	2.04	2.02	2.00	1.98	1.96	1.94	1.92	1.91	1.89	1.88	1.87	1.86	1.84	1.83	1.82	1.81	1.80	1.78	1.77	1.76	1.75	1.7	1.7
Yearly Tariff (Rs./kWh)	3.48	3.42	3.36	3.30	3.24	3.18	3.12	3.06	3.00	2.94	2.87	2.80	2.73	2.66	2.59	2.52	1.69	1.75	1.80	1.86	1.93	1.99	2.06	2.14	2.2	2.2
PV factor	1.00	0.91	0.83	0.76	0.70	0.64	0.58	0.53	0.48	0.44	0.40	0.37	0.34	0.31	0.28	0.26	0.23	0.21	0.20	0.18	0.16	0.15	0.14	0.12	0.1	0.1
NPV	3.48	3.12	2.80	2.51	2.25	2.02	1.81	1.62	1.45	1.30	1.16	1.03	0.92	0.82	0.73	0.65	0.40	0.37	0.35	0.33	0.31	0.30	0.28	0.26	0.2	0.2
Levelised Tariff payable for 25 years (Rs./kWh)	2.95																									