

**ANDHRA PRADESH ELECTRICITY REGULATORY COMMISSION**

4<sup>th</sup> Floor, Singareni Bhavan, Red Hills, Lakdi-ka-pool,  
Hyderabad – 500 004

O.P.No. 20 of 2017  
Date: 17-06-2017

Present

**Sri Justice G. Bhavani Prasad, Chairman**  
**Sri P. Rama Mohan, Member**

**Between:**

Southern Power Distribution Company of  
Andhra Pradesh Limited.,  
Srinivasapuram, Tiruchanoor Road,  
Tirupati – 517 503, Chittoor District

... Petitioner  
(Petitioner in O.P.No. 20 of 2017)

**A N D**

-NIL-

The petition has come up for hearing on 03-06-2017 in the presence of Sri P. Shiva Rao, learned Standing Counsel for the petitioner and Sri M. Thimma Reddy, Convenor, People's Monitoring Group on Electricity Regulation, objector /stakeholders. After carefully considering the material available on record and after hearing the arguments of the learned Standing Counsel for the petitioner and considering the comments/views of all objectors, the Commission passed the following:

**ORDER**

A petition to allow the Southern Power Distribution Company of Andhra Pradesh Limited (AP) to implement the Agricultural Demand Side Management (AgDSM) project, approve the capital investment for the project and the energy savings for recovery of the investment through monthly payout to the investor in accordance with the energy savings, approve the energy savings agreement "Agricultural Demand Side Management Agreement" executed on 10-04-2017 between APSPDCL and Energy Efficiency Services Limited (EESL) and to pass all other necessary orders as deemed fit.

2. The petitioner made the proposal for implementation of the project in the eight districts of Andhra Pradesh namely: Krishna, Guntur, Prakasham, SPSR Nellore, Chittoor, YSR Kadapa, Anantapur and Kurnool.

3. The petitioner proposed to replace 65,000 old pump sets out of those existing in the eight districts that are connected to the grid, with BEE 5 star rated 5HP energy efficient submersible Pump Sets and Smart control panels. The eligibility criteria for availing 5 HP BEE 5 star rated submersible pump set is that the consumer shall have a sanctioned load of 5 HP only. The eligible beneficiaries shall be provided with 5 HP BEE 5 star rated Energy Efficient Pump Sets (EEPS) free of cost with free repair and maintenance service for a period of five years from the date of distribution of such Energy Efficient Pump Sets. APSPDCL shall make capital investment in developing the programme, awareness campaign, procurement, distribution and installation, repair and maintenance of Energy Efficient Pump Sets. EESL or its selected agency(ies) supervisory staff shall be responsible for project development, tendering, vendor management, Project Monitoring and Repair & Maintenance (R&M) supervision as per the terms and conditions mentioned in the agreement. EESL shall maintain the inventory of old pump sets and their accessories. Replaced old pump sets and accessories will remain the property of APSPDCL. APSPDCL or its selected agency shall dispose of the pump sets in an environmentally benign manner. Petitioner will engage services of third party agencies such as EESL or any other third party for physical verification. The third party monitoring agency will randomly select samples of distributed energy efficient pump sets and smart control panels for annual verification and certify the working condition of the energy efficient pump sets and smart control panels in the system. Petitioner will replace the faulty pump sets and smart control panels for any technical defects (not broken pump sets) free of cost throughout the project period of five years irrespective of the type of fault. The quality of Energy Efficient Pump Sets shall be ensured as per the applicable specifications by EESL or a third party agency from NABL accredited laboratory(ies) for testing of the pump sets supplied under this project as per the applicable rules and Acts.

4. Cost of each 5HP submersible pump set along with smart control panel is Rs. 37,676/- (inclusive of tax). The project cost is around Rs. 292.54 crs and the details are furnished below:

Particulars		Amount Rs. crs
Number of Submersible pump sets	65000	
Total cost of EEPS with smart control panel with five years maintenance (Inclusive of Tax)	37676	244.90
EEPS installation cost @ Rs. 4600/ unit		29.90
EESL PMC charges over five years	5%	13.74
Cost for awareness & Distribution (Inclusive of call centre agency & software agency)		4.00
<b>Total Project Cost</b>		<b>292.54</b>

5. The capital investment required for implementation of the agricultural DSM project will be met by the petitioner. The project cost is based on expected distribution of 65,000 BEE 5 star rated 5 HP submersible pump sets and Smart Control Panels. In case actual distribution varies, the project cost will also change accordingly. The above cost is being discovered by EESL through open competitive bidding for the said project and the petitioner has considered the same for implementation of the project.

6. In the petition, APSPDCL mentioned that the energy savings will be around 235.87 MU per annum, resulting in reduction in power procurement cost of Rs. 94.35 crs per annum.

7. In the detailed project report, the petitioner furnished data pertaining to supply voltages and power consumption etc.,. A 5HP motor consumes 7.06 HP (5.3 kW) power. Out of 328 numbers pump sets, more than 50% of the pump sets consume 6 kW to 15 kW approximately. This indicates that the average pump set capacity gets inflated and the average capacity considered to estimate energy savings is 5.92 kW. The voltage profile mentioned in the Detailed Project Report (DPR) indicates that around 58% of consumers are getting proper voltages i.e, between 400 V to 415 V. The sample data indicates that the anticipated savings may not be realized, since the connected load of more than 50% consumers is over and above 5 HP.

8. Copy of the agreement between the parties dated 10-04-2017 for Providing Project Management Consultancy (PMC) for implementation of Agricultural Demand Side Management (AgDSM) project contains the details of project implementation.

9. As there was no named respondent and as the matter involved general public interest, a public notice was given through the website of the Commission on 19-05-2017 inviting views/suggestions/objections of all the stakeholders and a public hearing was held on 03-06-2017.

10. Sri M. Thimma Reddy, Convener, Peoples' Monitoring Group on Electricity Regulation, stated that under the proposed Agricultural DSM program, APSPDCL proposes to replace 65000 submersible pump sets out of the existing 6,66,044 submersible pump sets of 5HP capacity with BEE 5 star rated energy efficient submersible pump sets. According to its proposal the energy savings from replacement of old inefficient pump sets with star rated energy efficient pump sets will pay for the cost of implementation of the programme. The objector, while accepting that the proposed replacement of old inefficient pump sets with star rated EEPS will lead to energy savings, stated that the information provided by the APSPDCL in the petition as well as documents annexed to the petition gives rise to doubts. The objector also took an objection on the estimation of energy consumption. The objector stated that in the petition it was mentioned that the existing 65000 pump sets are consuming 727.27 MU per annum. This amounts to consumption of 2237 units/HP/annum. This estimation is on higher side. According to APSPDCL's ARR for FY2017-18, the average per HP consumption is 1146 units/annum. Compared to 1146 units per HP/annum, the consumption of 2237 units/HP/annum shown in the petition is nearly double. According to the petition, 65000 new EEPS will be consuming 491.40 MU in a year. This amounts to consumption of 1512 units/HP and is higher than DISCOM average per HP consumption of 1146 units/HP/annum. Inflated estimation of power consumption by agricultural pump sets may inflate benefits due to introduction of energy efficient pump sets. He further opined that the energy savings estimate is based on measurement of power for interval of 15 minutes at existing operating conditions. It is inadequate to justify the investments in the project. It is claimed that EEPS is 30% more efficient than the existing pump set. However, from graph (page 7 of DPR) it can be seen that the overall efficiency of the pump set is 25.25% for existing pump set and 49.71% for the 5 star pump set, a difference of 24%. The discrepancy needs to be explained.

To arrive at annual consumption, the petitioner has considered 270 days against the usual practice of about 200 days for two crops in a year. The number of hours of operation of the pump sets has a bearing on the total power saved under the proposed DSM programme. Cost of the project can be brought down as the pump sets along with the control panel are going to be procured in large scale. PMC charges should be reexamined. Installation cost of Rs. 4600/- per pump set needs to be brought down. In the case of Rajanagaram pilot project, the Commission allowed Rs. 3900/- towards installation cost per EEPS. While APSPDCL meets the capital expenditure required for the programme and EESL being implementing agency receives PMC charges for the same, whether EESL will guarantee 30% savings due to replacement of old pump sets with EEPS. Scrap value of the old pump sets needs to be deducted from the project cost and old pump sets needs to be scrapped and disposed of properly, so that old pump sets do not re-enter the market. The programme proposal is based on an audit of sample pump sets numbering 328 carried out by a team of EESL. The audit measures instantaneous power whereas the consumption may vary with operating conditions. Averaged value over a season (or at least a stipulated amount of time) is a better baseline.

The power factor recorded is in the range of 0.6 to 0.8 and often as low as 0.5 or 0.4. Ensuring quality power supply is an important parameter for success of this type of energy efficiency programmes. Impact of operation conditions and audit as per averaged value over a season are better base lines. The DPR only talks about observing 30% of the savings. The programme design, as projected in the petition is devoid of various details referred to by the objector due to which a comprehensive programme evaluation is not possible.

The petition talks briefly on the savings that can be achieved from the programme. However there is no clarity on the actual processes that will be followed. A programme design document clearly describing each process is required for any programme. Such a document can give clarity to each stakeholder and can also be used to hold the actors accountable for the processes to be followed. Lack of clarity on some processes is described below. In the data on pump sets measurement given in Annexure 1 (page 32-38) there are pump sets consuming less than 5 kW, few are consuming less than 4 kW also. By replacing such pump sets, power saving will be marginal. It is better to target pump sets with higher power

consumption. There are pump sets consuming more than 10 kW. In such cases it is also important to enquire in to the reasons for such high consumption.

It will be good to record the power flow data on feeders under which replacement is being planned. Such measurements should be taken after replacement also, to check the amount of savings. Although the petition mentions about annual verification of the installed pumps to be done by EESL, it does not give any details like, size of the sample, the methodology and about frequency of verification (once in a year or for different seasons). Will the report be made public or submitted to APSPDCL?

A programme like this should undergo a comprehensive evaluation which not only measures savings but also evaluates the processes to see which ones worked and which did not. This can help in the later phases of the programme as well as replicating the programme in other states.

With this project, around 1 lakh pump sets of the reported total of 15 lakh in AP would be replaced with efficient pump sets. The objector opined that the next ARR submission would reflect corresponding (30% energy saving of these 1 lakh pump sets) energy consumption reduction.

11. Sri N. Srikumar and Aditya Chunekar, Prayas Energy Group, while appreciating APERC's efforts to hold public hearings on this type of energy efficient programmes, to improve the design and implementation of Agricultural Demand Side Management programme as well as future projects submitted the following:

- (1) APERC has already approved (vide order dated 29.04.17 in O.P. No. 12 of 2017) APEPDCL programme of replacing 35,000/- Nos 5HP agricultural pump sets at Rs 157.20 crore. Together with this APSPDCL proposed programme, about 1,00,000 numbers 5HP pump sets will be replaced over next year at a combined cost of about Rs. 450 crore, a significant investment. Potential savings from the programme are justified based on a pilot in Rajanagaram where 944 inefficient pumps were replaced and 30% reduction in energy consumption was reported.
- (2) Evaluation of savings realized from the Rajanagaram pilot needs further investigation due to following reasons:
  - a) Average rating of the pumps replaced in Rajanagaram pilot was about 26

HP and 30% savings are claimed to have been realized. Savings potential for 5HP pumps may be different.

- b) The savings have been calculated based on one time measurement of consumption of individual pumps. Annual savings may differ based on quality of supply, farmer's behavior, and seasonal variation.
  - c) Savings calculated on Distribution Transformer (DT) and feeder level over a time period give a more reliable estimate of the realized savings. These are not available for the pilot.
  - d) Finally, effectiveness of the different processes of the programmes like awareness campaigns, installation, R&M and warranty and others has not been evaluated for the pilot. This can be done only over a period of time. Efficiency gains do not automatically follow after replacing appliances and cannot be calculated based only on norms.
- (3) Given the limitation of the evaluation of Rajanagaram project (as well as other pilots), a rigorous monitoring and evaluation should be conducted for the two proposed programmes. APERC should commission an independent evaluation of both the programmes after a year of their implementation. No further Ag-DSM programmes should be approved till the effectiveness of the existing programmes is substantially proved over a year.
- (4) **Actual installation of EEPS:**
- a) According to the agreement between APSPDCL and EESL, EESL is required to submit progress reports to APSPDCL on distribution and installation status (Article 2.1 (e)). APSPDCL should ensure that EESL submits these reports and make them public, by putting them on their website.
  - b) APERC order on APEPDCL programme recognizes this issue of verification of actual installation and requires APEPDCL to conduct a preliminary enquiry, if in inspection during the five years of R&M period finds that EEPS are not installed in the claimed location (24 (e) of O.P.No. 12 of 2017) .
  - c) Prayas suggested that during the first year of implementation, APSPDCL conducts quarterly inspection drive on 10% of the EEPS installed in that quarter. APSPDCL should be required to submit the findings from this

inspection drive to APERC as well as put it on their website.

(5) **Actual savings from the use of EEPS:**

- a) Better baselines should be established before the programme is actually implemented. A sample of pump sets can be selected to measure actual consumption, rating, hours of operation, flow and other parameters like head, voltage etc. APSPDCL can identify some feeders where a sample of EEPS will be installed and their consumption can be recorded before and after installation. APERC's order (24(h) of O.P.No. 12 of 2017) requires APEPDCL to do the same.
- b) As the programme is voluntary for farmers, there is a chance that some farmers may not participate in the programme. In this case, after the installation phase, DTs and feeder lines can be identified where significant replacement of old pump sets has happened. As feeder line consumption is already recorded, pre and post installation values can be compared to measure actual savings, after accounting for losses.
- c) EEPS are fitted with smart panels which among other things also record maximum power drawn, hours of use and energy consumed. Prayas opined that an independent evaluation should be conducted after a year on a sample of pump sets. The three values can be recorded to verify the projected hours of use and energy savings.
- d) Additionally, these values can also be recorded during the quarterly inspection drives mentioned above. This will provide an additional data set to verify the hours of use and actual energy consumption.

(6) **Farmer experience with R&M and warranty process**

- a) Agriculture pumps are quite different from LED lamps or fans. Their operation and life depends on many parameters, not all of them electrical. R&M and warranty process is crucial to ensure that farmers use EEPS in a manner that savings are realized in sustained manner. This is important since the pilot survey reports motor failures.
- b) According to the agreement (article 3), APSPDCL will pay EESL every quarter which in turn will pay the vendors actually responsible for



conducting R&M and warranty, and the call center agencies. Prayas opined that EESL to provide a quarterly report of the all the R&M requests addressed in that quarter and the calls received at the call center. The report can have details of the nature of requests, action taken, and time taken to respond. APSPDCL should make this report available on their website.

- (7) Independent evaluation after a year:
- a) Prayas also suggested that APERC should commission an independent comprehensive evaluation of the two programmes after a year of implementation. This will verify the actual savings achieved by the programme as well as the effectiveness of the various processes implemented under the programme.
  - b) The study will rely on the quarterly reports from EESL on (a) the distribution and installation and (b) the R&M and warranty activities. It will also consider the verification reports submitted by APSPDCL every quarter.
  - c) The study will analyze the feeder level data to identify the savings achieved after the installation of EEPS. It will also use the additional data set on the maximum power drawn, hours of use, and energy consumed, collected during the quarterly inspection drive by APSPDCL.
  - d) Finally, it should also conduct a study of randomly selected sample of the farmers who were installed EEPS. This survey can include the following:
    - i) Actual values of maximum power drawn, operating hours and energy consumed during a year of the use of EEPS as recorded by the smart panels. Other details such as head, cropping pattern etc should be noted.
    - ii) A survey of farmers on their experience of the programme during distribution, availing warranty and other processes should be recorded. They should also be asked if they have carried out any local repairs or rewinding.
- (8) It should be noted that this rigorous monitoring and evaluation process can be

conducted only for these two programmes and not necessarily for subsequent programmes. Once actual savings are achieved and effectiveness of the programmes is established, subsequent programmes can be better designed and could have limited verification processes.

12. The Commission studied the Detailed Project Report (DPR), AgDSM and the petition & noticed the following issues:

- (i) It was mentioned in the detailed project report that in the sample study conducted on 328 numbers of existing submersible pump sets, 32.45% energy savings were realized by replacing old pump sets with 5 star rated Energy Efficient Pump sets.
- (ii) From the sample study data of 328 numbers of existing services, it can be observed that the power factor varies from as low as 0.5 to 0.85 and often as low as 0.5. The average power factor is less than 0.7.
- (iii) In the proposed scheme, the smart control panel consist power factor improvement equipment (capacitors). If power factor corrective equipment (capacitors) of proper rating is used, the corresponding energy savings would be around 5% and the efficiency of the pump set would also increase.

From the above it is clear that the existing old motors are not provided with the capacitors. The efficiency calculations are supposed to be a calculated by taking similarly placed motors, i.e., efficiency has to be measured when capacitors are installed in both old and new energy efficient pump sets.

- (iv) The basis for arriving at the Project Management Consultancy (PMC) charges @ 5% of EEPS cost and the basis for arriving at the installation cost @ Rs. 4600/pump set is not mentioned.
- (v) In the DPR, the average capacity of old pump sets considered is 7.9 HP (5.92 kW). Since the connected load of more than 50% consumers is between 8 HP to 15.5HP, the anticipated savings may not be realized as estimated in the DPR. If higher capacity consuming pump sets which are in the range of 8 HP (6 kW) to 15.5 HP (11.71 kW) are replaced with 5 HP Energy Efficient Pump Sets, Energy Efficient Pump Sets may not work and may burn out.

- (vi) While estimating the energy savings, the petitioner considered 270 days of agricultural operation against the 200 days of actual usage of pump sets which is not correct.
- (vii) While replacing the old pump sets with new Energy Efficient Pump Sets, along with smart control panel, APSPDCL has to ensure both in letter and spirit that the existing old pump set capacity is 5 HP only. APSPDCL also has to ensure proper voltages at the consumer end before replacing the old pump sets with Energy Efficient Pump Sets.

13. In reply to the comments made by the objectors and the Commission, the petitioner submitted the following replies:

- i) With regard to objection about 30% efficiency of old pump sets versus 50% (49.71%) efficiency of Energy Efficient Pump Sets, the petitioner claimed that the calculations are correct. The EEPS pump set is 20% more efficient than old pump set, and this 20% more efficiency of EEPS pump set is getting translated to 40% savings in terms of energy. Thus, based on operating conditions of the pump sets, 30% overall savings in energy was considered.
- ii) With regard to objection on number of usage days, the petitioner submitted that, 200 days of agricultural operation is considered (1243 units /HP/annum) as filed in the ARR filings for FY2017-18.
- iii) With regard to project cost of Rs. 292.54 crs, petitioner stated that the project cost was arrived by EESL through national level competitive bidding. The PMC charges were arrived based on man power cost, administrative expenses and scope of work involved.
- iv) In response to query on Smart Control Panel, the petitioner mentioned that it has various features like remote operation control, measurement of actual power consumption, hours of operation and single phase protection, Motor On/Fault indicator and Thermal overload relay etc. The smart control panel is being provided with mobile sim card which will enable for online 24x7 recording of parameters of the motor. The supplier is also responsible for five years repair and maintenance of the pump set along with Smart Control Panel.
- v) In response to query on ensuring 30% of energy savings by replacing old pump sets

with EEPS, petitioner claimed that 31% energy savings was achieved in the pilot project implemented at Rajanagaram.

- vi) Regarding low power factor mentioned in the sample study, the petitioner stated that by installing capacitor, line losses would come down and energy drawal by the pump set would be same. The petitioner mentioned that efficiency of pump set will not increase by installing capacitors.

14. The point for consideration is whether the request for approval of the project has to be positively considered and if so, subject to what terms and conditions in public interest?

15. The petitioner and the EESL shall have to comprehensively re-assess the installation charges stated at Rs. 4600 per pump set, the basis for arriving at 5% PMC charges on procurement cost of Energy Efficient Pump Sets and the cost for spreading awareness and of distribution, on such assessment on the costs existing as on today.

16. Since the pump sets proposed to be replaced are submersible pump sets, APSPDCL shall ensure that the old pump sets are replaced with Energy Efficient Pump Sets. The officer entrusted with such duty by the petitioner and the consumer shall jointly certify stating that the old pump set is replaced with EEPS and if it is found that the EEPS does not exist in the bore well at any point of time during the five years warranty period, APSPDCL shall have to initiate appropriate disciplinary enquiry against the concerned officer/and/or appropriate civil and/or criminal action against the consumer after conducting a preliminarily enquiry into the responsibility of the consumer and/or the officer.

17. APSPDCL shall ensure Repair and Maintenance of defective or burnt EEPS including smart control panel within two days from the date of failure. In case of any delay in execution of repair and maintenance beyond the stipulated time of two days, APSPDCL shall impose a penalty as agreed under the terms and conditions of supply of EEPS and Smart Control Panel.

18. The petitioner has taken 270 days of agricultural operation to estimate agricultural consumption which inflates agricultural consumption and savings against the standard practice of 200 days agricultural operation which is being followed for the past 18 years. The petitioner shall estimate energy consumption and savings taking 200 days of agricultural operations.

19. Regarding power factor improvement, the petitioner stated that by installing capacitor, line losses would come down and energy drawal by the pump set would be same. The petitioner mentioned that efficiency of pump set will not increase by installing capacitors which is not correct. By installing capacitors, the voltage level at the consumer end would increase and the motor pumping capacity also increases as the motor speed is directly proportional to the supply voltage.

20. The petitioner shall submit a quarterly performance report on the implementation and working of the project, more particularly about the actual energy savings and cost benefit analysis through a third party agency. The petitioner shall also submit a comprehensive report after completion of one year from the date of commissioning of the project, positively by the end of 13<sup>th</sup> month.

21. All the relevant questions raised herein were dealt with and answered on identical pleadings, facts & circumstances in O.P. No. 12 of 2017 decided by this Commission on 29-04-2017, to which a reference can be made usefully.

22. Accordingly,-

- a) the petitioner is permitted to implement the Agricultural Demand Side Management (AgDSM) project making the required capital investment and executing the project in accordance with the AgDSM agreement dated 10-04-2017 between the petitioner and EESL, subject to the Terms and Conditions stated hereinafter;
- b) the petitioner and EESL have to, on the basis of the existing costs as on today, comprehensively re-assess and arrive at reasonable and acceptable installation cost per unit (per pump set), cost of awareness and distribution and PMC charges for five years and report to the Commission within 2 months from the date of this order, the reasonable amounts arrived at between the parties together or at different quantum by them under these three heads and obtain the approval of the Commission for financing such installation cost, cost of awareness and distribution and PMC charges as considered just and reasonable by the Commission, while the execution of this project shall be taken up and proceeded forthwith even in the meanwhile;

- c) the petitioner shall ensure that the capacity of the existing pump set to be replaced is 5 HP only and that the service connection has a proper voltage before replacing the existing pump sets with new Energy Efficient Pump Sets;
- d) the petitioner shall ensure supply of power at proper voltage before replacing the existing pump set with a new energy efficient pump set, if the voltage profile of the service connection is poor before such replacement;
- e) APSPDCL shall arrive at better baseline data before the programme is actually implemented. To establish baseline data, APSPDCL/EESL shall identify representative feeders and a sample of pump sets in such feeders, to measure actual consumption, rating of pump set, hours of operation, flow and other parameters like water head, voltage etc.,. For these pump sets energy consumption should be recorded before and after installation of pump sets to estimate energy savings.
- f) APSPDCL/EESL shall during the first years of implementation conduct quarterly inspection drive on 10% of the EEPS installed in that quarter and submit a report on findings to the Commission and also publish a report in APSPDCL website.
- g) the officer of the petitioner entrusted with the duty by the petitioner and the beneficiary consumer shall, at the time of replacement, certify jointly that the old pump set was replaced with an energy efficient pump set. If an inspection at any time during the period of warranty of five years is carried out and if such energy efficient pump set were to be found absent in that service connection, the petitioner shall cause a preliminary enquiry into the responsibility of the consumer and/or the officer and in the event of proof of such responsibility, initiate an appropriate criminal and / or civil action against the consumer and /or an appropriate disciplinary enquiry against the officer;
- h) the petitioner shall ensure repair and maintenance of the energy efficient pump sets including the smart control panel within two days from the date of noticing the defect or failure of the pump set and in default the petitioner shall recover agreed penalty as stipulated under the Terms and Conditions of supply of the pump set, except if the petitioner is satisfied that any delay beyond two days is for reasons beyond the control of the person responsible for repair and maintenance;

- i) to assess savings more accurately, EESL shall take feeder level and Distribution Transformer (DT) energy meter readings over a period of time. This information gives more reliable estimate of the realised savings and these are not available for the pilot project. In this regard APSPDCL shall install the meters at feeder and DT level and estimate energy savings.
  - j) the petitioner shall submit a quarterly performance and compliance report on the implementation of the project, more particularly about the quantum of actual energy savings and the cost benefit analysis done through a 3<sup>rd</sup> party, the first such report becoming due by 1<sup>st</sup> August 2017;
  - k) the petitioner shall cause the consumption of energy per feeder per month recorded for the feeders under which it is proposing to replace the old pump sets with energy efficient pump sets in execution of this order from the date of communication of this order till such replacement to provide a verifiable basis for assessment of the actual energy savings
  - l) the petitioner shall examine the issues raised and concerns expressed by the objectors and expeditiously take appropriate corrective measures in public interest and in the interest of the power sector in the state and communicate the action taken to the Commission from time to time;
- and
- m) the petitioner shall bear its own costs.

This order is corrected and signed on this 17<sup>th</sup> day of June, 2017.

**Sd/-**  
**Sri P. Rama Mohan**  
Member

**Sd/-**  
**Justice G. Bhavani Prasad**  
Chairman