

CHAPTER - 8

ENERGY

8.1 Rajasthan is a developing State therefore; increased availability of energy for social and economic development of the State is of paramount importance. State is according highest priority for achieving self sufficiency in power generation to cope up with the growing demand of energy in the domestic sector along with increased level of urbanization and to fulfil the energy needs of Industrial & Agriculture sector.

8.2 Rajasthan introduced Reform process in the Power Sector way back in the year 2000 by unbundling of the erstwhile RSEB into one generation, one transmission and three distribution companies at Jaipur, Jodhpur and Ajmer.

8.3 Subsequent to unbundling of erstwhile RSEB, installed generation capacity of the State has increased from all sources to 18155.57 MW as on 31st March, 2016, transmission & distribution system has been strengthened resulting in reduction of losses from 42 per cent in March, 2000 to the level of 26.58 per cent at the end of the year 2015-16.

8.4 The customer rolls have been growing fast since unbundling and now, it stands at 12.90 million. The annual per capita consumption of electricity during 2014-15 of the State was 910kwh as compared to all India average of 1014 kwh. The State is one of the India's most advanced States in terms of metering and collections. State has undertaken various reform programmes such as feeder renovation program, high voltage distribution system (HVDS), installation of single phase distribution transformers for providing domestic power supply in rural areas.

8.5 As the State is deficient in conventional resources of power generation like water, coal, oil and gas for undertaking new power generation schemes, highest priority is being accorded for augmenting power generation from non-conventional energy sources like wind, solar and biomass. Efforts are being made to encourage public private partnership in power generation and strengthening of transmission & distribution system for reducing T&D losses.

8.6 Efforts are also being made to provide regular and continuous electricity to the farmers on economical rates. Despite growth in connectivity, there are issues like unconnected households and low consumption of electricity that are being improved. Agriculture accounts for above 41.97 per cent and industry for over 25.38 per cent of total consumption of electricity in the State at the end of the year 2015-16. Though, almost 78 per cent consumers are domestic, they account for only 22.17 per cent of the total consumption. Around 72 per cent households have access to electricity. About 99.24 per cent villages are electrified but around 28 per cent households in rural areas are still

unconnected which are covered under DDUGY to be electrified by March, 2018.

Thrust Areas for the Twelfth Five Year Plan

8.7 During the Twelfth Five Year Plan and the Annual Plan 2016-17, the main thrust areas of power sector are as follows:

- Bridging the gap between demand and supply of power by increasing the generation capacity and ensuring availability of quality power.
- Strengthening of transmission and distribution network.
- Reducing Transmission & Distribution losses up to the level of 15 per cent by the end of Twelfth Plan.
- Tariff rationalization and reducing the subsidy requirement
- Achieving financial turn-around by the Distribution Companies under UDAY.
- Improving customer satisfaction by quality supply, network strengthening and using new techniques/Information Technology.
- Introducing IT up to Sub Division level under RAPDRP for automation, loss reduction and transparent service delivery.
- Private Sector participation in generation and transmission.
- Promoting non conventional sources of power generation.

8.8 The company-wise details of the outlay kept for the Twelfth Plan, expenditure in 2015-16 and outlay kept for the Annual Plan 2016-17 are as follows:

Table No. 8.1
Financial Outlays

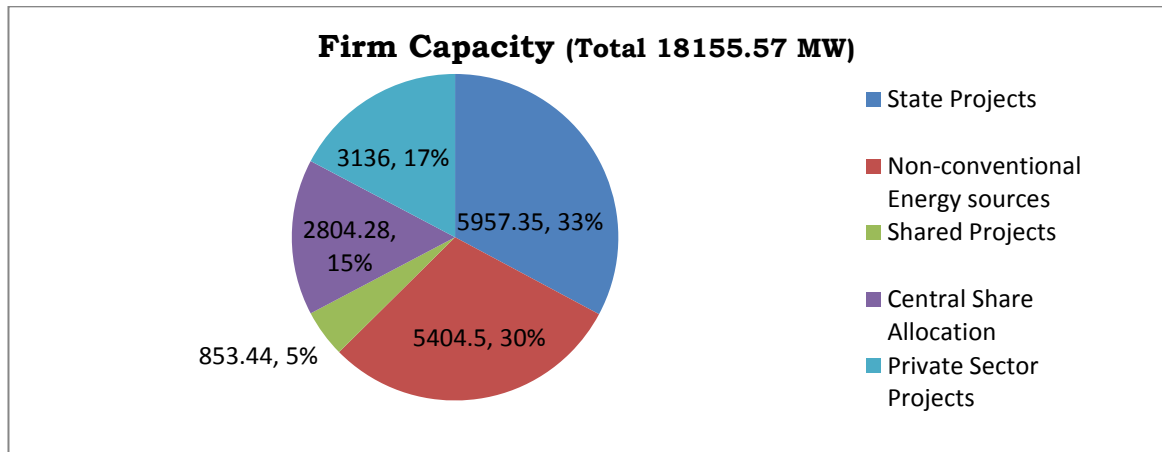
(₹ in crore)					
S. No.	Company	Twelfth Plan Outlay	Outlay 2015-16	Exp. 2015-16	Outlay for 2016-17
1.	Raj. Vidyut Utpadan Nigam Ltd.	47246.00	7296.36	5146.81	2236.37
2.	Raj. Vidyut Prasaran Nigam Ltd.	12600.00	2224.80	2177.88	2400.00
3.	Jaipur Vidyut Vitran Nigam Ltd.	5050.10	2486.30	16811.78	9564.30
4.	Ajmer Vidyut Vitran Nigam Ltd.	3833.08	2131.18	15685.85	8477.13
5.	Jodhpur Vidyut Vitran Nigam Ltd.	3984.07	2474.46	15123.62	8838.00
6.	Raj Renewal Energy Corporation	10.00	52.00	0.07	25.00
7.	Power Finance Corporation Ltd. Equity	0.00	0.00	0.00	0.00
	Total incl. UDAY	72723.25	16665.10	54946.01	31540.80
	Total excl. UDAY	72723.25	16665.10	14876.75	11407.56

Generation:

8.9 2238.70 MW firm capacity has been added during the year 2015-16. Source-wise firm capacity available to the State as on 31st March, 2016 is as under:-

Table No. 8.2

S. No.	Name of Sector Project	Firm Capacity as on 31 st March, 2016 in MW
1	State Projects	5957.35
2	Non-conventional Energy sources	5404.50
	a. Wind power	4006.85
	b. Bio-mass	114.30
	c. Solar	1283.35
3	Shared Projects	853.44
4	Central Share Allocation	2804.28
5	Private Sector Projects	3136.00
	Total	18155.57



I. GENERATION COMPANY(RVUN)

8.10 Rajasthan Rajya Vidyut Utpadan Nigam (RVUN) is engaged in operation of State sector power plants as well as installation of new power project under State sector. At present, RVUN owns & operates the following Thermal/ Gas/ Hydel power stations in the State sector as on 31st March 2016: –

Table No. 8.3

S. No.	Power Stations	Installed Capacity (MW)
A.	Thermal power projects	
i	Suratgarh Thermal Power Station	1500
ii	Kota Thermal Power Station	1240
iii	Chhabra Thermal Power Plant, Unit-1 to 4	1000
iv	Kalisindh Thermal Power Plant	1200

S. No.	Power Stations	Installed Capacity (MW)
v	Giral Lignite Thermal Power Plant Unit-1& 2	250
B.	Gas Based power projects	
i.	Dholpur Combined Cycle Gas Power Plant	330
ii	Ramgarh Gas Thermal Power Plant	273.5
C.	Hydro Projects	
i	Mahi Hydel Power Station	140
ii	Mini Micro Hydel Schemes	23.85
	Total	5957.35

8.11 A capacity of 600 MW has been added during the year 2015-16 commissioning of Kalisindh Thermal Power Unit.

8.12 In addition to above, RVUN are also Operating & Maintaining following two hydro power stations, which are owned by Rajasthan Vidyut Prasaran Nigam (RVPN):

1. Rana Pratap Sagar Hydel Power Station	172 MW
2. Jawahar Sagar Hydel Power Station	99 MW
Total	271 MW

8.13 Besides above, RVUNL had an ambitious plan of generation capacity addition of 2800 MW with two super-critical technology coal based and one gas based thermal power projects approved for the Twelfth Plan, out of which work is under progress for two super critical power projects totalling to 2640 MW capacity. An outlay of ₹47246.00 crore was kept in XII Plan for power generation through RVUN. An expenditure of ₹5146.81 crore has been incurred in the year 2015-16 against an outlay of ₹7296.36 crore. An outlay of ₹2236.37 crore is kept for the Annual Plan 2016-17. It is kept to take loan of ₹1774.37 crore from Power Finance Corporation/REC/Commercial Bank/open market borrowings, for financing the plan for the year 2016-17. Balance amount of ₹462.00 crore will be available as State Equity. Financial outlay kept for the Twelfth Plan, outlay and expenditure incurred in the year 2015-16. Kept outlay for the Annual Plan 2016-17 are as follows:

Table No. 8.4
Financial Outlays

S. No.	Project	Outlay Twelfth Plan	(₹in crore)		
			Outlay 2015-16	Exp. 2015-16	Outlay 2016-17
1.	Chhabra Thermal Power Project Unit- 1 & 2 (2x250 MW)	300.00	0.00	0.00	0.00
2.	Chhabra Thermal Power Project Unit -3 & 4 (2x250 MW)	568.00	0.00	107.27	0.00
3.	Chhabra Super-critical TPP Unit-5 & 6 (2x660 MW)	7605.00	2000.00	2362.48	250.00
4.	Suratgarh Super-critical TPP Unit-7& 8 (2x660 MW)	7625.00	2945.00	2262.82	1800.00

S. No.	Project	Outlay Twelfth Plan	Outlay 2015-16	Exp. 2015-16	Outlay 2016-17
5.	Surtagrah Super-critical TPP Unit – 9 & 10 (2x660 MW)	7920.00	85.00	0.00	0.00
6.	Ramgarh Gas Thermal Power Project Stage III 160 MW	169.00	0.00	30.94	0.00
7.	Ramgarh Gas Thermal Power Project Stage IV 160 MW	640.00	150.76	25.08	50.00
8.	Kalisindh Thermal Power Project Unit -1 & 2(2x660 MW)	2719.00	0.00	266.60	0.00
9.	Kalisindh Super-critical TPP Unit – 3 & 4 (2x660 MW)	7920.00	915.00	0.00	0.00
10.	Banswara Super-critical TPP Unit-1 & 2 (2x660 MW)	7880.00	900.00	0.00	10.00
11.	Survey Investigation Schemes & carried over liabilities	50.00	9.45	2.24	10.45
12.	Dholpur Gas CCPP Stage-II (3X110MW)	1210.00	0.00	0.00	0.00
13.	Additional Capital Works at KTPS, Kota	0.00	231.27	81.48	62.68
14.	Kota Gas Project	1320.00	0.00	0.00	0.00
15.	Chhabra Gas Project	1320.00	0.00	0.00	0.00
16.	Additional Capital Works at STPS, Suratgarh	0.00	59.88	7.90	53.24
	Total	47246.00	7296.36	5146.81	2236.37

RVUN's Plant Under construction: Following units are under advance stage of construction:

(i) Chhabra Super- Critical Thermal Power Project Stage-II Unit - 5 & 6 (2x660 MW)

8.14 Order on EPC basis was placed to M/s L&T on dated 28.03.2013. Work at site is in progress and unit-5 is targeted for commissioning during 12th plan period in the year 2016-17 and unit-6 by June, 2018. Environmental clearance of unit-6 has been granted by MoEF on 02.02.2015 on submission of Board resolution as desired. Total project cost is ₹ 7920 crore. An expenditure of ₹ 2362.48 crore has been incurred in the year 2015-16 against an outlay of ₹2000.00 crore. An outlay of ₹ 250.00 crore is kept for the year 2016-17, out of which ₹ 50.00 crore will be provided by the State Government as equity support and remaining ₹200.00 crore will be arranged from the financial institutions as long term capital loan.

(ii) 2x660 MW Suratgarh Super-critical Thermal Power Project Stage-V, Unit- 7 & 8

8.15 Orders on EPC basis was placed to M/s BHEL on dated 28.03.2013. Work at site is in progress and units are targeted for commissioning in 2017-18. Total project cost is ₹7920.00 crore. An expenditure of ₹2262.82 crore has been incurred in the year 2015-16

against an outlay of ₹2945.00 crore. An amount of ₹1800.00 crore is kept for the year 2016-17 out of which ₹360.00 crore is equity support from the State Government and remaining ₹1440.00 crore will be arranged from the financial institutions as long term capital loan.

(iii) 160 MW Ramgarh Gas based combined cycle TPP Stage-IV

8.16 BTG order for RGTPP stage-IV has also been placed and fresh NIT for BOP package shall be published after finalisation of gas prices. An expenditure of ₹25.08 crore has been incurred in the year 2015-16 against an outlay of ₹150.76 crore. An amount of ₹50.00 crore is kept for the Annual Plan 2016-17 out of which ₹10.00 crore is equity support from the State Government and remaining ₹40.00 crore will be arranged from the financial institutions as long term capital loan.

8.17 Apart from above, the initial activities for the following new proposed power projects have been stopped/deferred as per the reasons mentioned against them.

- 2X660 MW Banswara Supercritical TPP Units-1&2 - State government has decided to drop the Project and the Cabinet Note in this regard is under process for the cancellation of Administrative & Financial approval.
- 2X660 MW Kalisindh Supercritical TPP Units-3&4 - Task force constituted by GoR has decided during the meeting held on dt. 21.12.2015 that this project will be developed under case-2 bidding process and RVPN shall be Nodal agency. Further, GoR vide Cabinet Memo 44/2016 accorded in principal approval for disinvestment of KaTPP for existing Kalisindh (2x600) unit 1&2 under operation and 2x660 MW proposed unit3&4.

Table No. 8.5
Details of project, sources of funds and project cost
(₹in crore)

S. No.	Project	Source	Project Cost/ Revised Project Cost	Plan Outlay for 2016-17
1	Kalisindh Thermal Power Project, Unit1&2, 2 x 600 MW	State Equity	920/1545	0.00
		Loan	3680/6178	0.00
		Sub Total	4600/9480	0.00
2	Ramgarh GTPP Stage IV 160 MW	State Equity	128	10.00
		Loan	512	40.00
		Sub Total	640	50.00
3	Suratgarh Supercritical Power Project Unit 7 & 8, 2 x 660 MW	State Equity	1584	360.00
		Loan	6336	1440.00
		Sub Total	7920	1800.00
4	Chhabra Supercritical Power Project Unit 5 & 6, 2 x 660 MW	State Equity	1584	50.00
		Loan	6336	200.00
		Sub Total	7920	250.00

S. No.	Project	Source	Project Cost/ Revised Project Cost	Plan Outlay for 2016-17
5	Banswara Supercritical Power Project Unit 1&2, 2x660 MW	State Equity	1584	10.00
		Loan	6336	0.00
		Sub Total	7920	10.00
6	Suratgarh Supercritical Power Project Unit 9 & 10, 2x660 MW	State Equity	1584	0.00
		Loan	6336	0.00
		Sub Total	7920	0.00
7	Kalisindh Supercritical Power Project Unit 3 & 4, 2 x 660 MW	State Equity	1584	0.00
		Loan	6336	0.00
		Sub Total	7920	0.00
8	Additional Capital Works at Kota Thermal Power Station	State Equity	85	14.27
		Loan	287	48.41
		Sub Total	372	62.68
9	Additional Capital Works at Suratgarh Thermal Power Station	State Equity	27	7.28
		Loan	112	45.96
		Sub Total	139	53.24
10	S&I	State Equity		10.45
	Total	STATE EQUITY		462.00
		LOAN		1774.37
		TOTAL		2236.37

Private Sector Generation Projects (Implemented By RVPN):

Procurement of 1200 MW power from Kawai Super Critical TPS in Distt. Baran under Case-1 bidding process

8.18 Project was awarded to M/s Adani Power Rajasthan Power Ltd for procurement/ purchase of 1200 MW power under Case- 1 of competitive bidding guidelines issued by GoI. Commencement of supply of power from this project has commercially begun by first unit on 31.5.2013 and second unit from dated 31.12.2013.

Procurement of power from lignite based thermal power plant (135 MW X 8 Nos. units) installed by M/s Raj West Power Ltd. in district Barmer.

8.19 PPA executed with M/s RWPL by Rajasthan Discoms on 26.10.2006. Eight generating units each of 135 MW of lignite based thermal power plant have already been commissioned by M/s Raj West Power Ltd in Barmer district during November, 2009 to March, 2013.

Procurement of power under Case-1 bidding process

8.20 Bidding process (on behalf of Discoms) for Procurement of long term (25 years) power under Case-1 has been completed. LoIs to selected L-1 to L-3 bidders issued in September, 2013 and PPAs have been

executed by Rajasthan Discoms on 1st November, 2013 with L-1 to L-3 selected bidders (L-1: M/s MCCPL 250 MW, L-2: M/s DB Power Ltd. 410 MW & L-3: M/s Lanco Power Ltd. 350 MW).

8.21 Meanwhile in view of EAC's recommendation and considering the requirements, GoR has approved purchase of 500 MW power on long term basis against the bidding process conducted for 1000 MW. RERL issued order on 22.07.2015 for procurement of 500 MW power from L-1 and L-2 bidder equally.

Gurha (west) Lignite based 70 MW Thermal Power Plant under Case-2 bidding process

8.22 The GoR approved the project in December, 2008. SPV in the name of 'Gurha Thermal Power Company Ltd. incorporated on 16.04.2009. LoI issued to M/s. SPML consortium on dated 15.12.2011. Power Purchase Agreement (PPA) executed between GTPCL and Discoms on dt. 26.6.2013, but execution of Default Escrow & Hypothecate cum Deed of Hypothecation agreement is still pending. Tariff has been adopted by the RERC. All case files transmitted to RDPPC. Bidder is not ready to do this project.

Giral Unit 3 & 4 (2x125 MW) under Case-2 bidding process as per GoI guide lines

8.23 The, MoP, Govt. of India, has issued revised guidelines dated 21.9.2013 for such projects. As per new guidelines, the methodology of development of such projects has been changed from case-2 bidding process to DBFOT bidding process basis. As per new guidelines, the actions for bidding/development of such projects are to be undertaken by the Utilities i.e. Rajasthan Discoms. Earlier concept of developing such projects by means of "authorized representative (such as RVPN)" has been removed therein. Accordingly, CMD, JVVNL has been requested to convey, preliminary approval on the proposal of transfer of SPV to Rajasthan Discom for taking decision at their end.

1000 MW Gas based project at Keshoraipatan under Case-2

8.24 Government of India vide letter dated 19.03.2012 has advised not to plan for new gas based power projects till 2015 therefore this project has been deferred. Bidding process will be initiated after allotment of Gas from CEA and after load approval from RERC.

2x660 MW coal based Super Critical Thermal Power Plant at Banswara under Case-2

8.25 Possession of 444.50 acres Govt. land and 862.56 acres private land has been taken. Water allocated by WRD, GoR from Mahi Bajaj Sagar Project. New Broad Gauge Railway line is to be constructed from Ratlam to Doongarpur via Banswara for which Railway siding plan for the plant has been finalised. Coal block allotment application has been

submitted to MoC with RVUN. Bidding process will be initiated after allotment of coal blocks/linkage.

8.26 As per revised guidelines of MoP, Govt. of India, issued on dated 21.9.2013, the action for bidding/development of such projects are to be undertaken by the Utilities i.e. Rajasthan Discoms. Accordingly, the Managing Director, JVVNL, Jaipur vide RVPN letter dated 22.10.2014 and subsequent reminder letters dated 21.11.2014, 26.3.201, 4.05.2015 and vide RVPN letter 3.7.2015 & 10.08.2015 to CMD JVVNL have been requested to convey preliminary approval on the proposal of transfer of three SPV Companies i.e. Barmer Thermal Power Company Limited beside other SPV's companies (i.e. Banswara Thermal Power Company Limited & Keshorai patan Gas Thermal Power Company Limited) to Rajasthan Discoms for taking decision at their end. Another 2x660 MW Banswara STPP unit 1&2 proposed project under State sector has been decided to drop by GoR as mentioned in item no. 8.17 above. Decision on this project may also be taken at the level of GoR.

Shared Generation Projects (being implemented By RVPN):

Survey, Investigation and Preliminary Expenses of New Projects

8.27 A provision of ₹100.00 lakh has been kept during the year 2016-17 for making payment for S&I Works and for preliminary expenses for interstate new projects.

Bhakhra Beas Complex & Other shared projects

8.28 A total provision of ₹ 1900.00 lakh for up rating of Bhakhra Left Bank, other shared projects and for other Capital Works of BBMB is kept during the year 2016-17. This provision is for the Rajasthan's Share in Modernization works.

II. TRANSMISSION COMPANY

8.29 The Rajasthan Electricity Regulatory Commission (RERC) has granted a licence to Rajasthan Vidyut Prasaran Nigam Limited (RVPNL) for transmission and bulk supply of electricity in the State. RVPNL has been declared as State Transmission Utility by the State Government under the provision of the Electricity Act, 2003. RVPNL provides the pathway for power within the State. RVPNL owns, builds, maintains and operates the high-voltage electric transmission system that helps to keep the power supply in the State. RVPNL also owns the shared generating projects as representative of erstwhile RSEB. RVPNL is an "ISO 9001:2008 Certified Company" and also RVPNL's Meter Testing Laboratories at Jaipur and Udaipur are now "ISO/IEC 17025:2005 Certified".

8.30 Outlays kept for the Twelfth Plan & the Annual Plan 2015-16, expenditure to be incurred in the year 2015-16 and outlay kept for the

Annual Plan 2016-17 for the activities of RVPNL are as given in the following table:

**Table No. 8.6
Financial Outlays**

(₹ in crore)					
S.N.	Head	Outlay Twelfth Plan	Budgeted Outlay 2015-16	Exp. 2015-16	Outlay 2016-17
1.	Generation	100.00	20.00	5.41	20.00
2.	Transmission	12500.00	2204.80	2172.47	2380.00
	Total	12600.00	2224.80	2177.88	2400.00

8.31 The physical targets kept for the Twelfth Plan, targets & achievement in the year 2015-16 and targets kept for the Annual Plan 2016-17 are given in the following table:

**Table No. 8.7
Physical Target**

S. No.	Scheme	Unit	Target Twelfth Plan	Target 2015-16	Ach. (upto 31.3.2016)	Target for 2016-17
I	Transmission					
	765 KV Sub-station	MVA/ Nos	7500 2	1500 Nil	- -	- -
	765 KV Lines	ckt.kM	426	----	----	----
	400 KV Lines	ckt.kM	5800	580	350.299	840
	400 KV Sub-stations	MVA/ Nos	5040 8	945 1	315 1	2130 2
	220 KV Lines	ckt.kM	3650	545	512.727	668
	220 KV Sub-stations	MVA/ Nos	4600 40	900 6	1860 10	1020 8
	132 KV lines	ckt.kM	2150	600	581.914	551
	132 KV Sub-stations	MVA/ Nos	2875 100	475 16	732.50 24	400 16
II	Augmentation	MVA	7500	1500	1750.00	1500
III	Capacitor Banks	MVAR	300	150	244.35	300

8.32 A total provision of ₹ 238000.00 lakh is kept for Transmission works during the year 2016-17. During 2016-17 the work on evacuation schemes of Chhabra Super Critical TPS, Kalisind TPS, Suratgarh Super Critical TPS, Kawai Super Critical TPS & Solar and Wind Power will be in full swing. More transmission schemes related to forthcoming Generation stations and for expansion of transmission system are likely to be approved in 2016-17, which will be included in Annual Plan at the time of revision.

8.33 During 2016-17 major expenditure will be on construction of evacuation schemes which includes 400 kV transmission systems covered under various evacuation schemes.

8.34 Besides above looking to the load growth the expansion in transmission system and augmentation of capacity of existing EHV GSS is required. During 2016-17 RVPN has planned to commission, 2 Nos. of 400 kV and 8 Nos. of 220 kV GSS and 16 Nos. of 132 kV GSS along with their associated lines. An addition of 1500 MVA transformer capacity under augmentation programme is also proposed during 2016-17.

Transmission Projects under PPP mode:

8.35 Energy Department, Govt. of Rajasthan vide order dated 15.10.2008, constituted a State Level Empowered Committee (SLEC) with a view to encourage competition in private sector participation for development of transmission projects in the State of Rajasthan.

8.36 The SLEC in its first meeting held on dated 16.1.2009 decided that transmissions schemes to be implemented through competitive bidding process and authorized Rajasthan Rajya Vidyut Prasaran Nigam Limited (RVPN) to act as Bid Process Coordinator (BPC) for the purpose of selection of Bidder as Transmission Service Provider (TSP) and also decided that the Bidding documents approved by MoP, GoI be adopted for inviting bids on Built, Own and Operate and Maintain (BOOM) basis.

RAJ/PPP-1 :400 kV S/C Bikaner – Deedwana – Ajmer line along with 400 kV GSS at Deedwana and associated schemes/works –

8.37 Transmission Project developed by M/s Maru Transmission Service Co. Ltd. (MTSCL) (a wholly subsidiary co. of GMR Energy Ltd.). The LOI for projects RAJ/PPP-1 was awarded on 30.9.2010. The work of RAJ/PPP-1 has been completed and connection agreement between M/s MTSCL and RVPN executed on 4.12.2013. Deemed Commercial operation date (CoD) (16.12.13) has been declared by the RERC vide order dated 22.1.15. Further, 400/220 KV GSS Ajmer has been commissioned on dated 18.1.16 and 400 KV Deedwana Ajmer line has been energized on 6/1/16.

RAJ/PPP-2: 400 kV S/C Hindaun – Alwar line along with 400 kV GSS at Alwar and associated scheme/ works –

8.38 Transmission Project developed by M/s Aravali Transmission Service Co. Ltd. (ATSCL) (a wholly subsidiary co. of GMR Energy Ltd.). The LOI for projects RAJ/PPP-2 was placed on 30.9.2010. The work of RAJ/PPP-2 has been completed and the connection agreement between ATSCL & RVPN executed on dated 24/06/2014 & Commercial operation Date (CoD) declared as on 23/08/2014.

RAJ/PPP -3: 220 kV S/C Sikar – Nawalgarh – Jhunjhunu line along with 220 kV GSS at Nawalgarh and associated scheme/ works–

8.39 Transmission Project under development by M/s Shekhawati Transmission Service Co. Ltd. (STSCL)- a wholly subsidiary co. of M/S EMCO Ltd. The LOI for projects RAJ/PPP -3 was placed on 23.2.2011.

RERC adopted Transmission Tariff on dt. 27.8.2013 and Transmission License to the SPVs was granted on 8.10.2013. The work of the project is under progress and likely to be completed in the financial year 2017-18.

RAJ/PPP -5: 400 kV D/C Jodhpur (New)- Udaipur line alongwith 400 kV GSS at Udaipur and associated schemes/works –

8.40 Transmission Project was under development by M/s Lake City Transmission Service Co. Ltd. (LCTSC) - a wholly subsidiary co. of RVPN. The LoI for project RAJ/PPP-5 was placed on 12.7.2013 to M/S EMCO-CSPPL Consortium The Board of Director of RVPN in 241st meeting held on dated 7.1.16 has decided to drop this scheme due to changed technical scenario of transmission network.

RAJ/PPP-6400 kV Bikaner – Sikar D/C line (Twin Moose) under (PPP) projects availing VGF on DBFoT basis

8.41 LOA issued to M/s KEC International Ltd. for development of Project. Transmission Agreement signed between RVPN and M/s KEC Bikaner Sikar transmission Pvt. Ltd. (concessionaire) on 6.11.2015 and likely to be completed in the financial year 2017-18

RAJ/PPP-7400 kV Suratgarh- Bikaner D/C line (Twin Moose) under (PPP) projects on DBFoT basis

8.42 LOA issued to M/s Adani transmission for development of Project. Transmission agreement signed between RVPN and M/s. Adani Transmissions (Raj.) on 09.05.2016.

New PPP schemes:-

8.43 2 Nos. 220 kV and 13 Nos. 132 kV GSSs have been identified for construction on PPP mode. In three lots RFQ issued and to be opened on 15.07.2016 for short listing of qualified bidders, who shall be eligible for participation in next stage of bidding (RFP).

III. DISTRIBUTION COMPANIES:

8.44 The three distribution companies viz. Jaipur, Ajmer and Jodhpur are responsible to provide services to all categories of consumers in their jurisdiction in the State. These companies are also making investments in expansion of distribution network and rural electrification.

8.45 An outlay of ₹1286725.06 lakh was kept for all the three distribution companies for the Twelfth Plan. An expenditure of ₹4762124.97 lakh has been incurred including UDAY Scheme in 2015-16 against an outlay of ₹709194.00 lakh. An outlay of ₹2687943.04 lakh is kept including amounting to ₹ 2013324.00 lakh for UDAY Scheme in the Annual Plan 2016-17. Company-wise details are given in the following table:

Table No. 8.8
Financial Outlays

(₹in lakh)

S. No.	Distribution Company	Outlay Twelfth Plan	Outlay 2015-16	Exp. 2015-16	Outlay for 2016-17
1.	Jaipur	505010.02	248629.69	1681177.93	956429.87
2.	Ajmer	383307.52	213118.65	1568584.67	847713.05
3.	Jodhpur	398407.52	247445.69	1512362.37	883800.12
	Total incl. UDAY	1286725.06	709194.03	4762124.97	2687943.04

8.46 An expenditure of ₹755198.77 lakh has been incurred excluding UDAY Scheme in 2015-16 against an outlay of ₹ 709194.00 lakh. An outlay of ₹674619.04 lakh is kept excluding UDAY Scheme in the Annual Plan 2016-17. Company-wise details are given in the following table:

Table No. 8.9
Financial Outlays

(₹in lakh)

S. No.	Distribution Company	Outlay Twelfth Plan	Outlay 2015-16	Exp. 2015-16	Outlay for 2016-17
1.	Jaipur	505010.02	248629.69	304131.73	254954.87
2.	Ajmer	383307.52	213118.65	201792.67	182790.05
3.	Jodhpur	398407.52	247445.69	249274.37	236874.12
	Total excl. UDAY	1286725.06	709194.03	755198.77	674619.04

8.47 Physical targets kept for the 12th Plan, the Annual Plan 2015-16, achievement during 2015-16 and targets kept for the Annual Plan 2016-17 are given in the following table:-

Table No. 8.10
ALL DISCOMS

S. No.	Particular	Unit	Target Twelfth Plan	Target 2015-16	Ach. 2015-16	Target for 2016-17
1	33 kV S/S	No.	400	200	248	200
2	33 kV S/S	MVA		800	1236.50	800
3	33 kV Lines	Km.	2000	1000	1857.99	1060
4	Ag. Pump Sets.	No.	35800	40000	51303	40000
5	BPL Connections	No.		190502	12513	110750

8.48 Following schemes are proposed to be taken up by the distribution companies during the Annual Plan 2016-17.

1. Sub Transmission & Distribution Work

8.49 Under this scheme, strengthening the system as well as improving the technical parameters of the sub transmission and distribution system activities such as creation of 33/11 kV Sub-station with associate lines, installation of 11/0.4 kV distribution & transmission, erection of 11 kV and LT lines etc. are to be taken up.

8.50 Against the target of creation of 200 nos. 33/11 kV substations for the 2015-16, 248 nos. 33/11 kV substations have been created up to March 2016.

8.51 A target of creating 200 nos. 33/11 kV substations is proposed for the year 2016-17. An expenditure of ₹ 159649.00 lakh has been incurred in 2015-16 against an outlay of ₹ 100700.00 lakh. An outlay of ₹92727.00 lakh is kept for the Annual Plan 2016-17.

2. Normal Rural Electrification Works including release of new Agriculture connections:-

8.52 This head covers normal electrification works such as electrification of Harijan basties, industrial connections to SC category etc in rural areas and release of new Agriculture connections.

8.53 Against the target of releasing of 40,000 nos. new agriculture connections for the year 2015-16, 51303 nos. have been released till March 2016. An expenditure ₹ 139084.00 lakh has been incurred in 2015-16 against an outlay of ₹ 86200.00 lakh.

8.54 A target of energizing 40000 wells is kept for year 2016-17. An outlay of ₹ 97460.00 lakh is kept for the Annual Plan 2016-17.

3. Feeder improvement Programme

8.55 Feeder Improvement Programme (FIP) is to be taken up for augmentation of distribution system involving replacement/reconditioning of damaged 3 phase/single phase transformers, replacement of obsolete AB cable, drawing 3 phase system in villages near to the 33 kV grid etc. Estimated cost of the scheme is about ₹ 150098.00 lakh.

8.56 Over 3 lakh nos. wires are tightened, over 2 lakh nos. tilted poles are straightened and over 2 lakh nos. poles are inserted in long span. An expenditure of ₹ 29162.00 lakh has been incurred in 2015-16 against an outlay of ₹ 46874.00 lakh. An outlay of ₹ 18681.00 lakh is kept for the Annual Plan 2016-17.

4. Sub-station improvement Programme:

8.57 Sub-station Improvement Programme (SIP) for replacement of circuit breakers, feeder meters and roster switches (New and R&M) at existing 33/11 kV substations has been initiated. Estimated cost of the scheme is about ₹10003.40 lakh. Over 5 thousand nos. new roster switches, over 5 thousand nos. new circuit breakers and over 3 thousand nos. new feeder meters have been installed till March 2016.

8.58 An expenditure of ₹ 11069.00 lakh has been incurred in 2015-16 against an outlay of ₹ 12224.00 lakh. An outlay of ₹ 8472.00 lakh is kept for the Annual Plan 2016-17.

Central Assistance Programmes:-

1. Rajiv Gandhi Gramin Vidyuti karan Yojana (RGGVY) :-

(i) Rajiv Gandhi Gramin Vidyuti karan Yojana (RGGVY) X & XI Plan:-

8.59 Rajiv Gandhi Gramin Vidyuti karan Yojana (RGGVY) was launched by Govt. of India in April 2005 with objective of electrification of all villages and Dhanies. Connections to BPL households are given free of cost.

8.60 Under the scheme, 90 percent of scheme cost is being provided as grant and balance 10 percent as loan by Govt. of India.

8.61 In RGGVY Xth and XIth Plan, 40 schemes of estimated cost of ₹ 133118.00 lakh have been sanctioned. A sum of ₹114884.00 lakh has been utilized till March 2016 against the release of ₹111254.00 lakh by REC. Around 11.93 lakh BPL households have been electrified. The schemes are at its closure. Discom wise financial status of the scheme is as follows:-

Table No.8.11

(₹ in lakh)

Sr. No.	Discom	No. of Schemes	Sanctioned Amount	Total Funds released up to March - 2016	Expenditure Incurred till March-16
1	Jaipur	14	44986	36747	37595
2	Ajmer	12	47596	40507	39232
3	Jodhpur	14	40536	34000	38057
	Total	40	133118	111254	114884

(ii) Rajiv Gandhi Grameen Vidyuti karan Yojana (RGGVY) XII Plan:

8.62 Monitoring Committee MOP, GOI has sanctioned 28 nos. DPR'S for electrification of Dhanies having population 100 or more of 27 Districts of Rajasthan state and further, REC has issued sanction of aforesaid schemes on 27.09.13. The sanctioned cost of the scheme is ₹ 145319.00 lakh and around 13.35 lakh households including 4.43 lakh BPL households are likely to be benefitted. The details of RGGVY XII Plan are as follows:-

Table No.8.12

Name of Discom	Nos. of sanctioned Schemes	Coverage			Project cost (₹ in lakh)
		APL Households (nos. in lakh)	BPL Households (nos. in lakh)	Total Households (nos. in lakh)	
Jaipur	10	4.66	1.35	6.01	36306
Ajmer	9	1.77	1.49	3.26	41801
Jodhpur	9	2.49	1.59	4.08	67212
Total	28	8.92	4.43	13.35	145319

8.63 For the sake of work order, the 28 schemes are divided in 40 lots. Work orders of 38 lots have been placed on TW, and balance to Nos to be taken up departmentally on CLRC.

8.64 Survey work in many blocks has been completed and work of pole erection in many blocks is in progress. Now this scheme has been subsumed in DDUGJY. An expenditure of ₹ 17771.00 lakh has been incurred in 2015-16 against an outlay of ₹ 38500.00 lakh. An outlay of ₹ 84113.00 lakh is kept for the Annual Plan 2016-17.

2. Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

8.65 Now the Rajiv Gandhi Grameen Vidyuti karan Yojana (RGGVY) has been subsumed in the newly launched Central Assistance Scheme named Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY). As per guidelines issued by MoP, GoI, schemes to be sanctioned under DDUGJY shall have funding Pattern 60 percent grant by GoI and balance 40 per cent by the state Govt./implementing agencies. However, a provision of additional grant of 15 percent is also kept if the scheme is implemented as per the prescribed mile stones.

8.66 Govt. of India has launched Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY) for the rural areas with the following components:-

Separation of agriculture and non-agriculture feeders:

8.67 For facilitating 24 hours supply to the domestic, commercial, industrial and other loads (other than agriculture loads) in rural areas.

Strengthening and augmentation of sub-transmission & distribution

8.68 (ST&D) infrastructure in rural areas, including metering at distribution transformers, feeders and consumers end and providing access of electricity to rural households including connections to BPL households. Under system strengthening, works such as creation of new 33/11 kV substations and erection of associated lines and augmentation of existing sub-transmission and distribution network is involved.

8.69 The scheme of estimated cost ₹281941.00 lakh has been sanctioned by the monitoring committee of MOP in meeting dated 06.08.2015. It also includes electrification of dhanies having population 100 or more for remaining 6 nos. districts namely Jaipur, Banswara, Hanumangarh, Udaipur, Dholpur and Barmer. The head wise amount approved for the state is as under:-

Table No. 8.13

S.No.	Particulars	Amount (₹ in Lakh)
1	Electrification of Un electrified villages (104 nos.)	2343
2	Metering	37045
3	SAGY	1145
4.	System strengthening access to RHHs	173500

S.No.	Particulars	Amount (₹ in Lakh)
5	Feeder separation	66505
	Total	280538
6	PMA charges@ 0.5 per cent	1403
	Grand Total	281941

8.70 The recasting of scheme has been completed. After re-sanctioning from REC, tendering work will get started.

8.71 An expenditure of ₹290.00 lakh has been incurred in 2015-16 against an outlay of ₹ 10000.00 lakh. An outlay of ₹ 76244.00 lakh is kept for the Annual Plan 2016-17.

Restructured Accelerated Power Development and Reforms Programme (R-APDRP)

8.72 It consists of two parts. Part-A includes the projects for establishment of baseline data and IT applications for energy accounting/auditing & IT based consumer service centers. Part-B includes regular distribution strengthening projects.

R-APDRP Part-A:

8.73 It covers IT part of the scheme. It includes preparation of Base-line data for the project area covering Consumer Indexing, GIS Mapping, Metering of Distribution Transformers & Feeders and Automatic Data Logging for all Distribution Transformers & Feeders.

8.74 It will also include adoption of IT applications for meter reading, billing & collection and energy accounting & auditing.

Programme Coverage

8.75 It is proposed to cover urban areas towns and cities with population of more than 30,000 and therefore 87 towns in Rajasthan state are covered under this scheme. The Scheme Details are as follows:-

Table No.8.14

(₹In Lakh)

S. No.	Discom	Sanctioned cost	Order Value	Details		
				Name of funding agency	Amount sanctioned by funding agency	Amount Disbursed up to March -16
1	JVVNL	16352	18180	PFC	16352	8445.60
2	AVVNL	5203	4212	PFC	5203	1561.50
3	JdVVNL	10038	7131	PFC	10038	3011.00
Total		31593	29523		31593	13018.10

SCADA/DMS system:-

8.76 As per R-APDRP guidelines, SCADA/DMS system is to be established in urban areas-towns and cities with population of more than 4 lakh & 350 MUs annual input energy and therefore schemes for 5 towns namely Jaipur, Kota, Ajmer, Jodhpur and Bikaner have been sanctioned by PFC for SCADA/DMS activities in Rajasthan under RAPDRP. Work order has been placed upon to M/S Dongfang Electronics Company Ltd. The Scheme wise details are as follows:-

Table No. 8.15

(₹ in Lakh)

S. No.	Discom	Towns	Order Value	Amount Disbursed up to March-16
1	JVVNL	Jaipur,Kota	4607.00	2238.60
2	AVVNL	Ajmer	1169.00	586.50
3	JdVVNL	Jodhpur, Bikaner	3709.00	1702.00
Total			9485.00	4527.100

8.77 An expenditure of ₹ 1618.00 lakh has been incurred in the 2015-16 against an outlay of ₹ 13043.00 lakh. An outlay of ₹ 26127.00 lakh is kept for the year 2016-17.

R-APDRP Part-B:

8.78 This scheme covers the urban area towns & cities with population of more than 30,000, having AT&C losses more than 15 percent. In Rajasthan 82 nos. such towns are covered under this scheme. DPRs of these towns have been approved by PFC. The Discom wise details of RAPDRP Part B are: -

Table No.8.16

(₹ in lakh)

S.N.	Discom	Sanctioned cost	Order Value	Amount Disbursed		
				PFC	Others	Total
1	JVVNL	46523	60813*	6981	28809	35790
2	AVVNL	39110	41224	5865	15181	21046
3	JdVVNL	68417	68739	11930	38578	50508
Total		154050	170776	24776	82568	107344

*It includes free issue items to be supplied in turnkey work orders, CLRC work order amount, Kota SCADA order amount road cut charges levied against road restoration charges.

Project Funding Mechanism:

8.79 Initially 25 percent funds will be provided as loan from GoI and balance 75 percent is to be raised from financial institutions by the Nigam. Based on the criteria for reduction of AT&C losses below 15 percent and maintaining the same below that level, 10 percent of the total project cost of the town will be converted into grant every year &

that is maximum of 50 percent of the total project cost of a town can be converted into grant if the losses of that town are brought below the 15 percent and are maintained for 5 years.

8.80 An expenditure of ₹ 36171.00 lakh has been incurred in the 2015-16 against an outlay of ₹ 28223.00 lakh. An outlay of ₹ 24028.00 lakh is kept for the year 2016-17.

Integrated Power Development Scheme (IPDS)

8.81 The 185 nos. statutory towns have been covered under this scheme. The following works are proposed:-

I. Strengthening of Sub Transmission & Distribution System.

- Creation of new 33/11 kV Substations including GIS along with associated 33 KV line & 11 kV interconnection work (including civil work for substation), augmentation (capacity addition) of existing 33/11 kV Sub-stations.
- Installation of new DTs and Augmentation of Existing DTs along with associated LT lines.

II. Metering

8.82 The work involved under this head is as follows:-

- Feeder Metering- Replacement of defective feeder metering equipments and installation of new feeder metering equipments
- Replacement of defective Consumer meters
- Installation of Pre Paid meters
- Boundary meters for ring fencing of statutory towns.

The details as approved by monitoring committee for IPDS:-

8.83 In its meeting dated 06-08-15, the monitoring committee for IPDS has 'approved in principle' DPRs of Ajmer Discom and in its meeting dated 02-09-2015 has 'approved in principle' DPRs of Jaipur Discom and Jodhpur Discom. The details are as follows:-

Table No. 8.17

S. No.	Present Status of Schemes proposed under IPDS:-				
	Discom	Nos. of Schemes (Towns)	Sanctioned Cost		Date of Sanctioned
			DPR cost approved in principle (₹ in lakh)	PMA cost @0.5 % of project cost (₹in lakh)	
1	Jaipur	63	49417	247	02.09.2015
2	Ajmer	66	40820	204	06.08.2015
3	Jodhpur	56	40085	200	02.09.2015
Total		185	130322	651	

Duration of completion

8.84 After approval from monitoring committee, the work completion period will be 30 months, out of which 6 months period for issuing the work order and 24 months for execution. The tendering work is under process.

Ujwal Discom Assurance Yojana (UDAY)

8.85 UDAY is for financially turnaround of Power Distribution Companies has been approved on 20.11.2015 by the Government of India with an objective to improve the operational and financially efficiency of the State Discoms.

8.86 Tripartite MoU is made with Ministry of Power (MoP) GoI, GoR and each Discom of Rajasthan on dated 27.01.2016.

8.87 As per the scheme, States shall take over 75 percent of Discom debt as on September, (50 per cent in 2015-16 and 25 percent in 2016-17).

8.88 Outstanding debt level of the Discoms at the end of September 2015 is as follows:-

Table 8.18

(₹ in lakh)

S.No.	Name of Discom	Outstanding debt as on 30-09-15	Taken up in 2015-16	Shall be taken up in 2016-17
1	JVVNL	2805600	1291486.27	701475
2	AVVNL	2659700	1266172.00	664923
3	JdVVNL	2587700	1179268.00	646926
TOTAL		8053000	3736926.27	2013324

8.89 Outcomes of operational improvements will be measured through following indicators:

- Reduction in AT&C loss to 15 per cent in the year 2018-19 as per the loss reduction trajectory to be finalized by MoP and States.
- Reduction in gap between ACS and ARR to Zero by the year 2018-19 as finalized by MoP and States.

IV. RENEWABLE ENERGY SOURCES

8.90 Renewable energy has to play an expanding role in achieving energy security and access in the coming years. The National Action Plan for Climate Change has envisaged that the share of Renewable Electricity in the electricity mix should be 12 per cent by 2016-17. MNRE has further proposed Renewable Purchase Obligation of 17 per cent in the total energy mix by the year 2022 including minimum 8 per cent from solar. Power generation from Renewable Energy Sources are environmental friendly and saves the environment from global warming. Rajasthan Renewal Energy Corporation is the State Nodal Agency for promotion of New & Renewal Energy Sources, Energy Conservation and

implementation of the schemes of the Central Government in the State. The Corporation was established in August, 2002 with the merger of erstwhile Rajasthan Energy Development Agency (REDA) and Rajasthan State Power Corporation Ltd. The State Government has been according priority for development of Renewable Energy Sources. Following policies have been launched by the State Government in the field of energy for development of renewable energy sources in the State.

- Policy for promoting, generation of electricity through non-conventional energy source-2004.
- Policy for Promoting Generation of Electricity from Biomass 2010
- Rajasthan Solar Energy Policy, 2011
- Policy for promoting generation of electricity from wind, 2012
- Rajasthan Solar Energy Policy, 2014

8.91 In the month of August, 2015, Govt. of India has awarded the Rajasthan State for outstanding work in the field of Renewable Energy

8.92 An outlay of ₹1000.00 lakh was kept for the Twelfth Plan. An expenditure of ₹ 7.50 lakh has been incurred against an outlay of ₹ 5200.00 lakh in the year 2015-16. An outlay of ₹ 2500.00lakh is kept for the Annual Plan 2016-17. The Rajasthan Renewal Energy Corporation is mainly implementing following programs.

1. SPV Pumping Systems

8.93 SPV Pumping System was introduced by the State Government on pilot basis in 2010-11 in horticulture sector. Under this scheme, 86 per cent subsidy was provided to the beneficiaries in which 30 per cent subsidy component through off-grid solar application program of MNRE, GoI under JNNSM and 56 per cent through Rastriya Krishi Vikas Yojana (RKVY)/GoR. Subsidy under RKVY/GoR has been reduced to 30 per cent from the year 2014-15. 19810 nos. SPV Pumping Systems have been installed in farming fields using drip irrigation till March 2016, remaining work of total 12202 Nos. SPV Pumps of programme 2014-15 & 2015-16 is in progress. This programme is being implemented by Horticulture Department in Rajasthan. MNRE GoI has revised the maximum subsidy of ₹40500.00 per hp for DC pumps and ₹32400.00 per hp for AC pumps. During 2015-16, GoR has also revised the additional State subsidy in three categories:

- Farmers having electrical connections: NO State subsidy,
- Farmers not having electrical connection and not in priority: 30 per cent State subsidy and
- Farmers not having electrical connection and are in priority and ready to forgo: 45 per cent State subsidy

8.94 As such during 2016-17 work of allocated balance target (by MNRE, GoI) 12202 No. of pumps is proposed to take up for implementation.

2. Solar Power

8.95 Rajasthan is blessed with maximum solar radiation intensity of about 6-7 KWh/m²/day and maximum sunny days (more than 325 days) in a year with very low average rainfall and capable of making the State leader in Solar Power Generation. Thus the State known for its dry desert is now fast emerging as the biggest hub of solar power due to the aforesaid gift of nature and also due to investment friendly and effective "Rajasthan Solar Energy Policy 2014". Solar plants will be set up in the State under the National Solar Mission and Rajasthan Solar Energy Policy 2014. Government has set up a goal to install 25000 MW additional Solar Power Capacity with private investment. With a view to achieve this goal and to develop Solar Parks for 26000 MW Capacity Joint Venture Agreement and MOUs have been signed with M/s. Adani Enterprises, M/s. Reliance Power, M/s. IL&FS Limited, M/s. Essel Infra Projects out of which M/s. Adani Enterprises and M/s. Reliance Power have undertaken to install Solar Power Projects of 8000 MW by themselves in their Solar Parks. Other Solar Power Generation Plants of 1283.35 MW capacity has been established by March 2016 in the State. Rajasthan Solar Park Development Company a subsidiary of RRECL is developing a Solar Park of Capacity 680 MW at Bhadla Phase-II.

3. Wind Power

8.96 Till March, 2016, total 4006.845 MW capacity Wind Power Plants have been established against a total technical potential of 18770 MW. The State Transmission Utility is developing strong transmission network in the western region of the State. The State Regulatory commission has also prescribed a minimum renewable energy purchase obligation in the State. Rajasthan Renewable Energy Corporation Limited has established, three wind Power Plants of total capacity 6.3 MW at Jaisalmer, Phalodi and Devgarh under demonstration scheme of MNRE, GoI. In addition to this, Wind Power Plants of 25 MW, 10.2 MW & 10.2 MW have also been established by RREC in the year 2004, 2006 & 2010 respectively. It is expected that additional capacity of 800 MW wind power would be generated during next two years with the support of private sector.

4. Biomass Power

8.97 As per orders of the State Regulatory Commission, studies regarding availability of surplus biomass such as mustard stalk, rice husk & other agro wastes as well as Juliflora, which can be utilized to run power plant was conducted in all the districts of the State during the year 2010-11. Further fresh study has been conducted for this purpose during the year 2014-15. Biomass Power Generation Plants of 114.30 MW capacity have been established by March, 2016 in the State.

5. Energy conservation Program

8.98 Energy Conservation is one of the very important demand side management tool through which energy can be saved efficiently i.e. without affecting performance. One unit of energy saved is equivalent to 1.5 units generated. With this concept, the supply side capacity addition can be avoided. 'Rajasthan State Energy Conservation Fund' has been created for execution of energy conservation activities. The fund is administered by a State Level Steering Committee. Different Government Departments are being funded to take up Energy Conservation demonstration projects to show case the energy savings through new technologies. Following energy conservation activities have been taken up under the program:

- Development of Energy Resource Centre at Malviya National Institute of Technology, Jaipur.
- Installation of turbo ventilators under new technology program
- Replacement of existing incandescent bulbs by LED bulbs under LED village campaign.
- Industrial Area Street Lighting Program
- Demonstration projects of LED/Xenon based street lights at various ULBs to showcase the energy savings
- Energy auditing of Government buildings/offices
- Implementation of energy audit findings under Energy Efficient Government Building Program
- Preparation of DPRs of waste heat recovery in medium and large industries
- Installation of solar water heating systems at various hostels
- Advertisements of star rated products and their saving potential etc.
- Rajasthan Energy Conservation Awards, 2014 convened on Energy Conservation Day on 14th December.

6. Electrification through Solar in Rural Area:

8.99 Far Flung villages of the State, where population is less and process of arranging grid availability in these areas is costly option and those areas where reliable power supply is not being provided. For such places, government has announced, during budget 2014-15 to take up programme for electrification and providing reliable power to such villages/places using local solar grid and stand alone solar systems. This programme implementation guideline has been approved in-principle by GoR and implementation process has been initiated with an outlay of ₹2497.42 lakh as provisioned in the State Plan 2016-17 for electrification

of 58000 nos. such houses. Three different models of off-grid SPV Home lighting systems are being provided under this scheme:

Table 8.19

S.No	Model	Total Price	Subsidy Provisions			Beneficiary share
			MNRE, GoI	GoR	Total Subsidy	
1.	37 Wp HLS	9500	2850	1900	4750	4750
2.	100 Wp HLS	20573	6172	3828	10000	10573
3.	200 Wp HLS (optional)	27573	6172	3828	10000	17573

8.100 Looking to response of targeted beneficiaries a request has been made to Rural Electrical Corporation (REC) for additional subsidy support. REC has given in principle consent of 45 per cent support in addition to existing provision. Now process of implementation is being taken up accordingly.

Central Assistance Schemes:

7. Off-grid SPV Programme:

8.101 The main objective of the program is to create awareness and popularizing use of Solar Photovoltaic Systems in the State with a view to achieve 100 per cent household electrification in the rural/urban areas of the State. Under this scheme, MNRE, GOI is providing 30 per cent capital subsidy support under off-grid SPV application program. Presently there is no such project sanctions with RREC under this scheme.

8. Roof Top Solar Power Generation Scheme:

8.102 State Government has also taken initiative to promote use of Power generated through SPV technology in area of other than individuals in Rajasthan with subsidy support @ ₹ 24 per watt being provided by MNRE under Jawaharlal Nehru National Solar Mission (JNNSM). Under this scheme, institutions, industries, hotels/resorts, hospitals/nursing homes, government organizations and commercial organizations can take up installation of SPV Roof Top systems with support of subsidy being provided by RREC. During 2014-15, RREC has taken up target of installation of 6 MW PV capacities for whole Rajasthan. The time frame for the same is up to June, 2016 as sanctioned by MNRE, GoI. Further target of 25 MW has been sanctioned by MNRE which will be taken up for implementation during 2016-17. RERC has also issued the Regulation for Net Metering.

9. Wind Resource Assessment Programme:

8.103 The main objective of the programme is to estimate wind power potential in the area for setting up of wind power projects. Wind Resources Assessment is carried by installation of Wind Monitoring Station (Wind Mast) of different heights for a period of minimum two

years. During this period, various parameters like velocity, direction, temperature, pressure of wind are measured and recorded. These data are analysed and used for calculation of assessment of wind power potential in that area. Based on this assessment wind power project capacity decided and installed.

8.104 The Wind Resource assessment (WRA) programs in India are conducted by Ministry of New & Renewable Energy through National Institute of Wind Energy-NIWE (Formerly Centre for Wind Energy Technology-C-WET) Chennai. The National Institute of Wind Energy earlier has conducted programs to study wind power at various heights in India at 20M/25M, 50M & 80M height and issued wind atlas. NIWE has conducted WRA Programme for study of wind power at 100 meter level height& a potential of 18770 MW has been assessed at 100 meter height in Rajasthan.