**Additional Information sought in Part (3) on the filings of Resource Plan & Business Plan for 5th (FY 2024-25 to FY 2028-29) & 6th (FY 2029-30 to FY 2033-34) Control Periods**

1. **Clause 34 of Regulation 4 of 2016 (Distribution Licensee Regulations) stipulates that Load Forecast of Power Procurement Plan for two control periods shall be provided by the Petitioners. Hence, the load forecast for 6th control Period shall be provided by the Petitioners. Also, the detailed calculations of load forecast for 5th and 6th Control Period in MS Excel version and linked format shall be provided by the Petitioners. Besides, write up for projecting Peak Demand along with assumption, parameters and values considered for projecting the same shall be provided by the Petitioners.**

**Reply**: The detailed calculations of load forecast for 5th & 6th Control periods in MS Excel

version and linked format are enclosed in **Annexure-I(A).**

**Assumptions and parameters for projecting peak demand**:

The Peak demand forecast has been done using Time-series method. Time-series methods use time as independent variable to produce demand. Historic data is taken into account to establish the pattern of hourly demand. The pattern is then used to project the future hourly demand. Since time series methods are more accurate over a short period of time, the forecast is limited to the 5th Control Period.

Hourly demands from 1st April 2016 till 28th Feb 2023 for TSNPDCL were studied to derive the trend of demand for 24 hours and hourly demands for the period from H2 FY 2022-23 till FY 2028-29 were projected. Seasonality factor has been derived from the variation in demand for each date, for a specific hour, in different months. Based on this input, an output has been calculated using the following equation:

Y (Projected Hourly Demand) = Z \* (m X + C)

Where:

Z: Seasonality Factor

m: Slope of the hourly plotted demand

X: nth Day from the starting date (i.e., 1st April 2016)

C: Intercept of the hourly plotted demand

The above projected hourly demand (Y) is treated as Base Demand. Demand attributed to additional loads have been added to the Base Demand to arrive at demand inclusive of additional loads viz. Kakatiya textile park, Railway traction. The peak demand for future years is arrived by considering the hourly demands projected.

The detailed calculations of the projection of peak demand for 5th and 6th Control Period are provided as **Annexure-I(B)**.

1. **Petitioners shall provide the analogy followed for determining the Coincidental and Non-Coincidental Peak for various consumer categories. Load curves for different type of days demonstrating the load curve of different consumer categories on seasons wise and month wise basis shall be provided. Further, approach for accounting seasonability and other parameters shall be provided. Overall annual load curve demonstrating the consumer category wise load curve shall be provided by the Petitioners along with the detailed calculations in MS Excel version and Linked format.**

**Reply**: The Discoms have as first step collected the feeder and substation wise actual demand data for each of the sub-divisions and circle for entire area of operation for all days of the year (365 days). This demand data was collected on the hourly basis for each of the consumer categories and at different voltage levels, by looking at predominant demand of a particular feeder.

This data was then processed by taking weighted average for consumer category-wise demand of all the feeders available for a particular consumer category for hourly demand data. This average demand data was converted into percentage by dividing it with peak demand within that particular category. This division provided hourly demand percentage with respect to peak demand for all respective consumer categories on hourly basis.

This resultant hourly demand percentage has been considered as annual load curves for all consumer categories. This annual load curves accounts for monthly and seasonal variations.

Processing these category-wise and voltage-wise load curves, along with energy sales with the appropriately allocating the energy loss components to different consumer categories provides us with Coincidental and non-Coincidental peaks.

The annual load curve demonstrating the consumer category wise load curve is provided in **Annexure-II**.

1. **Demand Supply scenarios demonstrating the additional power requirement to meet the future energy demand in accordance to the Clause 3.3.1 of Guidelines for Load forecasts, Resource Plans and Power Procurement shall be provided by the Petitioners for 5th and 6th Control Period. Also, power supply position after accounting all the available and possible generation resources along with projected demand shall be demonstrated through some graphs on month wise and year wise basis. Further, reasons to substantiate the surplus power scenarios in different months and seasons shall be provided. Also, measures planned to avoid trading losses shall be provided.**

**Reply**: 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 submit a justification on the Energy Balance of 5th & 6th Control Period. In line with the direction of Hon’ble TSERC, TSDISCOMs submitted justification on the Energy Balance of 5th & 6th Control Period. The summary of the submitted Justification is presented in following paras.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Particular** | **Energy Balance in Telangana State** | | | | | | | | | |
| **5th Control Period** | | | | | **6th Control Period** | | | | |
| **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| Energy Availability | 121754 | 127451 | 127126 | 126658 | 122090 | 115424 | 114555 | 114608 | 114601 | 114657 |
| Energy Requirement | 84997 | 89768 | 94774 | 100285 | 105957 | 111638 | 118116 | 125101 | 132599 | 140637 |
| **Surplus/(Deficit)** | **36758** | **37683** | **32352** | **26374** | **16133** | **3786** | **(3561)** | **(10493)** | **(17997)** | **(25981)** |
| % of Surplus to Availability | 43% | 42% | 34% | 26% | 15% | 3% | -3% | -8% | -14% | -18% |

From the above Energy Balance, it can be seen that there is a surplus of power in the 5th Control Period which is decreasing from 43% in FY 2024-25 to 15% in FY 2028-29 and in the 6th Control Period there is a deficit which is increasing from 3% to 18% except in the first year of 6th Control Period where there is a nominal surplus of 3%.

1. **Projected sales from I&CAD for the Lift Irrigation Schemes for 5th and 6th Control Period**

The energy balance of the State provided in the Resource Plan is considering the energy requirement which is dependent on the projection of sales of individual categories of consumers and any variation of actual sales with projected sales will have an impact on the energy balance.

The projection of one of the major contributors of sales of Discoms i.e., sales of Lift Irrigation Schemes (falling under 132 kV level of HT IV A Category) is very challenging. The growth trend in this category has many variations due to variations in the operation of Lift Irrigation pumps based on rainfall, water levels in reservoirs, etc.

The quantum of sales considered in the current Resource Plan filings are as follows:

| **Particulars** | **2023-24** | **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| TSSPDCL | 2015 | 2217 | 2439 | 2682 | 2951 | 3246 | 3570 | 3927 | 4320 | 4752 | 5227 |
| TSNPDCL | 2169 | 2386 | 2625 | 2887 | 3176 | 3493 | 3843 | 4227 | 4650 | 5115 | 5626 |
| **Total** | **4184** | **4603** | **5063** | **5570** | **6126** | **6739** | **7413** | **8154** | **8970** | **9867** | **10853** |

The quantum of sales received from I&CAD for the 5th and 6th Control Period are as follows:

| **Particulars** | **2023-24** | **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **TSSPDCL** | **1989** | **4869** | **4869** | **4869** | **4869** | **4869** | **4869** | **4869** | **4869** | **4869** | **4869** |
| *Inservice* | *1989* | *1989* | *1989* | *1989* | *1989* | *1989* | *1989* | *1989* | *1989* | *1989* | *1989* |
| *Upcoming* |  | *2881* | *2881* | *2881* | *2881* | *2881* | *2881* | *2881* | *2881* | *2881* | *2881* |
| **TSNPDCL** | **3868** | **5185** | **5185** | **5185** | **5185** | **5185** | **5185** | **5185** | **5185** | **5185** | **5185** |
| *Inservice* | *3278* | *3278* | *3278* | *3278* | *3278* | *3278* | *3278* | *3278* | *3278* | *3278* | *3278* |
| *Upcoming* | *590* | *1907* | *1907* | *1907* | *1907* | *1907* | *1907* | *1907* | *1907* | *1907* | *1907* |
| **Total** | **5857** | **10055** | **10055** | **10055** | **10055** | **10055** | **10055** | **10055** | **10055** | **10055** | **10055** |

The revised energy balance of TS Discoms by revising the energy requirement by considering the sales projections received from I&CAD for 5th and 6th Control Period with the availability as submitted in Resource Plan for 5th and 6th Control period is as follows:

| **Particular** | **Impact of Energy Balance in Telangana State** | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **5th Control Period** | | | | | **6th Control Period** | | | | |
| **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| Energy Availability | 121754 | 127451 | 127126 | 126658 | 122090 | 115424 | 114555 | 114608 | 114601 | 114657 |
| Energy Requirement | 90587 | 94885 | 99371 | 104310 | 109354 | 114344 | 120062 | 126205 | 132790 | 139819 |
| **Surplus/(Deficit)** | **31168** | **32566** | **27756** | **22348** | **12736** | **1080** | **(5507)** | **(11597)** | **(18189)** | **(25163)** |
| % of Surplus to Availability | 34% | 34% | 28% | 21% | 12% | 1% | -5% | -9% | -14% | -18% |

1. **Delay in Commissioning of new Generating Station**

In the Resource Plan filings, the Discoms have submitted that power from the following new generating stations have been considered in 5th and 6th Control Period:

| **Station** | **Capacity (MW)** | **Date of Commissioning & Capacities** |
| --- | --- | --- |
| YTPS | 4000 | Unit#1, Dec' 2023,  Unit#2, Mar' 2024,  Unit#3, May' 2024,  Unit#4, July' 2024,  Unit#5, Sept' 2024. |
| Telangana STPP | 1360 | Unit-I Apr-23 Unit-II Jun-23 |
| SECI 400 MW | 130 | 270 MW is already Commissioned Balance 130 MW - Apr'23 |
| SECI 1000 MW | 1000 | 1000 MW - Oct'23 |
| NTPC CPSU 1692 MW | 260 | 1432 MW is already Commissioned Balance: 100 MW - Mar'23 10 MW - Apr'23 150 MW - Mar'24 |
| NTPC CPSU 1045 MW | 1045 | 735 MW - Nov'23 310 MW - Apr'24 |
| NHPC CPSU 500 MW | 500 | 500 MW - Apr'24 |

However, it is to be noted that in case the commissioning of any of the above stations is delayed it will be having an impact on the energy balance above and accordingly the quantum of surplus in the respective years will come down.

It is to be noted that many of the newly constructed power projects are being delayed on account of numerous factors which includes land acquisition delay in Forest and Environmental clearance, Coal linkage etc.

The updated status of commissioning of new generating stations as per the latest status is as follows:

| **Station** | **Capacity (MW)** | **Date of Commissioning considered in Resource Plans** | **Latest status of Commissioning** |
| --- | --- | --- | --- |
| YTPS | 4000 | Unit#1, Dec' 2023,  Unit#2, Mar' 2024,  Unit#3, May' 2024,  Unit#4, July' 2024,  Unit#5, Sept' 2024. | Unit#1, Dec' 2023,  Unit#2, Dec' 2023,  Unit#3, Oct' 2024,  Unit#4, Sept' 2024,  Unit#5, Dec' 2024. (As received from CE, Thermal Projects Construction, TS Genco dt. 08.06.2023) |
| Telangana STPP | 1360 | Unit-I Apr-23 Unit-II Jun-23 | Unit-I Sept-23 Unit-II Nov-23 (Retained the gap between stations as two months considering original submission in Resource Plan) |
| SECI 400 MW | 130 | 270 MW is already Commissioned Balance 130 MW - Apr'23 | Total Capacity Commissioned |
| SECI 1000 MW | 1000 | 1000 MW - Oct'23 | 1000 MW - May'24 |
| NTPC CPSU 1692 MW | 260 | 1432 MW is already Commissioned Balance: 100 MW - Mar'23 10 MW - Apr'23 150 MW - Mar'24 | 1542 MW is already Commissioned Balance: 150 MW - Mar'24 |
| NTPC CPSU 1045 MW | 1045 | 735 MW - Nov'23 310 MW - Apr'24 | 735 MW - Nov'23 310 MW - Sep'24 |
| NHPC CPSU 500 MW | 500 | 500 MW - Apr'24 | 500 MW - Apr'24 |

Analysis of delay in commissioning of the new generating stations/units and their impact on the energy balance of the State is as follows:

| **Particular** | **Impact of Energy Balance in Telangana State** | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **5th Control Period** | | | | | **6th Control Period** | | | | |
| **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| Energy Availability | 113113 | 127451 | 127126 | 126658 | 122090 | 115424 | 114555 | 114608 | 114601 | 114657 |
| Energy Requirement | 84997 | 89768 | 94774 | 100285 | 105957 | 111638 | 118116 | 125101 | 132599 | 140637 |
| **Surplus/(Deficit)** | **28116** | **37683** | **32352** | **26374** | **16133** | **3786** | **(3561)** | **(10493)** | **(17997)** | **(25981)** |
| % of Surplus to Availability | 33% | 42% | 34% | 26% | 15% | 3% | -3% | -8% | -14% | -18% |

1. **Variation of Actual PLF when compared to Normative**

The projections of Energy availability from individual generating stations have been obtained from the respective generating stations which were usually projected based on the installed capacity and Normative Plant Availability Factor (the average of the daily declared capacities (DCs) for all the days during the period expressed as a percentage of the installed capacity in MW less the normative auxiliary energy consumption) of the plant. However, it is to be noted that the actual PLFs (the ratio of the actual energy generated by a power plant to the maximum possible energy it could have generated during a given period) of generating stations are usually less than the normative on account of various factors like availability of fuel owing to either external factors or internal factors, lower power demand etc.

The specific considerations for projection of revised availability (based on actual PLF) of various generation sources is as follows:

| **Power Source** | **Considerations for projection of availability** |
| --- | --- |
| TS Genco – Thermal | Average PLF of the period FY 2019-20 to FY 2022-23 except BTPS and YTPS. For BTPS, PLF is considered as 60% which is the actual PLF for FY 2022-23 for all the years. Similarly, for YTPS, PLF is considered as 60% for the period from CoD of respective units for all the years. |  |
| TS Genco – Hydel | Considered as projected in Resource Plan considering that the availability exceeds only when there are good monsoons which is not so frequent. |  |
| Central Generating Stations | Average PLF of the period FY 2019-20 to FY 2022-23 except (i) NLC exp. 1 & 2 (ii) Nuclear & (iii) TSTPP. For these three plants the projections have been considered as filed in Resource Plan. |  |
| NCES | Considered as projected in Resource Plan. |  |
| Sembcorp Energy (IPPs) | Average PLF of the period FY 2019-20 to FY 2022-23 |  |
| CSPDCL (Chhattisgarh) | Not considered the same since the power is not being scheduled from April 2022 |  |
| Singareni | Average PLF of the period FY 2019-20 to FY 2022-23 |  |

With the above considerations, the availability of power from the contracted sources has come down and accordingly has impacted the energy balance of the State and the same is as follows:

| **Particular** | **Energy Balance in Telangana State** | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **5th Control Period** | | | | | **6th Control Period** | | | | |
| **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| Energy Availability | 97432 | 100071 | 99840 | 99136 | 96449 | 96416 | 96256 | 93728 | 95907 | 96058 |
| Energy Requirement | 84997 | 89768 | 94774 | 100285 | 105957 | 111638 | 118116 | 125101 | 132599 | 140637 |
| **Surplus/(Deficit)** | **12435** | **10303** | **5066** | **(1149)** | **(9508)** | **(15222)** | **(21860)** | **(31373)** | **(36692)** | **(44579)** |
| % of Surplus to Availability | 15% | 11% | 5% | -1% | -9% | -14% | -19% | -25% | -28% | -32% |

1. **Combined Impact of all three factors**

The combined impact of the delay in commissioning of new generating stations, LIS projections as received from I&CAD for 5th and 6th Control Period and availability as per historical actual PLFs is as follows:

| **Particular** | **Impact of Energy Balance in Telangana State** | | | | | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **5th Control Period** | | | | | **6th Control Period** | | | | |
| **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| Energy Availability | 93191 | 100071 | 99840 | 99136 | 96449 | 96416 | 96256 | 93728 | 95907 | 96058 |
| Energy Requirement | 90587 | 94885 | 99371 | 104310 | 109354 | 114344 | 120062 | 126205 | 132790 | 139819 |
| **Surplus/(Deficit)** | **2604** | **5186** | **469** | **(5174)** | **(12905)** | **(17928)** | **(23806)** | **(32477)** | **(36884)** | **(43761)** |
| % of Surplus to Availability | 3% | 5% | 0% | -5% | -12% | -16% | -20% | -26% | -28% | -31% |

1. **Forecast of consumer category wise captive consumption in term of energy (MWh) and demand (MW), as per Clause 2.1(a)(iv) of Guidelines for Load forecasts, Resource Plans and Power Procurement shall be provided by the Petitioners for 5th and 6th Control Period**.

**Reply**: The details of captive consumption are enclosed in **Annexure-III**

1. **Energy audit report for last audited year on voltage-wise and category-wise basis shall be provided by the Petitioners for conducting prudence of loss reduction trajectory proposed in Business Plan for 5th and 6th Control Period. Also, the Petitioners shall provide justifications for proposing meagre reduction in distribution losses for 5th and 6th Control Period**.

**Reply**: Energy audit report for last audited year on voltage-wise losses are enclosed in

**Annexure-IV.**

1. **Details calculations for cost of debt under Other Cost Reduction Measures in Business Plan for 5th Control Period shall be provided by the Petitioners. The same shall be submitted in MS Excel version and linked format.**

**Reply**: Will be complied.

1. **Clause 35.2 of Distribution Licensee Regulations states that power procurement of the licences shall remain consistent with the submitted details in the Resource Plan. Thus, the energy availability for additional capacity of Singareni Phase Il and Telangana STPP generating plants, which are planned to get tied up in 6th Control Period, shall be provided by the Petitioners.**

**Reply**: Will be complied.

1. **Financing Plan for Metering of Interface Point with ABT Meters proposed in the Business Plan shall be provided by the Petitioners. Also, confirmation for whether the same is undertaken in RDSS Scheme shall be provided. Further, the status of installation of ABT Meters on circle wise basis shall be provided in the following format (also in MS Excel version)**

**Reply**: ABT Meter details at T-D interface points is enclosed as **Annexure-V**.

1. **Work Plan for implementation of Prepaid Smart Meters under RDSS Scheme shall be provided by the Petitioners. Also, the status of approval of DPR for Prepaid Smart Metering by the Energy Department, GOTS shall be provided**.

**Reply**: The DPR under RDSS as per the scheme guidelines laid down has been sent to DRC & GoTS for approval. The action plan/DPR will be submitted by the DISCOM to the Nodal Agency on the recommendation of the Distribution Reforms Committee (DRC) and with the approval of the State Cabinet. Accordingly, the work plan for implementation of pre-paid Smart Meters shall be submitted once the DPR is approved as per the guidelines laid down under RDSS scheme.

1. **Action Plan for developing software-based tool for the demand forecasting, shall be provided by the Petitioners. Further, confirmation whether the same is considered under the RDSS Scheme shall be provided**.

**Reply**: Currently the demand forecasting is done by the SLDC. Hon’ble Central Electricity Authority envisaged certain Module/Tool for Power Procurement Cost Optimization under Power Sector Reform (PSR) Program of DFID, UK. M/s KPMG was appointed as consultant for that project and Telangana State was identified as pilot state for implementation of the project.

The Tool was developed targeting Day-ahead and Intra-day modules for Load Generation Balance and Cost Optimization. The Tool includes Demand Estimation on Day-ahead and Intra-day basis.

However, the Tool is not fully Operationalized due to Contractual issues and Regulatory changes. The Subject is taken up with Hon’ble CEA for completing the project through M/s KPMG. The response from Hon’ble CEA is awaited.

Notwithstanding to the above, TS Discoms are preparing a separate Detailed Project Report for Demand Estimation Tool for getting the PSDF fund approval.

1. **Details of capital investment, capitalization and financing plan on year wise basis for 6th Control Period is not provided in Business Plan. The indicative amount for the same shall be provided by the Petitioners**.

**Reply**: Will be complied.

1. **CAGR for projecting energy sales for 5th & 6th Control Period is not provided by the Petitioner. Complete calculation for projecting consumer category wise and circle wise energy sales along with the calculation of CAGR (illustrated with the records of past financial years) shall be provided by the Petitioners in MS Excel version and in linked format**

**Reply**: The calculation for projecting energy sales for 5th & 6th Control Period is enclosed as **Annexure-VI**.

1. **Plant wise and month wise energy availability at ex bus basis for last 5 years shall be provided by the Petitioners. Also, the detailed calculations for projecting energy availability for 5th and 6th Control Period on plant wise, month wise and ex bus basis shall be provided by the Petitioners in MS Excel version and in linked format**.

**Reply**: Energy availability details for last 5 Years is enclosed as **Annexure-VII**.

1. **Design energy and actual energy generation details for Hydro Generating Plants on month wise and at ex-bus basis shall be provided by the Petitioners for the period from FY 2018-19 to FY 2022-23**.

**Reply**: Design energy and actual energy generation details for Hydro Generating Plants on month wise are enclosed as is as **Annexure-VIII(A) & VIII(B)**.

1. **Details of allocated share from central generating stations shall be provided by the Petitioners. Also, documentary evidence to substantiate the same shall be provided**.

**Reply**: As per the SRPC allocation letter dt. 27.02.2023, the energy availability has been considered in proportion to the TS share. Copy of the same is enclosed as **Annexure-IX.**

1. **The Commission, vide the Order dated 17.11.2021 in OP No. 55 of 2021 accorded consent for relinquishment of power allocation from RSTPS-I&II (358.37 MW) and NLC TPS -I&II (59.05 MW from stage 1 and 105.95 MW from Stage Il) in terms of the guidelines issued by the Ministry of Power, Government of India vide Lr. No. 23 / 23 / 2020 -R&R (245623) Dt. 22.03.2021. The status of the same shall be provided by the Petitioners**.

**Reply**: The latest status in the subject matter is provided as **Annexure-X.**

1. **Compliance status of Renewable Power Purchase Obligation (RPPO) from the energy availability forecast submitted in the Resource Plan via-a-vis the RPPO specified in the Regulation No. 7 of 2022 along with measures proposed to fulfil the shortfall, if any, shall be provided by the Petitioners**.

**Reply**: Will be complied.

1. **Petitioners shall provide the voltage wise losses for FY 2019-20 to FY 2022-23 in the following format. Further, justification for having actual voltage wise losses higher than the approved losses shall be provided**.

**Reply**: The voltage wise losses for FY 2019-20 to FY 2022-23 for TSNPDCL is as follows:

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Losses of TSNPDCL for FY 2019-20 to FY 2022-23** | | | | | | | | |
| **Voltage level** | **FY 2019-20** | | **FY 2020-21** | | **FY 2021-22** | | **FY 2022-23** | |
| **Approved** | **Actual** | **Approved** | **Actual** | **Approved** | **Actual** | **Approved** | **Actual** |
| 33 kV | 3.56 | 3.06 | 3.54 | 3.01 | 3.52 | 3.01 | 3.50 | 3.00 |
| 11 kV | 3.89 | 3.89 | 3.86 | 3.88 | 3.83 | 3.88 | 3.80 | 3.83 |
| LT | 4.95 | 5.59 | 4.90 | 5.33 | 4.85 | 5.43 | 4.80 | 4.55 |

The actual voltage wise losses in TSNPDCL for 11 kV and LT voltage level are higher than the approved voltage wise losses in FY 2019-20 to FY 2022-23 on account of higher losses in certain circles of TSNPDCL and TSNPDCL is taking various measures to reduce such higher losses in specific circles and the detailed measures being taken are provided in the compliance reports to the directives given by the Hon’ble Commission in Retail Supply Tariff Order for FY 2023-24.

1. **Petitioners in regard to High-Cost measures proposed for Treatment of Previous Losses, shall provide circle-wise and voltage-wise details of overloaded feeders and substations in the following format (also in MS Excel and linked format):**

**Reply**:Will be complied

1. **In regard to Low-Cost measures proposed for Treatment of Previous Losses, circle wise specific details such as details of 11 kV and LT Lines, details of DTRs etc. wherein each of the measures are proposed to be undertaken shall be provided by the Petitioners**.

**Reply**: TSDISCOMS have mentioned in the Business Plan Petition the year wise losses from FY 2017-18 to FY 2022-23 (up to Sept 2022). The intent of the data provided under “Treatment of Losses” was to show the decreasing trend in losses from FY 2017-18 to FY 2022-23 due to various measures taken by the TSDISCOMs to reduce the losses in the system.

The measures undertaken by TSNPDCL in order to reduce the losses from 11.01% in FY 2017 -18 to 8.79% in FY 2022-23 (up to Sept,22) has been categorized under “High-Cost Measures”, “Low-Cost Measures” and “No Cost Measures”.

The detailed measures under each category as mentioned above have been listed in the Business Plan Petition. The measures mentioned under High-Cost Measures, Low-Cost Measures and No Cost Measures in Business Plan are not proposed for future control periods, but the measures already implemented in the previous control period for reduction of losses.

1. **Petitioners in regard to No-Cost measures proposed for Treatment of Previous Losses, shall submit the circle wise specific details such as details of Feeders, details of DTRs etc. wherein each of the measures are proposed to be undertaken**.

**Reply**:TSDISCOMS have mentioned in the Business Plan Petition the year wise losses from FY 2017-18 to FY 2022-23 (up to Sept 2022). The intent of the data provided under “Treatment of Losses” was to show the decreasing trend in losses from FY 2017-18 to FY 2022-23 due to various measures taken by the TSDISCOMs to reduce the losses in the system.

The measures undertaken by TSNPDCL in order to reduce the losses from 11.01% in FY 2017-18 to 8.79% in FY 2022-23 (up to Sept,22) has been categorized under “High-Cost Measures”, “Low-Cost Measures” and “No Cost Measures”.

The detailed measures under each category as mentioned above have been listed in the Business Plan Petition. The measures mentioned under High-Cost Measures, Low-Cost Measures and No Cost Measures in Business Plan are not proposed for future control periods, but the measures already implemented in the previous control period for reduction of losses.

1. **The division wise and circle wise details of units assessed due to meter defects and thefts for the last 5 financial years shall be provided by the Petitioners**.

**Reply**: The division wise and circle wise details of units assessed due to meter defects and thefts for the last 5 financial years is enclosed as **Annexure-XI**.

1. **Action taken report on the issues such as energy audit, reduction of cost of supply, 100% agriculture DTR Metering, installation of smart prepaid meters and other matters specified in the directives of the Tariff Order dated 24.03.2023 shall be provided by the Petitioners**.

**Reply**: The status of compliance to the directives issued in the Tariff Order dated 24.03.2023 is enclosed as **Annexure-XII**.

1. **Petitioners for LT-V Category shall provide the methodology for projecting energy sales for 5th and 6th Control Period. If connected load data is considered for projections, then information of variable such as number of supply hours for agriculture category, annual specific consumptions and consumer load at DTR levels of last financial year shall be provided by the Petitioners**.

**Reply**: TSNPDCL has projected the sales in the LT V Category by considering a growth rate of 5% on historical actual sales for the period from H2 FY 2022-23 till FY 2028-29 and 4% for the period from FY 2029-30 to FY 2033-34. TS Discoms expects that there shall be growth in agricultural category keeping in view the yearly new additional releases of Agriculture Pump supply connections. Further, on account of 24-hour supply to agricultural consumers, cultivation of Paddy crops will increase since Paddy crops are more water intensive than other major crops in Telangana like Maize, Soya been, Cotton etc. It is further submitted that as per report by MOSPI, Government of India from FY 2011-12 to FY 2021-22, the Paddy crop has grown by 99%, which is highest in India.

1. **Petitioners for HT - IV(A) Category shall submit, if any study is undertaken to establish the correlation between the variation in quantum of agricultural consumption with the commissioning of LIS during the last 5 years. If yes, the copy of the same shall be submitted. And Petitioner shall provide the projected Voltage wise sales data for 5th and 6th control period along with details of upcoming LIS Schemes undertaken**.

**Reply**: As of now, TS Discoms have not undertaken any study to establish correlation between the variation in quantum of agricultural consumption with the commissioning of LIS.

Increase in HT IVA will also increase along with the LT V on account of increase in cultivation of the paddy crop. Paddy crop is easier to cultivate, requires less maintenance. Further it is less susceptible to crop infestation.

Mission Kakatiya is a tank restoration and rejuvenation program in the state of Telangana which focuses on the development of minor irrigation infrastructure and strengthening community-based irrigation management. Mission Kakatiya resulted in restoration of ground water levels which helped farmers to increase Paddy crops cultivation subsequently increasing the consumption of HT IV A and LT V categories.

The voltage wise quantum of sales considered in the current Resource Plan filings is as follows:

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Sales projections of HT IV(A) (in MU) for FY 2023-24 and 5th Control Period** | | | | | | |
| **Particulars** | **2023-24** | **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** |
| **TSSPDCL** |  |  |  |  |  |  |
| 11 kV | 43 | 44 | 46 | 47 | 48 | 50 |
| 33 kV | 16 | 16 | 16 | 17 | 17 | 18 |
| 132 kV and above | 2015 | 2217 | 2439 | 2682 | 2951 | 3246 |
| **Total TSSPDCL** | **2074** | **2277** | **2500** | **2746** | **3016** | **3313** |
| **TSNPDCL** |  |  |  |  |  |  |
| 11 kV | 23 | 24 | 24 | 25 | 25 | 26 |
| 33 kV | 17 | 17 | 17 | 18 | 18 | 18 |
| 132 kV and above | 2169 | 2386 | 2625 | 2887 | 3176 | 3493 |
| **Total TSNPDCL** | **2209** | **2426** | **2666** | **2929** | **3219** | **3537** |

| **Sales projections of HT IV(A) (in MU) for 6th Control Period** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Particulars** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| **TSSPDCL** |  |  |  |  |  |
| 11 kV | 51 | 53 | 55 | 56 | 58 |
| 33 kV | 18 | 19 | 19 | 20 | 20 |
| 132 kV and above | 3570 | 3927 | 4320 | 4752 | 5227 |
| **Total TSSPDCL** | **3640** | **3999** | **4394** | **4828** | **5306** |
| **TSNPDCL** |  |  |  |  |  |
| 11 kV | 26 | 27 | 27 | 28 | 28 |
| 33 kV | 19 | 19 | 19 | 20 | 20 |
| 132 kV and above | 3843 | 4227 | 4650 | 5115 | 5626 |
| **Total TSNPDCL** | **3887** | **4273** | **4696** | **5162** | **5674** |

The Discoms in the current Resource Plan filings have sought for the realistic projections from I&CAD, however, there has been a delay in receipt of the projected sales from I&CAD department. In view of the delay in receipt of the information, TS Discoms have projected the sales for 132 kV and above Voltage level of lift irrigation schemes considering a growth rate of 10% based on the historical actual sales. However, subsequently TS Discoms have received the projected sales from I&CAD for the Lift Irrigation Schemes for 132 kV and above which are operational as on date and are expected to be commissioned in the 5th Control Period.

The quantum of sales received from I&CAD for the 5th and 6th Control Period for 132 kV and above Voltage level are as follows:

| **HT IV (A) 132 kV and above Sales as received from I&CAD (in MU) for FY 2023-24 and 5th Control Period** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **Particulars** | **2023-24** | **2024-25** | **2025-26** | **2026-27** | **2027-28** | **2028-29** |
| **TSSPDCL** | **1989** | **4869** | **4869** | **4869** | **4869** | **4869** |
| *Inservice* | *1989* | *1989* | *1989* | *1989* | *1989* | *1989* |
| *Upcoming* |  | *2881* | *2881* | *2881* | *2881* | *2881* |
| **TSNPDCL** | **3868** | **5185** | **5185** | **5185** | **5185** | **5185** |
| *Inservice* | *3278* | *3278* | *3278* | *3278* | *3278* | *3278* |
| *Upcoming* | *590* | *1907* | *1907* | *1907* | *1907* | *1907* |
| **Total** | **5857** | **10055** | **10055** | **10055** | **10055** | **10055** |

| **HT IV (A) 132 kV and above Sales as received from I&CAD (in MU) for 6th Control Period** | | | | | |
| --- | --- | --- | --- | --- | --- |
| **Particulars** | **2029-30** | **2030-31** | **2031-32** | **2032-33** | **2033-34** |
| **TSSPDCL** | **4869** | **4869** | **4869** | **4869** | **4869** |
| *Inservice* | *1989* | *1989* | *1989* | *1989* | *1989* |
| *Upcoming* | *2881* | *2881* | *2881* | *2881* | *2881* |
| **TSNPDCL** | **5185** | **5185** | **5185** | **5185** | **5185** |
| *Inservice* | *3278* | *3278* | *3278* | *3278* | *3278* |
| *Upcoming* | *1907* | *1907* | *1907* | *1907* | *1907* |
| **Total** | **10055** | **10055** | **10055** | **10055** | **10055** |

1. **Clause 7 (Guaranteed and Overall Standard of Performance) of the Regulation 5 of 2016 and Clause 31 (Standard of Performance) of Regulations 4 of 2016 stipulate that the distribution licensees should maintain the minimum service standards while supplying electricity to the consumers. Hence, the performance achieved in last control period and trajectory planned for 5th and 6th Control Period shall be provided by the Petitioner for the following parameters**:
   * **Distribution Transformer Failures**
   * **Reliability Indices (System Average Interruption Frequency Index (SAIFI), System Interruption Duration Index (SAIDI) and Momentary Average Interruption Frequency Index (MAIFI));**
   * **Billing Mistake**
   * **Faulty Meters and etc**.

**Reply**: The licensee has already achieved the performance as per Clause 7 (Guaranteed and Overall Standard of Performance) of Regulation 5 of 2016 with regard to supply of electricity to consumers. DISCOM has taken various measures to improve the services being extended to the consumers including but not limited to the following:

1. Release of new connection services through e seva/ MeeSeva
2. Release of new connections through TSIPASS portal
3. Online web portal for 100% registration of new applications with minimum documents (only 2 documents required for release of new connection)

Further the performance achieved with respect to Distribution Transformer Failures, Reliability indices (SAIFI, SAIDI, MAIFI), Billing Mistakes and Faulty Meters for previous years is submitted regularly to Hon’ble TSERC on as part of SOP reports. The data is enclosed again as **Annexure-XIII**. The parameters for future periods shall be maintained as per the Guaranteed and Overall Standard of Performance.

1. **Scheme wise and work wise financing plan along with the details of consumer contribution and grant for capital investment and capitalization incurred in actual for 4th Control Period and proposed for 5th Control Period shall be provided by the Petitioners. Also, the indicative amount of Capital Investment Plan and Capitalization Plan for 6th Control Period along with the above financing plan details shall be provided by the Petitioners**.

**Reply**: Will be complied.

1. **Bifurcation of Capital Expenditure Plan proposed for 5th & 6th Control Period into New and Ongoing Schemes shall be provided by the Petitioners**.

**Reply**: Will be complied.

1. **Cost Data Booklet and Schedule of Standard Rate of last financial year for the purpose of prudence of cost of per network unit considered for estimating the Capital Expenditure Plan for 5th & 6th Control Period shall be provided by the Petitioners. Also, detailed calculation for estimating the additional network requirement and corresponding capital expenditure for 5th and 6th Control Period shall be provided by the Petitioners in the MS Excel Version and in linked format**.

**Reply**: The Cost Data Booklet of FY 2022-23 considered for arriving at the cost per network unit for estimating the Capital Expenditure Plan is enclosed as **Annexure-XIV**. Also, the detailed calculation for estimating the additional network requirement and corresponding capital expenditure for 5th and 6th Control Period in MS-EXCEL version has already been shared.

1. **Number of substations and feeders proposed in the summary of Network Addition of Capital Investment Plan for 5th & 6th Control Period are not in parity with the network planning description provided in the preceding paragraphs. The same shall be revisited and submitted accordingly**.

**Reply**: The conditions and assumptions considered for projection of 33/11 kV substation and associated 11 kV Feeders have been mentioned in the petition of resource plan

A substation is projected subject to fulfilment of all the following conditions:

1. If none of the PTRs are upgradable (An upgradable PTR is 5 MVA capacity in Urban and Semi-Urban SS and 3.15 MVA in a Rural SS).
2. If an additional PTR is required and the substation cannot accommodate any further PTRs based on the criteria mentioned.
3. Average loading on PTRs in substation is greater than the threshold set (% loading of its capacity) for new substation addition.

The number of feeders proposed/assumed for a new substation are 6 for Urban & Semi-urban region and 4 for rural region.

Further for the purpose of projection in requirement of additional feeders in the existing substation due to overloading of feeders, following assumptions have been considered.

**New feeders will be proposed under the following conditions in Existing Substation:**

1. Redistribution of feeder currents is done for each sub-station, irrespective of the feeder loading.
2. If after the redistribution, peak feeder current exceeds more than threshold limits and an additional feeder can be accommodated in the substation.
3. The above applies only if no new substation addition is being proposed.
4. The peak currents in the feeders are distributed equally among the ones overloaded and the new feeders proposed.

Based on the above assumptions considered for feeder addition, a new substation may be proposed/projected due to overloading of feeders, if the substation cannot accommodate an additional feeder. The number of Substation proposed depends upon the number of feeders required as per threshold feeder current for that year and the Substation classification. It is assumed that each new Substation thus proposed, in Urban and Semi-Urban areas would have a capacity of 8 MVA (1 PTR of 8 MVA) whereas a Rural Substation would have a capacity of 5 MVA (1 PTR of 5 MVA).

Each new sub-station proposed/ projected due to overloading of Substation/PTR, or 11 kV feeders is having complete parity with the number of associated feeders required in the new substation (11 kV Feeders:6 for Urban & Semi-urban region and 4 for rural region.)

In addition to the projected substations, the network summary in the resource plan petition has details of feeder addition required in existing substations which does not depend on the projection of new substations directly and the numbers cannot be related/compared with projections of new substations. The feeder addition in existing substation depends on the threshold value set for the 11 kV feeders and the capacity of the substation to accommodate additional feeders. Also, some feeder addition in existing substation has been considered based on practical field input and other technical requirements which are already planned. The same has been mentioned in the petition.

1. **Reasoning for increase in Threshold Peak Loading of Distribution Network for 6th Control Period shall be provided by TSNPDCL. Also, justification for proposed Capital Investment Plan, if not adequate, shall be provided**.

**Reply**: TSNPDCL has already mentioned in the petition that with current loadings of the network elements and the growth in loading of the network assumed in 5th and 6th control period, very large number of new sub-stations, PTRs, feeders and DTRs are being proposed in both the control periods. Accordingly, the License adopted a differential and higher threshold limit to moderate the network projections and ensure relatively uniform network addition each year.

The threshold limits considered also takes into account the factor that TSNPDCL relatively has a higher rural consumer mix and most of the substation addition will take place in rural areas on the basis of the assumptions considered for projection of the network but the actual cumulative growth in sales (assumed as growth in loading of the network for projection purpose) will not necessarily have the same linear effect on the growth of the network peak load.

Also, since the projections of the 6th control period is indicative and the network addition projection was substantial in the 6th CP, higher threshold limit was adopted to tone down the network and capex requirement. Further, it is to clarify that the threshold limit considered is only used for projection of the network elements and it does not reflect the actual loading of the system components at the end of the control period. Also, a certain loading of the PTRs in the present sub-station is transferred to the new sub-station thus projected. The PTR capacity to be installed in the new sub-station is 5 MVA in rural, 8 MVA in case of urban & semi-urban. The load transfer from a present sub-station to a new sub-station has been factored in such a way that in most situations the average loading on PTRs in the present sub-station after the load transfer will be within the permissible limit and the system components will not be stressed.

1. **Cost Benefit analysis for the projects planned to be undertaken in the Schemes proposed in the Capital Investment Plan for 5th and 6th control period shall be provided by the Petitioner**.

**Reply**: The Cost Benefit Analysis requested by Hon’ble TSERC depends on number of factors including but not limited to Financing model & Financing scheme of the project. TS DISCOMs have submitted the capex for 5th & 6th CP based on network projections and requirement of the DISCOMS for improvement of efficiency, loss reduction, technological upgradation, improvement in customer service etc. The investment and the financing of the projects shall depend on schemes (central /state) being implemented and approval of the management. It is likely that most of the capex work may be undertaken under RDSS scheme, if approved later. The investment model and financing implications under RDSS (RDSS has different models having combination of grants and loans, DBFOOT, Pure Capex and TOTEX models etc.) shall vary as compared to projects undertaken through some other scheme or through direct loans from PFC/REC.

Accordingly, it is the view of TS DISCOMS that the cost benefit analysis of the schemes and projects to be undertaken cannot be provided at this moment.

1. **Status of consumer category wise Solar Rooftop Plant applications (received, pending and completed) for 4th Control Period shall be provided by the Petitioner. Also, the details of Solar Rooftop Plants installed and additional capacity for 5th & 6th Control Period shall be provided by the Petitioners**.

**Reply**: Status of consumer category wise Solar Rooftop Plant applications (received, pending and completed) and the details of Solar Rooftop Plants installed and additional capacity for 5th & 6th Control Period are enclosed in **Annexure-XV.**

1. **Proposal of forward and reverse banking, if any, considered by the Petitioners in Power Procurement Plan for 5th & 6th Control Period shall be provided**.

**Reply**: TSDISCOMS have not considered any Banking Arrangement proposals in Power procurement plan.

1. **ISTS losses incurred in actual for the last financial year on the basis of the energy bills received from central generating station shall be provided by the Petitioners in MS Excel version and linked format**.

**Reply**: As per the SRPC/SLDC schedule loss data the total ISGS month wise ISTS Losses in MW for the FY 2022-23 is enclosed as **Annexure-XVI**.