**ANNEXURE-I**

**Detailed Analysis of 4th Control Period**

TSDISCOMs filed the Resource Plan Petition for 5th (FY 2024-25 to FY 2028-29) and 6th Control Period (FY 2029-30 to FY 2033-34) on 01.04.2023. Hon’ble TSERC conducted Public hearing on the filed Resource Plan petitions on 01.09.2023. On the suggestion of the stakeholders, Hon’ble TSERC directed the TSDISCOMs to undertake an analysis on performance of 4th Control period.

In line with the direction of Hon’ble TSERC, TSDISCOMs are hereby submitting an analysis of the Sales and Power Procurement. The analysis of Sales and Power Procurement at the time of filing and their actual position in the of 4th Control Period are provided in the following sections.

Further a detailed Justification for the Energy balance scenario for 5th and 6th Control period is also provided.

**Analysis of Power Procurement of TS Discoms in 4th Control Period**

In accordance with the Telangana State Electricity Regulatory Commission (Terms and Conditions for Determination of Tariff for Wheeling and Retail Sale of Electricity), Regulation 4 of 2005, Resource Plan shall contain Sales forecast, Load forecast, Power procurement plan and Distribution plan.

TSDISCOMs filed the 4th Control Period Resource Plan on 31.10.2018 which consisted of Sale forecast, load forecast and distribution plan and submitted that the Power procurement plan will be submitted shortly.

However, TSDISCOMs were unable to file the Power Procurement plan before the Hon’ble Commission considering the following reasons:

1. Hon’ble TSERC was not operational from 9.01.2019, after the Chairman of Hon’ble TSERC demitted office after attaining the age of 65 years.
2. Enforcement of Model Code of Conduct in the State of Telangana from 10.03.2019 till 23.05.2019 in view of Lok Sabha election.
3. Enforcement of Model Code of Conduct for the Municipal elections from 23.12.2019 to 25.01.2020.

Since the TSDISCOMs were unable to file power procurement plan for the 4th Control period, there has been no approval of such power procurement plan by the Hon’ble Commission. In the absence of the approved power procurement plan for the 4th Control Period, the comparison of the actual power procurement with the approved power procurement plan is infeasible. In the absence of approval of power procurement plan, other possibility of analyzing the power

procurement in the 4th Control Period is by considering the submissions made by TSDISCOMs in their ARR- filings.

For FY 2019-20, FY 2020-21 and FY 2021-22 TSDICOMs were unable to submit the ARR filings before the Hon’ble Commission within the timelines as per Regulation No. 4 of 2005 on account of factors which were beyond the control of TSDISCOMs. Subsequently, the ARR filings FY 2019-20, FY 2020-21 and FY 2021-22 were submitted before the Hon’ble Commission on 31.03.2021, however, the same were not admitted by the Hon’ble Commission due to non-submission of tariff proposals by the TS Discoms. In view of the non approval of the power procurement plan for FY 2019-20, FY 2020-21 and FY 2021-22, TSDISCOMs in this analysis is considering the submissions made by them in filings which were made before the Hon’ble Commission on 31.03.2021.

Further, in the absence of the approved figures for the power procurement for FY 2019-20, FY 2020-21 and FY 2021-22, the approved values of the power procurement in the latest Tariff Order i.e., FY 2018-19 have been considered for the purpose of comparison.

As the filing of FY 2019-20 was carried out on 31.03.2021, TSDISCOMS used actual data of power purchase, hence the variance between the filed availability and the actual purchase is zero.

For FY 2022-23, the analysis of power procurement has been done considering the submissions made by TSDISCOMs in their ARR filings.

For FY 2023-24, the analysis is limited to Q1 of FY 2023-24 only considering the limitation of availability of information.

Year wise analysis of the power procurement is as follows

**FY 2019-20**

* Considering the filing of FY 2019-20 was carried out on 31.03.2021, TSDISCOMS used actual data of power purchase, hence the variance between the filed availability and the actual purchase is zero.
* Further it is to be noted that Surplus sale for FY 2019-20 is 1068 MU.

Table 1: Power Surplus/ Deficit Variance (MU) for FY 2019-20

| **S. No** | **Particulars** | **Filed** | **Approved** | **Actuals** | **Variance** |
| --- | --- | --- | --- | --- | --- |
| **FY 2019-20** | **FY 2018-19** | **FY 2019-20** |
| **1** | **2** | **3** | **4** | **5** | **6 = 5-3** |
| **Energy Availability** | | | | | |
| 1a | TS GENCO | 23837 | 21661 | 23837 | 0 |
| 1b | CGS | 13460 | 15791 | 13460 | 0 |
| 1c | NCE | 6402 | 5200 | 6402 | 0 |
| 1d | Others\* | 17644 | 21786 | 17644 | 0 |
| 1e | Short term Power Purchase\*\* | 6755 | *1159* | 6755 | 0 |
| 1f | **Interstate Sales (Surplus Sales)** | (1068) | 0 | (1068) | 0 |
| **1** | **Total Energy Availability** | **67030** | **65596** | **67030** | **0** |
| **Energy Requirement (Sales)** | | | | | |
| **2** | **Total Energy Requirement$** | **67044** | **57631** | **67044** | **0** |
| **3** | **Surplus / (Deficit)** | **(14)** | **7965** | **(14)** | **0** |

\* SEIL, CSPDCL, Singareni, APGPCL, PTC India

\*\* Includes 488 MU of UI

$ Requirement calculated by using actual losses

**FY 2020-21**

* The filing of FY 2020-21 was carried out on 31.03.2021 along with ARR for FY 2019-20, FY 2020-21 and FY 2021-22. For FY 2020-21, TSDISCOMs used actual data of power purchase for H1 of FY 2020-21 and projected the energy requirement for H2 of FY 2020-21.

Table 2 Power Surplus/ Deficit Variance (MU) for FY 2020-21

| **S. No** | **Particulars** | **Filed** | **Approved** | **Actuals** | **Variance** |
| --- | --- | --- | --- | --- | --- |
| **FY 2020-21** | **FY 2018-19** | **FY 2020-21** |
| **1** | **2** | **3** | **4** | **5** | **6 = 5-3** |
| **Energy Availability** | | | | | |
| 1a | TS GENCO | 21946 | 21661 | 23022 | 1076 |
| 1b | CGS | 12524 | 15873 | 11965 | (559) |
| 1c | NCE | 6280 | 5200 | 6558 | 278 |
| 1d | Others\* | 18576 | 21785 | 16236 | (2340) |
| **1** | **Total Energy Availability from firm sources** | **59326** | **64519** | **57781** | **(1545)** |
| **2** | **Total Energy Requirement$** | **64068** | **57631** | **66252** | **2184** |
| **3** | Surplus/ (deficit) before Market purchase | (4742) | 6888 | (8471) | **(3729)** |
| **4** | Short term Power Purchase | 4929 | 1159 | 8973 | 4044 |
| **5** | Total Energy Availability from firm sources including market sources | 64255 | 65678 | 66753 | **2498** |
| **6** | Surplus/ (deficit) including Market purchase | 187 | 8047 | 501 | **314** |

\* SEIL, CSPDCL, Singareni, PTC India

$ Requirement calculated by using approved losses

* For CSPDCL, scheduling is less than 50% of the availability projected. The reasons for less scheduling than the contracted capacity are the discrepancies in the invoices like the claim of Trading Margin and other incidental charges till the finalization of the appeal No. 391/2018 filed by TSDISCOMs at APTEL  against Hon’ble CSERC order on determination of  Capital Cost of Marwa TPP and final consent to PPA and tariff  by Hon’ble TSERC.
* For few plants like NPC Kaiga unit III & IV scheduling was zero.
* For other CGS plants like Simhadri I & NLC II scheduling was low.
* Considering the high variable charge of plants like NTPC Kudgi, their scheduling was low in accordance with the Merit Order Despatch.
* It is further submitted that in FY 2020-21, actual Hydel generation was 14% higher than the energy dispatch as approved by the Hon’ble Commission which led to lower scheduling from other remaining optional plants (like CGS, TSGENCO etc).
* It is further submitted that TSDISCOMs has considered 187 MU of actual surplus power sold in H1 of FY 2020-21 in the filing.
* As we can see above, the dispatch did not match the requirement, TSDISCOMs had to depend purchase from short term market for the deficit of 8973 MU.

**FY 2021-22**

Table 3 Power Surplus/ Deficit Variance (MU) for FY 2021-22

| **S. No** | **Particulars** | **Filed** | **Approved** | **Actuals** | **Variance** |
| --- | --- | --- | --- | --- | --- |
| **FY 2021-22** | **FY 2018-19** | **FY 2021-22** |
| **1** | **2** | **3** | **4** | **5** | **6 = 5-3** |
| **Energy Availability** | | | | | |
| 1a | TS GENCO | 29708 | 21661 | 28570 | (1138) |
| 1b | CGS | 14449 | 15873 | 15172 | 723 |
| 1c | NCE | 7964 | 5200 | 6649 | (1315) |
| 1d | Others\* | 22447 | 21785 | 16917 | (5530) |
| **1** | **Total Energy Availability** | **74568** | **64519** | **67308** | **(7260)** |
| **2** | **Total Energy Requirement$** | **77901** | **57631** | **73486** | **(4415)** |
| **3** | Surplus/ (deficit) before Market purchase | **(3333)** | 6888 | **(6178)** | (2845) |
| **4** | Short term Power Purchase | **3335** | 1159 | **6784** | 3449 |
| **5** | Total Energy Availability from firm sources including market sources | **77901** | 65678 | **74092** | (3809) |
| **6** | Surplus/ (deficit) including Market purchase | **0** | 8047 | **606** | 606 |

\* SEIL, CSPDCL, Singareni, PTC India

$ Requirement calculated by using approved losses

* It can be seen from the above table that there has been a significant variance between all major firm sources.
* In CGS , BTPS Unit 1, 2 & 3 were commissioned in FY 20 and 4th unit was to be commissioned in July 2021. However, the commissioning of 4th Unit was delayed and the plant was commissioned on January 2022 leading to delay in the expected quantum of power to TSDISCOMs from the BTPS plant.
* For few plants like NPC Kaiga unit III & IV there was zero scheduling.
* For other CGS plants like Simhadri I, scheduling was low.
* Considering the high variable charge of plants like Kudgi, their scheduling was less in accordance with the Merit Order Despatch.
* Scheduling from NCE’s (Solar plants in particular) was 3912 MU lower than projected availability.
* For CSPDCL scheduling was 5200 MU lower than the availability projected. In addition to the few issues related to discrepancies in invoices raised by CSPDCL (as explained above) there was also dispute over the outstanding dues as per CSPDCL and TSDISCOMS. These disagreements resulted in considerably low scheduling of power by CSPDCL.
* It is further submitted that in FY 2021-22, actual Hydel generation was 80% higher than the energy dispatch as approved by the Hon’ble Commission which led to lower scheduling from other remaining optional plants (like CGS, TSGENCO etc).
* As we can see above, the dispatch did not match the requirement, TSDISCOMs had to depend purchase from short term market for the deficit of 6784 MU.

**FY 2022-23**

Table 4 Power Surplus/ Deficit Variance (MU) for FY 2022-23

| **S. No** | **Particulars** | **Filed** | **Approved** | **Actuals** | **Variance** |
| --- | --- | --- | --- | --- | --- |
| **FY 2022-23** | **FY 2022-23** | **FY 2022-23** |
| **1** | **2** | **3** | **4** | **5** | **6 = 5-4** |
| **Energy Availability** | | | | | |
| 1a | TS GENCO | 31123 | 30626 | 29402 | (1224) |
| 1b | CGS | 19402 | 20089 | 15621 | (4468) |
| 1c | NCE | 8953 | 7699 | 8630 | 931 |
| 1d | Others\* | 21902 | 22748 | 14944 | (7804) |
| **1** | **Total Energy Availability** | **81380** | **81162** | **68597** | (12565) |
| **2** | **Total Energy Requirement$** | **84222** | **78274** | **73309** | (4965) |
| **3** | Surplus/ (deficit) before Market purchase | (2842) | 2888 | (4712) | (7600) |
| **4** | Short term Power Purchase | 2791 | 2172 | 9404 | 7232 |
| **5** | Total Energy Availability from firm sources including market sources | 84171 | 83334 | 78001 | (5333) |
| **6** | Surplus/ (deficit) including Market purchase | (51) | 5060 | 4692 | (368) |

\* SEIL, CSPDCL, Singareni, PTC India

$ Requirement calculated by using approved losses

* In TSGENCO, several plants like KTPS VII, KTPS II, BTPS showed high variance when compared to the projected availability.
* Scheduling from several CGS plants like NTPC Ramagundam I, II & III, NLC TPS II was significantly lower.
* At the time of filing of FY 2022-23, the expected COD of Telangana STPP (Phase I) Unit I & Unit II was October 2022 and January 2023 respectively. However, the COD of TSTPP was delayed resulting in zero scheduling of its power.
* CSPDCL scheduled zero power as against projected availability of 6350 MU at the time of filing. The dispute over the outstanding amount remained unresolved considering which CSPDCL scheduled zero power in FY 2022-23. It is further submitted entire undisputed outstanding amount along with surcharge was covered by TSDISCOMs under the LPS- Rules 2022 however, CSPDCL is still Scheduling Zero energy to TSDISCOMs.
* It is further submitted that in H1 of FY 2022-23, actual Hydel generation was 46% higher than the energy dispatch as approved by the Hon’ble Commission which led to lower scheduling from other remaining optional plants (like CGS, TSGENCO etc).
* It is pertinent to mention that the State of Telangana has started supplying 24\*7 power to agriculture sector from 01.01.2018. This has increased the power purchase requirement of FY 2022-23. The licensee after exhausting all their sources considered quantum of 9404 MU power purchase from Short term sources.

**FY 2023-24**

Table 5 Power Surplus/ Deficit Variance (MU) for Q1 of FY 2023-24

| **S. No** | **Particulars** | **Filed** | **Approved** | **Actuals** | **Variance** |
| --- | --- | --- | --- | --- | --- |
| **FY 2023-24 (Q1)** | **FY 2023-24 (Q1)** | **FY 2023-24 (Q1)** |
| **1** | **2** | **3** | **4** | **5** | **6 = 5-4** |
| **Energy Availability** | | | | | |
| 1a | TS GENCO | 6889 | 6741 | 6942 | 201 |
| 1b | CGS | 5170 | 4445 | 3365 | (1080) |
| 1c | NCE | 2903 | 2887 | 2829 | (58) |
| 1d | Others\* | 3939 | 5888 | 3590 | (2298) |
| **1** | **Total Energy Availability** | 18901 | 19961 | 16726 | (3236) |
| **2** | **Total Energy Requirement$** | 19035 | 20271 | 18527 | (1744) |
| **3** | Surplus/ (deficit) before Market purchase | (134) | (310) | (1802) | (1492) |
| **4** | Short term Power Purchase | 134 | 887 | 2210 | 1323 |
| **5** | Total Energy Availability from firm sources including market sources | 19035 | 20848 | 18935 | (1913) |
| **6** | Surplus/ (deficit) including Market purchase | 0 | 577 | 408 | (169) |

\* SEIL, CSPDCL, Singareni, PTC India

$ Requirement calculated by using approved losses

* Scheduling from several CGS plants like NTPC Ramagundam I, II & III, NLC TPS II was significantly less.
* At the time of Resource Plan filing, the expected COD of Telangana STPP (Phase I) Unit I & Unit II was April 2023 and June 2023 respectively. However, the COD of TSTPP has been delayed resulting in zero scheduling of its power.
* CSPDCL scheduled zero power as against claimed dispatch of 1697 MU at the time of filing. The dispute over the outstanding amount remained unresolved considering which CSPDCL scheduled zero power in Q1 of FY 2023-24.
* As we can see above, the dispatch did not match the requirement, TSDISCOMs had to depend purchase from short term market for the deficit of 2210 MU.

**Conclusion from the analysis of 4th Control period**

* From the variance information tabulated above and its reasons provided thereof it can be concluded that even in case of long term PPA done for a contracted capacity with firm power source, the variance between the claimed/ projected availability and the power scheduled from those sources can be significantly high.
* This variance can be attributed to different reasons like coal shortage, reduction in PLF ascribed to performance issues, transmission constraints, backing down of a power plant due to availability of cheaper power from a difference source, delay in COD of a unit/ plant, malfunctioning of the power plant, high quantum of dispatch from the Hydel power plants attributable to higher rainfall, etc.
* It can be seen that originally the expected COD of Telangana STPP (Phase I) Unit I & Unit II was October 2022 and January 2023 respectively. However, TSTPP has not been commissioned even till August 2023.
* Further, scarcity of coal in H1 of FY 2022-23 lead to few plants reduced its declared plant availability.
* From FY 2019-20 to FY 2022-23, because of high rainfall, the dispatch from the Hydel plants were very high. However, the changing climate have changed the pattern of rainfall made them more unpredictable. So dependence on Hydel plants will be erroneous.
* All the above cited reasons are beyond the control of TSDISOMs. This leads to deficit in demand and supply leading to requirement of power purchase from markets which are unpredictable in terms of its purchase price and quantum. This leads to imposition of burden of high-cost short term power purchase on the consumers.

Variance of Sales of TS Discoms in 4th Control Period

TSDISCOMs employ standard modified trend method to arrive at projected sales at the time of filing. However, during the 4th Control period, significant variance between the projected sales and the actual position of sales can be observed. The year wise, discom wise and consumer category wise variance in sales is tabulated below:

It is to be noted that, as the filing of FY 2019-20 was carried out on 31.03.2021, TSDISCOMS used actual data of sales , hence the variance between the filed availability and the actual purchase is negligible.

**FY 2019-20**

TSSPDCL

Figures in MU

|  |  |  |  |
| --- | --- | --- | --- |
| **Consumer Category** | **Filed (MU)** | **Actual (MU)** | **Variance** |
| **LT Category** | **23569** | **23569** | **0** |
| Category I - Domestic | 8710 | 8710 | 0 |
| Category II - Non-domestic/Commercial | 2582 | 2582 | 0 |
| Category III - Industry | 847 | 847 | 0 |
| Category IV - Cottage Industries | 9 | 9 | 0 |
| Category V - Agriculture | 10818 | 10818 | 0 |
| Category VI - St. Lighting & PWS | 484 | 484 | 0 |
| Category VII - General | 77 | 77 | 0 |
| Category VIII-Temporary Supply | 43 | 43 | 0 |
| **HIGH TENSION** | **16340** | **16337** | **2** |
| HT-I: Industry | 10622 | 10622 | 0 |
| HT-II: Others | 2583 | 2581 | 0 |
| HT-III: Airports, Bus Stations and Railway Stations | 91 | 91 | 0 |
| HT-IV: Irrigation & Agriculture and CPWS | 2380 | 2380 | 0 |
| HT-V: Railway Traction (including HMR) | 331 | 249 | 82 |
| HT-VI: Townships and Residential Colonies | 195 | 276 | -81 |
| HT-VII: Temporary | 136 | 136 | 0 |
| HT- VIII: RESCOs | 0 | 0 | 0 |
| HT-IX: EV Charging Station | 2 | 0 | 2 |
| **TOTAL( LT + HT)** | **39909** | **39907** | **2** |

TSNPDCL

Figures in MU

|  |  |  |  |
| --- | --- | --- | --- |
| **Consumer Category** | **Filed (MU)** | **Actual (MU)** | **Variance** |
| **LT Category** | **12065** | **12065** | **0** |
| Category I - Domestic | 3547 | 3547 | 0 |
| Category II - Non-domestic/Commercial | 758 | 758 | 0 |
| Category III - Industry | 244 | 244 | 0 |
| Category IV - Cottage Industries | 8 | 8 | 0 |
| Category V - Agriculture | 7140 | 7140 | 0 |
| Category VI - St. Lighting & PWS | 308 | 308 | 0 |
| Category VII - General | 60 | 60 | 0 |
| Category VIII-Temporary Supply | 0 | 0 | 0 |
| **HIGH TENSION** | **6548** | **6548** | **0** |
| HT-I: Industry | 1851 | 1851 | 0 |
| HT-II : Others | 154 | 154 | 0 |
| HT-III: Airports, Bus Stations and Railway Stations | 8 | 8 | 0 |
| HT -IV: Irrigation & Agriculture and CPWS | 3019 | 3019 | 0 |
| HT-V: Railway Traction | 447 | 447 | 0 |
| HT-VI: Townships and Residential Colonies | 152 | 152 | 0 |
| HT-VII: Temporary | 48 | 48 | 0 |
| HT VIII: RESCOs | 869 | 869 | 0 |
| HT-IX: EV Charging Station | 0 | 0 | 0 |
| **TOTAL( LT + HT)** | **18612** | **18612** | **0** |

**FY 2020-21**

TSSPDCL

Figures in MU

| **Consumer Category** | **Filed (MU)** | **Actual**  **(MU)** | **Variance** |
| --- | --- | --- | --- |
| **LT Category** | **22110** | **24286** | **-2177** |
| Category I - Domestic | 9079 | 8912 | 167 |
| Category II - Non-domestic/Commercial | 2237 | 2161 | 76 |
| Category III - Industry | 828 | 880 | -52 |
| Category IV - Cottage Industries | 9 | 10 | 0 |
| Category V - Agriculture | 9355 | 11745 | -2390 |
| Category VI - St. Lighting & PWS | 498 | 478 | 19 |
| Category VII - General | 59 | 48 | 12 |
| Category VIII-Temporary Supply | 44 | 53 | -9 |
| Category IX- Evs Charging Stations | 0 | 0 | 0 |
| **HIGH TENSION** | **14680** | **13987** | **-693** |
| HT-I Industry | 9223 | 8444 | -779 |
| HT -I B Ferro-alloys | 129 | 130 | 1 |
| HMWSSB | 0 | 830 | 830 |
| HT-II - Others | 2110 | 1845 | -265 |
| HT-III Airports, Bus Stations and Railway Stations | 72 | 53 | -20 |
| HT -IV A Irrigation & Agriculture | 2092 | 1617 | -474 |
| HT-IV B CPW Schemes | 517 | 512 | -5 |
| HT-V Railway Traction (including HMR) | 211 | 192 | -19 |
| HT-VI Townships and Residential Colonies | 207 | 261 | 54 |
| HT-VII Temporary | 118 | 103 | -15 |
| HT-VIII RESCO | 0 | 0 | 0 |
| HT-IX EVs Charging Station | 2 | 0 | -2 |
| **Total (HT+LT)** | **36790** | **38273** | **1483** |

In the case of TSSPDCL, we can observe, actual LT sales were higher by 2177 MU’s than the claimed. For HT sales actual sales were lower by 693 MU than the quantum claimed at the time of filing of petition. In total actual sales were higher by 1483 MU’s than the projected sales.

TSNPDCL

Figures in MU

| **Consumer Category** | **Filed** | **Actual** | **Variance** |
| --- | --- | --- | --- |
| **LT Category** | **11927** | **12928** | **1001** |
| Category I - Domestic | 3849 | 3769 | 79 |
| Category II - Non-domestic/Commercial | 700 | 649 | 51 |
| Category III - Industry | 237 | 246 | -9 |
| Category IV - Cottage Industries | 8 | 8 | 0 |
| Category V - Agriculture | 6768 | 7904 | -1136 |
| Category VI - St. Lighting & PWS | 320 | 322 | -2 |
| Category VII - General | 44 | 27 | 17 |
| Category VIII-Temporary Supply | 1 | 2 | -1 |
| **HIGH TENSION** | **7395** | **5846** | **-1548** |
| HT-I Industry | 1694 | 1767 | 72 |
| HT - I B Ferro-alloys | 36 | 37 | 1 |
| HT-II - Others | 125 | 115 | -10 |
| HT-III Airports, Bus Stations and Railway Stations | 7 | 6 | 0 |
| HT -IV A Irrigation & Agriculture | 3718 | 1958 | -1760 |
| HT-IV B CPW Schemes | 406 | 449 | 43 |
| HT-V Railway Traction | 277 | 318 | 41 |
| HT-VI Townships and Residential Colonies | 154 | 151 | -3 |
| HT-VII Temporary | 80 | 107 | 27 |
| HT-VIII RESCOs | 897 | 938 | 41 |
| **Total (HT+LT)** | 19321 | 18774 | -547 |

In the case of TSNPDCL, we can observe, actual LT sales were higher by 1001 MU’s than the claimed. For HT sales actual sales were lower by 1548 MU than the quantum claimed at the time of filing of petition. In total actual sales were lower by 547 MU’s than the projected sales.

**FY 2021-22**

TSSPDCL

Figures in MU

| **Consumer Category** | **Filed** | **Actual** | **Variance** |
| --- | --- | --- | --- |
| **LT Category** | **24423** | **25607** | **-1184** |
| Category I - Domestic | 9558 | 9435 | 122 |
| Category II - Non-domestic/Commercial | 2970 | 2494 | 477 |
| Category III - Industry | 973 | 901 | 73 |
| Category IV - Cottage Industries | 10 | 9 | 0 |
| Category V - Agriculture | 10277 | 12154 | -1876 |
| Category VI - St. Lighting & PWS | 512 | 469 | 42 |
| Category VII - General | 77 | 62 | 14 |
| Category VIII-Temporary Supply | 45 | 83 | -37 |
| Category IX- EVs Charging Station | 1 | 0 | 1 |
| **HIGH TENSION** | **20256** | **17477** | **2779** |
| HT-I: Industry | 12294 | 11860 | 434 |
| HT-II: Others | 2971 | 2265 | 706 |
| HT-III: Airports, Bus Stations and Railway Stations | 91 | 51 | 40 |
| HT -IV: Irrigation & Agriculture and CPW Schemes | 4195 | 2533 | 1661 |
| HT-V: Railway Traction (including HMR) | 336 | 299 | 38 |
| HT-VI: Townships and Residential Colonies | 219 | 312 | -93 |
| HT-VII: Temporary | 136 | 154 | -18 |
| HT VIII: RESCOs | 0 | 0 | 0 |
| HT-IX: EVs Charging Station | 15 | 3 | 11 |
| **TOTAL( LT + HT)** | **44679** | **43085** | **1594** |

In the case of TSSPDCL, we can observe, actual LT sales were higher by 1184 MU’s than the claimed. For HT sales actual sales were lower by 2778 MU than the quantum claimed at the time of filing of petition. In total actual sales were lower by 1594 MU’s than the projected sales.

TSNPDCL

Figures in MU

| **Consumer Category** | **Filed** | **Actual** | **Variance** |
| --- | --- | --- | --- |
| **LT Category** | **12509.04** | **12654.02** | **-144.98** |
| Category I - Domestic | 4175.73 | 3863.42 | 312.30 |
| Category II - Non-domestic/Commercial | 871.68 | 743.86 | 127.82 |
| Category III - Industry | 281.01 | 235.74 | 45.28 |
| Category IV - Cottage Industries | 7.99 | 8.18 | -0.19 |
| Category V - Agriculture | 6783.26 | 7419.51 | -636.25 |
| Category VI - St. Lighting & PWS | 326.82 | 344.52 | -17.70 |
| Category VII - General | 61.07 | 33.79 | 27.28 |
| Category VIII-Temporary Supply | 1.49 | 5.01 | -3.52 |
| **HIGH TENSION** | **11533.14** | **5987.80** | **5545.34** |
| HT-I: Industry | 1822.29 | 1914.98 | -92.69 |
| HT-II: Others | 176.75 | 146.25 | 30.50 |
| HT-III: Airports, Bus Stations and Railway Stations | 7.72 | 7.14 | 0.57 |
| HT-IV: Irrigation & Agriculture and CPWS | 7940.57 | 2332.78 | 5607.79 |
| HT-V: Railway Traction | 447.09 | 482.07 | -34.99 |
| HT-VI: Townships and Residential Colonies | 157.08 | 138.60 | 18.48 |
| HT-VII: Temporary | 35.71 | 42.07 | -6.36 |
| HT-VIII: – RESCOs | 943.50 | 923.90 | 19.60 |
| HT-IX: EVs Charging Station | 2.42 | 0.00 | 2.42 |
| **TOTAL( LT + HT)** | **24042.18** | **18641.82** | **5400.36** |

In the case of TSNPDCL, we can observe, actual LT sales were higher by 144 MU’s than the claimed. For HT sales actual sales were lower by 5545 MU than the quantum claimed at the time of filing of petition. The major change was in HT sales was on account of consumer category Government LIS schemes. In total actual sales were lower by 5400 MU’s than the projected sales.

**FY 2022-23**

TSSPDCL

Figures in MU

| **Consumer Category** | **Filed** | **Approved** | **Actual** | **Variance (Approved-Actual)** |
| --- | --- | --- | --- | --- |
| **LT Category** | **25246** | **25789** | **26751** | **-961** |
| Category I - Domestic | 9884 | 10722 | 9952 | 770 |
| Category II - Non-domestic/Commercial | 2639 | 3111 | 3077 | 34 |
| Category III – Industry | 930 | 906 | 933 | -28 |
| Category IV - Cottage Industries | 10 | 9 | 10 | 0 |
| Category V - Agriculture | 11182 | 10391 | 12127 | -1736 |
| Category VI - St. Lighting & PWS | 473 | 484 | 467 | 17 |
| Category VII - General | 57 | 94 | 88 | 6 |
| Category VIII-Temporary Supply | 71 | 71 | 96 | -25 |
| Category IX- Evs Charging Station | 2 | 2 | 1 | 1 |
| **HIGH TENSION** | **23576** | **22752** | **20800** | **1952** |
| HT I: Industry | 13864 | 13935 | 14262 | -328 |
| HT II: Others | 2794 | 3261 | 3134 | 127 |
| HT III: Airports, Bus Stations and Railway Stations | 86 | 114 | 65 | 48 |
| HT IV: Irrigation & Agriculture and CPW Schemes | 5948 | 3862 | 2352 | 1510 |
| HT V: Railway Traction and HMR | 448 | 1139 | 475 | 664 |
| HT VI: Townships & Residential Colonies | 273 | 276 | 308 | -32 |
| HT VII: Temporary | 151 | 151 | 194 | -43 |
| HT VIII RESCOs | 0 | 0 | 0 | 0 |
| HT IX: EV Charging Stations | 14 | 14 | 6 | 8 |
| **TOTAL( LT + HT)** | **48823** | **48541** | **47550** | **990** |

In the case of TSSPDCL, we can observe, actual LT sales were lower by 961 MU’s than the approved . For HT sales actual sales were lower by 1951 MU than the quantum approved in Tariff Order. In total actual sales were lower by 990 MU’s than the projected sales.

TSNPDCL

Figures in MU

| **Consumer Category** | **Filed** | **Approved** | **Actual** | **Variance (Approved-Actual)** |
| --- | --- | --- | --- | --- |
| **LT Category** | **13261** | **13313** | **13304** | **9** |
| Category I - Domestic | 4259 | 4437 | 3892 | 545 |
| Category II - Non-domestic/Commercial | 820 | 970 | 875 | 95 |
| Category III – Industry | 251 | 244 | 237 | 7 |
| Category IV - Cottage Industries | 9 | 9 | 8 | 0 |
| Category V - Agriculture | 7525 | 7238 | 7868 | -630 |
| Category VI - St. Lighting & PWS | 341 | 326 | 355 | -29 |
| Category VII - General | 53 | 85 | 59 | 26 |
| Category VIII-Temporary Supply | 5 | 5 | 10 | -6 |
| Category IX- Evs Charging Station | 0 | 0 | 0 | 0 |
| **HIGH TENSION** | **12643** | **7383** | **5946** | **1437** |
| HT I (A): Industry | 1795 | 1791 | 1905 | -114 |
| HT II: Others | 147 | 202 | 200 | 2 |
| HT III: Airports, Bus Stations and Railway Stations | 7 | 8 | 8 | -1 |
| HT IV: Irrigation & Agriculture and CPW Schemes | 9014 | 3741 | 2069 | 1672 |
| HT V: Railway Traction | 480 | 480 | 571 | -90 |
| HT VI: Townships & Residential Colonies | 147 | 160 | 126 | 34 |
| HT VII: Temporary | 36 | 36 | 31 | 4 |
| HT VIII: RESCO | 1013 | 960 | 1036 | -76 |
| HT-IX: EV Charging Stations | 5 | 5 | 0 | 5 |
| **TOTAL LT + HT** | **25905** | **20696** | **19250** | **1446** |

In the case of TSNPDCL, we can observe, actual LT sales were lower by 9 MU’s than the approved. For HT sales actual sales were lower by 1436.81 MU than the approved. The major change was in HT sales was on account of consumer category Government LIS schemes. In total actual sales were lower by 1446.14 MU’s than the projected sales.

Network & Capex Plan: Analysis of 4th Control Period for TSSPDCL

1. **Need for Capex Requirement:** Capital investment is required to improve Power supply reliability, reduce the AT&C losses, ensure the safety and security of network, make the network adequate to cater the load growth and implementation of the technology to bring process efficiency in the operations.

Further TSSPDCL has been framing its Capex requirement which is broadly based on the following:

1. **Statutory & Safety**: Investment required for addressing unsafe conditions and making the network statutory compliant. This covers Refurbishment jobs, set up of safety culture through PPEs and testing equipment.
2. **Loss Reduction**: Investment required for taking initiatives to improve Billing or collection efficiency or reducing the technical Losses in the network. This includes Energy auditing, LT Bare to AB Cable and Defective cable replacement etc.
3. **Reliability:** Investment required to improve the Reliability and Quality of Power Supply by taking various initiatives like Feeder addition / augmentation, Transformer addition / augmentation and N-1 redundancy etc.
4. **Load Growth:** Investment is required to meet the Load Growth in the network and making the network future ready. This includes Augmentation / Addition of Feeder, Transformers, sub-stations etc.
5. **Technology and Infrastructure:** Investment related to technology adoption and strengthening of various infrastructure to improve internal as well as external customer satisfaction. This includes IT infrastructure, GIS implementation, Civil infrastructure, Transformer Workshop and Admin assets.

Power for all-24 hours supply concept: TSSPDCL is committed to provide 24 hours power supply in all the areas under its jurisdiction which requires comprehensive plan for system strengthening loss reduction and reliability improvement.

1. **Key Network Statistics are as given below:**

| **TSSPDCL Network Infrastructure (FY 2022-23)** | | |
| --- | --- | --- |
| **Key Network Elements** | **Unit** | **Quantity** |
| 33/11 KV Sub-station | Nos. | 1700 |
| PTRs | Nos. | 3223 |
| PTR Capacity | MVA | 21060 |
| DTRs | Nos. | 499695 |
| DTR Capacity | MVA | 24244 |
| 33 KV Feeders | Nos. | 1314 |
| 11 KV Feeders | Nos. | 7865 |
| Line length | KM | 368100 |
| Capacitor Bank | Nos. | 1583 |

Data as on June 2022

1. **Consumer & Peak Demand Growth in 4th CP:**
2. **Investment Summary of 4th Control Period:**

The summary of the Capex filed, approved in Distribution MYT order and Actual expenditure against the approved capex for the 4th Control Period (FY 2019-20 to FY 2023-24) is as given below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TSSPDCL Capex (in Rs. Crore)** | | | | | |
| **FY** | **Filed Capex** | **Approved Capex** | **Actual Capex** | **Variation (Approved over Filed)** | **Variation (Actual over Approved)** |
| 2019-20 | 1632.06 | 1120.93 | 1384.82 | -31% | 24% |
| 2020-21 | 1736.13 | 1420.34 | 1205.88 | -18% | -15% |
| 2021-22 | 2248.32 | 1881.41 | 1379.28 | -16% | -27% |
| 2022-23 | 2741.42 | 2150.7 | 1606.63 | -22% | -25% |
| 2023-24 | 2903.52 | 2299.35 |  | -21% |  |
| **Total** | **11261.45** | **8872.73** | **5576.61** | -21% |  |

Note: Actual Capex for FY 2022-23 is Provisional Figure.

1. It can be observed that the variation in the Filed capex against the Approved number for 4th Control Period is 21%. Further, for FY 2019-20, FY 2020-21, FY 2021-22 & FY 2022-23, the variation in Actual expenditure incurred by DISCOM over the Approved expenditure is 24%, -15% ,-27% & -25% respectively.
2. It can be ascertained from the data given above that the cumulative capex expenditure in first four financial year of 4th CP against the approved capex is almost 85%.
3. The reduction in expenditure in FY 2020-21 & FY 2021-22 is mostly due to the impact of Covid-19 and consequent lockdowns imposed across the country. The Pandemic had widespread impact on the availability of skilled/unskilled labor and supply chain affecting the progress of existing work and further initiation of new projects.

Also, it is to be noted that the actual capital expenditure done by DISCOM depends on number of factors, some of which are beyond the control of the DISCOM, apart from the planning based on existing network situation, present network loading, projected future loads, loss reduction measures, reliability improvement measures etc.

The liquidity available with the DISCOM and funding from PFC/REC also plays a major role in the execution of planned capex which are beyond the control of DISCOM and is influenced by several external factor including the financial health of the Company.

Adoption of new technologies for monitoring of the network, providing quality & reliable power supply, prompt service to the customers also depend to a large extent on the availability of fund for investment.

The expenditure after the approval of the Hon’ble commission is planned and executed by DISCOM in a phased manner and this process automatically considers any variation, if expected in projected loads.

The capital expenditure claimed in 4th CP was based on planning as per the same methodology as has been considered in the Resource Plan petition for 5th & 6th CP.

1. **Impacts of capex expenditure in 4th CP:**
2. The expenditure done by TSSPDCL in 4th CP reflects the network strengthening work done for extending 24 hours power supply to agricultural consumers as per the policy of the state govt.
3. There has been considerable reduction in AT&C Loss of the DISCOM over the 4th CP i.e., from 11.26% in FY 2019-20 to 10.60 % in FY 2021-22 with substantial improvement in billing efficiency and collection efficiency.
4. The average hours of supply in rural and urban areas have improved and is at 23:58 Hrs. in FY 2022-23.
5. Reliability Index like SAIFI has improved over the 4th CP from 79.99 in FY 2019-20 to 30.48 in FY 2022-23.
6. Further SAIDI has improved considerably from 1888.46 minutes in FY 2019-20 to 794.27 minutes- in FY 2022-23.
7. The Customer service has been digitized with 100% new connections being released through online system. The integration of necessary IT/OT systems has improved customer services to a great extent and facilitated DISCOM in extending its services digitally without manual intervention. Such technological intervention has allowed the DISCOM to reduce new connection application processing time to an average of 7 days in urban areas and 10 days in rural areas. Outage alerts are being sent to the consumers on regular basis and almost 100% consumer complaints are being registered through 24X7 customer Call center.
8. The DT failure rate has been maintained consistently below 8% in 4th Control Period.
9. Average Hours of Supply has been maintained close to 24 hours in the 4th CP.
10. **AT & C Loss:**

High AT&C Loss in FY 2022-23 is due to low collection efficiency on account of Govt. receivables.

1. **T&D Loss:**

FY 2022-23 figure is estimated.

1. **SAIFI & SAIDI:**
2. **DTR Failure Rate:**
3. **Average Hours of Supply:**

Capex Plan: Analysis of 4th Control Period for TSNPDCL

1. **Need for Capex Requirement:** Capital investment is required to improve Power supply reliability, reduce the AT&C losses, ensure the safety and security of network, make the network adequate to cater the load growth and implementation of the technology to bring process efficiency in the operations.

Further TSNPDCL has been framing its Capex requirement which is broadly based on the following:

1. **Statutory & Safety**: Investment required for addressing unsafe conditions and making the network statutory compliant. This covers Refurbishment jobs, set up of safety culture through PPEs and testing equipment.
2. **Loss Reduction**: Investment required for taking initiatives to improve Billing or collection efficiency or reducing the technical Losses in the network. This includes Energy auditing, LT Bare to AB Cable and Defective cable replacement etc.
3. **Reliability:** Investment required to improve the Reliability and Quality of Power Supply by taking various initiatives like Feeder addition / augmentation, Transformer addition / augmentation and N-1 redundancy etc.
4. **Load Growth:** Investment is required to meet the Load Growth in the network and making the network future ready. This includes Augmentation / Addition of Feeder, Transformers, sub-stations etc.
5. **Technology and Infrastructure:** Investment related to technology adoption and strengthening of various infrastructure to improve internal as well as external customer satisfaction. This includes IT infrastructure, GIS implementation, Civil infrastructure, Transformer Workshop and Admin assets.

Power for all-24 hours supply concept: TSNPDCL is committed to provide 24 hours power supply in all the areas under its jurisdiction which requires comprehensive plan for system strengthening loss reduction and reliability improvement.

1. **Key Network Statistics are as given below:**

| **TSNPDCL Network Infrastructure (FY 2022-23)** | | |
| --- | --- | --- |
| **Network Elements** | **Unit** | **Quantity** |
| 33/11 KV Sub-station | Nos. | 1479 |
| PTRs | Nos. | 2406 |
| PTR Capacity | MVA | 12432 |
| DTRs | Nos. | 317970 |
| DTR Capacity | MVA | 11944 |
| 33 KV Feeders | Nos. | 655 |
| 11 KV Feeders | Nos. | 6291 |
| Line length | KM | 281881 |
| Capacitor Bank | Nos. | 1385 |

1. **Consumer & Peak Demand Growth in 4th CP**
2. **Investment Summary of 4th Control Period:**

The summary of the Capex filed, approved in Distribution MYT order and Actual expenditure against the approved capex for the 4th Control Period (FY 2019-20 to FY 2023-24) is as given below:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **TSNPDCL (in Rs. Cr)** | | | | | |
| **FY** | **Filed Capex** | **Approved Capex** | **Actual Capex** | **Variation (Approved over Filed)** | **Variation (Actual over Approved)** |
| 2019-20 | 1351.22 | 1055.78 | 536.30 | -22% | -49% |
| 2020-21 | 1937.31 | 1396.33 | 401.12 | -28% | -71% |
| 2021-22 | 2025.91 | 1386.61 | 504.41 | -32% | -64% |
| 2022-23 | 2595.24 | 1572.79 | 512.31 | -39% | -67% |
| 2023-24 | 2484.16 | 1794.05 |  | -28% |  |
| **Total** | **10393.84** | **7205.56** | **1954.14** | **-31%** |  |

Note: Actual Capex for FY 2022-23 is Provisional Figure.

1. It can be observed that the variation in the Filed capex against the Approved number for 4th Control Period is 31%. Further, for FY 2019-20, FY 2020-21, FY 2021-22 & FY 2022-23 the variation in actual expenditure incurred by DISCOM over the approved expenditure is -49%, -71%, -64% & -67% respectively.
2. It can be ascertained from the data given above that the cumulative capex expenditure in first four financial year of 4th CP against the approved capex is almost 36%.
3. TSNPDCL in current FY i.e., FY 2023-24 has already incurred approx. 300.28 Crore till the month of August 2023. The Expenditure in current financial year is expected to be much higher than previous years.
4. The reduction in expenditure in FY 2020-21 & FY 2021-22 is mostly due to the impact of Covid-19 and consequent lockdowns imposed across the country. The Pandemic had widespread impact on the availability of skilled/unskilled labor and supply chain affecting the progress of existing work and further initiation of new projects.
5. Also, TSNPDCL expected investment through RDSS scheme from FY 2021-22 to FY 2024-25 but since the RDSS scheme is yet to be approved by DRC, the estimated investment under the scheme did not materialize. Most of the important works like AGL feeder segregation, Loss reduction, DTR Metering, Technological upgradation etc. were covered under the DPR of RDSS and the DISCOM expected these expenditures in the 4th CP.

It is to be noted that the actual capital expenditure done by DISCOM depends on number of factors, some of which are beyond the control of the DISCOM, apart from the planning based on existing network situation, present network loading, projected future loads, loss reduction measures, reliability improvement measures etc.

The liquidity available with the DISCOM and funding from PFC/REC also plays a major role in the execution of planned capex which are beyond the control of DISCOM and is influenced by several external factor including the financial health of the Company.

Adoption of new technologies for monitoring of the network, providing quality & reliable power supply, prompt service to the customers also depend to a large extent on the availability of fund for investment.

The expenditure after the approval of the Hon’ble commission is planned and executed by DISCOM in a phased manner and this process automatically considers any variation, if expected in projected loads.

The capital expenditure claimed in 4th CP was based on planning as per the same methodology as has been considered in the Resource Plan petition for 5th & 6th CP.

1. **Impacts of Capex in 4th CP:**
2. The expenditure done by TSNPDCL in 4th CP reflects the network strengthening work done for extending 24 hours power supply to agricultural consumers as per the policy of the state govt.
3. There has been considerable reduction in AT&C Loss of the DISCOM over the 4th CP i.e., from 36.34% in FY 2019-20 to 13.11% in FY 2021-22 & 22.44% in FY 2022-23 due to considerable improvement in billing efficiency and collection efficiency over 4th CP.
4. The average hours of supply in rural and urban areas have improved and is at 23:50 Hrs. in FY 2022-23.
5. Reliability Index like SAIFI has improved over the 4th CP and is at 43 in FY 2022-23. SAIDI has been maintained at a consistent level and has a decreasing trend till FY 2021-22.
6. The Customer service has been digitized with 100% new connections being released through online system. The integration of necessary IT/OT systems has improved customer services to a great extent and facilitated DISCOM in extending its services digitally without manual intervention. Such technological intervention has allowed the DISCOM to reduce new connection application processing time to an average of 1.9 days in urban areas and 4.2 days in rural areas. Outage alerts are being sent to the consumers on regular basis and almost 100% consumer complaints are being registered through 24X7 customer Call center.
7. The DT failure rate has also come down from 11.16% to 9.80% from FY 2019-20 to FY 2022-23.
8. **AT & C Loss:**

High AT&C Loss in FY 2022-23 is due to low collection efficiency on account of Govt. receivables.

1. **T&D Loss:**
2. **SAIFI & SAIDI:**
3. **Average Hours of Supply:**
4. **DTR Failure Rate:**