National Electric Power Regulatory Authority
Islamic Republic of Pakistan

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No. NEPRA/R/ADG(TRF)/TRF-533/NTDC-2020/40671-40673
November 4, 2021

Subject: **Determination of the Authority in the matter of Petition filed by National Transmission & Despatch Company Ltd. (NTDC) for Determination of Use of System Charge (UOSC) for the FY 2019-20, FY 2020-21 and FY 2021-2022** - Case No. NEPRA/TRF-533/NTDC-2020

Dear Sir,

Please find enclosed herewith the subject Determination of the Authority along with Annex-I (92 Pages) in Case No. NEPRA/TRF-533/NTDC-2020.

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 along with Annex-I of the Determination is to be notified in the Official Gazette.

Enclosure: As above

4/11/21

(Iftikhar Ali Khan)

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.

PETITION NO. NEPRA/TRF-533/NTDC-2020

DETERMINAITON OF USE OF SYSTEM CHARGE (UOSC)

FOR THE FINANCIAL YEAR (FY) 2019-20, FY 2020-21 & FY 2021-22

UNDER

NEPRA TARIFF (STANDARDS & PROCEDURE) RULES - 1998

FOR

NATIONAL TRANSMISSION & DESPATCH COMPANY (NTDC)

ISLAMABAD

November 9 , 2021

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DETERMINATION OF THE AUTHORITY IN THE MATTER OF PETITION FILED BY NATIONAL TRANSMISSION & DESPATCH COMPANY (NTDC) FOR DETERMINATION OF USE OF SYSTEM CHARGE (UOSC) FOR THE FY 2019-20, FY 2020-21 AND FY 2021-22 NO. NEPRA/TRF-533/NTDC-2020

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
- Finance Director, NTDC

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ABBREVIATIONS

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

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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

(Rehmatullah Baloch)
Member

(Eng Maqsood Anwar Khan)
Member

(Engr. Rafique Ahmed Shaikh)
Vice Chairman

(Tauseef H. Farooqi)
Chairman

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4-11-21

Background

National Transmission and Despatch Company (NTDC), hereinafter called "the Petitioner", being a Transmission Licensee of NEPRA initially filed a petition for the determination of transfer/wheeling charges / Use of System Charges (UOSC) pertaining to the FY 2019-20, FY 2020-21 and FY 2021-22 in terms of Rule 3(1) of Tariff Standards & Procedure Rules-1998 ("Rules") vide letter no. NTDCL/16747 dated June 30, 2020. The petitioner made following submissions in this regard;

i. Determination of Proposed Tariff of Rs.249.72/kW/month for FY 2019-20, Rs.222.43/kW/month for FY 2020-21 & Rs.236.24/kW/month for FY 2021-22 may please be granted.
ii. To allow un-covered cost for FY 2017-18 Rs.6,631 Mln & 2018-19 Rs.7,309 Mln.
iii. To allow claim for the recovery of all legitimate costs incurred prudently during FY 2017-18 & FY 2018-19 in accordance with NEPRA Standard and Guidelines 17(3)(i) to run the business.
iv. To maintain the ROE at-least at 16% i.e. the level which has already been determined by the Authority in its determination of GoP's Reconsideration Request in light of NTDC's Tariff Petition for FY 2015-16 & FY 2016-17, vide letter no. NEPRA/TRF-365/NTDC-2016/7235-7237 dated 4th May, 2018.
v. To allow Cost of Debt in light of the GoP relent policies of the respective loans along with reasonable spread.
vi. To form a working group comprising of NEPRA and NTDC officers for resolution of recurring disagreements due to the parameters of NTDC Tariff.
vii. To approve the investment program of Rs.39,062 Mln for FY 2019-20, Rs. 51,633 Mln for FY 2020-21 and Rs. 69,046 Mln. For FY 2021-22 respectively.
viii. Projected data for FY 2019-20, 2020-21 & 2021-22 may be applied across the board for different components of Capital Base.
ix. Effective date of implementation (i.e.1st July 2020) for determined tariff may be mentioned in the determination of Use of System Charges (UoSC).
x. MDI may be considered on Non-Coincidental Basis.
xi. Annual average T&T Losses level may be maintained at 3.0 % at least.
xii. The restructuring of NTDC is in finalization process and may be shared during tariff proceedings for consideration.
xiii. In addition to above revenue requirements of NTDC, the approved tariff for HVDC Transmission Line which will be billed to NTDC as per contractual arrangement and that may be incorporated as received.

2. Proceedings:

2.1 In terms of rule 4 of the Tariff Standards and Procedures Rules 1998 (hereinafter referred to as "Rules"), the Petition was considered by the Authority on July 13, 2020 and was admitted for further processing. In terms of rule 4(5) (6) of Rules, the Authority on September 09, 2020 decided to conduct an online hearing on September 30, 2020. Notice of admission/ hearing was published in the newspapers on September 19, 2020 wherein salient features of the petition, issues, date, time and venue of the hearing were mentioned. Notices of hearing were also sent to relevant stake holders on September 22, 2020. In response no intervention request and comments were filed.

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3. **Framing of issues**

3.1 Following issues approved by the Authority were uploaded on NEPRA's website for input of the stakeholders:

4. **Technical Issues**

i. Whether the consistent level of loss target of 3.0% for a period of next three (03) years i.e. FY 2019-20, 2020-21 and 2021-22 is reasonable?

ii. Whether the Petitioner's proposed Investment programs of Rs. 39,062 million, Rs. 56,443 million and Rs. 69,046 million for FY 2019-20, 2020-21 and 2021-22 respectively are justified? NTDC needs to clarify that what is the criteria being adopted for the selection of such projects to be implemented in instant tariff period?

iii. The Authority has allowed a total investment of Rs. 41,380 million against 22 priority projects to NTDC for FY 2018-19. NTDC is required to submit detailed project-wise Benefit to Cost analysis in respect of each project. The detailed report, inter alia, must include time line for project implementation, analysis and way forward.

iv. NTDC filed the instant MYT petition for next 3 years on non-coincidental MDI basis and as per claim by NTDC, infrastructure for MDI calculation on co-incidental basis will be finalized in October, 2020. NTDC has failed to meet its own commitments for coincidental measurement of demand for the past 4 years. NTDC must provide such information for instant MYT petition.

v. Whether Land Acquisition and ROW issues have been resolved causing delays in implementation of development projects of NTDC?

vi. What steps have been taken by NTDC for power evacuation from upcoming power generation projects? Whether the issues of power curtailment from HUBCO, Port Qasim, Patrind, Lucky Electric and Renewable Energy Projects have been resolved or otherwise?

vii. Whether NTDC has paid Liquidated Damages (LDs) to other entities for its failure to complete projects on time. NTDC needs to provide details in this regard.

viii. Transmission line issues in Gawadar Region.

ix. Steps taken by NTDC for resolution of the intermittence issues in Jhimpir wind Corridor.

5. **Monitoring and Enforcement Issues**

i. What are NTDC's Plan for Removal of System Constraints which results in under-utilization of efficient power plants and also affect continuity of supply to DISCOs. Whether, these plans are reflected in MYT.

ii. NTDC has filed MYT tariff petition of non-coincidental Maximum Demand basis despite Authority's directions in previous tariff determination dated 31-7-2019 to file next tariff petition on the basis of calculation of MDI on coincidental basis.

iii. NTDC has pleaded for 3% T&T Losses inter alia on the ground that power flows from south to north region resulting in longer distances. Whether this ground is justified in view of recently commissioned RLNG based power plants located near to load centers.

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iv. Whether NTDC's statement at page 32 that 'Pakistan faces chronic power shortages across industrial, commercial, and residential sectors which severely hamper the economic growth of the country' is justified as currently Pakistan is operating in Generation Surplus Scenario

v. What steps have been taken by NTDC to ensure implementation of reliability indices such as voltage variations (Normal +-5% and N-1 +-10%), frequency variations (1%), loss of supply incidents and system collapses?

vi. What measures have been taken by NTDC to reduce the number of unplanned/forced outage events at grid stations and transmission lines?

6. <u>General Establishment and Administration Cost/Financial Issues</u>

i. Whether the Petitioner's requested General Establishment & Administration (GE&A) cost Rs. 11,149 million, Rs. 14,031 million & Rs. 15,599 for the FY 2019-20, FY 2020-21, and FY 2021- 22 is justified?

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

iii. Whether the proposed Repair & Maintenance expenditures (including for Rs. 716 million, Rs. 875 million and Rs. 1,064 for the FY 2019-20 and FY 2020-21 and FY 2021-22 is justified?

iv. Whether the proposed travelling expense expenditures for Rs. 34.5 million, Rs. 59.6 million and Rs. 48.6 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

v. Whether the proposed professional fee expenditures for Rs. 34.5 million, Rs. 59.6 million and Rs. 48.6 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

vi. Whether the petitioner's projected insurance of Rs. 304.2 million, Rs. 325.5 million and Rs. 348.2 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

vii. Whether the petitioner's projected depreciation Rs. 12,007 million, Rs. 13,468 million and Rs. 14,615 million for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified? The additional capitalization of assets to be referred.

viii. What are the reasons for substantial increase in financial charges of Rs. 9,135 million, Rs. 9,443 million and Rs. 9,893 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

ix. Whether the Petitioner's projected return on Equity at 16% Rs. 39,062 million, Rs. 56,443 million and Rs. 69,064 for the FY 2019-20, FY 2020-21 and FY 2021-22 are justified?

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

xi. Whether the Petitioner's projected Other Income of Rs. 1,507 million, Rs. 1,343 million and Rs. 1,421 for the FY 2019-20, FY 2020-21 and FY 2021-22 is reasonable?

xii. Whether the proposed Average Monthly MDI MW/Month 23,646, 24,333 & 25,550 for the FY 2019-20, FY 2020-21 and FY 2021-22 on non-Coincidental Basis by the petitioner is justified?

xiii. 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?

7. <u>Others Issues</u>

i. Briefly explain the status of the direction given to NTDCL in tariff determination of Matiari Lahore Transmission Line?

ii. Any other issue during the hearing as deemed appropriate by the Authority.

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8. Based on the submissions of NTDC, issue-wise discussion is as under;

9. <u>Compliance of the Authority's Directions given in tariff determination for **FY 2017-18 & FY 2018-19**</u>

i) **To file its next tariff petition timely under Multi-Year Tariff (MYT) regime.**

NTDC submitted during the the hearing that direction has been complied in letter and spirit. The instant petition is under Multi-Year Tariff regime.

ii) **To submit on quarterly basis progress made against the investment allowed.**

NTDC submitted that the quarterly progress report is being submitted regularly including progress made against investment allowed. Compliance is being ensured through submissions of these reports.

iii) **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.**

NTDC submitted during the hearing that they have made every endeavor to efficiently utilize the loan amount from the date of its availability (signing / effectiveness of the loan agreement). NTDC further submitted that the commitment charges are inherent to any loan agreement and start incurring after a specific time from signing of agreement i.e., they become effective much before loan closing and in fact soon after effectiveness of agreement. Hence, these are not considered as penalty but are a sort of charge for locking the financing amount for which the interest payments have not become due. Further, it must be noted that the project initiation phases take considerable time in case of engineering project e.g., hiring of consultant (often mandatory condition for Multilateral financing), finalization of designs, procurement methodologies, procurement process etc., which all occur after signing of loan agreement. The fulfillment of aforesaid requirements consumes considerable time and the significant disbursements only start once above processes have been completed. This makes it inevitable to avoid incurring of commitment charges (0.12% to 0.15 % per annum of unutilized loan amount). Therefore it will not be reasonable to separate commitment charges from the justified expenses.

The NTDC request has been examined and discussed in details in investment portion and financing cost of the determination.

iv) **To conclude the long awaited creation of separate post retirement funds and to transfer the amount claimed and already allowed and manage separately.**

NTDC submitted that the efforts are continued to comply with the directions of the Authority. NTDC submitted its detailed response in the matter in the request of General Establishment & Administration cost. The same has been examined and noticed that the same has not been complied with as yet.

v) **To file next tariff petition on the basis of calculation of MDI on coincidental basis. Quarterly share the progress on the implementation for recording of MDI on coincidental basis.**

NTDC submitted that status of quarterly progress report on SMS Project and IT Infrastructure Development is being regularly submitted to NEPRA. Regarding petition on coincidental MDI basis, NTDC submitted that the direction has been complied.

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NTDC is submitting the quarterly progress report on SMS project and IT infrastructure development however, the instant petition is on non-coincidental basis and submission of the Petitioner is not justified.

vi) **To provide loading position of its 500 kV and 220 kV components to the Authority on quarterly basis and recent improvements.**

NTDC intimated that the direction of NEPRA has been complied with. Further, loading position is being submitted along with quarterly progress report.

The Authority considered the submissions of NTDC and further directed the Petitioner to continue provision of quarterly progress reports regarding loading position of 500 KV and 200 KV.

vii) **To submit the updated progress regarding dispersal of power from major power plants, wind corridors, solar parks, hydel projects on monthly basis.**

NTDC submitted the following information:

Sr.	Name of Project	Date of PC-I Approval	Scope of Work	Physical Progress / Status	Expected Date of Completion	Remarks
1.	Evacuation of power from 1320MW Power Plant at Bin Qasim	13-05-2015	500kV D/C Quad Bundle T/ Line from Port Qasim Power Plant to 500kV Matiari Converter Station (Phase-II: 118.5 km)	Phase-II Lot-I (49.15 km) • Tower Concreted: 145/145 No. • Tower Erection: 145/145 No. • Stringing: 49.3/49.3 km • Overall Progress: 100% Lot-II (43.8 km) • Tower Concreted: 130/130 No. • Tower Erection: 130/130 No. • Stringing: 43.39/43.8 km • Overall Progress: 99.9% Lot-III (25.6 km) • Tower Concreted: 70/70 No. • Tower Erection: 70/70 No. • Stringing: 21.02/25.6 km • Overall Progress: 98.1% Overall Progress of the Project: 99.3%	Lot-I 20-04-2019 (completed) Lot-II 24-06-2019 (completed) Lot-III 05-10-2020	Phase-I (54.5km) of 500kV Port Qasim T/Line, after replacement of Disc Insulators with RTV Coated Disc Insulators upto interconnection point, has been connected to Phase-II (Lot-I & 27.54km of Lot-II) and successfully commissioned by In/Out arrangement with 500kV S/C Jamshoro-Dadu Circuit-II on 20-04-2019.

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2	Evacuation of Power from 1320MW HUB (CPHGC) Power Company Limited	07-11-2016	500kV D/C Transmission Line from HUBCO Power Plant to 500kV Jamshoro Grid Station (180 km)	Lot-I: • Tower Concreted: 136/136 No. • Tower Erection: 134/136 No. • Stringing: 44.9/46.6 km • Overall Progress: 98.5% Lot-II: • Tower Concreted: 135/135 No. • Tower Erected: 135/135 No. • Stringing: 45.32/45.32 km • Overall Progress: 100% Hi-pot test successfully completed on 08.07.2020. Lot-III: • Tower Concreted: 129/129 No. • Tower Erected: 129/129 No. • Stringing: 44.36/44.36 km • Overall Progress: 100% Hi-pot test successfully completed on 19.03.2020. Lot-IV: • Tower Concreted: 137/137 No. • Tower Erected: 137/137 No. • Stringing: 44.9/45 km • Overall Progress: 99.9% Hi-pot test successfully completed on 28.06.2020. Overall Progress of the Project: 99.6%	05-10-2020	Interim Arrangement (01 km approx.) Completed and energized on 18-09-2018.

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3.	Evacuation of Power from 2x1100MW K2/K3 Nuclear Power Plants	12-04-2017	• 500kV D/C Quad Bundle T/Line for Interconnection of K2/K3 Power Plant with 500kV Hub-NKI-Jamshoro Single Circuit and 500KV D/C Hubco-CPHGC-Jamshoro Circuit (11.24km) • 500kV D/C T/Line for Interconnection of K2/K3 with Port Qasim - Matiari (102 km)	<u>500kV D/C T/Line Hub-Jamshoro (11.24 km)</u> • Tower Concreted: 41/41 No. • Tower Erected: 37/41 No. • Stringing: 10.641/11.24 km • Overall Progress: 97.2% <u>500kV D/C T/Line Port Qasim-Matiari (102km)</u> • Detailed Survey & Subsoil Investigation work completed. • Approval for award of contract in favor of M/s ICC (Pvt.) Ltd. for construction of T/Line has been granted by the Competent Authority on 24-08-2020. NOA issued on 22-09-2020.	27-11-2019 (completed) Mar 2022	500 kV T/L energized through Hub-NKI T/L on 27-11-2019. Outstanding work/punch list items to be completed after completion of 500kV T/Line Hubco – Jamshoro
4.	Evacuation of Power from 50MW Tricom Wind, 50MW Master Green & 50MW Western Energy Wind Power Plants	24-11-2017	• 132kV T/L for Interconnection of Tricom Wind (10.6km) • 132kV T/L for Interconnection of Master Green (3.6 km) • 132kV T/L for Interconnection of Western Energy (14 km)	<u>Tricom Wind</u> Tower Concreted: 50/50 No. • Tower Erected: 50/50 No. • Stringing: 10.55/10.6 km • Overall progress: 98% <u>Master Green</u> Tower Concreted: 18/18 No. • Tower Erected: 16/18 No. • Stringing: 3.4/3.6 km • Overall progress: 98% <u>Western Energy</u> • Tower Concreted: 61/61 No. • Tower Erected: 52/61 No. Stringing: 4.7/14 km • Overall progress: 87%	<u>Tricom Wind</u> 18-07-2020 <u>Master Green</u> 15-07-2020 <u>Western Energy</u> 15-10-2020	<u>Tricom Wind</u> Construction work completed on 18-07-2020 except stringing of Gantry Span due to non-availability of Gantry at Tricom WPP. <u>Master Green</u> Foundation work completed. 02 No. Tower Erection & its stringing remaining which will be carried out on availability of shutdown on 220kV T/L Jamshoro – KDA 33 & 132kV T/L Nooriabad – Jamshoro Circuits. Also Gantry at Master WPP is not available.
5.	Evacuation of Power from 660MW Lucky	03-03-2020	500 kV Transmission Line Interconnection of 660MW Lucky Electric Coal with	• Work for construction of transmission line has been awarded to M/s M.R Concern (Pvt.) Ltd.	01-03-2021	

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	Electric Power Company Ltd.		Port Qasim – Matiari Circuit (11.8 km)	• Survey work has been completed. • NOCs from Port Qasim Authority, Pakistan Steel Mills, Sindh Government & M/s FOTCO is awaited to commence the construction activities.		
6.	Evacuation of Power from TEL, Thal Nova, Siddique Sons & SECL Coal Power Plants	12-04-2017	500 kV D/C Transmission Lines for Interconnection of TEL, Thal Nova, Siddique Sons & SECL Coal Power Plants with Thar – Matiari Circuit (06 km)	• Work for construction of transmission line has been awarded to M/s ICC (Pvt.) Ltd. on 31.01.2020. • However, permission of CPEC Authority was granted late (on 13-09-2020) to commence the work for Interconnection of TEL, Thal Nova & Siddique Sons CFPPs • Progress (for SECL & TEL): Concretion = 12.25/20 Erection = 05/20	01-11-2020	Work in progress
7	Evacuation of power from 969MW Neelum Jhelum Hydro Power Project	02-03-2015	500kV D/C Quad Bundle T/ Line from Neelum Jhelum Power House to Ghakkhar Grid Station	<u>Phase-II</u> <u>Lot-I</u> (65 km) Tower Concreted: 191/191 No. Tower Erection: 181/191 No. • Stringing: 40.62/65 km • Overall Progress: 86.25% <u>Lot-II</u> (68 km) • Tower Concreted: 196/196 No. • Tower Erection: 196/196 No. • Stringing: 57.66/68.16 km • Overall Progress: 91.92%	<u>Lot-I</u> 31-03-2021 <u>Lot-II</u> 31-03-2021	Phase-I was completed on 02-04-2018. Phase-II Lot-I consist of 500kV D/C Q/B T/Line from Domeli to Dinga. Phase-II Lot-II consist of 500kV D/C Q/B T/Line from Dinga to Ghakkar.
8	Evacuation of Power from 720MW Karot Power House	02-03-2015 (Included in NJHPP PC-I)	In/Out of 500kV Q/B Neelum Jhelum Transmission Line at Karot Hpp (3 km)	• Tower Concreted: 6/10 No. • Tower Erection: 2/10 No. • Stringing: 0/3 km • Overall Progress: 35%	15-02-2021	Project delayed considerably due to COVID-19.
9	Evacuation of Power from 147MW Patrind	27-01-2015	• 132 kV D/C Transmission Line from Patrind to Mansehra (40km)	<u>132kV D/C T/Line Patrind Mansehra (40 km)</u> • Tower Concreted: 190/190 No. • Tower Erected: 190/190 No. • Stringing: 40.7/40.7 km	25-09-2020 (completed)	Power initially evacuated through Patrind-Rampura circuit which was

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	Hydro Power Project		• 132 kV D/C Transmission Line from Patrind to Mansehra (8km)	• Overall Progress: 100%	-	energized on 28-04-2017 132 kV Patrind-Mansehra was energized on no-load on 23-08-2020 and on-load energization was carried out on 25-09-2020
10	Evacuation of Power from Tarbela 5th Extension Project	24-11-2017	500kV D/C Quad Bundle Transmission Line from Tarbela 5th Extension Switchyard to Islamabad West Grid Station	<u>500kV D/C T/Line for Tarbela 5th Extenstion (50 km)</u> • Tower Concreted: -. • Tower Erected: - • Stringing: -/50 km • Overall Progress: 1%	30-06-2023	The survey and soil investigation has been completed. The Prequalification of contractors is in progress. The evaluation of PQ documents is in review phase. Bidding Documents are under preparation.
11	Evacuation of Power from Suki Kinari Hydro Power Project (Lot-I)	14-11-2018	500kV D/C Quad Bundle Transmission Line from Suki Kinari HPP to NJTL Interconnection Point (75km)	<u>500kV D/C T/Line for Suki Kinari HPP (75 km)</u> • Tower Concreted: -. • Tower Erected: - • Stringing: -/75 km • Overall Progress: 5%	31-12-2022	The survey and soil investigation has been completed by NESPAK. The bidding has been carried out and evaluation report is in review/approval phase from BoD and Donor Agency (ADB). The contract to be awarded after approval.

The Authority considered the submissions of NTDC and observed that regular compliance is required regarding dispersal of power from major power plants, wind corridors, solar parks, hydel projects on monthly basis.

viii) **To ensure evacuation of the electricity from the upcoming power plants as per timelines of interconnection approval granted by NTDC**

NTDC submitted that all efforts are made to ensure interconnection to upcoming power plants as per timelines. Summary of progress for interconnection to upcoming IPPs is given below:

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Sr. No.	Plant Name	COD	Target Completion for Interconnection	Latest Physical Progress (T/L Works)
1	720 MW Karot HPP	28-Dec-21	2021	35%
2	870 MW Suki Kinari HPP	31-Dec-22	31-Dec-22	5%
3	660 MW Lucky Electric Power Co. Ltd. (LECPL)	Mar-21	2021*	5%
4	330 MW Thar Energy Limited	Mar-21	30.11.2020	36%
5	330 MW Thal Nova Project	Mar-21	30.11.2020	
6	330 MW Siddiqsons Energy Ltd.	Jun-21	31.12.2020	
7	1320 MW Shanghai Electric (TCB-I)	May-22	30.11.2020	
8	50 MW Master Green	Nov-20	15 July 2020**	98%
9	50 MW Western Energy	RCOD in 2021	15-Oct-20	87%
10	50 MW Tricom Wind Power	Feb-21	18 July 2020***	98%
11	50 MW Lakeside Energy	Oct-21	2021	7%
12	50 MW Artistic Wind Power	Oct-21	2021	7%
13	50 MW Liberty Wind Power 1	Oct-21	2021	7%
14	50 MW Indus Wind Energy	Oct 2021	2021	7%
15	50 MW Act2 Wind	Oct 2021	2021	7%
16	50 MW Liberty Wind Power 2	Oct 2021	2021	7%
17	50 MW Metro Wind Power	Oct 2021	2021	7%
18	50 MW Nasda Green Energy	Oct 2021	2021	7%
19	50 MW Din Energy	Oct 2021	2021	7%
20	50 MW Gul Ahmed Electric	Oct 2021	2021	7%

* Subject to issuance of NOCs by Port Qasim Authority, Pakistan Steel, M/s FOTCO & Govt. of *Sindh.*

** *Construction work completed except 02 No. Tower Erection & its Stringing which will be carried out on availability of gantry at Master Green WPP & Shutdown on 220kV T/L Jamshoro – KDA 33 & 132kV T/L Nooriabad – Jamshoro Circuits*

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*** *Construction work completed on 18-07-2020 except stringing of Gantry Span due to non-availability of Gantry at Tricom WPP*

**** *As per above table it seems that NTDC will be unable to complete transmission line in given time frame, therefore continuous monitoring on quarterly basis be ensured through M& E.*

It has been observed that NTDC is unable to timely completion of interconnections. Accordingly NTDC is directed to ensure the same and submit quarterly progress report in this regard.

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

NTDC stated that it exerts its all-out efforts for timely clearance of Right of Way issues occurred during execution while compensating the affected as per policy. However, in the absence of a legislation granting statutory powers to NTDC, clearing RoW issues still remains a challenge and often consumes considerable time to clear.

x) **To ensure installation of Secured Metering System (SMS) on remaining Common Delivery Points (CDPs). 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.**

The issue of SMS has been discussed above. Regarding import of electricity, NTDC submitted that TAVANIR consented to work within the existing contractual structure and financing agreement. In this respect they have developed a preliminary model for financing period using TAVANIR's receivables from CPPA-G. The model is yet to be shared with NTDC and MoE about its review and viability.

The Authority considers that import of electricity from TAVANIR is important for Balochistan because of sustainability.

xi) **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.**

NTDC informed that the direction has been complied and progress is being submitted as part of quarterly progress report.

The Authority considered the submissions of NTDC and directed the Company to continue sharing these activities in future on quarterly basis.

xii) **To ensure implementation of reliability indices for all in-process and future projects.**

NTDC submitted that the direction has been complied and progress is being submitted as part of quarterly progress report.

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The Authority considered the submissions of NTDC. The Petitioner is directed to ensure implementation of reliability indices for all in process and future projects and continue to submit report on quarterly basis.

10. Technical Issues

Issue#1 Whether the consistent level of loss target of 3.0% for a period of next three (03) years i.e. FY 2019-20, 2020-21 and 2021-22 is reasonable?

10.1 The Petitioner in its tariff petition, requested T&T loss of 3.00% for FY 2019-20, FY 2020-21 and FY 2021-22. NTDC requested for allowing T&T loss on ground realities basis by mentioning that the Authority allowed 2.80% target losses in the previous determination for FY 2017-18 and FY 2018-19 (Case No. NEPRA/R/TRF-450/NTDC-2018/13734-13736 dated July 31, 2019). In support NTDC submitted its month-wise losses from July 2019 to April 2020 which are shown below:

Months	Energy Recovered 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
Jul-19	13,304,754,125	12,874,848,858	429,905,267	3.23%
Aug-19	14,527,753,272	14,129,999,134	397,754,137	2.74%
Sep-19	13,708,427,197	13,341,000,018	367,427,178	2.68%
Oct-19	10,153,670,603	9,901,326,978	252,343,625	2.49%
Nov-19	7,969,409,779	7,759,859,946	209,549,833	2.63%
Dec-19	8,219,571,201	7,990,119,046	229,452,155	2.79%
Jan-20	8,930,797,332	8,626,736,754	304,060,577	3.41%
Feb-20	7,493,058,532	7,274,371,485	218,687,048	2.92%
Mar-20	7,710,296,999	7,489,023,706	221,273,293	2.87%
Apr-20	8,920,349,853	8,716,142,863	204,206,990	2.29%
Total	**100,938,088,893**	**98,103,428,788**	**2,834,660,105**	**2.81%**

10.2 NTDC stated that the above table depicts the actual T&T losses obtained from CDP Points at NTDC Grid stations for the year 2019-20. The Authority, in the decision in the matter of Motion for Leave for review (Case No. NEPRA/TRF-450/NTDC-2018/9710-9712 dated March 31, 2020,) directed NTDC to complete the installation of secured metering system. Therefore, the data so obtained will become basis for calculating the actual annual transmission losses. In this regard, it is submitted that until the data from secured meters is obtained, NTDC may be allowed the average annual losses to be maintained @ 3% at least due to following reasons:

- i) There is continuous increase in load demand except for recent months due to corona pandemic.
- ii) The previous loss calculation methodology has been modified as per instructions of NEPRA.
- iii) The DISCO's are drawing excessive reactive power from NTDC transformers.
- iv) The power flows from South to North regions of the country resulting in longer distances.
- v) Due to Covid-19 the trend of losses in future cannot be predicted.

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10.3 The petitioner during the course of the hearing dated September 30th, 2020 (Wednesday) stated that:

"It is apprised that the level of T&T losses target depends upon multiple factors such as:

i) Longitudinal network topology – Long 500 kV lines also have significantly high proportion of corona losses
ii) Location of power plants from load centers
iii) Seasonal variations in hydro generation dispatch
iv) Economical merit based thermal generation dispatch
v) System constraints
vi) Insufficient reactive power compensation at 132 kV & 11 kV networks resulting in increase of reactive power flow from NTDC system to DISCOs' systems, causing not only lower voltage profile but also increase in current flow & T&T losses in NTDC system.

10.4 According to NTDC, T&T Losses in system remained in range of 2.9 – 3 % during last 3 years.

i) Ongoing/planned transmission network up gradation & removal of system constraints.
ii) Appropriate reactive compensation by DISCOs and maintaining power factor at CDP points at least 0.95 as mentioned in the Grid Code - reactive power optimization in DISCO's network through joint study by DISCOs and NTDC.
iii) Acquisition of software by NPCC for optimal generation dispatch considering both generation cost and cost of losses.

10.5 NTDC submitted that in future, the T&T losses may increase as result of upcoming generation in south and north being away from load centers. In view of above, T&T losses are likely to remain close to 3% in future. NTDC however shall keep NEPRA updated on the actual loss figures every year."

Analysis & Decision:

10.6 NTDC is requesting for higher T&T loss of 3.00% for FY 2019-20, FY 2020-21 and FY 2021-22 despite the fact that the Authority allowed 2.80% T&T losses in its last determination i.e. for FY 2017-18 and FY 2018-19. 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 T&T losses.

10.7 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. Therefore during the hearing the Authority didn't agree with the NTDC's stance of higher losses due to power flows from South to North regions which resulted in higher T&T losses from the existing level.

10.8 The most dependable mode of calculating transmission and transformation (T&T) losses is through installation of high-accuracy class meters. It is also worth mentioning that every month CPPA-G

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files for fuel adjustment in the consumer end tariff which is approved by the Authority after carrying out necessary verification. The following tables shows such working for FY 2018-19 and FY 2019-20 comparing NTDC's actual T&T losses recorded through CDP metering:

For FY 2018-19 :(kWh)

Months	Units Received	Units Delivered	Units Loss	%age Loss
July, 2018	11619684720	11359584100	260100620	2.2384%
Aug, 2018	12334236719	11968728542	365508177	2.9634%
Sept, 2018	11534564995	11173862366	360702629	3.1271%
Oct, 2018	8950165870	8693440584	256725286	2.8684%
Nov, 2018	7654600482	7450492557	204107925	2.6665%
Dec, 2018	7911223598	7646514941	264708657	3.3460%
Jan, 2019	8548595688	8211600391	336995297	3.9421%
Feb, 2019	6941659501	6703026481	238633020	3.4377%
March, 2019	7419428235	7207368212	212060023	2.8582%
April, 2019	8481631871	8260919525	220712346	2.6022%
May, 2019	11200544912	10929526489	271018423	2.4197%
June, 2019	11716747004	11403816139	312930865	2.6708%
Total	**114313083595**	**111008880327**	**3304203268**	**2.8905%**

For FY 2019-20 :(kWh)

Months	Units Received	Units Delivered	Units Loss	%age Losses
July, 2019	13301921410	12874848858	427072552	3.21061%
Aug, 2019	14525192839	14129999134	395193705	2.7207%
Sept, 2019	13706062261	13341000018	365062243	2.6635%
Oct, 2019	10151897361	9901326978	250570383	2.4682%
Nov, 2019	7967936618	7759859946	208076672	2.6114%
Dec, 2019	8217994502	7990119046	227875456	2.7729%
Jan, 2020	8928989518	8626736754	302252764	3.3851%
Feb, 2020	7491737683	7274373484	217364199	2.9014%
March, 2020	7708890645	7488372706	220517939	2.8606%
April, 2020	8918836706	8716142863	202693843	2.2726%
May, 2020	12097546820	11786444859	311101961	2.5716%
June, 2020	12901508140	12581342485	320165655	2.4816%
Total	**125918514503**	**122470567131**	**3447947372**	**2.7382%**

10.9 From above tables, the average T&T losses for FY 2018-19 and FY 2019-20 are noted as **2.8905%** and **2.7385%** respectively. It may be noted that there is a slight reduction of **0.1523%** in the T&T losses for FY 2019-20 over FY 2018-19. It is further noted that the losses in FY 2019-20 are less than the targeted T&T losses allowed by NEPRA for FY 2017-18 and FY 2018-19 i.e. **2.80%**.

10.10 Considering the fact that with the addition and rehabilitation/up-gradation of the transmission networks, the transmission and transformation (T&T) losses can be controlled. In this respect, the following projects which include major new transmission line and grid station projects at 500 kV

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and 220 kV levels and also rehabilitation of existing grid stations and transmission lines would also have a positive impact in further reducing T&T Losses.

S. #	Plant Name	Total Cost (PC-1) in MPKR	MW Flow	Financial & Economic Rate of Return (%)	Average Benefits per Annum (MPKR)	Expected/ Actual Completion
1	220 kV Guddu-Muzaffargarh T/L	7,856	718.84	6.75-8.73	794.96	4-Mar-20
2	500 kV Port Qasim-Matiari T/L	12,977	1320	15.80-43.00	1867.59	1-Oct-20
3	500 kV Hub-Jamshoro T/L	16,415	1320	13.00-16.30	1867.59	10-Oct-20
4	500 kV Jamshoro-Moro-RYK T/L	37,243	1800	1.57-4.52	2228.08	6-Sep-19
5	500 kV Thar-Matiari CCT-1	22,041	1134.3	3.73-55.15	1735.47	31-Jul-18
6	500 kV RYK G/S + T/L	13,152	191.56	4.00-18.47	349.36	3-Feb-18
	220 kV Chishtian G/S + T/L	2,633	228.12	11.87-56.87	381.67	24-Oct-16
	220 kV Gujrat G/S + T/L	1,966	571.73	39.20-59.10	899.88	27-Apr-17
	220 kV Shalamar G/S + T/L	3,617	312.14	11.60-14.94	516.75	29-Oct-14
7	500 kV New Lahore T/L	12,524	1321.18	9.64-17.76	1635.42	7-Dec-17
	500 kV Shikarpur T/L	24,317	745.28	8.43-14.61	925.82	23-May-16
	220 kV D.I. Khan T/L	3,743.67	338	7.40-31.01	415.58	18-Feb-19
8	Evacuation of Power from Jhimpir & Gharo Wind Clusters	10,753	1224.6	29.77-32.40	3280.82	8-May-18
9	220 kV Lal Suhanra G/S + T/L	3,303	516	14.60-17.49	529.12	15-Feb-18
10	Evacuation of Power from 1230 MW RLNG Trimmu	4,231.83	1230	30.30-38.20	1932.57	11-Aug-18
11	220 kV Tarbela-Burhan T/L (reinforcement)	3,568.39	368	13.74-16.00	543	Ph-I: 28 Feb 19
12	Replacement of Depleted Material at Existing G/S	4,280	281	20.84-27.10	337.37	2-Mar-19
13	220 kV Mirpurkhas G/S + T/L	3,857	455.5	13.68-19.80	728.21	31-Dec-19

10.11 In view of the above, the consumers should be passed on the advantage of improved efficiencies due to reduced T&T losses on actual basis. Therefore for FY 2019-20 & FY 2020-21, a target of 2.73% and 2.60% respectively has been allowed to NTDC. For FY 2021-22 a target level of T&T losses has been set as 2.50% with the expectation of an improvement within NTDC's network after the investment made by the petitioner. Accordingly the allowed losses are as under:

<u>Level of T&T Losses for FY 2019-20, FY 2020-21 and FY 2021-22:</u>

Financial Year	Requested	Allowed
FY 2019-20	3.00%	2.73%
FY 2020-21	3.00%	2.60%
FY 2021-22	3.00%	2.50%

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10.12 The petitioner is also directed to improve its planning to utilize the allocated budget and investment with respect to augmentation and reinforcement of its transmission network for further reduction of T&T losses.

Issue#2 Whether the Petitioner's proposed Investment programs of Rs. 39,062 million, Rs. 56,443 million and Rs. 69,046 million for FY 2019-20, 2020-21 and 2021-22 respectively are justified? NTDC needs to clarify that what is the criteria being adopted for the selection of such projects to be implemented in instant tariff period?

11. The petitioner, in its instant tariff petition, provided the following breakup of requested investment of Rs. 39,062 million, Rs. 56,443 million and Rs. 69,046 million for FY 2019-20, FY 2020-21 and FY 2021-22 respectively:

Rs. in Million

Sr. #	Description	No. of Projects	FY 2019-20	FY 2020-21	FY 2021-22
1	Completed Projects	33	12855	12135	11855
2	Ongoing Projects	20	21784	20229	10015
3	New Projects	27	4313	22669	40826
4	New Projects to be Started	23	110	1410	6350
	Total	**103**	**39,062**	**56,443**	**69,046**

12. The petitioner, for the implementation of aforementioned investment requirements, also submitted the following financing arrangements:

Rs. in Million

Description	FY 2019-20	FY 2020-21	FY 2021-22
Asian Development Bank (ADB)	8,737	13,227	15,910
World Bank	2,387	8,605	16,810
Japan International Cooperation Agency (JICA)	544	300	500
Frankfurt (KFW)	144	600	610
US-AID	-	-	1,000
Other Donors (to be identified)	-	110	4,240
Sub Total (A)	11,782	22,842	39,070
Direct Loans from Commercial Bank:			
Neelum Jehlum T/L Project (UBL)	3,771	1,500	500
1320MW PP at Bin Qasim (HBL)	4,360	2,000	200
K-2/K-3 T/Line (ABL)	2,143	3,046	1,000
HVDC T/Line for converter Station (ABL)	1,834	806	100
SSRL/SECL Power Plant at Thar (New)	35	3,000	4,110
Other Projects (New Loan)	-	-	3,390
Sub-Total (B)	**12,143**	**10,352**	**9,300**
Total Loans (A+B)	23,925	33,194	48,370
Funds from own sources	15,138	23,249	20,676
Total Funding	39,062	56,443	69,046

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13. NTDC, in its instant petition, stated the importance of investments for 3-years which is reproduced hereunder:

" Being the national grid of the company of the country, NTDC is solely responsible for overall planning and coordination of the electricity transmission in Pakistan except the area under K-electric so NTDC investment program has been developed to fulfill the following objectives:

i. Provision of interconnection arrangement to evacuate power from upcoming power generation projects in the country.
ii. To identify any requirements (technical and/or economical) that might require the introduction of any new voltage level and/or transmission types into existing transmission network.
iii. To determine the reinforcements required in the transmission network to meet the growing demand of the load centers by developing new grid stations and their associated Transmission Lines emanating from the proposed power plants.
iv. To fulfill the reliability criteria of NTDC Grid Code approved by NEPRA in terms of acceptable voltage, frequency, loading of lines and transformer for normal (N-c0) and contingency (N-1) conditions both under disturbed dynamic/transient conditions and steady state conditions.
v. To determine the long-term impacts of fault levels throughout the transmission network and to examine mitigating measures to deal with excessive fault levels.
vi. To check the dynamic and transient stability of 500 KV HVAC or above, and HVDC systems catering for the bulk transmission of power from major power plants to the major load centers to verify the adequacy of network for normal and distributed conditions.

14. According to NTDC, electricity is indispensable for socio-economic development of the country. Pakistan faces chronic power shortages across industrial, commercial and residential sectors, which severely hampers the economic growth of the country. High cost of power generation is unaffordable for the majority consumers. This had adverse impact on competitiveness and national production so country has an urgent requirement to generate additional power at affordable price to feed into national grid. Ministry of Energy (Power), Government of Pakistan (GoP) has promulgated ambitious, Power Policy to support the current and future energy needs of the country. The bold strategy will set Pakistan on trajectory of rapid economic growth and social development.

15. NTDC management in the line with the preferential requirements as set by GoP has planned to accelerate the completion of existing ongoing projects and to expand the transmission network for evacuation of power from newly upcoming generation projects to eradicate power shortage in the country for good. For achieving this goal NTDC has planned following investment program to make the system more stable, reliable and have capacity to accommodate the future load. Also, the target/criteria set by NEPRA in terms of voltage profile Reliability & losses will likely to be achieved."

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16. NTDC submitted a detailed Project-wise Investment Program for FY 2019-20, FY 2020-21 and FY 2021-22, which is further divided in to four major groups i.e. Completed Projects, On-going Projects, New Priority Projects, and Other Projects. The details are as under:

NTDC Investment Program for 2019-20, 2020-21 and 2021-22

(Rs. in million)

S. #	Name of Project	Approval Status	PC-I / Estimated Cost	Finan. Agency	FY 2019-20			FY 2020-21			FY 2021-22		
					Local	Forgn	Total	Local	Forgn	Total	Local	Forgn	Total
	COMPLETED PROJECTS												
1	220 KV G/S & Allied T/L DI Khan	ECNEC 09.12.2010	3,744.00	ADB MFF-I T-IV	53.88	-	53.88	350.00	-	350.00	50.00	-	50.00
2	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	ECNEC 25.02.2005	2,592.00	KFW	412.36	114.01	526.37	100.00	-	100.00	10.00	10.00	20.00
3	220 KV Nowshera S/S	ECNEC 02.06.2008	1,876.00	ADB MFF-I T-IV	70.00	-	70.00	350.00	-	350.00	50.00	-	50.00
4	220 KV Chakdara S/S	ECNEC 03.10.2014	4,397.00	ADB MFF-I T-IV	95.17	-	95.17	350.00	-	350.00	50.00	-	50.00
5	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)	ECNEC 27.10.2007	13,152.00	JICA PK-58	161.09	132.01	293.10	400.00	-	400.00	100.00	-	100.00
6	500 KV HVDC Transmission System between Tajikistan and Pakistan for CASA-1000 Transmission Interconnection	ECNEC 29.08.2019	45,989.00	World Bank	77.46	1,939.04	2,016.50	1,000.00	3,000.00	4,000.00	1,900.00	8,000.00	9,900.00
7	500 KV Faisalabad New (2x750) (Now 500 KV Faisalabad West along with allied T/Ls)	ECNEC 12.01.2015	9,379.51	MFF-II T-I + JICA	802.81	1,694.05	2,496.86	1,200.00	2,000.00	3,200.00	750.00	500.00	1,250.00

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8	Addition of 500/220 KV Sub Station T/L for Strengthening the existing NTDC system i) 500 KV Lahore New ii) 500 KV Shikarpur iii) 220 KV D.I.Khan	ECNEC 09.12.2010	24,317.00	JICA PK-61	255.23	399.06	654.29	700.00	-	700.00	100.00	-	100.00
9	Construction of 500 KV T/L for Dispersal of Power form 747 MW from Guddu	ECNEC 29.07.2011	7,856.00	MFF-II T-I	635.70	1,211.59	1,847.29	100.00	100.00	200.00	-	-	-
10	Extension/Augmentation at 500/220 KV Rewat Substation	CDWP 23.09.2014	949.00	MFF-II T-I	211.86	3.00	214.86	50.00	-	50.00	-	-	-
11	Strengthening of TSG Centre for Grid System O&M	CDWP 21.02.2015	941.00	JICA Grant	43.47	-	43.47	50.00	-	50.00	-	-	-
12	Depleted Material Tranch-III (Now Replacement of Depleted Material at existing grid station of NTDC System) ADB Loan No. 2846-PAK	CDWP 23.09.2014	4,280.00	MFF-I T-III	50.00	-	50.00	100.00	-	100.00	-	-	-
13	220KV Rohri Sub Station & Associated T/L for Dispersal of Power from IPPS Fauji Foundation & Engro	ECNEC 22.10.2007	4,847.00	MFF-I T-II	50.00	-	50.00	50.00	-	50.00	-	-	-
14	132 KV Thatta Mirpur Sakro in and out FWEL 1 & 2nd WPP with 6 multiply 132 KV line bay & Jhampir Nooriabad Zorlu	ECNEC 22.04.2006	816.00	Own Resources	50.00	-	50.00	20.00	-	20.00	-	-	-
15	220 KV G/Station at Kassowal with 132 KV Expansion System (World Bank Loan No. 7565-Pk, Credit No. 4463-PK & 4464-PK)	ECNEC 25.02.2005	2,202.48	World Bank	50.00	-	50.00	50.00	-	50.00	-	-	-

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16	220 KV T/L from Chashma to Ludewala for Inter-connection of Chashnupp-II	CDWP 01.03.2008	2,057.00	Own Resources	0.19	-	0.19	10.00	-	10.00	-	-	-
17	220/132 KV Dera Murad Jamali Sub Station	CDWP 07.04.2011	880.00	Own Resources	9.97	-	9.97	50.00	-	50.00	-	-	-
18	220 KV G/S Mansehra Tranch-III	CDWP 07.04.2011	905.00	MFF-I T-III	48.61	-	48.61	200.00	-	200.00	-	-	-
19	3rd 500 KV Jamshoro-Moro-RYK S/C T/Line Tranch-III	ECNEC 28.08.2013	37,234.33	MFF-I T-III	514.69	-	514.69	500.00	-	500.00	100.00	-	100.00
20	Interconnection of Chashma Nuclear (C-3&C-4)	ECNEC 26.08.2013	3,150.00	Own Resources	-	-	-	5.00	-	5.00	-	-	-
21	Power Dispersal from 1200 MW Thar Coal Power Plant - 500KV Thar - Matiari T/L & Matiari 500 KV S/station)	ECNEC 16.08.2012	20,053.00	Local Bank	1,515.28	-	1,515.28	500.00	-	500.00	-	-	-
22	New 220 KV G/Station at Khuzdar/220 KV Dadu - Khuzdar D/C T/Line	ECNEC 04.08.2006	8,540.00	JICA PK-56	75.59	-	75.59	20.00	-	20.00	-	-	-
23	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	ECNEC 30.06.2012	25,040.00	MFF-I T-II	187.63	-	187.63	200.00	-	200.00	100.00	-	100.00
24	Quaid-e-Azam Solar Park at Lal Suhanra (Phase-II) Evacuation of 600 MW Solar (Proposed to be carried out by NTDC)	ECNEC 12.02.2014	4,065.73	Own Resource	271.55	-	271.55	50.00	-	50.00	5.00	-	5.00
25	Transmission Interconnection for Dispersal of Power from Uch-II Tranch-III	ECNEC 29.07.2011	2,330.00	MFF-I T-III	200.00	-	200.00	50.00	-	50.00	-	-	-

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26	Up-gradation of NPCC Islamabad	ECNEC 07.01.2004	2,895.00	JICA PK-54	-	-	-	5.00	-	5.00	-	-	-
27	Evacuation of Power from 1200 MW RLNG Project at Baloki	ECNEC 09.07.2015	3,375.00	Own Resources	59.51	-	59.51	10.00	-	10.00	5.00	-	5.00
28	Evacuation of Power from 1200 MW RLNG Project at Bhikki	CDWP 28.04.2015	270.00	Own Resources	20.74	-	20.74	5.00	-	5.00	5.00	-	5.00
29	Evacuation of Power from 1200 MW RLNG Project at Jhang (Haveli Bahadur Shah)	CDWP 28.04.2015	1,616.00	Own Resources	44.28	-	44.28	10.00	-	10.00	5.00	-	5.00
30	Evacuation of Power from 1320 MW RLNG Based Power Plant at Trimmu Jhang	CDWP 04.12.2017	4,149.55	Own Resources	259.63	-	259.63	100.00	-	100.00	5.00	-	5.00
31	Evacuation of power from 1320 MW Power Plant at Bin Qasim	ECNEC 13.05.2015	12,977.00	Local Bank	1,004.26	-	1,004.26	200.00	-	200.00	100.00	-	100.00
32	Evacuation of power from 147 MW Patrind HPP	CDWP 27.01.2015	966.00	Own Resource	98.84	-	98.84	150.00	-	150.00	-	-	-
33	Power Transmission Enhancement Project Tranch-I (19 Sub Projects of 500/220 KV Sub Stations and T/ Lines) ADB Loan No. 2289 & 2290-PAK	ECNEC 27.11.2006	12,617.00	MFF-I T-I	31.99	-	31.99	100.00	-	100.00	10.00	-	10.00
Total (Completed Projects)			**270,458.60**		**7,361.79**	**5,492.76**	**12,854.55**	**7,035.00**	**5,100.00**	**12,135.00**	**3,345.00**	**8,510.00**	**11,855.00**
ONGOING PROJECTS													
34	220 KV DI Khan-Zhob T/L along with 220-KV Zhob Sub-Station	ECNEC 07.11.2016	6,878.51	MFF-II T-II	980.43	3,372.49	4,352.92	1,000.00	2,000.00	3,000.00	500.00	2,200.00	2,700.00
35	2nd Source of Supply 220 KV I/Abad University S/S (Now 220 KV Transmission System Network Reinforcement in	ECNEC 09.01.2016	3,539.00	JICA PK-65	10.46	12.90	23.36	200.00	300.00	500.00	250.00	500.00	750.00

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	Islamabad & Burhan)												
36	220 KV Sub Station Lalian	ECNEC 11.11.2011	1,581.00	ADB MFF-I T-IV	88.40	-	88.40	400.00	-	400.00	50.00	50.00	100.00
37	220 KV Mirpur Khas G/S along with allied T/Ls	ECNEC 07.11.2016	3,857.00	MFF-II T-II	100.00	194.97	294.97	350.00	1,000.00	1,350.00	350.00	400.00	750.00
38	500 KV HVAC T/Line for inter connection of HVDC Converter Station at Lahore with existing HVAC System	ECNEC 07.11.2016	4,806.00	Local Bank	1,833.68	-	1,833.68	806.00	-	806.00	100.00	-	100.00
39	500 KV Lahore, North	ECNEC 24.11.2017	20,732.00	MFF-II T-III	512.37	628.08	1,140.45	1,000.00	2,000.00	3,000.00	500.00	1,500.00	2,000.00
40	Construction of New 220 KV Guddu-Uch-Sibbi Single Circuit T/L for Improvement of Power Supply System in South Areas	ECNEC 24.11.2017	8,624.24	MFF-II T-II	432.66	971.46	1,404.12	1,000.00	1,675.00	2,675.00	350.00	1,000.00	1,350.00
41	Evacuation of power from 1320 MW Power Plant at Sahiwal	ECNEC 31.08.2015	1,413.00	MFF-II T-I	32.23	265.35	297.58	100.00	382.00	482.00	50.00	-	50.00
42	Evacuation of power from wind power projects at Jhimpir and Gharo Wind Clusters	ECNEC 03.07.2014	12,572.66	KFW	712.01	-	712.01	900.00	100.00	1,000.00	200.00	100.00	300.00
43	Feasibility study for enhancing the transmission capacity of NTDCs 500 KV Transmission System by applying series compensation	CDWP 14.01.2016	133.18	Own Resources	40.00	-	40.00	25.00	-	25.00	-	-	-
44	Improvement & Upgradation of Protection System to Avoid the Frequent Tripping in South Areas	CDWP 31.12.2018	887.00	MFF-II T-I	70.80	375.93	446.73	50.00	130.00	180.00	-	-	-
45	Augmentation of 500/220 KV & 220/132 KV	ECNEC 21.01.2010	3,894.31	Own Resources	-	-	-	50.00	-	50.00	200.00	-	200.00

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	Transformer in NTDC System New												
46	Ext/Aug. of existing of 500&220 KV G/S of NTDC system by installation of additional T/FS	ECNEC 17.09.2009	1,863.78	Own Resources	22.01	-	22.01	50.00	-	50.00	10.00	-	10.00
47	Imported of 100 MW Power from Iran (with 220 KV G/S Gwadar and allied T/L form Iran to Gwader funded by Iran (EDBI-Iran Loan No.880/M/Pak/01)	ECNEC 05.09.2007	3,664.00	Own Resources	20.00	-	20.00	5.00	-	5.00	5.00	-	5.00
48	Provision of Secured Metering System at Delivery Point	ECNEC 04.08.2005	1,006.00	Own Resources	27.03	-	27.03	50.00	-	50.00	-	-	-
49	Transmission Scheme for Dispersal of power from Neelum-Jhelum, Karot and Azad Patan Hydropower Project	ECNEC 02.03.2015	21,697.00	Local Bank	3,770.90	-	3,770.90	1,500.00	-	1,500.00	500.00	-	500.00
50	Construction of 600 KV HVDC T/L From Matiari to Lahore (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	CDWP 31.08.2015	2,353.00	CDL	732.85	-	732.85	100.00	-	100.00	-	-	-
51	Evacuation of Power from 1320 MW Hub Power Company	ECNEC 07.11.2016	16,415.00	Local Bank	4,360.47	-	4,360.47	2,000.00	-	2,000.00	200.00	-	200.00
52	Evacuation of Power from K2/K3 Nuclear Power near Karachi (In/Out of 500-KV Port Qasim to Matiari S/C and 500-KV Hub to Matiari S/C at K2/K3)	ECNEC 12.04.2017	5,682.00	Local Bank	2,142.95	-	2,142.95	3,046.00	-	3,046.00	1,000.00	-	1,000.00

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53	Feasibility Study of Solar Water pumping in Balochistan Area	CDWP 04.07.2019	-	Own Sources	74.00	-	74.00	10.00	-	10.00	-	-	-
Total (Ongoing Projects)			**121,598.68**		**15,963.25**	**5,821.18**	**21,784.43**	**12,642.00**	**7,587.00**	**20,229.00**	**4,265.00**	**5,750.00**	**10,015.00**
NEW PRIORITY PROJECTS													
54	220-KV Jauharabad G/S along with allied T/Ls	CDWP 02.05.2018	2,961.00	ADB MFF-II Tranche-III	190.20	-	190.20	300.00	400.00	700.00	300.00	500.00	800.00
55	220-KV Mastung G/S along with allied T/Ls	ECNEC 22.05.2018	14,144.00	World Bank	17.40	76.00	93.40	100.00	-	100.00	500.00	1,000.00	1,500.00
56	500KV Chakwal G/S along with allied T/Ls	ECNEC 12.04.2017	8,926.39	KFW	-	-	-	200.00	500.00	700.00	500.00	500.00	1,000.00
57	Enhancement in Transformation Capacity of NTDC System by Extension and Augmentation of Existing Grid Stations	ECNEC 12.04.2017	16,526.00	World Bank	40.99	80.00	120.99	1,000.00	2,500.00	3,500.00	1,000.00	1,500.00	2,500.00
58	ERP (Now Implementation of Integrated Solution to improve Productivity and Control in NTDC by ERP System)	CDWP 19.03.2018	2,583.35	World Bank	25.00	81.50	106.50	100.00	405.00	505.00	300.00	500.00	800.00
59	Evacuation of Power from 1224 MW Wind Power Plants at Jhimpir Clusters	ECNEC 24.11.2017	10,752.61	USAID/ Local Loan	893.66	-	893.66	3,599.00	-	3,599.00	2,500.00	-	2,500.00
60	Evacuation of power from 2160 MW Dasu HPP Stage-I	CDWP 02.05.2018	85,595.00	World Bank	1,457.64	189.40	1,647.04	500.00	1,500.00	2,000.00	2,000.00	3,000.00	5,000.00
61	Evacuation of Power from Suki Kinari, Kohala, Mahal HPPs	ECNEC 14.11.2018	79,930.00	MFF-II T-III	216.98	-	216.98	800.00	1,985.00	2,785.00	1,300.00	4,160.00	5,460.00
62	220 KV Dharki - Rahim Yar Khan - Bhawalpur D/C T/L	ECNEC 02.10.2019	15,795.62	ADB MFF-III	-	-	-	50.00	5.00	55.00	200.00	500.00	700.00
63	220 KV Haripur Substation	CDWP 30.01.2020	3,423.93	New Loan	-	-	-	200.00	5.00	205.00	350.00	650.00	1,000.00

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64	220 KV Head Faqiran G/S along with allied T/Ls	ECNEC 15.07.2019	6,055.00	ADB MFF-III	-	-	-	200.00	5.00	205.00	500.00	50.00	550.00
65	220 KV Jamrud G/S along with allied T/Ls	CDWP 19.10.2017	2,398.00	New Loan	-	-	-	50.00	5.00	55.00	410.00	540.00	950.00
66	220 KV Larkana Substation	CDWP 17.10.2019	6,449.00	ADB MFF-III	-	-	-	50.00	5.00	55.00	500.00	500.00	1,000.00
67	220 KV Nawab Shah Substation	CDWP 17.10.2019	6,292.00	ADB MFF-III	-	-	-	50.00	-	50.00	500.00	500.00	1,000.00
68	220 KV Shadman G/S along with allied T/Ls (Now 220-KV Punjab University Substation)	CDWP 19.09.2017	2,948.00	World Bank	-	-	-	10.00	-	10.00	10.00	10.00	20.00
69	220 KV Swabi Substation	CDWP 17.10.2019	6,399.84	New Loan	50.00	-	50.00	300.00	-	300.00	500.00	1,000.00	1,500.00
70	220 KV Zero Point Grid Station at Islamabad	CDWP 19.09.2017	2,542.00	World Bank	-	-	-	50.00	-	50.00	100.00	100.00	200.00
71	500 KV Islamabad West	ECNEC 20.07.2016	8,288.00	World Bank	200.00	-	200.00	500.00	-	500.00	800.00	1,500.00	2,300.00
72	500 KV Moro Grid station	CDWP 25.09.2019	7,147.00	MFF-II T-III	50.00	-	50.00	50.00	-	50.00	300.00	500.00	800.00
73	Conversion from 220 KV Substations at Bund Road, Kala Shah Kaku, Ravi and Nishatabad to GIS Technology	ECNEC 07.03.2017	5,684.00	World Bank	4.00	20.70	24.70	200.00	1,100.00	1,300.00	500.00	500.00	1,000.00
74	Evacuation of Power from Tarbela 5th Extension	ECNEC 24.11.2017	4,068.00	World Bank	100.00	-	100.00	200.00	100.00	300.00	500.00	700.00	1,200.00
75	Installation of Pilot Battery Energy Storage System (BESS) at 220 KV Jhimpir G/Station	CDWP 25.05.2018	940.44	MFF-II T-III	5.00	20.00	25.00	50.00	-	50.00	200.00	300.00	500.00
76	Procurement of Mobile Grid Stations along with Emergency Recovery System and 500 KV Shunt Reactors for	CDWP 17.10.2019	6,202.00	USAID	100.00	-	100.00	500.00	-	500.00	500.00	1,000.00	1,500.00

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	Emergency Services												
77	Upgradation/Extension of NTDC's Telecommunication & SCADA System at NPCC	ECNEC 07.03.2018	11,638.00	MFF-II T-II	400.00	-	400.00	500.00	1,500.00	2,000.00	400.00	2,000.00	2,400.00
78	Construction of 600 KV HVDC T/L From Matiari (Port Qasim) to Faisalabad (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	CDWP 31.08.2015	2,477.00	Own Resources	20.00	-	20.00	50.00	-	50.00	10.00	-	10.00
79	Evacuation of Power from 330 MW Siddiquesons Ltd.	CDWP 30.01.2020	2,177.00	Own Resources	40.00	-	40.00	45.00	-	45.00	526.00	-	526.00
80	Evacuation of Power from 2x660 MW Thar Coal Based SSRL/SECL Power Plant at Thar	ECNEC 12.04.2017	21,783.00	Local Bank	35.00	-	35.00	3,000.00	-	3,000.00	4,110.00	-	4,110.00
Total (New Priority Projects)			344,126.18		3,845.87	467.60	4,313.47	12,654.00	10,015.00	22,669.00	19,316.00	21,510.00	40,826.00
Other Projects to be Started													
81	2nd source of supply to 220 KV Jaranwala Road Substation	Submitted to PC on 25.11.2019	5,788.33	New Loan	50.00	-	50.00	30.00	50.00	80.00	500.00	500.00	1,000.00
82	220 KV Arifwala Substation	Submitted to PC on 25.11.2019	4,900.00	ADB MFF-III	-	-	-	10.00	10.00	20.00	150.00	250.00	400.00
83	220 KV Gujranwala-II Substation	Submitted to PC on 10.01.2020	7,564.00	ADB MFF-III	-	-	-	15.00	10.00	25.00	150.00	250.00	400.00
84	220 KV Kamra G/S along with allied T/Ls	Submitted to PC on 25.11.2019	2,971.00	New Loan	-	-	-	30.00	10.00	40.00	150.00	250.00	400.00
85	220 KV Kohat G/S along with allied T/Ls	Submitted to PC on	5,593.00	ADB MFF-III	-	-	-	15.00	10.00	25.00	150.00	250.00	400.00

		25.11.2019											
86	500/220 KV Sialkot Substation	Submitted to PC on 25.11.2019	11,657.00	ADB MFF-III	-	-	-	30.00	10.00	40.00	250.00	500.00	750.00
87	500 KV Alama Iqbal Industrial City and 220 KV M-3 Industrial City Substations for Supply of Power to Industrial Estates of FIEDMC	Submitted to PC on 08.01.2020	14,330.00	New Loan	-	-	-	100.00	10.00	110.00	500.00	500.00	1,000.00
88	220 KV Quaid-e-Azam Apparel and Business Park (QABP) Grid Station for Provision of Electricity to PIEDMC SEZ	PC-I under preparation	3,692.00	New Loan	-	-	-	10.00	10.00	20.00	560.00	560.00	1,120.00
89	220 KV Sundar Industrial Estate Grid Station	Studies under process	4,650.00	New Loan	-	-	-	500.00	-	500.00	-	-	-
90	500 KV Vehari Grid Station	Studies under process	9,300.00	New Loan	-	-	-	5.00	5.00	10.00	50.00	50.00	100.00
91	Extension of 1x450 MVA Capacity T/F at 500 KV Multan	Studies under process	2,325.00	New Loan	-	-	-	5.00	5.00	10.00	50.00	50.00	100.00
92	Augmentation of 4x600 MVA T/Fs with 4x750 MVA Capacity at 500 KV Lahore (Sheikhupura)	Studies under process	6,975.00	New Loan	-	-	-	5.00	5.00	10.00	50.00	50.00	100.00
93	Re-conductoring/Underground cabling of existing 220 KV Bund Road - NKLP D/C T/L (17 km)	Studies under process	3,565.00	New Loan	-	-	-	5.00	5.00	10.00	50.00	50.00	100.00
94	220 KV Sheikh Munda Grid Station (near Quetta)	Studies under process	6,200.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00

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95	220 KV Kasur Grid Station	Studies under process	6,975.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00
96	Evacuation of Power from Mohmand Dam HPP	Studies under process	7,750.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00
97	220 KV Naghshah Grid Station	Studies under process	4,650.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00
98	220 KV Qasim Pur Grid Station	Studies under process	4,650.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00
99	Extension of 1x750 MVA, 500/220 KV T/F at 500 KV Lahore North	Studies under process	2,325.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00
100	Extension of 1x450 MVA, 500/220 KV T/F at 500 KV Dadu	Studies under process	1,860.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00
101	Extension of 1x250 MVA, 220/132 KV T/F at 500 KV RYK	Studies under process	775.00	New Loan	-	-	-	-	-	-	5.00	5.00	10.00
102	Evacuation of Power from 660 MW from Lucky Electric Power	Under Process in PC	1,315.00	Own Resources	60.00	-	60.00	500.00	-	500.00	300.00	-	300.00
103	600-KV HVDC T/Line from Thar to Lahore alongwith Converter & Grounding Stations at both ends	Under Process	100.00	Own Resource	-	-	-	10.00	-	10.00	100.00	-	100.00
Total (Other Projects to be Started)			119,910.33		110.00	-	110.00	1,270.00	140.00	1,410.00	3,050.00	3,300.00	6,350.00
Grand Total			856,093.79		27,280.91	11,781.54	39,062.45	33,601.00	22,842.00	56,443.00	29,976.00	39,070.00	69,046.00

17. The petitioner, during the course of the hearing dated September 30th, 2020 (Wednesday), highlighted the following main points in its presentation regarding requested investments for FY 2019-20, FY 2020-21& FY 2021-22, which are stated below:

- For New Priority Projects, proposed investment is made based on commencement of these projects.
- For future projects under approval or approved, it is expected that contract will be awarded or physical work will be started in the year, it is anticipated that 10 to 15% payment is to be made to the contractor at the time of award of contract

- As for completed and ongoing projects, funds are required to make payments i.e. land acquisition, Right of Way (RoW) clearance, crops compensation, taxes / duties etc and to clear the liabilities of the contractor (return of performance guarantee & retention money).
- NTDC has fixed criteria of selecting and prioritizing future projects in line with generation optimization and capacity enhancement, transmission and transformation system expansion based on existing loading limitations on transmission lines and transformers and finally requirement of distribution utilities.

Analysis & Decision

18. It is noted that NTDC submitted its investment plan for 3-years and requested investments amounting to Rs. 39,062.45 million for FY 2019-20, Rs. 56,443 million for FY 2020-21 and Rs. 69,046 million for FY 2021-22. It is also noted that the petitioner has categorized its investment plan in to four (04) major categories comprising of a total of One Hundred and Three (103) number of transmission network projects. It is observed that out of total 103 projects, 47 number of projects would be continued in instant tariff period i.e. from FY 2019-20 to FY 2021-22. The following table shows a summary of category wise investment plan for FY 2019-20, FY 2020-21 and FY 2021-22:

Rs. in Million

Sr. No.	Description	No. of Projects	FY 2019-20	FY 2020-21	FY 2021-22
1	Completed Projects	33	12855	12135	11855
2	Ongoing Projects	20	21784	20229	10015
3	New Projects	27	4313	22669	40826
4	New Projects to be Started	23	110	1410	6350
	Total	103	39,062	56,443	69,046

19. A year-wise analysis of NTDC's investment requirements is given below:

Analysis of Investments for FY 2019-20:

20. The petitioner in its tariff petition requested for an investment amounting to Rs. 39,062 million for FY 2019-20. The Authority, while considering the request of the petitioner, is of the view that since the period i.e. FY 2019-20, for which the investment is being assessed by the Authority, has already lapsed therefore, it would be more appropriate to consider the actual investments made by the Petitioner during FY 2019-20.

21. NTDC was directed to provide the audited accounts. In response, NTDC submitted its provisional audited Accounts for FY 2019-20. A detailed review of the provisional audited Accounts submitted by the petitioner revealed that NTDC has been able to spend an amount of Rs. 34,628 million as Capital Expenditure and Rs. 2,628 million against Deposit Works during FY 2019-20. Keeping in view the factual position of Actual Investment verified through NTDC's Audited Accounts, the Authority relies upon the submissions by NTDC and accordingly allows the Actual Expenditure amounting to Rs. 32,000 million (as per Audited Accounts) excluding amount of Rs. 2,628 million against Deposit Works

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for FY 2019-20 for NTDC. The summary of requested and allowed investment for FY 2019-20 is as follows:

FY 2019-20	Requested Investment	Allowed Investment
	Rs. 39,062.45 Million	Rs. 32,000 Million

<u>Analysis of Investments for FY 2020-21:</u>

22. The petitioner in its tariff petition requested an investment of Rs. 56,443 million for FY 2020-21. The Authority, for the purpose to assess the investment requirements in effective way, identified following gray areas with respect to existing power evacuation issues and transmission system constraints in NTDC's networks. In this regard, NTDC was directed to prepare a plan to resolve the aforementioned evacuation and overloading issues. Further, NTDC was also directed to include these critical projects in its investment plan pertaining to FY 2020-21 and FY 2021-22. In response, NTDC submitted the following details:

S. #	Constrained Grids / Transformers	Constraint Removal Plan	Target Date of Completion
1.	Gatti (500/220 kV) (4x450 MVA)	1. Commissioning of Trimmu Power Plant 2. Completion of 500/220/132 kV Faisalabad West GS	March 2021 October 2021
2.	Yousufwala (500/220 kV) 600 MVA	Completion of Arifwala Grid Station	2023-24
3.	Multan (500/220 kV) (2x450 MVA) 2x160 MVA Kasowal	1. Commissioning of trimmu power plant 2. Addition of 1x450 MVA trafo 3. 220 kV Arifwala G/S	March 2021 June 2022 June 2024
4.	Sarfaraznagar	1. Completion of 220/132 kV Sundar Grid Station 2. Completion of 220/132 kV Kasur Grid Station	2023-24 2024-25
5.	Lahore (Sheikhupura) G/S	Augmentation of Transformers	2023
6.	500 kV Rawat G/S	1. Addition of 1x160 MVA T/F 2. 500 kV ISB west G/S 3. 500kV Chakwal G/S	Dec 2020 Dec 2022 June 2024

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23. In addition to above, the Authority decided to acquire details of actual expenditure made by NTDC in first four (04) months i.e. from July 2020 to October 2020 and incremental investment requirements for remaining eight months i.e. from November 2020 to June 2021 pertaining to FY 2020-21. In response, NTDC submitted its actual expenditure made in above highlighted four (04) months and incremental amounts required for remaining eight months for FY 2020-21 against each project vide Email dated: 15-Dec, 2020. The following table shows a comparison of requested investment in the tariff petition and revised investment plan submitted by NTDC through post hearing submissions in response of the aforementioned directions of the Authority for FY 2020-21:

(Rs. Million)

Investment Program for FY 2020-21				
Sr. No.	Name of Project	Requested Investments Submitted vide Tariff Petition	Revised Investments Submitted vide Email on 15-Dec, 2020	
			Actual Exp. From July-2020 to Oct-2020	Incremental Cost from Nov, 2020 to June, 2021
Completed Projects				
1	220 Kv G/S & Allied T/L D.I Khan	350	13.42	336.58
2	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	100	66.28	34
3	220 Kv Nowshera S/S	350	0	350
4	220KV Chakdara S/S	350	15.34	350
5	04 New Projects to be Financed by JBIC: 500 kV R.Y. Khan G/S & T/L 220 kV Chishtian G/S & T/L 220 kV Gujrat G/S & T/L 220 kV Shalamar G/S & T/L	400	10.84	24.67
6	500kV HVDC Transmission System between Tajikstan and Pakistan for Central Asia-South Asia Transmission Interconnection (CASA-1000)	4,000.00	610.6	0
7	500KV Faisalabad New (2x750) (Now 500KV Faisalabad West alongwith allied T/Ls)	3200	206.47	3100
8	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)	700	89.18	320

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9	Construction of 500Kv T/L for Dispersal of Power form 747 MW from Guddu	200	31.856	39.352
10	Extension/Augmentation at 500/220 kV Rewat Substation	50	25.15	24.85
11	Strengthening of TSG Centre for Grid System Operations and Maintenance.	50	2.8	47
12	Depleted Material Tranch-III (Now Replacement of Depleted Matrial at existing grid station of NTDC System) ADB Loan No. 2846-PAK	100	0	100
13	1 No. 220KV Rohri Sub Station & Assosiated T/L for Dispersal of Power from IPPS Fauji Foundation & ENGRO near Karachi.	50	7.492	0
14	132KV Thatta Mirpur Sakro in and out FWELI & 2nd WPP with 6 multiply 132KV line bay & Jampir Nooriabad Zorlu	20	6.983	50.37
15	220 KV G/Station at Kassowal with 132 KV Expension System (World Bank Loan No. 7565-Pk, Credit No. 4463-PK & 4464-PK)	50	24.758	25
16	220 KV T/L from Chashma to Ludewala for Inter-connection of Chashnupp-II	10	0	0
17	220/132KV Dera Murad Jamali Sub Station	50	0	14.267
18	220Kv G/S Mansehra Tranch-III	200	54.97	145.03
19	3rd 500KV Jamshoro-Moro- R.Y Khan Single Circuit T/Line.Tranch-III	500	191.54	26.8
20	Interconnection of Chashma Neculer (C-3&C-4)	5	5.811	0.14
21	Iter-Connection- Ther Coal Based , 1200MW (Power Dispersal from 1200MW Thar Coal Power Plant - 500kV Thar - Matiari T/L & Matiari 500kV S/station)	500	207.7	292.3
22	New 220 KV G/Station at Khuzdar/220 KVDadu - Khuzdar D/C T/Line JICA Loan No. PK-56	20	0	0

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23	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	200	0	0
24	Quaid-e-Azam Solar Park at Lal-Suhanra (Phase-II) Evacuation of 600 MW Solar (Prposed to be carried out by NTDC)	50	0	50
25	Transmission Interconnection for Dispersal of Power From UCH-II Tranch-III	50	0	2349
26	Up Gradation of NPCC Islamabad JICA Loan No. PK-54	5	0	0
27	Evacuation of Power from 1200 MW LNG Based Power Project at Baloki	10	0	50
28	Evacuation of Power from 1200 MW LNG Based Power Project at Bhiki	5	0	50
29	Evacuation of Power from 1200 MW LNG Based Power Project at Jhang (Haveli Bahadur Shah)	10	0	50
30	Evacuation of Power from 1320 MW RLNG Power Plant at Trimmu Jhang	100	7.022	92.978
31	Evacuation of power from 1320MW Power Plant at Bin Qasim	200	465.35	45
32	Evacuation of power from 147MW Patrind HPP	150	2.3	147.71
33	Power Transmission Enhancement Project Tranch-I (19 Sub Projects of 500/220 KV Sub Stations and T/ Lines) ADB Loan No. 2289 & 2290-PAK	100	0	25
Total (Completed Projects)		**12135.00**	**2045.862**	**8140.047**
		12135.00	**10186**	
Ongoing Projects				
34	220-KV Dera Ismail Khan - Zhob Transmission Line alongwith 220-KV Zhob Sub-Station.	3000	2450.691	550
35	2nd Source of Supply 220KV I/Abad University S/S (Now 220KV Transmission System Network Reinforcement in Islamabad & Burhan)	500	9.48	280.52
36	220Kv Sub Station Lalian	400	0	0

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37	220kV Mirpur Khas G/S alongwith allied T/Ls	1350	0.49	1349.51
38	500kV HVAC T/Line for inter connection of HVDC Converter Station at Lahore with existing HVAC System.	806	1668.37	3631.63
39	500-KV Lahore, North.	3000	0	0
40	Construction of New 220kV Guddu-Uch-Sibbi Single Circuit Transmission Line for Improvement of Power Supply System in South Areas	2675	1991.84	683.16
41	Evacuation of power from 1320MW Power Plant at Sahiwal	482	227.89	0
42	Evacuation of power from wind power projects at Jhimpir and Gharo Wind Clusters	1000	91.84	908.16
43	Feasibility study for enhancing the transmission capacity of NTDCs 500-KV Transmission System by applying series compensation	25	2.768	98
44	Improvement & Upgradation of Protection System to Avoid the Frequent Trippings in South Areas	180	81.22	68.78
45	Augmentation of 500/220KV & 220/131KV Transformer in NTDC System New	50	0	0
46	Ext/Aug. of existing of 500&220 KV G/S of NTDC system by installation of additional T/FS	50	0	0
47	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)	5	0	0
48	Provision of Secured Metering System at Delivery Point. (Local Bank)	50	0.238	0.2
49	Transmission Scheme for Dispersal of power from Neelam-Jehlum, Karot and Azad Patan Hydro Power Project	1500	332.04	1167.96

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50	Construction of 600 KV HVDC Transmission Line From Matiari to Lahore (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	100	183.161	213.81
51	Evacuation of Power from 1320 MW Hub Power Company Ltd.	2000	2176	324
52	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).	3046	3547	500
53	Feasibility Study of Solar Water pumping in Balochistan Area	10	0	55
Total (Ongoing Projects)		**20229**	**12763.028**	**9830.73**
		20229	**22594**	
New Priority Projects				
54	220-KV Jauharabad G/S along with allied T/Ls.	700	0	190.19
55	220-KV Mastung G/S along with allied T/Ls.	100	0	153
56	500kV Chakwal G/S along with allied T/Ls	700	0	200
57	Enhancement in Transformation Capacity of NTDC System by Extension and Augmentation of Existing Grid Stations	3500	0	0
58	Enterprise Resource planning (ERP) (Now Implementation of Integrated Solution to improve Productivity and Control in NTDC by ERP System)	505	1.852	0
59	Evacuation of Power from 1224MW Wind Power Plants at Jhimpir Clusters	3599	43.788	92.96
60	Evacuation of power from 2160MW Dasu HPP Stage-I	2000	104.35	1055.65
61	Evacuation of Power from Suki Kinari, Kohala, Mahal HPPs	2785	2.67	2497.33
62	220kV Dharki - Rahim Yar Khan - Bhawalpur D/C T/L	55	0	0

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63	220kV Haripur Substation	205	0	205
64	220KV Head Faqiran G/S alongwith allied T/Ls.	205	0	205
65	220-KV Jamrud G/S alongwith allied T/Ls.	55	0	55
66	220kV Larkana Substation	55	0	0
67	220kV Nawab Shah Substation	50	0	0
68	220-KV Shadman G/S alongwith allied T/Ls (Now 220-KV Punjab University Substation)	10	0	0
69	220kV Swabi Substation	300	0	300
70	220kV Zero Point Grid Station at Islamabad	50	0	50
71	500KV Islamabad West	500	0	0
72	500kV Moro Gridstation	50	0	0
73	Conversion from 220kV Substations at Bund Road, Kala Shah Kaku, Ravi and Nishatabad to GIS Technology	1300	0	0
74	Evacuation of Power from Tarbela 5th Extension.	300	1.04	298.96
75	Installation of Pilot Battery Energy Storage System (BESS) at 220kV Jhimpir G/Station	50	0	0
76	Procurement of Mobile Grid Stations alongwith Emergency Recovery System and 500kV Shunt Reactors for Emergency Services	500	0	0
77	Upgradation/ Extension of NTDC's Telecommunication & SCADA System at NPCC	2000	0	0
78	Construction of 600 KV HVDC Transmission Line From Matiari (Port Qasim) to Faisalabad (Land Acquisition for Converter and Grounding Station - Both Ends) (CPEC)	50	0	0
79	Evacuation of Power from 330 MW Siddiquesons Ltd.	45	0	45
80	Evacuation of Power from 2x660 MW Thar Coal Based SSRL/SECL Power Plant at Thar	3000	44.68	1000
Total (New Priority Projects)		22669	198.38	6348.09
		22669	6546.47	

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Other Projects to be Started				
81	2nd source of supply to 220kV Jaranwala Road Substation	80	0	0
82	220kV Arifwala Substation	20	0	0
83	220kV Gujranwala-II Substation	25	0	0
84	220-KV Kamra G/S alongwith allied T/Ls.	40	0	0
85	220-KV Kohat G/S alongwith allied T/Ls.	25	0	0
86	500/220kV Sialkot Substation	40	0	0
87	500kV Allama Iqbal Industrial City and 220kV M-3 Industrial City Substations for Supply of Power to Industrial Estates of FIEDMC	110	0	0
88	220 kV Quaid-e-Azam Apparel and Business Park (QABP) Grid Station for Provision of Electricity to PIEDMC SEZ	20	0	0
89	220 kV Sundar Industrial Estate Grid Station	500	0	0
90	500 kV Vehari Grid Station	10	0	0
91	Extension of 1x450 MVA Capacity T/F at 500 kV Multan	10	0	0
92	Augmentation of 4x600 MVA T/Fs with 4x750 MVA Capacity at 500 kV Lahore (Sheikhupura)	10	0	0
93	Re-conductoring/Underground cabling of existing 220 kV Bund Road - NKLP D/C T/L (17 km)	10	0	0
94	Evacuation of Power from 660 MW from Lucky Electric Power Company Ltd.	500	0	1200
95	600-KV HVDC T/Line from Thar to Lahore along with Converter & Grounding Stations at both ends. (Feasibility)	10	0	0
Total (New Projects to be Started)		**1410**	**0**	**1200**
		1410	**1200**	
Grand Total		**56,443**	**40,526**	

24. It is observed from above table that NTDC in its petition requested an investment amounting to Rs. 56,443 million. Afterwards, NTDC through its post hearing submissions revised its investment plan for

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FY 2020-21 on the basis of above mentioned Authority's directions with respect to prioritize / rationalization of critical transmission network projects required to:

i. Overcome existing system constrains / overloading.
ii. Evacuate power from major power plants.
iii. Reduce T&T losses to applicable limits.

25. Keeping in view the importance of above mentioned projects prioritized by NTDC, the Authority considers the revised investment plan submitted by NTDC for FY 2020-21 and accordingly allows a total investment of Rs. 40,526 million which include Rs. 15,007 million against actual expenditure made in the first four (04) months of FY 2020-21 and an incremental amount of Rs. 25,519 million required for the remaining eight (08) months of FY 2020-21 as detailed below:

Sr. No.	Project Categories	Actual Exp. From July-2020 to Oct-2020 (Rs. in Million)	Incremental Cost from Nov, 2020 to June, 2021 (Rs. in Million)
1	Completed Projects	2045.862	8140.04
2	Ongoing Projects	12763.028	9830.73
3	New Projects	198.38	6348.09
4	New Projects to be Started	0	1200
Grand Total		**15007.27**	**25518.86**

26. The summary of requested and allowed investment for FY 2020-21 is as follows:

FY 2020-21	Requested Investment	Allowed Investment
	Rs. 56,443 Million	Rs. 40,526 Million

<u>Analysis of Investment for FY 2021-22:</u>

27. The petitioner in its tariff petition requested an investment of Rs. 69,046 million for FY 2021-22. The Authority, while considering the requested investments, observes that NTDC has requested for a huge investment for FY 2021-22 which NTDC has never been made in the previous years. In order to have a fair assessment of the investment requirements, the Authority directs the petitioner to provide a list of priority projects which are critical and play vital role for overall system improvements and essential to resolve existing transmission network issues. In response, NTDC, vide email dated: 11-Jan, 2021, submitted a priority based investment plan for FY 2021-22 which is further bifurcated in to two (02) major categories i.e. Major Investment Schemes and Other Investment Schemes. The following table shows a list of priority projects including justifications against each priority project for FY 2021-22:

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Rs. Million

Sr.#	Name of Project	Revised Projection 2021-22			Requirement Justification
		Local	Foreign	Total	
A.	Major Investment Schemes				
1	220-KV Dera Ismail Khan - Zhob Transmission Line along with 220-KV Zhob Sub-Station.	700.00	2,000.00	2,700.00	For Execution & Retention money payment against T/line/Grid
2	500-KV Lahore, North.	500.00	1,500.00	2,000.00	Design, partial material and civil works cost
3	500kV HVDC Transmission System between Tajikstan and Pakistan for Central Asia-South Asia Transmission Interconnection (CASA-1000)	1,900.00	7,000.00	8,900.00	For procurement of material
4	Construction of New 220kV Guddu-Uch-Sibbi Single Circuit Transmission Line for Improvement of Power Supply System in South Areas	350.00	1,000.00	1,350.00	For Progressive Invoices, and retention money
5	Conversion from 220kV Substations at Bund Road, Kala Shah Kaku, Ravi and Nishatabad to GIS Technology	500.00	500.00	1,000.00	for advance payments, & progressive payments
6	Enhancement in Transformation Capacity of NTDC System by Extension and Augmentation of Existing Grid Stations	500.00	1,500.00	2,000.00	Progressive payments, contract advance payments
7	Evacuation of power from 2160MW Dasu HPP Stage-I	1,500.00	1,500.00	3,000.00	Progressive payments, contract advance payments
8	Evacuation of Power from Suki Kinari, Kohala, Mahal HPPs	5,200.00	-	5,200.00	For T/line Equipment & Design Services & Execution
9	Up-gradation/ Extension of NTDC's Teleco. & SCADA System at NPCC	500.00	500.00	1,000.00	for SCADA Equipment + Services
10	Evacuation of Power from K2/K3 Nuclear Power near Karachi(In/Out of 500-KV Port Qasim to Matiari S/C and 500-KV Hub to Matiari S/C at K2/K3).	1,000.00	-	1,000.00	for progressive payments
11	Evacuation of Power from 2x660 MW Thar Coal Based SSRL/SECL Power Plant at Thar	4,110.00	-	4,110.00	Since contracts of material & civil works for the complete line will be awarded before June-2021 therefore, for 100% material payment & 90% civil works progressive payments
	Total (Major Investment Schemes)	16,760.00	15,500.00	32,260.00	

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B.	Other Investment Schemes				
12	220 Kv G/S & Allied T/L D.I Khan	50.00	-	50.00	80% Payment against construction of Residential Colony.
13	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	10.00	10.00	20.00	Retention money
14	220 Kv Nowshera S/S	50.00	-	50.00	80% Payment against construction of Residential Colony.
15	220KV Chakdara S/S	50.00	-	50.00	80% Payment against construction of Residential Colony.
16	220kV Dharki - Rahim Yar Khan - Bhawalpur D/C T/L	200.00	50.00	250.00	Advance payment and contractor mobilization
17	220kV Haripur Substation	300.00	50.00	350.00	Progressive payments, contract advance payments
18	220KV Head Faqiran G/S along with allied T/Ls.	350.00	25.00	375.00	Progressive payments, contract advance payments
19	220-KV Jamrud G/S along with allied T/Ls.	300.00	25.00	325.00	Progressive payments, contract advance payments
20	220-KV Jauharabad G/S along with allied T/Ls.	200.00	300.00	500.00	Progressive payments, contract advance payments
21	220kV Larkana Substation	350.00	50.00	400.00	Progressive payments, contract advance payments
22	220-KV Mastung G/S along with allied T/Ls.	300.00	50.00	350.00	Progressive payments, contract advance payments
23	220kV Mirpur Khas G/S along with allied T/Ls	350.00	400.00	750.00	Progressive payments, contract advance payments
24	220kV Nawab Shah Substation	300.00	25.00	325.00	Progressive payments, contract advance payments
25	220Kv Sub Station Lalian	50.00	50.00	100.00	for Civil works
26	220kV Swabi Substation	700.00	-	700.00	Progressive payments, contract advance payments

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27	2nd Source of Supply 220KV I/Abad University S/S (Now 220KV Transmission System Network Reinforcement in Islamabad & Burhan)	250.00	500.00	750.00	Progressive payments, contract advance payments
28	2nd source of supply to 220kV Jaranwala Road Substation	300.00	25.00	325.00	Progressive payments, contract advance payments
29	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)	100.00	-	100.00	
30	500kV Chakwal G/S along with allied T/Ls	500.00	50.00	550.00	Progressive payments, contract advance payments
31	500KV Faisalabad New (2x750) (Now 500KV Faisalabad West along with allied T/Ls)	750.00	500.00	1,250.00	Progressive payments, contract advance payments
32	500kV HVAC T/Line for inter connection of HVDC Converter Station at Lahore with existing HVAC System.	100.00	-	100.00	Payment of pending Liabilities against material & construction works
33	500KV Islamabad West	800.00	400.00	1,200.00	Progressive payments, contract advance payments
34	500kV Moro Grid station	300.00	100.00	400.00	
35	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)	100.00	-	100.00	
36	Enterprise Resource planning (ERP) (Now Implementation of Integrated Solution to improve Productivity and Control in NTDC by ERP System)	300.00	500.00	800.00	for progressive payments
37	Evacuation of Power from 1224MW Wind Power Plants at Jhimpir Clusters	2,500.00		2,500.00	Balance Payments, Progressive payments
38	Evacuation of power from 1320MW Power Plant at Sahiwal	50.00	-	50.00	For retention money payment

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39	Evacuation of Power from Tarbela 5th Extension.	500.00	700.00	1,200.00	Progressive payments, contract advance payments
40	Evacuation of power from wind power projects at Jhimpir and Gharo Wind Clusters	200.00	100.00	300.00	for balance payments
41	Installation of Pilot Battery Energy Storage System (BESS) at 220kV Jhimpir G/Station	25.00	75.00	100.00	Consultant + Procurement
42	220kV Arifwala Substation	200.00	25.00	225.00	Advance payment and contractor mobilization
43	220kV Gujranwala-II Substation	200.00	25.00	225.00	Advance payment and contractor mobilization
44	220-KV Kamra G/S along with allied T/Ls.	200.00	25.00	225.00	Advance payment and contractor mobilization
45	220-KV Kohat G/S along with allied T/Ls.	200.00	25.00	225.00	Advance payment and contractor mobilization
46	500/220kV Sialkot Substation	200.00	25.00	225.00	Advance payment and contractor mobilization
47	500kV Allama Iqbal Industrial City and 220kV M-3 Industrial City Substations for Supply of Power to Industrial Estates of FIEDMC	500.00	-	500.00	Progressive payments, contract advance payments
48	220 kV Quaid-e-Azam Apparel and Business Park (QABP) Grid Station for Provision of Electricity to PIEDMC SEZ	500.00	-	500.00	Progressive payments, contract advance payments
49	500 kV Vehari Grid Station	100.00	-	100.00	
50	Extension of 1x450 MVA Capacity T/F at 500 kV Multan	70.00	5.00	75.00	
51	Augmentation of 4x600 MVA T/Fs with 4x750 MVA Capacity at 500 kV Lahore (Sheikhupura)	70.00	10.00	80.00	
52	Re-conductoring/Underground cabling of existing 220 kV Bund Road - NKLP D/C T/L (17 km)	50.00	50.00	100.00	50% of estimated contract price (advance + progress payment)
53	3rd 500KV Jamshoro-Moro- R.Y Khan Single Circuit T/Line.Tranch-III	100.00	-	100.00	
54	Augmentation of 500/220KV & 220/131KV Transformer in NTDC System New	200.00	-	200.00	

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55	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	100.00	-	100.00	For balance payments
56	Transmission Scheme for Dispersal of power from Neelam-Jehlum, Karot and Azad Patan Hydro Power Project	400.00	-	400.00	For material & construction balance payments
57	Evacuation of power from 1320MW Power Plant at Bin Qasim	100.00	-	100.00	For balance payments
58	Evacuation of Power from 1320 MW Hub Power Company Ltd.	200.00	-	200.00	for Material payment against extension works at Jamshoro, Balance Payments, LD Reimbursement
59	Evacuation of Power from 660 MW from Lucky Electric Power Company Ltd.	300.00	-	300.00	For material, balance payments, civil works progressive payments, consultancy payment
60	600-KV HVDC T/Line from Thar to Lahore along with Converter & Grounding Stations at both ends. (Feasibility)	100.00	-	100.00	Project Feasibility Cost
Total (Major Investment Schemes)		14,125.00	4,175.00	18,300.00	
Grand Total		30,885.00	19,675.00	50,560.00	

28. It is noted that the revised investment plan for FY 2021-22 shows a reduced investment of Rs. 18,486 million (Rs. 69,046 Million requested in instant petition and Rs.50,560 Million requested vide revised investment plan). In this regard, the Authority relied upon the basis/approach adopted by NTDC to revise its investment plan which would be reflective of the priority projects critical for removing existing system constraints / overloading and necessarily required for evacuation of power from upcoming major power plants. Accordingly, the Authority approves the revised investment plan and allows the requested amount of Rs. 50,560 million for FY 2021-22 with the direction to complete these projects in due course of time. The summary of requested and allowed investment for FY 2021-22 is as follows:

Rs in Million

FY 2021-22	Requested Investment	Allowed Investment
	Rs. 69,046 Million	Rs. 50,560 Million

<u>DIRECTIONS TO NTDC:</u>

29. The Authority directs the petitioner to submit detailed reports within one (01) month of the issuance of this determination in terms of:

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i. The reasons (if any) causing delays in completion of priority projects pertaining to FY 2019-20 and FY 2020-21 and their financial impacts in terms of cost and time overrun including amount of Liquidated Damages (LDs) paid by NTDC to other entities.

ii. The prospective benefits achieved in terms of removal of congestion, ensuring evacuation of power from all the generation companies, improvement in voltage profile, improvement in overall system etc. through execution of each priority projects approved for FY 2019-20 and FY 2020-21.

30. In view of the approved investment plan pertaining to FY 2020-21 and FY 2021-22, NTDC needs to submit detailed report to NEPRA for monitoring on quarterly basis showing:

i. Total PC-I Cost and Actual Expenditure made during the reported quarter against each project.

ii. Scheduled Completion Date and Actual Physical Progress (%) against each project.

Issue# 3 **The Authority has allowed a total investment of Rs. 41,380 million against 22 priority projects to NTDC for FY 2018-19. NTDC is required to submit detailed project-wise Benefit to Cost analysis in respect of each project. The detailed report, inter alia, must include time line for project implementation, analysis and way forward.**

31. NTDC in compliance of the Authority's directions submitted the following information:

Sr.	Plant Name	Total Cost (PC-1) in MPKR	MW Flow	Financial & Economic Rate of Return	Avg. Benefits per Annum (MPKR)	Expected / Actual Completion
1	220 kV DI Khan-Zhob T/L along with Zhob G/S	6,878	291.52	10.41%, 6.6%	982.10	T/L: 16 Nov 21 G/S: 2022-23
2	220 kV Guddu-Muzaffargarh T/L	7,856	718.84	6.75%, 8.73%	794.96	04 Mar 20
3	220 kV Guddu-Uch-Sibbi T/L	8,624	598.4	12.2%, 17.8%	983.32	28 Jun 21
4	500 kV Port Qasim-Matiari T/L	12,977	1320	15.8%, 43%	1867.59	01 Oct 20
5	500 kV Hub-Jamshoro T/L	16,415	1320	13%, 16.3%	1867.59	10 Oct 20
6	500 kV Jamshoro-Moro-RYK T/L	37,243	1800	1.57%, 4.52%	2228.08	06 Sep 2019
7	500 kV Faisalabad West G/S + T/L	16,940	1425	13.2%, 16.2%	2337.33	22 Oct 21
8	500 kV Thar-Matiari Cct-1	22,041	1134.30	3.73%, 55.15%	1735.47	31 Jul 18
9	500 kV Neelum-Jhelum T/L	21,697	2339	20.1%, 23.0%	1975	31 Mar 21

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10	CASA-1000 Power Project	46,804	1308.59	4.5%, 6.5%	3246.34	31 Aug 23
11	SCADA-III Project	11,638	N/A	Income cannot be calculated separately. Considerable financial savings expected.	Nil	31 Dec 23
12	500 kV K-2/K-3 to Matiari T/L	7,501	2200	44%, 48.40%	3112.65	Ph-I: 31 Dec 20 Ph-II: Mar 2022
13	500 kV RYK G/S + T/L	13,152	191.56	4.0%, 18.47%	349.36	03 Feb 18
	220 kV Chishtian G/S + T/L	2,633	228.12	11.87%, 56.87%	381.67	24 Oct 16
	220 kV Gujrat G/S + T/L	1,966	571.73	39.2%, 59.1%	899.88	27 Apr 17
	220 kV Shalamar G/S + T/L	3,617	312.14	11.6%, 14.94%	516.75	29 Oct 14
14	500 kV New Lahore T/L	12,524	1321.18	9.64%, 17.76%	1635.42	07 Dec 17
	500 kV Shikarpur T/L	24,317	745.28	8.43%, 14.61%	925.82	23 May 16
	220 kV D.I. Khan T/L	3,743.67	338	7.4%, 31.01%	415.58	18 Feb 19
15	Evacuation of Power from Jhimpir & Gharo Wind Clusters	10,753	1224.60	29.77%, 32.40%	3280.82	08 May 18
16	220 kV Lal Suhanra G/S + T/L	3,303	516	14.6%, 17.49%	529.12	15 Feb 18
17	Evacuation of 500 MW from WPPs in Jhimpir Wind Cluster	11,278	487.5	14.8%, 15.6%	756.60	2021-22
18	Evacuation of Power from 1230 MW RLNG Trimmu	4,231.83	1230	30.3%, 38.2%	1932.57	11 Aug 18
19	220 kV Tarbela-Burhan T/L (reinforcement)	3,568.39	368	13.74%, 16.0%	543.0	Ph-I: 28 Feb 19
20	Replacement of Depleted Material at Existing G/S	4,280	281	20.84%, 27. 1%	337.37	02 Mar 19
21	220 kV Mirpurkhas G/S + T/L	3,857	455.50	13.68%, 19.8%	728.21	2021-22
22	Extension / Augmentation Works at Existing G/S	16,526.49	5716.80	38.17%, 47.6%	8650.66	Jun 2022

32. NTDC submitted details have been examined and it has been observed that NTDC did not provide the detail of the cost benefit analysis. It has been observed that almost all projects are delayed and progress on these projects is slow. In view thereof NTDC be directed to complete all the projects within given timeline.

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Issue # 4 NTDC filed the instant MYT petition for next 3 years on non-coincidental MDI basis and as per claim by NTDC, infrastructure for MDI calculation on co-incidental basis will be finalized in October, 2020. NTDC has failed to meet its own commitments for coincidental measurement of demand for the past 4 years. NTDC must provide such information for instant MYT petition.

33. NTDC in its Tariff Petition for Determination of Use of System Charges (UoSC) for FY 2019-20, FY 2020-21 and FY 2021-22 submitted that it has been charging Use of System Charge (UoSC) / Wheeling Charges 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 electrical boundaries called Common Delivery Points (CDPs) by designated metering committee(S) having one member of the respective DISCOs.

34. The Authority's determined mechanism for charging of MDI is as under;

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

35. The petitioner in its submission stated that it is appeared that in the Motion for Leave for Review filed on 30.08.2019, NTDC once again submitted the reasons for impracticality of Co-incidental MDI calculations at current stage. In the Decision of the Authority in the matter of said Motion for Leave for Review (Case No. NEPRA/TRF-450/NTDC-2018/9710-9712), dated March 31, 2020, the Authority has decided to address NTDC's concerns and that the matter of coincidental and non-coincidental require further deliberations with joint participation of all stakeholders i.e. CPPA-G, NTDC and XWDISCOSs etc. for sectorial harmony and allocation of fixed cost on justified basis. Accordingly, the Authority has decided that separate proceedings shall be initiated apart from the review decision. NTDC greatly appreciates the decision of the Authority.

36. Further the petitioner submitted that NTDC is already complying by the directions of the Authority on the subject of develop system for calculation of co-incidental MDI. The progress of co-incidental MDI system undertaken by NTDC on war footing basis is detailed as blow:

I. Progress on Co-incidental MDI System

37. The project was undertaken by the NTDC with the assistance from the USAID for enabling the accurate calculation of MDI on co-incidental basis from CDP meters. In this regard, the procurement of secured metering system (SMS) is being carried under the USAID program. The scope of the project is to bring all the primary meters online to ensure real-time operational monitoring and to meet the requirements of Regulator (NEPRA). The detail of the scope of this project is as under:

i) Procurement and installation of 100 revenue meters;
ii) Procurement and installation of 300 inverters to power up all DCU's through Sub Station batteries bank;
iii) Meter reading software Head-end and MDM (installation, training, support);
iv) Installation and laying communication modules (380 Ethernet + 150 GSM)

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v) Installation of 300 GSM antennas

38. Due to sensitive calculation mechanism of co-incidental MDI, it is important to mention that this system cannot be fully functional unless ALL the CDP meters are to be integrated into the Online Meter Data Management Software 'en-bloc'. Therefore, the timeline for its implementation and deployment poses challenge and may change due to current Covid-19 pandemic.

39. Moreover, in the above mentioned decision in the matter of Motion for Leave for Review (Case No. NEPRA/TRF-450/NTDC-2018), Authority has also directed NTDC to file the next Tariff petition on the basis of coincidental MDI. It is submitted that the decision for the adoption of coincident approach needs to be taken after the finalization of deliberations among all stakeholders which has been decided by the Authority. The petitioner during the course of the hearing stated that;

- As per Motion for Leave for Review filed on 30-08-2019, NTDC once again submitted the reasons for impracticality of Co-Incidental MDI calculations at current stage.
- The Authority vide decision dated 31-03-2020 stated that NTDC's concerns vis-à-vis matter of MDI require further deliberations with joint participation of all stakeholders i.e. CPPA-G, NTDC and XWDISCOs etc. for sectorial harmony and allocation of fixed cost on justified basis. Hence, Authority decided separate proceedings to be initiated apart from the Review Decision. NTDC greatly appreciates the decision of the Authority and request the Authority to undertake this deliberation amongst the stakeholders and settle the issue. NTDC is already complying with Authority's direction on the subject to develop a system for calculation of Co-incidental MDI.

- Due to COVID-19, the Project completion is slightly affected, however current status of SMS Meter Infrastructure Deployment is as under:
  1. RFP, Bids Evaluation, Contract Award completed
  2. FAT for Meters and ICT equipment completed, Equipment Delivered.
  3. Installation of Meters compliant with telemetering system: 98% complete.
  4. Enabling online secure communication of each Meter is in progress.
  5. HE/MDM Software configuration & deployment is in progress.
  6. Project completion deadline as given by USAID is 22-12-2020
- For utilizing co-incidental MDI for billing purposes, co-incidental MDI system first needs to be deployed, monitored for establishment of trends, projections and benchmarked for various testing and/or fault tolerant scenarios.
- It is appraised that the Authority has not yet determined the detailed mechanism for Use of System Charge calculation on Co-incidental MDI basis.
- Different scopes/mechanism of Co-incidental MDI calculation may lead to different formulae for billing to NTDC consumers i.e. XWDISCOs & KE. Some cases for mechanism of co-incidental MDI calculation are identified as such:

Case A: Scope : System-wise	Based on Overall combined Coincidental Maximum Demand of all DISCOs. Billing to be done proportionate to share of each DISCO in System Peak.

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Case B: Scope : DISCO-wise	Based on Coincidental Maximum Demand (Overall) of each DISCO. Billing to be done on each DISCOs individual co-incidental peak.
Case C: Scope : Station-wise	Based on Sum of Coincidental Maximum Demands of all Stations in DISCO. Billing to be done on Sum of individual peak of Stations of DISCO.

Analysis & Decision:

40. It has been observed that despite directions of the Authority from FY 2014-15, the petitioner is unable to install SMS at CDP points. The Petitioner in the instant petition neither updated the Authority about installation of Secured Metering System (SMS) for remaining CDPs nor filed the instant tariff petition on basis of coincidental MDI, as directed by the Authority in its last determination. It is also observed that instead of complying with the earlier directions of the Authority, NTDC in instant tariff petition, in addition to general arguments which it has been forwarding earlier, had also linked the matter to completion of another project through US-Aid funding.

41. It is observed that NTDC failed to complete the secured metering system after four years of its initiation and it appears that to continue with its earlier practices it is resorting to delaying tactics and proposed another project which was not earlier discussed as a requirement for SMS, viz a viz demand recording on coincidental basis. Timely and early completion of installation of SMS was not only required for accurate demand measurement but it was also critical in loss level setting of NTDC network. The Authority felt that this approach reflects in delaying automation of the system. In view thereof, the NTDC is directed to complete its overall project by December 15, 2021 and submit a detailed report for Authority's considerations. In case of non-completion the legal proceedings shall be initiated against NTDC as permissible under the law.

Issue#5 Whether Land Acquisition and ROW issues have been resolved causing delays in implementation of development projects of NTDC?

42. The petitioner in the tariff petition and during the hearing submitted that;

- Land Acquisition for Grid Stations is a time-consuming exercise carried out through local administration / revenue department under Land Acquisition Act 1894.
- Issues emerging during acquisition process are settled amicably with the support of Local Administration.
- Right of Way (ROW) problems are inherent part of transmission line projects emerging throughout execution work, resolved either directly through negotiation with land owner or with the support of local administration.
- NTDC had drafted a ROW Bill / legislation to resolve ROW issues in a timely and efficient manner. The draft was submitted to the Senate Standing Committee on Power about 1 ½ years ago for its review and to seek approval from the competent authority. However, no favorable response has been heard ever since.
  - In line with the instructions of Chairman (NEPRA) during the meeting dated 08-09-2020, Chief Legal Officer (CLO) NTDC is coordinating with Legal Advisor (NEPRA) to refine the already

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prepared draft Bill and to work out a way for timely approval of this Bill from the appropriate forum.

- While ROW issues emerge in a majority of transmission projects, the following 02 issues are very critical and require to cleared at the earliest to bring about a resumption in the stalled construction activities:

<u>±660 kV Matiari-Lahore HVDC T/L Project</u>

43. There is a serious ROW issues at tower location # 2604 of Matiari-Lahore HVDC T/L. The owner of the land, Lt. Gen. (Retd.) Najib Ullah Khan is not allowing construction work to happen over his land despite an offer from NTDC to the raise the height of the tower to be constructed to achieve more clearance.

44. The Evacuee trust Property Board has taken up the issue with Ministry of Religious Affairs regarding illegal construction by NTDC of the HVDC Electrode Station over a disputed land (measuring 206 kanals) at Mouza Pindi Cheeri (Nankana Sahib) which is the ownership of Gurdwara Shiromani Parbandhak Committee.

<u>500 KV Lucky to Port Qasim-Matiari T/L Project</u>

45. The contract for construction of 11.8 km Double Circuit (D/C) transmission line (T/L) for interconnection of 660 MW Lucky Coal Fired Power Plant (CFPP) with 500 kV Port Qasim-Matiari T/L was awarded in late January 2020. This T/L will pass through the lands of M/s PQA "Port Qasim Authority" (2.3 km section with 08 towers), M/s PSM "Pakistan Steel Mills" (07 km section with 23 towers), M/s FOTCO "Fauji Oil Terminal and Distribution Company Limited" (01 km section with 03 towers) and GoS "Government of Sindh" (1.5 km section with 06 towers).

46. NTDC has been approaching all these departments for months now (even before award of contract in case of M/s PQA) for issuance of necessary NOC to construct transmission towers in their land. However, despite numerous meetings, site visits, written correspondence and intervention of Ministry of Energy (Power Division), NOC is awaited from all the four discussed departments.

<u>Analysis & Decision:</u>

47. It is noted that ROW issues are critical as delay in resolving ROW issues leads to delay in overall project completion leading to higher project cost and other consequential impact. For instance failure of NTDC to transmit power from projects to HVDC Matiari-Lahore transmission line would result in under utilization of that line and consequently capacity charges would be paid without using maximum capacity of the HVDC transmission line. The Authority noted that NTDC has to make further efforts to resolve the issues pertaining to ROW. NTDC is hereby directed to provide quarterly progress report on all pending cases delayed due to ROW issues.

Issue#6 What steps have been taken by NTDC for power evacuation from upcoming power generation projects? Whether the issues of power curtailment from HUBCO, Port Qasim, Patrind, Lucky Electric and Renewable Energy Projects have been resolved or otherwise?

48. The petitioner during the hearing submitted the following information related to above issue;

<u>PATRIND-MANSEHRA T/L</u>

- Transmission Line from Patrind to Mansehra has been completed and is energized on No- Load on 23/08/2020.

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- The on Load commissioning was pending due to relay commissioning at Patrind End by Power House Authorities
- Star Hydro Power Limited (SHPL) had requested NTDC to implement relay settings in old Siemens relay at Patrind end for which shutdown was availed on 23/09/2020 & 24/09/2020
- The line was energized on Load on 25/09/2020 which is providing smooth evacuation facility for Patrind

HUB-JAMSHORO T/L

- 500kV Transmission Line for evacuation of power from 1320MW HUBCO "China Power Hub Generation Company (CPHGC)" to existing 500kV Jamshoro Grid Station has been completed & successfully tested.
- To be commissioned/energized on completion of extension work (2x500kV Line Bays) at Jamshoro Grid Station.
- Interim arrangement for evacuation of power has been provided through existing Hub-Jamshoro T/L.

PORT QASIM-MATIARI T/L

- Power evacuation from 1320MW Port Qasim Power Plant is being carried out through existing Dadu-Jamshoro Circuit-II (Interim arrangement).
- 500kV Transmission Line from Port Qasim to Matiari (original scope) is under progress.

LUCKY-PORT QASIM/MATIARI T/L

- Interconnection to 660MW Lucky Power Plant is contingent upon NOCs from Port Qasim Authority (PQA), Pakistan Steel Mills (PSM), Government of Sindh (GoS) & M/s Fauji Oil Terminal and Distribution Company Limited (FOTCO) by intervention of Ministry of Energy (Power Division) in order to commence construction activities. Since Lucky Coal Fired Power Plant (CFPP) has not achieved Commercial Operation Date (COD) yet, there are no curtailment issues.

EVACUATION OF POWER FROM JHIMPIR & GHARO WIND CLUSTERS

- Transmission Line Interconnection for evacuation of power from WPPs in Jhimpir & Gharo Cluster has already been provided.
- The Grid Station evacuates power (774.975MW) from 15 Wind Power Plants smoothly/without any interruption.
- Trouble causing "EMCO" made disc insulators have been replaced with imported ones on 220 kV D/C Jhimpir-TMK transmission line. Moreover, insulator change and addition (per string) is also planned on 132 kV T/Ls. Tender for this purpose has been floated.
- Grid Station has been evacuating power smoothly from all mentioned Wind Power Plants ever since.
- Addition of 02 Nos, 132 kV New line bays are under construction along with addition of 4th 250 MVA 220/132kV Auto Transformer to further enhance stability of this Grid Station in case of existing and future/upcoming wind power projects. 220 kV Jhimpir-II Grid Station will improve the voltage profile of NTDC and HESCO and also improve reliability at existing Jhimpir and Gharo (future) Grid Stations.

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Analysis & Decision:

49. For the purpose of NTDC's instant tariff petition FY 2019-20, FY 2020-21 and FY 2021-22, the petitioner have submitted its progress on power curtailment from HUBCO, Port Qasim, Patrind, Lucky Electric and Renewable Energy Projects. The mentioned projects scheduled completion dates and comparing these to their actual completion dates, are shown in the table below:

S. No.	Project Name	Actual Starting date of each Project	Scheduled Completion Date of each Project	Actual Completion Date
1	Patrind-Mansehra Transmission Line	07-06-2016	03-04-2017	25-09-2020
2	Hub-Jamshoro 500 kV Transmission Line	20-08-2018	15-06-2019	Dec, 2020
3	Port Qasim 500 kV Transmission Line	12-04-2017	28-02-2020	14-10-2020
4	Lucky Port Qasim Transmission Line	08-03-2020	13-11-2020	April, 2021
5	Evacuation of Power from Jhimpir & Gharo wind clusters	03-07-2014	31-12-2019	In process

50. It is evident from above table that almost all the highlighted projects caused time overrun due to delays in project completion. A detailed review of latest record submitted by NTDC before the Authority in respect of above mentioned projects also revealed the following:

i. 132 kV Patrind-Mansehra transmission line project was scheduled to be completed in April, 2017 but it was completed in September, 2020 meaning thereby a delay of about 41-months.

ii. 500 kV Hub Jamshoro transmission line project was allocated a PC-I cost of Rs. 16,415 million whereas NTDC spent a total expenditure of Rs. 17,496 million till date causing cost overrun of Rs. 1,531 million. The project was scheduled to be completed in June, 2019 but it has not achieved its COD yet resulting in time overrun also.

iii. 500 kV Port Qasim-Matiari transmission line project was scheduled to be completed in February, 2020 but it has not achieved its targeted completion schedule date. Therefore power from Port Qasim power plant was evacuated on interim arrangement causing frequent tripping and forced power outages.

iv. Evacuation of power from Jhimpir and Gharo wind clusters also could not be achieved due to non-completion of the projects on scheduled completion dates. Due to inadequacy of infrastructure for dispersal of power from these wind projects several forced outages and brown-outs were observed.

51. Foregoing in view, it is noted with concern that NTDC considers it normal to rely on interim arrangement for evacuation of power from projects as it never carried out relevant analysis to establish financial and economic loss to the sector which may result from inadequacy of transmission facilities, inferior reliability in the system and in certain cases denial of cheap electricity to the grid. Therefore the Authority directed NTDC to monitor progress of every project initiated by NTDC and submit quarterly report in the matter to Authority.

Issue# 7 Whether NTDC has paid Liquidated Damages (LDs) to other entities for its failure to complete projects on time. NTDC needs to provide details in this regard.

52. The petitioner during the course of the hearing stated that;

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"It has not paid any Liquidated Damages (LDs) to other entities for its failure to complete projects on time. Because NTDC makes sure to provide interim arrangement for the evacuation of Power."

Analysis & Decision:

53. It is noted that NTDC could not complete its interconnection facilities with power generation facilities as scheduled. In most of the cases NTDC provides interim evacuation facilities to satisfy commissioning requirements of such projects. Although NTDC might have been able to avoid Liquidated Damages (LDs) to other entities as it claimed, but interim arrangement cannot be the equivalent with the permanent arrangement of power evacuation in terms of reliability and adequacy. Being a sub-optimal solution, it adds to transmission losses. NTDC is directed to carry out detailed analysis and comparison of system reliability and incremental losses which the sector had to bear due to continuation of operation on interim transmission facilities. The analysis must also include the record of tripping incidents and forced power curtailment due to such outages. The above report shall be submitted to the Authority within three months of the determination date.

Issue#8 Transmission line issues in Gawadar Region.

54. NTDC stated that presently, 132 kV grid of Makran/Gwadar is not connected with national grid of Pakistan and is being fed from Iran (power range of 70-100 MW) from Jackigur (Iran) to Mand (Pakistan) through 132 kV transmission line since 2003. According to NTDC, a contract had also been signed between Pakistan and Iran for import of 100 MW at Gwadar (in Pakistan) through 220 kV D/C T/Line from Polan (in Iran). However, that project could not be started due to international sanctions on Iran. As per NTDC, QESCO has initiated a 132 kV development plan of regional grid of Makran/Gwadar, its interlinking with QESCO network as well as with 300 MW coal power project at Gwadar. QESCO can provide progress achieved in this regard. The feasibility study for QESCO's development plan also proposed connection of Makran network with NTDC network through 220 kV transmission lines in year 2025 & onwards. On the basis of this feasibility study, NTDC submitted concept clearance paper (approved by CDWP) for connection of Gwadar / Makran grid with NTDC network through 220 kV transmission lines from Khuzdar to Gawadar via Punjgur in year 2025 & onwards with estimated cost of Rs. 30 billion (the actual cost shall be worked out at the time of PC-1 preparation).

55. The Authority considered the submissions of the NTDC and noted that the transmission line in the above particular area has already been delayed. The Authority therefore decided to direct NTDC to submit the comprehensive plan along with the clear time lines for completion of the above lines in next petition along with the progress details.

Issue# 9 Steps taken by NTDC for resolution of the intermittence issues in Jhimpir wind Corridor.

56. NTDC submitted that the Grid Station evacuates power (774.975MW) from 15 Wind Power Plants smoothly/without any interruption. Trouble causing "EMCO" made disc insulators have been replaced with imported ones on 220 kV D/C Jhampir-TMK transmission line. Moreover, insulator change and addition (per string) is also planned on 132 kV T/Ls. Grid Station has been evacuating power smoothly from all mentioned Wind Power Plants ever since. Addition of 02 Nos, 132 kV New line bays are under construction along with addition of 4th 250 MVA 220/132kV Auto Transformer to further enhance stability of this Grid

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Station in case of existing and future/upcoming wind power projects. 220 kV Jhampir-II Grid Station (expected completion in Nov 2021) will improve the voltage profile of NTDC and HESCO and also improve reliability at existing Jhampir and Gharo (future) Grid Stations.

Issue#10 What are NTDC's Plan for Removal of System Constraints which results in under-utilization of efficient power plants and also affect continuity of supply to DISCOs. Whether, these plans are reflected in MYT.

57. NTDC submitted the following information:

Description	QTY under Constraint	Relevant Grids	Removal Expected By			
			2020-21	2021-22	2022-23	2023-24
Overloading of 500/220kV, 600MVA Transformers	2	500kV Nokhar	-	2	-	-
Overloading of 500/220kV, 450MVA Transformers	6	500kV Multan, Gatti.	4	2	-	-
Overloading of 220/132kV, 250MVA Transformers	15	220kV Islamabad University, New Kotlakhpat, Ravi, Ludewala, Bahawalpur, 500kV New Rewat.	6	4	5	-
Overloading of 220/132kV, 160MVA Transformers	50	220kV Ghakkar, Sahuwala Sialkot, Sarfaraz Nagar, WAPDA Town, Daudkhel, Ludewala, Kassowal, NGPS, Chishtian, Bahawalpur, Vehari, T.M. Khan, Khuzdar, Quetta Industrial, 500kV New Ghakkar, Yousufwala, Muzaffargarh, New Multan, Jamshoro, Sangjani.	12	19	7	12
Overloading of 220kV, circuits	10	NGKR-Gakkharh, Gatti-Bandala Cct-I & II, Multan-T.T. Singh Ccts-I & II, T.T.Singh-Sammundari Ccts-I & II, Uch I-Shikarpur, Uch II- Shikarpur, Jamshoro-Hala Road	2	7	1	-

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58. While the Authority observed that petitioner submitted that at present nine (09) 500 kV grid stations, twenty (20) 220 kV grid stations and ten (10) transmission lines are over loaded. Further, NTDC submitted he plans for removal of these constraints, which are given:

(1) 500 kV Grid Station Constraints

Sr.	Name of Grid Station	Equipment under constraint	Constraint Removal Plan	Expected / Actual Date of Completion	Adverse Impact of constraint
1	500 kV Gatti	4x450 MVA T/Fs	i. Addition of 600 MVA T/F at 500 kV Gatti G/S ii. Commissioning of Trimmu Power House iii. 500 kV Faisalabad West G/S	i. commissioned in May 2019 ii. 2021 iii. 2021	Commitment of RFO based Liberty Tech Power House
2	500 kV Jamshoro	2x450 MVA T/Fs	Addition of 1x450 MVA Transformer	Commissioned in January 2020	-
		2x160 MVA T/Fs	i. addition of 160 MVA T/F ii. 220 kV Mirpur Khas G/S	i. December 2022 ii. FY 2022-23	-
3	500 kV Yousafwala	2x600 MVA T/Fs	Addition of 1x600 MVA Transformer	Commissioned in July 2020	-
		4x160 MVA T/Fs	220 kV Arifwala G/S	Expected in FY 2023-24	-
4	500 kV Rewat	3x250 MVA T/Fs	i. addition of 1x160 MVA T/F ii. completion of 500 kV Chakwal G/S iii. completion of 500 kV Islamabad West	i. 2020 ii. December 2022 iii. FY 2023-24	Commitment of RFO based Attock Gen Limited Power Plant
5	500 kV Nokhar	2x600 MVA T/Fs	i. addition of 1x600 MVA T/F ii. completion of 500 kV Lahore north	i. expected in December 2021 ii. expected in FY 2022-23	Commitment of RFO based Hubco Narowal Power Plant
		1x160 MVA T/Fs	augmentation of 3x160 MVA to 3x250 MVA T/Fs	Expected in March 2022	
6	500 kV Multan	2x450 MVA T/Fs	i. commissioning of Trimmu Power House ii. addition of 1x450 T/F at Multan	i. expected in 2021 ii. expected in June 2022	Commitment of RFO based Fauji Kabirwala, KAPCO Block-II, Lalpir and Pak-gen Power Plants
		3x160 MVA T/Fs	Augmentation of 3x160 MVA T/Fs with 3x250 MVA T/Fs	Expected in June 2022	Load Management

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2) 220 kV Grid Station Constraints

Sr.	Name of Grid Station	Equipment under constraint	Constraint Removal Plan	Expected / Actual Date of Completion	Adverse Impact of constraint
1	220 kV Sangjani	4x160 MVA T/Fs	i. Addition of 250 MVA T/F at ISB university G/S ii. Completion of 500 kV Islamabad West G/S iii. Completion of 220 kV Zero Point G/S	i. Expected in June 2022 ii. Expected in FY 2023-24 iii. Expected in FY 2023-24	-
2	220 kV Islamabad University	2x250 MVA T/Fs			
3	220 kV Ghakkar	4x160 MVA T/Fs	i. Re-conductoring 132 kV Kala Shah Kaku – Kamoki T/Line ii. Re-conductoring of 132 kV Ghakkar-GujratT/Line iii. 220 kV Gujranwala II G/S	i. Expected in 2021 ii. Expected in 2021 iii. Expected in FY 2023-24	Commitment of RFO based Hubco Narowal Power Plant
4	220 kV Sialkot	3x160 MVA T/Fs			
5	220 kV Sarfaraznagar	4x160 MVA T/FS	i. 220 kV Sundar G/S ii. 220 kV Kasur G/S	i. Expected in FY 2023-24 ii. Expected in FY 2024-25	Commitment of RFO based Nishat Chnyan, Nishat Power and Kohinoor Energy Limited
Sr.	Name of Grid Station	Equipment under constraint	Constraint Removal Plan	Expected / Actual Date of Completion	Adverse Impact of constraint
6	220 kV New Kot Lakhpat	3x250 MVA T/Fs	i. Addition of 1x250 MVA T/F at New Kot Lakhpat ii. 220 kV Punjab University G/S	i. December 2021 ii. FY 2023-24	-
7	220 kV WAPDA Town	3x160 MVA T/Fs	Augmentation of 3x160 MVA T/Fs with 3x250 MVA T/Fs	June 2022	-
8	220 kV Ravi	3x250 MVA T/Fs	Addition of 250 MVA T/F	Under study and expected in FY 2022-23	-
9	220 kV Daudkhel	2x160 MVA T/Fs	Addition of 160 MVA T/F	June 2022	Load Management
10	220 kV Ludewala	2x250 MVA T/Fs	i. Augmentation of 1x160 MVA with 1x250 MVA T/F ii. Completion of 220 kV Lalian new G/S	i. Expected in June 2022 ii. Expected in FY 2021	Load Management
11	220 kV Kassowal	2x160 MVA T/Fs	Completion of 220 kV Arifwala	Expected in FY 2023-24	-

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12	220 kV NGPS Multan	2x160 MVA T/Fs	Augmentation of 2x160 MVA with 2x250 MVA T/F	Under study and expected in FY2023-24	Commitment of RFO based Fauji Kabirwala power plant
13	220 kV Chishtian	3x160 MVA T/Fs	Augmentation of 3x160 MVA with 3x250 MVA T/F	June 2022	Load Management
14	220 kV Muzaffargarh	2x160 MVA T/Fs	Addition of 160 MVA T/F	2021	Load Management
15	220 kV Bahawalpur	2x250 MVA T/Fs	Augmentation of 1x160 MVA with 1x250 MVA T/F	December 2022	-
16	220 kV Vehari	2x160 MVA T/Fs	i. Augmentation of 2x160 MVA with 2x250 MVA ii. Completion of 220 kV Arifwala G/S	i. December 2021 ii. Expected in FY 2023-24	-
17	220 kV T.M Khan	2x160 MVA T/Fs	i. Augmentation of 2x160 MVA with 2x250 MVA ii. Completion of 220 kV MirpurKhas G/S	i. December 2021 ii. Expected in FY 2022-23	-
18	220 kV Khuzdar	2x160 MVA T/Fs	i. addition of 160 MVA T/F ii. Completion of 220 kV Mastung G/S	i. December 2022 ii. Expected in FY 2022-23	-
19	220 kV Quetta Ind	2x160 MVA T/Fs	i. Augmentation of 2x160 MVA with 2x250 MVA T/Fs ii. Completion of 220 kV Mastung G/S	i. December 2022 ii. Expected in FY 2022-23	-

3) Transmission Line Constraints

Sr.	Name of Circuit	Constraint Removal Plan	Expected / Actual Date of Completion	Adverse Impact of constraint
1	500 kV Bhikki – Lahore	In – Out of 220 kV New Kot Lakhpat – Sarfaraznagar circuit at 220 kV Ghazi Rd G/S	Line energized on 25-2-2020	Commitment of RFO based Atlas power plant
2	220 kV Ravi – Lahore & 220 kV Ravi – Shalamar			
3	220 kV Multan – T.T Singh circuit I&II	i. Commissioning of Trimmu Power House ii. Completion of 500 kV Faisalabad West G/S	i. expected in 2021 ii. expected in October 2021	-
4	220 kV New Ghakkar – Ghakkar	220 kV Gujrat New G/S	Expected in December 2021	Commitment of RFO based Hubco Narowal power plant
5	220 kV Gatti – Bandala circuit I&II	Reconductoring of lines	Expected in December 2021	-
6	220 kV Multan – T.T Singh I&II	i. Commissioning of Trimmu Power House	i. 2021 ii. FY 2021-22 iii. 2021	Load Shedding
7	220 kV Summandari Rd – T.T SinghI&II			

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		ii. addition of 220 kV D/C T/Line from T.T Singh to Jaranwala Rd via Summandri Rd iii. completion of 500 kV Faisalabad West G/S		
8	220 kV Uch-II – Shikarpur & Uch – Shikarpur	Construction of 220 kV Gudd-Shikarpur-Uch-Sibi T/Line	Expected in December 2021	Curtailment of Uch-I and Uch-II power plants
9	220 kV Jamshoro – Hala Rd circuits	2nd source from T.M Khan	Expected in FY 2022-23	Load shedding

59. List of grid stations that are observed frequently during the FCA analysis are as follows:

Grid/ Transmission Line	Constraint Since	Way Forward	Expected Constraint Removal Date	Expensive Plants Operated
Sarfaraznagar (4x160 MVA) 220/132 kV	June 2018	Construction of 220/132 kV Sundar G/S and Kasur G/S	2024-25	Nishat Power, Nishat Chunia, KEL
Lahore (Sheikhupura) (4x160 MVA) 500/220/132 kV	August 2019	Augmentation of Trafos. from 4 x 160 MVA to 4 x 250 MVA	Dec 2022	Atlas Power, Halmore, Saphire, Saba,
Gatti (4x450 MVA) 500/220 kV	June 2017	Completion of 500/220/132 kV Faisalabad West Commissioning of Trimmu Power Plants	Mar 2022	Liberty Tech.
Multan (2x450 MVA) 500/220 kV	June 2018	Addition of 1x 450 MVA T/F	Dec 2022	KAPCO Block II-III, Muzaffargarh, Lalpir, Pakgen
Grid/ Transmission Line	Constraint Since	Way Forward	Expected Constraint Removal Date	Expensive Plants Operated
Kassowal (2x160 MVA) 220/132 kV	June 2017	Completion of 220/132 kV Arifwala G/S	2023-2024	Fauji Kabirwala
Multan Piranghaib (2x160 MVA) 220/132 kV	June 2017	Augmentation of 2 x 160 MVA T/Fs with 2 x 250 MVA T/Fs at Piranghaib-2	2022-2023	Fauji Kabirwala

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GHKR (4x160 MVA), Sialkot (3x160 MVA), Nokhar (3x160 MVA) 220 kV/132 kV Grids	June 2019	Augmentation from 3 x 160 MVA to 3 x 250 MVA at Nokhar and Completion of 220/132 kV Gujranwala – II G/s	2023-24	HUBCO (N)
Kassowal (2x160 MVA) 220/132 kV	June 2017	Completion of 220/132 kV Arifwala G/S	2023-2024	Fauji Kabirwala

60. From above it is evident that the constraints of NTDC are causing operation of expensive RFO based power plants as well as load shedding. Though NTDC has been able to remove few constraints but as per submitted information the most of the constraints will be removed by FY 2021-22 and beyond. NTDC need to ensure that all these constraints are addressed in shortest possible time so that the aim of cheaper and reliable electricity is achieved.

Issue#11 NTDC has filed MYT tariff petition of non-coincidental Maximum Demand basis despite Authority's directions in previous tariff determination dated 31-7-2019 to file next tariff petition on the basis of calculation of MDI on coincidental basis.

61. NTDC response and discussion is made in relevant issue.

Issue#12 NTDC has pleaded for 3% T&T Losses inter alia on the ground that power flows from south to north region resulting in longer distances. Whether this ground is justified in view of recently commissioned RLNG based power plants located near to load centers.

62. NTDC stated that it is appraised that although RLNG based Power Plants are located near load centers, but still Power flows from south to north region in both summer and winter seasons due to following reasons:

- Coal Power Plants (3095MW) situated in southern region get maximum dispatch as these plants are relatively cheaper than RLNG based Power Plants w.r.t. Economic Merit Order
- Wind Power Plants (1085MW) are also situated in southern region.
- The flow of Power from Southern region to mid-country region is further magnified in summer season due to high load demand in mid-country region and maximum generation from Wind Power Plants owing to high wind season.
- Similarly in winter season, hydel generation is at minimum level due to low hydel indents and canal closure. Resultantly Power Flows from Southern region to mid-country and northern region to meet the System Load demand

63. Keeping in view the investment incurred, and allowed for the FY 2020-21 & FY 2021-22, the T&T losses has been revised for NTDC as 2.73%, 2.60% and 2.5% for the FY 2019-20, FY 2020-21 and FY 2021-22 respectively.

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Issue#13 Whether NTDC's statement at page 32 that 'Pakistan faces chronic power shortages across industrial, commercial, and residential sectors which severely hamper the economic growth of the country' is justified as currently Pakistan is operating in Generation Surplus Scenario

64. NTDC submitted that historically, Pakistan has been facing shortage of supply as given below:

Historic Demand vs Capability (MW)				
FY	Month	Demand	Capability	Surplus/ Deficit
2011-12	Aug.	20,058	18,907	-1,151
2012-13	Jun.	19,915	18,204	-1,711
2013-14	Jun.	21,730	19,431	-2,299
2014-15	Jun.	22,160	20,070	-2,090
2015-16	Jun.	23,334	19,939	-3,395
2016-17	Jun.	25,717	22,455	-3,262
2017-18	Jun.	26,741	23,766	-2,975
2018-19	Aug.	25,627	24,565	-1,062
2019-20	Sep	26,252	24,942	-1,310

65. However, with the addition of generation power plants the shortage of supply has been removed and in future, surplus capacity will be available to meet the growing load demand as per current planning figures, which are presented below:

Future Demand vs Capability (MW)				
FY	Month	Demand	Capability	Surplus/ Deficit
2020-21	Jun.	29,325	30,582	1,257
2021-22	Jun.	30,921	32,989	2,068
2022-23	Jun.	31,953	35,896	3,943
2023-24	Jun.	33,696	37,918	4,222
2024-25	Jun.	35,422	39,157	3,735

66. The Authority observed that NTDC has clarified that historically Pakistan faced generation shortages however at present with the addition of power plants the shortage of supply has been removed.

Issue#14 What steps have been taken by NTDC to ensure implementation of reliability indices such as voltage variations (Normal +-5% and N-1 +-10%), frequency variations (1%), loss of supply incidents and system collapses?

67. NTDC, in the planning stage, conduct / review the system studies for all ongoing and future projects by making sure that the reliability criteria/indices, mentioned in the grid code are implemented. However, in some in-process (ongoing) projects which involve unavoidable delay in plant projects, these indices are

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compromised during interim period only until the completion of originally proposed scope of work. It is further added that DISCOs have also been advised for the conduction of "Reactive compensation Study" in order to ensure the power factor of 0.95 at the interconnection points. For reliability voltage indices, variation in secondary transmission system voltages is mainly the responsibility of the DISCOs by controlling the reactive power in secondary system.

68. NEPRA noticed that NTDC stated that in the planning stage, NTDC conduct /review the system studies for all ongoing and future projects by making sure that the reliability criteria/indices, mentioned in the grid code are implemented. However, in some ongoing projects which involve unavoidable delay in interconnection of power plants these indices are compromised during interim operation period until completion of original scope of the work. NTDC must ensure timely completion of complete interconnection works for upcoming power plants prior to their CODs so that reliability indices are maintained as per provisions of Grid Code

Issue#15 What measures have been taken by NTDC to reduce the number of unplanned/forced outage events at grid stations and transmission lines?

69. NTDC informed that:

- Implementation of Cross trip schemes
- Implementation of Auto Recloser and Tele-protection scheme on 220 kV Lines
- Augmentation of Transformers
- Enhanced preventive maintenance at Grid Stations and Transmission Lines as per SoP to avoid trippings/unscheduled maintenance activities
- Increased frequency of washing/cleaning of Lines and Grid Station equipment
- Regular Thermovision surveys to identify potential Hot spots and attending the same to avoid breakdowns.
- Replacement of old equipment
- Rehabilitation of transmission lines/Grid Station Equipment
- Close coordination with all stakeholders. WAPDA/GENCOs/IPPs/ DISCOs to improve System Stability and Reliability.

70. NEPRA analyzed that Petitioner listed that following measures have been taken to improve continuity of supply:

i. Implementation of Cross Trip Schemes
ii. Implementation of Auto Re-closer and tele-protection scheme on 220 kV Line
iii. Augmentation of Transformers
iv. Enhanced preventive maintenance at grid stations and transmission lines as per SoP to avoid trippings/unscheduled maintenance activities
v. Increased frequency of washing/cleaning of Lines and Grid Station equipment
vi. Regular Thermovision surveys to identify potential Hot spots and attending the same to avoid breakdowns
vii. Replacement of old equipment
viii. Rehabilitation of transmission line/grid station equipment

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ix. Close co-ordination with all stakeholder. WAPDA/GENCOs/IPPs/DISCOs to improve system stability and reliability.

GENERAL ESTABLISHMENT AND ADMINISTRATION COST

Issue#16 Whether the Petitioner's requested General Establishment & Administration (GE&A) cost Rs. 11,149 million, Rs. 14,031 million & Rs. 15,599 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

71. NTDC in its petition requested Rs. 70,858 million, Rs. 64,948 million and Rs. 72,432 million or Rs. 249.72/kW/month, Rs. 222.43/kW/month and Rs. 236.24/kW/month as Use of System Charge (UOSC) for the FY 2019-20, FY 2020-21 and FY 2021-22 respectively. The details are as under:

Rs in Million

Revenue Requirement	2019-20	2020-21	2021-22
Gen. Establishment and Admin	11,149	14,031	15,599
Repair & Maintenance	716	875	1,064
Insurance	284	265	286
Depreciation	12,007	13,468	9,893
Financial Charges	9,135	9,443	9,893
Prior Year Adjustment	13,941	-	-
ROE	24,134	28,209	32,395
Total	**72,366**	**66,291**	**72,432**
Less: Other Income	1,507	1,343	1,421
Total Revenue Requirement	**70,858**	**64,948**	**72,432**
MDI	23,645.69	24,333.19	25,549.85
Rs./kW/month	**249.72**	**222.43**	**236.24**

72. NTDC requested the Authority to allow Rs. 11,149 million, Rs. 14,031 million and Rs. 15,599 million for the FY 2019-20, FY 2020-21 and FY 2021-22 on account of salaries and wages.

Salaries & Wages

73. NTDC provided the following justification for increase salaries & wages:

FY 2019-20:

- Adhoc relief allowance @ 10% to BPS 1-16 and 5% to BPS 17-20
- Impact of annual increment became due in December 2019
- 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 %.
- Ex-gratia to employees

FY 2020-21 & FY 2021-2022:

- Impact of annual increment will be due from December 2020 & December 2021 respectively.
- Expected provision of Adhoc relief allowance @ 10%.

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- Increase in employee benefits and other components of employee's salaries as a result of transfer/ promotions.
- Expected provision for increase in Pension benefits by GoP 10 %.
- Ex-gratia to employees.
-

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Basic Pay	2,865	3,259	3,454	3,661
Other Allowances	1,811	2,096	2,522	2,658
Contractual & Daily Wage	49	61	67	74
Employee Benefits	2,019	1,639	2,284	2,366
Total	6,744	7,054	8,328	8,760

74. NTDC submitted that the GoP has announced the Prime Minister's Assistance Package for employees who died during service (both natural death and fatal accidents), which has been adopted by NTDC being the public sector company. According to NTDC, its transformation capability has been enhanced through energizing new grid stations and transmission lines in the last couple of years to ensure reliable voltage profile and to overcome forced load shedding. This network expansion needs competent and skilled professionals in the technical, finance and administration fields. Further, the work force is retiring each year and therefore it is necessary for the company to hire their replacement in order to handle the growing work load and for efficient and effective operations of the business.

75. The below exhibited table shows the current sanctioned strength as well as the present working strength and clearly describes the shortage of staff in the Company. In order to meet with the technical and operational targets, the management intends to recruit personnel in different cadres from BPS-1 to BPS 20 during FY 2019-20, 2020-21 and FY 2021-22 for which recruitment process will be started with the approval of the Board of Directors:

Description	Saction Strength	Working Strength					Deficiency	%age
		Regular	Contract	Package	Daily Wages	Total		
BPS 1-16	12,105	6,797	1,448	-	6	8,251	3,854	46.7%
BPS 17-20	1,541	1,167	185	-	-	1,352	189	14.0%
PPS 17-20	19	2	3	10	-	15	4	26.7%
Total	13,665	7,966	1,636	10	6	9,618	4,047	42.1%

76. The annual financial impact of positions to be filled is tabulated below:

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S.No.	BPS	2019-20 No. of Employees	2019-20 Annualized Impact	2020-21 No. of Employees	2020-21 Annualized Impact	2021-22 No. of Employees	2021-22 Annualized Impact
1	20	2	8,945,400	2	4,145,400	1	2,238,516
1	19	-	-	5	8,881,500	4	7,673,616
2	18	2	2,301,000	17	19,558,500	17	21,123,180
3	17	1	911,100	105	95,665,500	107	105,286,716
4	16	8	4,538,400	33	18,720,900	33	20,218,572
5	15	13	6,286,800	108	52,228,800	108	56,407,104
6	14	-	-	248	112,939,200	243	119,515,176
7	13	-	-	4	1,711,200	4	1,848,096
8	12	-	-	7	2,797,200	7	3,020,976
9	11	1	377,100	98	36,955,800	98	39,912,264
10	10	-	-	-	-	-	-
11	9	10	3,531,000	310	109,461,000	280	106,777,440
12	8	36	12,290,400	116	39,602,400	125	46,089,000
13	7	1	329,700	283	93,305,100	350	124,626,600
14	6	47	14,974,200	179	57,029,400	176	60,559,488
15	5	8	2,462,400	17	5,232,600	17	5,651,208
16	4	-	-	2	594,000	2	641,520
17	3	-	-	25	7,207,500	25	7,784,100
18	2	18	5,027,400	2	558,600	2	603,288
19	1	9	2,465,100	270	73,953,000	269	79,573,428
Total		156	64,440,000	1831	740,547,600	1868	809,550,288

77. The financial impact for recruitment has been taken for eight months after taking into account the due time required for completion of recruitment process.

Analysis & Decision

78. In support of its claim, NTDC was directed to provide the financial audited accounts for the FY 2019-20 and FY 2020-21. However, NTDC has provided initialed accounts for the FY 2019-20 on February 18, 2021. Based on the actual amount as per financial statements, the salaries, wages and other benefits have been calculated. It has been observed that the GOP did not grant adhoc allowance during the FY 2019-20 therefore no amount on this account has been incorporated while assessing the salaries and wages. Based on the submission of NTDC and audited accounts for the FY 2019-20, the salaries & wages and other benefits have been assessed as per following:

Rs. In Million

Description	Requested			Allowed		
	FY 2019-20	FY 2020-21	FY 2021-22	FY 2019-20	FY 2020-21	FY 2021-22
General Establishment Costs	10,433	12,402	15,599	10,431	11,135	12,199
Pay & Allow. & Other Benefits	7,274	8,327	8,759	6,855	7,201	7,872
Employees Benefits	3,159	4,075	5,083	3,576	3,933	4,327

79. Accordingly based on the above, the amount of Rs. 10,431 million, Rs. 11,135 million and Rs. 12,199 million for the FY 2019-20, FY 2020-21 and FY 2021-22 (including disparity allowance, benefits paid on account of pension, free electricity, medical etc) have been allowed.

Issue#17 Whether the Petitioner has maintained a separate post-retirement benefit fund?

80. NTDC submitted that the post-retirement benefits includes 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.

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- Post Retirement Fund

81. NTDC submitted that NEPRA vide decision date October 20, 2015 allowed post-retirement benefits to the extent of cash payment until the Company establishes and maintains its own post retirement fund, the same has also been emphasized in the subsequent Tariff Determinations. Therefore, in compliance with the Authority's direction NTDC has established Pension fund and made a financial proposal to fund this account and included the same in its Revenue Requirements. NTDC also made analysis / working for both allowed and dis-allowed cost as per actuarial valuation in the tariff till 2014 and the same is being shared with NEPRA for its consideration. The analysis is as under:

Year	GE&A NTDC (Inc. DL Expenses) (A)	GE&A - NEPRA (B)	DL Expenses (NTDC) (C)	Pension Paid (D)	DL Exp (Excl. Of Pension paid) (E)	NTDC GE&A (Excl. Of future DL Exp) Pension paid A - E = F	Difference	
							Pension not allowed F - B (G)	Pension allowed D - G (H)
2005	1,394	1,248	538	217	321	1,072	(176)	392
2006	1,632	1,621	803	184	619	1,013	(608)	792
2007	1,727	1,621	594	217	377	1,350	(271)	488
2008	1,728	1,621	489	279	210	1,517	(104)	382
2009	2,494	1,621	829	301	528	1,966	345	(44)
2010	3,184	1,621	971	352	620	2,564	943	(591)
2011	4,099	3,419	1,006	407	599	3,500	81	326
2012	4,393	3,419	1,185	445	740	3,653	234	211
2013	5,887	4,825	2,213	441	1,772	4,116	(709)	1,150
2014	7,743	4,825	1,811	863	948	6,795	1,970	(1,107)
Total	34,280	25,841	10,440	3,705	6,735	27,546	1,705	2,001

82. It is worth mentioning here that NTDC has initiated the process of establishing its own Post-Retirement fund duly approved from FBR the same has also been emphasized by the Authority in the determination dated May 4th, 2018. Regular investment in the fund will be undertaken on monthly/ annual basis subject to availability of required cash as received from CPPA (G). NTDC with respect to the separate post-retirement benefit submitted that the trust deed has since been signed by all the "Trustees". NTN/STRN has been obtained from FBR to obtain Tax Exemption from FBR on Employees' Pension Fund Account. Bank Account titled "NTDC Employees Pension Fund" has been opened. Tax exemption notification on Pension Fund Account has been issued by FBR. The amount of Rs. 10 million has initially been deposited in the account of NTDC Employees Pension Fund.

83. In this Petition NTDC has claimed a minimum amount of Rs. 200 million, Rs. 600 million and Rs. 600 million in FY 2019-20, FY 2020-21 and FY 2021-22 respectively, the same will be actualized later on based on actual results.

84. The year wise post-retirement benefits projection is as under: -

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Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Pension & Post Retirement Fund	2,694.0	3,159.2	4,075.1	5,082.6

- <u>Pension</u>

85. According to NTDC, 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.

86. 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

87. The GoP has granted increase to all pensioners @ 10% in FY 2019-20 and the same has been taken for FY 2020-21 and FY 2021-22.

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

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

- <u>Leave Encashment</u>

89. NTDC submitted that 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. An increase of 10% in this head has been estimated in line with salaries in the petition for the year 2018-19.

- <u>Post Retirement Free electricity</u>

90. NTDC submitted that electricity is payable under the scheme to all eligible employees of the company. The benefit is payable at the rates based on units consumed against entitled units according to Grades. 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

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- Death in service
- Disability
- Compulsory Retirement

Analysis & Decision:

91. NTDC was allowed provision for post-retirement benefits as a part of general establishment cost 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 fulfills 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 to date and it has not able to deposit the required amount.

92. Based on the audited accounts for the FY 2019-20, the amount on account of post-retirement benefits including pension, leave encashment, free electricity and medical facility has been indicated as Rs. 3,576 million and the same is allowed to NTDC. Accordingly based on the actual audited accounts for the FY 2019-20, the amount of Rs. 3,933 million and Rs. 4,327 million for the FY 2020-21 and FY 2021-22 has been assessed and allowed to NTDC.

Issue#18 Whether the proposed Repair & Maintenance expenditures (including for Rs. 716 million, Rs. 875 million and Rs. 1,064 for the FY 2019-20 and FY 2020-21 and FY 2021-22 is justified?

93. NTDC stated that its infrastructure comprises a mix of old and new grid stations & transmission equipment.
    - Optimal level of Transmission network reliability and sustainability can only be achieved through regular repairs and maintenance.
    - The increase in Repair & Maintenance is due to addition in Fixed Assets
    - A realistic maintenance plan has been annexed with the petition, the below table depicts the estimated R&M plan

94. 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.

Analysis & Decision

95. NTDC submitted the audited accounts for the FY 2019-20. It has been observed that NTDC requested Rs. 1,010 million as against the actual cost of Rs. 755 million. According to the breakup provided by NTDC, the cost incurred on account of vehicle expense repair, vehicle maintenance and running expenses and vehicle expense license are higher as compared to the requested amount in the petition. NTDC did not provide any justification regarding cost overruns on account of repair and maintenance. Accordingly the Authority has decided to allow Rs. 655 million as compared to requested cost of Rs. 1,010 million on account of repair and

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maintenance. Based on the CPI indexation, current fuel prices, the Authority has assessed Rs. 719 and Rs. 790 million for the FY 2020-21 and FY 2021-22. The breakup of cost is as under:

Rs. In Million

Description	2019-20	2020-21	2021-22		2019-20	2020-21	2021-22
	Actual	Requested in Petition			Allowed		
R&M Fixed Assets	361	716	875	1,064	361	397	436
Vehicle Expense Repair	111	77	94	114	77	84	93
Vehicle Maintenance & Running Expenses	271	208	229	252	208	229	252
Vehicle Expense License	12	9	9	9	9	9	9
Total	**755**	**1,010**	**1,207**	**1,439**	**655**	**719**	**790**

<u>Administrative Cost</u>

96. NTDC requested the Authority to allow following administrative cost:

Description	Requested FY 2019-20	Requested FY 2020-21	Requested FY 2021-22
Administrative Costs	763	806	853
Rent Rate & Taxes	139	146	154
Power Light etc.	98	110	123
Communication	48	52	56
Office Supplies & Other Expenses	24	27	29
Travelling Expenses	304	326	348
Professional Fee	35	60	49
Management Fees	35		
General Misc. Expenses	80	87	95

97. NTDC request and assessment on the basis of available information has been discussed in following issues.

Issue#19 Whether the proposed travelling expense expenditures for Rs. 304.5 million, Rs. 326 million and Rs. 348 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

98. NTDC submitted that 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 TA/D.A as per policy. Hence, keeping in view above travelling expenses have been projected as under:

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Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Travelling Expenses	267.9	304.5	326	348

99. NTDC submitted that Increase in proposed travelling expense is due to following reasons:
- System expansion
- Increase in Security Patrolling
- T/A & D/A of Security and Other Staff
- Impact of New Inductions

Analysis & Decision

100. NTDC provided the audited accounts wherein the actual amount for the FY 2019-20 on account of travelling expenses is indicated as Rs. 375 million as compared to the requested amount of Rs. 304 million. NTDC did not explain the reasons for cost overrun with respect to the requested amount in the petition. Accordingly the requested amount has been allowed to NTDC. Based on the travelling cost of FY 2019-20, amount of Rs. 326 million and Rs. 348 million has been allowed to NTDC for the FY 2020-21 and FY 2021-22 respectively. The comparison of requested and allowed cost is as under:

Description	Requested - Rs. in Million				Rs. in Million		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual	Allowed		
Travelling Expenses	304.2	326	348	375	304	326	348

Power Light, Gas and Water Charges

101. According to NTDC, the utilities prices have been increased as per the historical trend as well as hike in the prices of Furnace Oil and Gas ultimately increasing the Electricity Prices.

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Power, Light, Gas & Water	89.3	98.0	110	123

Analysis & Decision

102. NTDC provided the audited accounts wherein the actual amount for the FY 2019-20 on account of Rent, Rate and taxes of Rs. 96 million as against the requested amount of Rs. 98 million. Accordingly the actual amount for the FY 2019-20 of Rs. 96 million is allowed to NTDC. Based on the actual amount for the FY 2019-20, the cost on account of power, light, gas and water charges has been assessed as Rs. 106 million and Rs. 116 million for the FY 2020-21 and Rs. 2021-22 respectively. The comparison of requested and allowed cost is as under:

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Rs. In Million

Description	Requested				Allowed		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual			
Power, Light, Gas & Water	98.0	119	123	96	96	106	116

Rent, Rates and Taxes

103. NTDC requested the Authority to allow Rs. 139.4 million, Rs. 146.4 million and Rs. 153.7 million on account of rent, rates and taxes for the FY 2019-20, FY 2020-21 and FY 2021-22.

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Rent Rate & Taxes	108.2	139.4	146.4	153.7

Analysis & Decision

104. NTDC provided the audited accounts wherein the actual amount for the FY 2019-20 on account of Rent, Rate and taxes is indicated as Rs. 112 million. Accordingly the same is allowed to NTDC for the FY 2019-20. Based on the audited amount for the FY 2019-20 and after taking into account the 5% annual rent as communicated by NTDC, the amount on account of rent, rate and taxes has been assessed as Rs. 117 million and Rs. 123 million for the FY 2020-21, and FY 2021-22. The comparison is as under:

Rs. In Million

Description	Requested				Allowed		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual			
Rent Rate & Taxes	139.4	146.4	153.7	112	112	117	123

Communication

105. NTDC submitted that communication charges include telephone, postage and telegram & cell phone charges, fax and internet. 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	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Communication	28.3	48	52	56

Analysis & Decision

106. As per audited accounts provided by the Petitioner, the communication charges are Rs. 30 million as against the requested amount of Rs. 48 million. Accordingly the actual amount has been taken while calculating the revenue requirement of the NTDC. For FY 2020-21 and FY 2021-22 after taking into account the CPI

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inflation of 10%, the amount of Rs. 33 and Rs. 36 million has been assessed as communication charges. The breakup is as under:

Rs. In Million

Description	Requested						
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual	Allowed		
Communication	48	52	56	30	30	33	36

Office Supplies and Other Expenses

107. NTDC submitted that office supplies & other expenses are market based costs, hence they have been increased in line with CPI. It is apprised that these expenses do not include communication expenses and hence the same have been claimed above in a separate head as per NTDC accounts.

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Prov.	Projected	
Office Supplies & Other Expenses	15.1	24.3	26.5	28.9

Analysis & Decision

108. As per NTDC audited accounts the actual cost for the FY 2019-20 is Rs. 23 million and the same is allowed. For the FY 2020-21 and FY 2021-22 keeping in view the CPI inflation, amount of Rs. 27 million and Rs. 29 million has been assessed and allowed to NTDC. The comparison is as under

Rs. In Million

Description	Requested				Allowed		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual			
Office Supplies & Other Expenses	24.3	26.5	28.9	23	23	27	29

Management Fees

109. NTDC requested the Authority to allow Rs. 34 million on account of management fees for the FY 2019-20.

Analysis & Decision

110. NTDC was directed to provide the justification and breakup in this regard. However, NTDC did not provide any details pertaining to this cost. Accordingly the Authority has decided to disallow this cost owing to non-provision of required information.

General Miscellaneous Expenses

111. NTDC requested the Authority to allow Rs. 80 million, Rs. 88 million and Rs. 95 million on account of general miscellaneous expense. As per audited accounts of the NTDC for the FY 2019-20, the actual amount on account of general miscellaneous expenses are Rs. 157 million.

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Analysis & Decision

112. NTDC was directed to provide the justification for cost overrun in this regard however no explanation was given. Accordingly the Authority has decided to allow general miscellaneous expense of Rs. 80 million, Rs. 87 million and Rs. 95 million on this account.

Issue#20 Whether the proposed professional fee expenditures for Rs. 34.5 million, Rs. 59.6 million and Rs. 48.6 for the FY 2019-20, FY 2020-21 and FY 2021-22 are justified?

113. NTDC requested to allow Rs. 34.5 million, Rs. 59.6 million and Rs. 48.6 million for the FY 2019-20, FY 2020-21 and FY 2021-22. While justifying the requested amount, NTDC submitted that HR/ Organizational Development (OD) Consultancy firm was hired to restructure NTDC processes and prepare/ update policies & regulations for catering needs of expanding system due to higher number of cases being filed against NTDC:

- Increase in the no. of projects executed by NTDC
- Raised awareness amongst people w.r.t. their rights

114. NTDC submitted that taxation issues arising due to enforcement of new legislation & compliance thereon:

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Professional Fee	36.1	34.5	59.6	48.6

115. According to NTDC the fees claimed pertain to operations only.

Analysis & Decision

116. NTDC provided the audited accounts for the FY 2019-20, according to which actual amount is Rs. 21 million for the FY 2019-20. However after excluding the amount of work in progress on account of professional fee, the net amount on this account is Rs. 19 million which is allowed to NTDC. For FY 2020-21 & FY 2021-22 the amount of Rs. 21 million and Rs. 23 million on the basis of CPI inflation of 10% has been assessed on account of professional fee. The comparison is as under:

Rs. In Million

Description	Requested				Allowed		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual			
Professional Fee	34.5	59.6	48.6	19	19	21	23

Issue#21 Whether the petitioner's projected insurance of Rs. 304.2 million, Rs. 325.5 million and Rs. 348.2 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

117. NTDC requested the Authority to allow Rs. 304.2 million, Rs. 325.5 million and Rs. 348.2 million on account of insurance. NTDC informed that 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

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118. The assets of the company are protected /covered under WAPDA Equipment Protection Scheme (WEPS) vide which insurance cost is calculated @ 0.30% of book value of Grid Stations and insurance cost has been established on the same formula. This is usually paid at the book value and subject to change every year as a result of increase in assets.

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Prov.	Projected	
Book Value of Grid Stations	88,192.6	89,300.6	88,340.9	95,268.4
Insurance	265.0	284.0	278.3	319.9

119. The increase in insurance cost estimate is due to addition in fixed Assets:

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Prov.	Projected	
Book Value of Grid Stations	88,192.6	89,300.6	88,340.9	95,268.4
Insurance	265.0	284.0	278.3	319.9

<u>Analysis & Decision</u>

120. NEPRA allow insurance cost of 0.3% of the book value of grid stations. The actual audited figures for the FY 2019-20 provided by the NTDC reveals that the insurance cost of the Company is Rs. 236 million. Accordingly the same is allowed. Based on the audited amount, for the FY 2020-21 and FY 2021-22 the amount on account of insurance has been assessed as Rs. 278 and Rs. 320 million. The comparison is as under:

Rs. In Million

Description	Requested				Allowed		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual			
Insurance	284.0	278.3	319.9	236	236	278	320

Issue#22 Whether the petitioner's projected depreciation Rs. 12,007 million, Rs. 13,468 million and Rs.14,615 million for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

121. NTDC requested the Authority to allow Rs. 12,007 million, Rs. 13,468 million and Rs. 14,615 million for the FY 2019-20, FY 2020-21 and FY 2021-22. NTDC submitted that depreciation is calculated on straight-line method as per following rates:

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

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122. According to NTDC 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 2019-20, 2020-21 & 2021-22 has been calculated on established basis of:

(i) Value of existing assets,
(ii) The anticipated additions in existing assets during the FY 2019-20, 2020-21 & 2021-22

123. According to NTDC an extraordinary capitalization of over Rs. 116 billion will be made in the FY 2019-20, FY 2020-21 and FY 2021-22 substantially enhancing the quantum of depreciation, this will also address the issue raised by the Authority of having a sizeable amount parked in the Capital Work-in-Progress. Based upon these assumptions the depreciation has been worked out as under:

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Value of Assets	304,913	350,457	384,451	421,765
Depreciation	9,278	12,007	13,468	14,615

Analysis & Decision

124. NTDC in support of its claim submitted the audited accounts for the FY 2019-20 according to which the depreciation amount is Rs. 11,937 million and the same is allowed to Company. For the FY 2020-21 and FY 2021-22, the amount of Rs. 13,394 million and Rs. 14,666 million has been assessed on account of depreciation. The comparison is as under:

Rs. In Million

Description	Requested						
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Provisional	Projected		Actual	Allowed		
Depreciation	12,007	13,468	14,615	11,937	11,937	13,394	14,666

Issue#23 What are the reasons for substantial increase in financial charges of Rs. 9,135 million, Rs. 9,443 million and Rs. 9,893 for the FY 2019-20, FY 2020-21 and FY 2021-22 is justified?

125. NTDC requested the Authority to allow Rs. 9,135 million, Rs. 9,443 million and Rs. 9,893 million for the FY 2019-20, FY 2020-21 and FY 2021-22 respectively. NTDC submitted that borrowing costs that are directly attributable to acquisition, construction, or production of assets form part of the cost of assets and therefore should be capitalized. Other borrowing costs are recognized as expense. NTDC is an infrastructure based company and asset capitalization is a regular feature. Corresponding markup on these projects is chargeable to operations:

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Total Financial Charges	12,101	15,225	14,755	14,766
Charge to CWIP	3,982	6,090	5,312	4,873
Charge to Operation	8,119	9,135	9,443	9,893

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126. 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 (WB)
- KFW (Frankfurt Germany)

127. NTDC submitted that the projected Capital Investment program for FY 2019-20 is Rs.39,062 million, FY 2020-21 is Rs.56,443 million and FY 2020-21 is Rs.69,046 million which has been planned through a combination of own sources (by ploughing back profit), local loans and foreign relent loans.

128. According to NTDC, 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.

129. NTDC submitted that financial charges have been worked out taking into account completion of assets during FY 2019-20, 2020-21 and 2021-22. During FY 2019-20 Assets amounting Rs. 45,544 million, FY 2020-21 Rs. 33,994 million and during FY 2020-21 Rs. 37,314 million will be completed and transferred to operations.

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Prov.	Projected	
Total Financial Charges	12,101	15,225	14,755	14,766
Charge to CWIP	3,982	6,090	5,312	4,873
Charge to Operation	**8,119**	**9,135**	**9,443**	**9,893**

130. According to NTDC, the following is the asset capitalization projection which has been adopted in calculating the assets base:

Rs. In Million

Description	2019-20	2020-21	2021-22
Capitalization	45,544	33,994	37,314

131. NTDC submitted the proposed financing plan which is as under:

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(Rs. In million)

Description	F.Y 2019-20	F.Y 2020-21	F.Y 2021-22
Foreign Relent Loans from GoP:			
Asian Development Bank (ADB)	8,737	13,227	15,910
World bank	2,387	8,605	16,810
Japan International Coopration Agency (JICA)	544	300	500
Frankfurt (KFW)	114	600	610
US-AID	-	-	1,000
Other Donars (to be identified)	-	110	4,240
Sub Total (A)	11,782	22,842	39,070
Direcft Loans from Commercial Bank:			
Neelam Jehlum T/L Project (UBL)	3,771	1,500	500
1320MW PP at BinQasim (HBL)	4,360	2,000	200
K-2/K-3 T/Line (ABL)	2,143	3,046	1,000
HVDC T/line for convertar Station (ABL)	1,834	806	100
SSRL/SECL Power Plant at Thar (New)	35	3,000	4,110
Other Projects (New Loan)	-	-	3,390
Sub-Total (B)	12,143	10,352	9,300
Total loans (A+B)	23,925	33,194	48,370
Funds from own sources	15,138	23,249	20,676
Investment program	39,062	56,443	69,046

Analysis & Decision

132. The Petitioner has provided the audited accounts for the FY 2019-20 according to which the financial charges are Rs. 6,772 million. Keeping in view the capital structure for capital investment of Rs. 40,526 million for the FY 2020-21 ad Rs.50,560 million for the FY 2021-22, the financial charges for the FY 2020-21 and FY 2021-22 has been assessed as Rs. 7,739 million and Rs. 9,177 million and the same are allowed to NTDC. The comparison is as under:

Rs. In Million

Description	Requested				Allowed		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Provisional	Projected		Actual			
Financial Charges	9,135	9,443	9,893	6,772	6,772	7,739	9,177

Issue#24 Whether the Petitioner's projected Return on Equity at 16% Rs. 39,062 million, Rs. 56,443 million and Rs. 69,064 for the FY 2019-20, FY 2020-21 and FY 2021-22 are justified? &
Issue#25 Whether the requested Cost of Debt of 12% is justified?

133. NTDC requested the Authority to allow Rs. 39,062 million, Rs. 56,443 million and Rs. 69,064 million on account of ROE. NTDC submitted that the Authority in its GOP's reconsideration request allowed 16% cost of equity and cost of debt as 12% associating it with prevailing sector specific evacuation risk of transmission sector. Hence, Authority is requested to maintain RoE @ 16%, as per referred decision. NTDC submitted that

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the return will be ploughed back to fund the projected heavy Investment Program of Rs. 39,062 million in FY 2019-20, Rs. 56,443 million in FY 2020-21 and Rs. 69,064 million in FY 2021-22. The return will also fund the expenditure of financial charges arising during the project development & execution phase.

134. NTDC submitted that the Authority while calculating long term loans for the RoRB calculation considers Non-Current Loans as well as Current Portion of Long-term loans. It is pertinent to mention here that, by definition the current portion of long-term loans is the amount that will be due within one year. In this regard it is apprised that due to under-recovery of UoSC from CPPA, NTDC is at times unable to make a repayment of long-term loan when due, hence the current portion of long-term loan also comprises of such pending payments of previous years in addition to the actual current maturity amount due. In the light of the aforementioned discussion, it is submitted that the Authority may consider only current maturity for corresponding year during calculation of Return. Moreover, the same adjustment may also be made in return figure in PYA. According to Section 17(3)(iii) of NEPRA (Tariff Standards and Procedure) Rules-1998, *"Tariff should allow licensees a rate of return which promotes continued reasonable investment in equipment and facilities for improved and efficient service"*. NTDC hereunder maintained the same methodology as decided by NEPRA for the calculation of NTDC's Return. By applying the assessed ROE on the 30% portion of the Return on Asset Base (RAB) and assessed Cost of Debt on the remaining portion of equity (capital base) as 12%, the Cost of Equity (Ke) and Cost of Debt (Kd) have been calculated as follows:

Cost of equity (ke)

135. NTDC submitted that NEPRA in the tariff determination of 2016-17 after the detailed working and deliberation has determined ROE @ 16% which was subsequently reduced to 15% in tariff decision pertaining to FY 2017-18 and FY 2018-19. It is therefore requested that the Authority may maintain the Return on Equity at the same level as allowed in the above mentioned reconsideration request i.e. RoE 16%.

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

Ke = Rf + (Beta x Market Risk Premium)
Ke = 16%
Ke = Rf + (Beta x Market Risk Premium)
Ke = 16%

137. NTDC requested to allow 16% ROE amounting to Rs. 25,134 million, Rs. 28,209 million and Rs. 32,395 million for the FY 2019-20, FY 2020-21 and FY 2021-22 respectively.

Cost of debt (kd)

138. 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) as per the relent policy of GoP along with some local loans. The Cost of Debt in this petition has been maintained at the rate of 12% in line with the prevailing GoP Relent Policy. NTDC submitted that the Authority is requested that

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while determining NTDC's Cost of Debt, the Authority may consider NTDC's loan portfolio and allow a reasonable spread on the KIBOR as per the NEPRA's previous practice in NTDC Tariff Determination for FY 2015-16 & FY 2016-17. NTDC requested the Authority to allow cost of debt @ 12% of Rs. 13,928 million, Rs. 28,234 million and Rs. 36,669 million for the FY 2019-20, FY 2020-21 and FY 2021-22 respectively

Analysis & Decision

139. NTDC has been allowed rate of return by the Authority based on Capital Base 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

140. While examining the information submitted by NTDC it was observed that in capital works in progress Rs. 786 million, Rs. 1,792 million and Rs. 729 million have been claimed on account of Karkey rental power project, cost of land and crops compensation on account of HVDC/PMLTC transmission line respectively. Karkey rental power project cost has not been allowed to the Company being declared as vide ab initio by the Supreme Court of Pakistan in case of rental power projects.

141. As regards the cost of land and crops compensation cost of Rs. 2,521 million (Rs. 1,792 million and Rs. 729 million), the Authority observed that US$ 12 million (Rs. 1,253 million @ 104.4 US$/PKR) has been allowed to PMLTC in decision dated December 04, 2018 for converter station land and ROW issues. Accordingly for these particular costs, NTDC was directed to provide justification / breakup of the same.

142. In response NTDC submitted that the land has been acquired by NTDC from its own sources, thereby becoming a part of NTDC's Fixed Asset. Moreover any compensation received by NTDC in lieu of Land Lease component as stated in the PMLTC determination would have to be recorded as Other Income thereby being deducted from Revenue Requirement, thus not becoming a part of the NTDC Tariff. In view of the above, the point of duplication in return would be invalid as any proceeds received in lieu of land lease in NTDC's own return would net-off from the final revenue requirement, hence depicting an equitable Return on Asset

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Base which deems to be an appropriate treatment of NTDC Return being an opportunity cost for the acquisition of Land. NTDC further informed that only ROW amount has been paid by PMLTC and cost incurred on account of land has been incurred by NTDC.

143. Accordingly based on the NTDC request the cost of land amounting to Rs. 1,792 million has been provisionally included in the work in progress of NTDC subject to verification of the same amount in COD stage tariff of PMLTC. The income on account of land lease shall be subject to adjustment from NTDC revenue requirement. The Authority considers that since ROW amount has been compensated by PMLTC therefore the same should not be allowed to NTDC. Accordingly the crops compensation amounting to Rs. 729 million has been disallowed.

144. The financial statements of NTDCL have been examined and it has been observed that as per the NEPRA mechanism for assessment of capital asset base, the long term loans (non-current + current portion) is deducted in addition to deferred credits (consumer contribution), deferred liabilities current liabilities (2/3rd of current assets). It has been observed that loan note payable to CPPA-G amounting to Rs. 31.786 billion has been reflected in financial audited account of NTDC for the FY 2019-20. NTDC was requested to provide the justification in this regard.

145. In response to NEPRA query, NTDC submitted that Loan Note Payable to CPPA-G under the head merely contains unsettled balances between NTDC, CPPA-G, DISCOs, GENCOs, WAPDA etc as per BTA. It is further stated that no fixed asset is recorded against this liability.

146. It is pertinent to mention here that in order to settle the BTA balances an extension of one year has been granted to the concerned parties, hence the same will hopefully be resolved within FY 2022.

147. It has been observed that this transaction was required to be settled among the CPPA-G, WAPDA, GENCOs and NTDC bilaterally as per Business Transfer Agreement (BTA) dated June 03, 2015 which is still pending and reflected in the audited accounts for the FY 2019-20 of NTDC.

148. As per NEPRA mechanism the loan amount is deducted while calculating capital asset base. Since the amount is still reflected as loan amount in the financial accounts of the NTDC therefore the same has been adjusted as per existing mechanism.

149. Accordingly in line with the mechanism approved for NTDC, the RORB has been calculated which is as under:

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Description		FY 2019-20	FY 2020-21	FY 2021-22
		Rs. In Millions		
Calculation of Capital Base				
Opening fixed assets in operation		304,913	344,341	376,393
Add: Assets Transferred during the year		39,428	32,051	35,960
Closing Fixed Assets in Operation		**344,341**	**376,393**	**412,353**
Less: Accumulated Depreciation		96,975	110,369	125,034
Net Fixed Assets in operation		**247,366**	**266,024**	**287,318**
Add: Capital Work in Progress (Closing)		67,983	76,458	91,058
Fixed Assets Inc. WIP	**A**	**315,350**	**342,482**	**378,376**
Stores & Spares (3% GFA)		10,330	11,292	12,371
Accounts Receivables (30 Days of R.R)		4,197	4,141	3,606
*Cash & Bank Balance (1/6 of operating expenses)		1,958	2,095	2,293
Current Assets	**B**	**16,486**	**17,527**	**18,269**
Long Term Loans (Non Current + Current Portion)		166,819	190,652	226,072
Deferred Credits (Consumer Contribution)		9,444	9,444	9,444
Deferred Liabilities		9,097	9,097	9,097
*Current Liabilities (2/3rd of current assets)		10,991	11,685	12,180
Non-Current Liabilities + Current Liabilities	**C**	**196,350**	**220,878**	**256,792**
Capital Asset Base (A+B+C)		**135,486**	**139,132**	**139,854**
Avg. Capital Base	**D**	**138,233**	**137,309**	**139,493**
Calculation of RAB				
Fixed Assets Net + Work In Progress		315,350	342,482	378,376
Deferred Credits + Deferred Liabilities		18,541	18,541	18,541
RAB		296,809	323,942	359,836
Avg. RAB	**E**	***266,958***	***310,376***	***341,889***
Equity Portion (E*30%)	**F**	**80,087**	**93,113**	**102,567**
Return On Equity (F*15%)	**G**	**12,013**	**13,967**	**15,385**
Remaining Equity Portion (D-F)	**H**	**58,145**	**44,196**	**36,926**
Return @ 13.2%, 9.14% & 9.18% (Quarterly average KIBOR	**I**	**7,681**	**4,042**	**3,391**
Total Return On Equity (G+I)		**19,694**	**18,009**	**18,776**

Issue# 26 Whether the Petitioner's projected Other Income of Rs. 1,507 million, Rs. 1,343 million and Rs. 1,421 for the FY 2019-20, FY 2020-21 and FY 2021-22 is reasonable?

150. NTDC stated that "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 e.t.c and due to declining trend in KIBOR rates during the preceding years, there has been a decline in profit rates on bank deposits:

Rs. In Million

Description	2018-19	2019-20	2020-21	2021-22
	Actual	Provisional	Projected	
Other Income	1,994	1,507	1,343	1,421

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151. NTDC submitted the audited accounts according to which the other income for the FY 2019-20 has been indicated as Rs. 4,216 million. The same has been assumed for the FY 2020-21 and FY 2021-22:

Rs. In Million

Description	Requested				Allowed		
	2019-20	2020-21	2021-22	2019-20	2019-20	2020-21	2021-22
	Prov.	Projected		Actual			
Financial Charges	1,507	1,343	1,421	4,216	4,216	4,216	4,216

Issue#27 Whether the proposed Average Monthly MDI MW/Month 23,646, 24,333 & 25,550 for the FY 2019-20, FY 2020-21 and FY 2021-22 on non-Coincidental Basis by the petitioner is justified?

152. According to NTDC the projected average Monthly MDI for FY 2019-20 was 23,646 MW. After compilation of actual FY 2019-20 data final average monthly MDI is 23,640 MW. The projected average Monthly MDI 24,333 & 25,550 MW for FY 2020-21 and 2021-22 respectively have been compiled keeping in view:
   - Post COVID effect
   - Historical trends
   - Load forecast

153. Subsequently NTDC submitted the revised MDI. Accordingly the MDI calculated by NTDC on non-coincidental i.e.23,646 MW, 25,583 MW and 26,008 MW have been utilized for calculating the NTDC's UOSC.

Issue#28 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?

154. NTDC justified itself as per following points:
   - Commitment Charges are an inherent feature of Loans which are also envisaged in PC-I
   - Commitment charges are mainly applicable during the Grace Period
   - This represents the cost which NTDC was unable to recover due to time gap between Tariff petition & Tariff Determination/ Notification
   - To claim prudently incurred uncovered cost for FY 2017-18 & FY 2018-19 is the Petitioner's legitimate right

155. With respect to the Prior Year Adjustment (PYA) NTDC submitted that as per the True Up Mechanism the tariff may be allowed to the petitioner in a manner so that the Company may offset its financial obligations in time with respect to the regulatory gap. Furthermore, as per NEPRA standard and guidelines 17(3) (i) *"tariff should allow licensees the recovery of all costs prudently incurred to meet the demonstrated needs of their customers"*, hence, the prior year adjustment for FY 2017-18 and 2018-19 have been calculated in light of actual costs incurred. The Authority in its most recent Determination FY 2017-18 and FY 2018-19 has allowed Rs. 8,264 million on account of uncovered cost for FY 2017-18 and Rs. 6,002 million for FY 2018-19.

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156. NTDC submitted that there may have been an oversight while calculating the figure of Prior Year Adjustment for FY 2017-18 in FY 2018-19. As per Financial Statements for FY 2017-18 NTDC's billed revenue amounted to Rs. 36,744 million, whereas the revenue requirement determined by NEPRA for 2017-18 was Rs. 43,375 million, hence NTDC's claim for uncovered cost stands at Rs. 6,631 million as opposed to Rs. 6,002 million, calculations for the same are as-under:

Uncovered Cost to be Claimed	Rs. In Million
Total Revenue Requirement as per NEPRA for FY 2017-18	43,375
Total Revenue Requirement as per F/S for FY 2017-18	36,744
Net Covered cost to be Claimed	**6,631**

157. As per NTDC, the Revenue Requirement of Rs. 50,087 million determined by the Authority for FY 2018-19 is on the lower side which is mainly because of ROE. NTDC pointed out that there are two types of gaps observed while calculating the uncovered cost for FY 2018-19. There is an arithmetic error found in the calculation of ROE, since the actual Average Capital Base in-line with NTDC Financial Statements comes at Rs. 164,194 Mln after considering the last year actual capital base Rs. 158,017 Mln, whereas the Average Capital Base taken by NEPRA is Rs. 141,497 Mln, which is an under-assessment without any backup calculation in the determination. The second gap was due to the Authority allowing a lower Cost of Equity and Cost of Debt rate. The sum of the impact of both gaps comes to Rs. 7,309 million. Therefore, Authority is requested to allow uncovered cost for FY 2018-19 as given below;

(Rs. In Million)

	Revenue Requirement	As per FS 2018-19	2018-19 (NEPRA)	True Up 2018-19	to be Trued-up
1	General Est. & Admn.	10,279	9,885	10,279	-
2	Repair & Maintenance	585	1,242	585	-
3	Insurance	265	232	265	-
4	Depreciation	9,278	9,278	9,278	-
5	Financial Charges	8,119	8,119	8,119	-
6	Return on Equity	15,456	17,322	22,766	7,309
Total		**43,983**	**46,079**	**51,292**	**7,309**
7	Less: other income	(1,994)	(1,994)	(1,994)	-
8	Uncovered Cost 2017-18	-	6,002	6,631	6,631
9	**Total Revenue Requirment**	**41,989**	**50,087**	**55,930**	**13,941**
	MDI	**23,694**	**23,694**	**23,694**	**23,694**
	Rate kW/Month	**147.68**	**176.16**	**196.71**	**49.03**

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158. The submission of NTDC has been examined pertaining to the FY 2017-18. The calculations have been checked and no error has been found therefore the stance of NTDC is not justified.

159. As regards the PYA of 2018-19, FY 2019-20 and FY 2020-21, the same has been calculated in line with the Authority's approved mechanism. The Authority allowed 15% ROE to the Company. For equity beyond 30% the KIBOR of that particular year is applied, hence NTDC claim in this regard is not justified. In accordance with the Authority's prescribed mechanism the PYA for the FY 2018-19, FY 2019-20, FY 2020-21 has been assessed and allowed as Rs. 8,098 million, Rs. 10,825 million and Rs. 4,518 million respectively.

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Others

Issue#29 Briefly explain the status of the direction given to NTDCL in tariff determination of Matiari Lahore Transmission Line?

160. NTDC entered in its Transmission Service Agreement (TSA) with M/s Pak Matiari-Lahore Transmission Company (Pvt) Limited relating to 660kV HVDC Transmission Project on 14th May, 2018. The Company will design, engineer, construct, insure, operate and maintain a 660kV, Bi-pole HVDC, approximately eight hundred and seventy (878) KM electric transmission line. The Commercial Operation Date (COD) of the Company is 1st March, 2021 (now extension is required to 1st September 2021). The HVDC Transmission Project will interconnect with the Grid System of the Purchaser to be located on the Land Route from Matiari, in the province of Sindh to Lahore, in the province of Punjab, Pakistan and with a Design Transmission Capability of 4,000 MW with availability of 98.5%.

161. NTDC submitted that the Company has made its utmost efforts to complete line within time frame however due to COVID situation on both side the delay was occurred for which MOU has been signed and the PMTC has approached NEPRA in this regard.

162. According to NTDC, HVDC Transmission Services Payment by NTDC are based on 4000MW fixed capacity on a monthly basis. Actual recovery of NTDC UoSC stands at 70% therefore it is probable that NTDC might face financial liquidity crunch or LDs. The Authority is requested to pass appropriate directions to CPPA-G for entering into a formal mechanism with NTDC which would ensure timely and full payment of UOSC to NTDC and in particular, TSP under the Transmission Services Agreement (TSA) as it involves imposition of Delayed Payment Charges @ of KIBOR plus 2% P.A. for any delay in payment.

163. NTDC vide letter dated February 08, 2021 in continuation of the meeting held with NEPRA professionals on February 03, 2021 submitted the following payment mechanism for Transmission Services Payment to PMLTC:

- Transmission Service Payment to PMLTC for the preceding month which shall be calculated as the product of (I) the Contracted Capacity; (ii) the applicable transmission service charge; (iii) 1,000 and (iv) twenty four (24) hours multiplied by the total number of days of the relevant month (or part month) (Capacity Charge x applicable transmission service charge x 1000 x 24 x number of days)
- Any supplemental tariff due in the previous month (or part month)
- Any interest payable on an amount not paid by the due and payable date.
- Any pass through item due in respect of the previous month (or part month) as allowed and provided in the transmission service agreement.
- Any Pre-COD / other payment as per NEPRA determination and TSA.

164. NTDC vide letter dated September 14, 2021 stated that the Company vide letter dated February 8, 2021 have already requested to incorporate the payments on account of Transmission Service Payment (TSP) to be paid to Pak Matiari Lahore Transmission Line Company's (PMLTC), as a stand-alone component apart from NTDC tariff and to pass on PMLTC's payment to DISCOs through Central Power Purchasing Agency

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(Guarantee) Limited. Further, it may kindly be noted that NTDC through its Letter No. MD/NTDC/172-33 dated 12-01-2021 highlighted its revenue requirement which was as follows:

Financial Year	Capacity MW	Estimated Indexed Tariff payment (PKR in Billion)
2020-21 (Mar - Jan)	4000	16.837
2021-22	4000	50.337

165. However, it may be pertinent to point out that the revenue requirements, as projected above, have changed since the COD of the HVDC Project was shifted to September 01, 2021 due to unavoidable circumstances including emergence of COVID-19 pandemic. Furthermore, CPPA-G may kindly be directed to manage the aforesaid payments directly in a similar fashion as the payments to IPPs are managed since any delay in payments in this regard carry a risk of potential liquidated damages at the Delayed Payment Rate of KIBOR+2%. This arrangement is also imperative since the revenue requirements and Tariff Structure of NTDC and M/s PMLTC are entirely different. Moreover, in order to avoid incurrence of LD's, immediate directions may be issued to CPPA-G regarding the payment mechanism (in-line with IPP model), invoking prompt execution/ payments in light of PMLTC tariff.

<u>Analysis & Decision</u>

166. NTDC submissions has been examined and noticed that both Companies i.e. NTDC and PMTC signed MOU for extending the COD and in this regard the modification petition has been submitted to NEPRA which has been decided on September 02, 2021. Review motion in the matter is under process with NEPRA which will be finalized in due course of time.

167. As regards the payment mechanism of PMLTC, NEPRA has already determined the transmission tariff for PMLTC and the same shall be billed by PMLTC to NTDC, as per the NEPRA approved tariff. NTDC shall raise invoice to CPPA-G, indicating;

(i) Revenue requirement of NTDC as determined by NEPRA and
(ii) Revenue Requirement of PMLTC as per the tariff approved by NEPRA and amended from time to time.

168. The amount billed by PMLTC to NTDC shall be allocated to XWDISCOs and K-Electric, based on their actual monthly MDI for that month. The CPPA-G while making payment to NTDC, shall separately indicate the amount being paid on account of NTDC charges and PMLTC Revenue requirement.

169. NTDC shall ensure timely payment to PMLTC and no interest cost on account of delay can be allowed to NTDC. It is consistent practice of NEPRA that the timely payment of the NEPRA tariff is the responsibility of the power purchaser and inefficiency on this account cannot be passed on to the end-consumers. However, if distribution companies receives any late payment charges due to late payments from end-consumers, the same shall be proportionally allocated between IPPs and PMLTC.

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Revenue Requirement

170. Based on the assessment in the preceding paragraphs, the revenue requirement for FY 2019-20, FY 2020-21 and FY 2021-22 has been assessed as under;

	Rs. In Millions		
Description	**FY 2019-20**	**FY 2020-21**	**FY 2021-22**
Revenue Requirement	54,270	58,598	56,999
Avg. MDI	23,646	25,583	26,008
Rs. /kW/M	191.26	190.88	182.64
General Establishment Costs	10,431	11,135	12,199
Pay & Allowances & Other Benefits	6,855	7,201	7,872
Employees Benefits	3,576	3,933	4,327
Administrative Costs	664	716	770
Rent Rate & Taxes	112	117	123
Power Light etc.	96	106	116
Communication	30	33	36
Office Supplies & Other Expenses	23	27	29
Travelling Expenses	304	326	348
Professional Fee	19	21	23
Management Fees	-	-	-
General Misc. Expenses	80	87	95
Repair & Maintenance	655	719	790
R&M of Fixed Assets	361	397	436
Vehicle Expenses Repair	77	84	93
Vehicle Maintenance & Running Expenses	208	229	252
Vehicle Expenses-License	9	9	9
		-	
Insurance	236	278	320
Depreciation	11,937	13,394	14,666
Finance Charges	6,772	7,739	9,177
Return on Equity	19,694	18,009	18,776
Prior Year Adjustment	8,098	10,825	4,518
Less: other income	(4,216)	(4,216)	(4,216)

171. 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(7) of the NEPRA Act.

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172. <u>ORDER</u>

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

172.2 <u>Use of System Charges</u>

172.2.1 Since FY 2019-20 and FY 2020-21 has already been lapsed, therefore, the Authority has incorporated the impact of difference in the tariff determined for the FY 2019-20 & FY 2020-21 and the tariff actually charged by the Petitioner during this period, in the assessed revenue requirement as Prior Year Adjustment (PYA).

172.2.2 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 2021-22:

Fixed charge (USCF)	=	**Rs. 182.64/kW/Month**
Variable charge (USCV)	=	**Rs. 0.15/kWh x LAL Factor**

Where:
LAL Factor is a factor for Adjustment of Losses and Load imposed on the transmission system by user (other than XWDISCOs & K-Electric) who wheel electricity through NTDC system. LAL Factor of unity will be applied till benchmarks are defined by NEPRA. The revenue requirement of NTDC is attached as Annexure-I.

172.2.3 As regards the payment mechanism of PMLTC, NEPRA has already determined the transmission tariff for PMLTC and the same shall be billed by PMLTC to NTDC, as per the NEPRA approved tariff. NTDC shall raise invoice to CPPA-G, indicating;

i) Revenue requirement of NTDC as determined by NEPRA and
ii) Revenue Requirement of PMLTC as per the tariff approved by NEPRA and amended from time to time.

172.2.4 The amount billed by PMLTC to NTDC shall be allocated to XWDISCOs and K-Electric, based on their actual monthly MDI for that month. The CPPA-G while making payment to NTDC, shall separately indicate the amount being paid on account of NTDC charges and PMLTC Revenue requirement.

172.2.5 NTDC shall ensure timely payment to PMLTC and no interest cost on account of delay can be allowed to NTDC. It is consistent practice of NEPRA that the timely payment of the NEPRA tariff is the responsibility of the power purchaser and inefficiency on this account cannot be passed on to the end-consumers. However, if distribution companies receives any late payment charges due to late payments from end-consumers, the same shall be proportionally allocated between IPPs and PMLTC.

172.2.6 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:

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b) NTDC transmission system (NTDC System) and the bulk power consumer.
c) NTDC system and the transmission system of a special purpose transmission licensee.
d) NTDC system and the transmission system of another country connected under an arrangement approved by the Federal Government.
e) 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.

173. <u>Terms and Conditions:</u>

<u>Definitions:</u>

- Bulk Power Consumer (BPC) means a Bulk Power Consumer as defined in NEPRA Act.
- 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.
- Competitive Market Operation Date = The date as defined under article 7(2) of the License granted to NTDC.
- CPPA-G = Central Power Purchasing Agency Guarantee Limited as required under Article 8(a) of the License granted to NTDC.
- 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.
- IPPs = Independent Power Producers established under the Federal Government's Power Policy.
- 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.
- Month means a calendar month according to the Gregorian calendar.
- Power Factor: the rate expressed as a percentage of the kilowatt hours to the kilovolt hours consumed during a billing period.
- 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.

174. <u>Other Terms and Conditions</u>

- Power Factor Penalty: The DISCOs shall maintain an average power factor during a billing period at the delivery metering point in line with NEPRA approved grid code. In the event of the said Power Factor falling allowed limit in a billing period the concerned DISCO shall pay to NTDC a penalty as determined by the Authority for general applicability on the recommendation of NTDC and after consultation with the generation and distribution licensees.

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

175. <u>Directions of the Authority</u>

- To file its next tariff petition on the basis of calculation of MDI on coincidental basis under Multi-Year Tariff (MYT) regime. Share on quarterly basis the progress on the implementation for recording of MDI on coincidental basis.
- 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 December 2021.
- 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 submit on quarterly basis the investment made and progress made against the investment being allowed in this tariff.
- To submit the updated progress regarding dispersal of power from major power plants, wind corridors, solar parks, hydel projects on monthly basis.
- The reasons (if any) causing delays in completion of priority projects pertaining to FY 2019-20 and FY 2020-21 and their financial impacts in terms of cost and time overrun including amount of Liquidated Damages (LDs) paid by NTDC to other entities.
- The prospective benefits achieved in terms of removal of congestion, ensuring evacuation of power from all the generation companies, improvement in voltage profile, improvement in overall system etc. through execution of each priority projects approved for FY 2019-20 and FY 2020-21.
- To ensure evacuation of the electricity from the upcoming power plants as per timelines of interconnection approval granted by NTDC.
- To provide loading position of its 500 kV and 220 kV components to the Authority on quarterly basis and recent improvements.
- 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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Annex-I

NTDC Revenue Requirement
FY 2019-20, FY 2020-21 & FY 2021-22

Description	FY 2019-20	FY 2020-21	FY 2021-22
	Rs. In Millions		
Revenue Requirement	54,270	58,598	56,999
Avg. MDI	23,646	25,583	26,008
Rs. /kW/M	191.26	190.88	182.64
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Employees Benefits	3,576	3,933	4,327
Administrative Costs	664	716	770
Rent Rate & Taxes	112	117	123
Power Light etc.	96	106	116
Communication	30	33	36
Office Supplies & Other Expenses	23	27	29
Travelling Expenses	304	326	348
Professional Fee	19	21	23
Management Fees	-	-	-
General Misc. Expenses	80	87	95
Repair & Maintenance	655	719	790
R&M of Fixed Assets	361	397	436
Vehicle Expenses Repair	77	84	93
Vehicle Maintenance & Running Expenses	208	229	252
Vehicle Expenses-License	9	9	9
		-	
Insurance	236	278	320
Depreciation	11,937	13,394	14,666
Finance Charges	6,772	7,739	9,177
Return on Equity	19,694	18,009	18,776
Prior Year Adjustment	8,098	10,825	4,518
Less: other income	(4,216)	(4,216)	(4,216)

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