

Chapter 4

Annual Performance Review of FY 2021-22 and Revised Estimates for FY 2022-23

4.1 Background

PSPCL, in its Petition for Annual Performance Review (APR) of FY 2021-22 and Revised Estimates (RE) for FY 2022-23, has submitted the energy demand/requirement viz-a-viz availability, expenses/income of its generation & distribution businesses and the resultant gap; based on actual figures of H1 of FY 2021-22, estimated performance for the H2 of FY 2021-22 and revised estimates for FY 2022-23. The Commission has analyzed the same in this Chapter.

4.2 Energy Demand (Sales)

4.2.1 Metered Energy Sales

A. Energy Sales within the State

PSPCL's submissions:

PSPCL has submitted that, actual figures of energy sales have been considered for H1 of FY 2021-22 and energy sales for H2 of FY 2021-22 have been estimated by applying 3-year to 5-year half yearly (H2) CAGR on actual sales of H2 of FY 2019-20. Further, energy sales for FY 2022-23 have been projected with the energy sales of FY 2021-22 as base year.

PSPCL further submitted that breach of COVID-19 pandemic in India has had an impact on the overall demand for electricity and the pattern of electricity consumption within the category of consumers. Sales mix of PSPCL during second half of FY 2020-21 has been changed due breach of COVID-19 pandemic in State of Punjab and does not depict the actual energy consumption pattern. Therefore, the anticipated category wise energy sales for second half of FY 2021-22(H2) has been projected by considering Compound Annual Growth Rate (CAGR) for 3 to 5 years on base of second half of FY 2019-20 (H2).

Further, as the Railways has shifted into Open Access, consumption of the same is considered as NIL.

After normalization in sales of FY 2021-22 considering second half sales projections on the base of second half of FY 2019-20 (H2), sales projections for FY 2022-23 has been projected on base of FY 2021-22.

The CAGRs considered by PSPCL are as under:

Table 78: CAGRs considered by PSPCL for projecting energy sales

Sr. No.	Category	FY 2021-22(H2)	FY 2022-23
I	II	III	IV
1.	Domestic	1%	2%
2.	Non-Residential (NRS)	5%	1%
3.	Small Power Ind.	5%	4%
4.	Medium Supply Ind.	5%	7%
5.	Large Supply Ind.	5%	7%
6.	Street Lightning	5%	5%
7.	Bulk Supply	1%	2%
8.	Railway Traction	3%	2%
9.	AP	5%	5%
10.	Compost/Solid Waste Management/ Rural Water Works	0%	0%
11.	Charitable Hospitals	0%	0%
12.	Golden Temple	0%	0%
13.	Start-Up Power	0%	0%
14.	Temporary Supply	0%	0%

Accordingly, the projection of metered energy sales submitted by PSPCL for FY 2021-22 and FY 2022-23 are as follows:

Table 79: Category-wise energy sales projected by PSPCL for FY 2021-22 and FY 2022-23

Sr. No.	Consumer Category	Projected Energy Sales	
		FY 2021-22	FY 2022-23
I	II	III	IV
1	Domestic	14305	14631
2	Non-Residential	3948	3991
3	Small Power Ind.	1261	1312
4	Medium Supply Ind.	3540	3792
5	Large Supply Ind.	17003	18188
6	Public Lighting	131	138
7	Bulk Supply	660	670
8	Railway Traction	-	-
9	AP High Tech/ High Density Farming	0.1	0.1
10	Compost/ Solid waste Management Plants/ Rural Water Works	139	146
11	Charitable Hospitals set-up under PWD Act	0.002	0.002
12	Start-up Power for generators/CPPs	167	167
13	Golden Temple & Durgiana Mandir, Sri Amritsar Sahib	11	11
14	Temporary Supply	220	220
15	Total metered Sales (within the State)	41385	43266

Commission's Analysis:

The Commission has considered the CAGRs submitted by PSPCL for projecting the sales for FY 2021-22 and FY 2022-23. Thus, the Commission approves the energy sales within the State same as that submitted by PSPCL i.e. 41385 MWh for review of FY 2021-22 and 43266 MWh for FY 2022-23.

B. Common Pool/Outside State Sales

PSPCL has projected sales to common pool consumers as 301 MWh and 70 MWh for FY 2021-22 and FY 2022-23 respectively. The Commission decides to accept the figures submitted by PSPCL for Common Pool sales and outside State sale for FY 2021-22 and FY 2022-23.

4.2.2 AP Consumption

PSPCL's submission:

PSPCL submitted that the Agriculture sales are attributable to ground water table, strength of monsoon and rapid urbanization. For estimation of AP consumption for FY 2021-22, PSPCL has considered the actual AP consumption for H1 of FY 2021-22 based on pumped energy methodology.

PSPCL submitted that segregation of Agriculture feeders for Kandi area has already been started and is likely to be completed in near future. Till that time, AP consumption for Kandi area mixed feeders has to be calculated as per the existing approach. PSPCL has calculated the AP consumption of Kandi area mixed feeders as 30% of the total consumption in line to the Commission's methodology for computing AP consumption on Kandi area mixed feeders.

Actual AP consumption for first half of FY 2021-22 as submitted by PSPCL is as under:

Table 80: AP consumption for FY 2021-22 submitted by PSPCL (MWh)

Sr. No.	Category	FY 2021-22 (H1)
I	II	III
1.	Energy pumped in case of 3 Phase 3 Wire AP feeders	10438
2.	Energy pumped in case of 3 Phase 4 Wire AP feeders	4
3.	Energy pumped in case of Kandi area mixed feeders	1356
4.	Energy pumped in case of Kandi area pure AP feeders	24
5.	Total Energy Pumped	11822
6.	<i>Less: Losses @10.49%</i>	<i>949</i>
7.	Net AP consumption for H1 of FY 2021-22	10873
8.	Metered AP Consumption	96
9.	Total AP Consumption (H1)	9828
10.	Total AP Consumption projections for H2	2128
11.	Total AP Consumption	11956

For FY 2022-23 PSPCL has projected AP consumption as 12255 MWh.

Commission's Analysis:

The Commission accepts the projections of AP consumption as 11956 MWh and 12255 MWh for FY 2022-23. The Commission shall re-assess the same at the time of true-up of FY 2021-22 and FY 2022-23 respectively based on the

actual figures available and after considering the efforts/physical progress made by PSPCL regarding the compliance of various directives given by the Commission.

4.2.3 Total Energy Sales

The total energy sales as per PSPCL's submission and approved by the Commission for FY 2021-22 and FY 2022-23 are as follows:

Table 81: Total energy sales approved by the Commission for FY 2021-22 and FY 2022-23

MkWh

Sr. No.	Particulars	FY 2021-22		FY 2022-23	
		Submitted by PSPCL	Approved by the Commission	Submitted by PSPCL	Approved by the Commission
I	II	III	IV	V	VI
1.	Metered sales within State	41385	41385	43266	43266
2.	AP consumption	11956	11956	12255	12255
3.	Total sales within State	53341	53341	55521	55521
4.	Common pool sale	301	301	301	301
5.	Outside State sale	70	70	70	70
6.	Total	53712	53712	55892	55892

4.3 Transmission & Distribution Losses and Energy Requirement

4.3.1 Transmission & Distribution Losses

PSPCL's Submissions:

PSPCL has considered the distribution & transmission losses as approved by the Commission in the Tariff Order for FY 2021-22. The distribution & transmission losses considered by PSPCL are as follows:

Table 82: Distribution & transmission losses considered by PSPCL

Sr. No.	Particulars	FY 2021-22	FY 2022-23
I	II	III	IV
1.	Distribution loss	12.34%	12.04%
2.	Transmission loss	2.46%	2.44%

Commission's Analysis:

The Commission in the Tariff Order of PSPCL for FY 2021-22 had approved the distribution loss targets of 12.34% and 12.04% for FY 2021-22 and FY 2022-23 respectively. Further, the transmission loss trajectory was approved as 2.46% and 2.44% for FY 2021-22 and FY 2022-23 respectively. The Commission decides to retain the same targets for FY 2021-22 and FY 2022-23 in this Order. Accordingly, the distribution and transmission loss targets approved by the Commission for FY 2021-22 and FY 2022-23 are as follows:

Table 83: Distribution and transmission loss target trajectory approved by the Commission for 2nd MYT period

Sr. No.	Particulars	FY 2021-22	FY 2022-23
I	II	III	IV
1.	Distribution loss	12.34%	12.04%
2.	Transmission loss	2.46%	2.44%

4.3.2 Energy Requirement

PSPCL in its petition has projected the total energy requirement of 62864 MkWh and 65192 MkWh in its petition. However, vide Memo No. 922/ARR/Dy.CAO/263/Vol.I dated 24.12.2022 PSPCL submitted the revised energy requirement for FY 2021-22 and FY 2022-23 as 62816 MkWh and 65137 MkWh after excluding the generation/RE power of 1884 MkWh and 2186 MkWh respectively available at 66kV of PSPCL's distribution system for calculation of transmission losses. Further, from the energy requirement submitted by PSPCL it was observed that PSPCL has included Royalty to HP from Shanan and Share from RSD to HP in the total energy requirement, however the same has not been included in hydro generation. Since the Commission has already reduced the same from the hydel generation the same has not been considered as part of energy requirement

The energy requirement for FY 2021-22 and FY 2022-23 approved by the Commission in the Tariff Order for FY 2021-22, submitted by PSPCL and approved by the Commission are as follows:

Table 84: Energy Requirement for FY 2021-22

Sr. No.	Particulars	Approved by the Commission in TO of FY 2021-22	Submitted by PSPCL	Now Approved by the Commission
I	II	III	IV	V
1	Energy Sales within the State	50679	53341	53341
2	Target Distribution Loss			
	%	12.34%	12.34%	12.34%
	MkWh	7134	7509	7509
3	Input Energy Required	57813	60849.87	60850
4	Gen. /RE power available at 66 KV and below	2495	1884	1884
5	Input Energy Required (excluding NRSE Gen. Power available at 66 KV and below)	55318	58966	58966
6	Target Transmission Loss			
	%	2.46%	2.46%	2.46%
	MkWh	1395	1487	1487
7	Total Energy Input Required (excluding NRSE Gen. Power available at 66 KV and below)	56713	60453	60453
8	Total Energy Input Required	59208	62337	62337
9	Sales to Common pool consumers	301	301.00	301
10	Outside State Sales	405	70.00	70
11	Total Requirement	59914	62708	62708

Table 85: Energy Requirement for FY 2022-23

Sr. No.	Particulars		Approved by the Commission in the MYT Order	Submitted by PSPCL	Now Approved by the Commission
I	II		III	IV	V
1	Energy Sales within the State		56128	55521	55521
2	Target Distribution Loss	%	10.64%	12.04%	12.04%
		MkWh	6683.00	7599.74	7600
3	Input Energy Required		62811	63120.74	63121
4	Gen. /RE power available at 66 KV and below		2599	2186	2186
5	Input Energy Required (excluding NRSE Gen. Power available at 66 KV and below)		60212	60934	60935
6	Target Transmission Loss	%	2.44%	2.44%	2.44%
		MkWh	1506	1524	1524
7	Total Energy Input Required (excluding NRSE Gen. Power available at 66 KV and below)		61718	62458	62459
8	Total Energy Input Required		64317	64644	64645
9	Sales to Common pool consumers		307	301.00	301
10	Outside State Sales		-	70.00	70
11	Total Requirement		64624	65015	65016

Accordingly, the Commission approves the energy requirement of 62708 MkWh for FY 2021-22 and 65016 MkWh for FY 2022-23.

4.4 PSPCL's Net Thermal Generation

PSPCL's Submissions:

PSPCL has considered the actual Generation for H1 of FY 2021-22. For H2, power availability from State's own thermal Generating Stations has been projected on the basis of various performance parameters such as plant load factor, gross generation and auxiliary consumption. For FY 2022-23, PSPCL has submitted that it has projected energy to be scheduled from Own Thermal Generating Stations based on Merit Order principle. PSPCL has further submitted that, it has undertaken consistent and regular maintenance apart from timely renovation and overhaul of its units to sustain the generation from each of these power plants at the target output level set by the CEA. The Net Thermal Generation for FY 2021-22 and FY 2022-23 approved by the Commission in the Tariff Order for FY 2021-22 and the MYT Order for FY 2021-22 and FY 2022-23 respectively and submitted by PSPCL are as follows:

Table 86: Thermal Generation (Net) submitted by PSPCL

MkWh

Sr. No.	Station	Installed Capacity (MW)	Approved by the Commission		Submitted by PSPCL	
			FY 2021-22	FY 2022-23	FY 2021-22	FY 2022-23
I	II	III	IV	V	VI	VII
1.	GGSSSTP	4x 210 = 840	1647.10	2098.00	1651.08	2212.00
2.	GHTP	2(250+210) = 920	1843.54	2634.00	1676.48	2218.16
3.	Total	1760	3490.64	4732.00	3327.56	4430.16

Commission's Analysis:

The Commission accepts the net thermal generation projections (rounded off) from PSPCL's own plants as 1651 MkWh and 1676 MkWh for GGSSTP and GHTP respectively for FY 2021-22, and 2212 MkWh and 2218 MkWh for GGSSTP and GHTP respectively for FY 2022-23.

4.5 PSPCL's Hydel Generation**PSPCL's Submissions:**

The availability from own Hydel plants for FY 2021-22 and FY 2022-23 have been estimated based on the actual generation during H1 of FY 2021-22. PSPCL has also considered Royalty to HP from Shanana and Share to HP from RSD for FY 2021-22 and FY 2022-23.

Commission's Analysis:

The Commission accepts the station-wise gross hydel generation submitted by PSPCL (after rounding off). Accordingly, hydel generation approved by the Commission is as follows:

Table 87: PSPCL's Hydel generation approved by the Commission for FY 2021-22 and FY 2022-23

MkWh

Sr. No.	Station	FY 2021-22		FY 2022-23	
		Submitted by PSPCL	Approved by the Commission	Submitted by PSPCL	Approved by the Commission
I	II	III	IV	V	VI
1	Shanan	485.81	486	465	465
2	UBDC	Stage I	163.09	163	150
		Stage II	174.26	174	230
3	RSD	1208.56	1209	1516	1516
4	MHP Stage I	Stage I	1026.48	1026	1080
		Stage II	89.78	90	90
5	ASHP	551.94	552	581	581
6	Micro Hydel	3.15	3	0	0
7	Total own generation (Gross)	3703.07	3703	4112	4112
8	Less: Auxiliary consumption and Transformation Loss	31.30	*30	31.26	*34
9	Less: HP share in RSD	55.59	56	69.41	69
10	Less: J&K share in RSD	0.00	0	0.00	0
11	Less HP Royalty in Shanan	53.00	53	53.00	53
12	Total own generation (Net)	3563.17	3564	3958.33	3956
13	PSPCL share from BBMB				
(a)	PSPCL share excluding common pool share (Net)	3277.89	3278	3998.38	3998
(b)	Add Common pool share	300.63	301	300.63	301
14	Net share from BBMB	3578.52	3579	4299.01	4299
15	Total hydro availability (Net) (Own + BBMB)	7141.69	7143	8257.33	8255

**Transformation loss @0.5%, Auxiliary consumption @0.5% for RSD and UBDC stage-I (having static excitors) and @0.2% for others.*

The Commission, thus, approves the PSPCL's own net hydel generation as 7143 MkWh and 8255 MkWh for FY 2021-22 and FY 2022-23 respectively.

4.6 Energy Balance/Purchase (Net) required

PSPCL's Submission:

PSPCL in its petition has submitted total energy availability of 62864 MkWh and 65192 MkWh for FY 2021-22 and FY 2022-23 respectively including net power purchase of 52389 MkWh and 52504 MkWh for FY 2021-22 and FY 2022-23 respectively

Commission's Analysis:

PSPCL vide reply dated 27.12.02022 submitted the revised energy requirement of 62816 MkWh and 65137 MkWh for FY 2021-22 and FY 2022-23 respectively. However, on perusal of the same it was observed that there is variation in the revised energy requirement and the energy availability submitted by PSPCL. PSPCL has inadvertently included 109 MkWh and 122 MkWh pertaining to HP Royalty to Shanan and HP share in RSD for FY 2021-22 and FY 2022-23 respectively in energy requirement while reducing the same from hydel generation also.