



National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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Registrar

No. NEPRA/UTS-01/7915-7917
May 25, 2015

Subject: Decision of the Authority in the Matter of Motion for Leave for Review filed against the Determination of the Authority dated 22.01.2015 regarding Upfront Generation Tariff for Solar PV Power Plants

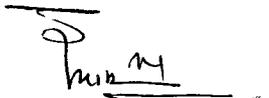
Dear Sir,

Please find enclosed herewith the subject Decision of the Authority along with Annex-I, Ia, II, IIa, III, IIIa, IV, IVa, V, Va, VI, VIa (30 pages).

2. The Decision is being intimated to the Federal Government for the purpose of notification of the approved tariff in the official gazette pursuant to Section 31(4) of the Regulation of Generation, Transmission and Distribution of Electric Power Act (XL of 1997) and Rule 16(11) of the National Electric Power Regulatory Authority Tariff (Standards and Procedure) Rules, 1998.

3. Order of the Authority along with Annex-I, Ia, II, IIa, III, IIIa, IV, IVa, V, Va, VI, VIa of the Decision will be notified in the official Gazette.

Enclosure: As above


(Syed Safer Hussain)
25.05.15

Secretary
Ministry of Water & Power
'A' Block, Pak Secretariat
Islamabad

CC:

1. Secretary, Cabinet Division, Cabinet Secretariat, Islamabad.
2. Secretary, Ministry of Finance, 'Q' Block, Pak Secretariat, Islamabad.



**DECISION OF THE AUTHORITY IN THE MATTER OF MOTION FOR LEAVE FOR
REVIEW FILED AGAINST THE DECISION OF THE AUTHORITY DATED 22-01-
2015 REGARDING UPFRONT GENERATION TARIFF FOR SOLAR PV POWER
PLANTS**

1. INTRODUCTION

1.1 The Authority vides its decision No. NEPRA/UTS-01/905-907 dated January 22, 2015 determined upfront solar tariff for various categories of solar photo voltaic (PV) power plants ranging 1 MW to 100 MW. The Order of the Authority was notified vide SRO No. 183(I)/2015 dated 3rdMarch 2015 in the Official Gazette. Following companies filed motion for leave for review against the decision of the Authority dated 22-01-2015:

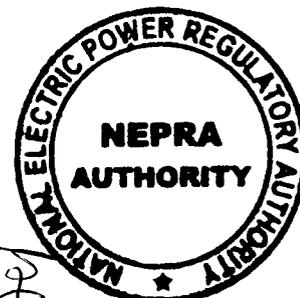
1. Burj Capital
2. Zonergy Company Limited
3. Siddiq Sons Energy Limited
4. ET Solar International Company
5. RIAA Law Advocates and Corporate Counselors
6. Harappa Solar (Private) Limited

1.2 The Authority considered and admitted the review motion(s) on February 19, 2015 and decided to club all the review motions under single petition.

2. GROUNDS OF REVIEW MOTION

The petitioners filed the review on the following grounds:

- Insufficient EPC cost
- Insufficient Non-EPC Cost
- Sinosure fee/premium
- Sharing of Savings in the loan premium
- Withholding tax on dividends
- Revenue Sharing for Excess Generation
- Degradation





- Level of Induction
- Inspection of plant and equipment
- Revision of time period for the financial close.
- Sharing of discount on EPC Cost.
- Duties and taxes
- Insurance Adjustment

3. HEARING

The hearing in the matter was held on 26th March 2015 in NEPRA Tower. Individual letters were sent to all concerned. The hearing was participated by the stakeholders.

4. DISCUSSION OF THE ISSUES

On the basis of the issues raised by the petitioners, the determination of the Authority is provided in the succeeding paragraphs.

5. EPC COST

5.1 The stakeholders submitted that the determined EPC price of US\$ 1.359 million/MW is inadequate to construct a solar PV project where the lender and sponsors would be provided adequate performance coverage by the EPC contractor. The petitioners requested the Authority to reconsider the EPC price in light of the range of original bid received for the QASP project i.e. US\$ 1.5 million/MW.

5.2 Having heard the stakeholders view point, the Authority is of the opinion that stakeholders could not justify their contention with evidence regarding EPC cost revision. Some of the stakeholders have already accepted the upfront tariff unconditionally. The Authority is also cognizant of the fact that there is a declining trend in the panel prices and other equipment for solar power plants. The Authority considers that the request for upward revision does not merit consideration; therefore, the Authority has decided to maintain its earlier decision in this regard.

6. NON-EPC COST

6.1 According to the stakeholders, the costs of QASP have been taken as the base for non-EPC cost. It was stated that QASP is being developed within the Quaid-e-Azam Solar Park wherein the provincial government is supplementing non-EPC costs by



providing land, boundary walls, access roads and water for cleaning modules at concessionary rates. On the other hand, project developing outside of the park will be incurring higher non- EPC costs and development costs of land at market rates, ensuring construction of boundary walls, security, access roads, water supply etc. it was further submitted that the land cost alone accounts for a significant portion for solar projects and requested the Authority to revise non-EPC cost for projects outside the solar power park accordingly.

6.2 It is to be noted that in the case of QA Solar, non-EPC cost was US\$ 18,500/MW, whereas the Authority allowed US\$ 43,500/MW to US\$ 47,805/MW as non-EPC cost for different sizes of projects to compensate for the costs incurred for land, security, boundary wall etc. Since the Authority has already provided reasonable compensation for the projects outside the QA Solar Park; therefore, the stakeholder's request, being without any merit, is declined.

7. SINOSURE FEE

7.1 According to the stakeholders, Sinosure fee is missing in the tariff and needs to be built in the tariff. A number of projects especially large-scale are seeking funding from Chinese financial institutions and a condition for financing these projects is that financial institutions are required to obtain coverage from the China Export Credit & Insurance Corporation (SINOSURE) for specific risks. The premium in such a case is a significant cost which has been recently recognized and allowed by NEPRA in the upfront tariff for coal power projects as a valid project cost. Accordingly it was requested to allow SINOSURE fee/premium (where applicable) as a project cost either through classification as a pass-through item or a corresponding adjustment in the upfront tariff.

7.2 The Authority has considered the stakeholders request and noted that during the proceedings for determining upfront tariff, none of the stakeholders raised this issue. Since the stakeholders have now raised this issue and the Authority in coal, LNG and hydro upfront tariffs, has provided the Sinosure fee; therefore on the basis of principle of equity fairness and justice, the provision of Sinosure fee to solar power projects under the upfront tariff is justified. Accordingly, the Authority has decided to allow the Sinosure fee for the solar power projects under the upfront tariff. In case Sinosure fee or export credit agency fee on foreign financing is payable, the benchmark





established in the coal upfront tariff will be applicable subject to maximum of 7% and appropriate adjustment in the project cost shall be made at the time of COD.

8. SHARING OF PREMIUM SAVING

8.1 According to the stakeholders, the sharing of loan premium saving is not in line with international norms for FIT. It was submitted that the only ways that better spread can be achieved are if the sponsor has proven track record, or makes its balance sheet strength available to lender or negotiates a higher debt to equity ratio and/or lower financing rate to compensate other limitations and why should sponsors pass such savings to off taker? It was further submitted that the same concept has been recognized by the Authority in its wind upfront tariff decisions whereby the sponsors are bearing the overall risk of the projects under the tariff as a whole which is an established international practice. The stakeholders requested the same precedent to be applied in the case of solar upfront tariff.

8.2 The Authority considers that the sharing in premium saving is in line with the recent upfront tariffs determined by the Authority for coal, LNG and hydro. The wind upfront tariff was determined in 2013 and was expired in April 2014; therefore, instead of referring the wind upfront tariff, recently determined upfront tariffs are appropriate benchmarks for reference purposes. In view thereof the Authority has decided to maintain its earlier decision.

9. WITHHOLDING TAX ON DIVIDEND

9.1 According to the stakeholders, the Authority, in all other previous upfront tariffs, has either allowed withholding tax on dividends as a pass-through item or set the return on equity figure higher than 17% to compensate for withholding tax. The effect of removing such a provision is a reduction in the net rate of return of the equity holders from 17.00% to 15.73%. Some foreign companies may be subject to further tax on these dividends in their countries and the return may be further reduced. The stakeholders have requested that withholding tax on dividends should be allowed as a pass through item, especially since the tariff has now been significantly reduced and return on equity allowed for solar projects is significantly lower than coal projects.

9.2 The Authority has carefully considered the contention of the stakeholders that in all the previous upfront tariffs, the Authority allowed return on equity higher than





17% to compensate withholding tax. The Authority observed that the stakeholder's stance is not based on facts. While determining the upfront tariffs on imported coal and LNG where return on equity was less than or equal to 17%, withholding tax was not allowed as Pass-through. Similarly in local coal, Thar coal, and small hydro upfront tariffs, the Authority did not allow the reimbursement of withholding tax on dividend. The decision of the Authority regarding inadmissibility of reimbursement of withholding tax on dividend is consistent with the decision of the Authority in other similar cases; therefore, the Authority has decided to maintain its earlier decision.

10. REVENUE SHARING FOR EXCESS GENERATION

10.1 According to the stakeholders, the provision of revenue sharing in case of generation above the benchmark plant factor is not in accordance with international practice for feed-in/upfront tariffs and is especially unwarranted in a case where the provisions of Section V (vii) Terms & Conditions of the Order apply and the power producer is required to bear the risk of lower irradiation. The stakeholders requested to reconsider the decision in this matter especially where the upfront tariff has been significantly reduced. Such a provision precludes any investment by the sponsors in the efficiency of the plant or the introduction of new technologies and assumes that the projects will be able to achieve efficiencies without any additional capital expenditure. The stakeholders further submitted that aiming for technology which only meets the minimum efficiency benchmarks results in reliance on sub-optimal technology and avoidance of state of the art technologies such as tracking. It would also highlight that this seriously limits the financing options available to project sponsors as they would be unable to avail financing from European or American financial institutions and other agencies providing credit on the basis of equipment from their region. For a country like Pakistan, which has a high risk profile, the aforesaid restriction can have serious consequences for the development of renewable energy power projects. In the scenario that all downside risk is being borne by the power producer, all upside risk should also pass on to the power producer. The stakeholders also highlighted that the calculations for levelized tariff in case of excess energy are confusing. As per our understanding the levelized tariff would reduce from the benchmark level in the presence of a sharing mechanism.

10.2 The Authority has considered the submissions of the stakeholders regarding the sharing mechanism and installation of tracking system with additional investment. The upfront



tariff was determined based on fixed ground mounting structures without tracking system. Accordingly, the existing sharing mechanism was developed. The Authority having considered the argument put forward by the stakeholders feels that the requests for review of sharing mechanism carry weight. The Authority, while agreeing to the stakeholder's contention that the existing sharing mechanism does not encourage the investment in better technology and to encourage efficiency, has decided to revisit its earlier decision. Accordingly, the Authority has decided to modify the sharing mechanism and the excess energy shall be charged in accordance with the following revised mechanism:

Net Annual Plant Capacity Factors	% of the prevalent tariff
Above 16.78%/17.50% to 17.78%/18.50%	75%
Above 17.78%/18.50% to 18.78%/19.50%	80%
Above 18.78%/19.50%	100%

11. DEGRADATION

11.1 According to the stakeholders in the solar tariff determination, degradation up to 0.7% per annum has been allowed which is to be incorporated in the Energy Purchase Agreement ("EPA"). The stakeholders submitted that AEDB is not including this critical clause in the EPA document due to lack of understanding. The stakeholders requested the Authority to clarify to AEDB that tariff adjustment mechanism must be incorporated in the EPA as is allowed to thermal IPPs under PPA's approved by government. The stakeholders also highlighted that due to technology specific parameters the degradation in the 1st year varies between 2.5% to 3.0% and requested to incorporate an appropriate adjustment in the Solar Determination in this regard.

11.2 The issue of degradation has been addressed in the determination dated 22nd January 2015 and actual degradation subject to maximum of 0.7%/annum of initial power was allowed with the condition that degradation shall not be allowed if the generation remains in excess of the benchmark plant capacity factors i.e 17.5% and 16.78% for South and North regions respectively. The following table is provided for illustrative purpose.

Xo= Energy as determined by NEPRA in GWh





End of Year	Energy (GWh) at the busbar
1	$X_1 = X_0$
2	$X_2 = X_1 \times 0.993$
3	$X_3 = X_2 \times 0.993$
4	$X_4 = X_3 \times 0.993$
.....	

- (a) 0.993 corresponds to a degradation factor of 0.7% which will be changed according to the actual degradation in the respective year.
- (b) X_1, X_2, X_3, \dots are energy values at the end of year 1, year 2, year 3 and so on if degradation is allowed subject to conditions to be satisfied as noted above.
- (c) Reference tariff will be correspondingly adjusted in respective years.

12. LEVEL OF INDUCTION

12.1 According to the stakeholders, given the limited timeline for application for acceptance of the tariff and to avoid any delays due to misunderstandings in respect of NTDC's role, following recommendations are proposed for the consideration of the Authority:

- The studies may be carried out by the power producer and reviewed/approved by NTDC.
- For projects interconnecting at 11KV the studies may be reviewed by the relevant distribution company, if the power producer desires.
- A time period may be determined during which NTDC would be required to communicate its recommendations to NEPRA.
- Recommendations on suitability should be limited to power evacuation and interconnection and not the commercial/financial aspects of the project.

12.2 The Authority has carefully examined the recommendations proposed by the Petitioners and considers that some of them are justified. Accordingly the Authority directs the following:





- The studies for power evacuation and interconnections may be carried out by the power producer and reviewed/approved by NTDC/DISCO.
- For projects interconnecting at 11KV the studies may be reviewed by the relevant distribution company.

13. INSPECTION OF PLANT AND EQUIPMENT

13.1 According to the stakeholders, the determination contains provisions for the periodic inspection of the plant and equipment. The stakeholders believed that as long as the project is meeting benchmark energy values within the permissible degradation, there should be no requirement for periodic inspection. The stakeholders requested that the requirement of inspection should be done away with or the cost of inspection should be borne by the off taker.

13.2 The Authority has considered the contention of the petitioners regarding periodic physical inspection. In the opinion of the Authority, the contention raised by the Petitioner is valid and accepted as such. Accordingly, Para iii of the Terms & Conditions regarding periodic physical inspection has been deleted.

14. TIME PERIOD FOR FINANCIAL CLOSE

14.1 Out of six stakeholders only RIAA Law Associate raised this issue. According to the stakeholder, the requirement of financial close within one year may be realistic for PKR financing from the local financial market, however, it would be a very aggressive timeline for projects securing foreign currency financing. The stakeholder requested to consider revising the time available for financial close to projects developing on foreign financing.

14.2 The Authority has considered the stakeholder's request and in its opinion twelve months period for financial close is reasonable for financial close even on foreign currency financing. In view thereof the Authority decided to maintain its earlier decision in this respect.

15. SHARING OF DISCOUNT ON EPC COST

15.1 According to the stakeholders the determination provides that any discount



received by any project would be accounted for and EPC cost will be adjusted downward. We would like to highlight that this is unprecedented and defeats the purpose of determining an upfront tariff. The Authority has not previously included such a provision in upfront tariffs for other technologies such as wind or bagasse. Upfront tariffs are evaluated as a whole by the investor for viability and bankability, with the investor having the option to make up a deficiency in certain aspects of the tariff through better negotiations. The stakeholders requested the Authority to seriously consider removing this provision as it is more in line with a 'cost plus' rather than an upfront tariff.

15.2 The Authority having considered the stakeholders argument noted that the issue has already been resolved through corrigendum dated February 20, 2015.

16. ADJUSTMENT OF DUTIES AND TAXES

16.1 According to the stakeholders, the solar upfront tariff is artificially inflated relative to other technologies as no provision for taxes and duties are included in the EPC costs in other upfront tariffs (e.g. wind or bagasse). Netting off the amount of US\$ 47,365 per MW would reduce the levelized solar tariff. The stakeholders requested that the amount of US\$ 47,365 per MW assumed for duties and taxes may be excluded from the EPC cost and the tariff may be adjusted accordingly.

16.2 The Authority has considered the stakeholders request carefully and it feels that inclusion or exclusion of duties and taxes in the upfront tariff will have no impact on revenue of the stakeholders as the same being a pass-through item has to be considered at any case at the time of Cod on the basis of verifiable documentary evidence. In the opinion of the Authority, no adjustment in the tariff is required at this point of time. At the time of COD, tariff will be adjusted on the basis of actual duties and taxes paid on the basis of verifiable documentary evidence.

17. ADJUSTMENT IN INSURANCE

17.1 According to the stakeholder annual adjustment of insurance as per actual subject to maximum of 1% of the EPC cost is also not aligned with the objectives of determining an upfront tariff. The stakeholder proposed that insurance at 1% of EPC cost for entire tariff term should be applicable with annual indexation for exchange rate unless a project-



specific adjustment is requested by the power producer.

17.2 The insurance adjustment mechanism is consistent with the mechanisms provided in the coal, LNG and Hydro upfront tariffs; therefore, the Authority has decided to maintain its earlier decision.

18. VALIDITY PERIOD

18.1 In the hearing the stakeholders requested that the validity period should start from the date of decision of the Authority in the matter of review petitions instead of notification of the original decision i.e. 3rd March 2015.

18.2 The Authority has considered the request of the stakeholders. In the opinion of the Authority, the request is reasonable and justified. Accordingly, the Authority has decided that the validity of the upfront solar tariff shall be six (6) months from the date of Notification of the following revised Order of the Authority.

19. REVISED ORDER

I. The Authority hereby determines and approves the following upfront tariff and adjustments/indexations for solar power generation for delivery of electricity to the power purchaser based on solar PV power plants:

Specified Reference Tariff

NORTH REGION

Description	$\geq 1 \leq 20$ MW	$> 20 \leq 50$ MW	$> 50 \leq 100$ MW	Indexations
	Rs./kWh	Rs./kWh	Rs./kWh	
O&M	2.5797	2.5797	2.5797	CPI, US CPI, PKR/US\$
Insurance	1.0081	0.9894	0.9707	Actual on annual basis
ROE	5.0186	5.0087	4.9959	PKR/US\$
Debt Servicing (1-10 Years only)	10.5960	10.4327	10.2675	PKR/US\$ & LIBOR/KIBOR
Total Tariff 1-10 Years	19.2025	19.0105	18.8138	
Total Tariff 11-25 Years	8.6065	8.5779	8.5463	
Levelized	15.7793	15.6401	15.4967	
Levelized US¢/kWh	15.0279	14.8953	14.7588	





SOUTH REGION

Description	$\geq 1 \leq 20$ MW	$> 20 \leq 50$ MW	$> 50 \leq 100$ MW	Indexations
	Rs./kWh	Rs./kWh	Rs./kWh	
O&M	2.4736	2.4736	2.4736	CPI, US CPI, PKR/US\$
Insurance	0.9667	0.9487	0.9307	Actual on annual basis
ROE	4.8121	4.8027	4.7903	PKR/US\$
Debt Servicing (1-10 Years only)	10.1601	10.0034	9.8451	PKR/US\$ & LIBOR/KIBOR
Total Tariff 1-10 Years	18.4125	18.2284	18.0397	
Total Tariff 11-25 Years	8.2524	8.2250	8.1947	
Levelized	15.1301	14.9966	14.8591	
Levelized US¢/kWh	14.4096	14.2825	14.1516	

The detailed tariff tables and debt service schedules for each project size are attached as Annexures.

II. ONE TIME ADJUSTMENT AT COD

- i) Since the exact timing of payment to EPC contractor is not known at this point of time, therefore, an adjustment for relevant foreign currency fluctuation for the portion of payment in the relevant foreign currency will be made against the reference exchange rate of Rs. 105/US\$. In this regard the sponsor will be required to provide all the necessary relevant details along with documentary evidence. The adjustment shall be made only for the currency fluctuation against the reference parity values.
- ii) The approved taxes and duties of US\$ 47,365/MW in the EPC cost will be adjusted as per actual at the time of COD stage adjustment of tariff on the basis of verifiable documentary evidence.
- iii) Interest during construction will be reestablished at the time of COD on the basis of actual project financing and actual average LIBOR/KIBOR and applicable premiums.
- iv) In case Sinosure fee or export credit agency fee on foreign financing is payable, the benchmark established in the coal upfront tariff will be applicable subject to





maximum of 7% and appropriate adjustment in the project cost shall be made.

III. ADJUSTMENT IN INSURANCE AS PER ACTUAL

The actual insurance cost for the minimum cover required under contractual obligations with the Power Purchaser not exceeding 1% of the EPC cost will be treated as pass-through. Insurance component of reference tariff shall be adjusted annually as per actual upon production of authentic documentary evidence according to the following formula:

AIC	=	$Ins_{(Ref)} / P_{(Ref)} * P_{(Act)}$
Where		
AIC	=	Adjusted Insurance Component of Tariff
$Ins_{(Ref)}$	=	Reference Insurance Component of Tariff
$P_{(Ref)}$	=	Reference Premium 1% of the EPC cost at Rs. 105/US\$.
$P_{(Act)}$	=	Actual Premium or 1% of the EPC cost in Pak Rupees on exchange rate prevailing on the 1st day of the insurance coverage period whichever is lower

IV. INDEXATIONS:

The following indexations shall be applicable to the reference tariff;

i) INDEXATION OF RETURN ON EQUITY (ROE)

After COD, ROE component of tariff will be quarterly indexed on account of variation in PKR/US\$ parity according to the following formula:

$ROE_{(Rev)}$	=	$ROE_{(Ref)} * ER_{(Rev)} / ER_{(Ref)}$
Where;		
$ROE_{(Rev)}$	=	Revised ROE Component of Tariff
$ROE_{(Ref)}$	=	ROE Component of Tariff established at the time of COD
$ER_{(Rev)}$	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan
$ER_{(Ref)}$	=	Reference Exchange Rate at the time of COD





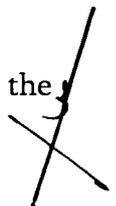
ii) **INDEXATION APPLICABLE TO O&M**

The O&M component of tariff will be adjusted on account of local Inflation (CPI) and foreign inflation (US CPI) and exchange rate quarterly on 1st July, 1st October, 1st January and 1st April based on the latest available information with respect to CPI notified by the Pakistan Bureau of Statistics (PBS), US CPI issued by US Bureau of Labor Statistics and revised TT & OD selling rate of US Dollar notified by the National Bank of Pakistan as per the following mechanism:

L O&M _(REV)	=	L O&M _(REF) * CPI _(REV) / CPI _(REF)
F O&M _(REV)	=	FO&M _(REF) * US CPI _(REV) / US CPI _(REF) * ER _(REV) /ER _(REF)
Where:		
L O&M _(REV)	=	the revised applicable O&M Local Component of tariff
F O&M _(REV)	=	the revised applicable O&M Foreign Component of tariff
L O&M _(REF)	=	the reference local O&M component of tariff for North Region Rs. 0.3572/kWh and for South Region Rs. 0.3425/kWh
F O&M _(REF)	=	the reference foreign O&M component of tariff for North Region Rs. 2.2226/kWh and for South Region Rs. 2.1311/kWh
CPI _(REV)	=	the revised Consumer Price Index (General) published by Pakistan Bureau of Statistics.
CPI _(REF)	=	the reference Consumer Price Index (General) of 198.700 for the month of August 2014
US CPI _(REV)	=	the revised US CPI (All Urban Consumers) published by US Bureau of Labor Statistics
US CPI _(REF)	=	the reference US CPI (All Urban Consumers) of 237.852 for the month of August 2014
ER _(REV)	=	the revised TT & OD selling rate of US dollar published by National Bank of Pakistan
ER _(REF)	=	the reference TT & OD selling rate of RS. 105/US dollar

iii) **INDEXATION FOR LIBOR VARIATION**

The interest part of fixed charge component will remain unchanged throughout the



term except for the adjustment due to variation in interest rate as a result of variation in 3 months LIBOR according to the following formula;

ΔI	=	$P_{(REV)} * (LIBOR_{(REV)} - 0.31\%) / 4$
Where:		
ΔI	=	the variation in interest charges applicable corresponding to variation in 3 months LIBOR. ΔI can be positive or negative depending upon whether $LIBOR_{(REV)}$ is > or < 0.31%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment applicable on quarterly basis.
$P_{(REV)}$	=	The outstanding principal (as indicated in the attached debt service schedule to this order) on a quarterly basis on the relevant quarterly calculation date. Period 1 shall commence on the date on which the 1 st installment is due after availing the grace period.

V. TERMS AND CONDITIONS OF TARIFF

The above tariff and terms and conditions, stipulated hereunder, shall be incorporated in the Energy Purchase Agreement between the Power Purchaser and the Power Producer:

- i. All plant and equipment shall be new and shall be designed, manufactured and tested in accordance with the latest IEC standards or other equivalent standards.
- ii. The verification of the new machinery will be done by the independent engineer at the time of the commissioning of the plant duly verified by the power purchaser.
- iii. The companies interested in availing upfront tariff will submit unconditional formal application to NEPRA for approval by the Authority in accordance with the NEPRA Upfront Tariff (Approval and Procedure) Regulations 2011.
- iv. Plant Capacity factors for north and south regions will be 16.78% and 17.5% respectively.



- v. In case the actual output exceeds the minimum output, the excess energy shall be charged in accordance with the following mechanism:

Net Annual Plant Capacity Factors	% of the prevalent tariff
Above 16.78%/17.50% to 17.78%/18.50%	75%
Above 17.78%/18.50% to 18.78%/19.50%	80%
Above 18.78%/19.50%	100%

- vi. The risk of lower solar irradiation will be on the power producer.
- vii. The choice to opt for upfront tariff will be available up to 6 months from the date of its notification of this Revised Order in the Official Gazette.
- viii. The applicant will have to achieve financial close within one year from the date of approval of the upfront tariff in favor of the applicant. The upfront tariff granted to the applicant will no longer remain applicable/valid, if financial close is not achieved by the applicant within the stipulated time or generation license is declined to the applicant.
- ix. The tariff control period will be 25 years from the date of commercial operation.
- x. The dispatch will be at appropriate voltage level from 11kV to 220kV mutually agreed between the power purchaser and the power producer.
- xi. The targeted maximum construction period after financial close is 8 months, 10 months and 12 months for $\geq 1\text{MW} \leq 20\text{MW}$, $> 20\text{MW} \leq 50\text{MW}$ and $> 50\text{MW} \leq 100\text{MW}$ projects respectively. No adjustment will be allowed in this tariff to account for financial impact of any delay in project construction. However, the failure of the applicant to complete construction within the stipulated time will not invalidate the tariff granted to it.
- xii. The eligibility criteria for opting upfront solar tariff will be as under:
- a. The projects holding valid Letter of Intent (LOI) from AEDB/provincial Government agencies.

- b. The projects whose proposed plant & machinery is confirmed to be new as per undertaking/affidavit to be provided by the project sponsors along with their applications to the Authority for acceptance of upfront tariff.
- c. The projects having obtained the approval of NTDC/DISCO for Grid connectivity and simulation studies to the effect that solar based power will be evacuated in accordance with the project timeline and further that the power injected through the project will not have any adverse effect on the national grid as required under the Grid Code.
- xiii. Actual degradation subject to maximum of 0.7%/annum of initial power shall be allowed with the condition that degradation shall not be applicable if the generation remains in excess of the benchmark plant capacity factors i.e. 17.5% and 16.78% for South and North regions respectively. The following table is provided for illustrative purpose.

X₀= Energy as determined by NEPRA in GWh

End of Year	Energy (GWh) at the busbar
1	$X_1 = X_0$
2	$X_2 = X_1 \times 0.993$
3	$X_3 = X_2 \times 0.993$
4	$X_4 = X_3 \times 0.993$
.....	

- (a) 0.993 corresponds to a degradation factor of 0.7% which will be changed according to the actual degradation in the respective year.
- (b) X₁, X₂, X₃, ... are energy values at the end of year 1, year 2, year 3 and so on if degradation is allowed subject to conditions to be satisfied as noted above.
- (c) Reference tariff will be correspondingly adjusted in respective years.



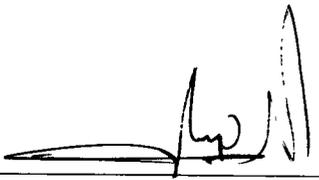
- xiv. Pre COD sale of electricity to the power purchaser, if any, shall be allowed subject to the terms and conditions of EPA, at the applicable tariff excluding principal repayment of debt component and interest component.
- xv. In the Upfront Tariff no adjustment for certified emission reductions has been accounted for. However, upon actual realization of carbon credits, the same shall be distributed between the power purchaser and the power producer in accordance with the Policy for Development of Renewable Energy for Power Generation 2006, as amended from time to time.
- xvi. The decision to opt for upfront tariff once exercised will be irrevocable.
- xvii. Debt part of the project financing has been assumed on foreign financing. However, the debt part of the project can also be financed through local financing or mix of local and foreign financing and the debt servicing component will be adjusted accordingly.
- xviii. The adjustment/indexation of upfront tariff will be made on the basis of benchmarks assumed by the Authority for Upfront Tariff in accordance with the indexation mechanism stipulated herein above and respective Upfront Tariff will be applicable to the solar PV projects coming under the Upfront Tariff regime. No project specific adjustments shall be taken into account.
- xix. No provision for income tax, workers profit participation fund and workers welfare fund, any other tax, custom/excise duty or other duty, levy, charge, surcharge or other governmental impositions, payable on the generation, sales, exploration has been accounted for in the tariff except as provided under Para 14(II)(ii) of the decision of the Authority dated 22-1-2015. If the company is obligated to pay any tax the exact amount will be reimbursed by CPPA/DISCO on production of original receipts. However, withholding tax on dividend will not be passed through under this tariff.
- xx. General assumptions, which are not covered in this determination and National Electric Power Regulatory Authority Upfront Tariff (Approval & Procedure) Regulations, 2011, may be dealt with as per the standard terms of the Energy Purchase Agreement.



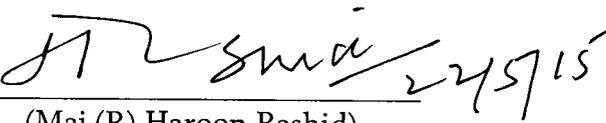


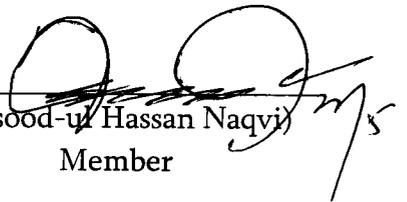
- VI. Any benefits accruing under this revised Order of the Authority shall also be applicable to those companies which have opted for upfront solar PV tariff notified vide SRO No. 183(I)/2015 dated 3rd March 2015.
- VII. The above Order of the Authority along with 12 Annexes will be notified in the Official Gazette in terms of Section 31(4) of the Regulations of Generation, Transmission and Distribution of Electric Power Act, 1997.

Authority

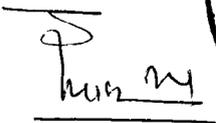

22.5.15
(Khawaja Muhammad Naeem)
Member


(Himayat Ullah Khan)
Member


22/5/15
(Maj (R) Haroon Rashid)
Vice Chairman


(Masood-ul Hassan Naqvi)
Member


22/5/15
(Brig (R) Tariq Sadozai)
Chairman


25.05.15


**Upfront Solar Tariff >1MW≤20MW
Reference Tariff Table (North Region)**

Year	O&M	Insurance	Return on Equity	Debt Servicing	Total Tariff	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs. per kWh	¢ per kWh
1	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
2	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
3	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
4	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
5	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
6	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
7	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
8	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
9	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
10	2.5797	1.0081	5.0186	10.5960	19.2025	18.2881
11	2.5797	1.0081	5.0186	-	8.6065	8.1967
12	2.5797	1.0081	5.0186	-	8.6065	8.1967
13	2.5797	1.0081	5.0186	-	8.6065	8.1967
14	2.5797	1.0081	5.0186	-	8.6065	8.1967
15	2.5797	1.0081	5.0186	-	8.6065	8.1967
16	2.5797	1.0081	5.0186	-	8.6065	8.1967
17	2.5797	1.0081	5.0186	-	8.6065	8.1967
18	2.5797	1.0081	5.0186	-	8.6065	8.1967
19	2.5797	1.0081	5.0186	-	8.6065	8.1967
20	2.5797	1.0081	5.0186	-	8.6065	8.1967
21	2.5797	1.0081	5.0186	-	8.6065	8.1967
22	2.5797	1.0081	5.0186	-	8.6065	8.1967
23	2.5797	1.0081	5.0186	-	8.6065	8.1967
24	2.5797	1.0081	5.0186	-	8.6065	8.1967
25	2.5797	1.0081	5.0186	-	8.6065	8.1967
Levelized	2.5797	1.0081	5.0186	7.1728	15.7793	15.0279

Installed Capacity (MWp)	20.000
Minimum Annual Energy (GWh)	29.399
CPI (General) August 2014	198.700
US CPI (All Urban Consumers) August 2014	237.852
Exchange Rate (Rs./US\$)	105.000



**Upfront Solar Tariff >1MW≤20MW
Debt Servicing Schedule**

Period	Foreign Debt					Annual Principal Repayment	Annual Interest	Annual Debt Servicing
	Principal	Repayment	Mark-up	Balance	Debt Service			
	US\$/MW	US\$/MW	US\$/MW	US\$/MW	US\$/MW			
1	1,172,077	22,990	14,094	1,149,087	37,084	6.69	3.91	10.5960
	1,149,087	23,267	13,818	1,125,821	37,084			
	1,125,821	23,546	13,538	1,102,274	37,084			
	1,102,274	23,829	13,255	1,078,445	37,084			
	1,172,077	93,632	54,705	1,078,445	148,337			
	1,078,445	24,116	12,968	1,054,329	37,084			
	1,054,329	24,406	12,678	1,029,923	37,084			
2	1,029,923	24,699	12,385	1,005,223	37,084	7.02	3.58	10.5960
	1,005,223	24,997	12,088	980,227	37,084			
	1,078,445	98,218	50,119	980,227	148,337			
	980,227	25,297	11,787	954,930	37,084			
3	954,930	25,601	11,483	929,328	37,084	7.36	3.24	10.5960
	929,328	25,909	11,175	903,419	37,084			
	903,419	26,221	10,864	877,199	37,084			
	980,227	103,028	45,309	877,199	148,337			
	877,199	26,536	10,548	850,663	37,084			
4	850,663	26,855	10,229	823,807	37,084	7.72	2.88	10.5960
	823,807	27,178	9,906	796,629	37,084			
	796,629	27,505	9,579	769,125	37,084			
	877,199	108,074	40,263	769,125	148,337			
	769,125	27,836	9,249	741,289	37,084			
	741,289	28,170	8,914	713,119	37,084			
5	713,119	28,509	8,575	684,610	37,084	8.10	2.50	10.5960
	684,610	28,852	8,232	655,758	37,084			
	769,125	113,367	34,970	655,758	148,337			
	655,758	29,199	7,885	626,559	37,084			
	626,559	29,550	7,534	597,009	37,084			
	597,009	29,905	7,179	567,104	37,084			
6	567,104	30,265	6,819	536,839	37,084	8.49	2.10	10.5960
	655,758	118,919	29,418	536,839	148,337			
	536,839	30,629	6,455	506,210	37,084			
	506,210	30,997	6,087	475,213	37,084			
	475,213	31,370	5,714	443,843	37,084			
7	443,843	31,747	5,337	412,096	37,084	8.91	1.69	10.5960
	536,839	124,743	23,594	412,096	148,337			
	412,096	32,129	4,955	379,967	37,084			
	379,967	32,515	4,569	347,452	37,084			
	347,452	32,906	4,178	314,545	37,084			
	314,545	33,302	3,782	281,244	37,084			
8	412,096	130,852	17,485	281,244	148,337	9.35	1.25	10.5960
	281,244	33,702	3,382	247,541	37,084			
	247,541	34,108	2,977	213,434	37,084			
	213,434	34,518	2,567	178,916	37,084			
	178,916	34,933	2,151	143,983	37,084			
9	281,244	137,261	11,077	143,983	148,337	9.80	0.79	10.5960
	143,983	35,353	1,731	108,630	37,084			
	108,630	35,778	1,306	72,852	37,084			
	72,852	36,208	876	36,644	37,084			
	36,644	36,644	441	0	37,084			
10	143,983	143,983	4,354	0	148,337	10.28	0.31	10.5960

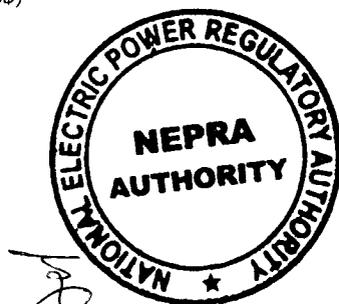
20



**Upfront Solar Tariff >20MW<50MW
Reference Tariff Table (North Region)**

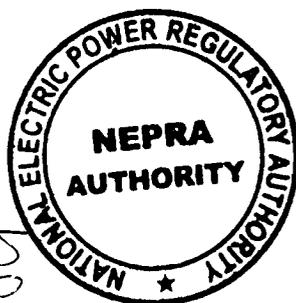
Year	O&M	Insurance	Return on Equity	Debt Servicing	Total Tariff	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs. per kWh	¢ per kWh
1	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
2	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
3	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
4	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
5	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
6	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
7	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
8	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
9	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
10	2.5797	0.9894	5.0087	10.4327	19.0105	18.1053
11	2.5797	0.9894	5.0087	-	8.5779	8.1694
12	2.5797	0.9894	5.0087	-	8.5779	8.1694
13	2.5797	0.9894	5.0087	-	8.5779	8.1694
14	2.5797	0.9894	5.0087	-	8.5779	8.1694
15	2.5797	0.9894	5.0087	-	8.5779	8.1694
16	2.5797	0.9894	5.0087	-	8.5779	8.1694
17	2.5797	0.9894	5.0087	-	8.5779	8.1694
18	2.5797	0.9894	5.0087	-	8.5779	8.1694
19	2.5797	0.9894	5.0087	-	8.5779	8.1694
20	2.5797	0.9894	5.0087	-	8.5779	8.1694
21	2.5797	0.9894	5.0087	-	8.5779	8.1694
22	2.5797	0.9894	5.0087	-	8.5779	8.1694
23	2.5797	0.9894	5.0087	-	8.5779	8.1694
24	2.5797	0.9894	5.0087	-	8.5779	8.1694
25	2.5797	0.9894	5.0087	-	8.5779	8.1694
Levelized	2.5797	0.9894	5.0087	7.0622	15.6401	14.8953

Installed Capacity (MWp)	50.000
Minimum Annual Energy (GWh)	73.496
CPI (General) August 2014	198.700
US CPI (All Urban Consumers) August 2014	237.852
Exchange Rate (Rs./US\$)	105.000



**Upfront Solar Tariff >20MW≤50MW
Debt Servicing Schedule**

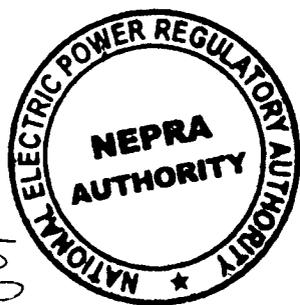
Period	Foreign Debt					Annual Principal Repayment	Annual Interest	Annual Debt Servicing
	Principal	Repayment	Mark-up	Balance	Debt Service			
	US\$/MW	US\$/MW	US\$/MW	US\$/MW	US\$/MW			
1	1,154,005	22,636	13,877	1,131,369	36,513	6.59	3.85	10.4327
	1,131,369	22,908	13,605	1,108,462	36,513			
	1,108,462	23,183	13,329	1,085,278	36,513			
	1,085,278	23,462	13,050	1,061,816	36,513			
	1,154,005	92,189	53,861	1,061,816	146,050			
	1,061,816	23,744	12,768	1,038,072	36,513			
2	1,038,072	24,030	12,483	1,014,042	36,513	6.91	3.52	10.4327
	1,014,042	24,319	12,194	989,724	36,513			
	989,724	24,611	11,901	965,113	36,513			
	1,061,816	96,704	49,346	965,113	146,050			
	965,113	24,907	11,605	940,206	36,513			
	940,206	25,207	11,306	914,999	36,513			
3	914,999	25,510	11,003	889,489	36,513	7.25	3.19	10.4327
	889,489	25,816	10,696	863,673	36,513			
	965,113	101,440	44,610	863,673	146,050			
	863,673	26,127	10,386	837,546	36,513			
	837,546	26,441	10,071	811,105	36,513			
	811,105	26,759	9,754	784,346	36,513			
4	784,346	27,081	9,432	757,265	36,513	7.60	2.83	10.4327
	863,673	106,408	39,642	757,265	146,050			
	757,265	27,406	9,106	729,859	36,513			
	729,859	27,736	8,777	702,123	36,513			
	702,123	28,069	8,443	674,054	36,513			
	674,054	28,407	8,105	645,647	36,513			
5	757,265	111,619	34,431	645,647	146,050	7.97	2.46	10.4327
	645,647	28,749	7,764	616,898	36,513			
	616,898	29,094	7,418	587,804	36,513			
	587,804	29,444	7,068	558,359	36,513			
	558,359	29,798	6,714	528,561	36,513			
	645,647	117,085	28,965	528,561	146,050			
6	528,561	30,157	6,356	498,405	36,513	8.36	2.07	10.4327
	498,405	30,519	5,993	467,885	36,513			
	467,885	30,886	5,626	436,999	36,513			
	436,999	31,258	5,255	405,742	36,513			
	528,561	122,820	23,231	405,742	146,050			
	405,742	31,633	4,879	374,108	36,513			
7	374,108	32,014	4,499	342,094	36,513	8.77	1.66	10.4327
	342,094	32,399	4,114	309,695	36,513			
	309,695	32,788	3,724	276,907	36,513			
	405,742	128,835	17,215	276,907	146,050			
	276,907	33,183	3,330	243,724	36,513			
	243,724	33,582	2,931	210,143	36,513			
8	210,143	33,986	2,527	176,157	36,513	9.20	1.23	10.4327
	176,157	34,394	2,118	141,763	36,513			
	276,907	135,144	10,906	141,763	146,050			
	141,763	34,808	1,705	106,955	36,513			
	106,955	35,226	1,286	71,729	36,513			
	71,729	35,650	863	36,079	36,513			
9	36,079	36,079	434	(0)	36,513	9.65	0.78	10.4327
	141,763	141,763	4,287	(0)	146,050			
	141,763	141,763	4,287	(0)	146,050			
10	141,763	141,763	4,287	(0)	146,050	10.13	0.31	10.4327



**Upfront Solar Tariff for >50MW≤100MW
Reference Tariff Table (North Region)**

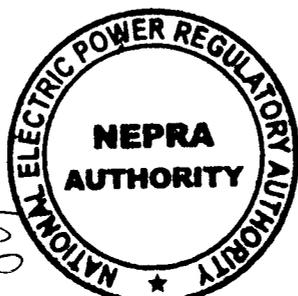
Year	O&M	Insurance	Return on Equity	Debt Servicing	Total Tariff	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs. per kWh	¢ per kWh
1	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
2	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
3	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
4	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
5	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
6	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
7	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
8	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
9	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
10	2.5797	0.9707	4.9959	10.2675	18.8138	17.9179
11	2.5797	0.9707	4.9959	-	8.5463	8.1393
12	2.5797	0.9707	4.9959	-	8.5463	8.1393
13	2.5797	0.9707	4.9959	-	8.5463	8.1393
14	2.5797	0.9707	4.9959	-	8.5463	8.1393
15	2.5797	0.9707	4.9959	-	8.5463	8.1393
16	2.5797	0.9707	4.9959	-	8.5463	8.1393
17	2.5797	0.9707	4.9959	-	8.5463	8.1393
18	2.5797	0.9707	4.9959	-	8.5463	8.1393
19	2.5797	0.9707	4.9959	-	8.5463	8.1393
20	2.5797	0.9707	4.9959	-	8.5463	8.1393
21	2.5797	0.9707	4.9959	-	8.5463	8.1393
22	2.5797	0.9707	4.9959	-	8.5463	8.1393
23	2.5797	0.9707	4.9959	-	8.5463	8.1393
24	2.5797	0.9707	4.9959	-	8.5463	8.1393
25	2.5797	0.9707	4.9959	-	8.5463	8.1393
Levelized	2.5797	0.9707	4.9959	6.9504	15.4967	14.7588

Installed Capacity (MWp) 100.000
 Minimum Annual Energy (GWh) 146.993
 CPI (General) August 2014 198.700
 US CPI (All Urban Consumers) August 2014 237.852
 Exchange Rate (Rs./US\$) 105.000



**Upfront Solar Tariff for >50MW≤100MW
Debt Servicing Schedule**

Period	Foreign Debt					Annual Principal Repayment	Annual Interest	Annual Debt Servicing
	Principal	Repayment	Mark-up	Balance	Debt Service			
	US\$/MW	US\$/MW	US\$/MW	US\$/MW	US\$/MW			
1	1,135,736	22,277	13,657	1,113,459	35,934	6.48	3.79	10.2675
	1,113,459	22,545	13,389	1,090,913	35,934			
	1,090,913	22,816	13,118	1,068,097	35,934			
	1,068,097	23,091	12,844	1,045,007	35,934			
	1,135,736	90,729	53,009	1,045,007	143,738			
	1,045,007	23,368	12,566	1,021,638	35,934			
	1,021,638	23,649	12,285	997,989	35,934			
2	997,989	23,934	12,001	974,055	35,934	6.80	3.47	10.2675
	974,055	24,221	11,713	949,834	35,934			
	1,045,007	95,173	48,565	949,834	143,738			
	949,834	24,513	11,422	925,321	35,934			
	925,321	24,807	11,127	900,514	35,934			
3	900,514	25,106	10,829	875,408	35,934	7.13	3.14	10.2675
	875,408	25,408	10,527	850,000	35,934			
	949,834	99,834	43,904	850,000	143,738			
	850,000	25,713	10,221	824,287	35,934			
	824,287	26,022	9,912	798,264	35,934			
4	798,264	26,335	9,599	771,929	35,934	7.48	2.79	10.2675
	771,929	26,652	9,282	745,277	35,934			
	850,000	104,723	39,015	745,277	143,738			
	745,277	26,973	8,962	718,305	35,934			
	718,305	27,297	8,638	691,008	35,934			
5	691,008	27,625	8,309	663,383	35,934	7.85	2.42	10.2675
	663,383	27,957	7,977	635,425	35,934			
	745,277	109,852	33,886	635,425	143,738			
	635,425	28,293	7,641	607,132	35,934			
	607,132	28,634	7,301	578,498	35,934			
6	578,498	28,978	6,956	549,520	35,934	8.23	2.04	10.2675
	549,520	29,327	6,608	520,193	35,934			
	635,425	115,232	28,506	520,193	143,738			
	520,193	29,679	6,255	490,514	35,934			
	490,514	30,036	5,898	460,478	35,934			
7	460,478	30,397	5,537	430,081	35,934	8.63	1.63	10.2675
	430,081	30,763	5,172	399,318	35,934			
	520,193	120,875	22,863	399,318	143,738			
	399,318	31,133	4,802	368,186	35,934			
	368,186	31,507	4,427	336,679	35,934			
8	336,679	31,886	4,049	304,793	35,934	9.06	1.21	10.2675
	304,793	32,269	3,665	272,523	35,934			
	399,318	126,795	16,943	272,523	143,738			
	272,523	32,657	3,277	239,866	35,934			
	239,866	33,050	2,884	206,816	35,934			
9	206,816	33,448	2,487	173,368	35,934	9.50	0.77	10.2675
	173,368	33,850	2,085	139,519	35,934			
	272,523	133,005	10,733	139,519	143,738			
	139,519	34,257	1,678	105,262	35,934			
	105,262	34,669	1,266	70,593	35,934			
10	70,593	35,086	849	35,508	35,934	9.97	0.30	10.2675
	35,508	35,508	427	-	35,934			
	139,519	139,519	4,219	-	143,738			



**Upfront Solar Tariff for >1MW≤20MW
Reference Tariff Table (South Region)**

Year	O&M	Insurance	Return on Equity	Debt Servicing	Total Tariff	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs. per kWh	¢ per kWh
1	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
2	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
3	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
4	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
5	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
6	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
7	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
8	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
9	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
10	2.4736	0.9667	4.8121	10.1601	18.4125	17.5357
11	2.4736	0.9667	4.8121	-	8.2524	7.8594
12	2.4736	0.9667	4.8121	-	8.2524	7.8594
13	2.4736	0.9667	4.8121	-	8.2524	7.8594
14	2.4736	0.9667	4.8121	-	8.2524	7.8594
15	2.4736	0.9667	4.8121	-	8.2524	7.8594
16	2.4736	0.9667	4.8121	-	8.2524	7.8594
17	2.4736	0.9667	4.8121	-	8.2524	7.8594
18	2.4736	0.9667	4.8121	-	8.2524	7.8594
19	2.4736	0.9667	4.8121	-	8.2524	7.8594
20	2.4736	0.9667	4.8121	-	8.2524	7.8594
21	2.4736	0.9667	4.8121	-	8.2524	7.8594
22	2.4736	0.9667	4.8121	-	8.2524	7.8594
23	2.4736	0.9667	4.8121	-	8.2524	7.8594
24	2.4736	0.9667	4.8121	-	8.2524	7.8594
25	2.4736	0.9667	4.8121	-	8.2524	7.8594
Levelized	2.4736	0.9667	4.8121	6.8777	15.1301	14.4096

Installed Capacity (MWp)	20.000
Minimum Annual Energy (GWh)	30.660
CPI (General) August 2014	198.700
US CPI (All Urban Consumers) August 2014	237.852
Exchange Rate (Rs./US\$)	105.000



**Upfront Solar Tariff for >1MW≤20MW
Debt Servicing Schedule**

Period	Foreign Debt					Annual Principal Repayment	Annual Interest	Annual Debt Servicing
	Principal	Repayment	Mark-up	Balance	Debt Service			
	US\$/MW	US\$/MW	US\$/MW	US\$/MW	US\$/MW			
1	1,172,077	22,990	14,094	1,149,087	37,084	6.41	3.75	10.1601
	1,149,087	23,267	13,818	1,125,821	37,084			
	1,125,821	23,546	13,538	1,102,274	37,084			
	1,102,274	23,829	13,255	1,078,445	37,084			
	1,172,077	93,632	54,705	1,078,445	148,337			
	1,078,445	24,116	12,968	1,054,329	37,084			
	1,054,329	24,406	12,678	1,029,923	37,084			
2	1,029,923	24,699	12,385	1,005,223	37,084	6.73	3.43	10.1601
	1,005,223	24,997	12,088	980,227	37,084			
	1,078,445	98,218	50,119	980,227	148,337			
	980,227	25,297	11,787	954,930	37,084			
	954,930	25,601	11,483	929,328	37,084			
	929,328	25,909	11,175	903,419	37,084			
	903,419	26,221	10,864	877,199	37,084			
3	980,227	103,028	45,309	877,199	148,337	7.06	3.10	10.1601
	877,199	26,536	10,548	850,663	37,084			
	850,663	26,855	10,229	823,807	37,084			
	823,807	27,178	9,906	796,629	37,084			
	796,629	27,505	9,579	769,125	37,084			
	877,199	108,074	40,263	769,125	148,337			
	769,125	27,836	9,249	741,289	37,084			
4	741,289	28,170	8,914	713,119	37,084	7.40	2.76	10.1601
	713,119	28,509	8,575	684,610	37,084			
	684,610	28,852	8,232	655,758	37,084			
	769,125	113,367	34,970	655,758	148,337			
	655,758	29,199	7,885	626,559	37,084			
	626,559	29,550	7,534	597,009	37,084			
	597,009	29,905	7,179	567,104	37,084			
5	567,104	30,265	6,819	536,839	37,084	7.76	2.40	10.1601
	655,758	118,919	29,418	536,839	148,337			
	536,839	30,629	6,455	506,210	37,084			
	506,210	30,997	6,087	475,213	37,084			
	475,213	31,370	5,714	443,843	37,084			
	443,843	31,747	5,337	412,096	37,084			
	536,839	124,743	23,594	412,096	148,337			
6	412,096	32,129	4,955	379,967	37,084	8.15	2.01	10.1601
	379,967	32,515	4,569	347,452	37,084			
	347,452	32,906	4,178	314,545	37,084			
	314,545	33,302	3,782	281,244	37,084			
	412,096	130,852	17,485	281,244	148,337			
	281,244	33,702	3,382	247,541	37,084			
	247,541	34,108	2,977	213,434	37,084			
7	213,434	34,518	2,567	178,916	37,084	8.54	1.62	10.1601
	178,916	34,933	2,151	143,983	37,084			
	281,244	137,261	11,077	143,983	148,337			
	143,983	35,353	1,731	108,630	37,084			
	108,630	35,778	1,306	72,852	37,084			
	72,852	36,208	876	36,644	37,084			
	36,644	36,644	441	0	37,084			
8	143,983	143,983	4,354	0	148,337	9.86	0.30	10.1601
	143,983	143,983	4,354	0	148,337			
	143,983	143,983	4,354	0	148,337			



**Upfront Solar Tariff for >20MW≤50MW
Reference Tariff Table (South Region)**

Year	O&M	Insurance	Return on Equity	Debt Servicing	Total Tariff	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs. per kWh	¢ per kWh
1	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
2	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
3	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
4	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
5	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
6	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
7	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
8	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
9	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
10	2.4736	0.9487	4.8027	10.0034	18.2284	17.3604
11	2.4736	0.9487	4.8027	-	8.2250	7.8333
12	2.4736	0.9487	4.8027	-	8.2250	7.8333
13	2.4736	0.9487	4.8027	-	8.2250	7.8333
14	2.4736	0.9487	4.8027	-	8.2250	7.8333
15	2.4736	0.9487	4.8027	-	8.2250	7.8333
16	2.4736	0.9487	4.8027	-	8.2250	7.8333
17	2.4736	0.9487	4.8027	-	8.2250	7.8333
18	2.4736	0.9487	4.8027	-	8.2250	7.8333
19	2.4736	0.9487	4.8027	-	8.2250	7.8333
20	2.4736	0.9487	4.8027	-	8.2250	7.8333
21	2.4736	0.9487	4.8027	-	8.2250	7.8333
22	2.4736	0.9487	4.8027	-	8.2250	7.8333
23	2.4736	0.9487	4.8027	-	8.2250	7.8333
24	2.4736	0.9487	4.8027	-	8.2250	7.8333
25	2.4736	0.9487	4.8027	-	8.2250	7.8333
Levelized	2.4736	0.9487	4.8027	6.7717	14.9966	14.2825

Installed Capacity (MWp)	50.000
Minimum Annual Energy (GWh)	76.650
CPI (General) August 2014	198.700
US CPI (All Urban Consumers) August 2014	237.852
Exchange Rate (Rs./US\$)	105.000



**Upfront Solar Tariff for >20MW≤50MW
Debt Servicing Schedule**

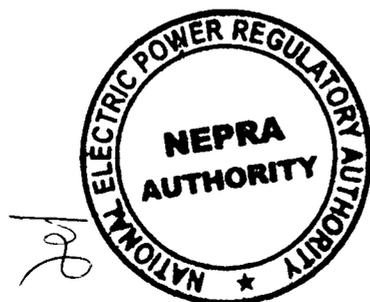
Period	Foreign Debt					Annual Principal Repayment	Annual Interest	Annual Debt Servicing
	Principal	Repayment	Mark-up	Balance	Debt Service			
	US\$/MW	US\$/MW	US\$/MW	US\$/MW	US\$/MW			
1	1,154,005	22,636	13,877	1,131,369	36,513	6.31	3.69	10.0034
	1,131,369	22,908	13,605	1,108,462	36,513			
	1,108,462	23,183	13,329	1,085,278	36,513			
	1,085,278	23,462	13,050	1,061,816	36,513			
	1,154,005	92,189	53,861	1,061,816	146,050			
	1,061,816	23,744	12,768	1,038,072	36,513			
	1,038,072	24,030	12,483	1,014,042	36,513			
2	1,014,042	24,319	12,194	989,724	36,513	6.62	3.38	10.0034
	989,724	24,611	11,901	965,113	36,513			
	1,061,816	96,704	49,346	965,113	146,050			
	965,113	24,907	11,605	940,206	36,513			
	940,206	25,207	11,306	914,999	36,513			
3	914,999	25,510	11,003	889,489	36,513	6.95	3.06	10.0034
	889,489	25,816	10,696	863,673	36,513			
	965,113	101,440	44,610	863,673	146,050			
	863,673	26,127	10,386	837,546	36,513			
	837,546	26,441	10,071	811,105	36,513			
4	811,105	26,759	9,754	784,346	36,513	7.29	2.72	10.0034
	784,346	27,081	9,432	757,265	36,513			
	863,673	106,408	39,642	757,265	146,050			
	757,265	27,406	9,106	729,859	36,513			
	729,859	27,736	8,777	702,123	36,513			
5	702,123	28,069	8,443	674,054	36,513	7.65	2.36	10.0034
	674,054	28,407	8,105	645,647	36,513			
	757,265	111,619	34,431	645,647	146,050			
	645,647	28,749	7,764	616,898	36,513			
	616,898	29,094	7,418	587,804	36,513			
6	587,804	29,444	7,068	558,359	36,513	8.02	1.98	10.0034
	558,359	29,798	6,714	528,561	36,513			
	645,647	117,085	28,965	528,561	146,050			
	528,561	30,157	6,356	498,405	36,513			
	498,405	30,519	5,993	467,885	36,513			
7	467,885	30,886	5,626	436,999	36,513	8.41	1.59	10.0034
	436,999	31,258	5,255	405,742	36,513			
	528,561	122,820	23,231	405,742	146,050			
	405,742	31,633	4,879	374,108	36,513			
	374,108	32,014	4,499	342,094	36,513			
8	342,094	32,399	4,114	309,695	36,513	8.82	1.18	10.0034
	309,695	32,788	3,724	276,907	36,513			
	405,742	128,835	17,215	276,907	146,050			
	276,907	33,183	3,330	243,724	36,513			
	243,724	33,582	2,931	210,143	36,513			
9	210,143	33,986	2,527	176,157	36,513	9.26	0.75	10.0034
	176,157	34,394	2,118	141,763	36,513			
	276,907	135,144	10,906	141,763	146,050			
	141,763	34,808	1,705	106,955	36,513			
	106,955	35,226	1,286	71,729	36,513			
10	71,729	35,650	863	36,079	36,513	9.71	0.29	10.0034
	36,079	36,079	434	(0)	36,513			
	141,763	141,763	4,287	(0)	146,050			



**Upfront Solar Tariff for >50MW≤100MW
Reference Tariff Table (South Region)**

Year	O&M	Insurance	Return on Equity	Debt Servicing	Total Tariff	
	Rs./kWh	Rs./kWh	Rs./kWh	Rs./kWh	Rs. per kWh	¢ per kWh
1	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
2	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
3	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
4	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
5	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
6	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
7	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
8	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
9	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
10	2.4736	0.9307	4.7903	9.8451	18.0397	17.1807
11	2.4736	0.9307	4.7903	-	8.1947	7.8044
12	2.4736	0.9307	4.7903	-	8.1947	7.8044
13	2.4736	0.9307	4.7903	-	8.1947	7.8044
14	2.4736	0.9307	4.7903	-	8.1947	7.8044
15	2.4736	0.9307	4.7903	-	8.1947	7.8044
16	2.4736	0.9307	4.7903	-	8.1947	7.8044
17	2.4736	0.9307	4.7903	-	8.1947	7.8044
18	2.4736	0.9307	4.7903	-	8.1947	7.8044
19	2.4736	0.9307	4.7903	-	8.1947	7.8044
20	2.4736	0.9307	4.7903	-	8.1947	7.8044
21	2.4736	0.9307	4.7903	-	8.1947	7.8044
22	2.4736	0.9307	4.7903	-	8.1947	7.8044
23	2.4736	0.9307	4.7903	-	8.1947	7.8044
24	2.4736	0.9307	4.7903	-	8.1947	7.8044
25	2.4736	0.9307	4.7903	-	8.1947	7.8044
Levelized	2.4736	0.9307	4.7903	6.6645	14.8591	14.1516

Installed Capacity (MWp)	100.000
Minimum Annual Energy (GWh)	153.300
CPI (General) August 2014	198.700
US CPI (All Urban Consumers) August 2014	237.852
Exchange Rate (Rs./US\$)	105.000



**Upfront Solar Tariff for >50MW≤100MW
Debt Servicing Schedule**

Period	Foreign Debt					Annual Principal Repayment	Annual Interest	Annual Debt Servicing
	Principal	Repayment	Mark-up	Balance	Debt Service			
	US\$/MW	US\$/MW	US\$/MW	US\$/MW	US\$/MW			
					Rs./kWh	Rs./kWh	Rs./kWh	
1	1,135,736	22,277	13,657	1,113,459	35,934	6.21	3.63	9.8451
	1,113,459	22,545	13,389	1,090,913	35,934			
	1,090,913	22,816	13,118	1,068,097	35,934			
	1,068,097	23,091	12,844	1,045,007	35,934			
	1,135,736	90,729	53,009	1,045,007	143,738			
	1,045,007	23,368	12,566	1,021,638	35,934			
	1,021,638	23,649	12,285	997,989	35,934			
2	997,989	23,934	12,001	974,055	35,934	6.52	3.33	9.8451
	974,055	24,221	11,713	949,834	35,934			
	1,045,007	95,173	48,565	949,834	143,738			
	949,834	24,513	11,422	925,321	35,934			
	925,321	24,807	11,127	900,514	35,934			
3	900,514	25,106	10,829	875,408	35,934	6.84	3.01	9.8451
	875,408	25,408	10,527	850,000	35,934			
	949,834	99,834	43,904	850,000	143,738			
	850,000	25,713	10,221	824,287	35,934			
	824,287	26,022	9,912	798,264	35,934			
4	798,264	26,335	9,599	771,929	35,934	7.17	2.67	9.8451
	771,929	26,652	9,282	745,277	35,934			
	850,000	104,723	39,015	745,277	143,738			
	745,277	26,973	8,962	718,305	35,934			
	718,305	27,297	8,638	691,008	35,934			
5	691,008	27,625	8,309	663,383	35,934	7.52	2.32	9.8451
	663,383	27,957	7,977	635,425	35,934			
	745,277	109,852	33,886	635,425	143,738			
	635,425	28,293	7,641	607,132	35,934			
	607,132	28,634	7,301	578,498	35,934			
6	578,498	28,978	6,956	549,520	35,934	7.89	1.95	9.8451
	549,520	29,327	6,608	520,193	35,934			
	635,425	115,232	28,506	520,193	143,738			
	520,193	29,679	6,255	490,514	35,934			
	490,514	30,036	5,898	460,478	35,934			
7	460,478	30,397	5,537	430,081	35,934	8.28	1.57	9.8451
	430,081	30,763	5,172	399,318	35,934			
	520,193	120,875	22,863	399,318	143,738			
	399,318	31,133	4,802	368,186	35,934			
	368,186	31,507	4,427	336,679	35,934			
8	336,679	31,886	4,049	304,793	35,934	8.68	1.16	9.8451
	304,793	32,269	3,665	272,523	35,934			
	399,318	126,795	16,943	272,523	143,738			
	272,523	32,657	3,277	239,866	35,934			
	239,866	33,050	2,884	206,816	35,934			
9	206,816	33,448	2,487	173,368	35,934	9.11	0.74	9.8451
	173,368	33,850	2,085	139,519	35,934			
	272,523	133,005	10,733	139,519	143,738			
	139,519	34,257	1,678	105,262	35,934			
	105,262	34,669	1,266	70,593	35,934			
10	70,593	35,086	849	35,508	35,934	9.56	0.29	9.8451
	35,508	35,508	427	-	35,934			
	139,519	139,519	4,219	-	143,738			

