CHHATTISGARH STATE ELECTRICITY REGULATORY COMMISSION
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Petition No. 69 of 2022

In the matter of

Approval of Additional Capital Investment Plan for FY 2022-23 to FY 2024-25.

M/s Chhattisgarh State Power Transmission Company Limited … Petitioner

PRESENT	:	**Vinod Deshmukh, Member (Judicial)**
	:	**Pramod Kumar Gupta, Member**
Appearance	:	**Shri Ashok Kumar Verma, Chief Engineer and Shri D. K. Dave ACE for petitioner**

ORDER
(Passed on 15/11/2022)

This order is passed in petition filed by Chhattisgarh State Power Transmission Company Limited (herein after referred as 'CSPTCL') for approval of Additional Capital Investment Plan for FY 2022-23 to FY 2024-25 under the provisions of the Chhattisgarh State Electricity Regulatory Commission (Terms and Conditions for determination of tariff according to Multi-Year Tariff principles and Methodology and Procedure for determination of Expected revenue from Tariff and Charges) Regulations, 2021 (here in after referred as 'CSERC MYT Regulations 2021').

2. The Commission vide order dated 27.04.2022 has passed in petition no. 05 of 2022 approving various schemes under capital investment plan for the control period from FY 2022-23 to FY 2024-25.

3. CSPTCL vide present petition, submitted different schemes of an amount Rs. 278.16 Crs. for approval under Additional Capital Investment Plan for the Control Period from FY

2022-23 to FY 2024-25.

4. As a regulatory process, the petitioner was directed to publish gist of its proposals in the newspapers for inviting objections/suggestions. CSPTCL has published the gist in Pioneer (Hindi), Navbharat (Hindi) & The Hitvada (English) on 08.10.2022.

5. Public hearing was held on 02.11.2022.

6. No objection from stakeholder was received either in writing or verbally during hearing.

7. In the present petition, CSPTCL has submitted proposal of construction of following 132/33KV sub station and associated line;

i. 132/33 KV Substation, Jeora-Sirsa, District –Durg

ii. 132/33 KV Substation, Maharajpur, Distt-Rajnandgaon

iii. 132/33KV Substation, Jamgaon (R), South Patan, Distt- Durg

iv. 132/33KV Substation, Anda, Distt- Durg

v. 132/33KV Substation, Tarekela Tahsil-Pithora Distt-Mahasamund

8. Details of the proposed 132/33KV Substation schemes are as given below;

S. No.	**Name of Proposed 132/33KV Substation**	**Capacity in MVA/ Route Length of line in KM**	**Scheme Provision in Rs Crs**
1	132/33 KV Substation, Jeora-Sirsa, District – Durg	2x 40 MVA	26.00
	132 KV DCDS line from 220/132KV substation, Semaria +02 No. 132KV feeder bays at 220KV Substation, Semaria	19 KM	18.98
2	132/33 KV Substation, Maharajpur, Distt-Rajnandgaon	2x 40 MVA	26.00
	LILO of 132KV Dongargarh-Kiranapur Line	41 KM	28.94
3	132/33KV Substation, Jamgaon (R), South Patan, Distt- Durg	2x 40 MVA	26.00
	132 KV DCDS line from 220/132KV substation Patan +02 No. 132KV feeder bays at 220 KV substation, Patan.	20 KM	19.40
4	132/33KV Substation, Anda, Distt- Durg	2x 40 MVA	26.00
	132 KV DCDS line from 220/132KV substation Patan +02 No. 132KV feeder bays at 220 KV substation, Patan.	31 KM	28.42
5	132/33KV Substation, Tarekela Tahsil-Pithora Distt-Mahasamund	2x 40 MVA	26.00
	LILO of one circuit of 132KV Saraipali-Sarangarh DCDS line	28 KM	22.96
	TOTAL (in Rs Crs)		**248.70**

CSPTCL has submitted justification for construction of above-mentioned substations as under:

(i) **132/33 KV Substation Jeora-Sirsa District-Durg**

At present power supply of Durg block is being fed by 33 KV Litiya feeder emanating from 132/33 KV S/s Dhamdha and secondly, from 33 KV Jeora Sirsa feeder from 132/33 KV S/s Kurud. The Voltage Regulation of existing 33 KV Litiya feeder emanating from 132/33 KV Dhamdha S/s is 22.98% and Voltage Regulation of existing 33 KV Jeora feeder emanating from 132/33 KV Kurud S/s is 13.98% which is higher than the norms of CSPDCL. Also, the total length of 33 KV Litiya feeder is 32 Km and maximum load recorded on this feeder is 17 MW and similarly total length of 33 KV Jeora Sirsa feeder is 25.0 Km and maximum load recorded on this feeder is 12.5 MW. Keeping in view industrial growth in nearby area of Jeora Sirsa and uninterrupted Power Supply to IIT, Bhilai (Kutelabhata) and future Industrial growth, CSPDCL has proposed to construct a new 132/33 KV Substation in Jeora-Sirsa with transformation capacity of 2X40 MVA.

Details of maximum and average load on all 33 KV feeders emanating from 132/33 KV Substation Dhamdha and Kurud are as under: -

(A) 132/33 KV Substation at Dhamdha (2X40 MVA)

S. NO.	Name of 33 KV Feeder	Average Load (Ampere)	Maximum Load (Ampere)
1.	Dhamdha	100	280
2.	Dargaon	110	280
3.	Parpodi	80	220
4.	Litiya	120	340
5.	Saja	80	240
6.	Nankatti	40	170
7.	PGCIL	100	240

(B) 132/33 KV Substation at Kurud (2X40 MVA)

Name of 33 KV Feeder	Average Load (Ampere)	Maximum Load (Ampere)
Junwani	10	200
N.T.R.O	10	150
Jewara Sirsa	10	260
Sunder Nagar	30	110
Kailash Nagar	10	150
Mother Teresa	10	170
Kurud Ind.	10	130
Nandini Road ind	10	240
SLDC back- up	ON	ON

Also, there is no space available for additional 33 KV feeders at 132/33 KV Substation Dhamdha and 132/33 KV Substation Kurud. It is to mention that 04 No. 33 K feeders will be fed through new proposed 132/33 KV Substation Jeora Sirsa. The details of which are

as under: -

Name of 33 KV Feeder	Voltage Regulation
IIT Kutelabhata	0.39 %
Jeora	8.02 %
HT	0.65 %
Bhesar	0.82 %

If a new proposed 132/33 KV Substation Jeora Sirsa is installed, then following feeders shall remain with the existing 132/33 KV Substation Kurud and 132/33 KV Substation Dhamdha and their existing Voltage Regulation and Voltage Regulation after installation of proposed Substations are as under: -

Name of Substation	Name of 33 KV feeder	Existing Voltage Regulation from Substation	Voltage Regulation from proposed Substation
132/33 KV Substation Kurud	Jeorsa Sirsa	13.98 %	0.05 %
132/33 KV Substation Dhamdha	Litiya	22.98 %	6.47 %

(ii) **<u>132/33 KV Substation Maharajpur, District-Rajnandgaon</u>**

At present power supply of Dongargarh area is being fed by 33 KV Chhuriya feeder emanating from 132/33 KV S/s Achholi (Dongargarh) and secondly 33 KV Chowki feeder from 132/33 KV S/s Amlidih (Dongargaon).The Voltage Regulation of existing 33 KV Chhuriya feeder emanating from 132/33 KV S/s Achholi (Dongargarh) is 24.87% and Voltage Regulation of existing 33 KV Chowki feeder emanating from 132/33 KV Amlidih (Dongargaon) S/s is 22.20% which higher than the norms of CSPDCL.Also the total length of 33 KV Chhuriya feeder is 38 Km and maximum load recorded on this feeder is 300 A and similarly total length of 33 KV Chowki feeder is 45.0 Km and maximum load recorded on this feeder is 292 A. Keeping in view lengthy 33 KV feeders and low voltage problem especially during Kharif crop season in 132 No. Villages near to Chhuriya, LB Nagar and Sadak Chirchari, CSPDCL has proposed to construct a new 132/33 KV Substation Maharajpur with transformation capacity of 2X40 MVA.

Details of maximum and average load on all 33 KV feeders emanating from 132/33 KV Substation Amalidih (Dongargaon) and Achholi (Dongargarh) are as under: -

(A) 132/33 KV Substation at Amalidih (Dongargaon) (2X40 MVA)

Name of 33 KV Feeder	Average Load (Ampere)	Maximum Load (Ampere)
Chauki	120	292
Dongargaon	124	272
Tumribod	132	330
Sukhanala	86	270
Bijebhata	20	58
Industrial	200	300
Arjuni	106	270

(B) 132/33 KV Substation at Achholi (Dongargaon) (2X40 MVA)

Name of 33 KV Feeder	Average Load (Ampere)	Maximum Load (Ampere)
Dongargaon (T)	160	230
Chhuriya	125	300
Achholi	160	340

Also, there is no space available for additional 33 KV feeders at 132/33 KV Substation Amalidih (Dongargaon) and 132/33 KV Substation Achholi (Dongargaon). It is to mention that 04 No. 33 KV feeders will be fed through new proposed 132/33 KV Substation Jeora Sirsa. The details of which are as under: -

Name of 33 KV Feeder	Voltage Regulation
LB Nagar	1.49 %
Sadak Chirchari	3.20 %
Chhuriya	4.47 %
Industrial Feeder	0.02 %

If a new proposed 132/33 KV Substation Maharajpur is installed, then following feeders shall remain with the existing 132/33 KV Substation Amalidih (Dongargaon) and 132/33 KV Substation Achholi (Dongargaon) and their existing Voltage Regulation and Voltage Regulation after installation of proposed Substations are as under:

Name of Substation	Name of 33 KV feeder	Existing Voltage Regulation from Substation	Voltage Regulation from proposed Substation
132/33 KV Substation Amalidih (Dongargaon)	Chauki	22.20 %	5.96 %
132/33 KV Substation Achholi (Dongargaon)	Chhuriya	22.90 %	4.28%

(iii) **<u>132/33 KV Substation Anda, District-Durg</u>**

At present power supply of Anda area is being fed by 33 KV Pulgaon feeder emanating from 132/33 KV S/s Pulgaon and secondly, from 33 KV Gunderdehi feeder from 132/33 KV S/s (Gunderdehi) Irraguda. The Voltage Regulation of existing 33 KV Pulgaon feeder emanating from 132/33 KV Pulgaon S/s is 2.97% (within limit) and Voltage Regulation of existing 33 KV Gunderdehi feeder emanating from 132/33 KV Irraguda S/s is 10.13% which is higher than the norms of CSPDCL.Also the total length of 33 KV Pulgaon feeder is 15 Km and maximum load recorded on this feeder is 200 A and similarly total length of 33 KV Gunderdehi feeder is 30.7 Km and maximum load recorded on this feeder is 230 A. It has been intimated that keeping in view of low voltage problem especially in paddy season and in summer season, lengthy 33 KV line and load growth in future, CSPDCL has proposed to construct a new 132/33 KV Substation Anda

with transformation capacity of 2X40 MVA.

It is to mention that 03 No. 33 KV feeders will be fed through new proposed 132/33 KV Substation Anda. The details of which are as under: -

Name of 33 KV Feeder	Voltage Regulation
Anda	0.32 %
Chankuri	1.59 %
Nikum	1.96 %

(iv) **132/33 KV Substation, Jamgaon (R), South Patan District-Durg :**

At present power supply of Patan area is being fed by 33 KV Jamgaon (R) feeder and 33 KV Ranitarai feeder emanating from 132/33 KV S/s Patan. The Voltage Regulation of existing 33 KV Jamgaon (R) feeder emanating from 132/33 KV Patan S/s is 20.67% which is higher than the norms of CSPDCL. Also the total length of 33 KV Jamgaon (R) feeder is 52.5 Km and maximum load recorded on this feeder is 11.99 MW and similarly total length of 33 KV Ranitarai feeder is 24 Km and maximum load recorded on this feeder is 5.86 MW. In order to ensure reliable power supply arrangement to agriculture consumers of Patan Area and also looking to fast Industrial and agriculture growth in future and to shorten lengthy 33 KV lines, CSPDCL has proposed to construct a new 132/33 KV Substation Jamgaon (R) with transformation capacity of 2X40 MVA.

Details of maximum and average load on all 33 KV feeders emanating from 132/33 KV Substation Patan are as under: -

Name of 33 KV Feeder	Average Load (Ampere)	Maximum Load (Ampere)
Sonpur	128	236
Jamgaon (T)	136	216
Patan	102	162
Ranitarai	68	114
Jamgaon - R	136	233
Selud	153	192
Parsada	102	158

Also there is no space available for additional 33 KV feeders at 132/33 KV Substation Patan. It is to mention that 03 No. 33 KV feeders will be fed through new proposed 132/33 KV Substation Jamgaon(R). The details of which are as under: -

Name of 33 KV Feeder	Voltage Regulation
Belhari	1.31 %
Gadadih	5.30 %
Didga	1.65 %

After construction of 132/33KV EHV substation at Jamgaon (R), South Patan, VR of 33 KV Jamgaon feeder will get reduced from 20.64% to 5.54%, hence voltage will get improved.

(v) **132/33 KV Substation Tarekela District-Mahasamund**

At present power supply of Bhavarpur Tarekela under Tahsil-Pithora, Distt._ Mahasamund is being fed by 33 KV Limdarha, Salkhand & Jagdispur feeders emanating from 132/33 KV S/s Sankra (Temri), 132/33 KV Basna & 220/132 KV S/s Saraipali. The Voltage Regulation of existing 33 KV Limdarha feeder emanating from 132/33 KV Sankra S/s is 35.75 %, Voltage Regulation of existing 33 KV Salkhand feeder emanating from 132/33 KV Basna S/s is 15.46% & Voltage regulation of 33 KV Jagdispur feeder emanating from 220/132 KV S/s Saraipali which is higher than the norms of CSPDCL. Also the total length of 33 KV Limdarha, Salkhand & Jagdishpur feeders are 72 Km, 44 KM & 39 KM respectively and maximum load recorded on this feeders are 13 MW, 18 MW & 13 MW respectively. Keeping in view agriculture pump load in nearby area of Tarekela, Bhavarpur and nearby villages of Pithora Tahsil & future load growth, CSPDCL has proposed to construct a new 132/33 KV Substation Tarekela, Tahsil-Pithora, Distt.-Mahasamund with transformation capacity of 2X40 MVA.

Details of maximum and average load on all 33 KV feeders emanating from 132/33 KV Substation Sankra, Basna & 220/132/33 KV s/s Saraipali are as under:-

(A) 132/33 KV Substation at Sankra (1X40 MVA + 1 x 63 MVA)

Name of 33 KV Feeder	Average Load (MW)	Maximum Load (MW)
Bhagat Dewri	12	15
Baldidih	12	16
Paraswani	13	16.5
Rajpur	12	16
Limdarha	10	14

(B) 132/33 KV Substation at Basna (1X40 MVA)

Name of 33 KV Feeder	Average Load (MW)	Maximum Load (MW)
Garhfuljhar	11	13.5
Salkhand (Bhanwarpur)	13	17
Basna town	7.5	8

(C) 220/132/33 KV S/s Saraipali (3x 40 MVA)

Name of 33 KV Feeder	Average Load (MW)	Maximum Load (MW)
Saraipali	9	10.5
Bhukel	11	16
Jagdispur	11	13
Bhanwarpur	14	16
Kosampali	12	15
Baloda	10	14
Maldamal	8.5	9.5
Ghanteshwari	11.5	13

Also there is no space available for additional 33 KV feeders at 220/132/33 KV Substation Saraipali and 132/33 KV Substation Sankra. At 132/33 KV S/s Basna space is available but low voltage problem in Tarekela area could not be solved due to long distance. It is to mention that 04 Nos. 33 KV feeders will be fed through new proposed 132/33 KV Substation Tarekela, Tahsil-Pithora, Distt.- Mahasamund. The details of which are as under:

Name of 33 KV Feeder	Voltage Regulation
Pirada	2.58 %
Arangi	5.39 %
Jagdispur	2.35 %
Badesajapali	5.38 %

If a new proposed 132/33 KV Substation Tarekela, Tahsil-Pithora, Distt.- Mahasamund is installed, then following feeders shall remain with the existing 132/33 KV Substation Sankra, Basna and 220/132/33 KV Substation Saraipali and their existing Voltage Regulation and Voltage Regulation after installation of proposed Substations are as under: -

Name of Substation	Name of 33 KV feeder	Existing Voltage Regulation from Substation	Voltage Regulation from proposed Substation
132/33 KV Substation Sankra	Limdarha	35.75 %	10.46 %
132/33 KV Substation Basna	Salkhand	15.46 %	2.72 %
220/132/33 KV S/s Saraipali	Jagdispur	12.61 %	5.29%

Commission's view

Proposal submitted for construction of new 132/33KV sub stations have been analyzed. The Commission is satisfied with the justification submitted by CSPTCL, hence, approves the above proposed schemes.

9. In addition to above capital works, CSPTCL has also submitted a proposal for Construction of 132KV DCDS Line between 220/132KV (Under-construction) Substation, Semaria & 132/33KV Rasmada +02 Nos 132KV feeder bay at 132KV Substation, Rasmada +02 Nos 132KV feeder bay at 220KV Substation, Semaria. The details of the same are as under:

S. No.	Particulars	Route Length of line in KM	Scheme Provision in Rs Crs
1	Construction of 132KV DCDS Line between 220/132KV (Under-construction) Substation, Semaria & 132/33KV Rasmada +02 Nos 132KV feeder bay at 132KV Substation, Rasmada +02 Nos 132KV feeder bay at 220KV Substation, Semaria.	28 KM (RL)	29.46

CSPTCL submitted that at present various HT connections are pending/in process on 132KV supply along with few CPP's grid connectivity cases from 132/33KV substation, Rasmada causing overloading of existing two number 132KV lines supplying power to 132 KV substation, Rasmada. 132KV substation, Rasmada is having 2x40MVA transformers with loading about 50-60 MW. With the connectivity of HT connections & CPPs as stated above and future load growth of the area receiving power from this substation, total loading of incoming 132KV lines may reach up to 110 to 130 MW. In case of tripping of one 132KV source line to substation out of existing two lines may cause interruption to the entire substation. Construction of 132KV DCDS Line between 220/132KV (Under-construction) Substation, Semaria & 132/33KV Rasmada shall provide additional 132KV source to Rasmada substation and also be useful to maintain uninterrupted supply to existing & upcoming load being supplied from this 132KV substation, Rasmada.

Commission's view

Proposal submitted for Construction of 132KV DCDS Line between 220/132KV Substation, Semaria & 132/33KV Rasmada, 02 Nos 132KV feeder bay at 132KV Substation, Rasmada and 02 Nos 132KV feeder bay at 220KV Substation, Semaria have been analyzed. The Commission is satisfied with the justification submitted by CSPTCL, hence, approves the above schemes.

10. Year-wise fund allocation

After prudence check of the above works, the Commission approves following year-wise fund allocation:

S. No.	Year	Fund Allocated (Rs. Crs.)
1.	FY 2022-23	55.63
2.	FY 2023-24	166.90
3.	FY 2024-25	55.63

11. Directives:

Petitioner CSPTCL is directed to complete the all above works within specified time. In case of any controllable delay, the Commission will not consider any cost overrun.

Sd/-
(Pramod Kumar Gupta)
Member

Sd/-
(Vinod Deshmukh)
Member (Judicial)