

BEFORE THE HARYANA ELECTRICITY REGULATORY COMMISSION

BAYS No. 33-36, SECTOR-4, PANCHKULA- 134112, HARYANA

Case No. HERC/PRO – 38 of 2019

DATE OF HEARING : 16.09.2019

DATE OF ORDER : 17.09.2019

IN THE MATTER OF:

Petition under Section 86 (1)(a) & (e) of the Electricity Act, 2003 read with Regulation 66 of the Haryana Electricity Regulatory Commission (Terms and condition of determination of Tariff from Renewable Energy Sources, Renewable Purchase Obligation and Renewable Energy Certificate) Regulations, 2017 and Regulation 23 of the Haryana Electricity Regulatory Commission (Conduct of Business) Regulations, 2004, seeking approval of 'Grid Connected Solar Powered Tubewell Pump' Project.

Petitioner

Uttar Haryana Bijli Vitran Nigam Ltd. (UHBVNL)
and
Dakshin Haryana Bijli Vitran Nigam (DHBVN)

On behalf of Petitioners

1. Smt. Sonia Madan, Advocate
2. Shri P.K. Nautial, SE (HAREDA)
3. Shri B.S. Kamboj, XEN (UHBVNL)
4. Shri JS Kohli, TE (HAREDA)
5. Shri Ankur, Sr. Consultant (UHBVNL)
6. Shri Arun, AEE (UHBVNL)

QUORUM

Shri Pravindra Singh, Member

Shri Naresh Sardana, Member

ORDER

1) Brief Background of the Case

1.1) The Petitioners have filed the present Petition seeking approval of implementation of the 'Grid Connected Solar Powered Tubewell Pump' Project along with the incentive to be paid to the farmers for evacuation of the surplus solar power back to the grid.

1.2) The Petitioner's submissions are briefed as follows:

- a) The Commission vide their Memo No. 1684/HERC/Tariff/SV-2/2015 dated 14.09.2015 had issued an advice to the Additional Chief Secretary to Govt.

Haryana, Power Department, with respect to the Renewable Energy (RE) subsidy, as follows:

- i) The RE subsidy has increased from Rs. 531 Crore in the FY 1999-2000 to Rs. 6196.9 Crore in the FY 2015-16. The estimated RE subsidy, including the arrears, payable by the State Government, in FY 2015-16 adds up to Rs. 10,215.27 Crore.
 - ii) There is an urgent need to take a fresh look at the entire gamut of RE subsidy including its delivery, in-line with the National Electricity Policy which provides for the 'Recovery of Cost of Services & Targeted Subsidy'.
 - iii) A change in the method of the RE subsidy administration and delivery, from the existing tariff subsidies (as against Cost to Supply of Rs. 7.34/kWh the average tariff charges is just about 11 paise/kWh i.e about 1.5% cost coverage as against 50% stipulated by the National Electricity Policy for BPL consumers) to direct subsidy based on entitlement, is required.
 - iv) Accordingly, Commission had suggested installation of AP Solar PV Pumps to reduce subsidy dependence.
- b) On advice of the Commission and under the guidance of the Government of Haryana, a decision had been taken to implement the 'Grid Connected Solar Powered Tubewell Pump' Project.
- c) In July 2018, the Government of Haryana had sought technical assistance and guidance from World Bank to operationalize its vision. A World Bank team reviewed the past experiences of grid connected solar pumps and analyzed the available secondary data. Further, after detailed discussions with UHBVN officials and farmers in Karnal and Yamunanagar, the team submitted its report to develop a 'Roadmap for Piloting Solarisation of Agricultural Feeders in Haryana'. The pilot will act as a demonstrator of the technology as well as commercial and financial viability of solarizing agricultural pumps. Most importantly, the pilots will generate useful data and insights for a State level solar policy.
- d) As per the said report, Haryana has more than 605,000 agricultural tubewell connections, with another 40,000 farmers waiting to get grid connection, which has further increased to nearly 84537 connection till 31.12.2018. In addition, there are about 350,000 diesel pumps. The 605,000 electric pump sets consume an estimated 857.1 crore kWh (units) of electricity i.e. average 14,160 kWh per pump per annum. Further the electricity supply to farmers is highly subsidized and, on average, farmers pay only Rs. 0.11/kWh against a cost of supply of Rs. 7.34/kWh.

- e) The Government of Haryana's annual farm subsidy burden is a daunting Rs. 6,196.90 crores, amounting to an average per pump annual subsidy of Rs. 101,220. Not only is the farm subsidy burden in Haryana high and unsustainable, the regime under which the subsidy is delivered to farmers has also led to inefficient and unsustainable pumping of groundwater.
- f) Such high increase in RE subsidy is clearly not a sustainable situation in the long run for any State Govt. & the DISCOMs. In order to reduce this RE subsidy burden, the promotion of solar water pumping system is the only solution. Replacing the electric pumps with solar irrigation pumps will help state government and its utilities to reduce the burden of RE subsidy, save electricity and promote environment friendly green energy.
- g) Despite various advantages of solar pumps, the installation and utilization of same has flip side with huge capital expenditure and near nil operating costs. The cost structure of Solar powered irrigation pumps (SIPs) is such that they have high capital costs but near zero operating cost. SIP's can offer farmers high quality, day-time, zero marginal cost energy, with no possibility of rationing power supply. However, if grid connected SIPs are promoted, with the option for farmers to evacuate their surplus solar powers to the grid at an attractive price, this will have multiple benefits:
- Incentivize farmers to be efficient users of energy and groundwater;
 - Offer farmers an additional source of income;
 - Reduce RE subsidies;
 - Free-up grid capacity to better service domestic and commercial consumers;
 - Reduce carbon footprint of India's groundwater irrigation economy;
 - Help utilities meet RE purchase obligations;
 - Contribute towards India's 100 GW solar capacity target; and
 - Improve the financial and economic viability of State Government.
- h) After analyzing the report submitted by the World Bank, the Department of New and Renewable Energy, Haryana, (HAREDA) decided to implement the 'Grid Connected Solar Powered Tubewell Pump' Project in the State of Haryana. Initially a pilot has been proposed for two selected feeders, and based on the experience and learning, the project is expected to be scaled up for the other feeders in the State. The installation of solar powered pumps is planned in two 11 kV agricultural feeders i.e. Biana feeder in Karnal district and Marupur feeder in Yamunanagar district. The details of these two feeders are given below:

FEEDERS	BIANA (KARNAL)	MARUPUR (YAMUNANAGAR)
Number of grid-connected farmers	287	181
Distribution of (registered) Connected Load		
3 HP	12	108
5 HP	23	62

7.5 HP	126	05
10 HP	74	06
12.5 HP	44	0
15 HP	08	0
Metered and Unmetered Connections		
- Metered	36	70
- Unmetered	251	111
Total (registered) Connected Load	2506 HP	731.5 HP
Average pump size	8.73 HP	4.04 HP
2017-18 Power Consumption (MU)	2.33	0.79
Total landholding of farmers (approx.)	1230 acre	550 acres
Average land holding per farmer	4.3 acre	3.0 acre

- i) The Petitioners have proposed to implement the Pilot Project under Govt. CAPEX Model. Under this model:
- a) HAREDA shall install the Brush Less DC (BLDC) solar pumps in consultation with UHBVNL by selecting an EPC contractor through bidding route.
 - b) All the expenditure shall be borne by the State Govt. There shall be no financial burden on the farmers.
 - c) If the GoI launches the proposed KUSUM (Kisan Urja Suraksha Evam Uthaan Mahaabhiyan) scheme, which is under process at the moment, 30% of the project cost shall be funded as subsidy by Central Govt. under the said scheme.
 - d) The pump shall remain the property of the HAREDA/ DISCOMs for initial 5 years.
 - e) The farmers shall be paid for the surplus energy injected in to the system @ INR 1.0/kWh.
 - f) The firm providing solar panel and energy efficient pump set shall also be responsible for installation and O&M activities for the next 5 years after installation.
 - g) Total installed solar capacity required for the feeders is approx. 2.3 MW (Biana), and 0.7 MW (Marupur).
 - h) Both the feeders shall have to be kept on for 12 hours per day by the DISCOM's.
 - j) The existing AC pump sets shall be replaced with grid connected solar PV Brushless DC (BLDC) water pumping system with remote monitoring, submersible BLDC pump, BLDC controller with maximum power point tracker (MPPT), grid connected inverter (unidirectional), mounting structure and cables as per MNRE specifications.
 - k) DC power from solar panels is passed through BLDC controller with MPPT to operate BLDC submersible pump. Excess solar power shall be converted to AC power using inverter and is injected into the grid. However, farmer cannot withdraw energy from grid as BLDC pump set requires DC power to operate.
 - l) The total project cost is as follows:

Capacity of Pump/ Module capacity	Nos. of pumps	Approx. Project Cost @ Rs. 80,000 per HP (Rs. in lacs)	Total Installed Capacity (KW)
03.00 HP (3.00 Kw)	120	288.00	360.00
05.00 HP (4.8 Kw)	85	340.00	408.00
07.50 HP (6.75 Kw)	131	786.00	884.25
10.00 HP (9.00 Kw)	80	640.00	720.00
12.50 HP (11.55 Kw)	44	440.00	508.20
15.00 HP (13.8 Kw)	8	96.00	110.40
Total	468	2590	2990.85

m) The Pay back period is as follows:

Sr. No.	Particulars	Units	11 kV Biana Feeder	11 kV Marupur Feeder	Combined
A	Total number of connections to be replaced	Nos.	287	181	468
B	Total HP of pump sets	HP	2506	732	3238
C	Cost of solar pump (estimated) @ INR80,000/HP (with O&M for 5 years)	INR Cr	20.0	5.90	25.90
D	Total Agriculture Consumption for FY 2017-18	LUs	23.30	7.90	31.20
E	Per HP consumption per year (D/B)	kWh/HP	930	1079	964
F	Subsidy per unit supplied to Agriculture pumps	INR/kWh	7.1	7.1	7.1
G	Annual Subsidy Paid by Govt. to be saved (D x F)	INR lakh	165.43	56.09	221.52
H	Annual Surplus Power to be fed to grid by farmers (Approx 170 days out of 320 sunny days)	LUs	20.24	6.16	26.40
I	Annual savings to DISCOMs by purchasing this power @ Rs.1.00/kwh against the APPC cost i.e Rs.3,89/kwh (H x 2.89)	INR lakh	58.49	17.80	76.29
J	Total savings (G+I)	INR lakh	223.92	73.89	297.81
K	Simple Pay back period (C/J)	Years			8.7

n) The farmers shall be paid for the surplus energy injected in to the system @ INR 1.0/kWh. During the field visit conducted during August 2018, the farmers in Biana and Marupur suggested that before solarizing the entire feeder, one or two demonstration solar pumps should be installed in the village. In this regard a meeting was held on 01/02/2019 under the Chairmanship of worthy ACS, Power & NRE. In the said meeting it was decided that a demonstration project may be installed in each of the feeder (solar pumps of 5 HP for Marupur feeder and 10 HP for Biana Feeder) from reputed suppliers. It was further decided that the power would be purchased by the DISCOMs @Rs.1.00/kWh.

1.3) In view of above, the Petitioner has prayed as follows:

“

a. For approval of the above detailed ‘Grid Connected Solar Powered Tubewell Pump’ Project as proposed by HAREDA;

AND

b. For implementation of the said ‘Grid Connected Solar Powered Tubewell Pump’ Project across the State of Haryana;

AND

c. For payment of incentive to the farmers @ INR 1.0/kWh for the surplus power generated and supplied to the applicant during the implementation of the Project;

AND/OR

d. Pass any other such appropriate orders as this Hon’ble commission may deem fit and proper in the facts and circumstances of the case and in the interest of Justice and fair play.”

2) Proceedings

- 2.1) The matter was heard as scheduled on 16/09/2019. The Ld. Counsel Smt. Sonia Madan appeared on behalf of the Petitioners and briefed the case to the Commission mainly summarizing their written submissions.
- 2.2) The Ld. Counsel sought approval from the Commission for implementation of the ‘Grid Connected Solar Powered Tubewell Pump’ Project along with the incentive to be paid to the farmers for evacuation of the surplus solar power back to the grid.

3) Commission’s Analysis & Order

- 3.1) The Commission has analysed the proposal submitted in the form of Petition related to implementation of the ‘Grid Connected Solar Powered Tubewell Pump’ Project along with the incentive to be paid to the farmers for evacuation of the surplus solar power back to the grid whose salient features are as follows:
- a) HAREDA shall install the Brush Less DC (BLDC) solar pumps in consultation with UHBVNL by selecting an EPC contractor through bidding route.

- b) All the expenditure shall be borne by the State Govt. There shall be no financial burden on the farmers.
 - c) If the GoI launches the proposed KUSUM (Kisan Urja Suraksha Evam Uthaan Mahaabhiyan) scheme, which is under process at the moment, 30% of the project cost shall be funded as subsidy by Central Govt. under the said scheme.
 - d) The pump shall remain the property of the HAREDA/ DISCOMs for initial 5 years.
 - e) The farmers shall be paid for the surplus energy injected in to the system @ INR 1.0/kWh.
 - f) The firm providing solar panel and energy efficient pump set shall also be responsible for installation and O&M activities for the next 5 years after installation.
 - g) Total installed solar capacity required for the feeders is approx. 2.3 MW (Biana), and 0.7 MW (Marupur). Both the feeders shall have to be kept on for 12 hours per day by the DISCOM's.
 - h) The existing AC pump sets shall be replaced with grid connected solar PV Brushless DC (BLDC) water pumping system with remote monitoring, submersible BLDC pump, BLDC controller with maximum power point tracker (MPPT), grid connected inverter (unidirectional), mounting structure and cables as per MNRE specifications.
 - i) DC power from solar panels is passed through BLDC controller with MPPT to operate BLDC submersible pump. Excess solar power shall be converted to AC power using inverter and is injected into the grid. However, farmer cannot withdraw energy from grid as BLDC pump set requires DC power to operate.
- 3.2) The Commission observes that the said proposal is in line with the advisory issued to the Additional Chief Secretary to Govt. Haryana, Power Department by the Commission vide Memo No. 1684/HERC/Tariff/SV-2/2015 dated 14/09/2015 wherein installation of Solar PV Irrigation Pumps was suggested in order to reduce subsidy dependence.
- 3.3) The Petitioners have submitted that initially a pilot has been proposed for two selected feeders (Biana feeder in Karnal district and Marupur feeder in Yamunanagar district) and based on the experience and learning, the project is expected to be scaled up for the other feeders in the State.

3.4) Accordingly, the Commission accords in principle approval to the Petitioners for implementation of the scheme on pilot basis at Biana feeder in Karnal district and Marupur feeder in Yamunanagar district. Further, the Petitioners are directed to submit the outcome of this Pilot program to the Commission for review before scaling up for other feeders in the State.

In view of above, the present Petition is disposed off accordingly.

This Order is signed, dated and issued by the Haryana Electricity Regulatory Commission on 17/09/2019.

Date: 17.09.2019

(Naresh Sardana)

(Pravindra Singh)

Place: Panchkula

Member

Member