National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

NEPRA Tower, Attaturk Avenue (East), G-5/1, Islamabad
Ph: +92-51-9206500, Fax: +92-51-2600026
Web: www.nepra.org.pk, E-mail: registrar@nepra.org.pk

No. NEPRA/R/TRF-449/FEPL-2018/6039-6041
February 21, 2020

Subject: **Determination of National Electric Power Regulatory Authority in the matter of Tariff Petition filed by M/s. FAS Energy Pakistan (SMC-Private) Limited for Determination of Generation Tariff in respect of 50 MWp Solar Power Project** (Case No. NEPRA/TRF-449/FEPL-2018)

Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annex-I, II & III (26 pages) in Case No. NEPRA/TRF-449/FEPL-2018.

2. The Determination is being intimated to the Federal Government for the purpose of notification in the official gazette pursuant to Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

3. Order of the Authority along with Annex-I, II & III of the Determination are to be notified in the official Gazette.

Enclosure: As above

21.02.20

(Syed Safeer Hussain)

Secretary
Ministry of Energy (Power Division)
'A' Block, Pak Secretariat
Islamabad

CC:

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

DETERMINATION OF NATIONAL ELECTRIC POWER REGULATORY AUTHORITY IN THE MATTER OF TARIFF PETITION FILED BY M/S FAS ENERGY PAKISTAN (SMC-PRIVATE) LIMITED FOR DETERMINATION OF GENERATION TARIFF IN RESPECT OF 50 MWp SOLAR POWER PROJECT

1. M/s FAS Energy Pakistan (SMC-Private) Limited (FEPSMCPL or the petitioner/company) filed a tariff petition before National Electric Power Regulatory Authority (NEPRA/the Authority) on July 26, 2018 for determination of generation tariff in respect of its 50 MWp solar power project (project) to be set up at D.I. Khan, Khyber Pakhtunkhwa. The said petition was filed by FEPSMCPL under Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 (the NEPRA Act) read with NEPRA (Tariff Standards & Procedure) Rules, 1998 (Tariff Rules). The petitioner has requested for the approval of levelized tariff of US Cents 7.1412/kWh over the tariff control period of 25 years.

2. The petitioner submitted that it was issued Letter of Intent (LOI) under Government of Pakistan Development of Renewable Energy for Power Generation 2006 (GOP RE Policy, 2006) on September 22, 2016 by Pakhtunkhwa Energy Development Organization (PEDO, Government of Khyber Pakhtunkhwa (GoKPK) for establishing a solar PV power generation project. FEPSMCPL informed that PEDO vide its letter dated April 23, 2018 decided to grant a day-to-day extension in the validity of LOI of FEPSMCPL till the time its Grid Interconnection Study (GIS) is approved by National Transmission and Despatch Company Limited (NTDCL) and subsequently the project company obtains Letter of Support (LOS) from Alternative Energy Development Board (AEDB). The certificate of incorporation of the company dated May 22, 2018 issued by Securities and Exchange Commission of Pakistan (SECP) was also submitted by FEPSMCPL. The petitioner also submitted a letter of PEDO dated June 29, 2018 stating that Panel of Experts (POE) in its meeting held on June 13, 2018 has reviewed and approved the technical feasibility study of the project.

3. Summary of the key information as provided in the tariff petition is as follows:

Project company	:	FAS Energy Pakistan (SMC-Pvt.) Ltd.
Sponsor	:	FAS Power Trading Company, KSA
Capacity	:	50 MWp
Project location	:	D. I Khan, Khyber Pakhtunkhwa
Land area	:	250 Acres
Concession period	:	25 years from Commercial Operations Date (COD)

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Purchaser	:	Central Power Purchasing Agency (Guarantee) Ltd.	
PV modules/manufacturer	:	Polycrystalline (JKM 325PP-72-V) / Jinko Solar	
Inverter	:	Huawei - 2000-36KTL	
Structure System	:	Single Axis Tracking	
Construction period	:	10 months	
Plant capacity factor	:	19.55%	
Annual Energy production	:	85.626 GWh	
EPC Contractor	:	Self-EPC Mode	
Project cost:		**USD Million**	
EPC cost	:	41.00	
Insurance during construction	:	0.21	
Project Development Cost	:	3.70	
Land cost	:	0.94	
Financial Charges	:	1.39	
Interest during construction	:	1.05	
Degradation @ 3.62%		1.48	
Total project cost	:	**49.76**	
Financing structure	:	Debt: 80% : Equity: 20%	
Debt composition	:	50% Foreign & 50% local loan	
Interest rate	:	Foreign loan: 3 month LIBOR + 4.25% Local loan: SBP fixed rate of 6%	
Debt tenure	:	Foreign: 14 years & Local: 12 years	
Return on equity	:	15% IRR based	
Annual O&M cost	:	USD 15,000 per MW per year	
Insurance cost	:	0.5% of EPC cost	
Tariff:		**Rs./kWh**	**US Cents/kWh**
Levelized	:	8.2124	7.1412
Exchange rate	:	1 USD = PKR 115	

4. In accordance with Rule 4 of Tariff Rules, the tariff petition was admitted by the Authority on August 29, 2018. Notice of Admission/Hearing was published in the daily national newspapers on October 18, 2018 stating hearing date as October 31, 2018 while also providing salient features of the petition, issues framed for hearing and invitation for filing comments/intervention request from the interested parties. Individual Notices of Admission and Hearing were sent to the stakeholders, considered relevant by NEPRA, and to the

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

petitioner on October 22, 2018 for participation in the hearing. Tariff petition and Notice of Admission/Hearing were also hosted on NEPRA's website for information of general public.

5. Following issues were framed by the Authority for the hearing:

- Whether the claimed EPC cost is competitive, comparative and based on the firm and final agreement(s)?
- Whether the NEPRA (Selection of EPC Contractor by IPPs) Guidelines, 2017 have been fully complied with?
- Whether the details provided for Non-EPC cost are sufficient and claimed Non-EPC cost is justified? Also provide justification for land requirement as claimed by the petitioner?
- Whether the claimed O&M costs are justified?
- Whether the claimed insurance during operation cost is justified?
- Whether the claimed return on equity is justified?
- Whether the claimed financing/debt terms are justified?
- Whether the claimed annual energy generation and corresponding plant capacity factor are reasonable and justified?
- Whether the petitioner's proposed solar modules technology satisfies the international standards of quality and operation?
- Whether the claimed construction period is justified?
- Whether the project grid interconnection study is approved by the relevant organization(s) and whether NTDCL has issued power evacuation certificate?
- Any other issue with the approval of the Authority

6. The hearing was held on October 31, 2018 (Wednesday) at NEPRA Tower, Ataturk Avenue, G-5/1, Islamabad which was attended a number of participants including the petitioner, representatives of Punjab Power Development Board (PPDB)-Government of Punjab, PEDO, GoKPK, Board of Investment and other stakeholders. Post hearing, comments were submitted by Central Power Purchasing Agency (G) Ltd. (CPPA-G) dated November 02, 2018. NTDCL also submitted its comments vide dated November 16, 2018. The comments of these parties are discussed in the relevant paragraphs of this determination.

7. The issue wise submissions of the petitioner and the Authority's findings and decision thereon are as under.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

8. **Whether the claimed EPC cost is competitive, comparative and based on the firm and final agreement(s) and**
Whether the NEPRA (Selection of EPC Contractor by IPPs) Guidelines, 2017 have been fully complied with?

8.1 The petitioner has claimed USD 41 million on account of Engineering Procurement and Construction (EPC) cost. On a per MW basis, the claimed EPC cost comes out to be around USD 0.82 million.

8.2 The petitioner submitted that claimed EPC includes the cost of supply of equipment i.e. cost of PV modules, inverters, electrical equipment, together with ancillary equipment and other goods, systems and machinery. It also includes the cost of construction, installation and commissioning including the cost of erection, testing, completion and commissioning of the equipment and construction of the facility that is capable of fulfilling the intended purpose. The petitioner further submitted that EPC cost includes cost related to staff accommodation (construction of container type houses), supply of drinking water and electricity (to container houses), catering services for the staff, certain project vehicles, standby generator (including fuel), site security during construction period and internal access roads etc. Moreover, it includes cost of project design services including all the cost associated with conceptual design of the plant including design of mechanical, electrical and civil works for the project.

8.3 The petitioner submitted that this project is the first solar project being developed in province of KPK. FEPSMCPL submitted that when compared to solar projects in Sindh, its project site is substantially distant from the port resulting in higher transportation cost, availability of skilled labour in the project's region is limited and security cost is higher due to unstable law and order situation in the area. During the hearing and in the tariff petition, FEPSMCPL apprised the Authority that since the project company is having a self EPC arrangement so NEPRA (Selection of EPC Contractor by IPPs) Guidelines, 2017 does not apply on it.

8.4 The Authority has noted that one of the comparable solar project has claimed EPC cost of around USD 0.65 million per MW for tracking technology and for smaller size compared to FEPSMCPL's project. It has also been noted that the referred petitioner filed application back in November, 2018, i.e. the claimed prices do not account for the impact of decrease in equipment prices since that time. In light thereof, the Authority is of the view that EPC cost being claimed by FEPSMCPL may not be considered prudent and reflective of prevailing prices and therefore requires assessment.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

8.5 For this purpose, the Authority has relied upon the EPC cost and project cost data in different countries. The prices of different types of modules, inverters and mounting structures in different parts of the world were researched through a number of reports published by credible organizations. Moreover, a number of online sources providing spot prices data of equipment of solar power system were also surfed. Furthermore, the costs being claimed recently by other comparable projects were also checked.

8.6 It has been noted that the average prices of solar modules of different types and brands have gone as low as USD 0.19 million per MW. Those average prices were at the level of USD 0.32-0.34 million per MW back in January, 2018. This shows that there has been a decline of more than 40% in the cost of modules in mere two years' time. The same trend of decreasing module prices is also being forecasted by different credible agencies; however, these sources state that the trend would not be that sharp. The cost of inverters, inclusive of combiner boxes, has been found reported in different sources and has been claimed in other tariff petitions at or below the level of USD 0.04 million per MW. For mounting structures, the price of as low as USD 0.10 million per MW for single axis tracking has been stated by one of the solar projects. It has also been noted that the cost of around USD 0.11 million per MW for tracking mounting structure has been achieved by a solar power project which has recently been commissioned. On these base figures, the factors such as transportation cost, existing local market conditions, local manufacturing base, length of time allowed for achieving financial close etc. were given due consideration. The cost of civil works as allowed by the Authority in the comparable tariff cases has been rationalized for the impact of PKR devaluation and local inflation. The cost of electrical balance of plant equipment has been allowed in line with the comparable projects. It has also been ensured to provide a reasonable amount of profits to the Contractor(s). Keeping in view all these factors, the Authority has assessed the EPC cost for FEPSMCPL as USD 0.5356 million per MW (USD 26.780 million) which is hereby approved. The allowed EPC cost shall be adjusted at COD in accordance with the mechanism given in the Order part of this determination.

9. Whether the details provided for Non-EPC cost are sufficient and claimed Non-EPC cost is justified? Also provide justification for land requirement as claimed by the petitioner?

9.1 The petitioner has claimed USD 7.290 million on account of non-EPC cost. The break-up of the cost components as provided by the petitioner is as follows:

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

Non-EPC cost	(USD Million)
Insurance during construction	0.210
Project Development Cost	3.700
Land	0.940
Financial Fee and Charges	1.390
Interest during construction	1.050
Total non-EPC cost	**7.290**

Insurance during Construction:

9.2 The petitioner has claimed pre-COD insurance cost of around USD 0.21 million at rate of 0.5% of EPC cost. The petitioner submitted that as per the norms of Pakistan power market and in accordance with the requirements set out by the lenders' funding the project, it intends to procure following insurances during the construction phase of the project;

- Erection all risk insurance (EAR)
- EAR delay in start-up insurance
- Marine and inland transit insurance
- Marine – Delay-in startup insurances
- Terrorism insurance

9.3 FEPSMCPL submitted that Federal Excise Duty is not included in the claimed cost and requested to allow the same at COD at actual.

9.4 The Authority has noted that NEPRA (Benchmarks for Tariff Determination) Guidelines, 2018 (Benchmarking Guidelines) issued vide S.R.O. 763(I)/2018 notification dated June 19, 2018 states the provision of insurance during construction at the rate of 0.40% of EPC cost for solar projects. In accordance therewith, the Authority has decided to allow insurance during construction, inclusive of taxes, charges and/or duties, at the rate of 0.4% of the approved EPC cost to FEPSMCPL. On this basis, the amount being approved under this head works out to be around USD 0.107 million.

NEPRA AUTHORITY

Project Development Cost

9.5 The petitioner has claimed around USD 3.70 million on account of Project Development Cost (PDC). During the hearing, the summary of PDC as provided by the petitioner is given hereunder:

Project Development Cost	USD Million
Consultancy costs	0.550
Owner's engineer costs	0.250
Independent Engineer for NTDC	0.100
PD studies (survey, geotech, topo, grid etc.)	0.530
Permits, permissions & related costs	0.030
Site, Security & Infrastructure	2.000
Administration cost and HR cost	0.140
Travelling costs	0.100
Total	**3.700**

9.6 The Authority has examined the cost of PDC that has been allowed in tariff of comparable solar projects. The impact of PKR devaluation against USD and local inflation that have occurred since the time of approval of tariff determinations of those projects has been accounted for. The requirement of comparatively higher security and its corresponding costs has also been given due consideration. On these bases, the Authority has decided to approve the PDC of USD 1.0 million for FEPSMCPL. This amount is being approved on lump sum basis, i.e. the cost incurred on individual heads of PDC may change but should not exceed the overall amount.

Cost of Land

9.7 The petitioner has claimed USD 0.940 million on account of land cost for the proposed land area of 250 acres. During the proceedings, the petitioner submitted copy of "Agreement to Sell" executed on June 27, 2018 with three (03) Nos. landowners and FEPSMCPL. As per aforesaid Agreement, the landowners have agreed to give the land on lease to the petitioner for a fixed term from the date of Agreement till such time the Federal/Provincial Government (or any of its entities) issues the LOS to the project company. It is stated that the project

NEPRA AUTHORITY

company shall pay an amount of USD 10,000 as lump sum rent to the landowners for the initial period upon signing of the Agreement to Sell.

9.8 Clause 5 of the Agreement of Sell states that upon issuance of LOS the lease agreement shall immediately cease and shall be converted into sale and purchase agreement. As per clauses 7 of Agreement to Sale, the parties have agreed to sale and purchase the project land at the rate of USD 2,912.60 per acre and the total sale consideration shall be USD 728,150 for total land measuring 250 acres. It is given in the Agreement that in case project land measures more or less than 250 acres then total sale consideration shall be tendered to the landowners at the rate of USD 2,912.60 per acre. In addition, the timeline of making payments are given in the Agreement.

9.9 Regarding claiming higher land cost of USD 940,000 in the petition against the agreed price in the Agreement to Sell i.e. USD 728,150, FEPSMCPL informed that the land cost in tariff petition was assumed on the initial plan of land area of 320 acre but after the feasibility study 250 acres were found feasible for the development of the project. In the said response, FEPSMCPL submitted that custom duty at the rate of 5%, transfer fee at 7% and facilitation and miscellaneous expenses at the rate of 10% have been added in the cost of land in addition to the agreed price of land and requested to consider the cost of land as USD 888,344 for the tariff purpose.

9.10 The Authority is of the view that denominating the cost of land in USD in the Agreement to Sell may not be considered justified. To assess the cost of land, an analysis with respect to the cost that has been allowed to comparable solar projects (both on lease basis and on procurement from private party) has been carried out. Considering the claimed cost at exchange rate (PKR/USD) prevailing on the date of Agreement, the amount of USD 0.500 million is found comparative and justified and is hereby approved. Cost of land shall be adjusted at actual at COD in accordance with the mechanism given in the Order part of this determination.

Financing Fee and Charges

9.11 FEPSMCPL has claimed financing fees and charges of USD 1.390 million. The petitioner submitted that this head covers the costs related to the financing of the project and includes the lenders' up-front fee and commitment fee, mandate and processing fee, fees payable and stamp duty applicable on the financing documents; agency fee; security trustee fee; lenders' project monitoring fee and the fees for the lenders' various advisors includes.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

9.12 It has been noted that Benchmark Guidelines states the provision of financing fee & charges not exceeding 2% of the approved debt amount of the capital expenses. In accordance with the said benchmark, the Authority has decided to allow the captioned cost at the rate of 2% of approved debt portion of allowed capital expenses, as maximum limit, to the petitioner. Accordingly, this amount works out to be around USD 0.454 million.

Interest during construction (IDC)

9.13 The petitioner has claimed interest during construction (IDC) of USD 1.05 million. The petitioner submitted that IDC has been calculated based on mix of foreign and local debt. 3 month LIBOR plus margin of 4.25% has been used for foreign financing and fixed rate of 6% under SBP refinancing facility for local loan. The construction period of 10 months has been taken into account for this claim. The petitioner submitted that IDC is to be adjusted at actual at the time of true-up based on actual debt drawdown, revised quarterly LIBOR rates and PKR/USD exchange rate.

9.14 Based on the abovementioned approved costs while considering the drawdown schedule as given in the order part of this determination; the IDC works out to be around USD 0.519 million and is hereby approved. The details of financing terms and construction period that have been used to work out the aforesaid amount of IDC is discussed in the ensuing relevant sections. The allowed IDC shall be re-computed at COD as per the mechanism given in the order part of this determination.

9.15 Recapitulating above, the approved project cost is given hereunder:

Project Cost	USD Million
EPC Cost	26.780
Project Development Cost	1.000
Land Cost	0.500
Insurance during construction	0.107
Financing Fee and Charges	0.454
Interest During Construction	0.519
Total	**29.360**

NEPRA AUTHORITY

10. **Whether the claimed O&M costs are justified?**

10.1 The petitioner has claimed O&M cost of USD 15,000 per MW per year. FEPSMCPL submitted that the claimed O&M cost is in line with NEPRA's determination where similar O&M cost was allowed based on similar technology. It also submitted that its project size is relatively small and does not benefit from the very substantial economies of scale in O&M costs available to large solar plants. It also highlighted that the project has high security (due to location) and cleaning costs during operations.

10.2 To evaluate this claim of FEPSMCPL, the O&M cost being allowed in other parts of the world has been referred. Local market and security conditions of the area where project is being setup, required skilled manpower, spare parts etc. have also been deliberated. The cost recently being claimed by other solar power projects based on different technologies has also been compared. The O&M cost as allowed earlier to comparable projects has also been examined while taking into account the PKR devaluation and local inflation. In view thereof, the Authority has decided to approve the O&M cost of USD 0.475 million per year to FEPSMCPL, i.e. USD 9,500 per MW per year.

10.3 To decide about the proportion of approved O&M cost, the Authority has examined the change in local CPI (allowed on local portion) viz a viz the collective change in both US CPI and exchange rate (allowed for foreign portion) for last nineteen years. It has been noted that the average annual change in indices allowed on foreign component during the last couple of years has been higher relative to local inflation. However, the change in indices applied on local and foreign component has roughly been same when analysis is carried out for the longer term. Further, it has been studied that that the majority of O&M cost for solar project consists of administrative expenses (either site or at office) and may be obtained in local currency. The cost of spare parts and replacement of equipment and some services would require procurement from abroad; however, their proportions are not very significant and also vary from year to year. In view of these considerations, the Authority has decided to allow whole of approved O&M cost in local currency.

11. **Whether the claimed insurance during operation is justified?**

11.1 In its tariff petition, FEPSMCPL has claimed insurance during operation at 0.5% of the EPC cost. The petitioner also requested to allow annual insurance during operation subject to the

NEPRA AUTHORITY

maximum cap of 0.75% of EPC cost. During hearing, FEPSMCPL submitted that in view of the practices set by the other power generation projects in Pakistan and in accordance with the requirements set by the lenders, it shall procure the following insurance during the operational phase of the project:

- Property damage and comprehensive machinery insurance (including business interruption insurance);
- Third party liability;
- Terrorism insurance;
- Group personal accident insurance; and
- Motor comprehensive insurance.

11.2 The Authority noted that in the recently approved solar tariff determinations, insurance during operation at the rate of 0.4% of the approved EPC cost has been allowed. Benchmark Guidelines also provide insurance during operation at the rate of 0.4% of EPC cost for solar projects. In view thereof, the Authority has decided to allow insurance during operation at the maximum limit of 0.4% of the approved EPC cost, including all taxes/charges, to the petitioner, subject to adjustment on actual basis as per the mechanism given in the order part.

12. **Whether the claimed return on equity is justified?**

12.1 The petitioner has claimed Return on Equity (ROE) of 15% while stating that the risk associated with the project site is high as compared to other solar projects due to its proximity to FATA. FEPSMCPL further argued that no solar project has to date been commissioned in KPK. The Authority has noted that in the most recent comparable tariff cases of renewable technologies being setup in all the regions of the country, it has allowed ROE (both during construction and operation) to the limit of 14%. Accordingly, the Authority has decided to approve the ROE of 14% for FEPSMCPL also.

13. **Whether the claimed financing/debt terms are justified?**

13.1 The petitioner claimed following parameters regarding the debt:

NEPRA AUTHORITY

Debt	80% (50% foreign and 50% local)
Interest	Foreign: 3 month LIBOR (2.36%) + 4.25% Local: SBP fixed rate of 6%
Repayment period	Foreign loan: 13 years Local loan: 11 years

13.2 During the proceedings, the petitioner submitted indicative term sheet dated July 18, 2018 signed with the lender i.e. Dubai Islamic Bank Pakistan Limited.

13.3 The Authority has noted that Benchmarking Guidelines provides that the debt to equity ratio for all renewable power projects will be 80:20 and in case of change in ratio, the return approved on equity shall be adjusted to maintain cost of capital at the same level as under a 80:20 debt-equity ratio capital structure. The debt-equity ratio of 80:20 has also been approved by the Authority in the recent wind and solar tariff determinations. Therefore, the Authority has decided to compute and approve tariff of FEPSMCPL on debt to equity ratio of 80:20.

13.4 Benchmarking Guidelines provide that in case of renewable energy projects eligible for securing debt under the revised State Bank of Pakistan Refinancing Scheme (SBP Scheme), a flat rate of 6% shall be approved with debt repayment period not exceeding 12 years. For foreign financing, Benchmarking Guidelines say that spread not exceeding 4.25% over LIBOR shall be approved. The size of the project being setup by the petitioner is 50 MW which makes it eligible to avail financing under SBP scheme. However, it has been noted that SBP vide its circular dated July 26, 2019 has decided that eligible renewable energy projects of more than 20MW shall be given financing of up to 50% under SBP Scheme. In view thereof, the Authority has decided to compute and approve tariff of FEPSMCPL at 50% local and 50% foreign financing. For local loan, the cost of 6% as stated in the SBP Scheme has been taken into account. For the foreign loan, the cost of 6.156% (LIBOR of 1.9055% + spread of 4.25%) has been used.

13.5 The petitioner has claimed debt servicing period of thirteen years for foreign financing. The Authority in recently approved wind and solar tariff determinations has allowed foreign debt repayment period of not less than thirteen years. In view of approvals given in the recent tariff determinations, the Authority has decided to approve foreign debt repayment period of 13 years as claimed by the petitioner. For local loan under SBP scheme, the debt repayment period has been spread over 10 years.

NEPRA AUTHORITY

14. **Whether the claimed annual energy production and corresponding plant capacity factor are justified? and**
Whether the petitioner's proposed solar modules and inverter technology satisfies the international standards of quality and operation?

14.1 The petitioner has submitted the following in this regard:

Project capacity	50 MWp
Annual energy generation	85.626 GWh
Net capacity factor	19.55%

14.2 The petitioner in tariff petition and during hearing submitted that it has selected PV Module "JKM 325PP-72-V" manufactured by Jinko Solar for the project. During the hearing, the petitioner submitted that Jinko Solar was established in 2006 and is one of the leading manufacturers and suppliers in the solar power industry based out of China. For inverters, the petitioner submitted that it has selected Huawei 2000-36KTL for the project. The petitioner further submitted that it intends to install cutting-edge tracking technology (single-axis) for the project which shall provide higher plant factor and higher energy output to the energy purchaser.

14.3 It has been noted that the generation license for the proposed technology has already been approved for FEPSMCPL. For plant capacity factor, the Authority has considered the modules, inverters and other equipment as proposed by FEPSMCPL with respect to their quality and energy yield. The plant capacity factor that has been allowed for polycrystalline modules in the recent tariff cases in different regions of the country were also checked. Considering these factors, the Authority is of the view that the claimed net plant capacity factor is on lower side as per the assessment of Technical Team of NEPRA and decided to compute the tariff of FEPSMCPL on the capacity factor of 21.04%. The solar resource risk shall be borne by the power producer and a sharing mechanism given in the order part of this determination shall be applied on the energy produced beyond the approved capacity utilization factor.

15. **Whether the claimed construction period is justified?**

15.1 During the hearing and in its tariff petition, the petitioner has proposed 10 month construction period for the project. The Authority has noted that in other similar scale solar

NEPRA AUTHORITY

PV projects, the construction period of 10 months has been allowed. Therefore, the same construction time limit is hereby allowed to FEPSMCPL as well.

16. **Whether the project grid interconnection study is approved by the relevant organization(s) and whether NTDCL has issued power evacuation certificate?**

16.1 The petitioner submitted that Grid Interconnection Assessment of the project was undertaken by ARCO Energy and completed in January, 2018. The petitioner submitted approval letter of Grid Interconnection Study (GIS) report of the project issued by Peshawar Electric Supply Company (PESCO) on February 21, 2018. In the said approval, PESCO has stated that the revised GIS report of the project has been vetted for load flow, contingency, short circuit and stability analysis. It further states that the proposed interconnection scheme through 2.5 km in/out arrangement from single circuit of 132 KV Kulachi Solar Power - 132 kV Grid Station Kulachi D/C circuit transmission line using rail conductor for connecting FEPSMCPL project is found technically feasible and approved. During the proceeding, FEPSMCPL submitted that the approval of GIS is pending at NTDCL's side and requested to extend the deadline for submission of GIS for a further period so that the matter can be resolved; however, the petitioner could not submit that approval. The Authority has noted that approval of project's GIS/power evacuation certificate by NTDCL is not a requirement for the award of generation tariff as given in the Tariff Rules. This issue was framed to confirm that the integration of the subject project does not affect the overall grid system. The Authority has further noted that during the proceedings of the Generation License as awarded to FEPSMCPL on December 27, 2019, the matter of interconnection of the project has already been discussed and addressed. In view thereof, the Authority considered it appropriate to proceed further in the subject matter as per the stipulations given in the Tariff Rules.

17. **Degradation factor**

17.1 FEPSMCPL has claimed USD 1.48 million as the impact of degradation as a part of project cost at the rate of 3.62%. The Authority has noted that degradation factor of 0.5% has been taken into account in the recently approved tariff cases of solar power projects and decided to approve the same in FEPSMCPL's tariff. The Authority has decided to capitalize the impact of allowed degradation in the approved project cost. The amount of USD 0.969 million has been made part of the approved project cost while calculating the same at the levelized rate of 3.62% of the approved EPC cost.

NEPRA AUTHORITY

18. **Comments submitted by CPPA-G**

18.1 Following submissions were advanced by CPPA-G:

- CPPA-G has neither issued consent for the purchase of power nor issued Power Acquisition Request for the projects.
- NEPRA State of Industry Report, 2017 (SIR) has indicated surplus capacity of 908 MW in the year 2018 and projected to increase to 13,934 MW by the year 2025. The surplus generation will result in huge financial burden on the end consumers in the form of capacity payment.
- CPPA-G requested to check the status of these projects in Indicative Generation Capacity Expansion Plan (IGCEP) pursuant to PC-4 of the NEPRA Grid Code. NTDCL vide its letter dated November 16, 2018 submitted that the project is not included in the draft IGCEP.
- CCOE vide its decision dated December 12, 2017 decided that all projects based on wind, solar, small hydel and bagasse energy will be awarded through competitive bidding and after the quota allocation of renewable energy by the Grid Code Review Panel.
- Under the NEPRA Licensing (Generation) Rules, 2000, NEPRA may refuse to issue a license upon dissatisfaction. Further, NEPRA is required to examine 'least cost option criteria' to safeguard the interests of the consumers under rule 3 of License (Generation) Rules, 2000.
- NEPRA must review the proposal of the demand vs. supply situation coupled with quantum of renewable energy to be induced in the national grid according to the recommendations of the grid code review panel duly approved by NEPRA from time to time.

18.2 The Authority has noted that the aforesaid submissions were also advanced for the proceedings carried out by NEPRA with respect to the Generation Licence of the subject project. These comments have already been discussed and addressed in the Generation License of FEPSMCPL as issued by NEPRA on December 27, 2019. Therefore, the Authority is of the view that it is not required to discuss/address these submissions again in this tariff determination.

NEPRA AUTHORITY

19. **ORDER**

In pursuance of section 7(3)(a) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997 and NEPRA (Tariff Standards & Procedure) Rules, 1998, the Authority hereby determines and approves the generation tariff along with terms and conditions for FAS Energy Pakistan (SMC-Private) Limited (FEPSMCPL) for its 50 MWp solar power project for delivery of electricity to the power purchaser as follows:

- Levelized tariff works out to be Rs. 6.1428/kWh (US Cents 3.9542/kWh).
- The tariff has been worked out on Build, Own and Operate basis.
- EPC cost of USD 26.780 million has been approved.
- Project Development Cost of USD 1.00 million has been approved.
- Cost of land of USD 0.500 million has been approved.
- Insurance during constriction at the rate of 0.4% of the approved EPC cost has been approved.
- Financing fee at the rate of 2% of the debt portion of the capital cost has been approved.
- Debt to Equity ratio of 80:20 has been approved.
- Financing mix of 50% local and 50% foreign has been used.
- ROE and ROEDC of 14% has been allowed.
- The cost of debt of 6% (SBP scheme) has been used for local financing.
- The cost of debt of 3 month LIBOR (1.9055%) + spread (4.25%) has been used for foreign financing.
- Debt servicing period of 10 years from COD has been used for local financing under SBP scheme.
- Debt servicing period of 13 years from COD has been used for foreign financing.
- O&M Cost of USD 9,500 per MW per year has been allowed.
- Insurance during Operation has been calculated as 0.40% of the allowed EPC Cost.
- Construction period of 10 months has been allowed.
- Net Annual Plant Capacity Factor of 21.04% has been approved.
- Reference Exchange Rates of 155.35 PKR/USD has been used.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

- IDC and ROEDC have been worked out using following drawdown schedule:

Month 1	5.00%
Month 2	5.00%
Month 3	5.00%
Month 4	15.00%
Month 5	15.00%
Month 6	15.00%
Month 7	6.67%
Month 8	6.67%
Month 9	13.33%
Month 10	13.33%

- Detailed component wise tariff is attached as Annex-I of this decision.
- Debt Servicing Schedule for local loan is attached as Annex-II of this decision.
- Debt Servicing Schedule for foreign loan is attached as Annex-III of this decision.

A. One Time Adjustments at COD

- The EPC cost shall be verified and adjusted at actual considering the approved amount as the maximum limit. Applicable foreign portion of the EPC cost will be adjusted at COD on account of variation in PKR/USD parity during the construction period, on production of authentic documentary evidence by the petitioner to the satisfaction of the Authority. The adjustment in approved EPC cost shall be made for the currency fluctuation against the reference parity values.
- PDC, Land cost, Insurance during construction and Financing Fee and Charges shall be adjusted at actual at the time of COD considering the approved amount as the maximum limit. The amounts allowed on these accounts in USD will be converted in PKR using the reference PKR/USD rate of 155.35 to calculate the maximum limit of the amount to be allowed at COD.

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

- Duties and/or taxes, not being of refundable nature, relating to the construction period directly imposed on the company up to COD will be allowed at actual upon production of verifiable documentary evidence to the satisfaction of the Authority.

- The tariff has been determined on debt : equity ratio of 80 : 20. The tariff shall be adjusted on actual debt : equity mix at the time of COD, subject to equity share of not more than 20%. For equity share of more than 20%, allowed IRR shall be neutralized for the additional cost of debt : equity ratio.

- IDC will be recomputed at COD on the basis of actual timing of debt draw downs (for the overall debt allowed by the Authority at COD) for the project construction period of 10 months starting from the date of financial close. For foreign loan, the IDC shall also be allowed adjustment for change in applicable LIBOR.

- ROEDC will be adjusted at COD on the basis of actual equity injections (within the overall equity allowed by the Authority at COD) during the project construction period of 10 months from the date of financial close.

- For foreign and local loans, the savings in the approved spreads shall be shared between the power purchaser and power producer in the ratio of 60:40.

B. Indexations

Adjustment of O&M, ROE, ROEDC, applicable Debt Servicing Components shall be made on quarterly basis to be applicable from 1st July, 1st October, 1st January and 1st April. Adjustment of Debt Servicing Component, where applicable, may also be allowed on bi-annual basis depending upon the final terms approved by the Authority at the time of COD. For bi-annual adjustments, the periods shall start from 1st July and 1st January. Insurance component shall be adjusted on annual basis starting from either 1st January or 1st July. The indexation mechanisms are given hereunder:

i) Operation and Maintenance Costs

O&M component of tariff shall be adjusted on account of change in local Inflation (CPI) as notified by the Pakistan Bureau of Statistics according to the following mechanism:

L. O&M (REV)	=	L. O&M (REF) * CPI (REV) / CPI (REF)

NEPRA AUTHORITY

Where;		
L. O&M (REV)	=	The revised O&M Local Component of Tariff
L. O&M (REF)	=	The reference O&M Local Component of Tariff
CPI (REV)	=	The revised CPI (General)
CPI (REF)	=	The reference CPI (General) of 263.59 for the month of November, 2019

Note: The reference index of CPI shall be revised for making the required adjustments in O&M component at the time of COD. For the adjustment of O&M component at COD, the revised CPI value for the middle month of preceding quarter prior to the date of COD shall be considered. Thereafter, the CPI value taken at COD shall become reference for subsequent adjustments in the O&M component.

ii) **Insurance during Operation**

The actual insurance cost for the minimum cover required under contractual obligations with the power purchaser, not exceeding 0.4% of the approved 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 @ 0.4% of approved EPC Cost at Rs. 155.35/USD
P (Act)	=	Actual premium or 0.4% of the approved EPC Cost converted into Pak Rupees on exchange rate prevailing on 1st day of the insurance coverage period whichever is lower

iii) **Return on Equity**

The ROE (ROE + ROEDC) component of the tariff will be adjusted on account of change in USD/PKR parity. The variation relating to these components shall be worked out according to the following formula:

NEPRA AUTHORITY

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

ROE (Rev)	=	ROE (Ref) * ER (Rev) / ER (Ref)
Where;		
ROE (Rev)	=	Revised ROE Component of Tariff
ROE (Ref)	=	Reference ROE Component of Tariff
ER (Rev)	=	The revised TT & OD selling rate of US dollar as notified by the National Bank of Pakistan
ER (Ref)	=	The reference TT & OD selling rate of Rs. 155.35/USD

Note: The reference tariff component shall be revised after making the required adjustments at the time of COD.

iv) **Indexations applicable to debt**

For foreign debt, respective principal and interest components will be adjusted on quarterly/bi-annual basis, on account of revised TT & OD selling rate of US Dollar, as notified by the National Bank of Pakistan as at the last day of the preceding period, over the applicable reference exchange rate as approved at COD.

v) **Variations in LIBOR**

The interest part of tariff component for the foreign loan shall remain unchanged throughout the term except for the adjustment due to variation in interest rate as a result of variation in LIBOR according to the following formula:

Δ I	=	P (REV) * (LIBOR (REV) – 1.9055%) / 4
Where;		
ΔI	=	The variation in interest charges applicable corresponding to variation in 3 month LIBOR. ΔI can be positive or negative depending upon whether 3 month LIBOR (REV) per annum > or < 1.9055%. The interest payment obligation will be enhanced or reduced to the extent of ΔI for each quarter under adjustment.

NEPRA AUTHORITY

P (REV)	=	The outstanding principal (as indicated in the attached debt service schedule to this order), at the relevant quarterly calculations date. Quarter 1 shall commence on the commercial operations date (i.e. the first figure will be used for the purposes of calculation of interest for the first quarter after commercial operations date)
LIBOR (REV)	=	Revised 3 month LIBOR as at the last day of the preceding quarter.

Note: The reference tariff component shall be revised after making the required adjustments at the time of COD.

C. Terms and Conditions

The following terms and conditions shall apply to the determined tariff:

- All plant and equipment shall be new and of acceptable standards. The verification of the plant and equipment will be done by the Independent Engineer at the time of the commissioning of the plant duly appointed by the power purchaser.
- This tariff will be limited to the extent of net annual energy generation supplied to the power purchaser up to 21.04% net annual plant capacity factor. Net annual energy generation supplied to the power purchaser in a year, in excess of 21.04% net annual plant capacity factor, will be charged at the following tariffs:

Net annual plant capacity factor	% of prevalent tariff allowed to power producer
Above 21.04% to 21.07%	-
Above 21.07% to 21.82%	20%
Above 21.82% to 22.57%	40%
Above 22.57% to 23.32%	80%
Above 23.32%	90%

- The risk of solar resource shall be borne by the power producer.
- The maximum plant PV capacity shall not exceed 50 MWp.
- In the above tariff no adjustment for certified emission reductions has been accounted for. However, upon actual realization of carbon credits, the same shall be distributed between

NEPRA AUTHORITY

- The approved tariff along with terms & conditions shall be made part of the EPA. General assumptions, which are not covered in this determination, may be dealt with as per the standard terms of the EPA.

20. The Order part along with 3 Annexures is recommended for notification by the Federal Government in the official gazette in accordance with Section 31(7) of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997.

AUTHORITY

(Saif Ullah Chattha)
Member
21.2.2020

(Rafique Ahmed Shaikh)
Member
21/2/20

(Eng. Bahadur Khan)
Member

(Rehmatullah Baloch)
Vice Chairman
21/2/2020

(Tauseef H. Farooqi)
Chairman

NEPRA AUTHORITY
NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

21 02 20

the power purchaser and the power producer in accordance with the applicable GOP Policy, amended from time to time.

- The petitioner is required to ensure that all the equipment is installed as per the details/specifications in the generation license as awarded by NEPRA.
- The petitioner is hereby directed to secure the maximum available loan under the SBP Scheme. The savings in the cost of financing under SBP Scheme shall be shared between power purchaser and power producer in the ratio of 60:40 at the time of COD or during any time of the loan tenor, as applicable. The savings in the approved limit of spread over foreign loan shall also be shared between power purchaser and power producer in the ratio of 60:40 at the time of COD or during any time of loan tenor, as applicable.
- Allowed limit of degradation has been made part of the approved project cost. No extra financial compensation shall be provided in the EPA.
- The company will have to achieve financial close within one year from the date of issuance of tariff determination. The tariff granted to the company will no longer remain applicable/valid, if financial close is not achieved by the company, for whatever reason, in the abovementioned timeline or its generation license is declined/revoked by NEPRA.
- The targeted maximum construction period from prescribed date/time of financial close is 10 months. No adjustment will be allowed in this tariff to account for financial impact of any delay in project construction. However, the failure of the company to complete construction within 10 months will not invalidate the tariff granted to it.
- Pre COD sale of electricity is allowed to the power producer, subject to the terms and conditions of EPA, at the applicable tariff excluding debt servicing and return components. However, pre COD sale will not alter the required COD stipulated in the EPA in any manner.
- In case the company is obligated to pay any tax on its income from generation of electricity, or any duties and/or taxes, not being of refundable nature, are imposed on the company, the exact amount paid by the company on these accounts shall be reimbursed on production of original receipts. This payment shall be considered as a pass-through payment. However, withholding tax on dividend shall not be passed through.
- No provision for the payment of Workers Welfare Fund and Workers Profit Participation has been made in the tariff. In case, the company has to pay any such fund, that will be treated as pass through item in the EPA.

NEPRA AUTHORITY

Annex-I

FAS ENERGY PAKISTAN (SMC-PRIVATE) LIMITED

REFERENCE TARIFF TABLE

Year	O&M Local	Insurance	Return on Equity	Return on Equity during Construction	Principal Repayment	Interest Charges	Tariff
	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh	Rs. / kWh
1	0.8007	0.1806	1.4316	0.0812	2.6042	2.4275	7.5257
2	0.8007	0.1806	1.4316	0.0812	2.7657	2.2660	7.5257
3	0.8007	0.1806	1.4316	0.0812	2.9372	2.0944	7.5257
4	0.8007	0.1806	1.4316	0.0812	3.1194	1.9122	7.5257
5	0.8007	0.1806	1.4316	0.0812	3.3129	1.7187	7.5257
6	0.8007	0.1806	1.4316	0.0812	3.5184	1.5132	7.5257
7	0.8007	0.1806	1.4316	0.0812	3.7367	1.2950	7.5257
8	0.8007	0.1806	1.4316	0.0812	3.9685	1.0632	7.5257
9	0.8007	0.1806	1.4316	0.0812	4.2146	0.8170	7.5257
10	0.8007	0.1806	1.4316	0.0812	4.4761	0.5556	7.5257
11	0.8007	0.1806	1.4316	0.0812	1.9571	0.3400	4.7912
12	0.8007	0.1806	1.4316	0.0812	2.0804	0.2168	4.7912
13	0.8007	0.1806	1.4316	0.0812	2.2114	0.0857	4.7912
14	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
15	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
16	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
17	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
18	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
19	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
20	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
21	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
22	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
23	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
24	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
25	0.8007	0.1806	1.4316	0.0812	-	-	2.4941
Levelized Tariff	**0.8007**	**0.1806**	**1.4316**	**0.0812**	2.4573	**1.1914**	**6.1428**

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA AUTHORITY

Annex-II

FAS ENERGY PAKISTAN (SMC-PRIVATE) LIMITED
DEBT SERVICING SCHEDULE - LOCAL

Relevant Quarters	Base Amount (Rs.)	Principal Repayment (Rs.)	[illegible]	[illegible]	Total Debt Service (Rs.)	[illegible] (Rs./KWh)	[illegible]
1	1,884,694,018	34,729,448	28,270,410	1,849,964,570	62,999,859	1.5417	1.1928
2	1,849,964,570	35,250,390	27,749,469	1,814,714,180	62,999,859		
3	1,814,714,180	35,779,146	27,220,713	1,778,935,034	62,999,859		
4	1,778,935,034	36,315,833	26,684,026	1,742,619,201	62,999,859		
5	1,742,619,201	36,860,571	26,139,288	1,705,758,630	62,999,859	1.6363	1.0982
6	1,705,758,630	37,413,479	25,586,379	1,668,345,151	62,999,859		
7	1,668,345,151	37,974,681	25,025,177	1,630,370,470	62,999,859		
8	1,630,370,470	38,544,302	24,455,557	1,591,826,168	62,999,859		
9	1,591,826,168	39,122,466	23,877,393	1,552,703,702	62,999,859	1.7367	0.9978
10	1,552,703,702	39,709,303	23,290,556	1,512,994,399	62,999,859		
11	1,512,994,399	40,304,943	22,694,916	1,472,689,456	62,999,859		
12	1,472,689,456	40,909,517	22,090,342	1,431,779,940	62,999,859		
13	1,431,779,940	41,523,160	21,476,699	1,390,256,780	62,999,859	1.8433	0.8912
14	1,390,256,780	42,146,007	20,853,852	1,348,110,773	62,999,859		
15	1,348,110,773	42,778,197	20,221,662	1,305,332,576	62,999,859		
16	1,305,332,576	43,419,870	19,579,989	1,261,912,706	62,999,859		
17	1,261,912,706	44,071,168	18,928,691	1,217,841,538	62,999,859	1.9564	0.7781
18	1,217,841,538	44,732,236	18,267,623	1,173,109,303	62,999,859		
19	1,173,109,303	45,403,219	17,596,640	1,127,706,083	62,999,859		
20	1,127,706,083	46,084,267	16,915,591	1,081,621,816	62,999,859		
21	1,081,621,816	46,775,531	16,224,327	1,034,846,285	62,999,859	2.0764	0.6581
22	1,034,846,285	47,477,164	15,522,694	987,369,120	62,999,859		
23	987,369,120	48,189,322	14,810,537	939,179,799	62,999,859		
24	939,179,799	48,912,162	14,087,697	890,267,637	62,999,859		
25	890,267,637	49,645,844	13,354,015	840,621,793	62,999,859	2.2039	0.5307
26	840,621,793	50,390,532	12,609,327	790,231,261	62,999,859		
27	790,231,261	51,146,390	11,853,469	739,084,871	62,999,859		
28	739,084,871	51,913,586	11,086,273	687,171,286	62,999,859		
29	687,171,286	52,692,289	10,307,569	634,478,997	62,999,859	2.3391	0.3954
30	634,478,997	53,482,674	9,517,185	580,996,323	62,999,859		
31	580,996,323	54,284,914	8,714,945	526,711,409	62,999,859		
32	526,711,409	55,099,187	7,900,671	471,612,222	62,999,859		
33	471,612,222	55,925,675	7,074,183	415,686,546	62,999,859	2.4826	0.2519
34	415,686,546	56,764,560	6,235,298	358,921,986	62,999,859		
35	358,921,986	57,616,029	5,383,830	301,305,957	62,999,859		
36	301,305,957	58,480,269	4,519,589	242,825,688	62,999,859		
37	242,825,688	59,357,473	3,642,385	183,468,215	62,999,859	2.6350	0.0995
38	183,468,215	60,247,835	2,752,023	123,220,379	62,999,859		
39	123,220,379	61,151,553	1,848,306	62,068,826	62,999,859		
40	62,068,826	62,068,826	931,032	0	62,999,859		

NEPRA AUTHORITY

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY

Annex-III

FAS ENERGY PAKISTAN (SMC-PRIVATE) LIMITED

Debt Servicing Schedule - Foreign

Relevant Quarters	Base amount (USD)	Principal Repayment (USD)	Interest (USD)	Balance Principal (USD)	Total Debt Service (USD)	Annual Principal Repayment Rs./kWh	Annual Interest Rs./kWh
1	12,131,922	153,976	186,695	11,977,945	340,671	1.0625	1.2347
2	11,977,945	156,346	184,326	11,821,600	340,671		
3	11,821,600	158,752	181,920	11,662,848	340,671		
4	11,662,848	161,195	179,477	11,501,654	340,671		
5	11,501,654	163,675	176,996	11,337,978	340,671	1.1294	1.1677
6	11,337,978	166,194	174,477	11,171,785	340,671		
7	11,171,785	168,751	171,920	11,003,033	340,671		
8	11,003,033	171,348	169,323	10,831,685	340,671		
9	10,831,685	173,985	166,686	10,657,700	340,671	1.2005	1.0966
10	10,657,700	176,663	164,009	10,481,037	340,671		
11	10,481,037	179,381	161,290	10,301,656	340,671		
12	10,301,656	182,142	158,530	10,119,514	340,671		
13	10,119,514	184,945	155,727	9,934,570	340,671	1.2762	1.0210
14	9,934,570	187,791	152,881	9,746,779	340,671		
15	9,746,779	190,680	149,991	9,556,099	340,671		
16	9,556,099	193,615	147,056	9,362,484	340,671		
17	9,362,484	196,594	144,077	9,165,889	340,671	1.3565	0.9406
18	9,165,889	199,620	141,052	8,966,270	340,671		
19	8,966,270	202,692	137,980	8,763,578	340,671		
20	8,763,578	205,811	134,861	8,557,767	340,671		
21	8,557,767	208,978	131,693	8,348,790	340,671	1.4420	0.8551
22	8,348,790	212,194	128,477	8,136,596	340,671		
23	8,136,596	215,459	125,212	7,921,136	340,671		
24	7,921,136	218,775	121,896	7,702,362	340,671		
25	7,702,362	222,142	118,530	7,480,220	340,671	1.5328	0.7643
26	7,480,220	225,560	115,111	7,254,660	340,671		
27	7,254,660	229,031	111,640	7,025,629	340,671		
28	7,025,629	232,556	108,116	6,793,073	340,671		
29	6,793,073	236,134	104,537	6,556,939	340,671	1.6294	0.6678
30	6,556,939	239,768	100,903	6,317,171	340,671		
31	6,317,171	243,458	97,213	6,073,713	340,671		
32	6,073,713	247,204	93,467	5,826,509	340,671		
33	5,826,509	251,009	89,663	5,575,500	340,671	1.7320	0.5651
34	5,575,500	254,871	85,800	5,320,629	340,671		
35	5,320,629	258,793	81,878	5,061,835	340,671		
36	5,061,835	262,776	77,895	4,799,060	340,671		
37	4,799,060	266,820	73,852	4,532,240	340,671	1.8411	0.4560
38	4,532,240	270,926	69,746	4,261,314	340,671		
39	4,261,314	275,095	65,576	3,986,219	340,671		
40	3,986,219	279,328	61,343	3,706,891	340,671		
41	3,706,891	283,627	57,044	3,423,264	340,671	1.9571	0.3400
42	3,423,264	287,991	52,680	3,135,272	340,671		
43	3,135,272	292,423	48,248	2,842,849	340,671		
44	2,842,849	296,923	43,748	2,545,926	340,671		
45	2,545,926	301,493	39,179	2,244,433	340,671	2.0804	0.2168
46	2,244,433	306,132	34,539	1,938,301	340,671		
47	1,938,301	310,843	29,828	1,627,458	340,671		
48	1,627,458	315,627	25,045	1,311,831	340,671		
49	1,311,831	320,484	20,187	991,347	340,671	2.2114	0.0857
50	991,347	325,416	15,256	665,932	340,671		
51	665,932	330,423	10,248	335,508	340,671		
52	335,508	335,508	5,163	(0)	340,671		

NATIONAL ELECTRIC POWER REGULATORY AUTHORITY
NEPRA
AUTHORITY

26