

**Before the Appellate Tribunal for Electricity  
(Appellate Jurisdiction)**

**Appeal No. 75 of 2012**

**Dated: 17th April, 2013**

**Present: Hon'ble Mr. Justice M. Karpaga Vinayagam, Chairperson  
Hon'ble Mr. Rakesh Nath, Technical Member**

**In the matter of:**

**Solar Energy Society of India,**

A-14, Mohan operative Industrial Estate,  
Mathura Road,  
New Delhi-110 044

... Appellant (s)

Versus

1. **Gujarat Electricity Regulatory Commission,**

1<sup>st</sup> Floor, Neptune Tower.,  
Opposite Nehru Bridge, Ashram Road,  
Ahmedabad-380 009

2. **Gujarat Urja Vikas Nigam Ltd.,**

Race Course, Vadodara-390 007

...Respondent(s)

Counsel for Appellant(s) :

Mr. Vikas Singh, Sr. Advocate,  
Mr. Venkatesh, Ms. Ambica Garg,  
Mr. Aman Panwar

Counsel for the Respondent(s):

Mr. Sanjay Sen, Sr. Adv.,  
Mr. Anurag Sharma, Ms. Surbhi Sharma  
Ms. Shikha Ohri with  
Mr. S.R. Pandey (Rep.) for R-1  
Mr. M.G. Ramachandran,  
Ms. Swapna Seshadri  
Mr. Anand K. Ganesan,  
Ms. Swagatika Sahoo for R-2  
Mr. V.T. Patel (Rep.) for R-2

**JUDGMENT**

**RAKESH NATH, TECHNICAL MEMBER**

This Appeal has been filed by Solar Energy Society of India against the order dated 27.1.2012 passed by

the Gujarat Electricity Regulatory Commission (“State Commission”) fixing the tariff for procurement of power by the Distribution Licensees and others from Solar Energy Projects.

2. The State Commission is the Respondent no. 1 and Gujarat Urja Vikas Nigam Ltd. (“GUVNL”) is the Respondent no. 2.

3. The brief facts of the case are as under:

3.1 The Appellant is a Society which has been established with the objective of advancing, promoting and propagating the use of renewable energy. The members of the Society include the developers of Solar Projects.

3.2 The Government of Gujarat on 6.1.2009 notified the Solar Power Policy, 2009 for promotion of Solar Power Development within the State of Gujarat.

3.3 Subsequently, the State Commission by order dated 29.1.2010 fixed the tariff for procurement of power by the Distribution Licensees from Solar Energy Projects. According to the order dated 29.1.2010, the tariff was to be applicable for projects which got commissioned within the control period of 2 years i.e. from 29.01.2010 to 28.01.2012. A number of developers of Solar Photovoltaic Power Projects entered into Power Purchase Agreement ("PPA") with GUVNL (R-2). The PPA provided that the GUVNL would pay the fixed tariff as determined by the State Commission vide Tariff Order dated 29.01.2010 for projects commissioned before 31.12.2011 and for projects delayed beyond 31.12.2011, the tariff as determined by the State Commission for Solar Projects effective on the date of commissioning of solar power project or the

tariff which was determined by order dated 29.01.2010, whichever is lower, would be applicable.

3.4 The State Commission by the impugned order dated 29.1.2012 fixed the tariff for procurement of power by the distribution licensees from Solar Energy Projects w.e.f. 29.1.2012 for a period of three years.

3.5 Aggrieved by the impugned order dated 29.1.2012, the Appellant has filed the present Appeal.

4. The Appellant has raised the following issues:

4.1 **Operation & Maintenance cost:** The State Commission in the Discussion Paper had proposed increase in the %age O&M cost from 0.5% of capital cost as allowed in the previous tariff order to 0.75% of the capital cost as the capital cost was proposed to be reduced from Rs. 16.5 Crores/MW for FY 2010-11 to Rs. 11 Crores/MW for FY 2012-13. In absolute terms

the proposed O&M expenses worked out to Rs. 8.25 lakh/MW i.e. the same level as allowed earlier for FY 2010-11 (0.5% of Rs. 16.5 Cr.). However, the State Commission in the impugned order has reduced the capital cost to Rs. 10 Cr./MW while maintaining the O&M cost at 0.75% of the capital cost which effectively works out to Rs. 7.5 lakh/MW for FY 2012-13 instead of Rs. 0.909 lakhs/MW, Rs. 8.25 lakhs for 2010-11 escalated by 5% per annum, as allowed by the State Commission in the tariff order dated 29.1.2010. The O&M cost comprises employees cost, administrative cost and repairs and maintenance cost. Out of these, the majority expenses relate to employees cost and administrative cost which are independent of the capital cost and have inflationary trend. Repairs and Maintenance also comprises material as well as labour cost. Of these,

the material cost of only modules has shown decreasing trend and other material costs have been increasing. Thus, only a negligible fraction of O&M cost would have relationship with the capital cost. Even though the State Commission has allowed a higher %age of O&M cost, effectively the O&M cost has been reduced as a result of lower capital cost approved in the impugned order.

**4.2 Inverter Replacement Cost:** The State Commission has assumed 10% reduction in inverter cost every year which is arbitrary and incorrect as major cost items in inverter are made up of copper and iron which have shown increasing trend. Electronic component and controller comprises very small fraction of the total cost and hence the assumption of the State Commission that since cost of electronic items is going down, the inverter cost will reduce every

year is incorrect. Further the inverter replacement has been envisaged in the 13<sup>th</sup> year. Even if the reduction in capital cost for inverter as assumed by the State Commission is considered to be correct, the computation of cost in the 13<sup>th</sup> year by the State Commission is incorrect. The cost of the inverter replacement in the 13<sup>th</sup> year should be 4.2% and not 3.81% of the capital cost.

**4.3 Working Capital:** The working capital requirement has taken into consideration one month's receivables only and additional one month's O&M and cost of maintenance spares has not been considered. On the other hand, the Central Commission's Regulations provide for O&M expenses for one month, receivables equivalent to 2 months' energy charges and maintenance spares @ 15% of O&M expenses in computing the working capital requirement. The State

Commission has failed to consider the rebate for prompt payment allowed by the Solar Power Developers to GUVNL.

**4.4 Return on Equity:** The State Commission in the impugned order has retained the post tax Return on Equity at 14% per annum for the reason that the same is being allowed by the State Commission to the Conventional Plants. On the other hand, the Central Commission has allowed post tax Return on Equity of 16%. On one hand, the State Commission has allowed RoE of 14% post tax to its own projects the power procurement is being allowed from Central Plants at tariff which includes post tax Return on Equity of 15.5% or 16%. The State Commission has also failed to pass on the grossed up post tax Return to arrive at pre-tax return. The Tribunal in Appeal nos. 49 of 2010 and 174 of 2009 upheld the need of grossing up



the post tax return by applicable tax rate to arrive at pre-tax return for computing income-tax.

#### **4.5 Discount rate for computation of levelled**

**tariff:** The State Commission in passing the impugned order has failed to consider the discount rate computed from the rates of interest on debt and Return on Equity. The State Commission has erroneously relied on the methodology followed by the Central Commission for deciding discount rate to be used for the bidding purposes and not on the methodology specifically stipulated by the Central Commission for computing discount rate for renewable energy sources. The Appellant is not seeking to claim parity with the Central Commission's Regulations but is only seeking application of correct financial and regulatory principles.

**4.6 Formula used for levelled tariff:** The State Commission has allowed 1% annual degradation of plant, which gives lower generation in the subsequent years. However, in computing tariff, the State Commission has used a formula based on absolute values of tariff stream for 25 years which does not consider de-gradation of plant approved by the State Commission.

**4.7 Tariff for first 12 years and next 13 years:** The State Commission has allowed two phase tariff i.e. first 12 years as Phase-I and next 13 years as Phase-II. However, the State Commission has arbitrarily fixed the tariffs for these two phases and has not followed its own methodology for determining tariff for first 12 years and subsequent 13 years as was used in its previous Tariff Order dated 29.1.2010. In the previous Tariff Order the State Commission had allowed 20%

higher tariff in first 12 years i.e. Rs. 15/- per unit against the levelled tariff of Rs. 12.54/unit for 25 years, whereas in the impugned order the tariff for first 12 years has been allowed at only 8.5% higher than the levelled tariff for 25 years thus putting the new projects in worse position than the old ones. The tariff for first 12 years should have been 20% higher than the levelled tariff, as allowed in the previous tariff order dated 29.1.2010.

**4.8 Successive revision in tariff:** The State Commission in its finding has held that there has been a reducing trend for Solar PV Projects and the State Commission has held that there will be reduction of 7% annually in tariff. The reduction in prices is temporary and successive revision is pre-mature and pre-emptive.

**4.9 Clean Development Mechanism:** The State Commission in passing the impugned order has not clarified that the sharing has to be done on cash basis or accrual basis.

**4.10 No option for Project specific tariff:** The State Commission has determined only generic tariff for Solar PV projects without giving any option for getting project specific tariff determined. The developers should be given an option of getting project specific tariff determined for Hybrid solar project. The Tribunal in Appeal nos. 50 & 65 of 2008 in case of HPSEB vs. HPERC has permitted the option to the developer to opt for either the normative (generic) tariff or project specific tariff.

4.11 The Appellant in the Appeal had also raised the issue of incorrect methodology & benefit of Accelerated

Depreciation by levelling for 20 years instead of 25years which has since been withdrawn.

5. GUVNL, the Respondent no. 2 herein, has made the following submissions:

5.1 GUVNL has entered into Power Purchase Agreement with various Solar Power Projects and the capacity of solar projects for which PPA has been signed is much more than that required for meeting the renewable purchase obligation specified by the State Commission. The State Commission having determined the normative tariff at which the Solar Power Projects would sell electricity to GUVNL, it is for the members of the Appellants' Association to decide whether to establish the Solar Power Projects and offer power to GUVNL at the normative tariff and terms and conditions contained in the Order dated 27.1.2012.

There is no mandatory direction to the Appellant or any other Solar Power Developer to compulsorily establish Solar Power Project and offer power from the Project to GUVNL. So long there are developers who are willing to enter into an agreement at the tariff determined by the State Commission, there is no reason for reviewing the tariff at this stage at the instance of the Appellant.

5.2 GUVNL has also made detailed submissions on the issues specifically raised in the Appeal which we shall consider at the appropriate place in this Judgment.

6. The State Commission has also submitted written submissions giving reply to the specific issues raised by the Appellant which we shall discuss while considering the specific issues.

7. We heard Shri Vikas Singh, Learned Senior Counsel for the Appellant. We also heard the reply submissions made by Shri Sanjay Sen, learned Senior Advocate representing the State Commission, Respondent no. 1 and Mr. M.G. Ramachandran, learned counsel for the Respondent no. 2. After taking into account the rival contentions of the parties, the following questions would arise for our consideration:

- i) Whether the State Commission has erred in determining the Operation & Maintenance expenses effectively lower than that determined in the previous tariff order dated 29.1.2010?
- ii) Whether the State Commission was correct in assuming 10% reduction in inverter cost every year while deciding the inverter replacement cost and whether there is also an error in

computing the inverter replacement cost as per the norm decided in the impugned order?

- iii) Whether the State Commission has allowed lower working capital without considering the Central Commission's Regulations and rebate being allowed by the Solar Power Developers to the Distribution Licensee for prompt payment?
- iv) Whether the State Commission has erred in allowing a low Return on Equity for Solar Power Projects?
- v) Whether the State Commission has incorrectly decided the discount rate for computation of levelled tariff?
- vi) Whether the State Commission has considered 1% annual degradation of the Solar Plant while computing the levelled tariff?



- vii) Whether the State Commission has erred in allowing the tariff for the first 12 years only at 8.5% higher than the levelled tariff instead of 20% allowed in the previous Tariff Order dated 29.1.2010?
  - viii) Whether the State Commission has erred in assuming reduction in capital cost of Solar PV Projects at 7% annually during the control period?
  - ix) Whether the CDM benefit has to be shared by the Solar Project Developers with the GUVNL on accrual basis?
  - x) Whether the State Commission has erred in not giving any option for project specific determination of tariff?
8. The first issue is regarding O&M cost.

8.1 According to the learned Senior counsel for the Appellant, the State Commission has reduced O&M cost from Rs. 8.25 lakh/MW in 2010-11 to Rs. 7.5 lakh/MW in 2012-13 whereas O&M cost ought to have been increased to Rs. 9.09 lakh/MW for 2012-13 by escalating Rs. 8.25 lakh/MW for 2010-11 for two years @ 5% per annum as approved by the State Commission in its earlier tariff order dated 29.01.2010.

8.2 Learned Counsel for GUVNL (R-2) argued that O&M cost is related to capital cost in many respects and is not independent of the capital cost. The State Commission has infact increased the O&M by allowing it at 0.75% of the capital cost as against 0.5% of the capital cost allowed in the earlier tariff order dated 29.1.2010. The State Commission has additionally given insurance cost to the developers at 0.35% of the

capital cost which works out to Rs. 3.5 lakh/MW. Therefore, the O&M expenses is Rs. 7.5 lakhs plus Rs. 3.5 lakhs i.e. Rs. 11 lakhs/MW. In addition, the inverter replacement cost has also been allowed. The Central Commission has also allowed a total O&M cost of Rs. 11 lakhs/MW including the insurance cost which is the same as that determined by the State Commission.

8.3 Shri Sanjay Sen, learned Senior Counsel for the State Commission has submitted that solar photovoltaic power plants have very low cost of Operation & Maintenance and the State Commission in the impugned order has tried to strike a balance between the low cost of maintenance of the solar power plants and the concerns of the developers on account of high inflation rates. The State Commission has

infact increased the O&M cost from 0.5% to 0.75% of the capital cost.

8.4 Let us now examine the Discussion Paper dated 1.11.2011 circulated by the State Commission. The discussion paper has proposed capital cost of Rs. 11 crores/MW for Megawatt scale solar photovoltaic power projects and O&M cost of 0.75% of capital cost. The relevant extracts of the discussion paper relating to operation & maintenance cost is as under:

*“2.2.7 Operation and Maintenance cost and its escalation:*

*Photovoltaic power plants are characterized by their simple and low-cost operation and maintenance (O&M). The operation and maintenance of a Photovoltaic power plant mainly involves cleaning of the photovoltaic modules at a regular interval. The cleaning frequency of the*

*modules of a commercial plant may be as high as once per week or as low as once per month.*

*In addition to cleaning staff, the photovoltaic power plants typically require security staff and site supervisors. Performance monitoring of such plants are typically done remotely, and an engineer is deployed onsite only during troubleshooting of issues.*

*Many earlier CERC and SERC tariff orders considered the operation and maintenance cost of 0.5% of the plant capital cost. However, the capital cost of the power plants have substantially reduced, while the cost of operation & maintenance has almost remained constant.*

*Hence, for the near term, the typical operation and maintenance cost of photovoltaic power plants is considered to be 0.75% of the capital cost. Further, as most of this cost is human resource-related, the annual escalation of the operation and maintenance cost is considered to be 5%”.*

8.5 In the Discussion Paper, the State Commission has clearly indicated that while the capital cost of power plants has reduced substantially, the cost of operation & maintenance has remained constant. Hence the State Commission has considered O&M cost at 0.75% of the capital cost of the plant. It has also been indicated that most of the operation & maintenance cost is human resource-related. The capital cost of Solar PV Plant was proposed as Rs. 11 Cr./MW. Therefore, in the discussion paper, the State Commission effectively proposed the operation & maintenance cost of 0.75% of Rs. 11 Cr./MW i.e. Rs. 8.25 lakhs/MW. In addition to that, the State Commission in the discussion paper proposed insurance cost @ 0.35% of the capital cost.

8.6 However, in the impugned order dated 27.1.2011, the State Commission decided to reduce the capital

cost of Megawatt scale solar photovoltaic power projects to Rs. 10 crores per MW. Notwithstanding the reduction in the capital cost, the State Commission decided to maintain the first year operation and maintenance cost at 0.75% of the capital cost. The relevant extracts of the impugned order are as under:

***“2.2.2 Operation and Maintenance Cost and its Escalation***

*Photovoltaic power plants are characterized by their simple and low-cost operation and maintenance (O&M). The operation and maintenance of a photovoltaic power plant mainly involves cleaning of the photovoltaic modules at a regular interval. Additional operation and maintenance activities include regular checking of electrical connections, oil in transformers, minor replacement of electronic components, etc. In addition to cleaning staff, the photovoltaic power plants typically require security staff and site engineers or supervisors. Performance monitoring of such plants are typically done remotely, and an*

*engineer may be deployed onsite only during troubleshooting of issues”.*

**“Commission’s Ruling:**

*The Commission decides to maintain the first year operation and maintenance cost for photovoltaic power plants at 0.75% of the capital cost. This cost will also be applicable to the kilowatt-scale photovoltaic systems as the Commission envisions that such smaller system will be maintained by individuals or organizations who would maintain the systems domestically at a much lower cost.*

*Considering the concerns of the Developers regarding the high inflation rate, and in lines with the CERC guidelines as well as GERC Multi Year Tariff Regulation, 2011, the Commission decides to adopt an annual escalation in operation and maintenance cost of 5.72%.”*

8.7 We find that at the reduced the capital cost of Rs. 10 crores/MW, the O&M expenses at 0.75% of the capital cost work out to Rs. 7.5 lakhs/MW. As against



this, in the order dated 29.1.2010, the State Commission allowed O&M expenses at 0.5% of the capital cost of Rs. 16.5 crores/MW which works out to Rs. 8.25 lakhs/MW for FY 2010-11. In the discussion paper the State Commission had proposed O&M expenses at 0.75% of the capital cost of Rs. 11 crores/MW i.e. Rs. 8.25 lakhs/MW, which is the same level as decided for 2010-11 by order dated 29.1.2010.

8.8 As rightly pointed out by the Appellant and also indicated by the State Commission in the discussion paper, the employees' expense is a major component of O&M expenses of solar power project. The reduction in cost of Solar Power Projects is basically for the solar power module only. Therefore, the reduction of the capital cost should not impact the O&M cost appreciably. The intention of the State Commission in the discussion paper was also by providing O&M

expenses at 0.75% of the proposed capital cost of Rs. 11 crores/MW i.e. at Rs. 8.25 lakhs/MW. However, the State Commission decided to reduce the capital cost to Rs. 10 crores/MW in the impugned order but maintained the O&M cost at Rs. 0.75% only. No explanation was given in the impugned order for effectively reducing the O&M expenses. We feel that the State Commission should have maintained O&M expenses in absolute value atleast at the same level as approved for the FY 2010-11 i.e. at Rs. 8.25 lakhs/MW. Accordingly, we direct the State Commission to reconsider the O&M cost and allow atleast \***0.825%** of the capital cost.

8.9 Learned counsel for GUVNL has argued that the State Commission has also allowed insurance cost in addition to O&M cost in the impugned order. We find that in the earlier order dated 29.1.2010 also the State

*\* The above correction shown in italics and bold is made as per the orders of the Tribunal dated 29.5.2013 in R.P. no. 9 of 2013*

Commission had allowed 0.35% of the net assets of the project as insurance charges in addition to O&M charges. Therefore, there is no force in the arguments of the Respondent no. 2 regarding insurance charges.

8.10 Accordingly, the State Commission is directed to re-determine the O&M charges.

9. The second issue is regarding inverter replacement cost.

9.1 According to the Appellant, the State Commission has arbitrarily assumed 10% annual reduction in cost of inverter and there has also been error in calculation of inverter replacement cost in the 13<sup>th</sup> year.

9.2 According to GUVNL, the State Commission has specifically referred to the fact that all major inverter suppliers in Europe, USA, Taiwan, etc., have been

increasing their capacity which will lead to price reduction and there is also a surge of inverter manufacturers in China and India which will further help in bringing down the cost of inverter. Further the inverter replacement cost has been allowed in addition to O&M expenses and no actuals are known as at present. There is also no computational error in calculating the inverter price as the inverter would have to be replaced between 12<sup>th</sup> & 14<sup>th</sup> years of operation. Therefore, the life span of the inverter has been considered as 13 years. The capitalization, if any, in the 13<sup>th</sup> year needs to be compensated through tariff from 14<sup>th</sup> year onwards and not from 13<sup>th</sup> year itself as sought by the Appellant.

9.3 According to the learned counsel for the State Commission, the State Commission has as a special consideration to solar power development, for the first

time allowed a separate head for inverter replacement cost after duly taking into consideration the life span of the inverter. The cost of transformer is much lower as compared to inverter. The inverter replacement cost was not part of the first tariff order for Solar Power Plants issued by the State Commission on 29.1.2010.

9.4 We notice that the State Commission for the first time has proposed to include inverter replacement cost in the 13<sup>th</sup> year of operation while working out the levelled tariff for the solar power projects. However, considering the reduction in cost of electronics and current cost trend of photovoltaic modules, the State Commission decided to consider an annual reduction in cost of inverters at 10% and replacement cost of 3.8% of the capital cost in the 13<sup>th</sup> year. The impugned order indicates that some developers had

pleaded that the projected cost of inverter replacement is too low and it should be considered atleast 5 to 6% of the capital cost.

9.5 The State Commission has allowed an additional cost of inverter replacement over and above the O&M cost and inverter replacement cost was not allowed in the earlier tariff order dated 29.1.2010. At the moment, it is not possible to predict what would be the actual cost of inverter replacement in the 13<sup>th</sup> year of operation of solar power plants. However, the State Commission has made an estimation based on the rate of reduction in cost of electronics and current cost trend of photovoltaic inverters at 10% per annum. The State Commission has tried to provide an additional expenditure with a view to compensate the project developers for the replacement of the inverter which according to the State Commission could be required

in the 13<sup>th</sup> year. The Appellant has also not suggested on alternate methodology for estimation of the inverter replacement cost with relevant supporting material. In any case inverter replacement cost is an additional cost which has been allowed and which was not provided in the previous tariff order dated 29.1.2010. We, therefore, do not want to interfere with the assessment of cost reduction made by the State Commission at 10% per annum.

9.6 However, we find that the State Commission has incorrectly computed the inverter replacement cost at 3.81% of the capital cost in the 13<sup>th</sup> year. We also find that at annual reduction in the inverter cost at 10%, the cost in the 13<sup>th</sup> year would work out to 4.24% of the capital cost and not 3.81% of the capital cost. So the argument of GUVNL that the inverter has to be replaced from 12 to 14<sup>th</sup> year and replacement cost in

the 13<sup>th</sup> year will be accounted for tariff in the 14<sup>th</sup> year is not valid. The State Commission has allowed inverter replacement in the 13<sup>th</sup> year and, therefore, the cost of inverter as assessed for the 13<sup>th</sup> year alone has to be considered for determination of tariff. Accordingly, directed.

10. The third issue is regarding working capital.

10.1 According to the Appellant, the State Commission ought to have allowed cost of maintenance spares and receivables for two months in the working capital as allowed under the Central Commission's Regulations.

10.2 According to GUVNL, the Power Purchase Agreement entered into between the project developers and the GUVNL specifically provides for payment to be made within 30 days and the applicability of the



delayed payment surcharge if payment is not made within the above period. As against this, the Central Commission's Regulations provides for the delayed payment surcharge after 60 days. The cost of maintenance spars is already included in the operation & maintenance cost allowed.

10.3 According to the State Commission, the Appellant has never challenged the principle for computing the working capital adopted by the State Commission in the first tariff order dated 29.1.2010 and the same principle has been followed in the impugned order.

10.4 Ld. Sr. counsel for the Appellant has argued that the rebate allowed for prompt payment (within 30 days) in the PPA is SBI Prime Lending Rate plus 2%

whereas the interest allowed on working capital for corresponding period is at the rate of 1%.

10.5 We find that the State Commission in the impugned order has decided to retain one month's operation & maintenance expenses and receivables equivalent to one month's energy charges in the working capital considering the prompt payment made by the Distribution Companies and penalty for delayed payment beyond 30 days included in the PPA. However, the impugned order does not specify quantum of rebate for prompt payment and penalty for delayed payment.

10.6 We find that the Central Commission's Tariff Regulations for Solar Power Plants provides for operation & maintenance expenses for one month, receivables for 2 months of energy charges and

maintenance spares @ 15% of operation & maintenance expenses. The Regulations also provide for rebate of 2% if payment is made through letter of credit and 1% for payment made within a period of one month of presentation of bills by the generating company. The late payment surcharge is payable under these regulations, if payment is delayed beyond a period of 60 days from the date of billing.

10.7 The PPAs in the present case provide for rebate at SBI PLR plus 2% if payment is made within 30 days, as submitted by the Appellant. There is a penalty for delayed payment if payment is made after 30 days.

10.8 Thus, the provisions in Central Commission's Regulations for rebate/penalty are different from that provided in the PPAs between the Developers and the GUVNL. While the Central Commission's Regulations

provide for rebate for prompt payment @ 2% if the payment is made through LC and 1% if the payment is made within 30 days and surcharge only if payment is made after 60 days, the impugned order of the State Commission does not provide for any penalty or rebate or penalty linked to prompt payment or delayed payment. The PPAs entered into between the parties in the present case provide for rebate of 1% if payment is made within 30 days and penalty if payment is made after 30 days.

10.9 The Appellant has claimed allowance of working capital as per the Central Commission's Regulations in view of rebate being given to GUVNL for prompt payment as per the PPA. We do not find force in this argument. Firstly, the State Commission in its tariff order has not decided any rebate for prompt payment. The project developers and GUVNL on their

own have agreed to some payment security mechanism under which Solar Power Developer has to give rebate for payment made within 30 days and is entitled to charge penalty for delay in payment beyond 30 days. Secondly, the penalty as per the PPA is leviable if payment is made after 30 days. On the other hand, the Central Commission's Regulations provide for surcharge only after 60 days. Thus, the payment security mechanism as agreed in the PPA is not comparable to that allowed in the Central Commission's Regulations. Thus, the Appellant cannot claim parity with Central Commission's Regulations regarding working capital. Thus, we do not find any infirmity in the State Commission allowing one month's O&M expenses and one month's receivables in the working capital.

11. The fourth issue is regarding Return on Equity.

11.1 According to the Appellant, the State Commission should have allowed the Return on Equity as per the Central Commission's Regulations and should have grossed up the post tax return to arrive at pre-tax return and then compute the Income Tax.

11.2 The Respondent no. 2 has contended that the same rate of return as allowed to Solar Projects in the impugned order has been allowed in the earlier Solar Tariff Order dated 29.1.2010 as well as for all renewable energy projects. Regarding grossing up of income-tax, the State Commission has correctly allowed income tax at 20.008% for 10 years and corporate tax at 32.445% for 11<sup>th</sup> year onwards.

11.3 According to the learned counsel for the State Commission, the State Commission has allowed income tax at 20.008% (18.5% MAT + 5% surcharge

+3% Education cess) per annum for 10 years and corporate tax at 32.445% per annum from 11<sup>th</sup> year onwards, over and above 14% ROE to solar power developers which is adequate. Let us examine the findings of the State Commission regarding ROE.

*“24.8 Return on Equity:*

*The Commission has provided in the Multi Year Tariff Regulation, 2011 Notification No. 1 of 2011 as well as indicated in the Discussion Paper the return on equity as 14% per annum. The Commission has also allowed Income Tax at 20.008% (18.5% MAT + 5% Surcharge +3% Education Cess) per annum for 10 years, and Corporate Tax at 32.445% per annum from 11<sup>th</sup> year onwards. Any further enhancement in the return on equity will burden the Consumers.*

.....

*“Commission’s Ruling:*

*The Commission has provided in the Multi Year Tariff Regulation, 2011 Notification No. 1 of 2011, indicated in the Discussion Paper, as well as*

*considers the return on equity for all projects, renewable and non-renewable, at 14% per annum. Hence, the Commission shall retain the return on equity at 14% per annum”.*

11.4 We notice that the State Commission has allowed post tax RoE of 14% for solar as well as other renewable and non-renewable power projects. The MYT Regulations, 2011 of the State Commission also provide for 14% RoE. Even though the Central Commission's Regulations for renewable energy projects provide for post tax RoE of 16%, the State Commission is not bound to adopt the same RoE. If the State Commission has decided to allow post tax RoE of 14% to renewable energy projects as applicable to power projects of conventional energy sources, we cannot find fault with the same.



11.5 As regards grossing up of income-tax, this Tribunal in a number of judgments has decided that the income tax has to be grossed up to permit the required post tax Return on Equity. This Tribunal in the judgment in Appeal no. 174 of 2009 dated 14.02.2011 in the matter of Tata Power Company Limited vs. Maharashtra Electricity Regulatory Commission has decided as under:

*“18. While the State Commission has computed the tax by considering the Return on Equity equal to profit before tax, it has ignored the fact that such allowed income tax would also be considered as revenue gains and the Appellant would have to pay tax on the same. In order to rectify the same, the State Commission ought to have grossed up the tax computed by it and pass the same to the Appellant. Thus the claim of the State Commission that it has reimbursed the actual tax and hence there is no case for allowing post tax Return on Equity is not correct. Therefore, it would be appropriate to direct*

*the State Commission to compute income tax entitlement of the Appellant by replacing Return on Equity by regulatory profit before tax on the basis of income less permissible expenses. Accordingly ordered.”*

11.6 This Tribunal in the judgment in Appeal no. 68 of 2009 dated 23.03.2010 in the matter of Torrent Power Limited vs. Gujarat Electricity Regulatory Commission has decided as under:

*“55. In view of the foregoing discussion and analysis, we set aside order of the State Commission in this view of the matter and direct that it allows the income tax by grossing up to ensure the stipulated post tax return by the State Commission to the Appellant.”*

11.7 Learned counsel for Respondent no. 2 has referred to the order dated 05.01.2011 in Review Petition no. 9 of 2010 in Appeal no. 68 of 2009. The

relevant extracts of order dated 5.1.2011 is reproduced as under:

*“10. Regulation 7 clearly stipulated that the tax on income stream of the generating company from its core business shall be computed as expense and shall be recovered from the beneficiaries. The adjustment for under or over recovery of any amount from beneficiary has to be made by the generating company directly on the basis of income tax assessment under the Income Tax Act as certified by the statutory auditors. Regulation 66(20) only restricts the income tax to be allowed on the permissible return subject to actual payment.*

*11. This is the only difference in the State Commission’s Regulations with reference to the Regulations of 2004 of the Central Commission in respect of Income Tax. The Central Commission’s Regulations of 2004 allow income tax as pass through even on income over and above the permissible return on equity due to better performance over the generation norms. However,*

*the State Commission's Regulations allow the income tax on the permissible return. The principle of grossed up tax is applicable to both as decided by this Tribunal in the impugned judgment and in various other cases referred to by the Respondent.*

*12. Conjoint reading of the Regulations of the State Commission will imply that income tax has to be taken as expense subject to adjustment as per actuals as per audited accounts by the statutory auditors and to the extent of permissible return. However, tax on income on permissible return has to be 'pass through'. Thus the intent of the Regulations is that income on permissible return on core business in the hands of the generating company has to be net of tax. Thus the entire tax inclusive of grossed up tax is relatable to the core activity of the generating company. However, if there is any over-recovery of tax, the generating company has to reimburse the same as the same is adjustable as per actuals as per audited accounts by the statutory auditors.*

13. *The Tribunal's judgment dated 23.03.2010 in para 52 clearly shows that the Tribunal has considered Regulation 7 and Regulation 66 and Section 195 (A) of the Income Tax Act to arrive at the decision that grossing up of the tax has to be carried out to ensure that after paying the tax, the admissible post tax return is assured to the Appellant (Respondent in Review Petition), Torrent Power Limited. The Tribunal has also held in the judgment that the Appellant, Torrent Power Limited should neither benefit nor lose on account of tax payable which is a pass through in the tariff. Thus, there is no question of the generating company making profit on account of income tax. The excess recovery of income tax if any has to be reimbursed by the generating company to the distribution company as per the Regulations of the State Commission. In this case the excess recovery of income tax if any has to be adjusted in the true up of the financials. Thus the judgment dated 23.3.2010 needs no review".*

11.8 In Review order also, the Tribunal has decided that the principle of grossed up tax is applicable to the Central Commission's Regulations as well as the State Commission's Regulations.

11.9 The findings of the Tribunal in the above cases will also be applicable to the present case. Therefore, the issue regarding grossing up of income-tax is decided in favour of the Appellant.

12. The fifth issue is regarding discount rate for computation of levellised tariff.

12.1 According to the learned Senior counsel for the Appellant, the Weighted Average Cost of Capital (WACC) has to be computed considering the rates of interest on debt and Return on Equity and the State Commission in computing the discount rate for levellised tariff has erroneously relied on the

methodology followed by the Central Commission for deciding the rate of discounting to be used for bidding purposes and not on the methodology specifically stipulated by the Central Commission for computing discount rate for renewable energy sources. According to him, the State Commission has erred by relying on market based WACC and not considering its own determined rates for interest on debt and RoE for computation of WACC. Since debt and equity change every year due to repayment of loan considered by the State Commission, the WACC for every year will be different whereas the State Commission has adopted only one figure of WACC at the opening debt equity ratio.

12.2 According to GUVNL (R-2), the State Commission has decided the discounting rate as per the Central Commission's Notification dated 7.10.2011

which was available at the time of passing of the impugned order. According to her, the Appellant was relying on subsequent Notification of Feb., 2012 which could not be the basis to question the findings of the State Commission.

12.3 According to learned counsel for the State Commission, the State Commission is using methodology adopted by the Central Commission for calculating discount rates.

12.4 Let us examine the findings of the State Commission with regard to discount rate as under:

*“ 2.4.9 Discount Rate for Levelized Tariff Calculation*

*The Commission, in its Discussion Paper, had calculated the annual levelized tariff based on the discount rate of 10.74% over the 25 year life of the solar power project”.*



.....

*“Commission’s Ruling:*

*The discount rate for calculating the levelized tariff is computed based on the time series for latest twelve calendar years, and is based upon weighted average cost of capital (WACC). The discount rate due to cost of debt is calculated based on market interest rate and corporate tax rate, while the discount rate due to equity is calculated based on the risk free rate, beta, and equity market risk premium. Here, beta indicates the degree to which the stock’s return moves with that of the overall market and is computed on the data on Bombay Stock Exchange (BSE) Indices for power sector and Sensex for the year 2010. Further, this methodology is also adopted by the CERC for calculating discount rates.*

*Hence, the Commission shall retain the annual discount rate of 10.74% to calculate the levelized tariff over the 25 year life of the solar project”.*

12.5 We find that the State Commission has used the same methodology as adopted by the Central Commission for calculating discount rates. The Central Commission by Notification dated 7.10.2011 decided the various escalation rates and discount rate to be adopted for bid evaluation and payment for procurement of power by distribution licensees by competitive bidding. The Notification specifies the discount rate as 10.74%. The explanation given by the Central Commission for determining the discount rate is as under:

*“(9) Discount Rate to be used for bid evaluation  
Weighted Average Cost of Capital (WACC) has been considered as discount rate. The WACC has been computed as under:*

*WACC=Cost of Debt+ Cost of Equity*

*Where,*

*Cost of Debt=0.70 (Market Rate of Interest) X(1-Corporate Tax Rate)*

*Cost of Equity= 0.30 (Risk Free Rate+b (Equity Market Risk Premium)*

The computation of WACC can be seen in the following table:

<b>Table-9: DISCOUNT RATE TO BE USED FOR BID EVALUATION</b>		
	<b>Cost of Debt/Equity</b>	<b>WACC</b>
<b>1. Cost of Debt</b>		
$0.70(MR) \times (1-CTR)$	<b>5.64</b>	
<b>2. Cost of Equity</b>		
$0.30 ((RF+b (RP)))$	<b>5.10</b>	
<b>Discount Rate (1+2)</b>		<b>10.74</b>
<b>Discount Rate has been computed based on the following assumptions</b>		
<b>Components of Debt/Equity</b>	<b>Assumptions (%)</b>	
<i>Debt</i>	70	
<i>Equity</i>	30	
<i>Corporate Tax Rate (CTR)</i>	30	
<i>Risk Free rate (RF)</i>	7.36	
<i>Beta (b)</i>	0.78	
<i>Equity Market Risk Premium (RP)</i>	12.35	
<i>Market Rate of Interest (MR)</i>	11.50	

The Debt and Equity of 70:30 has been assumed based on CERC norms on Debt and Equity in its Tariff Regulations 2009-14. The basic corporate tax rate proposed in the GOI Budget for the year 2011-12 (i.e. excluding surcharge and cess) has been assumed while computing the discount rate.

Hitherto, while calculating the cost of debt, the market rate of interest was being linked to the prime lending rate. With switch over

to “base rate” regime from July 1, 2010, however, in this Notification, the market rate of interest shall be taken as the base rate (average of base rates of five major public sector banks) + 350 basis points. Accordingly, the market rate of interest in this Notification has been taken as 11.5%.

As regards risk free rate, the 10<sup>th</sup> year GOI securities rate for the “current year” was being considered as the risk rate (the “current year” being year immediately preceding the year of the Notification, i.e. for Notifications in the year 2010, the year 2009 was being taken as the “current year” and the data for that was being taken as the risk free rate). In this Notification, however, an average of the risk free rate earned over the past ten years is being taken as the risk free rate. Thus, the risk free rate of 7.36% taken in the calculation of cost of equity is the average of the 10 year GOI securities rate over the past 10 years, i.e. from 2001 to 2010.

In the calculation of cost of equity, the market risk premium was being derived by subtracting the risk free rate for the “current” year from the CERC norm for ROE (i.e. 16% post tax) in its Tariff Regulations 2009-14. Since market risk premium is the difference between the expected market return and the risk free rate, it was thought more appropriate to arrive at the market risk premium by subtracting the risk free rate from the market rate of return and not from the CERC norm for ROE, which is the “power sector” rate of return. Accordingly, the market risk premium in this Notification has been arrived at by subtracting the average risk rate of 7.36% from the average rate of return on market portfolio over the past ten years (19.71%), i.e. from 2001 to 2010. Sensex values for the past eleven years have been used to arrive at average rate of return on the market portfolio for the past ten years. The historical approach

*adopted here for arriving at the expected market return assumes the expected future return as an average to be the same as past returns. The market risk premium in this Notification thus has been taken as 12.35% (19.71%-7.36%).*

*The beta value has been computed based on the data on Bombay Stock Exchange (BSE) Indices for power sector and Sensex for the year 2010.*

*The WACC computed in the above table (10.74%) has been notified as discount rate for bid evaluation”.*

12.6 The Central Commission has given detailed explanation for adopting the market returns instead of the Return on Equity as per the Central Commission's norms. We do not find any infirmity in adopting the market related factors rather than the Return on Equity and debt as allowed in the tariff order.

12.7 The State Commission has adopted the discount rate as decided by the Central Commission by its Notification dated 7.10.2011. This was the only notification available before the State Commission while passing the impugned order. It is also not

relevant whether the Central Commission's notification was for evaluation of bids for competitive bidding for procurement of power. What is relevant is the method used for determination of the discount rate in which we do not find any infirmity. As such, there is no infirmity in the State Commission adopting the market related parameters as per the method adopted by the Central Commission.

13. The sixth issue is regarding the consideration of 1% annual degradation of plant and formula used for levelled tariff.

13.1 According to the Appellant, the State Commission has not considered degradation of plant as approved by the State Commission in the impugned order in computing the levelled tariff.

13.2 According to learned counsel for the Respondent no. 2, the State Commission has already considered the generation that will be available from the Solar Power Developers after applying degradation factor.

13.3 Learned Sr. counsel for the State Commission has informed that performance degradation has been taken into account by the State Commission while determining the year to year tariff and the same has also been given effect while determining the levelled tariff. The State Commission has also furnished calculation sheet indicating the gross generation after taking into account the performance degradation.

13.4 We find from these calculations that the State Commission has taken into account the annual degradation of 1% while working out the gross

generation in the tariff stream of 25 years. The State Commission has computed year-wise tariff from year wise expenses and net generation which has been discounted by taking annual discount rate. Levellised tariff has been determined by dividing the arithmetic summation of year wise tariff divided by the arithmetic summation of discount factor. Learned Senior counsel for the Appellant argued that with equated levellised tariff, the cash stream for 25 years is constant only if generation is assumed to be constant. But since the State Commission has allowed annual degradation @ 1%, the annual cash flows will also reduce each year by 1% as tariff is constant. The reduction in cash flows is solely due to reduction in generation. Hence the levellised tariff has to be computed with cash flows reducing in the same proportion as generation. The



Appellant in the written submission gave illustration to explain their point.

13.5 We feel that the issue raised by the Appellant needs to be considered by the State Commission to examine if the levelling tariff allowed by the State Commission ensures recovery of the revenues permissible to the Developers during the life cycle of the plant at the energy sent out with degradation. Accordingly, the State Commission shall consider the submissions of the Appellant and decide the matter.

14. The seventh issue is regarding tariff for first 12 years and next 13 years.

14.1 According to the Appellant, the State Commission has arbitrarily fixed the tariffs for two phases and has not followed its own methodology for determining first 12 years and second 13 years tariff

as was used in its previous Tariff Order dated 29.1.2010. In the previous Tariff Order the State Commission had allowed 20% higher tariff in first 12 years whereas in the impugned order it has allowed only 8.5% higher tariff than the levelled tariff.

14.2 Learned counsel for the Respondent no. 2 submitted that GUVNL had contended before the State Commission that a single part tariff should be determined instead of burdening the utility with payment of higher tariff in the initial years and also considering the risk of solar developers not supplying energy in the period after 12 years due to lower tariff. However, the State Commission has allowed on front loaded two sub-period tariff which is favourable to the Solar Project Developers.

14.3 We find that the State Commission for megawatt scale projects not availing accelerated depreciation has calculated the levellised tariff at Rs. 10.37/kWh. The State Commission decided the tariff for first 12 years as Rs.11.25 per kWh i.e. 8.5% higher than the levellised tariff and Rs. 7.50 per kWh for the subsequent 13 years i.e. about 27.7% lower than the levellised tariff. Front loading of the tariff is good for the developer to facilitate payment of debt and to get more return on investment during initial period and may also give more comfort to the lenders to finance the solar projects. A single levellised tariff will ensure to maintain continued interest of the developer for the life cycle of the plant. Thus, a balance has to be maintained to provide adequate return in the first 10 to 12 years to the developer to pay the debt liabilities and at the same time to ensure continued

interest of the developer in upkeep of the plant for the life cycle of the solar plant.

14.4 We find that the State Commission has balanced the interest of the project developer and the consumer by allowing a tariff higher by only about 8.5% than the levelled tariff during the first 12 years.

14.5 Thus, we do not find any merit in the contention of the Appellant that the tariff for the first 12 years should be 20% higher than the levelled tariff as in the previous tariff order dated 29.1.2010. The first tariff order was for solar power plants which were to be commissioned within two years of the date of the order with different capital cost and tariff. The same ratio of tariff in first 12 years and the levelled tariff cannot be applied to the tariff of the projects which have to be commissioned in the ensuing control

period of three years from 29.1.2012. The Appellant has also not indicated any difficulty in meeting of the debt liability or getting the specified Return on Equity. We feel that the State Commission in the impugned order has balanced the interests of the project developers and the consumers. Thus, we do not find any reason to interfere with the finding of the State Commission in regard to front loading of the tariff.

15. The eighth issue is regarding Successive Revision in Tariff.

15.1 According to the learned Senior Advocate for the Appellant, the State Commission in passing the impugned order should have frozen the tariff for the life of the plant without assuming an arbitrary reduction of 7% annually. The State Commission has incorrectly arrived at this decision based on the competitive bidding under Jawahar Lal Nehru National

Solar Mission (“JNNSM”) and assumed that there has been a reducing trend and the same will continue in future. The bidding principles cannot be applied for tariff determination under Sections 61 and 62.

15.2 According to learned counsel for Respondent no. 2, the State Commission has fixed the tariff for a particular control period instead of frequently revising the same as sought by the Appellant. If the argument of the Appellant is accepted, then there will be no certainty to either the developer or the procurer regarding the cost of electricity and all developers will seek frequent revisions in tariff burdening the consumer with higher costs.

15.3 Learned counsel for the State Commission has argued that in view of changing cost trends, the reduction in price of Solar PV modules and recent

technological developments in the Solar Energy field. The State Commission in the impugned order decided to revise the capital cost from Rs. 16.5 crores per MW to Rs. 10 crores per MW. This trend is also reflected in the Central Commission's Regulations, 2012 and the bidding conducted under Jawahar Lal Nehru National Solar Mission ("JNNSM"). There has been a significant reduction in the bid price quoted by the solar projects bidding under the JNNSM bids from 2010 till date.

15.4 Let us now examine the findings in the impugned order. The relevant paragraphs are reproduced below:

*"2.5.3 Successive Revisions to Tariff*

*Due to the steadily decreasing cost of solar technology, reducing the burden on the end user of electricity, and ensuring timely commissioning of projects, the Commission, in its Discussion Paper, had indicated a year-on-year reduction for the 25-*

*year applicable tariff. Hence, the Commission had considered a conservative decline in the tariff for both megawatt-scale and kilowatt-scale photovoltaic projects at 7% decline for 1 April, 2013 to 31 March, 2014, and a further 7% decline for 1 April, 2014 to 31 March, 2015”.*

*“Commission’s Ruling:*

*The commission has considered an annual reduction of 7% in the tariff for solar photovoltaic power projects considering various factors including the capital and financial costs of such projects, as well as to encourage projects coming up and being commissioned at a regular pace. Removal of the provision for year-on-year decrease in the tariff and resultantly keeping a fixed tariff up to 31 March, 2015 may cause most of the projects to be commissioned very close to the end of this period leaving a void in deployment of photovoltaic power plants. Leaving the year-on-year rate of revision open-ended in the current order would create uncertainty for the solar and related*



*industries for the long term, and hence, should be fixed.*

*Hence, the Commission has decided to retain the decline in the applicable tariff for both megawatt-scale and kilowatt-scale photovoltaic projects at 7% decline for 1 April, 2013 to 31 March, 2014, and a further 7% decline for 1 April, 2014 to 31 March, 2015 as follows:*

*Table: Summary of tariffs for solar photovoltaic power plants commissioned between 29 January, 2012 and 31 March, 2015.*

<b>Period</b>	<b>29<sup>th</sup> Jan.'12 to 31 March'13</b>	<b>1 Apr.'13 to 31 Mar.'14</b>	<b>1 Apr. to 31 Mar.15</b>
<b>For megawatt-scale photovoltaic projects availing accelerated depreciation</b>			
Levelling Tariff for 25 years	Rs.9.28 per kWh	Rs.8.63 per kWh	Rs.8.03 per kWh
For first 12 years	Rs.9.98 per kWh	Rs.9.13 per kWh	Rs.8.35 per kWh
For subsequent 13 years	Rs.7.00 per kWh	Rs.7.00 per kWh	Rs.7.00 per kWh
<b>For megawatt-scale photovoltaic projects not availing accelerated depreciation</b>			
Levelling Tariff for 25 years	Rs.10.37 per kWh	Rs.9.64 per kWh	Rs.8.97 per kWh
For first 12 years	Rs.11.25per kWh	Rs.10.30 per kWh	Rs.9.42 per kWh
For subsequent 13 years	Rs.7.50 per kWh	Rs.7.50 per kWh	Rs.7.50 per kWh
<b>For kilowatt-scale photovoltaic projects availing accelerated depreciation</b>			
Levelling Tariff for 25 years	Rs.11.14 per kWh	Rs.10.36 per kWh	Rs.9.63 per kWh
<b>For kilowatt-scale photovoltaic projects not availing accelerated depreciation</b>			
Levelling Tariff for 25 years	Rs.12.44 per kWh	Rs.11.57 per kWh	Rs.10.76per kWh

15.5 We notice that the State Commission has decided the control period from 29.1.2012 to 31.3.2015 i.e. a period of about three years for tariff determination. The State Commission has determined the tariff for the first year of control period as per its norm and thereafter, decided that the tariff for the next two years of the control period will be reduced @ 7% p.a. We notice that the State Commission in the Consultative Paper has proposed tariff for the PV Solar Plant commissioned between 29.1.2012 to 31.3.2013 regarding successive revision of tariff. The following has been indicated as under:

*“2.5.3 Successive Revisions to Tariff*

*It is the intention of GERC to support the development of a long-term solar industry in Gujarat taking advantage of its enormous solar energy potential, which would accelerate the reduction in solar energy prices both in Gujarat as well as India. However, it may be inappropriate to*

*commit the solar energy tariffs for the long term in view of the dynamically changing prices of solar energy technologies, and the potential economic burden on Consumers in case of deviation or reduction of actual solar energy prices from currently determined project prices.*

*The global trends in the photovoltaic industry indicate a continual drop in the price of photovoltaic modules of various technologies, and also a steady drop in the price of photovoltaic inverters. Further, the decrease in costs of photovoltaic systems is ensured through widespread industry learning and economies of scale. The Indian market has already seen a steep drop in the cost of solar projects. Based on the trends of various photovoltaic system components, it is expected that the price of solar systems will continue to drop by 7-8% annually in the near term.*

*Hence, a conservative annual decline in the photovoltaic tariff for both megawatt-scale and kilowatt-scale is considered at 7% decline for 1<sup>st</sup>*

*April, 2013 to 31 March, 2014, and a further 7% decline for 1 April, 2014 to 31 March, 2015”.*

Thus, based on the trends had proposed decline in the Photo Voltaic tariff at 7% during the control period.

15.6 The State Commission in order to give certainty about the solar tariff has determined tariff for the entire control period of three years. On the other hand, the Central Commission in its 2012 Regulations has decided tariff for the first year of the control period of 2015-17 and has decided to determine the tariff for the subsequent years of the Control Period later.

15.7 The tariff decided by the State Commission for the control period is a promotional tariff and the developers will have to take decision about setting up solar power plants based on the bidding tariff decided by the State Commission. At this stage, it is not

possible for us to decide what would be the correct capital cost or tariff for the second and third year of the control period. It is for the State Commission to take a call on this issue at appropriate time considering the prevalent market price and development of solar power in the State.

15.8 Learned Senior Counsel for the Appellant pointed out during the rejoinder submission that he was not pressing this point. Accordingly, this issue would not survive.

16. The ninth issue is regarding Clean Development Mechanism.

16.1 According to the Appellant, the State Commission in passing the impugned order has not clarified whether the sharing of CDM benefit has to be done on cash basis or accrual basis. The Learned

Senior Counsel for the Appellant also expressed difficulty in sharing of CDM benefit on accrual basis as it takes time in actually receiving the cash against the CDM benefit. On this issue the State Commission clarified that the CDM benefit has to be shared when it is actually received by the developers.

16.2 In view of the clarification given by the State Commission, the Appellant did not press this issue. Accordingly, this issue also does not survive.

17. The tenth issue is regarding option for Project Specific Tariff.

17.1 According to Shri Vikas Singh, learned Senior Advocate for the Appellant, the State Commission has determined only generic tariff for Solar PV Projects, without giving any option for getting project specific tariff determined. It has however, given an option of

getting project specific tariff determined for Hybrid solar projects. Some projects which were started in previous control period and could not be commissioned in that control period have incurred higher capital costs than that considered in the impugned order. Thus, they do not have an option to get the project specific tariff determined. In this regard, they refer to the findings of the Tribunal in Appeal nos. 50 & 65 of 2008 dated 18<sup>th</sup> Sept., 2009 in the case of Techman Infra Ltd. vs. HPERC & others.

17.2 According to GUVNL, as per the impugned order option to project specific tariff will be available to solar power developers who have not signed any Power Purchase Agreement with the utility and it is for the members of the Appellant Association to apply for any project specific tariff before the State Commission and justify the same.

17.3 According to the learned counsel for the State Commission the developers sought to be protected by the Appellant, have defaulted in the commissioning deadline dated 30.1.2011 provided in the Power Purchase Agreement and have also missed the original tariff control period provided in order dated 29.1.2010. However, majority of the solar power developers have already commissioned their projects within the control period i.e. from 29.1.2010 to 28.1.2012. The control period of the first tariff order for solar power projects came to an end on 28.1.2012. The impugned tariff order determines tariff applicable to solar power projects for the next control period i.e. 29.1.2012 to 31.3.2015 and the new tariff has been determined while taking into account the current cost trends. The State Commission has however, allowed project specific tariff for systems with thermal storage



because the storage capacity for such plants will vary. Moreover, the variations on account of technologies and materials used for storage make it difficult to fix a generic cost. Storage and hybrid technologies have implication on various costs associated with capital, operation and maintenance, auxiliary consumption and capacity utilization factor. Therefore, it is not possible to decide capital cost of such systems having varying storage capacity on a generic basis. Similarly in case of systems based on hybrid, the capital cost will vary depending upon the technology used. The proportionate usage of different technologies may also vary and affect the final tariff for such power plants. The Appellant is attempting to equate its case with the aforesaid technologies which is not correct. In case of Solar PV power projects no such variations are found,

therefore, a normative tariff has been fixed by the State Commission.

17.4 We are in agreement with the submissions made by the learned counsel for the State Commission. There is absolutely no case for the State Commission to determine the project wise tariff afresh for the projects which signed Power Purchase Agreement based on the first tariff order and failed to commission their projects during the control period. The findings of the Tribunal in Appeal nos. 50 & 65 of 2008 in respect of Hydro Projects will not be applicable in this case. In case of Hydro Projects the capital cost could vary depending on the geological conditions and inflows of water with respect to the norms assumed in the generic tariff. Such variables are not relevant in case of Solar PV projects. Thus, findings of the

Tribunal in Techman case will not be applicable to the present case.

17.5 Therefore, we find no force in the contention of the Appellant regarding determination of project specific tariff. Accordingly, this issue is decided against the Appellant.

## 18. **Summary of our findings**

**i) Operation & Maintenance Expenses: The State Commission should have maintained O&M expenses in absolute value at least at the same level as approved for FY 2010-1 i.e. Rs. 8.25 lakhs/MW. Accordingly, we direct the State Commission to redetermine the O&M cost and allow at \*least 0.825% of the capital cost.**

*\* The above correction shown in italics and bold is made as per the orders of the Tribunal dated 29.5.2013 in R.P. no. 9 of 2013*

**ii) Inverter replacement cost: We do not want to interfere with the assessment of cost reduction for inverter @ 10% p.a. made by the State Commission for the reason indicated in paragraph 9.4 of the judgment. However, the State Commission has incorrectly computed the inverter replacement cost at 3.81% of the capital cost in the 13<sup>th</sup> year. With annual reduction of 10% in inverter cost the cost in the 13<sup>th</sup> year would work out to 4.24% of the capital cost and not 3.81%. Accordingly, the State Commission shall correct the inverter replacement cost.**

**iii) Working Capital: We do not find any infirmity in the State Commission's order in determinig the working capital.**

**iv) Return on Equity: The State Commission is not bound to adopt the RoE as provided in the Central Commission's Regulations. If the State Commission has decided to allow post tax RoE of 14% to renewable energy projects as applicable to power projects of conventional energy sources, we cannot find fault with the same. However, the State Commission should have followed the principle of grossing up of the income tax as decided by this Tribunal in Appeal no. 174 of 2009, 68 of 2009 and Review Petition no. 9 of 2010 in Appeal no. 68 of 2009. Accordingly, directed.**

**v) Discount factor: We do not find any infirmity in the State Commission adopting a discount factor of 10.74% as per the Central Commission's notification dated 7.10.2011.**

**vi) Annual degradation of Solar Plant: We feel that the issue raised by the Appellant needs to be considered to examine if the levelling tariff allowed by the State Commission ensures recovery of the revenue permissible to the Developers in the life cycle of the solar plant at the energy sent out with degradation. Accordingly, the matter is remanded to the State Commission.**

**vii) Tariff for first 12 years: We find that the State Commission has balanced the interests of the project developer and the consumer by allowing a tariff of only about 8.5% higher than the levelled tariff during the first 12 years. We do not find any reason to interfere with the findings of the State Commission in this regard.**

**viii) Successive revision in tariff: This issue does not survive as the learned counsel for the Appellant during the rejoinder submission decided not to press the issue.**

**ix) Clean Development Mechanism: In view of the clarification given by the State Commission that the CDM benefit has to be shared by the Project Developer with GUVNL on cash basis, the issue would not survive.**

**x) Project specific tariff: We do not find force in the argument of the Appellant regarding option for project specific tariff. The findings of the Tribunal in Techman case (Appeal nos. 50 & 65 of 2008) for hydro projects will not be applicable to the present case.**

19. In view of above, the Appeal is partly allowed to the extent as indicated above. The State Commission shall pass the consequential order in terms of the observations and directions referred to above. No order as to costs.

20. Pronounced in the open court on this **17<sup>th</sup> day of April, 2013.**

**( Rakesh Nath)**  
**Technical Member**

**(Justice M. Karpaga Vinayagam)**  
**Chairperson**

√

**REPORTABLE/~~NON-REPORTABLE~~**

vs