

## **TEHRI DAM & HPP (1000 MW)** **(UNDER OPERATION)**

Tehri Dam and HPP (1000 MW) comprises a 260.50m high Earth & Rockfill dam, one of the highest dams of its type in the world, a Spillway System designed for PMF of 15540 cumecs and a drop of 220m, having one Chute Spillway and four Shaft Spillways and an underground Power House housing four Turbine/ Generator sets of 250MW each, designed to operate with a head variation of 90m.

Project was commissioned in 2006-07 and all four machines of Tehri HPP are under commercial operation. Besides providing much needed power to the Northern Grid, the command area is availing irrigation benefits from the Project and drinking water is being supplied to Delhi and UP.

After long persuasion with GoUK and with the help of MoP, the long-awaited permission to fill Tehri Reservoir up to 830m (FRL) has been granted and Tehri HPP (1000MW) has also achieved its full reservoir potential (EL830m) on 24.09.2021. This achievement of FRL will enhance the energy generation and will also support in regularizing the downstream requirements of water for irrigation, drinking, flood control etc.

### **COMMISSIONING OF PROJECT**

All four units (Unit-IV, Unit-III, Unit-II & Unit-I) were synchronized with the Northern Grid in Jul'2006, Oct'2006, Jan'2007 & Mar'2007 respectively and are in commercial operation w.e.f. 22.09.2006, 09.11.2006, 30.03.2007 & 09.07.2007 respectively.

### **GENERATION:**

Details of generation from Tehri HPP for the previous years are as under:

S.No.	Years	Generation	
		Target (MU)	Achievement (MU)
1	2006-07	888.00	891.37
2	2007-08	2649.00	2663.58
3	2008-09	2649.00	3164.23
4	2009-10	2850.00	2116.79
5	2010-11	2797.00	3116.03
6	2011-12	2797.00	3983.65
7	2012-13	3000.00	3101.99
8	2013-14	2797.00	4060.43
9	2014-15	2900.00	3004.01
10	2015-16	2920.00	3101.06
11	2016-17	2964.82	3146.23
12	2017-18	3014.49	3080.91
13	2018-19	3106.39	3172.15
14	2019-20	3050.09	3041.72
15	2020-21	3015.00	3042.24
16	2021-22	3000.33	3098.12
17	2022-23	3000.00	3284.79
<b>Total</b>		<b>47398.12</b>	<b>51069.30</b>

Details of generation from Tehri HPP for the current F.Y. 2023-24 are as under:

S.No.	Quarter/ Month	Generation	
		Target (MU)	Achievement (MU)
1	Apr'23 to Jun'23	523.70	524.50
2	Jul'23 to Sep'23	994.94	1272.47
3	Oct'23	217.18	260.29
4	Nov'23	205.68	244.28
5	Dec'23	302.02	260.46
<b>Total (up to Dec'23)</b>		<b>2243.52</b>	<b>2562.00</b>

Cumulative generation during F.Y.2023-24 till Dec'23 is 2562.00 MU against the target of 2243.52 MU and average cumulative PAF achieved is 82.41% against the target of 80.10%.

**COMPLETION COST:**

Approved Completion Cost of the Project is ₹ 8392.45cr including IDC plus contingent liabilities on account of arbitration award / court cases etc, as per actual but not exceeding ₹ 967.38cr.

**TARIFF:**

The tariff for the period 2019-24 for Tehri HPP (1000 MW) has been approved by Hon'ble Commission in Petition No. 97/GT/2020.

## KOTESHWAR HEP (400 MW) (UNDER OPERATION)

Koteshwar Hydro-Electric Plant (400 MW), located 22km downstream of Tehri, is an integral part of Tehri Power Complex that comprises of Tehri Dam & HPP (1000 MW), Tehri PSP (1000 MW) and Koteshwar HEP (400 MW) built to develop Hydro-electric potential of river Bhagirathi. It facilitates the functioning of Tehri Power Complex as a major peaking station in Northern Grid, as reservoir created by Koteshwar Dam having a live storage capacity of 35 MCM functions as lower (balancing) reservoir for Tehri PSP. This plant is also regulating water releases from Tehri reservoir for irrigation and drinking purposes.

### COMMISSIONING OF PROJECT

All four units (Unit-I, Unit-II, Unit-III & Unit-IV) were synchronized with the Northern Grid in Mar'2011, Mar'2011, Jan'2012 & Mar'2012 respectively and are in commercial operation w.e.f. 01.04.2011, 26.10.2011, 13.02.2012 & 01.04.2012 respectively.

### GENERATION

Details of generation from Koteshwar HEP are as under:

S.No.	Years	Generation	
		Target (MU)	Achievement (MU)
1	2011-12	537.00	607.60
2	2012-13	1145.00	1164.05
3	2013-14	1155.00	1521.83
4	2014-15	1170.00	1210.17
5	2015-16	1080.00	1247.21
6	2016-17	1224.30	1224.54
7	2017-18	1224.86	1220.33
8	2018-19	1230.00	1223.80
9	2019-20	1186.05	1203.20
10	2020-21	1185.00	1221.45
11	2021-22	1160.08	1190.69
12	2022-23	1160.33	1255.20
<b>Total</b>		<b>13247.62</b>	<b>14290.07</b>

Details of generation from Koteshwar HEP for the current F.Y. 2023-24 are as under:

S.No.	Quarter/ Month	Generation	
		Target (MU)	Achievement (MU)
1	Apr'23 to Jun'23	266.16	230.24
2	Jul'23 to Sep'23	364.33	441.53
3	Oct'23	70.68	87.62
4	Nov'23	68.40	84.23
5	Dec'23	103.21	89.91
<b>Total (up to Dec'23)</b>		<b>872.78</b>	<b>933.53</b>

Cumulative generation during F.Y.2023-24 till Dec'23 is 933.53 MU against the target of 872.78 MU and average cumulative PAF achieved is 64.98 % against target of 63.22%.

### TARIFF:

The tariff for the period 2019-24 for Koteshwar HEP (400 MW) has been approved by Hon'ble Commission in Petition No. 244/GT/2020. Koteshwar HEP has been outsourced for operation to M/s BOMS Pvt Ltd. on 20.02.2023 for a period of two years with effect from 20.03.2023.

### COMPLETION COST:

Govt. of India approved the implementation of Koteshwar Hydro Electric Project (4 X 100 MW) in Apr'2000 at a cost of ₹1301.56cr including IDC of ₹ 190.04cr at Oct.'1999 price level. CCEA in its meeting held on 06.03.2017 approved the Revised Cost Estimate (RCE-1) at an estimated completion cost of ₹ 2717.35cr.

## PATAN WIND POWER PROJECT (50 MW) (UNDER OPERATION)

The Wind Power Project located in Distt. Patan, Gujarat having an installed capacity of 50 MW which comprises 25 nos. Wind Turbine Generators (WTGs), installed in four villages namely Amrapur, Ved, Vahedpura and Anwarpura that are approximately 200km from Ahmedabad and 120km from Mehsana and each of 2 MW capacity. The overview of the project is as under:

S.N.	Particular	
1.	Name of Site / Distt. / State	Village Amrapur, Ved, Vahedpura and Anwarpura, Dist. Patan, Gujarat
2.	Project Capacity (MW)	50 MW (25 x 2MW)
3.	WTG Model	G97 – 2.0 MW
a	WTG rating (kw)	2000
b	Hub Height (m)	90
c	Rotor Diameter (m)	97
4.	Type of Land	Revenue
5.	Pooling Sub-Station near Wind Farm	Existing 220/33KV SS at Amarapur
6.	GETCO Sub-Station	Tharad SS approx 90km from PSS.

### COMMISSIONING OF PROJECT:

The Project was commissioned on 29.06.2016, ahead of the schedule.

The project has been registered with IREDA for availing of Generation Based Incentive (GBI) @ Rs.0.50 / kwh with a cap of Rs. 1 Cr. per MW. The project will receive a total GBI of Rs. 50 Cr. under this scheme of MNRE. 2463

The expected Annual Generation from the project is 110.50 MU with 25.22% capacity factor. The Power Purchase Agreement (PPA) for the project has been signed with Gujarat Urja Vikas Nigam Limited (GUVNL) at a fixed tariff of Rs. 4.15 / unit for 25 years of life of the project.

### GENERATION:

Details of generation from Patan Wind Power Project are as under:

S. N.	Year	Generation (in MU)	CUF (%)
1	2016-17	59.041	17.59 %
2	2017-18	90.22	20.60 %
3	2018-19	108.32	24.73%
4	2019-20	104.07	23.70%
5	2020-21	75.64	17.27%
6	2021-22	77.74	17.75%
7	2022-23	77.71	17.74%
<b>Total</b>		<b>592.74</b>	<b>20.02%</b>

The details of generation from Patan Wind Power Project for the current financial year 2023-24 are as under:

S.N.	Month	Target (in MU)	Generation (in MU)	CUF (%)
1	Apr'23 to Jun'23	26.00	26.35	24.13%
2	Jul'23 to Sep'23	21.00	21.41	19.39%
3	Oct'23	3.00	2.42	6.47%
4	Nov'23	4.00	3.98	11.07%
5	Dec'23	7.00	5.65	15.20%
<b>Total (up to Dec'23)</b>		<b>61.00</b>	<b>59.81</b>	<b>18.12%</b>

Cumulative generation during FY 2023-24 upto Dec'23 is 59.81 MU against the target of 61.00 MU and CUF achieved is 18.12%.

## DEVBHUMI DWARKA WIND POWER PROJECT (63 MW) (UNDER OPERATION)

The Project is having an installed capacity of 63 MW comprising of 30 nos. Wind Turbine Generators (WTGs) installed in seven villages namely Jampar, Kotadiya, Fot, Kandorna, Gundala, Gunda & Bajana situated in Bhanvad and Kandorna Wind farms in distt. Devbhumi Dwarka, Gujarat are approx. 190 Km from Rajkot and 410 Km from Ahmedabad each of 2.1 MW capacity. The overview of the Project is as under:

S.N.	Particulars		
1.	Name of Site / Distt. / State	Bhanvad, District DevbhumiDwarka, Gujarat	Kandorna, District Devbhumi, Dwarka, Gujarat
2.	Project Capacity (MW)	18.9 MW (09 x 2.1 MW)	44.1 MW (21 x 2.1 MW)
3.	WTG Model	S97-120	S97-120
a	WTG rating (kW)	2100	2100
b	Hub Height (Mtr.)	120	120
c	Rotor Diameter (Mtr.)	97	97
4.	Type of Land	Revenue	Revenue
5.	Pooling Sub-Station near Wind farm	132 /33 kV, 3x50 MVA, Gunda Pooling Sub-Station	66 /33 kV, 2x25 MVA, Bajana Pooling Sub-Station
6.	GETCO Sub-Station	Bhomiyavada GETCO SS	Babarzar GETCO SS

### COMMISSIONING OF PROJECT:

The Project was commissioned on 31.03.2017. By commissioning of Project on 31.03.2017, THDCIL is eligible to receive Generation Based Incentive (GBI) to the extent of Rs. 63 Cr. from Govt. of India.

The expected Annual Energy Production (AEP) from the Project is 144.9 MU with 26.27% CUF. The Power Purchase Agreement (PPA) for the Project has been signed with Gujarat Urja Vikas Nigam Limited (GUVNL) at a fixed tariff of Rs. 4.19 / kWh for 25 years.

### GENERATION:

Details of generation from Devbhumi Dwarka Wind Power Project are as under:

S. No.	Year	Generation (in MU)	CUF (%)
1	2016-17	0.1387	0.30 %
2	2017-18	149.447	27.08 %
3	2018-19	182.887	33.14%
4	2019-20	177.83	32.13%
5	2020-21	136.44	24.72%
6	2021-22	156.90	28.43%
7	2022-23	140.75	25.50%
<b>Total</b>		<b>944.39</b>	<b>28.49%</b>

The details of generation from Devbhumi Dwarka Wind Power Project for the current financial year 2023-24 are as under:

S. N.	Month	Target (In MU)	Generation (in MU)	CUF (%)
1	Apr'23 to Jun'23	38.60	34.23	24.88%
2	Jul'23 to Sep'23	39.50	46.21	33.21%
3	Oct'23	6.50	3.57	7.62%
4	Nov'23	12.00	9.47	20.88%
5	Dec'23	13.50	15.54	33.16%
<b>Total (up to Dec'23)</b>		<b>110.10</b>	<b>109.03</b>	<b>26.22%</b>

Cumulative generation during FY 2023-24 up to Dec'23 is 109.03 MU against the target of 110.10 MU and CUF achieved is 26.22%.

## **DHUKWAN SHEP (24 MW) (UNDER OPERATION)**

Dhukwan SHEP has been constructed at the toe of existing Dhukwan masonry cum earthen dam across Betwa River in district Jhansi, UP. The 8.22 M high existing dam is 2972 M long. The major works executed by THDCIL are Approach Channel approx. 502m long, 4 no. RCC Barrels, Intake works, HRC approx. 1451m long, Forebay, Spillway with spill channels, Surface Power House, TRC approx. 919 m long, Cross Drainage Works and Switchyard. Annual Energy Generation shall be 97.82 MU at 46.53% load factor (as per availability of water).

### **COMMISSIONING OF PROJECT:**

Project has been commissioned on 20.12.2019.

### **COD Permission:**

PPA signed with UPPCL of Dhukwan Project was approved by Hon'ble UPERC on 13.05.2020. UPPCL vide letter no.-112/CE/PPA-R, dtd. 05.06.20, consented the COD of Dhukwan SHEP at 00:00 Hrs on date 13.01.2020

**TARIFF:** UPERC approved the fixed Tariff of Rs.4.87/kwh, vide order dated 19.05.2020 with effect from Commercial Operation date of Dhukwan SHEP.

MOU for water permission was signed with GoUP on 28<sup>th</sup> Aug'20.

### **GENERATION:**

S.No.	Years	Generation	
		Target (MU)	Achievement (MU)
1	2020-21	86.00	72.24
2	2021-22	60.00	58.25
3	2022-23	60.00	82.47
<b>Total Generation</b>		<b>206.00</b>	<b>212.96</b>

Details of generation from Dhukwan SHEP for the current F.Y. 2023-24 are as under:

Sl.No.	Quarter/ Month	Generation	
		Target (MU)	Achievement (MU)
1	Apr'23 to Jun'23	10.00	9.07
2	Jul'23 to Sep'23	11.50	22.70
3	Oct'23	12.50	10.03
4	Nov'23	14.00	4.38
5	Dec'23	10.00	8.51
<b>Total (up to Dec'23)</b>		<b>58.00</b>	<b>54.69</b>

Cumulative generation during FY 2023-24 up to Dec'23 is 54.69 MU against the target of 58.00 MU and cumulative PAF achieved is 34.53%.

**Note:** Generation is being done as per the Head availability and Water discharge from reservoir by UPID.

## **SOLAR PV POWER PLANT (50 MW) (UNDER OPERATION)**

- THDCIL & Solar Energy Corporation of India (SECI) have signed an MOU on 13.02.2015 for setting up 250 MW Solar PV Projects in India.
- The work of Solar PV Power Plant (50 MW) was awarded to M/s Tata Power Solar System Limited (TPSSL) on 08.08.2019 for “Comprehensive Operation & Maintenance (O&M) for 10 years”.
- The project specification includes installation of 1,65,149 nos. Multi Crystalline Solar PV modules of capacity 355Wp, 360Wp, 365Wp, 400 Wp, 405Wp & 410Wp.
- Project has been commissioned on 31.12.2020 and dedicated to the Nation by Hon’ble Prime Minister on 19.02.2021.
- Total expenditure incurred on the project is ₹ 253.78 Cr.

The Power Purchase Agreement (PPA) was signed between THDCIL and KSEBL on 11.08.2022. This PPA will remain in force for a period of 25 Years w.e.f. 31.12.2020 (Commercial Operation Date of Project) at a Levellized Tariff of ₹ 3.10 per unit.

### **GENERATION:**

S.No.	Years	Generation
		Achievement (MU)
1	2020-21	17.35
2	2021-22	89.11
3	2022-23	94.58
<b>Total Generation</b>		<b>201.04</b>

The detail of generation from 50 MW Solar Power Plant for the current financial year 2023-24 is as under:

S. N.	Month	Target (in MU)	Generation (in MU)
1	Apr'23 to Jun'23	21.50	25.57
2	Jul'23 to Sep'23	18.50	19.20
3	Oct'23	8.00	8.24
4	Nov'23	8.00	7.84
5	Dec'23	9.00	8.84
<b>Total (up to Dec'23)</b>		<b>65.00</b>	<b>69.68</b>

Cumulative generation during F.Y.2023-24 till Dec'23 is 69.68 MU against the target of 65.00 MU.