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 15916.87 MW as on 31st March, 2015, transmission & distribution system has been strengthened resulting in reduction in T&D losses from 42 per cent in March, 2000 to the level of 27.50 per cent in March, 2014.

8.4 The customer rolls have been growing fast since unbundling and now, it stands at 12.01 million. The annual per capita consumption of electricity during 2011-12 of the State was 927.4 kwh as compared to all India average of 883.6 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 38.50 per cent and industry for over 24.45 per cent of total consumption of electricity in the State at the end of Dec., 2014. Though, almost 77 per cent consumers are domestic, they account for only 22.50 per cent of the total consumption. Around 64 per cent households have access to electricity. About 97 per cent villages are connected but

electrification has not penetrated adequately at the household level with around 36 per cent still unconnected rural households.

Thrust Areas for the Twelfth Five Year Plan

8.7 During the Twelfth Five Year Plan and the Annual Plan 2015-16, the main thrust areas of power sector are as follows:

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

8.8 The company-wise details of the outlay kept for the Twelfth Plan, likely expenditure in 2014-15 and proposed outlay for the Annual Plan 2015-16 are as follows:

Table No. 8.1
Proposed Financial Outlays

(₹ in crore)

S. No.	Company	Twelfth Plan Outlay	Outlay 2014-15	Likely Exp. 2014-15	Proposed Outlay for 2015-16
1.	Raj. Vidyut Utpadan Nigam Ltd.	47246.00	4850.56	4850.56	7296.36
2.	Raj. Vidyut Prasaran Nigam Ltd.	12600.00	1780.00	1780.80	2224.80
3.	Jaipur Vidyut Vitran Nigam Ltd.	4166.00	2824.49	2731.32	2301.09
4.	Ajmer Vidyut Vitran Nigam Ltd.	3170.00	2303.34	2220.94	1992.26
5.	Jodhpur Vidyut Vitran Nigam Ltd.	3321.00	2185.51	2164.16	2335.54
6.	Raj Renewal Energy Corporation	10.00	131.67	109.80	52.00
7.	FRP- Transitional Cash Support to Discom	2210.25	441.00	441.00	463.05

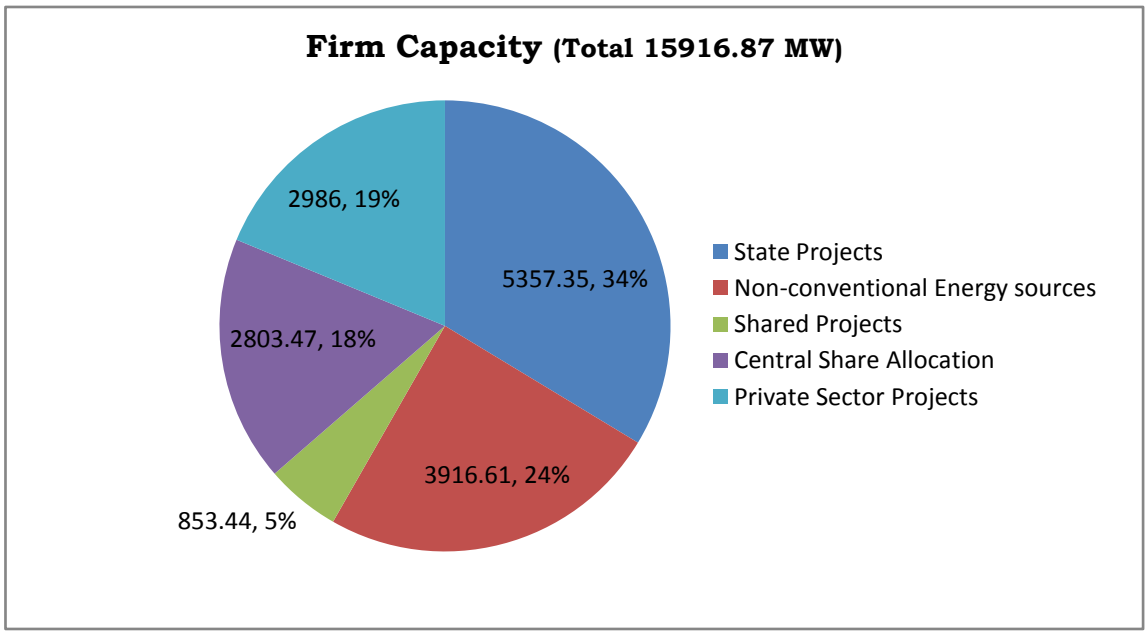
S. No.	Company	Twelfth Plan Outlay	Outlay 2014-15	Likely Exp. 2014-15	Proposed Outlay for 2015-16
8	Power Finance Corporation Ltd.Equity	-	-	-	0.00
	Total	**72723.25**	**14516.57**	**14298.58**	**16665.10**

Generation:

8.9 1545.27 MW firm capacity has been added during the year 2014-15. Source-wise firm capacity available as on 31st March, 2015 is as under:-

Table No. 8.2

S. No.	Name of Sector Project	Firm Capacity as on 31st March, 2015 in MW
1	State Projects	5357.35
2	Non-conventional Energy sources	
	a. Wind power	3214.61
	b. Bio-mass	97.00
	c. Solar	605.00
3	Shared Projects	853.44
4	Central Share Allocation	2803.47
5	Private Sector Projects	2986.00
	Total	**15916.87**



GENERATION COMPANY

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 2015: –

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-1to 4	1000
iv	Kalisindh Thermal Power Plant	600
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	**5357.35**

8.11 In addition to above, RVUN is 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

8.12 Besides above, RVUNL had an ambitious plan of generation capacity addition of 7750 MW with five super-critical technology coal based and four gas based thermal power projects approved for the Twelfth Plan, out of which work is under progress for three power projects amounting to 2800 MW capacity. An outlay of ₹ 47246.00 crore was kept in XII Plan for power generation through RVUN. An expenditure of ₹ 4850.56 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 4850.56 crore. An outlay of ₹ 7296.36 crore is proposed for the Annual Plan 2015-16. It is proposed to take loan of ₹ 6027.86 crore from Power Finance Corporation/ REC/ Commercial Bank /open market borrowings for financing the plan for the year 2015-16. Balance amount of ₹ 1268.50 crore will be available as State Equity. Proposed Financial outlay for the Twelfth Plan outlay, likely expenditure incurred in the year 2014-15 and proposed outlay for the Annual Plan 2015-16 are as follows:

Table No. 8.4
Proposed Financial Outlays

(₹ in crore)

S. No.	Project	Outlay Twelfth Plan	Outlay 2014-15	Likely Exp. 2014-15	Proposed Outlay 2015-16
1.	Chhabra Thermal Power Project Unit– 1 & 2 (2x250 MW)	300.00	0.00	0.00	0.00

S. No.	Project	Outlay Twelfth Plan	Outlay 2014-15	Likely Exp. 2014-15	Proposed Outlay 2015-16
2.	Chhabra Thermal Power Project Unit –3 & 4 (2x250 MW)	568.00	399.43	399.43	0.00
3.	Chabra Super-critical TPP Unit-5 & 6 (2x660 MW)	7605.00	885.00	885.00	2000.00
4.	Suratgarh Super-critical TPP Unit-7& 8 (2x660 MW)	7625.00	1265.00	1265.00	2945.00
5.	Surtagrah Super-critical TPP Unit – 9 & 10 (2x660 MW)	7920.00	0.00	0.00	85.00
7.	Ramgarh Gas Thermal Power Project Stage III 160 MW	169.00	205.00	205.00	0.00
8.	Ramgarh Gas Thermal Power Project Stage IV 160 MW	640.00	36.25	36.25	150.76
9	Kalisindh Thermal Power Project Unit -1 & 2(2x660 MW)	2719.00	1706.11	1706.11	0.00
10.	Kalisindh Super-critical TPP Unit – 3 & 4 (2x660 MW)	7920.00	15.00	15.00	915.00
11.	Banswara Super-critical TPP Unit-1 & 2 (2x660 MW)	7880.00	181.49	181.49	900.00
12.	Survey Investigation Schemes & carried over liabilities	50.00	10.05	10.05	9.45
13.	Dholpur Gas CCPP Stage-II (3X110MW)	1210.00	-	-	-
14.	Additional Capital Works at KTPS, Kota	0.00	107.23	107.23	231.27
15.	Kota Gas Project	1320.00	-	-	-
16.	Chhabra Gas Project	1320.00	-	-	-
17.	Additional Capital Works at STPS, Suratgarh	0.00	40.00	40.00	59.88
	Total	**47246.00**	**4850.56**	**4850.56**	**7296.36**

A. RVUN's Plant Under construction:

8.13 Following units are under advance stage of construction and are expected to be commissioned by this year:

(i) Kalisindh Thermal Power project Unit - 1 & 2 (2x600 MW):

8.14 Unit-1 of the project achieved full load on 02.05.2014 and commercial operation commenced from 07.05.2014. Unit-2 is synchronized on coal on dated 27.03.2015 and commissioning expected in the month of May, 2015. Revised project cost is ₹ 9479.51 crore. An expenditure of ₹ 1706.11 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 1706.11 crore.

B. Construction work on the following state sector power projects were taken during the year 2013-14.

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

8.15 Order on EPC basis was placed to M/s L&T on dated 28.03.2013. Work at site has commenced and unit-5 is targeted for commissioning

during 12th plan period in the year 2016-17 and unit-6 by June, 2018 as environmental clearance of this unit 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 ₹ 885.00 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 885.00 crore. Major supplies is expected in the year 2015-16. An amount of ₹ 2000.00 crore is proposed for this year out of which ₹ 400.00 crore shall be provided by the State Government as Equity Support and remaining ₹ 1600.00 crore shall 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

8.16 Orders on EPC basis was placed to M/s BHEL on dated 28.03.2013. Work at site has been commenced and units are targeted for commissioning in 2016-17. Total project cost is ₹ 7920.00 crore. An expenditure of ₹ 1265.00 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 1265.00 crore. Major supplies is expected in the year 2015-16. An amount of ₹ 2945.00 crore is proposed for this year out of which ₹ 545.00 crore is Equity Support from the State Government and remaining ₹ 2400.00 crore shall be arranged from the Financial Institutions as Long Term Capital Loan.

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

8.17 BTG order for RGTPP stage-IV has also been placed and order for BOP package shall be finalized shortly. An expenditure of ₹ 36.25 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 36.25 crore. An amount of ₹ 150.76 crore is proposed for the Annual Plan 2015-16 out of which ₹ 26.50 crore is Equity Support from the State Government and remaining ₹ 124.26 crore shall be arranged from the Financial Institutions as Long Term Capital Loan.

8.18 Apart from above, following new power projects have also been taken up for implementation for which land identified, water allocated, environmental consultant appointed, ToR for Kalisindh and Banswara super-critical have been prescribed by MoEF, GoI and for Kalisindh unit-3&4 Environment Impact Assessment(EIA) study has been completed and public hearing completed at site on 08.07.2014, application also submitted to MoC for long term coal linkages and allocation of coal blocks, engineering consultant yet to be appointed. Possibilities are also being explored for enhancing the capacity of Banswara Super-critical TPP from 2x660 MW to 2x800 MW. Ratlam-Banswara-Dungarpur railway line has already been sanctioned. Survey and land acquisition work is under progress.

- 2X660 MW Banswara Super-critical TPP Units-1&2
- 2X660 MW Kalisindh Super-critical TPP Units-3&4
- 2X660 MW Suratgarh Super-critical TPP Units-9&10

8.19 Project wise details for proposed plan outlay for the year 2015-16 are as under:-

Table No.8.5
Details of project, sources of funds and project cost

(₹ in crore)

S. No.	Project	Source	Project Cost	Proposed/ Revised Project Cost	Proposed Outlay 2015-16
1	Chhabra Thermal Power Project Unit 3 & 4, 2 x 250 MW	State Equity	520	607	0.00
		Loan	2080	2427	0.00
		Sub Total	2600	3034	**0.00**
2	Kalisindh Thermal Power Project, Unit 1&2, 2 x 600 MW	State Equity	920	1545	0.00
		Loan	3680	6178	0.00
		Sub Total	4600	9480	**0.00**
3	Ramgarh GTPP Stage III, 160 MW	State Equity	128	178	0.00
		Loan	512	712	0.00
		Sub Total	640	890	**0.00**
4	Suratgarh Super-critical Power Project Unit 7 & 8, 2 x 660 MW	State Equity	1584		545.00
		Loan	6336		2400.00
		Sub Total	7920		**2945.00**
5	Chhabra Super-critical Power Project Unit 5 & 6, 2 x 660 MW	State Equity	1584		400.00
		Loan	6336		1600.00
		Sub Total	7920		**2000.00**
6	Banswara Super-critical Power Project Unit 1&2, 2x660 MW	State Equity	1584		100.00
		Loan	6336		800.00
		Sub Total	7920		**900.00**
7	Ramgarh GTPP Stage IV 160 MW	State Equity	128		26.50
		Loan	512		124.26
		Sub Total	640		**150.76**
8	Suratgarh Super-critical Power Project Unit 9 & 10, 2 x 660 MW	State Equity	1584		5.00
		Loan	6336		80.00
		Sub Total	7920		**85.00**
9	Kalisindh Super-critical Power Project Unit 3 & 4, 2 x 660 MW	State Equity	1584		115.00
		Loan	6336		800.00
		Sub Total	7920		**915.00**
10	Additional Capital Works at Kota Thermal Power Station	State Equity	85		54.27
		Loan	287		177.00
		Sub Total	372		**231.27**
11	Additional Capital Works at Suratgarh Thermal Power Station	State Equity	27		13.28
		Loan	112		46.60
		Sub Total	139		**59.88**
12	S&I				**9.45**
	Total	**STATE EQUITY**			1268.50
		LOAN			6027.86
		TOTAL			**7296.36**

Private Sector Generation Projects (Implemented By RVPN):

Selection of bidder through tariff based competitive bidding process under Case-1

(A) Procurement of 1200 MW Power from Kawai Super-Critical TPS in Distt. Baran:

8.20 Project awarded to M/s Adani Rajasthan Power Ltd for procurement of 1200 MW power under Case-1 of competitive bidding guidelines issued by the GoI. Commencement of supply of power from this project had commercially begun by 1st unit on 31.05.2013 and 2nd unit on 31.12.2013.

(B) Procurement of 1000 MW Power

8.21 Discoms (Procurers) have authorized RVPN for procuring long term (25 years) 1000 MW + 10 per cent power for them through tariff based competitive process as per bidding guidelines issued by the Govt. of India under Case-1 bidding procedure. RFP documents duly approved by Discoms (Procurers) were issued to various bidders. After that evaluation of Non-Financial & Financial bids have been carried out and letter of intents (LoIs) were issued to successful bidders as under:-

Table No. 8.6

S. No	Bidder	Capacity for which LoI issued (MW)	LoI issued Dispatched no / Date	LoI sent by speed post	Levelised tariff- Rs. per kWh
1	M/s PTC India Ltd (through developer M/s Maruti Clean Coal and Power Ltd.)	195+55	757/24.9.13 & 784/27.9.13	25-9-13 & 01-10-13	4.517
2	M/s PTC India Ltd (through their developer M/s DB Power Limited)	410	785/27.9.13	01-10-13	4.811
3	M/s Lanco Power Limited (Generation Source- M/s Lanco Babandh Power Limited)	350	786/27.9.13	01-10-13	4.892
	Total	1010			

8.22 Power Purchase Agreement has been signed by the Discoms with successful Bidders on dated 1.11.2013. In this reference the Tariff adoption petition No. RERC/431/13 has been filed by RVPN on dated 28.11.2013 before Rajasthan Electricity Regulatory Commission(RERC) for adoption of tariff and approval of deviations, scheduled to hear the matters on 4.2.2015.

8.23 The Rajasthan High Court, Jaipur has issued order dated 18.04.2014 in the matter of D.B. Special Appeal Writ No. 538/14 of M/s Athena Chhattisgarh Power Ltd & D.B. Special Appeal Writ No. 604/14 of M/s SKS Power Generation (Chhatisgarh) Ltd. The matter is also under hearing in the Supreme Court of India, New Delhi. Reply already filed before Supreme Court of India on dated 30.06.2014 from RVPN side and on dated 21.07.2014 from the State of Rajasthan side. Next date of hearing in the matter is on 7.4.2015.

Selection of bidder through tariff based competitive bidding process under Case-2

(a) Giral Unit 3 & 4(2x125 MW) Thermal Power Plant:

8.24 The GoR approved for development of Project on 15.1.2010 and SPV in the name of Barmer Thermal Power Co. Ltd. was got registered with the RoC, Rajasthan, Jaipur on 5.7.2010. Filed a petition with RERC on 30.7.2010 for approval to purchase the above power. Additional land for ash dyke (56.48 ha.) got allotted by GoR to RVPN on 20.8.2010. Interlocutory application filed with RERC on 27.8.2010 for approval to purchase the above power. Application for EC submitted to Rajasthan State Pollution Contro Board(RSPCB) on 3.11.2010. RERC given Load approval for 2x125 MW (+/-10%) videsorderdt. 23.3.2011. Fuel (lignite) 16.0 Lac MMT/Annum for Unit 3&4 to be supplied by Rajasthan State Mines & Mineral Ltd.(RSMML) from Giral and Soneri Lignite reserves. Evaluation of RFQ bids was finalized on 28.4.2011. Twenty-seven bidders were shortlisted. RFP document issued on 10.5.2011. Public hearing conducted at site by RSPCB on 8.2.2012. FSA finalized with RSMML on 16.8.2012. Three RFP bids were received and opened on 28.12.2012. After evaluation of three RFP (Non-financial) bids only one bid was qualified. Petition filed on 12.3.2013 in RERC for seeking permission to continue the bidding process and open the price bid (Financial) of the single qualified bidder. RERC issued an order on 15.4.2013 that the Commission is not inclined to give its consent to the procurer to proceed with a single qualified bid. The position was apprised to GoR on 3.5.2013. The matter was again referred to GoR for seeking permission for rebidding on 5.7.2013.

8.25 Ministry of Power, GoI on 21.09.2013 issued guidelines for procurement of electricity from Thermal Power Station set up on Design, Build, Finance, Operate, and Transfer (DBFOT) basis. The previous guidelines issued on 19.01.2005, as amended from time to time, including the standard bidding document thereunder, are hereby repealed referred for case-2. Accordingly, a request for permission of rebidding for project under DBFOT basis sought on 3.04.2014 from GoR. Proposal is under consideration.

(b) 1000 MW Gas based Thermal Power Plant at Keshoraipatan :

8.26 The GoR approved the Project on 19.7.2010 and SPV in the name of 'Keshoraipatan Gas Thermal Power Company Ltd.' has been incorporated on 17.9.2010 with RoC, Rajasthan, Jaipur. Land allotment got done on 21.7.2010 (458 Bigha) for the project from Cooperative Department, GoR. The possession of 458 Bigha land was taken on 22.06.2011. 154 Bigha (23.71 ha.) additional land of Nagar Palika Keshoraipatan have also been purchased and possession work is under progress. Form No. 1 submitted to MoE&F, GoI on 25.10.2010 for issuing ToR for EC. Presentation made before MoE&F on 7.3.2011 for approval of ToR. For allotment of gas on administered price, application submitted to CEA on 26.10.10. Term Sheet for supply of gas at market driven price has been signed with M/s GAIL on 7.6.2011 and extended the validity of agreement up to 06.06.2015.

8.27 Central Electricity Authority vide letter dated 27.6.2012 intimated that MOP/ CEA has issued an advisory for the time being not to plan any gas based power generation plants till 2015 due to uncertainty in the availability of domestic gas. Whenever the allotment of gas is made available by CEA the bidding process may be initiated after obtaining load approval from RERC.

(c) Banswara Thermal Power Plant (2x660 MW) :

8.28 The GoR approved the Project on 13.1.2009. SPV in the name of 'Banswara Thermal Power Company Ltd.' has been incorporated on 13.4.2009. Water allotment (2000 MCFT/63 cusec) committed by GoR from Mahi Project on 1.5.2009. Possession of 444.50 acre Govt. land was taken on 9.6.2010. Possession of 862.56 acre private land was taken on 18.12.2010. For EC final report submitted to MoE&F on. 5.10.2010. MoP, GoI vide their office memorandum dated 20.8.2010 has recommended the case of allotment of coal linkage to MoC, GoI. The State Govt had given its consent on 7.12.2010 to Ministry of Railway for sharing 50 per cent cost (Approx. 1200 crore) of the final project cost (excluding the cost of land acquisition in Rajasthan as well as in MP) for construction of broad gaug(BG) rail link from Ratlam to Dungarpur via Banswara. MoU between Ministry of Railways, GoI and GoR was signed on 31.5.2011. For construction of railway line a meeting was held on 19.12.2011 under the chairmanship of Chief Secretary, GoR wherein a decision was taken to expedite the above work through CMD, RVUN, Collector, Banswara and Railway authorities. Previous meeting of coordination was held on 7.8.2012 and then on 2.4.2013 chaired by Chief Secretary, Rajasthan in which Chief Secretary himself reviewed the progress. Railway siding for construction of new BG line has been finalized and given to Dy CE (Gen), RVUN Banswara who is nodal officer for construction of this line in association with Railways. Coal block application filed to MoC on 1.2.2013 with RVUN.

(d) 70 MW Lignite based Gurha Thermal Power Project

8.29 RVPN had been authorised by Rajasthan Discoms to undertake the process of selection of developer for setting up of 70 MW lignite based Thermal Power Project under Case-2 through tariff based competitive bidding process in Gurha village of Kolayat Tehsil, Distt. Bikaner. Persuant to GoI guidelines a Special Purpose Vehicle (SPV) in the name of Gurha Thermal Power Company Ltd. (GTPCL) was registered with RoC on 16.4.2009 and company obtained commencement of business certificate on 13.11.2009.

8.30 M/s SPML – Om Metal Consortium with lowest evaluated levelised tariff of ₹ 3.2227/ kWh was declared as the successful bidder and LoI issued on 15.12.2011. Share Purchase Agreement (SPA) executed between RVPN and M/s SPML – Om Metal Consortium i.e. successful bidder and GTPCL transferred to successful bidder on 30.5.2013. Power Purchase Agreement (PPA) executed between GTPCL and Discoms on 26.6.2013. Petition filed for adoption of tariff in RERC and hearing held on 22.11.2013. Tariff has been adopted by RERC on 22.01.2014. Still Default Escrow Agreement is yet to be executed between GTPCL, Discoms and SBBJ which is pending due to clearance by SBBJ to Discoms. Thereafter, Agreement to Hypothecate cum Deed of Hypothecation would be executed between GTPCL and Discom(s). Discoms are constantly persuing with Bank(s) for executing pending Agreements as above.

Shared Generation Projects (being implemented By RVPNL):

8.31 Renovation, modernization & up-rating of shared projects in Bhakra Beas Management Board (BBMB) will continue. Five units of Bhakra Left Bank earlier scheduled in the Eleventh Plan for up-rating from 108 MW to 126 MW are being taken up in the Twelfth Plan. State will get 15.22 per cent share during the Twelfth Plan. An outlay of ₹ 100.00 crore was proposed for above works in the Twelfth Plan. An expenditure of ₹ 7.71 crore has been incurred in the year 2014-15 against the same outlay. An outlay of ₹ 20.00 crore is proposed for the Annual Plan 2015-16.

II. TRANSMISSION COMPANY

8.32 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".

8.33 Outlays kept for the Twelfth Plan & the Annual Plan 2014-15, likely expenditure to be incurred in the year 2014-15 and outlay proposed for the Annual Plan 2015-16 for the activities of RVPNL are as given in the following table:

Table No. 8.7
Proposed Financial Outlays

(₹in crore)

S.N.	Head	Outlay Twelfth Plan	Budgeted Outlay 2014-15	Likely Exp. 2014-15	Proposed Outlay 2015-16
1.	Generation	100.00	20.00	20.00	20.00
2.	Transmission	12500.00	1760.00	1760.80	2204.80
	Total	**12600.00**	**1780.00**	**1780.80**	**2224.80**

8.34 The physical targets kept for the Twelfth Plan, targets & likely achievement in the year 2014-15 and targets proposed for the Annual Plan 2015-16 are given in the following table:

Table No.8.8
Proposed Physical Target

S. No.	Scheme	Unit	Target Twelfth Plan	Target 2014-15 (Revised)	Ach. (upto 15.3.2015)	Proposed target 2015-16
I	**Transmission**					
	765 KV Sub-station	MVA Nos	7500 2	6000 2	6000 2	1500 Nil
	765 KV Lines	ckt.kM	426	----	----	----
	400 KV Lines	ckt.kM	5800	300	----	580
	400 KV Sub-stations	MVA Nos	5040 8	315 1	----	945 1
	220 KV Lines	ckt.kM	3650	1000	976.129	545
	220 KV Sub-stations	MVA Nos	4600 40	920 8	1320 8	900 6
	132 KV lines	ckt.kM	2150	600	444.91	600
	132 KV Sub-stations	MVA Nos	2875 100	600 20	612.50 13	475 16
II	**Augmentation**	MVA	7500	2150	2197.00	1500
III	**Capacitor Banks**	MVAR	150	150	----	150

8.35 An outlay of ₹ 2204.80 crore is proposed for transmission works during the year 2015-16. During 2015-16 the work on evacuation schemes of Chhabra Supercritical TPS, Kalisind TPS, Suratgarh Supercritical TPS, Kawai Supercritical 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 2015-16, which will be included in Annual Plan at the time of revision.

8.36 During the year 2015-16 major expenditure will be on construction of evacuation schemes which include 400 kV transmission systems covered under various evacuation schemes.

8.37 Besides above looking to the load growth the expansion in transmission system and augmentation of capacity of existing EHV GSS is required. During 2015-16 RVPN has planned to commission, 1 No. of 400kV (at Chittorgarh), 6 Nos. of 220 kV GSSs and 16 Nos. of 132 kV GSSs along with their associated lines. An addition of 1500 MVA transformer capacity under augmentation programme is also proposed during 2015-16.

Transmission Projects under PPP mode:

8.38 Looking to the huge requirement of funds for the power sector and to facilitate smooth and rapid development of transmission capacity, a part of investment is being sought from the private sector. RVPNL is implementing various transmission projects on BOOM basis.

8.39 A State Level Empowered Committee (SLEC) was constituted with a view to encourage competition in private sector participation for development of transmission projects in the State of Rajasthan.

8.40 In pursuance to the decisions of SLEC, the following transmission projects were taken up:

Table No. 8.9

S. No.	Particulars of Project on BOOM basis	Estimated cost in Crores ₹	Name of SPV	Successful Bidder	Quoted Levelised Charges in Millions of ₹	Date of Award	Scheduled COD
1	RAJ/PPP-1 : 400 kV S/C Bikaner – Deedwana – Ajmer Line along with 400 kV GSS at Deedwana and associated schemes / works.	285	Maru Transmission Service Company Limited	M/s GMR Energy Ltd.	327.84	15.2.11	13.5.13/ 16.12.13 (Deemed by RERC)
2	RAJ/PPP-2 :400 kV S/C Hindaun – Alwar Line along with 400 kV GSS at Alwar and associated schemes / works.	188.32	Aravali Transmission Service Company Limited	M/s GMR Energy Ltd.	203.97	19.1.11	17.4.13 /23.8.14 (CoD by Discom)
3	RAJ/PPP-3 : 220 kV S/C Sikar – Nawalgarh – Jhunjhunu Line along with 220 kV GSS at Nawalgarh and associated schemes / works.	36.28	Shekhawati Transmission Service Company Limited	M/s EMCO Ltd.	80.36	25.2.13	24.2.15

8.41 The Share Purchase Agreement (SPA) and Transmission Service Agreement (TSA) of all above three projects had been executed. The Transmission license to the SPVs had been granted by RERC. The Transmission Tariff was adopted by the RERC. The work of Project PPP-1 & PPP-2 have been completed and PPP-3 will be completed in 2015-16.

8.42 Further, in pursuance to the decisions of SLEC, the following Transmission projects were taken up in the second Phase:

Table 8.10

S. No.	Particulars of Project on BOOM basis	Estimated cost in Crore ₹	Name of SPV	Succes-sful Bidder	Quoted Levelised Charges in Millions of ₹	Date of Award	Scheduled COD
1	RAJ/PPP-5 : 400 kV D/C Jodhpur (New) – Udaipur Line along with 400 kV GSS at Udaipur and associated schemes / works.	379.53	Lake City Transmission Service Company Ltd.	M/s EMCO CSPPL Consortium	607.26	To be awarded	**LoI cancelled on 4.7.14 and same is revoked on 5.12.14**

8.43 As there is un-certainty of land issues as per requirement of PPP mode due to which some projects have became unfeasible to be executed in PPP mode as per existing clauses, and hence, was decided to be taken up on PPP mode availing Viability Gap Funding on DBFOT Basis.

8.44 The brief details of PPP projects availing VGF on DBFOT basis are as under:

Table 8.11

S. No.	Particulars of the Project on DBFOT basis	Estimated Cost in cores of ₹	Status
1	PPP-6: 400 kV Bikaner – Sikar D/C line (Twin Moose) – 169 Km.	260	• M/s TCE Ltd + M/s PwC Pvt. Ltd. has been appointed as Project Consultant. • Petition in RERC filed for approval of Unitary Charges on dated 5-9-14. • RERC vide order dated 8-12-2014 and 9-01-2015 approved to initiate tariff based bidding process on notional unitary charges of ₹ 29.43 crore • Application for in-principal approval of VGF submitted in DEA, MoF, GoI on dated 8-9-14. Matter discussed in 61st and 63rd meetings of

			Empowered Institution. However, final Decision of DEA awaited. • RFP Bid opened on 25-02-2015. • After requisite approvals action for issue of LOA would be taken.
2	PPP-7: 400 kV D/C Suratgarh TPS-Bikaner Line (Twin Moose)-146 Km.	204	• M/s Tata Consultancy Engineers Limited have been appointed as Technical Consultant to prepare Feasibility Report. • LoA/Agreement signed with M/s TCE Ltd, Mumbai on dated 23-9-14. • Inception Report submitted by M/s TCE Ltd on dated 13-10-14 and Draft Alternate Route Alignment Report submitted on 13-02-2015. Alternate Route Alignment discussed with M/s TCEL and advised to submit Final Report. • Feasibility report is expected by April, 15
3	PPP- 4: 400 kV D/C Babai (Jhunjhunu) – Jaipur (North) Line along with 400 kV GSS at Jaipur (North) and associated schemes / works.	222	• M/s Tata Consultancy Engineers Limited has been appointed as Technical Consultant to prepare Feasibility Report. • Agreement signed with M/s TCE Ltd, Mumbai on dated 21-10-14. • M/s. TCEL have started alternate route alignment survey. • SE (TCC-I) RVPN requested to expedite the possession of land for 400Kv GSS Jaipur (North) from JDA

III. DISTRIBUTION COMPANIES:

8.45 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.

8.46 An outlay of ₹12867.25 crore was kept for all the three distribution companies for the Twelfth Plan. An expenditure of ₹ 7557.42 crore is likely to be incurred in 2014-15 against an outlay of ₹ 7557.42 crore. An outlay of ₹ 7091.94 crore is proposed for the Annual Plan 2015-16. Company-wise details are given in the following table:

Table No. 8.12
Proposed Financial Outlays

(₹ in crore)

S. No.	Distribution Company	Outlay Twelfth Plan	Outlay 2014-15	Likely Exp. 2014-15	Proposed for 2015-16
1.	Jaipur	5028.00	3000.89	2907.72	2486.30
2.	Ajmer	3810.87	2435.64	2353.24	2131.18
3.	Jodhpur	4028.38	2317.81	2296.46	2474.46
	Total	**12867.25**	**7754.34**	**7557.42**	**7091.94**

8.47 Following schemes are proposed to be taken up by the distribution companies during the Annual Plan 2015-16.

1. Sub Transmission & Distribution Work

8.48 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 11kV and LT lines etc are to be taken up. For strengthening the power system, 11kV lines for inter connection of feeders are also being erected. 245 nos. 33/11 KV substations have been created in the financial year 2014-15. A target of creating 200 nos. 33/11 KV substations is proposed for the Annual Plan 2015-16. An expenditure of ₹ 1087.56 crore is likely to be incurred in 2014-15 against an outlay of ₹ 1393.42 crore. An outlay of ₹ 1007.00 crore is proposed for the Annual Plan 2015-16.

2. Rural Electrification Works

8.49 Under the scheme, new agricultural connections are released including extension of 11kV line, installation of 11/0.4 KV Sub-stations along with associated LT lines. 40000 wells are likely to be energized in the year 2014-15. A target of energizing 40000 wells is proposed for the Annual Plan 2015-16. An expenditure of ₹ 1036.93 crore is likely to be incurred in 2014-15 against an outlay of ₹ 1316.42 crore. An outlay of ₹ 862 crore is proposed for the Annual Plan 2015-16.

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

8.50 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 Centre whereas Part-B includes regular distribution strengthening projects.

R-APDRP Part-A:

8.51 In Rajasthan total 87 towns have been identified which are having population 30000 or more, for which detailed project reports amounting

to ₹ 315.93 crore have been sanctioned on 20-02-09 by Ministry of Power, Govt. of India. The sanctioned schemes are as follows:-

Table No. 8.13

Discom	Approved Cost (₹ in Crore)	Towns covered
Jaipur	163.52	27
Ajmer	52.03	29
Jodhpur	100.38	31
GRAND TOTAL	**315.93**	**87**

8.52 The 6 towns have been declared Go live. Work has not been completed by M/s HCL Info systems except deployment of hardware and development of initial stage of software.

SCADA/DMS System:

8.53 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. Therefore, schemes for 5 towns namely Jaipur, Kota, Ajmer, Jodhpur and Bikaner have been sanctioned on dated 31.3.2010 by PFC for SCADA/DMS activities in Rajasthan under RAPDRP. The scheme-wise details are as follows:-

Table No. 8.14

Name of SCADA city / Discom	Total DPR cost (₹ in Lakh)
Jaipur (Jaipur Discom)	5232.00
Kota (Jaipur Discom)	2460.00
Total Jaipur Discom,	**7692.00**
Bikaner (Jodhpur Discom)	2593.00
Jodhpur (Jodhpur Discom)	3277.00
Total Jodhpur Discom	**5870.00**
Ajmer (Ajmer Discom)	2149.00
Total(all Discoms)	**15711.00**

8.54 M/s Kalki Tec has been appointed as SCADA Consultant in Feb, 2010. Award of contract has been placed upon M/s Dongfang. The firm has commissioned 31 nos. 33/11 KV Substations in Jaipur City, 6 nos. 33/11 KV Substations in Ajmer City and 4 nos. 33/11 KV Substations in Jodhpur City. Jaipur and Ajmer SCADA/DMS Control Centre have been

commissioned and work of Jodhpur SCADA/DMS Control Centre is under progress.

8.55 For timely rectification of consumer complaints, centralized call Centre at Jaipur, Ajmer and Jodhpur are proposed to be started in the year 2015-16.

8.56 An expenditure of ₹ 56.93 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 76.73 crore. An outlay of ₹ 68.88 crore is proposed for the year 2015-16.

R-APDRP PART-B:

8.57 As per the guidelines of Ministry of Power, GoI, towns having population more than 30000, and having AT&C losses more than 15 per cent are covered in the scheme. In Rajasthan 82 nos. such towns are covered under this scheme. DPRs of these towns have been approved by PFC.

8.58 Initially 25 per cent funds will be provided as loan from GoI and balance 75 per cent is to be raised from financial institutions by the Nigam. Based on the criteria for reduction of AT&C losses below 15 per cent and maintaining the same below that level, 10 per cent of the total project cost of the town will be converted into grant every year & that is maximum of 50 per cent of the total project cost of a town can be converted into grant if the losses of that town are brought below the 15 per cent and are maintained for 5 years.

8.59 Out of 27 towns of Jaipur Discom eligible for funding under RAPDRP, 23 towns having AT&C losses more than 15 per cent have been selected for execution of the programme. 22 schemes with an estimated cost of ₹ 465.23 crore have been sanctioned by PFC whereas scheme for Chomu town is not viable due to less IRR as per PFC. Base line losses of all towns have been verified by TPIEA-EA in Sept., 2011. The completion period has now been extended by Ministry of Power up to March, 2016. An expenditure of ₹ 173.07 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 254.78 crore. An outlay of ₹ 111.23 crore is proposed for the year 2015-16.

8.60 Under Ajmer Discom 29 schemes with an estimated cost of ₹ 391.10 crore have been sanctioned by PFC. An expenditure of ₹ 100 crore is likely to be incurred in the year 2014-15 against an outlay of ₹160 crore. An outlay of ₹ 71 crore is proposed for the year 2015-16.

8.61 Under Jodhpur Discom 30 Schemes with an estimated cost of ₹ 684.17 crore have been sanctioned by PFC. The town Abu Road is having losses below 15 per cent, hence not considered eligible under RAPDRP Part-B Program. An expenditure of ₹ 240 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 240 crore. An outlay of ₹ 150 crore is proposed for the year 2015-16.

(4) Feeder improvement Programme and Sub-station improvement Programme:-

8.62 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 ₹ 1500.98 crore. An expenditure of ₹ 356.19 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 814.45 crore. An outlay of ₹ 468.74 crore is proposed for the Annual Plan 2015-16.

8.63 Substation Improvement Programme (SIP) for replacement of circuit breakers, feeder meters and roster switches (New and R&M) at existing 33/11 kV substations is also being initiated. Estimated cost of the scheme is about ₹ 399.96 crore. An expenditure of ₹ 231.72 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 342.94 crore. An outlay of ₹ 122.24 crore is proposed for the Annual Plan 2015-16.

Mukhya Mantri Sabke Liye Vidyut Yojana (MMSLVY)

8.64 The Cabinet Sub-committee, GoR in its meeting held on 26-2-2014 has recommended for releasing 30,000 domestic connections to the households in the Dhanis under MMSLVY in the first Phase. The financial assistance shall be provided by the GoR after releasing these connections. This is to be continued till the disposal of all pending applications against the scheme. An expenditure of ₹ 215 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 259.18 crore. An outlay of ₹ 346.55 crore is proposed for the Annual Plan 2015-16.

8.65 Since the scheme MMSLVY is likely to be vanished from the year 2015-16, therefore, the same amount may be directed to **Deen Dayal Upadhyaya Gram Jyoti Yojana**.

Central Assistance Programme:-

(1) Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY)

8.66 This scheme was launched by the Central Government in April 2005. As per objective of the scheme, all the villages/hamlets had to be electrified during the next 5 years and provide access of electricity to rural households including BPL families. Connections to BPL families had to be given free of cost.

8.67 In RGGVY X and XI Plan, 40 schemes of estimated cost of ₹ 1331.18 crore were sanctioned. An amount of ₹ 1135.96 crore has been utilized till Jan., 2015 against the release of ₹ 1112.54 crore by REC. Around 11.77 lakh BPL households have been electrified. The Discom-wise financial status is as follows:-

Table No. 8.15

(₹ in crore)

Sr. No.	Discom	No. of Schemes	Sanctioned Amount	Funds released up to 31.03.2014	Total Funds released up to Jan, 2015	Expenditure up to 31.1.2015
1	Jaipur	14	449.86	367.47	367.47	367.07
2	Ajmer	12	475.96	402.10	405.07	400.36
3	Jodhpur	14	405.36	340.00	340.00	368.53
	Total	40	1331.18	1109.57	1112.54	1135.96

8.68 In the Twelfth Plan the State Government submitted 34 projects on the actual field survey for approval to the Central Government for electrification of Dhanies (hamlets) having population more than 100. Out of these, 28 projects covering 13.35 lakh families including 4.43 lakh BPL families of 27 districts of estimated cost ₹ 1453.19 crore have been sanctioned. The schemes of remaining 6 districts are under consideration under newly launched Central Scheme '**Deen Dayal Upadhyaya Gram Jyoti Yojana**'. The details of RGGVY XII Plan are as follows:-

Table No. 8.16
RGGVY XII PLAN ALL DISCOMS

S. No.	Discom	Hamlets covered under RGGVY XII Plan	Rural HHs Covered			Sanctioned/ Estimated cost as per XII Plan Guidelines
		Total	APL	BPL	Total	(₹ in crore)
1	Jaipur	11293	465958	135371	601329	363.07
2	Ajmer	11593	177342	149589	326931	418.01
3	Jodhpur	12779	248734	158797	407531	672.11
Total		**35665**	**892034**	**443757**	**1335791**	**1453.19**

8.69 An expenditure of ₹ 65 crore is likely to be incurred in the year 2014-15 against an outlay of ₹ 189.72 crore. An outlay of ₹ 460 crore is proposed for the Annual Plan 2015-16.

2. Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY)

8.70 Now the Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY) has been subsumed in the newly launched Central Assistance Scheme named Deen Dayal Upadhyaya Gram Jyoti Yojana (DDUGJY). Consent has been intimated to the nodal agency, REC, for consideration of schemes of remaining 6 nos. districts namely Jaipur, Banswara, Hanumangarh, Udaipur, Dholpur and Barmer amounting to ₹ 816.25 crore under DDUGJY. These schemes covers electrification of 1864 Hamlets, intensive electrification of 14578 Hamlets and electrification of

540000 households. 160000 BPL households will be benefitted through it.

8.71 As per guideline issued by MoP, GoI, schemes to be sanctioned under DDUGJY shall have funding pattern 60 per cent grant by GoI and balance 40 per cent by the State Govt./implementing agencies. However, additional grant of 15 per cent would also be admissible if the scheme is implemented as per the prescribed mile stones.

8.72 The implementation period is 24 months from the date of issue of Letter of Award by the Utility in case of turnkey works and 30 months from the date of communication of the approval of the monitoring committee in case of partial turnkey/departmental basis. However, the monitoring committee can extend execution period depending upon the merits in the exceptional cases. An amount of ₹ 25.00 crore is proposed for the Annual Plan 2015-16.

8.73 Physical targets kept for the 12th Plan, the Annual Plan 2014-15, likely achievement during 2014-15 and proposed targets for the Annual Plan 2015-16 are given in the following table:

Table No. 8.17
ALL DISCOMS

S. No.	Particular	Unit	Target Twelfth Plan	Target 2014-15	Likely Ach. 2014-15	Target for 2015-16
1	33 kV S/S	No.	400	220	220	200
2	33kV Lines	Km.	2000	1100	1100	1000
3	Ag. Pump Sets.	No.	35800	40000	40000	40000
5	BPL Connections	No.	-	10079	19398	60000

D. RENEWABLE ENERGY SOURCES

8.74 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 envisages that the share of renewable electricity in the electricity mix should be 12 per cent by 2016-17. 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

Recently the Govt. of India has awarded the Rajasthan State for outstanding work in the field of Renewable Energy

8.75 An outlay of ₹ 1000.00 lakh was kept for the Twelfth Plan. An outlay of ₹ 5200.00 lakh is proposed for the Annual Plan 2015-16. The Rajasthan Renewal Energy Corporation is mainly implementing following programs.

1. SPV Pumping Systems

8.76 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. 16746 Nos. SPV Pumping Systems have been installed in farming fields using drip irrigation till March, 2015. Remaining work out of total 9902 Nos. SPV Pumps of programme 2013-14 is in progress. This programme is being implemented by Horticulture Department in Rajasthan. During 2014-15, the subsidy has been revised as ₹ 40500/- per hp for DC pumps and ₹ 32400/- per hp for AC pumps from MNRE, GoI and 40 per cent support from Government of Rajasthan. During 2014-15, a target of 9902 Nos. SPV Pumps installation has been received from MNRE, GoI which is also under implementation. During 2015-16 further target of 5000 Nos. pumps has been proposed.

2. Solar Power

8.77 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, 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 921.10 MW capacity has been established by Feb., 2015 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

8.78 Till March, 2015, total 3321.345 MW capacity Wind Power Plants have been established against a total technical potential of 5400 MW. To further exploring the wind potential in the State, it was proposed to carry out wind assessment studies at 30 more locations (100 m) during the XII Plan under financial support program of the Central Government. 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 Ltd. has established, three Wind Power Plants of total capacity 6.35 MW at Jaisalmer, Phalodi and Devgarh. In addition to this, Wind Power Plants of capacities of 25 MW, 10.2 MW and 10.2 MW have also been established in the year 2004, 2006 and 2010 respectively. It is expected that an additional capacity of 1500 MW wind power would be generated during the next three years with the support of private sector .

4. Biomass Power

8.79 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 started for this purpose during the year 2014-15. Biomass Power Generation Plants of 114.30 MW capacity have been established by March, 2015 in the State.

5. Energy conservation Program

8.80 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.

8.81 As per available Plan allocation for 2014-15, RREC has taken up activities to utilise ₹ 200 lakh. RREC has also proposed to take up similar activities further under Energy Conservation Programme 2015-16 with an outlay of ₹ 200.00 lakh.

6. Electrification through Solar in Rural Area:

8.82 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 ₹10000.00 lakh as provisioned in the State Plan 2014-15 for electrification of one lakh such houses. Similarly, during 2015-16 a target of electrification of around 50000 Nos. houses is proposed with State Plan allocation of ₹ 5000.00 lakh.

Central Assistance Schemes:

7. Rural Electrification Program:

8.83 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 area of the

State. Till 2012-13, RREC used to popularize PV systems by installation of SPV Domestic Lighting Systems which consists of 37 watt SPV module, 40 Ah battery, 2 Nos. 9 watt CFL fixture and Balance of Systems (BOS). This system is used for illumination purpose only. This system is widely accepted in the State as this is very useful in areas where power grid is not available and also in the areas where public is facing problem during power cut. The cost of the present system was ₹ 9780, out of which 30 per cent subsidy amounting to ₹ 2934 per DLS was provided. Balance cost of ₹ 6846 was borne by the beneficiary.

8.84 During 2014-15, RREC has taken up promotion of higher PV capacity systems up to 1 kW PV capacity in rural as well as urban area of the State. It was planned to take up programme of 5000 KW PV capacity systems installations during 2014-15.

8.85 Following are the six models of systems of different PV capacity opted for installation under this programme:

Table 8.18

S. No.	System Details :	PV Capacity of each system:	Tentative Numbers	Total PV Capacity in kW
1.	37 Wp SPV HLS (Model-ii) (with 2 CFLs of 9W p each)	37 Wp	5000	185
2.	24 Wp SPV HLS (with Four LED Fixtures)	24 Wp	5000	120
3.	100 Wp SPV System (with 3 CFLs of 11Wp each+ DC Fan +Mobile Charger)	100 Wp	5050	505
4.	250 Wp SPV System	250 Wp	2760	690
5.	500 Wp SPV System	500 Wp	3000	1500
6.	1000 Wp SPV System	1000 Wp	2000	2000
TOTAL :				**5000**

8.86 As this programme is based on available sanction of MNRE for 30 per cent CFA, presently RREC is having sanction of 2 MW PV capacity each of 1 kW from MNRE, GoI. The implementation of this is under progress. The time frame to complete this programme has been extended by MNRE till 31.8.2015. The sanction of other systems is awaited from MNRE, GoI. The programme size will be as per available sanction from MNRE, GoI.

8. Roof Top Solar Power Generation Scheme:

8.87 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 is 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 Dec., 2015 as sanctioned by MNRE, GoI. Further targets will also be taken up as per sanction of MNRE during 2015-16. RERC has also issued the Regulation for Net Metering.

9. Wind Resource Assessment Programme:

8.88 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.

8.89 The Wind Resource assessment programs in India are conducted by Ministry of New & Renewable Energy through Centre for Wind Energy Technology (CWET), Chennai. The NIWE (formerly C-WET) earlier has conducted programs to study wind power at various heights in India at 20M/25M, 50M & 80M height and issued wind atlus. Currently C-WET is conducting WRA-2011-12 Programme for study of wind power at 100 meter level height.

8.90 During XII Plan, the Ministry of New & Renewable Energy (MNRE) has an ambitious target of 30,000 MW capacity additions through grid connected renewable power. In order to achieve the target of 15,000 MW from wind, the current proposal envisages implementation of Assessment of Wind Power Potential at 100 Meter level in 500 selected locations in 24 States through installation and commissioning of wind masts along with instrumentation from the funds available under NCEF. The project proposal will be implemented by National Institute for Wind Energy (NIWE) (formally C-WET), Chennai. Out of 500 Nos. locations 30 Nos. locations are in Rajasthan.

8.91 The project will be implemented by funding in a ratio of 40 per cent by MNRE with the help of fund available from National Clean Energy Fund (NCEF), 30 per cent by State and balance 30 per cent by Wind Power Developers. A provision of ₹180.00 Lakh has been made under State Plan 2014-15 for this programme and MNRE will provide ₹ 240.00 Lakh as GoI support. The implementation of this programme is under process and will likely be completed by August, 2015. No further target provisioned under State Plan 2015-16.