National Electric Power Regulatory Authority
Islamic Republic of Pakistan

Registrar

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No. NEPRA/R/TRF-450/NTDC-2018/13734-13736
July 31, 2019

Subject: **Determination of the Authority in the matter of Petition filed by National Transmission & Despatch Company Ltd. (NTDC) for Determination of Transfer/Wheeling Charges for the FY 2017-18 and FY 2018-19** - Case No. NEPRA/TRF-450/NTDC-2018

Dear Sir,

Please find enclosed herewith the subject Determination of the Authority (80 pages) in Case No. NEPRA/TRF-450/NTDC-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. The Order Part and the Terms and Conditions of the Determination are to be notified in the Official Gazette.

Enclosure: As above

31.07.19

(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.

National Electric Power Regulatory Authority
(NEPRA)

PETITION NO. NEPRA/TRF-450/NTDC-2018

DETERMINAITON OF TRANSFER / WHEELING CHARGES

FOR THE YEAR 2017-18 & FY 2018-19

UNDER

NEPRA TARIFF STANDARDS & PROCEDURE RULES - 1998

FOR

NATIONAL TRANSMISSION & DESPATCH COMPANY (NTDC)

ISLAMABAD

, 2019

DETERMINATION OF THE AUTHORITY IN THE MATTER OF PETITION FILED BY NATIONAL TRANSMISSION & DESPATCH COMPANY (NTDC) FOR DETERMINATION OF TRANSFER / WHEELING CHARGES FOR THE FY 2017-18 AND FY 2018-19.
CASE NO. NEPRA/TRF-450/NTDC-2018

PETITIONER

National Transmission & Dispatch Company Limited (NTDC)
540 WAPDA House, Lahore.

INTERVENER

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COMMENTATOR

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REPRESENTATION

- Managing Director, NTDC
- General Manager GSO, NTDC
- General Manager Planning (P), NTDC
- General Manager (SO), NPCC
- Finance Director, NTDC

ABBREVIATIONS

CPPA-G	Central Power Purchasing Agency (Guarantee) Limited
FY	Financial Year
GOP	Government of Pakistan
MoWP	Ministry of Water and Power
NTDC	National Transmission & Despatch Company Limited
GWh	Giga Watt Hours
KV	Kilo Volt
Kw	Kilo Watt
kWh	Kilo Watt Hour
MW	Mega Watt
NEPRA	National Electric Power Regulatory Authority
O&M	Operation and Maintenance
PEPCO	Pakistan Electric Power Company
SRO	Statutory Regulatory Order
T&T	Transmission and Transformation Losses

The Authority, in exercise of the powers conferred on it under Section 7(3) (a) read with Section 31 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, Tariff (Standards and Procedure) Rules, 1998 and all other powers enabling it in this behalf, and after taking into consideration all the submissions made by the parties, issues raised, evidence/record produced during hearings, and all other relevant material, hereby issues this determination.

AUTHORITY

Saif Ullah Chattha
Member

31/7/19
Rafique Ahmed Shaikh
Member

Rehmatullah Baloch
Member

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1. Background

1. National Transmission and Despatch Company Limited (NTDC) 414-Wapda House, Lahore, was incorporated under the Companies Ordinance 1984 on November 6, 1998, as a result of structural reforms introduced by the Government of Pakistan in the Power Sector. The principal business of NTDC is to own, operate and build infrastructure for transmission system of 500kV and 220kV Transmission Lines and associated Sub-Stations. NTDC commenced its commercial operations on March 1st, 1999 and was organized to take over the properties, assets, rights and obligations of the Transmission network all over Pakistan previously owned by WAPDA, except the area served by K-Electric.

2. NTDC is a Transmission Licensee of NEPRA vide License No. TL/01/2002 issued on 31st December, 2002 to engage in the transmission business for a term of thirty (30) years, pursuant to Section 17 of the Regulation of Generation, Transmission and Distribution of Electric Power Act, 1997, within Pakistan except the area served by K-Electric Limited.

3. Under Article 8 of the License, NTDCL was required to move towards a Competitive Trading Bilateral Contract Market (CTBCM) and for this purpose, it had to facilitate the establishment of and functioning of a Single Buyer Plus (SBP) trading arrangement. Under the regime set out in the License, the Petitioner was entrusted to act as System Operator (SO), Transmission Network Operator (TNO), Central Power Purchasing Agency (CPPA), Contract Registrar and Power Exchange Administrator (CRPEA).

4. NTDCL in accordance with the Article 8 of its License, established the Central Power Procurement Agency (CPPA) to discharge the functions of billing, settlement and payment to Generation Companies (GENCO, IPPs, and WAPDA Hydel) under the said article. Although, CPPA was contemplated to be a standalone entity but for practical reasons at the time of grant of the Transmission License to NTDCL this could not be achieved, therefore, it was included in the Transmission License of NTDCL.

5. The Government of Pakistan, in pursuance of achieving a competitive market, decided to create an independent company to perform the Market Operator functions and accordingly, Central Power Purchasing Agency (Guarantee) Limited (CPPA-G) was incorporated in 2009 in order to become the successor of CPPA of NTDC and assume the existing market operations being performed by NTDCL. Accordingly, the Authority through its determination dated May 29, 2015 in the matter of Licensee Proposed Modification filed by NTDC, pursuant to Regulation 10(11)(a) of the NEPRA Licensing (Application & Modification Procedure) Regulations, 1999, separated the functions, business of settlement and development of competitive market from NTDC and assigned the same to CPPA-G to establish, govern, promote an efficient and transparent billing, settlement and payment system.

6. By virtue of modifications in the Transmission License functions of the Company have been restricted to System Operations, thereafter, NTDC only deals with System Operations whereas the Market Operations function has been assigned to CPPA-G through Business Transfer Agreement (BTA) between NTDC and CPPA-G dated 03-6-

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2015. Further under article 17 (1) (Functional Separation) of the Modification-II in the Transmission License by NEPRA vide No. NEPRA/R/LAT-01/8287-83003 dated 29th May 2015; NTDC will perform independently in both accounting and management terms:

- The Wire Business
  - Transmission & Generation Planning
  - Design and Engineering
  - Project Development and Execution
  - Operation & Maintenance of Transmission Assets
- System Operation and Despatch
  - Economic Generation Despatch
  - Power System Operation and Control

7. NTDC, in addition to its core functions, is also providing services (non-core function) to the Distribution Companies (DISCOs) in the areas of design, construction of transmission lines/substations and maintenance of support for the telecommunication system protection.

<u>Current Tariff Petition (FY 2017-2018 & FY 2018-19)</u>

8. National Transmission and Despatch Company Limited (NTDCL), hereinafter called "the Petitioner", being a Transmission Licensee of NEPRA initially filed a petition for the determination of transfer/wheeling charges pertaining to the FY 2017-18 and FY 2018-19 in terms of Rule 3(1) of Tariff Standards & Procedure Rules-1998 ("Rules") vide letter no. NTDCL/MD 718-28 dated June 28, 2016. Comparison of NTDC allowed and requested tariff is as under;

Rs. in Million

Sr. No.	Components of Rev. Requirements	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
		Allowed		Requested	
1.	GE & Administration	5,401	5,991	8,264	9,848
2.	Repair & Maintenance	1,024	1,133	814	1,068
3.	Insurance	121	121	200	259
4	Depreciation	5,477	5,944	7,019	9,897
5	Financial Charges	1,498	3,208	1,389	6,318
6	Return on Equity	13,410	15,324	20,230	24,533
7	Prior Year Adjustment	5,105	4,830	7,513	-
	Total	32,036	36,551	45,429	51,924
	Less: Other income	1,282	2,353	(1,531)	(1,597)
	Total Revenue Requirement	30,754	34,251	43,897	50,326
MDI		19,243	19,243	21,419	22,490
Tariff for the year Rs. /kW/Month		133.18	148.33	170.79	186.48

9. The petitioner made following submissions in this regard;

- Requested Tariff of Rs.170.79/kW/Month for FY 2017-18 & Rs.186.48/kW/Month for FY 2018-19.

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- Requested to allow un-covered cost for FY 2015-16 & FY 2016-17 including reversal of the impact of K.E. Loan Adjustment on ROE and the Unrecovered Cost for FY 2014-15.
- Requested to allow claim for the recovery of all legitimate costs incurred prudently during FY 2015-16 & FY 2016-17 in accordance with NEPRA Tariff Standard and Procedure Rules, 1998 17(3)(i) to run the business.
- Submitted to approve the investment program of Rs. 46,428 Mln for FY 2017-18 and Rs. 49,815 Mln for FY 2018-19 respectively.
- Submitted projected data for FY 2017-18 & 2018-19 to be applied across the board for different components of Capital Base.
- Requested effective date of implementation (i.e Jul 01, 2018) for determined tariff to be mentioned in the determination of Use of System Charge (UoSC).
- Submitted MDI to be considered on Non-Coincidental Basis due to the facts mentioned above.
- Requested annual average T&T losses level to be kept @ 3.0% at least.

<u>Admission / Hearing</u>

10. In terms of rule 4 of the Tariff Standards and Procedures Rules 1988 (hereinafter referred to as "Rules"), the Petition was considered by the Authority on August 9, 2018 and decided to return the application being deficient.

11. Accordingly the same was returned by Registrar through letter dated 20.08.2018. Later after fulfilling the requisite deficiencies, NTDCL resubmitted it's tariff petition for determination of transfer/wheeling charges for the FY 2017-18 and 2018-19 vide letter dated August 31, 2018. The same was considered and admitted by the Authority on September 13, 2018 for further processing.

<u>Framing of issues</u>

12. Following issues were approved by the Authority which were uploaded on NEPRA website for input/comments of the stakeholders.

13. <u>Status of Authority's Direction</u>

    i. What is the compliance status by NTDCL on the directions of the Authority given in the tariff determination for FY 2015-16 & FY 2016-17;
        - To file next tariff petition on the basis of calculation of MDI on coincidental basis.
        - To apprise the Authority about the progress of long pending five 220KV Grids Stations along-with allied transmission lines.
        - To submit a detailed report regarding the reasons for major incidents of brownouts and blackouts and the preventive measures taken or to be taken to avoid such frequent system collapses in future.
        - To provide summary of new hiring made during the FY 2015-16 and FY 2016-17 along with their financial and performance / operational impact in its next tariff petition.
        - To ensure implementation of reliability indices for all in-process and future projects.

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- To provide a detailed report on the recent improvements in networks undertaken to prevent transmission system breakdowns resulting in black outs and tripping particularly in cold foggy weather.
- To provide latest loading position of its 500 kV and 220 kV transmission links and grid station stations to the Authority on quarterly basis.
- To ensure installation of Secured Metering System (SMS) on remaining CDPs. A comprehensive report in this regard shall also be submitted to the Authority.
- To ensure timely right of way and other associated tasks assigned to NTDCL for timely completion of HVDC / all HVAC Transmission lines.
- To submit the updated progress regarding dispersal of power from major power plants in southern parts of the country on monthly basis.
- To share the TORs set for the engagement of international consultant for the capacity building of NTDC's Planning department.
- To apprise periodically the progress made on import of electricity with TAVANIR Iran and to submit the outcome (if any) of the Joint Working Group formed in this regard.

14. <u>Technical Issues</u>

i. What steps have been taken by NTDC for power evacuation from upcoming Renewable Energy Projects? Whether the issues of power curtailment from HUBCO, Port Qasim and Renewable Energy Projects have been resolved or otherwise? Port Qasim claimed a damage of US $ 119.13 million to plant and equipment.
ii. Has there been any independent study carried out on the losses being claimed in petition?
iii. What steps were taken in last 2 years to reduce the losses?
iv. Whether the loss target of 2.93% for FY 2017-18 and projected level of loss target of 3.0% for FY 2018-19 is reasonable? What steps have been taken by NTDC for elimination of the reasons (as identified by NTDC in its instant petition) for higher losses.
v. How many power transformers and conductors have been upgraded under the previous tariff control period to reduce technical losses and system overloading / constraints?
vi. What is the latest status of overloading? What were the reasoning identified for tripping and major blackout during May, 2018 and August, 2018? What remedial measures have been taken for preventing the transmission system breakdowns and cascading of power failures throughout the country in the next tariff control period?
vii. What technical and administrative actions have been taken in view of frequent tripping observed in last 18 months?
viii. Whether N-1 contingency has been assured for all transmission line projects being completed or in progress?

15. <u>Investment</u>

i. The Authority had allowed a total investment of Rs. 49,810 million to NTDC for FY 2016-17. What has been the project wise spending segregating the cost and time overrun? What is the impact of past investment and addition of coal /RLNG power in load centers on reduction of losses.

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ii. Petitioner to provide the component wise summary of Rs. 46,428 million and 49,815 million claimed, specify the time and cost overrun for these projects for which investment has been claimed?
iii. What is the central planning framework being used to ensure that new investment will ease out existing and as well as to avoid future transmission constraints? Will the required NTDCL investment address fully the overloading of 500 / 220 KV transmission lines and grids?
iv. Whether actual progress of NTDC for evacuation of the power projects is in line with the interconnection study approved by the Company?
v. What is the completion time of these projects for which investment has been claimed?
vi. In view of huge investment claimed, what progress has been made to mobilize resources from private sector under transmission policy, 2015?
vii. What is the status and sources of funds (local & foreign components) of the investments claimed in FY 2017-18 and 2018-19?
viii. What strategy has been devised to address the frequent ROW challenges and to avoid the delays in implementation of development projects of NTDC?
ix. How is the investment claimed associated with transmission system explain plan.
x. What is the latest status of transmission system expansion plan to be developed under grid code and integrated with indicative generation capacity expansion plan (IGCEP)?
xi. Whether NTDC formulated mechanism regarding forecast errors rebate in the Grid Code Addendum No. 2 (Revision-1) for Grid Integration of PV and CSP Solar Power Plants is reasonable and justified?

16. <u>General Establishment and Administration Cost</u>

i. Whether the Petitioner's requested General Establishment & Administration (GE&A) cost Rs. 8,264 million & Rs. 9,848 million for the FY 2017-18 and FY 2018-19, is justified?
ii. Whether the request of petitioner for induction of 1,449 employees for the FY 2018-19 is justified?
iii. Whether the Petitioner has maintained a separate post-retirement benefit fund?
iv. Whether the proposed Repair & Maintenance expenditures for Rs. 744 million & Rs. 988 million for the FY 2017-18 and FY 2018-19 is justified?
v. Whether any analysis is done for out sourcing of vehicle transport in view of existing high cost claimed on account of vehicles running expense plus repair and maintenance of vehicle expenses claimed?
vi. What is the rationale for 60% increase in travel expense for 2017-18 over the last year's actual expenditure?
vii. What are the reasons for high rising trend in professional fee actually incurred for the FY 2016-17 and also claimed for FY 2017-18 & FY 2018-19?
viii. Whether the petitioner's projected insurance of Rs. 199 million & Rs. 259 million for the FY 2017-18 and FY 2018-19 is justified? Identify the Grid Station which are to be capitalized and the existing completion and expenditure status therein?

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- ix. Whether the petitioner's projected depreciation of Rs. 7,019 million & Rs. 9,897 million for the FY 2017-18 and FY 2018-19 is justified? The additional capitalization of assets to be referred.
- x. What are the reasons for substantial increase in financial charges of Rs. 9,398 million & Rs. 12,098 million for the FY 2017-18 and FY 2018-19?
- xi. Whether the Petitioner's projected Return on Equity at 16% Rs. 20,230 million & Rs. 24,533 million for the FY 207-18 and FY 2018-19 are justified?
- xii. Whether the requested Cost of Debt of 12% is justified?
- xiii. Whether the Petitioner's projected Other Income of Rs. 1,531 million & Rs. 1,597 million for the FY 2017-18 and FY 2018-19 is reasonable?
- xiv. How is the charge out rate determined for services rendered to IPPs and DISCO's under the heading of "Other Income"?
- xv. Whether the proposed Average Monthly MDI MW/Month 21,419 for the FY 2017-18 on non-Coincidental Basis and Average Monthly MDI MW/Month 22,490 for the FY 2018-19 on non-Coincidental Basis by the petitioner is justified?
- xvi. Whether the cost over-run and commitment charges paid by the NTDCL needs to be adjusted in the transmission tariff? How the component of the requested Prior Year Adjustments (PYA) is justified?

17. <u>Others</u>

- i. Whether the calculation of Wheeling charge for the FY 2017-18 & 2018-19 based on Non-Coincidental basis is justified?
- ii. Whether claim of NTDC for allowing un-covered cost for FY 2015-16 & FY 2016-17 including reversal of the impact of K.E. Loan Adjustment on ROE and the Uncovered Cost for FY 2014-15 is justified?
- iii. Any other issue that may come up during the Regulatory Meeting.

18. In compliance of the provisions of rule 4(5)(6) of Rules, notice of admission/ hearing was published in the national newspapers on 8th & 9th November 2018 in national newspapers. Individual notices were also served to the interested / affected person / parties. In response no intervention request and comments were filed. Based on the submission of NTDCL, issues wise discussion is as under:

<u>Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17</u>

To file next tariff petition on the basis of calculation of MDI on coincidental basis

<u>Issue framed by the Authority</u>

Whether the proposed Average Monthly MDI MW/Month 21,419 for the FY 2017-18 on non-Coincidental Basis and Average Monthly MDI MW/Month 22,490 for the FY 2018-19 on non-Coincidental Basis by the petitioner is justified?

19. NTDC has submitted the instant petition on non-coincidental basis. While justifying the same, NTDC submitted that Use of System Charge / Wheeling Charges are charged to DISCOs including K-electric on the basis of Maximum Demand Indicator (MDI) which is reckoned on maximum demand recorded at the Common Delivery Points (CDPs) during the billing period at the particular time on Non-Coincidental basis. The maximum demand (kW) of DISCOs is measured through Digital Energy Meters installed at their

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electrical boundaries called Common Delivery Points (CDPs) by designated metering committee(s) having one member of the respective DISCOs. The Authority's determined mechanism for charging of MDI is as under;

XWD = The sum of the maximum demand of the XWDISCOs in kW recorded during a billing period at all the delivery metering points at which power is received by the XWDISCOs.

20. During hearing held on November 28, 2019, NTDC submitted that there is no loss to the Company if MDI is calculated on co-incidental basis however, the Company is in support of non-coincidental basis on the following grounds:

<u>SECTORIAL HARMONY</u>

21. Complete Power Sector, ranging from Generation Stations to Consumers of DISCOs, presently uses non co-incidental MDI for all billing matters. It is also highlighted that CPPAG also uses Non-Coincidental MDI for the purpose of charging its Market Operation Fee.

<u>RELIABILITY OF NON CO-INCIDENTAL MDI METERING DATA</u>

22. At present, all stakeholders including Generators, NTDC & DISCOs rely on Non coincidental MDI Metering Data jointly signed by respective Metering Committees which is in all respects more reliable than indirectly ascertained Co-incidental MDI. DISCOs also do not have mechanism for measuring co-incidental MDI from CDP meters.

<u>MERGING OF DISCO'S 132KV SYSTEM WITH NTDC</u>

23. As per NEPRA directions vide NEPRA/SA (Tech)/LAT-01/17193-205 dated 18-10-2017, a steering committee has been formed to look into merging of 132kV System of DISCOs with NTDC. The kick-off meeting was held on 07-03-2018 to deliberate on the modalities of merging mechanism.

24. NTDC submitted that the Company is undertaking a project enabling the accurate calculation of MDI on co-incidental basis from CDP meters. This project in collaboration with CPPAG and USAID/ADB. According to NTDC this project will not only enable co-incidental MDI calculation from CDP meters but will also provide online monitoring, and help automate billing procedures. The technical deliberations and other negotiations are in process and hopefully this project will be completed in 12 months time. NTDC further submitted that accurate and reliable co-incidental MDI from all CDP meters is not possible unless and until an automated system is in place which ensures all the online connectivity of CDP Meters and periodic transmission of Meter parameters to centralized Meter Data Management Software (MDM) which has enabling provisions for meeting all Tariff, Billing requirements. This calculation is sensitive as even the missing of one meter will result in inaccurate co-incidental MDI calculations.

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25. The Petitioner was directed in the tariff determination dated 9th May 2011 to install the digital meters at Common Delivery Points (CDPs). During hearing of the tariff petition for the FY 2014-15, upon the query from the Authority, the Petitioner responded that the digital meters have been installed at CDPs. In order to arrive at a just and informed decision, the Authority considered it appropriate to arrange the consultative session of the CPPA/NTDC and Distribution Companies in this regard. Accordingly, the consultative session was held on 19th March 2015. The Authority considering the submission of the Petitioner and the Distribution Companies, directed the Petitioner in the tariff determination for the FY 2014-15, to file the next tariff petition i.e. FY 2015-16 on the basis of calculation of MDI on coincidental basis.

26. Despite clear directions of the Authority, NTDC again submitted the instant petition on non-coincidental basis and giving the same justifications as already submitted. The Petitioner has consistently not able to comply with the directions of the Authority which tantamount to be dealt in accordance with the provision of terms of Fee & Fine Rules of NEPRA. However, the Authority in order to provide NTDC a fair chance finally announced the latest date of installing of digital meters for remaining CDPs as 30th September 2019. NTDC is directed to submit the next petition on co-incidental basis and non-compliance in the matter will be dealt in accordance with provision of NEPRA Act and Rules made there-under.

<u>Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17</u>

<u>To apprise the Authority about the progress of long pending five 220KV Grids Stations along-with allied transmission lines</u>

27. NTDC submitted the following information regarding the long pending five 220 KV grid stations along with allied transmission lines in Khyber Pakhtunkhwa:

Description	Grid Station – KV			Substation - KV	
Name of project	220 Chakdara	220 Nowshehra	220 Mansehra	220 Mansehra	220 Lalian
Financing	ADB (Tranche-IV) Loan No. 3203	ADB (Tranche-IV) Loan No. 3203	ADB (Tranche-III) Loan No. 2846	ADB (Tranche-III) Loan No. 2846	ADB (Tranche-IV) Loan No. 3203
Consultant	Barqaab	Barqaab	NESPAK	NESPAK	BARQAAB
Contractor	PEL	PEL	CHINT	CHINT	
Contract Price	PKR 311,231,632/-	PKR 393,704,352/-	CNY 65,857,873 + PKR 172,903,328	CNY 65,857,873 + PKR 172,903,328	
Contractual completion	26-10-2017	26-10-2017	02-11-2016	02-11-2016	
Status	Energized on 16-09-2018	To be completed by January, 2019	Energized on 04-04-2018	Energized on 04-04-2018	Project Site has been changed due to Land Acquisition issues. New Land selected and Section 4 is under process

28. In response to the query by the Authority, NTDC provided the current status in respect of D.I.Khan, Nowshehra and Lalian grid stations as follows:

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Status of 220kV D.I.Khan Grid Station:

Percentage Progress of Civil works = 94%
Percentage Progress of Electrical works = 90%
Overall Percentage progress = 92%

29. Telecom works testing is pending which would be completed in a week and the D.I.Khan Grid Station would be energized in 2-weeks subject to shut down by NPCC.

Status of 220kV Nowshehra Grid Station:

Percentage Progress of Civil works = 84.74%
Percentage Progress of Electrical works = 41.13%
Overall Percentage progress = 81.9%

Status of 220kV Lalian Grid Station:

30. NTDCL submitted that first selected site could not acquire due to non-issuance of NOC by the Forest Department. Another piece of private land was acquired through section-IV way back on 27.03.2015 and Rs. 35 million were deposited in Government Treasury. But later on second selected site could not be acquired because of court cases filed by the land owners and thereafter objection by the Project Funding Agency / ADB. So further process of compulsory acquisition was stopped. Again on 11.09.2018 after survey of the area, five sites were identified out of which one most feasible site was finalized by selection board. Accordingly acquisition of new Land is under progress and Section-IV has been submitted to Deputy Commissioner Office for publication in the Punjab Gazette.

31. Having considered the above information submitted by NTDC, this was noted that, in the province of Khyber Pakhtunkhwa, 220 kV Mansehra grid station has become operational in April 2018 with a delay of about 18 months, 220 kV Chakdara grid station in September 2018 with a delay of about 11 months, whereas, 220 kV Nowshehra and D.I.Khan grid stations have still not been energized despite delays of about 14 months. It was further noted that the delay in construction of 220 kV Lalian grid station located in Chiniot District of Punjab Province is due to land acquisition issues.

32. NTDCL is directed to resolve the issues on priority basis and expedite the energization process of the above grid stations. NTDC shall submit a progress report to NEPRA about the revised timeline and cost overruns.

33. NTDC is also directed to ensure timely completion of its all planned projects in a structural and planned way to avoid network constraints and overloading scenarios. NTDC is further directed to submit a detailed report regarding benefits achieved in terms of removal of overloading / system constraints after the energization of 220 kV Chakdara and Mansehra grid stations.

Issues framed by the Authority

What is the latest status of overloading? What were the reasons identified for tripping and major blackout during May, 2018 and August, 2018? What remedial measures have been taken for preventing the transmission system breakdown and

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cascading of power failures throughout the country in the next tariff control period?

How many power transformers and conductors have been upgraded under the previous tariff control period to reduce technical losses and system overloading / constraints? and

What technical and administrative actions have been taken in view of frequent tripping observed in last 18 months?

Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17

To provide a detailed report on the recent improvements in network undertaken to prevent transmission system breakdowns resulting in black outs and tripping particularly in cold foggy weather.

To provide latest loading position of its 500 kV and 220 kV transmission links and grids stations to the Authority on quarterly basis

To submit detailed reports regarding the reasons for major incidents of brownouts and blackouts and the preventive measures taken or to be taken to avoid such frequent system collapses in future.

- As provided by the petitioner, a list of Black-outs (Major) and Brown-outs (Partial) period for the calendar year 2016 & 2018 is given below;

SR. NO.	DATE & TIME	TYPE	REASON	RESTORATION TIME
1	16-05-2018 at 09:28Hrs	Partial (From Guddu to Peshawar)	Tripping of three number 500 kV Guddu747-Rahim Yar Khan, 500 kV Guddu-D.G Khan and 500 kV Guddu-M/Garh due to fault on shunt reactor at Guddu747 and tripping of two number of RLNG Plants i.e. Haveli Bahadur Shah and Bhikki (2400 MW) resulted in cascaded tripping in the northern part from Guddu to Peshawar leading to power collapse in North (Punjab and Khyber Pakhtunkhwa)	From Guddu to Sheikh Muhammadi Peshawar at 18:41 Hrs (Duration 9 Hrs and 13 mnts)
2	21-01-2016 at 15:07Hrs	Partial (From Muzaffargarh to Peshawar)	Tripping of 500/220 KV 450 MVA Auto Transformer T-3 alongwith 500 KV Guddu Old - Guddu 747 circuit.	From Muzaffargarh to Sheikh Muhammadi Peshawar at 20:25 Hrs (Duration 5 Hrs and 18 mnts)
3	15-01-2016 at 09:21Hrs	Partial (From New Multan to Peshawar)	Damage of porcelain insulator of isolator D5Q11 controlling 220 kV Muzaffar Garh Phase-2 -Multan cct 3	From New Multan to Sheikh Muhammadi Peshawar at 16:40 Hrs (Duration 7 Hrs and 19 mnts)

34. According to the petitioner NTDC system has supported peak power generation of 20,795 MW in June 2018 as compared to 16,975 MW in July 2016 which indicates NTDC's enhanced capability to meet with increased load demand. NTDC further submitted that the System overloading has been observed at some points which may be attributed to permanent/temporary outage of Power Plants in the area or increase load

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demand. NTDC further submitted that the following Grid Stations were overloaded in summer season. To mitigate this issue, augmentation/addition work is in progress:

500 kV SKP	500 kV Gatti
500 kV Nokhar	500 kV Yousaf Wala
500 kV Rawat	500 kV Shikarpur
500 kV Jamshoro	220 kV Jaranwala
220 kV Ludewala	200 kV NKLP
220 kV Mardan	220 kV Banu
220 kV Sanjani	220 kV Quetta Industrial

35. The updated loading position (I.e. June 2018) as provided by NTDC is placed below:

Part(a) : 500 kV Grid Stations

Province	No. of Grid Stations	No. of Power T/Formers (500/220 kV)	Over-Loaded T/Formers	%
Punjab	10	25	18	72
Sindh	5	11	0	0
Khyber Pakhtunkhwa	1	3	3	100
Balochistan	NIL	-	-	-
Total	16	39	21	54

Part(b) : 220 kV Grid Stations

Province	No. of Grid Stations	No. of Power T/Formers (220/132 kV)	Over-Loaded T/Formers	%
Punjab	27	103	67	65
Sindh	5	20	5	25
Khyber Pakhtunkhwa	4	16	10	63
Balochistan	5	11	2	18
Total	41	150	84	56

Reasons identified by NTDC for tripping and major blackout during May, 2018:

36. The tripping/blackout on 16 May 2018 @ 09:28 hrs was due to the damage of Yellow phase Shunt Reactor in Switchyard of 500kV 747MW (GENCO-II) and Subsequent tripping of 500kV Guddu 747MW-Rahim Yar khan T/L. The Damaged Shunt Reactor was replaced by 747MW TPS GENCO-II formation.

Reasons identified by NTDC for tripping and major blackout during August, 2018:

37. NTDCL informed that the Partial blackout on 17 August 2018 at 500 kV G.S NTDC Jamshoro was due to the occurrence of flash over on 132kV Line isolator No. 105 (controlling 132kV Jamshoro–Old Jamshoro Ckt-II), which resulted in tripping of 220/132kV 160MVA ATF T-3 and T-7. The weather condition of Jamshoro was very humid on 17/8/2018. NTDC submitted that following remedial Measures have been taken:

- Implementation of under frequency schemes.

- Implementation of Cross trip schemes.
- Implementation of auto Re-closure and Tele-protection scheme on 220 kV Lines in Process.
- Increase frequency of washing/cleaning of Lines and Grid Station equipment.
- Regular thermo vision surveys to identify potential Hot spots and attending the same to avoid breakdowns.
- Rehabilitation of transmission lines.
- RTV Coatings.
- Replacement of poor-quality insulators.
- Replacement of old equipment.

38. NTDC submitted the following improvements were made in the system:

- Addition of New Grids/Transmission Lines to relieve Overloading
- Augmentation of Transformers
- Close coordination with all stakeholders. WAPDA/GENCOs/IPPs/ DISCOs to improve System Stability and Reliability
- Implementation of Under frequency schemes
- Implementation of Cross trip schemes
- Implementation of Auto closer and Tele protection scheme on 220 kV Lines in Process
- Increased frequency of washing/cleaning of Lines and Grid Station equipment.
- Regular surveys to identify potential Hot spots and attending the same to avoid breakdowns.
- Rehabilitation of transmission lines/Grid Station Equipment
- RTV Coatings
- Replacement of poor Quality insulators

39. NTDCL submitted that the following Technical & Administrative actions have been taken in this regard;

- Periodical washing/cleaning and maintenance.
- Replacement work of 01 to 09 No. deteriorated towers of both the 500kV Hub-Jamshoro and Hub-NKI is under progress.
- Replacement of substandard quality EMCO Make disc insulators with imported 160 KN NGK Japan and the addition of 02 nos. extra disc insulators on 220kV Jhampir-T.M Khan circuit I & II. In this regard Procedure has been initiated for black listing of EMCO.
- Application of RTV coating on disc insulators installed on 500kV PQ-NKI and PQ-Jamshoro Transmission Lines from loc # 01 to 40 is in process.
- Procurement of RTV Coated fog type Disc insulators for replacement on 500kV Hub-Jamshoro T/L under ADB Loan.
- Rehabilitation of following transmission lines is in process to reduce trippings
- Reconductoring of 220 kV NKLP-Bund Road with twin rail and underground cable
- Reconductoring of 220 kV SKP-bund road cct I &II with rail twin bundle
- Re-conducting of 220 kV Gatti-Bandala cct I&II with rail (5 km portion)
- Procurement of washing units, cranes to expedite effective maintenance work.

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- Procurement of thermos vision cameras, dead line and Live line T&P to replace worn out T&P for effective maintenance

40. Replacement of faulty shunt reactors to reduce tripping due to over voltages at following Grid Stations;

- 500 kV Gatti G/s for Gatti-Brotha Circuit II
- 500 kV Rawat G/S for Rawat-Nokar and Rawat-Neelum Jehulm circuit
- 500 kV Nokhar G/S for Nokar-Neelum Jehlum Circuit
- 500 kV Sheikhupura G/S for Sheikhupura- CFPP Sahiwal Circuit and Sheikhupra-Nokhar Circuit II
- Procurement of 500/220 kV Transformers for replacement of old transformers (3 No.) at Gatti G/S to improve reliability.
- Upgradation of protection system by replacing electromechanical/static relays with numerical relays
- Augmentation work of 160 MVA Auto T/F at 500kV Shikarpur
- Extension of 01 No. 220/132kV, 250MVA ATF at 220Kv G.S Rohri is under progress
- Addition of 3rd 450MVA Auto T/F at 500kV G.S Jamshoro
- Addition of 3rd circuit, 500kV Thar Engro-Moro T/L
- Addition of a new transmission line 220kV Uch-Sibbi D/C
- Energization of 500kV Thar Engro-Jamshoro T/L
- Energization of 2nd source,220kV Jhampir-T.M Khan I & II for 220kV GS T.M Khan Road.
- 02 Nos. cranes, washing units and maintenance gangs have been deployed for maintenance of 500kV PQ-NKI and PQ-Jamshoro Transmission Lines.
- Energization of New Grids:
  - 500kV RY Khan, 220kV G.S Dera Murad Jamali, Chakdara, Lal Sohanra and Mansehra G/S
  - Addition of 160 MVA T/F at Ghazi Road, ISPR , Sheikhupura
  - Augmentation of 01 No. 160 MVA Auto T/F at 220kV G.S NTDC Hala Road, 500kV G.S Dadu
- Completion of the foundation work of Auto T/F to be augmented at 220kV G.S NTDC Quetta

41. The submissions made by the Petitioner was reviewed and it was observed that the major partial system collapse & cascading network failures have occurred in the country as listed above which are undesirable for EHV networks.

42. NTDC's 500 kV & 220 kV network is loaded above 50%, which is alarming sign. The major reason is delay of system reinforcement projects. The Authority further observed that a number of 500 kV and 220 kV grid stations were overloaded in summer season. Upon query raised on this particular issue, NTDC apprised the Authority that the overloading scenarios would be addressed through energization of new grid stations. However, it is found that commissioning of grid stations in recent past to relieve overloading has not achieved the desired objectives. For instance 500 kV Shikarpur grid station commissioned in 2016 to relief overloading in the affected areas, has now become overloaded. This situation points to inefficiency of NTDC who failed to recognize the actual demand of the area.

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43. The Authority has shown serious concerns on the issue of brown outs and black outs. Furthermore, NTDC did not provide details regarding the administrative measures taken due to which frequent tripping incurred. NTDC has been allowed huge amount of Rs. 28 billion and Rs. 49.8 billion on account of investment for augmentation of the existing system as well as interconnection of the upcoming power projects. Keeping in view the sufficient investment allowed by the Authority brownouts and blackouts seems unjustifiable. In view thereof NTDC is directed to ensure system sustainability and smooth operation in line with Performance Standards Transmission Rules - 2005.

Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17

To ensure implementation of reliability indices for all in-process and future projects

44. On the issue of reliability indices NTDC submitted the following details:

COMPARISON OF VOLTAGE VIOLATIONS				
Sr#	**Allowed Limits as per NEPRA Performance Standards Transmission Rules-2005**	FY-2015-16 (Nos.)	FY-2016-17 (Nos.)	FY-2017-18 (Nos.) Till Mar-2018
1	Voltage variation ±5% under normal operating conditions.	97,127	68,340	69,072
2	Voltage variation ±10% under N-1 contingency conditions.	2,599	727	3,999

RELIABILITY INDICES							
System Parameters		2014-15	2015-16	2015-16	2016-17	2016-17	2017-18
System Reliability	System Duration of Interruption	0.38	0.46	0.46	1.08	1.08	0.6
	System Frequency of Interruption	0.3	0.19	0.19	0.35	0.35	0.29
Tie Line Reliability	System Duration of Interruption	4.68	2.24	2.24	1.85	1.85	0
	System Frequency of Interruption	0.75	0.75	0.75	0.75	0.75	0
System Security	Energy not Served in GkWHr	0.53	0.14	0.14	0.07	0.07	0.47
Frequency Violations	**Total no. of occasions**	**1264**	**246**	**246**	**35**	**35**	**25**

45. The system studies for all in-process and future projects are conducted for making sure that reliability criteria for normal and N-1 conditions as mentioned in NEPRA Grid Code are fulfilled. However, in some in-process ongoing projects which involve unavoidable delays in the construction of originally proposed transmission schemes, there N-1

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reliability criteria is compromised sometimes for interim period only until the completion of originally proposed complete scope of work.

46. NTDC is directed to ensure N-1 contingency in vital projects such as 1320 MW Port Qasim plant, which caused serious technical and financial issues. NTDC has to ensure the compliance of the NEPRA grid code in letter and spirit.

Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17

To ensure installation of Secured Metering System (SMS) on remaining CDPs. A comprehensive report in this regard shall also be submitted to the Authority.

47. According to NTDC, the installation of SMS meters is in progress, 465 Nos. SMS has been installed and brought online out of total 498 Nos. CDPs.

48. The information submitted by the petitioner reflects that NTDC, instead of a comprehensive report, provided only the number of installed and pending SMS on CDPs as noted above. In this regard, the petitioner is directed to ensure the installation of Secured Metering System (SMS) on all the remaining CDPs before September 30, 2019 and inform the Authority accordingly.

Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17

To ensure timely right of way and other associated tasks assigned to NTDCL for timely completion of HVDC / all HVAC Transmission lines.

49. Responsibilities of the NTDC under the agreement are as under:

i. Land Acquisition of Converter Stations and provision of the same to the Project Company on lease for 25 years.
ii. Land Acquisition for Grounding Electrodes for lease to the project company for 25 years.
iii. Provision of Land Route (ROW) to the project company for construction of HVDC T/L and electrode line as per the mechanism agreed in Land Lease Agreement.
iv. Construction of Boundary Wall around converter station.
v. Provision of drainage channel for discharge of effluent from converter station.
vi. Access road for converter station at Lahore and Matiari.
vii. Obtaining consents / NOCs from various department for construction of T/Line and grounding electrodes.
viii. Land Acquisition of 3 repeater stations along the route of T/Line to cater for the communication needs of the project.
ix. Land Acquisition of Central Ware House.
x. Liaison with various departments and organizations regarding various issues of the project.
xi. Provision of data / base cases for stability studies.
xii. Basic design review through owner engineer.
xiii. FATs / Texting of the equipment.

50. NTDC submitted that all out efforts are being made for timely clearance of Right of Way (RoW) problems and completion of other associated tasks, while compensation is paid to affected as per prevailing NTDC policy / procedure under WAPDA Act 1958 section-14.

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Accordingly to NTDC the COD of HVDC project is set as 1st March 2021. The latest progress of the project is given below:

Description	Status
Land acquisition of Lahore C/S	137 acres / 163.2 acres through negotiation with land owners
Land acquisition of Matiari C/S	Payment to 95% of land owners has been made, the remaining 5% have gone to court and filed a case against NTDC
Land acquisition of Electrode Station	The land for electrode station at Lahore & Matiari end has been acquired
Land acquisition of Repeater Stations	land acquisition is in process
HVDC 878 km T/Line Progress	The total length of transmission line is divided into 8 lots. Currently route survey and RoW clearance is in progress
HVAC lines	The interconnections are to be provided 6 months before COD. There are three double circuits 500 kV In/Out circuits for dispersal of power from HVDC convertor station Lahore. Total length of lines is 56.6 km. currently FAT of towers and soil investigation / route survey is in progress
Bottlenecks / Issues	Shortage of resources experienced by Chief Engineer (HVDC) office

51. At present NTDC activities are at initial stage. NTDC needs to ensure timely completion of all its activities. NTDC is directed to submit the quarterly report regarding progress on HVDC line to NEPRA. NTDC is further directed to ensure completion of all its responsibilities within given time frame in order to avoid any delay in completion of HVDC transmission lines COD.

To apprise periodically the progress made on import of electricity with TAVANIR Iran and to submit the outcome (if any) of the Joint Working Group formed in this regard.

52. NTDCL informed that first meeting of the committee was held on 24th -25th April, 2018 at Power Division, Ministry of Energy. Iranian side stated that the supply of 100 MW electricity agreement was signed between M/s TAVANIR and NTDCL in 2007 for which Iranian side has completed 49 km of transmission line but due to lack of transmission line and grid station in Pakistan, supply of power is not possible and Pakistani side need to implement the project in its territory for early completion.

53. Pakistani side stated that NTDC paid administration fee of Export Development Bank of Iran (EDBI), Insurance Premium (Euro 833,000/) and paid 15% advance payment. In the meanwhile UN/USA sanctions were imposed on Iranian Banks. Due to this situation no further payments were possible due to non-availability of banking channels between EDBI and Pakistani Banks and the situation stands as it is even today.

54. During talks both parties expressed their resolve to implement the project by following three possible options:

Option – I: Execution of the project (Phase-I) as per existing contract agreement (SU-NT/2009-10) through M/s SUNIR, financed by EDBI.

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Option – II: Execution of the project (Phase-I) through M/s SUNIR, financed by NTDCL own sources.

Option – III: Execution of the project (Phase-I) through a new contractor, financed by NTDCL own sources.

55. Both sides agreed to hold next session of the committee in Tehran to further discuss modalities.

56. The Authority observed that sanctions on Iran have halted work on the project due to closure of banking channels. However, both parties seem committed to implement the project and discussions are ongoing. NTDC is directed to pursue the project in letter and spirit.

Technical Issues

Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17

To submit the updated progress regarding dispersal of power from major power plants in southern parts of the country on monthly basis, and

To share the TORs set for the engagement of international consultant for the capacity building of NTDC's Planning department, and

Issue framed by the Authority

What steps have been taken by NTDC for power evacuation from upcoming Renewable Energy Projects? Whether the issues of power curtailment from HUBCO, Port Qasim and Renewable Energy Projects have been resolved or otherwise? Port Qasim claimed a damage of US $ 119.13 million to plant and equipment.

57. According to the petitioner, the following steps have been taken for power evacuation from upcoming Renewable Energy Projects:

- Presently 24 Nos. Wind Power Projects 1,233 MW are connected with National Grid through 220kV Jhimpir New Grid Station including 150 MW WPP of Gharo Cluster.
- In future further 20 Nos. of WPP having 1,224 MW will be connected with 500/220kV Jhimpir – II Grid Station which will be commissioned in FY 2020-21.
- Due to ocean environment consultant being finalized for 220kV Grid Station Gharo.
- Evacuation from projects is through Interim arrangement and integration will be made at Matiari station.
- High pollution in the coastal areas especially due to K.E. operated plants, coating and washing is being carried out.
- NTDC has responded on technical grounds regarding damages claimed by Port Qasim and reply is awaited from Port Qasim Coal Fired Power Plant.

58. NTDC submitted that it has already complied with Regulator's Directions to submit the updated progress regarding dispersal of power from major power plants in southern parts of the country on monthly basis. Also the TORs set for the engagement of international consultant for the capacity building of NTDC's Planning department is as under:

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Intervention Title / International Consultant	Focused Area/ Planned Schedule	Overall Objective	Specific Tasks
"Variable Renewable Energy Integration and Planning Study" / World Bank (M/s Lahmeyere International, Germany)	• Load Forecast • Generation Planning *Sep 2018 - Feb 2019*	Improve planning processes and enhance capacity of Power System Planning to enhance variable RE share in the national power mix	• Provide models, analysis and capacity to plan integration of variable RE in national grid • Assess the role that VRE could play in lowering basket price
"Review, support and strengthen Transmission Planning & Dispatch functions for preparing roadmap to optimally enhance variable RE share in the grid (2019-40)"/USAID SEP Project	• Transmission Planning *Oct 2018 - Dec 2020*	Strengthen PSP-NTDC capacity for enhancing the share of RE (clean, cheap and indigenous) in the national grid	• Prepare implementation plan for enhanced share of VRE • Organize multiple basic & advanced trainings on PSS/E and RTPSS for PSP and NPCC
"Upgrading of National Power System Expansion Plan 2018-2040" / Japan International Cooperation Agency (JICA)	• Transmission Planning *Jan 2019 - Jun 2020*	Support PSP-NTDC in preparing National Power System Expansion Plan and build PSP capacity for future iterations	• Upgrading Transmission System Expansion Plan • Provide on-the-job training • Execute economic, financial & environmental analysis

59. The response of the petitioner on this particular issue is only acceptable to the extent of submission of monthly report to NEPRA showing arrangements for dispersal of power from power plants located in the south region.

60. As per statement of NTDC (referred to the above listed bullets), 24 Nos. of Wind Power Projects are currently connected to the National Grid and further 20 Nos. of Wind Power Projects would be evacuated in future through 220 kV Jhampir 2 grid station in FY 2020-21. The Authority has previously shown serious reservation on such imprudent practices and response by NTDC. The Authority had earlier expressed that owing to NTDC evacuation related issues, the initiative and target of the government of inducting renewables in the system is not fully achieved. Therefore NTDC's response regarding interim arrangements for power evacuation from Renewable Energy Projects cannot be considered substantiate enough for timely evacuation of power from upcoming RE projects. Similarly the view point of NTDC regarding high pollution in coastal areas especially due to KE's operated plants is not acceptable since the consultant has failed to consider the impact of the pollution from the stated KE's plants in its study.

61. In view thereof, NTDC is directed to resolve the aforementioned issues and achieve the stipulated time line for completion of its planned projects related to power evacuation from power plants located in southern part of the country such as wind cluster of Jhampir and Gharo in Sindh Province as well as from HUBCO and Port Qasim power plants. The petitioner is directed to submit a detailed progress report in this regard on quarterly basis to NEPRA.

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Issue framed by the Authority

Whether the loss target of 2.93% for FY 2017-18 and projected level of loss target of 3.0% for FY 2018-19 is reasonable? What steps have been taken by NTDC for elimination of the reasons (as identified by NTDC in its instant petition) for higher losses?
How many power transformers and conductors have been upgraded under the previous tariff control period to reduce technical losses and system overloading / constraints?
Has there been any independent study carried out on the losses being claimed in petition?
What steps were taken in last 2 years to reduce the losses?

62. The overall losses for the year 2017-18 come-out to 2.928% which is already 0.128 % higher than 2.8 % restricted by NEPRA. The month wise losses comparison of FY 2017 & 2018 for the months July to September clearly shows increase of T&T Losses from 2.68% to 3.00% as shown in the following table.

For FY 2017-18

Month	Energy Received by NTDC at CDPs (kWh)	Energy Delivered by NTDC at CDPs (kWh)	T&T Loss (kWh)	% T&T Loss
				Expressed as % of Energy Received by NTDC at CDPs
18-Sep	11,536,737,487	11,173,862,367	362,875,120	3.15%
18-Aug	12,336,690,774	11,968,728,542	367,962,232	2.98%
18-Jul	11,697,927,894	11,359,584,100	338,343,794	2.89%
Over All	**35,571,356,155**	**34,502,175,009**	**1,069,181,146**	**3.01%**

For FY 2016-17

Month	Energy Received by NTDC at CDPs (kWh)	Energy Delivered by NTDC at CDPs (kWh)	T&T Loss (kWh)	% T&T Loss
				Expressed as % of Energy Received by NTDC at CDPs
17-Sep	10,289,398,349	10,024,438,079	264,960,269	2.58%
17-Aug	11,120,786,312	10,809,808,287	310,978,025	2.80%
17-Jul	10,739,255,797	10,452,453,966	286,801,831	2.67%
Over All	32,149,440,458	31,286,700,333	862,740,125	2.68%

63. NTDC Actual T&T Losses for FY 2017-18 are shown in the following table:

Month	Energy Received by NTDC at CDPs (kWh)	Energy Delivered by NTDC at CDPs (kWh)	T&T Loss (kWh)	% T&T Loss
				Expressed as % of Energy Received by NTDC at CDPs
18-Jun	11,039,329,204	10,735,821,164	303,508,040	2.75%
18-May	10,338,977,505	10,039,547,910	299,429,595	2.90%
18-Apr	8,479,433,241	8,224,727,207	254,706,035	3.00%
18-Mar	7,449,729,317	7,220,514,795	229,214,523	3.08%
18-Feb	6,079,438,378	5,886,084,164	193,354,214	3.18%
18-Jan	7,708,909,393	7,442,715,172	266,194,220	3.45%
17-Dec	7,654,457,327	7,434,093,065	220,364,262	2.88%

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17-Nov	6,396,609,059	6,170,728,358	225,880,701	3.53%
17-Oct	8,729,578,157	8,480,901,827	248,676,330	2.85%
17-Sep	10,289,398,349	10,024,438,079	264,960,269	2.58%
17-Aug	11,120,786,312	10,809,808,287	310,978,025	2.80%
17-Jul	10,739,255,797	10,452,453,966	286,801,831	2.67%
Over All	106,025,902,040	102,921,833,994	3,104,068,045	**2.93%**

64. NTDC while justifying its 3% T&T losses claimed in the instant petition submitted that, prior to FY 2017-18 transmission losses used to include 132 kV losses. NTDC submitted that since most of IPPs serve at 132 kV network and utilization is closer to load centers, therefore contributing low loss quantum resulting in lower aggregate loss of NTDC. Consequently, the benchmark of losses needs to be revisited as evident from the actual results till the revised loss assessment study excluding 132kV network. According to NTDC the study will be conducted soon by NTDC. Hence the projected level of loss target for 3% is reasonable at this point in time. NTDC submitted that the following table depicts the new generation added in the south, which means energy has to travel longer distances resultantly impacting losses.

Sr. No.	Name of IPPs	Capacity (MW)	Actual/Expected Date of Completion of Interconnection Facilities
01.	Hartford (Artistic) WPP	50	26.01.2018
02.	Hawa WPP	50	31.01.2018
03.	Jhampir WPP	50	31.01.2018
04.	Three Gorges Second WPP	50	31.01.2018
05.	Three Gorges Third WPP	50	31.01.2018
06.	UCH-II Power Project	404	08.05.2018
07.	Engro Power Gen Thar Limited	660	31.07.2018
08.	Tricon Boston - A WPP	50	12.07.2018
09.	Tricon Boston - B WPP	50	13.07.2018
10.	Tricon Boston - C WPP	50	20.07.2018
11.	Zephyr WPP	50	31.12.2018
12.	Guddu Power Plant (GENCO-II)	747	Oct, 2019
13.	China Power Hub Generation Company (Pvt.) Limited	1320	June, 2019

65. According to NTDC, the following tables indicate system up-gradation undertaken to reduce technical losses and over-all loading constraints:

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<u>500kV Grid Stations</u>

Sr. No.	Project Description	Completion date	Remarks
500kV Grid Station			
1.	Shikarpur 500kV Substation (2X600MVA)	15.05.2016	Reinforcement
220kV Grid Station			
1.	Jhampir 220kV Substation (2X250MVA)	25.08.2016	Evacuation
2.	Kassowal 220kV Substation 2X160MVA	17.04.2015	Reinforcement
3.	Gujrat 220kV Substation (3x250MVA)	27.04.2017	Reinforcement
4.	Chishtian 220 kV Substation 2x160MVA	24.10.2016	Reinforcement
5.	220 kV Line Bays at Vehari Grid Station	24.10.2016	Reinforcement

<u>500 kV TL</u>

Sr. No.	Project Description	Completion date	Remarks
500kV T/Line			
1.	Bhikki Line 500kV (2.6 km)	10.12.2016	Evacuation
2.	Sahiwal 500kV Line (5 km)	27.01.2017	Evacuation
3.	Haveli Bahadur Shah 500kV Line-1 (2 km)	21.02.2017	Evacuation
4.	Balloki 500kV Line (13 km)	19.06.2017	Evacuation

<u>220 kV T/Line</u>

Sr. No.	Project Description	Completion date	Remarks
220kV T/Line			
1.	Vehari-Chishtian 220kV Line (65 km)	24.09.2016	Reinforcement
2.	Guddu-Sibbi S/C 220kV TL in/out at Shikarpur GS (50km)	15.05.2016	Reinforcement
3.	Jhimpir-T.M.Khan 220kV T/L (83.4 km)	25.08.2016	Evacuation
4.	Chashma-Bannu 220kV Line (126 km)	11.10.2016	Evacuation

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132 kV T/Line

Sr. No.	Project Description	Completion date	Remarks
132kV T/Lines			
1.	17 MW Kanolia HPP 132kV T/Line (1.5 km)	08.05.2017	Evacuation
2.	Jhampir-T.M.Khan 132kV Line (78km)	25.08.2016	Evacuation
3.	Tenaga Power Plant- 132kV Line (1.3km)	11.08.2016	Evacuation
4.	Interconnection of Master Wind Power Plant 132kV Line (15km)	04.09.2016	Evacuation
5.	Interconnection of Hydro China Dawood Power Plant 132kV Line (11.5km)	06.09.2016	Evacuation
6.	Interconnection of 99.5 MW United Wind Energy 132kV Line 3.8 km	10.12.2016	Evacuation
7.	132kV Temporary G/S & T/Line for testing of 1320 MW Port Qasim Power Plant 40MVA, 2.68km	14 & 16.02.2017	Evacuation
8.	Interconnection of 50 MW Sachal Power Plant 132kV Line (1 km)	06.03.2017	Evacuation
9.	Evacuation of Power from 147 MW Patrind HPP - 132 kV TL Patrind - Muzaffarabad-II GS (6 km)	Phase-I 28.04.2017	Evacuation

Extension/ Augmentation works

Sr. No.	Project Description	Completion date	Remarks
Extension/ Augmentation Works			
1.	Augmentation of 160MVA Transformer with 250MVA at Ludewala 220kV S/S	28.05.2017	Reinforcement
2.	Addition of 600 MVA, 500/220 kV Auto T/F Bay at 500 kV GS Ghazi Barotha	02.01.2015	Reinforcement
3.	Addition of 160MVA Transformer at T.T. Singh 220kV Substation	03.02.2017	Reinforcement
4.	Augmentation of 220/132 kV, 160 MVA ATF at 220 kV Grid Station Bahawalpur	20.03.2015	Reinforcement
5.	Augmentation of 220/132 kV, 160 MVA ATF 220 kV Grid Station Bund Road, Lahore.	14.04.2015	Reinforcement
6.	Extension of 220 kV Sibbi GS	10-05-2017	Reinforcement
7.	Augmentation of 2x160MVA Transformer with 2x250MVA at Burhan 220kV S/S	TF-1: 10-01-2017 TF-2: 29-09-2017	Reinforcement
8.	Augmentation of 2x160MVA Transformer with 2x250MVA at Sheikh Muhammadi 500kV S/S	TF-1: 22.05.2017 TF-2: July 2017	Reinforcement
9.	2x220 kV Line Bays at Bannu 220kV GS	11.10.2016	Evacuation

66. NTDC submitted that Independent Analytical Evaluation of T&T losses of NTDC System Network based on FY 2011-12 was carried out by M/s PPI, wherein they simulated whole NTDC network and Considered load flow cases for peak & off peak load of each month (24 cases). They evaluated 3.494% average annual loss at NTDC System as per Report dated 15-10-2015. Furthermore, a fresh study will be conducted keeping in view of the Network Expansion. NTDC submitted that agreement has been made with JICA (Japan International Coordination Agency) to prepare base case related studies for:

- Transmission Expansion Plan
- Investment Plan
- Financial studies

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67. NTDCL also submitted that JICA has been requested to include Primary Transmission System losses studies. NTDC submitted that the final report will be submitted by the end of June, 2020.

68. The Authority observed that the T&T losses of NTDC have increased in FY 2017-18 as compared to FY 2016-17 i.e. 2.93% in FY 2017-18 and 2.68% in FY 2016-17. Upon enquiry on the increased T&T losses, NTDC mentioned that the increase in the losses is due to the power flows from South to North regions of the country resulting in longer distances directly impacting the losses.

69. Keeping in view the above justification of the petitioner, it was noted that a number of system up-gradation schemes have been undertaken by NTDC to reduce technical losses and to overcome the system constraints in the previous tariff control period. However the above schemes could not reduce T&T losses as desired. Hence the above justification by NTDC has no stance. While considering the submission of the petitioner regarding setting of higher T&T loss targets, it was noted that the most dependable mode of calculating transmission and transformation losses is through installation of high-accuracy class metering system in the network i.e. installation of Smart Metering System (SMS) at CDPs. The petitioner has not installed the smart metering system (SMS) on all the CDPs i.e. 465 Nos. SMS have been installed out of total 498 Nos. of CDPs. Hence the actual losses reported to NEPRA cannot reflect the accurate T&T losses.

70. The Authority observed that in earlier T&T loss studies conducted by PPI could not be relied upon due to quality issues of the studies. With addition and rehabilitation / up-gradation of the transmission components, the technical losses can be controlled. Further, the electricity consumers have to bear only the true cost and the inefficiencies of NTDC cannot be passed on to the consumers. Hence already determined target of annual T&T losses as per actual with a cap at 2.80% for FY 2017-18 and FY 2018-19 is maintained with the directions to ensure utilization of allocated budget and investment with respect to augmentation and reinforcement of its transmission network for further reduction of technical losses.

71. Where there are issues pertaining to new 220 kV grid stations, NTDCL has to co-ordination with relevant DISCOs to reduce Over-Loadings, Low Voltage Problems and Distant Transmissions on Secondary Voltage.

<u>Technical Issues</u>

Whether N-1 contingency has been assured for all transmission line projects being completed or in progress?

72. NTDCL submitted N-1 contingency is being assured & implemented by NTDC Power Planning Department in all Interconnection studies. RLNG Power Plants have been constructed near load centers of Lahore, Faisalabad and Sahiwal, supplying power without importing it through lengthy transmission line thus reducing the losses. For accurate calculation of reduction in losses, system studies need to be conducted. Voltage profile has also been improved due to VAR injection/support by these power plants.

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Sr. #	Name of Power Plant	Capacity (MW)	COD	Unit Generated (kWh) since COD	Average MW Generation
1	Sahiwal Coal	1,240	28-10-2017	10,229,727,150	1,081
2	HBS	1,230	09-05-2018	4,462,764,035	925
3	Bhikki	1,180	20-05-2018	3,942,646,123	864
4	Balloki	1,203	29-07-2018	2,175,641,800	755
	Total	4,853MW			

73. NTDC submitted that it is clear from the table that the impact of loss reduction due to flow of power from central to north, will be witnessed in this winter season. NTDC stated that N-1 contingency is being assured & implemented by NTDC Power Planning Department in all Interconnection studies.

74. NTDC is directed to provide details about implementation of projects in a manner so that (N-1) contingency is assured. However, the response by NTDC thus should be limited to the interconnection studies only. NTDC is directed to provide within two (02) months, complete details and evidence that the system continues to provide reliable services in case of outage of transmission lines in major corridors of supply.

Investment Issues

The Authority had allowed a total investment of Rs. 49,810 million to NTDC for FY 2016-17. What has been the project wise spending segregating the cost and time overrun? What is the impact of past investment and addition of coal /RLNG power in load centers on reduction of losses?

What is the central planning framework being used to ensure that new investment will ease out existing and as well as to avoid future transmission constraints? Will the required NTDCL investment address fully the overloading of 500 / 220 KV transmission lines and grids? and

Petitioner to provide the component wise summary of Rs. 46,428 million and 49,815 million claimed, specify the time and cost overrun for these projects for which investment has been claimed?

75. NTDC, in its tariff petition, claimed an Investment amounting to Rs. 46,428 million for FY 2017-18 and Rs. 49,815 million for FY 2018-19 which have been funded through a combination of own sources, local loans and foreign relent loans. NTDC informed that the investment program has been designed on the following parameters:

- NTDC Power Planning while performing system studies (as per grid code through software tool PSS/E 33.0), for new addition of generation and transmission projects, incorporates the constraints and overloading of existing system (as per de-rated capacities), to ease the existing system.
- The removal of overloading and constraints remains a continuous process.
- An up-gradation plan of existing system is being undertaken by World Bank under "National Transmission Modernization Project"

76. To carry out the investments, as shown above i.e. Rs. 46,428 million for FY 2017-18 and Rs. 49,815 million for FY 2018-19, NTDC provided its funding plan as depicted below:

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S.No.	Loans	Curr.	Loan Amount	Loan Availed	Avaiable
Foreign Relent Loans:					
1	ADB MFF-II (T-I&II)	US$	375.0	2.9	372.1
2	AFD	EURO	75.0	11.7	63.3
3	JICA	JPY	37,908.0	20,848.0	17,060.0
4	World Bank - Dasu	US$	63.0	2.2	60.8
5	World Bank - CASA	SDR	78.3	-	78.3
6	KFW Frankfurt	EURO	11.3	6.8	4.5
7	World Bank - NTM-I	US$	425.0	-	425.0
Local Loans:					
1	UBL- NJ T/L Project	PKR	17,000.0	7,159.4	9,840.7
2	Askari Bank - Thar-Mitiari T/L	PKR	18,000.0	12,457.2	5,542.8
3	HBL- Bin Qasim T/L	PKR	10,400.0	4,010.6	6,389.4

77. According to NTDC the New/In-Pipeline Foreign Relent & Local Loans are as below:

S.No.	Loans	Curr.	Loan Amount	Loan Availed	Avaiable
Foreign Relent Loans:					
1	ADB MFF-II (T-III&IV)	US$	455.0	-	455.0
2	IDB - CASA	US$	35.0	-	35.0
3	KFW Frankfurt	EURO	27.0	-	27.0
Local Loans:					
1	HBL- Hub-Mitiari T/L	PKR	13,132.0	-	13,132.0
2	ABL - K2/K3 & HVAC to HVDC T/L	PKR	9,846.0	-	9,846.0
3	SSRL/SECL	PKR	17,400.0	-	17,400.0
4	Suki Kinari	PKR	28,600.00	-	28,600.00

78. On NEPRA's directions, NTDC submitted the project wise details of the requested investments for FY 2017-18 & FY 2018-19, starting date of each project, expected completion schedule of each project and the total expenditure till date on each project;

Sr. No	GoP Sr. No.	Project Name	FY 2017-18			FY 2018-19			Starting date of Project/ Approval Date	Expected Completion Date of Project	Total amount spent up till now on each Project
			Estimated			Estimated					
			Local	Frgn	Total	Local	Frgn	Total			
		Ongoing Projects									
1	884	Depleted Material Tranch-III (Replacement of Depleted Material at existing grid station of	1,600	-	1,600	200	-	200	23.09.2014	30.09.2018	2,511.92

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		NTDC System) ADB Loan No. 2846-PAK									
2	885	1 No. 220KV Rohri Sub Station & Associated T/L for Dispersal of Power from IPPS Fauji Foundation & ENGRO near Karachi.	25	-	25	50	-	50	22.10.2007	30.08.2014	4,408.58
3	886	132KV Thatta Mirpur Sakro in and out FWEL-I & 2nd WPP with 6 multiply 132KV line bay & Jampir Nooriabad Zorlu	50	-	50	150	-	150	22.04.2006	12.06.2014	1,486.10
4	887	220 Kv G/S & Allied T/L D.I Khan	1,350	200	1,550	550	100	650	09.12.2010	31.01.2019	2,345.50
5	888	220 KV G/S at Ghazi Road, Lahore with 220 KV D/C T/Line 132 KV Expansion System EDCF Loan No.PAK-2 & KFW	800	1,0 00	1,800	300	250	550	25.02.2005	31.03.2019	4,933.39
6	889	220 KV G/Station at Kassowal with 132 KV Expansion System (World Bank Loan No. 7565-Pk, Credit No. 4463-PK & 4464-PK)	50	-	50	50	-	50	02.02.2005	17.04.2015	2,725.20
7	890	220 Kv Nowshera S/S	900	-	900	400	200	600	06.02.2008	31.08.2018	1,776.20
8	891	220 KV T/L from Chashma to Ludewala for Inter-connection of Chashnupp-II	5	-	5	5	-	5	22.10.2007	30.04.2011	2,488.41
9	892	220/132KV Dera Murad Jamali Sub Station	300	-	300	200	-	200	07.04.2011	31.03.2018	1,045.71
10	893	220KV Chakdara S/S	1,400	400	1,800	350	200	550	03.10.2014	30.09.2018	2,381.50
11	894	220Kv G/S Mansehra Tranch-III	350	-	350	150	-	150	07.04.2011	31.03.2018	1,548.31
12	895	220Kv Sub Station Lalian	850	100	950	300	300	600	11.11.2011	Date will be provided after	1,391.00

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										arrangement of Land	
13	896	2nd Source of Supply 220KV I/Abad University S/S (Now 220KV Transmission System Network Reinforcement in Islamabad & Burhan)	600	-	600	600	300	900	09.01.2016	30.06.2019	445.04
14	897	3rd 500KV Jamshoro-Moro- R.Y Khan Single Circuit T/Line. Tranch-III	2,000	-	2,000	2,000	-	2,000	26.08.2013	31.02.2019	20,501.67
15	898	4 Nos New Projects to be financed by JBIC (i) 500 KV RY Khan G/S & T/L (ii)220 KV Chishtian T/L (iii) 220 KV Gujrat G/S & 220 KV T/L (iv) 220 KV Shalamar G/S & 220 KV T/L (4 Projects - JBIC Loan) (JICA Loan No. PK-58)	1,200	800	2,000	200	500	700	22.10.2007	18.01.2018	11,888.55
16	899	500KV Faisalabad New (2x750) (Now 500KV Faisalabad West alongwith allied T/Ls)	100	-	100	1,500	1,000	2,500	12.01.2015	31.12.2020	732.37
17	900	Addition of 500/220KV Sub Station T/L for Strengthening the existing NTDC system i) 500KV Lahore New ii) 500KV Shikarpur iii) 220KV D.I.Khan (JICA-PK-61)	1,500	1,000	2,500	500	800	1,300	12.09.2010	31.01.2019	21,065.62
18	901	Augmentation of 500/220KV & 220/132KV Transformer in NTDC System New	50	-	50	550	-	550	29.07.2011	30.06.2018	2,206.16
19	902	Construction of 500Kv T/L for Dispersal of	500	500	1,000	1,500	1,50	3,000	29.07.2011	30.02.2019	5,841.45

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		Power form 747 MW from Guddu					0				
20	903	Enterprise Resource planning (ERP) (Now Implementation of Integrated Solution to improve Productivity and Control in NTDC by ERP System)	50	-	50	100	-	100	19.03.2018	30.06.2022	-
21	904	Evacuation of power from wind power projects at Jhimpir and Gharo Wind Clusters	1,000	-	1,000	1,000	-	1,000	03.07.2014	31.12.2019	9,643.89
22	905	Ext/Aug. of existing of 500&220 KV G/S of NTDC system by installation of additional T/FS	150	-	150	110	-	110	22.01.2020	30.03.2018	835.33
23	906	Extension/Augmentation at 500/220 kV Rewat Substation	150	300	450	60	-	60	23.09.2014	31.01.2019	220.96
24	907	Import of 100 MW Power from Iran (with 220KV G/S Gowadar and allied T/L form Iran to Gwader funded by Iran (EDBI-Iran Loan No.880/M/Pak/01)	10	-	10	100	-	100	19.09.2007	31.12.2019	1,144.74
25	908	Interconnection of Chashma Nuclear (C-3&C-4)	300	-	300	110	-	110	26.08.2013	11.10.2016	4,149.98
26	909	Inter-Connection-Thar Coal Based , 1200MW (Power Dispersal from 1200MW Thar Coal Power Plant - 500kV Thar - Matiari T/L & Matiari 500kV S/station)	9,000	-	9,000	2,000	-	2,000	16.08.2012	30.09.2018	14,897.33
27	910	New 220 KV G/Station at Khuzdar/220 KVDadu - Khuzdar D/C T/Line JICA Loan No. PK-56	150	-	150	150	-	150	27.07.2004	09.06.2014	11,598.74

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28	911	Power Transmission Enhancement Project (Tranch-II) (SET)10 Sub projects (i) 9 Sub Projects of 500KV & 220KV S/S& T/Lines ADB Loan No. 2396-PAK	300	-	300	300	-	300	02.06.2008	30.10.2017	22,151.83
29	912	Provision of Secured Metering System at Delivery Point. (Local Bank)	100	-	100	50	-	50	08.04.2005	30.06.2019	897.36
30	913	Quaid-e-Azam Solar Park at Lal-Suhanra (Phase-II) Evacuation of 600 MW Solar (Proposed to be carried out by NTDC)	200	-	200	210	-	210	12.02.2014	15.02.2018	2,074.52
31	914	Transmission for Dispersal power from Neelam-Jhelum Hydro Power Project	4,000	-	4,000	3,000	-	3,000	26.08.2013	31.12.2019	12,314.18
32	915	Transmission Interconnection for Dispersal of Power From UCH-II Tranch-III	400	-	400	300	-	300	16.08.2012	30.4.2018	2,349.51
33	916	Up Gradation of NPCC Islamabad JICA Loan No. PK-54	20	-	20	10	-	10	07.01.2004	30.06.2016	4,041.07
34	917	220kV Mirpur Khas G/S along with allied T/Ls	300	-	300	500	300	800	17.11.2016	31.12.2019	656.33
36	918	500kV Chakwal G/S alongwith allied T/Ls	300	-	300	1,000	-	1,000	12.04.2017	30.03.2020	239.38
37	919	500KV Islamabad West	300	-	300	1,000	500	1,500	20.07.2016	30.06.2020	-
38	920	Alliot switching station and its interconnection with Suki Kinari HPP (Evacuation of Power from 840MW Suki Kinari HPP)	100	-	100	500	-	500	14.11.2018	31.12.2022	-

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39	921	Construction of 600 KV HVDC Transmission Line From Matiari to Lahore (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	450	-	450	500	-	500	31.08.2015	31.12.2018	2,076.26
40	922	Construction of 600 KV HVDC Transmission Line From Matiari (Port Qasim) to Faisalabad (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	10	-	10	100	-	100	31.08.2015	30.06.2020	-
41	923	Evacuation of Power from 1200 MW LNG Based Power Project at Baloki	520	-	520	210	-	210	09.07.2015	31.03.2018	2,234.45
42	924	Evacuation of Power from 1200 MW LNG Based Power Project at Bhiki	38	-	38	15	-	15	28.04.2015	10.12.2016	61.66
43	925	Evacuation of Power from 1200 MW LNG Based Power Project at Jhang (Haveli Bahadur Shah)	1,020	-	1,020	210	-	210	28.04.2015	15.03.2018	1,092.61
44	926	Evacuation of power from 1320MW Power Plant at Bin Qasim	3,500	-	3,500	5,000	-	5,000	13.05.2015	28.02.2019	4,927.04
45	927	Evacuation of power from 1320MW Power Plant at Sahiwal	320	-	320	510	-	510	31.08.2018	30.06.2018	260.57
46	928	Evacuation of power from 147MW Patrind HPP	100	-	100	250	-	250	27.01.2015	28.02.2018	567.87
47	929	Evacuation of power from 2160MW Dasu HPP Stage-I	400	-	400	400	200	600	2018-19	30.06.2022	282.79
48	930	Interconnection scheme for import of power from CASA-	10	-	10	900	200	1,100	07.05.2015	30.06.2021	845.45

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		1000									
49	985	Power Transmission Enhancement Project Tranch-I (19 Sub Projects of 500/220 KV Sub Stations and T/ Lines) ADB Loan No. 2289 & 2290-PAK	50	-	50	50	-	50	30.11.2006	30.06.2015	17,167.04
49	987	Rehabilitation of NTDC system in south area for improvement in system reliability to avoid the frequent tripping.	200	-	200	200	500	700	14.01.2016	30.06.2020	104.45
50	988	Evacuation of Power from 1320 MW Hub Power Company Ltd.	500	-	500	5,000	-	5,000	07.11.2016	31.12.2019	558.05
51	989	500kV HVAC T/Line for inter connection of HVDC Converter Station at Lahore with existing HVAC System.	100	-	100	400	-	400	07.11.2016	30.06.2021	-
52	991	220-KV Mastung G/S along wtih allied T/Ls.	50	-	50	200	100	300	15.01.2018	30.06.2021	-
53	992	Evacuation of Power from Tarbela 5th Extension.	5	-	5	100	100	200	24.11.2017	30.06.2021	-
54	993	Evacuation of Power from Karot and Azad Pathan HPPs.	10	-	10	10	-	10	02.03.2015	30.06.2021	
55	994	Evacuation of Power from 350 MW Siddiqusons Ltd.	10	-	10	10	-	10	17.01.2017	30.06.2021	-
56	995	Evacuation of Power from 650 MW from Lucky Electric Power Company Ltd.	-	-	-	100	-	100	2019-20	30.06.2021	-
57	996	Evacuation of Power from K2/K3 Nuclear Power near Karachi(In/Out of 500-KV Port Qasid to Matiari S/C and 500-KV Hub to Matiari S/C at K2/K3).	100	-	100	1,000	-	1,000	12.04.2017	28.02.2020	-

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58	997	500-KV Lahore, North.	10	-	10	300	100	400	24.11.2017	30.06.2021	-
59	998	600-KV HVDC T/Line from Thar to Lahore along with Converter & Grounding Stations at both ends. (Feasibility)	10	-	10	10	-	10	2019-20	30.06.2022	-
60	1001	Extension/Augmentation of Existing Grid Stations.	100	-	100	800	500	1,300	12.04.2017	31.12.2019	82.59
61	1002	Feasibility study for enhancing the transmission capacity of NTDCs 500-KV Transmission System by applying series compensation.	10	-	10	5	50	55	14.01.2016	30.06.2019	-
62	1003	Evacuation of Power from 300-MW Solar Power Plants near Chishtian	10	-	10	100	-	100	21.12.2015	31.12.2019	-
63	1004	220-KV Dera Ismail Khan - Zhob Transmission Line along with 220-KV Zhob Sub-Station	50	-	50	300	200	500	11.07.2016	30.06.2020	748.74
64	1005	Strengthening of TSG Centre for Grid System Operations and Maintenance.	100	100	200	50	300	350	21.12.2015	30.06.2019	854.88
65	1006	Conversion from 220-KV AIS Grid Stations in GIS Grid Stations. 220-KV Kala Shah Kaku, 220-KV Bund Road, 220-KV Nishatabad, 220-KV Jaranwala	10	-	10	350	100	450	07.03.2017	31.12.2019	-
66	1011	220-KV Kohat G/S along with allied T/Ls	10	-	10	50	-	50	2019-20	30.06.2022	-
67	1012	220-KV Jamrud G/S along with allied T/Ls	10	-	10	50	-	50	19.10.2017	30.06.2022	-
68	1013	220-KV Kamra G/S along with allied T/Ls	5	-	5	10	-	10	2019-20	30.06.2022	-

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69	1014	220-KV Punjab University G/S along with allied T/Ls	50	-	50	200	200	400	19.09.2017	Date will be provided after arrangement of Land	-
70	1015	220-KV Jauharabad G/S along with allied T/Ls	10	-	10	50	-	50	02.05.2018	30.06.2022	-
71	1016	220-KV Faqiran G/S along with allied T/Ls.	-	-	-	50	-	50	17.10.2018	30.06.2022	-
		TOTAL PSDP - (Ongoing)	38,238	4,400	42,638	37,545	8,500	46,045			
		New Projects under PSDP									
72	1027	Evacuation of Power from 2x660 MW Thar Coal Based SSRL/SECL Power Plant at Thar	10	-	10	300	-	300	12.04.2017	30.06.2022	-
73	1028	Evacuation of Power from 500MW Wind Power Plants at Jhimpir Clusters	10	-	10	200	200	400	24.11.2017	30.06.2022	-
74	1029	220kV Zero Point Grid Station at Islamabad	10	-	10	300	-	300	19.09.2017	30.06.2022	-
75	1030	Upgradation/ Extension of NTDC's Telecommunication & SCADA System at NPCC	50	-	50	300	200	500	19.09.2017	30.06.2022	-
76	1031	Reinforcement of existing 220kV Guddu-Uch-Sibbi Single Circuit Transmission Line for improvement of Power Supply System in South Area	10	-	10	500	200	700	24.11.2017	30.06.2021	-
		TOTAL PSDP - (New)	90	-	90	1,600	600	2,200			
		Total (On-going + New)	38,328	4,400	42,728	39,145	9,100	48,245			
		New Projects									
77		Evacuation of Power from 1320 MW RLNG Power Plant at Trimmi Jhang	3,700	-	3,700	500	-	500	04.12.2017	30.06.2022	1,563.68

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78	500kV Moro Gridstation		-	-	10	-	10	2019-20	30.06.2022	-
79	220kV Nawab Shah Substation		-	-	10	-	10	2019-20	30.06.2022	-
80	220kV Larkana Substation		-	-	10	-	10	2019-20	30.06.2022	-
81	220kV Gujranwala II		-	-	10	-	10	2019-20	30.06.2022	-
82	220kV Arifwala		-	-	10	-	10	2019-20	30.06.2022	-
83	220kV Sialkot		-	-	10	-	10	2019-20	30.06.2022	-
84	220kV Dharki - Rahim Yar Khan - Bhawalpur D/C T/L		-	-	10	-	10	2019-20	30.06.2022	-
85	Procurement of 5 Nos. 220kV Mobile Grid Stations		-	-	500	500	1,000	04.06.2018	30.06.2020	-
	TOTAL PSDP - (New)	3,700	-	3,700	1,070	500	1,570			
	Total (On-going + New)	42,028	4,400	46,428	40,215	9,600	49,815			

<u>Investments for FY 2017-18:</u>

79. NTDC also submitted its audited record of actual expenditure along with claimed investment for FY 2017-18 as shown in the following table grouped under relevant heads:

Rs. Million

Sr. No.	Name of Projects	Investment for 2017-18		To be carried over to 2018-19 Rs. Mln
		Claimed Rs. Mln	Spent Rs. Mln	
	Augmentation of Existing System			
1	Augmentation of 500/220KV & 220/132KV Transformer in NTDC System New	50.0	-	50.0
2	Ext/Aug. of existing of 500&220 KV G/S of NTDC system by installation of additional T/FS	150.0	59.5	90.5
3	Extension/Augmentation at 500/220 kV Rawat Substation	450.0	228.1	221.9
4	Extension/Augmentation of Existing Grid Stations.	100.0	73.2	26.8
5	Conversion from 220-KV AIS Grid Stations in GIS Grid Stations.	10.0	-	10.0

	220-KV Kala Shah Kaku, 220-KV Bund Road, 220-KV Nishatabad, 220-KV Jaranwala			
6	Reinforcement of existing 220kV Guddu-Uch-Sibbi Single Circuit Transmission Line for improvement of Power Supply System in South Area	10.0	-	10.0
	Total - (Augmentation)	**770.0**	**360.9**	**409.1**
Power Evacuation Projects				
7	132KV Thatta Mirpur Sakro in and out FWELI & 2nd WPP with 6 multiply 132KV line bay & Jampir Nooriabad Zorlu	50.0	-	50.0
8	Construction of 500Kv T/L for Dispersal of Power form 747 MW from Guddu	1,000.0	933.6	66.4
9	Evacuation of power from wind power projects at Jhimpir and Gharo Wind Clusters	1,000.0	1,314.9	(314.9)
10	Imported of 100 MW Power from Iran (with 220KV G/S Gwadar and allied T/L form Iran to Gwader funded by Iran (EDBI-Iran Loan No.880/M/Pak/01)	10.0	-	10.0
11	Interconnection of Chashma Neculer (C-3&C-4)	300.0	110.4	189.6
12	Iter-Connection- Ther Coal Based , 1200MW (Power Dispersal from 1200MW Thar Coal Power Plant - 500kV Thar - Matiari T/L & Matiari 500kV S/station)	9,000.0	11,078.3	(2,078.3)
13	Quaid-e-Azam Solar Park at Lal-Suhanra (Phase-II) Evacuation of 600 MW Solar (Proposed to be carried out by NTDC)	200.0	155.4	44.6
14	Transmission for Dispersal power from Neelam-Jhelum Hydro Power Project	4,000.0	3,335.4	664.6
15	Transmission Interconnection for Dispersal of Power From UCH-II Tranch-III	400.0	374.3	25.7
16	Evacuation of Power from 1200 MW LNG Based Power Project at Baloki	520.0	513.8	6.2
17	Evacuation of Power from 1200 MW LNG Based Power Project at Bhiki	38.0	24.4	13.6
18	Evacuation of Power from 1200 MW LNG Based Power Project at Jhang (Haveli Bahadur Shah)	1,020.0	271.6	748.4
19	Evacuation of power from 1320MW Power Plant at Bin Qasim	3,500.0	2,889.2	610.8
20	Evacuation of power from 1320MW Power Plant at Sahiwal	320.0	219.8	100.2
21	Evacuation of power from 147MW Patrind HPP	100.0	87.8	12.2
22	Evacuation of Power from 1320 MW RLNG Power Plant at Trimmi Jhang	3,700.0	1,310.0	2,390.0
23	Alliot switching station and its interconnection with Suki Kinari HPP (Evacuation of Power from 840MW Suki Kinari HPP)	100.0	-	100.0
24	Evacuation of power from 2160MW Dasu HPP Stage-I	400.0	94.9	305.1

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25	Interconnection scheme for import of power from CASA-1000	10.0	0.6	9.4
26	Evacuation of Power from 1320 MW Hub Power Company Ltd.	500.0	306.0	194.0
27	Evacuation of Power from Tarbela 5th Extension.	5.0	-	5.0
28	Evacuation of Power from Karot and Azad Pathan HPPs.	10.0	-	10.0
29	Evacuation of Power from 350 MW Siddiquesons Ltd.	10.0	-	10.0
30	Evacuation of Power from K2/K3 Nuclear Power near Karachi(In/Out of 500-KV Port Qasid to Matiari S/C and 500-KV Hub to Matiari S/C at K2/K3).	100.0	-	100.0
31	Evacuation of Power from 300-MW Solar Power Plants near Chishtian.	10.0	-	10.0
32	Evacuation of Power from 2x660 MW Thar Coal Based SSRL/SECL Power Plant at Thar	10.0	-	10.0
33	Evacuation of Power from 500MW Wind Power Plants at Jhimpir Clusters	10.0	-	10.0
Total - (Evacuation)		26,323.0	23,020.4	3,302.6
				New Grid and T/Lines
34	1 No. 220KV Rohri Sub Station & Associated T/L for Dispersal of Power from IPPS Fauji Foundation & ENGRO near Karachi.	25.0	-	25.0
35	220 Kv G/S & Allied T/L D.I Khan	1,550.0	855.4	694.6
36	220 KV G/S at Ghazi Road, Lahore with 220 KV D/C T/Line 132 KV Expansion System EDCF Loan No.PAK-2 & KFW	1,800.0	1,532.8	267.2
37	220 KV G/Station at Kassowal with 132 KV Expension System (World Bank Loan No. 7565-Pk, Credit No. 4463-PK & 4464-PK)	50.0	67.6	(17.6)
38	220 Kv Nowshera S/S	900.0	829.1	70.9
39	220 KV T/L from Chashma to Ludewala for Inter-connection of Chashnupp-II	5.0	-	5.0
40	220/132KV Dera Murad Jamali Sub Station	300.0	146.5	153.5
41	220KV Chakdara S/S	1,800.0	720.5	1,079.5
42	220Kv G/S Mansehra Tranch-III	350.0	461.8	(111.8)
43	220Kv Sub Station Lalian	950.0	868.6	81.4
44	2nd Source of Supply 220KV I/Abad University S/S (Now 220KV Transmission System Network Reinforcement in Islamabad & Burhan)	600.0	392.8	207.2
45	3rd 500KV Jamshoro-Moro- R.Y Khan Single Circuit T/Line.Tranch-III	2,000.0	3,737.9	(1,737.9)
46	4 Nos New Projects to be financed by JBIC (i) 500 KV RY Khan G/S & T/L (ii)220 KV Chishtian T/L (iii) 220 KV Gujrat G/S &	2,000.0	1,756.4	243.6

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	220 KV T/L (iv) 220 KV Shalamar G/S & 220 KV T/L (4 Projects - JBIC Loan) (JICA Loan No. PK-58)			
47	Addition of 500/220KV Sub Station T/L for Strengthing the existing NTDC system i) 500KV Lahore New ii) 500KV Shikarpur iii) 220KV D.I.Khan (JICA-PK-61)	2,500.0	3,300.7	(800.7)
48	New 220 KV G/Station at Khuzdar/220 KVDadu - Khuzdar D/C T/Line JICA Loan No. PK-56	150.0	199.7	(49.7)
49	Power Transmission Enhancement Project (Tranch-II) (SET)10 Sub projects (i) 9 Sub Projects of 500KV & 220KV S/S& T/Lines ADB Loan No. 2396-PAK	300.0	761.8	(461.8)
50	Power Transmission Enhancement Project Tranch-I (19 Sub Projects of 500/220 KV Sub Stations and T/ Lines) ADB Loan No. 2289 & 2290-PAK	50.0	20.3	29.7
51	500KV Faisalabad New (2x750) (Now 500KV Faisalabad West alongwith allied T/Ls)	100.0	717.2	(617.2)
52	220kV Mirpur Khas G/S alongwith allied T/Ls	300.0	179.4	120.6
53	500kV Chakwal G/S alongwith allied T/Ls	300.0	239.4	60.6
54	500KV Islamabad West	300.0	-	300.0
55	500kV HVAC T/Line for inter connection of HVDC Converter Station at Lahore with existing HVAC System.	100.0	-	100.0
56	220-KV Mastung G/S slongwtih allied T/Ls.	50.0	-	50.0
57	500-KV Lahore, North.	10.0	-	10.0
58	220-KV Dera Ismail Khan - Zhob Transmission Line alongwith 220-KV Zhob Sub-Station.	50.0	37.5	12.5
59	220-KV Kohat G/S alongwith allied T/Ls.	10.0	-	10.0
60	220-KV Jamrud G/S alongwith allied T/Ls.	10.0	-	10.0
61	220-KV Kamra G/S alongwith allied T/Ls.	5.0	-	5.0
62	220-KV Shadman G/S alongwith allied T/Ls. (Now 220kV Punjand University G/S & T/L)	50.0	-	50.0
63	220-KV Jauharabad G/S alongwith allied T/Ls.	10.0	-	10.0
64	220kV Zero Point Grid Station at Islamabad	10.0	-	10.0
	Total - (New G/S & T/L)	**16,635.0**	**16,825.2**	**(190.2)**
				Others
65	Depleted Material Tranch-III (Now Replacement of Depleted Matrial at existing grid station of NTDC System) ADB Loan No. 2846-PAK	1,600.0	1,785.9	(185.9)
66	Provision of Secured Metering System at Delivery Point. (Local Bank)	100.0	9.7	90.3

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67	Up Gradation of NPCC Islamabad JICA Loan No. PK-54	20.0	11.2	8.8
68	Construction of 600 KV HVDC Transmission Line From Matiari to Lahore (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	450.0	206.0	244.0
69	Strengthening of TSG Centre for Grid System Operations and Maintenance.	200.0	12.8	187.2
70	Enterprise Resource planning (ERP) (Now Implementation of Integrated Solution to improve Productivity and Control in NTDC by ERP System)	50.0	-	50.0
71	Construction of 600 KV HVDC Transmission Line From Matiari (Port Qasim) to Faisalabad (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	10.0	-	10.0
72	Rehabilitation of NTDC system in south area for improvement in system reliability to avoid the frequent tripping.	200.0	104.4	95.6
73	600-KV HVDC T/Line from Thar to Lahore along with Converter & Grounding Stations at both ends. (Feasibility)	10.0	-	10.0
74	Feasibility study for enhancing the transmission capacity of NTDCs 500-KV Transmission System by applying series compensation.	10.0	-	10.0
75	Upgradation/ Extension of NTDC's Telecommunication & SCADA System at NPCC	50.0	-	50.0
Total - (Others)		2,700.0	2,130.0	**570.0**
Grand Total		**46,428.0**	**42,336.5**	**4,091.5**

80. The Authority observed that on ten (10) of the above listed projects, NTDC has spent excess than approved amounts. Upon query NTDC provided the following reasons of excess expenditure on the projects;

Rs. Million

Sr. No.	Name of Projects	Investment for FY 2017-18		To be carried over to FY 2018-19	Reasons of Excess Expenditure
		Claimed Rs. Mln	Spent Rs. Mln	Rs. Mln	
1	Evacuation of power from wind power projects at Jhimpir and Gharo Wind Clusters	1,000.00	1,314.90	-314.9	Project was carried out on priority basis for power evacuation from WPPs and completed the Jhimpir G/S and Jhimpir Gharo T/L to meet with the timelines.
2	Iter-Connection- Ther Coal Based , 1200MW (Power Dispersal from 1200MW Thar Coal Power Plant -	9,000.00	11,078.30	-2,078.30	To meet with the power evacuation timeline before the COD of power plant the project carried out on priority basis after clearance of ROW issues.

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	500kV Thar - Matiari T/L & Matiari 500kV S/station)				
3	220 KV G/Station at Kassowal with 132 KV Expansion System (World Bank Loan No. 7565-Pk, Credit No. 4463-PK & 4464-PK)	50	67.6	-17.6	Payment of pending works and liabilities.
4	220Kv G/S Mansehra Tranch-III	350	461.8	-111.8	Project completed and energized in 2017-18
5	3rd 500KV Jamshoro-Moro-R.Y Khan Single Circuit T/Line. Tranch-III	2,000.00	3,737.90	-1,737.90	In the absence of Matiari G/S which is the part of HVDC project, the only possibility for dispersal of power to include in National Grid was to complete this line on war footing basis and to utilize the committed ADB loan as well.
6	Addition of 500/220KV Sub Station T/L for Strengthing the existing NTDC system i) 500KV Lahore New ii) 500KV Shikarpuriii) 220KV D.I.Khan (JICA-PK-61)	2,500.00	3,300.70	-800.7	New Lahore G/S completed and 04 Nos.T/L work expedited on resolution of ROW issues.
7	New 220 KV G/Station at Khuzdar/220 KVDadu - Khuzdar D/C T/Line JICA Loan No. PK-56	150	199.7	-49.7	Payment of retention money and pending liabilities
8	Power Transmission Enhancement Project (Tranch-II) (SET)10 Sub projects (i) 9 Sub Projects of 500KV & 220KV S/S& T/Lines ADB Loan No. 2396-PAK	300	761.8	-461.8	Completed the extension/augmentation work in various G/S and Payment made for pending liabilities of closed projects.

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9	500KV Faisalabad New (2x750) (Now 500KV Faisalabad West alongwith allied T/Ls)	100	717.2	-617.2	The cost of land acquisition was higher as compare to provision made against the project.
10	Depleted Material Tranch-III (Now Replacement of Depleted Material at existing grid station of NTDC System) ADB Loan No. 2846-PAK	1,600.00	1,785.90	-185.9	The material was anticipated to be received in next FY, however expedited and received & paid in 2017-18.

81. The Authority observed that as against the requested investment of Rs. 46,428 million for FY 2017-18, NTDC has spent an amount of Rs. 42,336.5 million as per audited accounts. The Authority therefore decided to allow the actual investment of Rs. 42,336.5 million incurred by NTDC for the FY 2017-18.

Investments for FY 2018-19:

82. NTDC submitted that among the total projects on which Company has spent Rs. 42,336.5 million in FY 2017-18, some of the projects would continue in FY 2018-19. NTDC submitted that the leftover amount of Rs. 4,091.5 million (after net off the excess amount in FY 2017-18) needs to be allowed to NTDC for FY 2018-19 for the projects on which NTDC did not exhaust all of its claimed investment.

83. As per information submitted by NTDC, the Company only spend Rs. 12 billion on account of investment in seven months of the current year against the claimed cost of Rs. 49.815 billion. Similar situation was noticed in the FY 2017-18. NTDC submitted that the actual investment was Rs. 42.3 billion during the period even though the actual expense till December 2017 was only Rs. 12 billion. The information provided by NTDC regarding the investment trend is as under:

Financial Year	Expenditure (July – Dec)	Expenditure (Jan – June)
FY 2013-14	8,072.98	17,262.39
FY 2014-15	8,761.89	22,765.10
FY 2015-16	8,602.33	28,748.45
FY 2016-17	18,780.95	44,842.43
FY 2017-18	12,306.99	42,336.47
FY 2018-19	11,268.12	

84. High importance of investments exists as required to be made by NTDC to overcome the system constraints. NTDC should ensure to further improve its capability to evacuate power from the entire pool of planned projects as requested in the instant petition. Keeping in view the actual expense of R. 12.228 billion till January 2019 and status of the

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projects indicated by NTDC, the comparison of requested and allowed cost for the FY 2018-19 is as under:

Sr. No.	Name of Projects	Expenditure (Jul 2018 – Jan 2019) Rs. Mln	Incremental Expenditure till June 2019 Rs. Mln	Allowed Cost Rs. Mln
1.	220 KV Dera Ismail Khan Zhob Transmission Line alongwith 220 KV Zhob Sub-station (Contract Entered in December 2018)	585.9 (advance payment)	2,114.1	1,719
2.	Construction of 500 KV T/L for Dispersal of Power from 747 MW from Guddu (ADB 80%)	554.1	1,195.9 (Material arrived / few L/C issues)	1,195.9
3.	Reinforcement of existing 220 KV Guddu Uch Sibbi Single Circuit Transmission Line for improvement of Power Supply System in South Area (Contract)	428.2 (Advance payment)	1,371.8 (Partial payments due in June 2019	1,371.8
4.	Evacuation of Power from 1320 MW Power Plant at Bin Qasim (Contract)	353.7 (Revising Bill)	2,146.3 (Civil works demands Stringing in place for certain sections)	2,146.3
5.	Evacuation of Power from 1320 MW Hub Power Company Limited (Programme payment own)	3,995.5	7,004.5 Material expected in June 2019	7,004.5
6.	3rd 500 KV Jamshoro Moro R.Y.Khan Single Circuit T/Line. Tranch-III	1,180.1	1,819.9 (Tower erection program. Material due) PC-I cost Rs. 9.3 billion	1,819.9
7.	500 KV Faisalabad New (2 x 750) Now 500 KV Faisalabad West along with allied T/Ls) contract under evaluation)	252.8 (Land cost)	2,897.2 (Only advance payment will be due 10-15%).	938.0
8.	Inter-Connection Thar Coal based 1200 MW (Power Dispersal from 1200 MW Thar Coal Power Plant - 500 KV Thar Matiari T/L & Matiari 500 KV S/Station) partially energized on 31st July 2018	554.9	2,445.1 (Last invoice retention money)	2,445.1
9.	Transmission for dispersal power from Neelam Jehlam Hydro Power Project (HBL)	1,899.2	2,100.9 (Civil works in process Insulators dues L/C issues)	2,100.9
10.	Interconnection scheme for import of power from CASA-	B.G Issues	2,368.0 (Advance Payment)	2,368.0

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11.	Upgradation / Extension of NTDC's Telecommunication & SCADA system at NPCC (ADB)	- Bid opening - NOC sought from ADB	2,750.0	0
12.	Evacuation of Power from K2/K3 Nuclear Power Plant near Karachi (In/Out of 500 KV Port Qasim to Matiari S/C and 500 KV Hub to Matiari S/C at K2/K3)	Contract opening due yet.	1,500.0	568.0
13.	4 Nos New Projects to be financed by JBIC (i) 500 KV RY Khan G/S & T/L (ii) 220 KV Chistian T/L (iii) 220 KV Gujrat G/S & 220 KV T/L (iv) 220 KV Shalamar G/S & 220 KV T/L)	484.0	916.0 - Progressive payment is due - Completion Date ? - Complications - Protection money due	916.0
14.	Addition of 500 /220 Sub Station T/L for Strengthening the existing NTDC system 1. 500 KV Lahore new712.1 2. 500 KV Sh347.5ikarpur 3. 220 KV 998.5D.I.Khan	742.5	357.5	357.5
15.	Evacuation of power from wind power projects at Jhimpir and Gharo Wind Clusters	787.9	712.1 Retention money (Rs. 300) Provision for grid station (pending)	712.1
16.	Quaid-e-Azam Solar Park a Lal Suhana (Phase-II) Evacuation of 600 MW Solar	22.5	347.5 Pending liabilities Extension of time Retention money subject to BOD approval	347.5
17.	Evacuation of power from 500 MW Wind Power Plants at Jhimpir clusters (USAID)	1 + 2 lots awarded	998.5 Bidding in process / under evaluation	998.5
18.	Evacuation of power from 1320 MW RLNG power plant at Trimmi Jhang	298.8	701.2	701.2
19.	2nd Source of Supply 220 KV I/Abad University S/S (Now 220 KV Transmission Nework Reinforcement in Islamabad & Bhurban) (JICA direct payment)	15.7	234.3 Tower erection in progress Civil works computed.	234.3
20.	Depleted material Tranch-III (Now replacement of Depleted	66.1	433.9 - Contractual issue /	433.9

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	Matiari at Existing grid station of NTDC system) – ADB funded		clarification by ADB - Shipment due in March 2019	
21.	220 KV Mirpur Khas G/S along with allied T/Ls – ADB	PCI Rs. 3.8 Billion	700.0 Contract under 00v1 47896+aluation - Advance payment	380.0
22.	Extension / Augmentation of existing Grid Stations	9.4	390.6 - Consultant engage for feasibility cost.	390.6
		12,231.3	35,505.3	**29,149**

85. The above analysis clearly shows that the requested amount was on higher side keeping in view the current status of the projects which has been rationalized. Accordingly as against the requested amount of Rs. 47,736.6 million, the investment amount of Rs. 41,380.3 million has been allowed to NTDC for the FY 2018-19.

What is the completion time of these projects for which investment has been claimed?

86. NTDC submitted that the projects for which investment has been claimed are aligned with the evacuation of power projects. The augmentation and expansion of NTDC Network is followed by the timelines as per system demand and load growth plan.

87. NTDC submitted the investment claim of Rs. 46 billion for the FY 2017-18 and Rs. 49 billion for the FY 2018-19. As against the claimed amount, Rs. 42.3 billion for the FY 2017-18 and Rs. 41.3 billion for the FY 2018-19 has been allowed. NTDC is directed to ensure the timely completion of the indicated projects in order to resolve the transmission constraints and overloading issues.

In view of huge investment claimed, what progress has been made to mobilize resources from private sector under transmission policy, 2015?

88. NTDC submitted that some future projects were proposed to PPIB. The donors have been approached to hire consultant for preparation of RFP and Standard Documents.

89. NEPRA awarded two transmission licenses to Fatima Transmission Company and Sindh Transmission and Dispatch Company. Opening up the transmission sector to the private investors will not only bring the investment, expertise but also timely completion of the grid stations and transmission lines. In view thereof NTDC is directed to pursue the same with the Ministry of Energy, Power Division.

What is the status and sources of funds (local & foreign components) of the investments claimed in FY 2017-18 and FY 2018-19?

90. NTDC in its petition submitted the following financing plan:

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Rs. in Million

Description	FY 2017-18	FY 2018-19
Foreign Relent Loans from GOP:		
Asian Development Bank (ADB)	-	1,200
French development Agency (AFD)	1,500	2,300
World Bank	-	1,900
Japan International Cooperation Agency (JICA)	1,900	2,900
Frankfurt (KFW)	1,000	4,50
US-AID	-	500
Other Donors (to be identified	-	350
Sub-Total (A)	4,400	9,600
Direct Loans from Commercial Banks:		
Neelum Jehlum T/L project (UBL)	4,000	3,000
500 KV Thar Matiari T/L (Askari)	9,000	2,000
1320 MW PP at Bin Qasim (HBL)	3,500	5,000
Hub to Matiari Financing (HBL)	500	5,000
K-2 / K-3 T/Line (ABL)	100	1,000
HVDC T/Line for Convertor Station (ABL)	100	400
Sub Total (A + B)	17,200	16,400
Total Loans (A + B)	21,600	26,000
Funds from Own Resources	24,828	23,815
Investment Program	46,428	49,815

91. NTDC submitted that the On-Going Foreign and Relent Local Loans are depicted below;

S.No.	Loans	Curr.	Loan Amount	Loan Availed	Avaiable
Foreign Relent Loans:					
1	ADB MFF-II (T-I&II)	US$	375.0	2.9	372.1
2	AFD	EURO	75.0	11.7	63.3
3	JICA	JPY	37,908.0	20,848.0	17,060.0
4	World Bank - Dasu	US$	63.0	2.2	60.8
5	World Bank - CASA	SDR	78.3	-	78.3
6	KFW Frankfurt	EURO	11.3	6.8	4.5
7	World Bank - NTM-I	US$	425.0	-	425.0
Local Loans:					
1	UBL- NJ T/L Project	PKR	17,000.0	7,159.4	9,840.7
2	Askari Bank - Thar-Mitiari T/L	PKR	18,000.0	12,457.2	5,542.8
3	HBL- Bin Qasim T/L	PKR	10,400.0	4,010.6	6,389.4

92. According to NTDC the new/in-Pipeline Foreign Relent & Local Loans financing plan is as under:

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S.No.	Loans	Curr.	Loan Amount	Loan Availed	Avaiable
Foreign Relent Loans:					
1	ADB MFF-II (T-III&IV)	US$	455.0	-	455.0
2	IDB - CASA	US$	35.0	-	35.0
3	KFW Frankfurt	EURO	27.0	-	27.0
Local Loans:					
1	HBL- Hub-Mitiari T/L	PKR	13,132.0	-	13,132.0
2	ABL - K2/K3 & HVAC to HVDC T/L	PKR	9,846.0	-	9,846.0
3	SSRL/SECL	PKR	17,400.0	-	17,400.0
4	Suki Kinari	PKR	28,600.00	-	28,600.00

93. NTDC provided the following details:

Investment Details		Rs. in Millions		
Sr. No.	Description	No. of Projects	FY 2017-18	FY 2018-19
On-Going Projects				
1	Augmentation of Existing System	3	650.00	720.00
2	Power Evacuation Projects	16	25,158.00	16,565.00
3	New Grid Stations & T/Lines	17	15,330.00	8,805.00
4	Others	5	2,370.00	1,110.00
Sub-total		41	43,508.00	27,200.00
New Projects				
1	Augmentation of Existing System	3	120.00	2,450.00
2	Power Evacuation Projects	15	1,165.00	9,320.00
3	New Grid Stations & T/Lines	23	1,305.00	8,380.00
4	Others	8	330.00	2,465.00
Sub Total		49	2,920.00	22,615.00
Total		90	46,428.00	49,815.00

94. NTDC submitted the financing plan of initial requested investment amount of Rs. 49.815 billion however subsequently the same has been revised to Rs. 47.3 billion. As against the requested amount Rs. 41.3 billion has been allowed for the FY 2018-19. The financial plans proposed by the NTDC seems reasonable.

Whether actual progress of NTDC for evacuation of the power projects is in line with the interconnection study approved by the Company?

95. NTDC submitted that the Evacuation of power projects is always based on approved Grid Interconnection Study.

96. NTDC stated that the evacuation of power project is based on the approved interconnection study however detailed information is required to be submitted in this regard. NTDC is directed to submit the details of the interconnection study approval and actual timeline of interconnection of the power projects before 30th September 2019.

What strategy has been devised to address the frequent ROW challenges and to avoid the delays in implementation of development projects of NTDC?

97. NTDC submitted that it has adopted a two type strategy comprising of short-term and long-term solutions.

- Short Term Solutions for instant relief
- Long term Solutions for long term relief

Short Term Solutions;

98. NTDC submitted that prior to unbundling, WAPDA enjoyed statutory powers to enter into private property for the erection of transmission lines and towers. In order to extract benefit from the powers enjoyed by WAPDA, an Authorization was obtained from Chairman WAPDA under Section 14 of the WAPDA Act 1958, which is as under:

"Right of Entry

14. (1) The Chairman or any person Authorized by him in writing may enter upon and survey any land, erect pillars for the determination of intended lines of works, make borings and excavations and. do all other acts which may be necessary for the preparations of any scheme; Provided that when the affected land does not vest in the Authority, the power conferred by this sub-section shall be exercised in such manner as to cause the least interference with, and the least damage to, the rights of the owner thereof

(2) When any person enters into or upon any land in pursuance of sub-section (1), shall at the time of entering or as soon thereafter as may be practicable, pay or tender payment for all necessary damage to be done as aforesaid, and in case of disputes as to the sufficiency of the amount so paid or tendered, the disputes shall be referred to the Deputy Commissioner of the district whose decision shall be final."

99. NTDC submitted that it makes utmost efforts to vacate the stay and resolve the legal issues. NTDC is also focusing on long term solutions of these issues.

100. The Authority considers that the ROW issues are major challenges which needs to be addressed in order to complete the transmission line as per given schedule to avoid transmission constraints. In this regard NTDC is directed to pursue the matter with relevant forum as mentioned above on war footings.

How is the investment claimed associated with transmission system explain plan.
&
What is the latest status of transmission system expansion plan to be developed under grid code and integrated with indicative generation capacity expansion plan (IGCEP)?

101. As per the requirement, NTDC Planning Department prepares a 5 Year Transmission System Expansion plan which is reviewed annually. Afterwards financing is arranged through foreign and local donors including self-financing option, the total investment on transmission system is claimed through PSDP Budget.

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102. NTDC vide letter dated 26th February 2019 submitted the IGCEP plan to NEPRA which is under consideration of the Authority. The investment allowed for the FY 2018-19 is reconciled with the power generation sources as incorporated in the latest submitted IGCEP.

Whether NTDC formulated mechanism regarding forecast errors rebate in the Grid Code Addendum No. 2 (Revision-1) for Grid Integration of PV and CSP Solar Power Plants is reasonable and justified?

103. According to NTDC, the mechanism is reasonable and justified because the hourly forecast will be provided on daily basis by Solar IPPs to NPCC and NPCC will incorporate it in their unit commitment for the next day keeping in view the economical dispatch. NTDC has bound Solar IPPs to use latest forecast tools to ensure error less power dispatch to the NTDC system. NPCC as network operator will ensure the same in real time power dispatch.

104. The following proposed mechanism for Forecasting Error Rebate for Grid Integration of Solar PV and Concentrated Solar Power (CSP) plants has been reviewed:

Annual Mean Absolute Error Range	Forecasting Error Rebate as percentage of the Energy Payment invoiced by the Seller.
15% to 25%	Ten percent (10%)
25% to 35%	10% , plus 1% for each 1% variation in excess of 25% upto 35%
Above 35%	Thirty Percent (30%)

105. It was observed that no support calculations and other assumptions have been provided by NTDC. The petitioner has also not been able to satisfy the Authority about the ability of NPCC to incorporate such a routine in its operations. NTDC is therefore directed to separately bring before the Authority, the forecasting practice followed by solar projects, NPCC's experience with the information so provided, whether NPCC possesses the necessary tools and software to analyze forecasting data and the resulting financial impact. Based on the information provided so far the proposed mechanism is not allowed for the time being.

General Establishment and Administration Cost

Direction of the Authority given in Determination for the FY 2015-16 & FY 2016-17

To provide summary of new hiring made during FY 2015-16 & FY 2016-17 along with their financial and performance / operational impact in its next tariff petition; &

Issues framed by the Authority

Whether the Petitioner's requested General Establishment & Administration (GE&A) cost Rs. 8,264 million & Rs. 9,848 million for the FY 2017-18 and FY 2018-19, is justified?

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106. As per the tariff petition, general Establishment includes Pay and Allowances, Employee benefits, staff costs, retirement benefits and other administrative expenses. Being a public-sector entity NTDC follows the pay scales of GoP, hence increase in salary and other employee benefits approved in the GoP finance bill have to be adopted by the Company under the terms of employment. Each component of General Establishment & Administration expenses and retirement benefits has been discussed hereunder:

- Revision of Pay Scales by the GoP
- Adhoc relief allowance @ 10%.
- Impact of annual increment due in December 2017.
- Increase in employee benefits and other components of employee's salaries as a result of transfer, promotions.
- Increase in Pension benefits announced by GoP 10 %.
- Increase in T.A/ D.A announced by GoP @ 60%
- Increase in Orderly Allowance announced by GoP from Rs.12,000 to Rs.17,000.

107. NTDC submitted that keeping in view the above increases, the Salaries and Wages have been projected as under;

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested	
Basic Pay	1,667	2,222	2,731	2,895
Other allowances	1,333	1,301	1,414	1,799
Contractual & Daily Wage	33	45	69	76
Employee Benefits	980	1,545	1,303	1,543
Total	4,012	5,112	5,516	6,312

108. NTDC along with the petition submitted the following breakup;

Rs. In Million

Description	FY 2015-16 Actual	FY 2016-17 Actual	FY 2017-18 Requested	FY 2018-19 Requested
Salaries, Wages & Other Benefits	6,192	6,878	7,502	9,030
Vehicle Running Expenses	147	150	170	193
Travelling Expenses	179	193	306	328
Power, Light, Gas and Water	98	73	61	69
Rent, Rates and Taxes	51	59	73	86
Communication	17	18	24	28
Offices Supplies and Other expenses	13	13	19	20
Professionals fees	20	176	59	45
Charges for Common Services (AOH) outside service employed	9	6	8	8
Store Handling Expenses	0	-	1	1
Advertisement and publicity	7	8	6	6
Subscription and Periodicals	1	1	1	1
Donations and Contributions	-	-	-	-

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Representation and Entertainment	2	3	2	3
Management Fees	14	17	20	24
Miscellaneous Expenses	4	4	7	7
Repair & Maintenance	739	595	814	1,068
Insurance	153	164	200	259
Depreciation	5,477	6,554	7,019	9,897
Transmission Losses	-	-	-	-
Total	13,122	14,910	16,293	21,069

109. NTDC also submitted the actual audited accounts for the FY 2017-18 according to which the actual salaries and wages are as under:

Description	Actual Rs. in Mln		Requested Rs. in Mln	
	FY 2017	FY 2018	FY 2018	FY 2019
Basic Pay	2,648	2,651	2,651	2,998
Ad hoc Relief Allowance	561	441	441	464
Cash Medical Allowance	104	99	99	104
Conveyance Allowance	230	216	216	227
Deputation Pay	0	0	0	0
Dual Charge Allowance	2	2	2	2
Entertainment Allowance	1	1	1	1
Group Life Insurance	4	3	3	3
House Rent Allowance	89	88	88	131
Job Allowance	38	43	43	43
Livery Allowance	9	8	8	8
Local Compensatory Allowance	3	3	3	3
Officiating/Personal Special Pay	5	5	5	5
Other Allowances	205	186	186	186
Overtime and Off Day Wages	99	119	119	119
Personal Allowance	0	0	0	0
Qualification Pay/Technical Pay	25	26	26	26
Senior Post Allowance	0	1	1	1
Shift Allowance	11	25	25	25
Special Pay	29	32	32	32
Staff Allowance	2	3	3	3
Washing Allowance	9	8	8	8
7% Living Allowance	0	0	0	0
Special Adhoc Allowance	62	18	18	18
Special Adhoc Allowance No.2	12	16	16	16
Wages of Contractual Labour	45	69	69	69
Daily Wage Labour	1	0	0	0
Power, Light and Water	362	277	277	291
House Acquisition	332	282	282	282
Breavement and Other Donations	31	64	64	64

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Sports and Recreation	2	1	1	1
Awards and Gratuities	0	1	1	1
Education and Training Expenses	136	141	141	141
Social Security Contributions	0	0	0	0
Employee's Old Age Benefit Insurance (EOBI)	0	0	0	0
Education Cess	1	1	1	1
Residential Telephone	1	1	1	1
Uniform	12	7	7	7
*Funeral Expense	3	7	7	7
Honrarium	937	0	0	0
Actual payment of benefit	1,765	2,007	2,007	2,208
Total	7,780	6,852	6,852	7,496

110. NTDC submitted that during the FY 2015-16 & FY 2016-17 following hiring were made:

BPS	No. of Employees Hired during FY 2016-17	Planning hiring including System Expansion in 2017-18 (07 New G/S)	Planning hiring including System Expansion in 2018-19 (06 New G/S)
01	9	438	92
02	0	0	0
03	0	83	0
04	0	0	0
05	0	64	32
06	71	150	145
07	317	67	187
08	28	91	47
09	6	147	154
10	0	0	0
11	4	17	47
12	0	0	0
13	0	0	0
14	52	72	121
15	9	65	106
16	0	7	19
17	133	69	60
18	2	4	9
19	1	0	0
20	0	0	0
		1,274	1,019

111. NTDC also submitted that in different categories from BPS-1 to 20 in 2016-17, 245 employees are retired. Similarly in FY 2017-18, total 285 number of employees are retired from BPS-1 to BPS 20. NTDC submitted that new hiring are required to be made due to the following reasons:

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- Human resources are required to operationalize the newly created offices / grid stations.
- To fill in the posts vacated due to exit of employee through different modes.

112. NTDC further submitted that owing to huge gap in human resources ongoing projects in the company are being delayed thus effecting performance, therefore, these vacant posts are required to be filled in a timely fashion in the interest of the Company's work.

113. NTDC was directed to provide hiring details during the FY 2018-19. In response to it NTDCL provided the department wise hiring details which is given below;

Period 01-07-2018 to 10-12-2018																						
Number of Employees Hired in Different Departments																						
BPS	CE (AM/GSO) LHR	CE (AM/GSO) ISB	CE (AM/GSO) MUL	CE (AM/GSO)HYD	CE (AM/GSO) Quetta	CE (PD/GSC) LHR	CE (PD/GSC) ISB	CE (PD/GSC) HYD	CE (Telecom)	CE (Sub. Design)	CE (S&S)	CE (MP&M)	CE (HVDC)	CE (P&C)	CE (QA&INSP)	CE (TSG)	CFO	MD NTDC	GM (PSP)	GM (NPCC)	GM (PD/GSC) LHR	Total
15	3	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5
14	2	1	4	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
11	1	-	-	-	-	-	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	2
9	16	14	7	11	-	-	-	2	-	-	-	-	-	-	-	-	-	-	-	-	-	50
8	-	-	-	-	-	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
7	86	45	20	27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	178
5	19	17	6	6	-	-	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	55
1	2	-	-	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1	-	-	-	4
Total	129	77	39	46	-	-	6	9	-	-	-	1	-	-	-	-	-	1	-	-	-	308

114. It has been observed that the audited amount of Rs. 7,880 million contains the impact of Cost of Work in Progress salaries and wages amount of Rs. 1,056 million which is already covered under the CWIP. Similarly provision of pension fund amount of Rs. 4,042 million has also been reflected. As per Authority previous practice the actual amount paid as pension fund is allowed. In the instant case the audited amount of Rs. 2,007 million is reflected in the FY 2017-18 as actual payment of benefits. Accordingly after adjusting the CWIP salaries and wages, post retirement pension funds the salaries and wages for the FY 2017-18 has been assessed as Rs. 6,853 million as against the requested amount of Rs. 7,502 million.

115. It was further observed that NTDC requested amount Rs. 17 million for the FY 2018-19 from the contractual amount on account of an assignment outsourced to E&Y for the HR restructuring of NTDC. During the discussion meeting with the NTDC held on December 22, 2018 in Lahore, E&Y representative and relevant HR Dept officials

presented salient aspects and progress of the assignment under process. During the review following matters were observed:

- Though approved by the BoD, the assignment does not establish a direct link with the overall strategic restructuring of NTDCL. Therefore it is not clear how the Job Description are being prepared in the absence of Department Strategic roles and their alignment with the central restricting vision.
- Despite of this ongoing activity and inception report presented to the Board, the NTDCL Management continues to recruitment and hiring with no direct linkage with this activity and the contents of the inception report.
- The financial and legal aspects are not clarified for proposed changes by E&Y wherein a new cadre and employment structure is being proposed to replace the historical BPS based permanent employment structure with post-retirement benefits. No substantial evaluation has been made on the financial and legal acceptability and transformation to this proposed model

116. Since the amount requested by the NTDC on account of structuring plan to E&Y is not comply with the strategic plan, existing recruitment and formal approvals, therefore the same is disallowed.

117. Accordingly after incorporating the GOP adhoc allowance, 50% house ceiling increase, impact of increment and other allowances, the salaries and wages for the FY 2018-19 has been assessed as Rs. 7,496 million as against requested amount of Rs. 9,030 million and the same is allowed to NTDC.

<u>Utilities Prices</u>

118. Utilities prices have been increased as per the historical trend as well as recent hike in the prices of Furnace Oil and Gas ultimately increasing the Electricity Prices. Based on the actual results for the FY 2015-16 & FY 2016-17 NTDC projected the following amount and requested to allow the same:

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Power, Light, Gas & Water	97.6	72.7	61.4	67

119. The actual amount for the FY 2017-18 is Rs. 60.11 million. Accordingly the same is allowed to NTDC. Assuming 10% increase in utility prices the amount of Rs. 66 million has been assessed on this account for the FY 2018-19 and the same is allowed to NTDC.

<u>Rent, Rate & Taxes</u>

120. NTDC submitted that as most of NTDC lower formations offices are hired on rental basis, therefore an annual contractual increase in Rent & Rates @ 10% has been assumed in the calculations.

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Rent Rate & Taxes	50.7	58.8	72.9	80.20

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121. NTDC submitted that due to the extra construction work rent, rate and taxes were on higher side. However, in subsequent year amount on this head will be reduced. As per audited accounts for the FY 2017-18 NTDC expense on account of rent, rate and taxes is reflected as Rs. 87 million. Keeping in view the actual cost of Rs. 87 million and subsequent reduced amount of Rs. 80.2 million being reasonable cost, the Authority has decided to allow the same as such.

Communication Charges

122. Communication charges include Telephone, Postage and Telegram & Cell Phone Charges. NTDC has acquired the services of Ufone for mobile postpaid SIMs to NTDC officers as per their entitlement. Due to accounts automation IT Department has enhanced the bandwidth of broadband in order to cater the upcoming requirements.

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Communication	16.6	18.1	24.10	28.20

123. In previous determination the Authority observed that this amount is already covered in the office supplies and others therefore cannot be allowed twice. Accordingly same treatment has been made in the instant petition and this cost has been disallowed to NTDC.

Office Supplies & Other

124. NTDC submitted that office supplies & other expenses are market based costs, hence they have been increased in line with CPI.

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Office Suppliers & Other expenses	12.8	12.6	19.3	20.4

125. Keeping in view the 5% CPI trend for the FY 2016-17 & FY 2017-18, the requested amount seems on higher side. Accordingly Rs. 12.18 million and Rs. 12.78 million for the FY 2017-18 & FY 2018-19 has been assessed on this account and same has been allowed.

Other G&EA

126. NTDC submitted that this includes outside services employed, store handling charges, advertising and publicity, Representations and Entertainment, NEPRA annual license fee, Management fees and other miscellaneous expenses.

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Other G& EA	42.7	42.4	52.3	58.1

127. NTDC subsequent to the above request submitted the audited accounts for the FY 2017-18 according to which the actual expense on account of other G&EA is Rs. 59 million. NTDC requested to allow the above cost as per actual expense. Keeping in view the

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expense trend in previous years, the requested amount of Rs. 59 million and Rs. 58 million by NTDC seems reasonable therefore the same has been allowed to NTDC as such.

<u>Issue framed by the Authority</u>

Whether the request of petitioner for induction of 1,449 employees for the FY 2018-19 is justified?

128. NTDC submitted that in order to meet with the technical and operational targets, the management intends to recruit personnel in different cadres from BPS-1 to BPS-18 during FY 2017-18 and FY 2018-19 for which recruitment process has been started with approval of Board of Directors.

Sr. No.	Description	Sanction Strength	Working Strength				Deficiency	%age
			Regular	Contract	Daily Wage	Total		
Officers BPS-17 &ABOVE								
a	Technical	1,205	836	179	-	1,015	190	18.72%
b	Non Technical	211	165	18	-	183	28	15.30%
Officials BPS 1 To 16								
a	Technical	6,326	3,409	914		4,323	2,003	46.33%
b	Non Technical	3,252	1,910	255	13	2,178	1,074	49.31%
c	Supportive	1,423	807	241	45	1,093	330	30.19%
	Total	**12,417**	**7,127**	**1,607**	**58**	**8,792**	**3,625**	**41.23%**

129. NTDC also provided the annual financial impact of positions to be filled which is as under:

S. No.	BPS	Employees Recruitment FY 2017-18	Annualized Impact FY 2017-18 (Rs.)	Employees Recruitment FY 2018-19	Annualized Impact FY 2018-19 (Rs.)
1	20	-	-	1	1,980,645
2	19	-	-	1	1,703,265
3	18	-	-	6	6,601,230
4	17	47	41,250,960	253	222,053,040
5	16	-	-	33	18,079,380
6	15	96	44,745,120	36	16,779,420
7	14	106	46,517,040	108	47,394,720
10	11	13	4,713,735	14	5,076,330
12	9	179	60,890,430	42	14,287,140
13	8	-	-	195	64,180,350
14	7	374	118,965,660	125	39,761,250
15	6	-	-	391	120,056,550
16	5	-	-	27	8,001,585
19	2	-	-	27	7,256,385
20	1	-	-	190	50,080,200
Total		**815**	**317,082,945**	**1,449**	**623,291,490**

130. NTDC submitted the financial impact for recruitment for FY 2018-19 has been taken for eight months after taking into account the due time required for completion of recruitment process. It is to apprise that as a result of capitalization and expansion of Power System, New Grid Stations/ Transmission Lines are being added with new sanctioned posts, which are required to be filled to operationalize the new projects.

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131. Owing to retirement/ resignation/ death etc. of employees, large number of posts are lying vacant which are required to be filled in the interest of Company's work, since recruitment process could not be undertaken due to ban imposed by Federal Government from time to time. Furthermore, due to restructuring in NTDC new posts have been created which are required to be filled to operationalize these newly created offices in NTDC. In view of the above, the Authority considers that the request of NTDC to fill its available vacant posts seems justified.

<u>Issue framed by the Authority</u>

Whether the Petitioner has maintained a separate post-retirement benefit fund?

132. NTDC submitted that NEPRA in its determination for FY 2014-15 allowed actual payments on account of post-retirement benefits. For the year FY 2017-18 & 2018-19 expenditure has been estimated accordingly. Further, NTDC has initiated the process of establishing its own Post-Retirement Fund duly approved from FBR as required by the Authority. Regular investment in the fund will be undertaken on monthly/ annual basis subject to cash received from CPPA-G. NTDC submitted that the post-retirement benefits include pension, leave encashment, free electricity supply & medical facility to the retired employees. The Company adopted the WAPDA's employee pension scheme, post retirement free electricity scheme and post-retirement medical benefits scheme. The year wise comparison of post-retirement benefits paid vis-à-vis projection is as under: -

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Pension	2,050.3	1,543.5	1,732.8	1,906.1
Leave Encashment	26.5	80.5	90.3	99.4
Free Electricity	55.2	59.4	66.7	73.4
Medical Facility	48.3	82.0	92.1	101.3
Total	**2,180.3**	**1,765.5**	**1,982.0**	**2,180.1**

<u>Pension</u>

133. Pension is payable under the scheme to all eligible employees by the rules of the scheme. Pension is calculated on last pay drawn on completion of qualifying service. No benefit is payable under the scheme for less than five years of service. An employee is entitled to benefit under Pension Scheme on ceasing to be an employee due to any of the following reasons:

- Retirement after completion of 25 years of service
- Retirement at age 60
- Death in service
- Disability during service
- Lump sum Gratuity, if service is less than 10 years

134. According to NTDC the GoP has granted increase to all pensioners @ 10% in FY 2017-18 and FY 2018-19.

<u>Post-Retirement Medical Facility</u>

135. NTDC submitted that all regular employees and their family members (retiring on superannuation, voluntary retirement, early retirement, death/disability in service) are

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eligible for the post-retirement medical benefits without any limitation subject to a minimum service requirement as under:

- Superannuation Retirement on attaining the age of 60 years
- Normal Retirement 25 Years
- Death/Disability in minimum service of 10 Years

Leave Encashment

136. According to NTDC in case of retirement of an employee on superannuation, a lump-sum payment of 365 days leave in his credit is allowed as leave encashment. NTDC submitted that an increase of 10% in this head has been estimated in line with salaries in the petition for the year 2018-19.

Post Retirement Free electricity

137. NTDC submitted that Electricity is payable under the scheme to all eligible employees of the company. According to NTDC the benefit is payable at the rates based on units consumed against entitled units according to Grades. NTDC stated that an employee is entitled to benefit under Pension Scheme on ceasing to be an employee due to any of the following reasons:

- Retirement at age 60
- Retirement after completion of 25 years of service
- Death in service
- Disability
- Compulsory Retirement

Post Retirement Fund

138. NTDC submitted that the process of establishing its Post-Retirement Fund has been initiated. Regular investment in the fund will be undertaken on monthly/ annual basis subject to cash received from CPPA(G). Trust deed of NTDC Employees Pension Fund duly Approved by BOD and got registered from the registrar on 22.12.2017. NTN number and registration with FBR of NTDC Employees Pension Funds has been given on 26.09.2018. Process of exemption from FBR has been started on 11.10.2018. Opening of Bank Account Placement of Fund in NTDC Employees Pension Fund on the basis of actuarial valuation. Pension payments will be made from mentioned above Account. Any balance amount in NTDC Employees Pension Fund Account will be invested as investment policy decided by Board of Trustees.

139. NTDC had been allowed provision for post-retirement benefits as a part of general establishment cost to the Petitioner till the FY 2012-13. Thereafter, in order to protect the interest of the employees regarding post-retirement benefits, considering the overall liquidity position in the power sector and in order to ensure that the Petitioner fulfils its legal liability with respect to the post-retirement benefits, the Authority directed the Petitioner in the tariff determination for the FY 2014-15 to create a separate retirement benefit fund / funds, as allowed under the IAS-19. However, the Petitioner has failed to comply with the direction of the Authority as till date it has not been able to create a separate post-retirement Fund. NTDC submitted the annual audited accounts for the FY

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2017-18. Accordingly based on the audited accounts the actual amount of Rs. 2,007 million on account of actual payments made is allowed as per previous practice. For the FY 2018-19 the requested amount of Rs. 2,208 million by the Petitioner being reasonable is allowed as such.

<u>**Issue framed by the Authority**</u>

Whether the proposed Repair & Maintenance expenditures for Rs. 744 million & Rs. 988 million for the FY 2017-18 and FY 2018-19 is justified?

140. NTDC submitted that asset management department is the back bone of the NTDC that links power generation and load centers located almost in the entire country. It is responsible to manage/ supervise O&M of 16 numbers 500 KV and 42 numbers 220 KV grid stations and 5772 km 500 KV transmission lines and 10742 km 220 KV transmission lines for smooth operation and uninterrupted power supply to almost the whole of the country. It has to carry out the periodical / annual maintenance of all the equipment installed at 500 / 220 KV grid stations and transmission lines as per SOP besides attending breakdowns. The vehicles are used by grid station and transmission line division in order to perform routine maintenance and emergent works in order to ensure continuity of the supply across the Pakistan. Line patrolling and other maintenance work are done from coastal areas of Sindh, deserts and rugged hilly areas in north through these vehicles. Further transportation of equipment and store materials is carried out. Moreover, community vans are used for employee benefit like school / college and staff pick and drop duties. NTDC submitted that R&M amount has been requested based on the following:

- Continuous expansion of NTDC network which required extensive travelling of officers / officials and transportation of equipment due to increased maintenance requirements.
- Increase in repair and maintenance expenditure due to aging of vehicles, inflation and rupee devaluation.
- Addition of new offices due to new grids and transmission lines, resulting in more usage of vehicles.

141. As NTDC's transmission network is the backbone of the country's electric power supply system, it comprises a mix of old and new grid stations & transmission equipment. The continuous growth in demand load has necessitated the Company to ensure and attain optimal level of its Transmission network reliability and sustainability which can only be achieved through regular repairs and maintenance. NTDC in support of its claim provided the following information;

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Repair & Maintenance	679	430	744	988

142. Later on, NTDC submitted the audited accounts for the FY 2017-18 according to which the repair & maintenance amount is Rs. 671 million. The actual amount on this account has been allowed to NTDC for the FY 2017-18. The Authority allow repair and maintenance 0.5% of the gross fixed assets other than land and lease land cost. Keeping

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in view the NTDCL projected amount of Rs. 988 million being within 0.5% of Fixed Assets has been allowed as such.

Issue framed by the Authority

Whether any analysis is done for out sourcing of vehicle transport in view of existing high cost claimed on account of vehicles running expense plus repair and maintenance of vehicle expenses claimed?

143. NTDCL Transmission network spreads across the country approximately 16,295km 500kV/220kV transmission lines, these lines spread into remote areas of Baluchistan and KPK, so extensive patrolling is inevitable by technical staff for the maintenance of the transmission system as well as by the security staff to avoid sabotage activities. Hence, NTDCL requires funds to cover the vehicle running expenses. The below tabulated projects of vehicle running expenditure has been incorporated in the wake of expansion in the transmission network. The bifurcation of the requested amount is as under;

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Vehicle & Transport Equipment	922.0	965.4	1,118.4	1,471.9
Vehicle Running Expenses	147.3	149.9	169.8	195.7

144. NTDC further submitted that since NTDC Transmission network spreads across the country making extensive patrolling by technical staff inevitable due to maintenance system and security of the transmission system. Hence, NTDC requires funds for repair and regular maintenance of these vehicles in order to prolong the useable life of the vehicles. The below table projects the estimated repair and maintenance costs:

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Vehicle & Transport Equipment	922.0	965.4	1,118.4	1,471.9
Vehicle R&M Expenses	59.6	64.7	70.0	80.0

145. NTDC submitted that the projection has been made in view of fuel price increase, old vehicles, system expansion. The transport policy revamp in a part of ongoing HR / OD consulting project. The objectives of the proposed Transport Policy are as under:

- To ensure efficient utilization of official vehicles
- To keep POL / Repair & Maintenance / recurring expenses under check
- To instill a sense of ownership among employees to safeguard company's vehicles
- To satisfy employees transportation needs

146. As per audited account provided by NTDC for the FY 2017-18 the bifurcation of actual amount is as under:

Rs. In Million

Description	FY 2017-18	FY 2018-19
	Actual	Requested Amount
Vehicle repair expenses	69	80
Vehicle running expenses	165	195
Total	234	275

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147. After incorporating the expected increase of 5% on account of CPI and fuel as 10% the amount on this account has been worked out for the FY 2018-19 which is as under;

Rs. In Million

Description	FY 2017-18	FY 2018-19
	Actual/Allowed	Allowed
Vehicle repair expenses	69	72
Vehicle running expenses	165	182
Total	234	254

148. Despite clear directions NTDC did not submitted any outsourcing of the vehicle running expenses. NTDC is therefore directed to conduct study for outsourcing the vehicle running expenses in order to minimize the cost of vehicle running expenses.

Issue framed by the Authority

What is the rationale for 60% increase in travel expense for FY 2017-18 over the last year's actual expenditure?

149. NTDC submitted that the GoP has increased daily allowance for each BPS around 60% resultantly increasing the Travel Expense for FY 2017-18. Other reasons include System Expansion, Increase in Security Patrolling, Transfer T/As of Security & Other Staff and Impact of New Inductions. To ensure continuous and reliable transmission of energy through NTDC's ever-expanding Transmission Network requires extensive patrolling by the maintenance and security staff to avoid threats of sabotage activities and for regular/scheduled maintenance purposes. Further, keeping in view the current law and order situation in the country security personnel are frequently transferred from one grid station to other and paid transfer T.A/D.A as per policy. Hence, keeping in view above Travelling Expenses have been projected as under;

Rs. In Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Travelling Expenses	178.7	192.5	306.3	327.8

150. Subsequently NTDC submitted audited accounts for the FY 2017-18 according to which the actual amount is Rs. 257 million. The same is allowed to NTDC. For the FY 2018-19 after taking into account the devaluation of currency exchange rate, trend of fuel prices the increase of Rs. 269 million has been assessed and the same is allowed to NTDC.

Issue framed by the Authority

What are the reasons for high rising trend in professional fee actually incurred for the FY 2016-17 and also claimed for FY 2017-18 & FY 2018-19?

151. NTDC submitted that increase in the professional fee has been estimated as a result of revised rates of professional contracts/ legal counsel fee. Further NTDC has hired the services of an Organizational Development (OD)/HR Consultancy firm. The firm has been mandated with the restructuring of NTDC hierarchy, processes and for the preparation of policies & regulations to cater the needs of NTDC's ever expanding system. According to NTDC the extra ordinary cost appearing in FY 2016-17 includes a non-recurring payment with regards to consultancy carried out by Planning Department. NTDC has hired services of an HR/ Organizational Development (OD) Consultancy firm

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to restructure NTDC processes and prepare/ update policies & regulations for catering the needs of expanding system.

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Professional Fee	19.5	176.0	59.4	44.7

152. Rise in incurrence of legal professional fee is due to higher number of cases being filed against NTDC this trend appears due to;

- Increase in the no. of projects executed by NTDC
- Raised awareness amongst people w.r.t. their rights
- Emergence of Taxation cases of serious nature also necessitated drastic measure

Case Year	Number of cases filed in the Year	Cases on Special Fee
FY 2015-16	97	8
FY 2016-17	122	16
F 2017-18	185	12

153. NTDC submitted that the BoD approved Schedule of Fee which has not been revised since 2014.

154. It has been observed that the amount charged to the Profit and Loss account is less than the amount charged to Cost of Work in Progress. Since the expense on the existing projects under progress are capitalized therefore the same cannot be allowed twice to NTDC.

Issue framed by the Authority

Whether the petitioner's projected insurance of Rs. 199 million & Rs. 259 million for the FY 2017-18 and FY 2018-19 is justified? Identify the Grid Station which are to be capitalized and the existing completion and expenditure status therein?

155. The assets of the company are protected /covered under WAPDA Equipment Protection Scheme (WEPS) and insurance cost is calculated @ 0.30% of book value of Grid Stations. The increase in insurance cost estimate is due to addition in Fixed Assets.

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Book Value of Grid Stations	55,417	54,229	66,606	86,425
Insurance	152.76	164.29	199.82	259.28
%age	0.3%	0.3%	0.3%	0.3%

156. NEPRA allow insurance cost of 0.3% of the book value of grid stations. The actual audited figures for the FY 2017-18 provided by the NTDC reveals that the insurance cost of NTDC is Rs. 216 million. However, as per NEPRA practice Rs. 199.82 million which is 0.3% of the book value of the grid stations is allowed to NTDC. For the FY 2018-19 Rs. 232.31 million as per this formula is assessed and the same is allowed to NTDC.

Issue framed by the Authority

Whether the petitioner's projected depreciation of Rs. 7,019 million & Rs. 9,897 million for the FY 2017-18 and FY 2018-19 is justified? The additional capitalization of assets to be referred.

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157. NTDC submitted that depreciation is also a significant component to determine revenue requirement of the tariff petition which may change as a result of addition or deletion in the fixed assets and would require adjustments accordingly. The depreciation for FY 2017-18 & 2018-19 has been calculated on established basis of:

(i) Value of existing assets,
(ii) The anticipated additions in existing assets during the FY 2017-18 & 2018-19

158. NTDC submitted that extraordinary capitalization of over Rs. 100 bln will be made in the FY 2017-18 and FY 2018-19 enhancing the quantum of depreciation. According to NTDC this will also address the issue raised by the Authority of having a sizeable amount parked in the Capital Work-in-Progress. Depreciation is calculated on straight-line method as per following rates:

- Land @ 0%
- Civil works and building @ 2%,
- Transmission & Despatch Equipments @ 3.5%
- Furniture and Fittings @ 10%.
- Vehicles @ 10%
- Other equipment @ 10%.

159. Increase in depreciation is due to addition in fixed assets.

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Value of Assets	171,919	180,400	248,843	333,888
Depreciation	5,477	6,554	7,019	9,897

160. NTDC submitted that projects expected to be completed during FY 2017-18 & FY 2018-19 are as follows;

S#	Project Name	Capitalization (PKR Million)	
		FY 2017-18	FY 2018-19
1	1 No. 220KV Rohri Sub Station & Assosiated T/L for Dispersal of Power from IPPS Fauji Foundation & ENGRO near Karachi	1,126.00	-
2	220/132KV Dera Murad Jamali Sub Station.	1,000.63	-
3	3rd 500KV Jamshoro-Moro- R.Y Khan Single Circuit T/Line. Tranch-III	-	30,000.00
4	500kV Rahim Yar Khan GS & T/Line	7,686.00	-
5	500kV Shikarpur GS & T/Line	3,256.80	-
6	Construction of 500Kv T/L for Dispersal of Power form 747 MW from Guddu	-	7,873.72
7	Evacuation of power from Wind Power Projects (WPPs) at Jhimpir and Gharo Wind Clusters	11,038.78	-
8	Iterconnection- Ther Coal Based , 1200MW (Power Dispersal from 1200MW Thar Coal Power Plant - 500kV Thar - Matiari T/L & Matiari 500kV S/station)	13,000.00	-
9	New 220 KV G/Station at Khuzdar/220 KVDadu - Khuzdar D/C T/Line, JICA Loan No. PK-56	1,324.00	-
10	Transmission Interconnection for Dispersal of Power From UCH-II Tranch-III	2,330.00	-
11	Evacuation of power from 1320MW Power Plant at Bin Qasim	3,977.81	9,099.72
12	SVC at 220 KV Grid Station, New Kotlakhpat, Lahore	3,743.36	-
13	220 KV Grid Station, Gujrat	1,219.00	-

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S#	Project Name	Capitalization (PKR Million)	
		FY 2017-18	FY 2018-19
14	220 KV Substation Chakdara	-	3,200.00
15	220 KV Grid Station, Ghazi Road, Lahore & T/Lines	-	3,717.00
16	220 KV Grid Station, Mansehra	905.00	-
17	Transmission for Dispersal of power from Neelum-Jhelum Hydro Power Project	8,713.38	7,000.00
18	500 KV Grid Station, New Lahore	3,057.73	-
19	500 KV Transmission Lines at New Lahore	-	6,116.35
20	220 KV Grid Station, D.I.Khan & allied T/Lines	-	4,000.00
21	220 KV Grid Station, Lalian	-	1,600.00
22	220 KV Grid Station, Nowshera	-	2,000.00
23	Augmentation of 500/220 KV Transformer	95.41	-
24	Quid-e-Azam Solar Park	3,422.26	-
25	Construction 660 KV HVDC Transmission line from Maitaire to Lahore (Land Acquistion for Converter and Grounding Station)	-	1,568.00
26	RLNG Power Project from 1200 mw at baloki	417.99	2,800.00
27	RLNG Power Project from 1200 mw at bikhi	54.03	-
28	RLNG Power Project from 1320 mw at haveli bahadur shah	1,917.60	-
29	RLNG Power Project from 1320 mw at sahiwal	55.15	1,100.00
30	Evacuation of power from 147mw patrind HPP	-	1,100.00
31	Evacuation of power from Tarimu Line	-	3,700.00
	Total	**68,340.94**	**84,874.79**

161. NTDC in support of its claim submitted the audited accounts for the FY 2017-18 according to which the depreciation amount is Rs. 6,880 million which has been allowed as such. Keeping in view the investing amount of Rs. 41.3 billion the depreciation for the FY 2018-19 has been assessed as Rs. 8,902 million and the same is allowed to NTDC.

Issue framed by the Authority

What are the reasons for substantial increase in financial charges of Rs. 1,389 million & Rs. 6,318 million for the FY 2017-18 and FY 2018-19 is justified?

162. NTDC submitted that it is an infrastructure based company, thus, striving vigorously for enhancing its transmission network system to cater the growing needs of Distribution Companies. NTDC is responsible to build, design and operate the Extra High Voltage (EHV) Transmission lines to evacuate Power from all upcoming power generation centers. Therefore, NTDC plays a crucial role in arranging the availability of transmission network to align with the availability of power plants. NTDC undertakes numerous projects to coup with the demand of Distribution Companies, therefore managing its investment program through a mix of financing i.e Return on Equity (RoE) and Loans (Foreign & Local). At present, foreign loans are taken through the GoP re-lent policy whereas local loans are obtained from local financial institutions, these loans comprise of a 15-20 years tenure for the construction of 500/220kV Transmission Lines/Grid Stations to meet the costs of an ever-expanding transmission system across the country. Following are the major sources of foreign re-lent loans:

- Asian Development Bank ADB
- Japan International Cooperative Agency (JICA)
- World Bank
- KFW (Frankfurt Germany)
- AFD (Agence Française de Development)

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163. The projected Capital Investment program for FY 2017-18 is Rs.46,428 Mln & for FY 2018-19 is Rs.49,815 Mln which has been planned through a combination of own sources, local loans and foreign relent loans. Markup during the construction period is charged to Projects (as CWIP) in line with IAS 23 and after completion of the project markup on those loans is charged to operations till the full retirement/repayment of loans. Financial Charges have been worked out taking into account completion of assets during FY 2017-18 and 2018-19. NTDC submitted that it is expected that during FY 2017-18 Assets amounting to Rs. 68,341 Mln and during FY 2018-19 Rs. 84,875 Mln will be completed and transferred to operations resultantly a noticeable surge can be witnessed in Financial Charges chargeable to operations.

Rs. in Million

Description	FY 2015-16	FY 2016-17	FY 2017-18	FY 2018-19
	Actual		Requested Amount	
Total Financial Charges	5,515	7,341	9,398	12,098
Charge to CWIP	4,016	6,081	8,009	5,780
Charge to Operation	1,498	1,259	1,389	6,318

164. The Petitioner has provided the audited accounts for the FY 2017-18 according to which the financial charges are Rs. 4.575 billion which is Rs. 3.1 billion higher than the requested amount. The main reason of higher financial charges is significant capitalization of Rs. 51.7 billion during the FY 2017-18. Keeping in view the capital structure proposed by the petitioner for capital investment of Rs. 41.3 billion for the FY 2018-19 the financial charges for the FY 2018-19 has been assessed Rs. 6.318 billion and the same is allowed to NTDC.

<u>**Issue framed by the Authority**</u>

Whether the Petitioner's projected Return on Equity at 16% Rs. 20,230 million & Rs. 24,533 million for the FY 207-18 and FY 2018-19 are justified?

165. According to Section 17 (3) (iii) of NEPRA (Tariff Standards and Procedure) Rules, *"Tariff should allow licensees a rate of return which promotes continued reasonable investment in equipment and facilities for improved and efficient service."* NTDC hereunder applied the same methodology as adopted by NEPRA for the calculation of Return on Equity of NTDC (Ref: Determination of the Authority in the matter of NTDC No. NEPRA / TRF -365/NTDC-2016/5043) By applying the assessed ROE on the 30% portion of the RAB and 12% on the remaining portion of equity (capital base), the Cost of Equity (Ke) and Cost of Debt (Kd) have been calculated as follows:

Cost of equity (ke)

166. NTDC submitted that the cost of equity (ke) is calculated in line with NEPRA guidelines i.e Capital Assets Pricing Model (CAPM).

K_e = R_f + (Beta x Market Risk Premium)
K_e = 16%
K_e = R_f + (Beta x Market Risk Premium)
K_e = 16%

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167. NTDC requested to allow 16% ROE amounting to Rs. 20,230 million and Rs. 24,533 million for the FY 2017-18 & FY 2018-19.

168. NTDC has been allowed a rate of return based on Capital Base by NEPRA using the following formula:

Capital Base = (NFAIO + CWIP+S&S+TD+C&BB) - (LTB+SDC+ERB+CA&OCL)

Where:

NFAIO	=	Net Fixed Assets in operation
CWIP	=	Capital Works in progress
S&S	=	Store & Spare subject to maximum of 3% of (Gross fixed assets in operation)
TD	=	Trade Debts subject to a maximum 30 days outstanding billing.
C&BB	=	Cash and bank balances of 1/6th of annual operating expenses other than non cash items
LTB	=	Long term Borrowing **(Net of current Maturity)**
SDC	=	Security deposits by Consumers
ERB	=	Employees retirement benefits
CA&OCL	=	Current, Accrued and other current Liabilities (Maximum 2/3rd of current assets)

Where:

Current Assets =S&S+TD+C&BB

169. The RORB of the NTDC has been calculated as per following mechanism:

Description		Actual	Approved
		FY 2017-18	FY 2019
Calculation of Capital Base		**Rs. Million**	
Opening fixed assets in operation		180,400	231,970
Add: Assets Transferred during the year		51,547	16,696
Closing Fixed Assets in Operation		231,947	**248,666**
Less: Accumulated Depreciation		75,759	84,661
Net Fixed Assets in operation		156,210	**164,004**
Add: Capital Work in Progress (Closing)		95,131	119,815
Fixed Assets Inc. WIP	A	251,341	**283,819**
Stores & Spares (3% GFA)		6,959	7,460
Accounts Receivables (30 Days of R.R)		4,574	4,141
*Cash & Bank Balance		1,370	1,571
Current Assets	B	12,903	13,172

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Long Term Loans (Non Current + Current Portion)		99,069	**137,419**
Deferred Credits (Consumer Contribution)		5,137	5,460
Deferred Liabilities		9,097	9,097
*Current Liabilities (2/3rd of current assets)		8,062	8,781
Non-Current Liabilities + Current Liabilities	C	121,905	**160,757**
Capital Asset Base (A+B+C)		142,063	**136,233**
Avg. Capital Base	D	135,627	**139,148**
Calculation of RAB			
Fixed Assets Net + Work In Progress		251,341	283,819
Deferred Credits + Deferred Liabilities		14,234	14,557
RAB		237,106	269,262
Avg. RAB	E	*219,300*	***253,184***
Equity Portion (E*30%)	F	65,790	75,955
Return On Equity (F*15%)	G	9,868	11,393
Remaining Equity Prtion (D-F)	H	69,837	63,193
Return @ 8.99% (H * 8.99%)	I	6,275	5,673
Total Return On Equity (G+I)		16,144	**17,067**
* (1/12th of sum of cash and bank balance whether deposits at the end of each month of the year subject to the maximum of 1/6th of annual operating expenses other than non-cash items)			

170. The Authority while considering the reconsideration request by GOP in its determination dated May 4, 2018 decided to allow 16% ROE keeping in view the expansion in the transmission system due to addition of large number of generation projects. While allowing this it was clearly mentioned that this was against the upcoming plants that have to attain the COD (particularly RLNG and coal power plants). The Authority observed that NTDC performance was not up to the mark and frequent tripping and poor performance was noted. Similarly the projects were not completed timely and time and cost overrun has been visualized in the investment program details. At the same time the evacuation from the different power projects such as Patrind, Port Qasim etc are delayed despite reasonable return allowed by the Authority.

171. In the present tariff petition, the risk free and market premium have been assessed as prevailing during the tariff control period under consideration. The average current yield of 3 years of Pakistan Investment Bond (PIB) for the two FYs 2017-18 and 2018-19 (till Feb'2019) is 9.24%. Likewise, the market risk premium Pakistan Stock Exchange Index is 6.5% (Source: Bloomberg Terminal Sept. 2018, Investopedia 2016). Using the same values, with no change in Beta (risk factor-utilities) ROE is worked out as under:

$$Ke = 9.24\% + (0.862 \times 6.5\%)$$

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Ke = 15%

172. Accordingly NTDC is allowed 15% ROE for the FY 2017-18 & FY 2018-19. The Capital base has been assessed for the FY 2017-18 as Rs. 142,012 million and for the FY 2018-19 as Rs. 136,117 million. However, the Avg. RAB for the same period has been assessed as Rs. 135,594 million for the FY 2017-18 and Rs. 139,064 million for the FY 2018-19. In line with the Authority earlier decision the average RAB has been divided into 70:30 debt:equity ratio. Based on the 8.99% cost of debt for the tariff control period i.e. FY 2017-18 & FY 2018-19, the amount of Rs. 6,275 million has been assessed for the FY 2017-18 and Rs. 5,673 million for the FY 2018-19. Similarly ROE @ 15% has been assessed as Rs. 9,868 million for the FY 2017-18 and Rs. 11,393 million for the FY 2018-19 respectively. In view thereof the accumulated ROE for the FY 2017-18 is assessed as Rs. 16,144 million and for the FY 2018-19 Rs. 17,067 million for the FY 2018-19.

<u>Issue framed by the Authority</u>

Whether the requested Cost of Debt of 12% is justified?

173. NTDC submitted that cost of Debt has been calculated at the rate of 12% in line with NEPRA permissible rates in the last tariff determination.

174. NTDC submitted that the current loan portfolio of NTDC includes foreign loans which have been taken at 17% (prior to 17th March, 2009), 15% (following 17th March, 2009) and 12% (following 8th September, 2016). Furthermore, it has been observed that KIBOR rate went as low as 6%, therefore GoP decided to reduce markup on relent loans and hence the rate came down from 15% to 12% in line with market trends. However, in this calendar year a sizeable hike in the KIBOR rates has been witnessed and therefore GoP is expected to follow suit. It is pertinent to mention here that till-to-date large no. of loans were taken by NTDC at 17% and 15% and only few loans have been acquired at the new 12% rate and is expected to increase again as per market trend.

175. The Authority in the previous determination in line with the principle adopted in generation companies and Distribution Companies, has considered the equity amount beyond 30% as debt. Similarly the Authority has also revised the spread over LIBOR / KIBOR for the generation companies. Keeping in view the asset base of NTDCL shareholding pattern of NTDCL (Govt Owned entity), the 2.5% spread allowed in previous determination has been reviewed. In view thereof, the excess amount from 30% ROE has been considered as debt component @ 8.99% (two years average KIBOR for the FY 2017-18 & FY 2018-19). Accordingly amount of Rs. 6,275 million and Rs. 5,673 million has been assessed for the FY 2017-18 and FY 2018-19 and the same is allowed to NTDC.

<u>Issue framed by the Authority</u>

Whether the Petitioner's projected Other Income of Rs. 1,531 million & Rs. 1,597 million for the FY 2017-18 and FY 2018-19 is reasonable?

176. NTDC submitted that the "Other Income" includes income from services rendered to DISCOs, IPPs in shape of planning, telecommunication, design, mark up on bank deposits, amortization of deferred credit etc. Interest income has been projected based on historical trends which is as under:

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Rs. in Million

Description	FY 2016-17	FY 2017-18	FY 2018-19
Interest Income	534.29	531.00	504.45
Amortization of deferred credit	206.87	206.87	206.87
Services to Power Companies	543	713.87	785.26
Other Income	248.00	79.75	100.81
Sub-Total	1,532.39	1,531.50	1,597.40

177. The NTDC has submitted actual audited accounts for the FY 2017-18 according to which the other income is Rs. 969 million as against projected amount of Rs. 1,531 million therefore the same is allowed to NTDC. The petitioner has requested Rs. 1,597 for FY 2018-19 and considering the same being reasonable is allowed as such.

Issue framed by the Authority

How is the charge out rate determined for services rendered to IPPs and DISCO's under the heading of "Other Income"?

178. NTDC Services Division has provided the following Man Day Rates w.e.f 01.07.2018 based on which the requisite charge out rates are determined,

Rs.

Sr. #	Particulars	Chief Engineer	Manager Grade 19	Dy. Manager Grade 18	Asst. Manager Grade 17	Technical Staff Grade-16
1.	Maximum Gross Salary	310,428	230,562	199,182	161,596	127,762
2.	Fringe Benefits @ 60% of average gross salary	186,257	138,337	119,509	96,958	76,657
3	Total Monthly Cost	496,685	368,899	318,691	258,554	204,419
4.	Man Day rates @ 22 working days a month (figures round up	22,577	16,768	14,486	11,752	9,292
5.	Man hours rates @ 08 working hours a day (figures round up)	22,600	16,800	14,500	11,700	9,300

Notes:

These rates are based on the maximum gross salaries drawn by the officers/officials in the relevant Fiscal year excluding:

- *Transport Charges and TA/DA as admissible*
- *Provincial Sales Tax.*

179. NTDCL has provided the breakup of assessment of the other income which seems reasonable.

Issue framed by the Authority

Whether the cost over-run and commitment charges paid by the NTDCL needs to be adjusted in the transmission tariff? How the component of the requested Prior Year Adjustments (PYA) is justified?

180. The issue has been discussed in the investment program.

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Sr.	Name of Grid Station	Completion Date		Physical Progress	Total Delay
		Contractual	Target Date		
1	500 kV Rahim Yar Khan	Jan. 2012	Feb. 2018	100 %	[illegible]
2	220 kV Dera Murad Jamali	Feb. 2014	June 2018	100%	[illegible]
3	220 kV Chistian	Sept. 2013	Oct .2016	100%	37 mon
4	500 kV New Lahore	Nov. 2014	Nov. 2017	100 %	[illegible]
5	220 kV Gujrat	March 2015	April 2017	100 %	[illegible]
6	220 kV Mansehra	Nov. 2016	Feb. 2018	100 %	[illegible]
7	220 kV Chakdara	Dec. 2016	Dec. 2018	90% 1 T/F energized	24 mon
8	220 kV Dera Ismail Khan	Dec. 2016	Dec 2018	G/S 80% T/Line 85%	24 months
9	220 kV Nowshera	Dec. 2016	Jan 2019	76 %	25 months
10	220 kV Ghazi Rd	Oct. 2016	Dec 2018	88 %	26 months

Sr.	Project	Pending Work	Completion Date		Physical Progress	Total Delay
			Contractual	Target Date		
1	404 MW Uch-II	220 kV Uch-II to Sibi, D/C T/Line, 125 km	Oct. 2013	May 2018	100%	55 mo
2	1200 MW Thar Coal	500 kV Thar-Matiari T/Line, 250 km	Dec. 2017	June 2018	100 %	[illegible]
3	969 MW Nelum Jhelum HPP39	500 kV Neelum Jhelum - Domeli D/C T/Line, 145 km Phase-I	June 2016	Feb 2018	100%	20 Months
		500 kV Domeli – Ghakkar D/C T/Line, 130 km Phase-II	Dec 2016	Feb 2019	10%	24 Months
4	1320 MW Port Qasim	500 kV D/C Bin Qasim - Matiari T/L, 180 km	June 2017	Dec. 2018	Phase I 100% Phase II 39.3%	18 months
5	747 MW Guddu New	500 kV S/C Guddu New - Muzafargarh T/Line, 256 km	Feb. 2014	Dec 2018	Rebidding of Lot-II & III	56 months
6	Wind Power Plants at Jhimpir & Gharo	220 kV Gharo G/S	2016-17	2018-19	NIL	24 months

181. The issue has been discussed in the investment program.

<u>Others</u>

<u>Issue framed by the Authority</u>

Whether the calculation of Wheeling charge for the FY 2017-18 & 2018-19 based on Non-Coincidental basis is justified?

182. NTDC submitted that this query has been addressed at Point No.1 under the head of Compliance to Authority's Directions of the Authority FY 2015-16 & FY 2016-17.

183. The issue of MDI calculation charges has been discussed in detail in the above paragraphs.

<u>Issue framed by the Authority</u>

Whether claim of NTDC for allowing un-covered cost for FY 2015-16 & FY 2016-17 including reversal of the impact of K.E. Loan Adjustment on ROE and the Uncovered Cost for FY 2014-15 is justified?

184. NTDC submitted the brief history of the K.E. Loan adjustment which is as under;

- NTDC billed K.E. on basket price @ Rs. 3.69/kWh w.e.f 01-Nov-03
- NEPRA determined on 21-Feb-07 to charge K.E. on Hourly Marginal Cost basis.
- K.E. contended that it should be treated at par with XW-DISCOs instead of billing on Marginal Cost Basis
- ECC on 26-Aug-08 constituted a committee under chairmanship of MoF to resolve all outstanding payments to NTDC and other enterprises
- K.E. contended that arrears of Rs.31 Bln payable on account of marginal difference was not it's liability and may be removed from the balance sheet
- Committee headed by Finance Minister suggested this amount be set aside, modalities of which shall be worked out later by Finance Division
- ECC on 14-Oct-09 decided that modalities for adjustment/payment of Rs.31 billion may be worked out by a committee comprising of MoWP, Finance Division, Law & Justice Division and Planning & Development Division
- The committee in its meeting held on 31-March-09 decided the following;
    - Difference of Rs. 31 Bln between marginal cost basis and DISCO average rate from 6/2006 to 7/2008 is not K.E.'s liability as per ECC decision on 26-Aug-08
    - Set-aside amount of Rs. 31 Bln will be settled by GoP against GoP outstanding debts against PEPCO/WAPDA as decided on 04-April-09
- NEPRA determined on 21-Feb-07 to charge K.E. on Hourly Marginal Cost basis. Out of Rs. 31 Bln, Rs. 24.6 Bln relates to NTDC as a receivable from GoP in lieu of K.E. and Rs.6.4 Bln (pertain to GENCOs) transferred to CPPA-G.

185. NTDC submitted that GoP has granted the following adjustments in this regard so far;

Description	Amount to be adjusted	Circular Debt Adjusted 2013-14	Circular Debt Adjusted 2015-16	Balance to be Adjusted
Relent Loan				
i- Principal	20.204	0.925	-	19.279
ii- Markup	2.735	0.102	1.636	0.997
CDL				
iii- Principal	1.424	1.424	-	-
iv- Markup	0.237	0.237	-	-
Total	**24.6**	**2.688**	1.636	**20.276**

186. Furthermore, it is apprised that considering the loan amount which has been adjusted against K.E. Receivables as part of NTDC Loans while calculating RoE directly results in a reduction of NTDC's return as depicted below;

Description	FY 2014-15	FY 2015-16	FY 2016-17
Loan related to KE Adjustment	19,279	19,228	19,228
Rate of Return	13.11%	12.00%	12.00%
ROE reduced by	2,527	2,307	**2,307**
Cumulative reduction in ROE			**7,142**
Average Impact on Tariff (Rs./kW/month)*			**27.79**

- *Note: the amount will keep accumulating by Rs. 2,307 million per FY assuming cost of debt @ 12%*

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- *Average monthly MDE assumed @ 21,419 MW*

187. The adjustment of K-Electric receivables against the GOP loan has been considered by the Authority in previous determinations however the same was more elaborated in the decision dated 22nd January 2016 with respect to motion for recalculation filed by NTDCL. The relevant paragraph 4.3 of the said decision is as under:

"Further justification by the Petitioner that the current portion of long term loans includes Rs. 20,203.92 million which is against loans adjustment of KESC receivables as per ECC Decision in 2009 also does not stand valid as the amount has not been duly accounted for as yet by either or it did not issue any credit note for adjusted loans against such receivable amount."

188. NTDCL in its petition for the FY 2015-16 & FY 2016-17 submitted the same request with the same grounds. The Authority again considered the stance of NTDCL and decided to maintain its earlier decision. NTDCL in review motion again requested to review the above decision however no new grounds, documentary evidence which substantiate that the settlement has been made was provided. In the absence of the documentary evidence the Authority again maintained its earlier decision.

189. The accounting treatment made by the NTDC in its audited accounts have been reviewed. This amount of receivables has been highlighted in the account receivables. Similarly the GOP loan has been reflected in the liability side. NTDC request is not based on the documentary evidence. The NTDC stance that it is a book entry carrying application and source is not evident from the documentary evidence provided by the NTDC in support thereof. The current maturity of long term loans indicated that loan of GOP are still not been settled through the credit notes / debit notes and are still reflected in the audited accounts of NTDC for the FY 2017-18. The NTDC reiterated its stance without having a documentary evidence.

190. NTDC itself stated that from out of Rs. 24 billion Rs. 4.2 billion has been settled by the Ministry of Finance in the previous years. NTDC also provided the settlement documents in this regard. According to NTDC the net amount of loan is Rs. 19 billion which is required to be settled against the K-Electric receivables however it has been noticed that the same amount is reflected still as loan in the current maturity of long term loans of the audited accounts of the NTDC for the FY 2017-18. NTDC in support of its claim submitted that Ministry of Finance letter dated December 26, 2017 which stated that:

"......... Pursuant to Cabinet decision dated 08.04.2009, out of Rs. 31 billion as non-cash settlement, Finance Division has already adjusted Rs. 10.724 billion during the FY 2013-14 and FY 2015-16. However, the balance loans of Rs. 20.276 billion is pending for non-cash adjustment and NTDC is not liable to pay any principal or markup against these loans since 2009.

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Further, due to fiscal constraint, as no allocation could be made on this account in the budget during 2016-17 and 2017-18, therefore, necessary adjustment of balance amount of Rs. 20.276 billion will be made in due court through a non-cash sanction letter by MoF."

191. This letter has already been considered by the Authority in reconsideration request filed by GOP and keeping in view no adjustment by MoF, the Authority maintained its earlier decision. The same evidence is once again submitted for Authority's consideration. The settlement is between Ministry of Finance and NTDC, therefore any delay on adjustment / settlement on this account cannot be passed on to the end-consumers. Since the same amount is reflected as loan in the audited accounts of the NTDC therefore while calculating the ROE the same is excluded. As per mechanism of NEPRA, the long term loan and current maturity of loan is reduced from fixed assets in order to calculate the return on equity. In view thereof the Authority has decided to maintain its earlier decision.

192. <u>Previous Year Adjustment</u>

192.1 The Petitioner claimed prior year adjustments of 7,513 million on account of un-recovered cost on account of delayed notification. According to NTDC total variance is comprised of two variances i.e Price variance and Volume variance.

192.2 The Authority considered the submission of the Petitioner. Based on previous precedence, the financial impact on account of price and volume variance has been calculated which is as under:

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
FY 2016-17				
Determined		148.33	19,243	34,252
Recovery		126.75	20,493	31,170
				3,082
Other Income				
Determined	- 2,353			
Actual	- 1,532			821
ROE				
Determined	15,324			
Actual	17,088			1,764
Depreciation				
Determined	5,944			
Actual	6,554			610
Financial Charges				

Determined	3,208		
Actual	1,259		- 1,949
PYA			4,327
Impact of Losses			3,874
Total PYA for FY 2016-17			**8,201**
FY 2017-18			
Determined	158.71	22,720	43,270
Recovery	136.04	22,720	37,089
			6,181
Impact of Losses			- 279
Total PYA for FY 2017-18			**5,902**

192.3 The Authority noted that the PYA amount has significant impact on the transmission / wheeling charges. In view thereof NTDC is directed to timely file petition in future for determination of transmission / wheeling tariff for avoiding such cost.

193. <u>Revenue Requirement</u>

193.1 Based on the assessment in the preceding paragraphs, the revenue requirement for FY 2017-18 and FY 2018-19 has been assessed as under;

Rs. In Millions

	Description	FY 2017-18	FY 2018-19
	Revenue Requirement	43,270	46,053
	Avg. MDI – MW	22,720	25,288
	Rs. /kW/M	**158.71**	**151.77**
A	**General Establishment Costs**	**6,852**	**7,495**
B	**Administrative Costs**	**481**	**493**
	Rent Rate & Taxes	87	80
	Power Light etc.	60	66
	Communication		
	Office Supplies & Other Expenses	12	13
	Travelling Expenses	256	269
	Professional Fee		
	Management Fees	6	6
	General Misc. Expenses	59	58
C	**Repair & Maintenance**	**905**	**1,242**
	R&M of Fixed Assets	671	988
	Vehicle Maint & Running Expenses	165	182
	Vehicle Expenses Repair	68	72

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D	Insurance	199	232
E	Depreciation	6,880	8,902
F	Finance Charges	4,575	6,318
G	Return on Equity	16,144	17,066
H	Prior Year Adjustment	8,201	5,901
I	Less: other income	(969)	(1,597)

195. The order part and the Terms & Conditions of the determination are intimated to the Federal Government for notification in the official gazette under Section 31(4) of the NEPRA Act.

196. <u>ORDER</u>

196.1 The National Transmission and Dispatch Company (NTDC) is allowed to charge such tariff and on such terms and conditions as provided hereunder:

196.2 Use of System Charges

196.2.1 Since FY 2017-18 has already lapsed, therefore, the Authority has incorporated the impact of difference in the tariff determined and the tariff actually charged by the Petitioner during this period for the FY 2016-17 & FY 2017-18, in the assessed revenue requirement for the FY 2017-18 as Prior Year Adjustment (PYA).

196.2.2 Accordingly, NTDCL shall charge its users for provision of transmission and allied services the following two-part tariff i.e. a fixed and variable charge for the FY 2018-19:

Fixed charge (USCF) = Rs.151.77/kW/Month
Variable charge (USCV) = Rs.0.1247/kWh x LAL Factor

Where:
LAL Factor is a factor for Adjustment of Losses and Load imposed on the transmission system by user. LAL Factor of unity will be applied till benchmarks are defined by NEPRA.

196.2.3 In case of DISCOs, NTDCL shall charge only the fixed charges i.e. Rs. 151.77/kW/Month. The variable charge shall only be applicable to the energy in kilowatt-hours (kWh) transmitted / delivered during a billing period. Recording of the maximum demand in kW and energy delivered in kWh shall be carried out at meters installed at the common delivery metering points i.e. inter-connection point between:

a) NTDC transmission system (NTDC System) and the bulk power consumer.

(b) NTDC system and the transmission system of a special purpose transmission licensee.

(c) NTDC system and the transmission system of another country connected under an arrangement approved by the Federal Government.

(d) NTDC system and a distribution company receiving power in bulk either for sale to its own consumers or on behalf of another distribution company or a BPC located in another distribution company.

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197. Terms and Conditions:

197.1 Definitions:

197.1.1 Bulk Power Consumer (BPC) means a Bulk Power Consumer as defined in NEPRA Act.

197.1.2 Billing Period means a period determined by NEPRA for the purpose of charging the transfer charge to DISCOs or BPC or any other user of transmission system in respect of power delivered. The billing period for the purpose of applying a transfer charge shall be on a one month basis (starting 24:00 hrs of the 1st day of the month and ending 12:00 hrs on the last day of the month) till a shorter billing period is specified by NEPRA through a Competitive Trading Arrangement Transitional Order.

197.1.3 Competitive Market Operation Date = The date as defined under article 7(2) of the License granted to NTDC.

197.1.4 CPPA-G = Central Power Purchasing Agency Guarantee Limited.

197.1.5 Delivery metering point means the interconnection point at the grid stations where power is delivered by NTDC to DISCOs, BPCs connected directly to the transmission system or other users of the transmission system and where relevant meters are installed to measure such power delivered.

197.1.6 IPPs = Independent Power Producers established under the Federal Government's Power Policy of 1994 or earlier.

197.1.7 System Peak Demand = The highest system peak demand recorded during a billing period measured over successive periods of 30 minute interval at the receiving metering point of the DISCOs or user of the transmission system. Maximum demand measuring apparatus used for recording the maximum system peak demand during a billing period shall be based on a 30 minutes interval reset basis.

197.1.8 Month means a calendar month according to the Gregorian Calendar.

197.1.9 Power Factor: the rate expressed as a percentage of the kilowatt hours to the kilovolt hours consumed during a billing period.

197.1.10 Use of System Charge means any charge (fixed or variable) payable by a Distribution Company, BPC or any other user of the transmission system for Transportation of Power from Generator to Delivery Metering Point and delivery to a distribution company, BPC or any other user and as required under Article 13 and 14 of the NTDC License.

198. Other Terms and Conditions

198.1 Power Factor Penalty: The DISCOs shall maintain an average power factor during a billing period at the delivery metering point of at least 85% lagging. In the event of the said Power Factor falling below 85% in a billing period the concerned DISCO shall pay to NTDC a penalty as determined by the Authority for general applicability on the

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recommendation of NTDC and after consultation with the generation and distribution licensees.

198.2 In order to ensure least cost generation, NTDC shall strictly follow the merit order while operating the power plants.

199. Directions of the Authority

199.1 The directions of the Authority given in the instant petition are reproduced as under;

- To file its next tariff petition timely under Multi-Year Tariff (MYT) regime.
- To submit on quarterly basis the investment made and progress made against the investment being allowed in this tariff.
- To ensure efficient and timely utilization of Loans and Credits from DFIs. The commitment charges due to non-utilization within loan/credit period will not be allowed.
- Conclude the long in-process creation of separate post retirement funds and to transfer the amount claimed and already allowed by the Authority for this retirement fund and separately managed.
- To file tariff petition timely and complete in all aspects to avoid PYA made belatedly
- To file next tariff petition on the basis of calculation of MDI on coincidental basis. Share on quarterly basis the progress on the implementation for recording of MDI on coincidental basis.
- To provide loading position of its 500 kV and 220 kV components to the Authority on quarterly basis and recent improvements.
- To submit the updated progress regarding dispersal of power from major power plants, wind corridors, solar parks, hydel projects on monthly basis.
- To ensure evacuation of the electricity from the upcoming power plants as per timelines of interconnection approval granted by NTDC.
- To ensure timely right of way and other associated tasks assigned to NTDCL for timely completion of HVDC / all HVAC Transmission lines.
- To ensure installation of Secured Metering System (SMS) on remaining Common Delivery Points (CDPs). A comprehensive report in this regard shall also be submitted to the Authority by September 30, 2019.
- To ensure completion of its planned activities within the prescribed timeframe to avoid tripping incidents in future. Progress in this regard to be shared with the Authority on a quarterly basis.
- To ensure implementation of reliability indices for all in-process and future projects.

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Annexure-1

Revenue Requirment		
Description	**FY 2017-18 (Rs. In Million)**	**FY 2018-19 (Rs. In Million)**
Revenue Requirement	43,270	46,054
Avg. MDI	22,720	25,288
Rs. /kW/M	**158.71**	**151.77**
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Pay & Allowances & Other Benefits	6,853	7,496
Administrative Costs	**481**	**493**
Rent Rate & Taxes	87	80
Power Light etc.	60	**66**
Communication	-	-
Office Supplies & Other Expenses	12	13
Travelling Expenses	257	269
Professional Fee	-	-
Management Fees	6	6
General Misc. Expenses	59	58
Repair & Maintenance	**905**	**1,242**
R&M of Fixed Assets	671	988
Vehicle Expenses Repair	69	72
Vehicle Maintenance & Running Expenses	165	182
Vehicle Expenses-License		
Insurance	**200**	**232**
Depreciation	**6,880**	**8,902**
Finance Charges	**4,575**	**6,318**
Return on Equity	**16,144**	**17,067**
Prior Year Adjustment	**8,201**	**5,902**
Less: other Income	**(969)**	**(1,597)**

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