

4. ENERGY

4.1 POWER

Outlay – ` 3209.00 crore

4.1.1 In the Annual Plan 2013-14, a sum of ` 3209.00 crore is earmarked for power sector. Strengthening of distribution system and transmission system, clearing of pending agriculture power connections and conversion of Low Voltage Distribution System (LVDS) into High Voltage Distribution System (HVDS) in agriculture sector are some of the initiatives planned for achieving full and effective rural electrification. The outlay which is 21% of the total plan funds includes ` 1209 crore for transmission, 750 crore for distribution and ` 750 crore for generation. The state government is committed to make making Punjab a power surplus state in near future. The present generation capacity of Punjab is 7276 MW including central share of 2024 MW, The State is likely to become power surplus by the year 2013-14.

4.1.2 Power plays a vital role in the development of the overall economy of the State. In the State of Punjab, not only the industrial sector but the agriculture sector is also heavily dependent on power. In view of the rising living standards of the people of the State, the demand for power is increasing day by day. The main objective is to expand and strengthen the power generation system so that adequate power supply is available on demand to consumers in various sectors of the economy. For this, the strategy for the 12th Five Year Plan is as under:-

- (1) Maximum utilization of existing installed capacity by improving the performance of thermal power stations and renovation and modernization of old thermal/hydro power plants.
- (2) Expeditious commissioning of new projects.
- (3) To initiate advance actions on new schemes to be proposed.
- (4) Diversification of source of power generation-use of gas based thermal plants/biomass based plants and establishing nuclear power plants for Punjab.
- (5) Development of captive power plants.
- (6) Encouragement of captive power plants and cogeneration plants in the State.
- (7) Liberalizing setting up of new renewable energy source (NRES) based

plants through attractive tariff and other concessions.

- (8) Augmenting and strengthening of the transmission and distribution systems to supply proper quality of power in both urban as well as in rural areas.
- (9) Reduction of Aggregate Technical and Commercial (AT and C) losses.
- (10) Conservation of energy and load management.
- (11) Adoption of information technology in the power sector.

4.1.3 Per capita consumption of electricity in the State has increased from 163 kwh in 1968 to 1225 kwh in 2011-12 and accordingly electricity consumption has increased from 700 million units to 33529.73 million units in 2011-12. The total installed capacity in 1967-68 was 614 MW which has increased to 7276 MW by the end of March, 2013. All the 12428 inhabited villages in the State have already been electrified. At present the number of consumers being served upto Feb, 2013 are 7857959 nos which includes general connections 6543010 nos, industrial connections 123364 nos, agriculture connections 1188096 nos and others connections 3489 nos in the State. In order to create employment/self employment opportunities and also to encourage agro based small scale industries in the rural areas, power supply on urban pattern has already been provided to 18866 villages including 12428 villages and 6438 deras and dhanies through independent feeders in the State. The total no of grid sub-stations are 805 as on March, 2013 and length of the transmission lines is 16167.24 km as on 28/2/2013. Besides this, the length of 11kv lines is 205693.4 Ckt km and LT lines is 162263.3 Ckt km ending 30/9/2012. The transmission and distribution losses which were 20.12% in 2009-2010 have been brought down to 17.72% during 2012-13 and aims to bring it down to 15% by the year 2015-16.

4.1.4 An outlay of `5963.65 crore was approved in the 10th Five Year Plan for power sector, the expenditure incurred during the corresponding period was `4928.89 crore. An outlay of `7055.83 crore was provided under sub-head "Power" in the 11th Plan against which an expenditure of `8771.79 crore has been incurred. An outlay of `22673.80 crore and `3300.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `3209.00 crore is provided for Annual Plan 2013-14.

Status as on 31/3/2013 is given below:

(1)	Installed Capacity (Own) (Including Common Pool)	4783.35 MW
(2)	Share from Central Sector Projects	2024 MW
(3)	PEDA and other NRSE project including 10 MW Jalkheri RSTP	469 MW
(4)	Total Installed Capacity	7276 MW
(5)	Maximum Demand Met Within 2011-12	11520 MW
(6)	Energy Sent Out 2011-12	33529.73 Mu
(7)	Connected Load	29611.51 MW
(8)	Per Capita Consumption	1225 kwh/yr
(9)	Numbers of Villages Provided Urban Pattern Supply including Deras and Dhanis	18866* Nos.
(10)	T and D Losses(Including Commercial)	17.718%
(11)	No of grid Sub Stations	805
(12)	Length of Transmission Lines	16167.24 Ckt km
(13)	Length of 11 KV Lines	205693.4 Ckt km
(14)	Number of Distribution Transformers	605153
(15)	Length of LT Lines	162263.3 Ckt km
(16)	Number of Connections	7857959
	(i) General	6543010
	(ii) Industrial	123364
	(iii) Agriculture	1188096.00
	(iv) Others	3489

*Including 12428 villages and 695 deras and dhanis and 5743 additional deras/dhanies having a cluster of 5 or more houses.

Ongoing Schemes

Centrally Sponsored Schemes

PP-01 Transmission System

Outlay – `1209.00 crore

4.1.5 The outlay for transmission includes execution of various 220/132/66/33KV sub stations and transmission lines, renovation and modernization works of existing sub stations, various PLC works and evacuation systems for Talwandi Sabo Thermal Plant through PGCIL on Turn Key basis. During 11th Five Year Plan an outlay of `2445.74 crore has been allocated to this component which included distribution, Restructured Accelerated Power Development Programme & Rajiv Gandhi Gramin Viduti karan Yojana. An outlay of `2445.74 crore was provided under this scheme in the 11th Plan against which an expenditure of `3570.94 crore has been incurred. An outlay of `5777.05 crore and `1095.41 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `1209.00 crore is provided for Annual Plan 2013-14.

Targets for 11th and 12th Five Year Plan and achievements upto 3/2013 are as under:-

SN	Item	Units	11th Plan (2007-12)		2012-13		2013-14
			Target	Achievements	Targets	Achievements	Targets
1	2	3	4	5	6	7	8
1	400 KV S/S New/ Upgradation/ Augmentation	Nos. (MVA)	-	-	-	2 (1000.00)	8 (2890.00)
2	220 KV S/S New/ Upgradation/ Augmentation	Nos. (MVA)	50 (5000.00)	59 (5076.00)	19 (1900.00)	24 (2729.50)	19 (2000.00)
3	132 KV S/S New/ Upgradation/ Augmentation	Nos. (MVA)	75 (725.00)	54 (747.50)	5 (100.00)	12 (195.50)	NIL
4	66 KV S/S New/ Upgradation/ Augmentation	Nos. (MVA)		495 (4593.70)		139 (1459.95)	169 (1725.00)
5	33 KV S/S New/ Upgradation/ Augmentation	Nos. (MVA)	620 (3775.00)	35 (167.50)	200 (2250.00)	11 (58.00)	6 (45.00)
6	400 KV S/S New/ Upgradation/ Augmentation	Nos. (MVA)	-	-	-	709.640	666.19
7	220 KV Transmission Line New/ Upgradation/ Aug.	Ckt.Km	1500.00	954.190	450.00	382.102	689.902
8	132 KV Transmission Line New/ Upgradation/ Aug.	Ckt.Km	200.00	75.902	100	NIL	NIL
9	66 KV Transmission Line New/ Upgradation/ Aug.	Ckt.Km			800.00	-	438.00
10	33 KV Transmission Line New/ Upgradation/ Aug.	Ckt.Km	1300.00	1696.362	-		7.00
11	HT Shunt Capacitors	MVAR	-	657.993	434.00	724.604	622.49

PP-01(i) Work Relating to Restructured Accelerated Power Development & Reforms Programme (R-APDRP)

Outlay – `500.00 crore

4.1.6 Ministry of Power, Government of India, had sanctioned 26 schemes amounting `715.57 crore in 2002-03 to 2004-05 under Accelerated Power Development Reforms Programme (APDRP) for strengthening of transmission, distribution system and replacement of metering equipment. This programme was in operation during the period 2002-03 to 2008-09. Government of India had been providing 25% grant and the balance 75% funds (of the project cost) were contributed by PSEB from internal resources or through availing loans from PFC/REC. Due to launch of Restructured APDRP during 2009-10, all ongoing APDRP schemes were closed as per directions of MoP/GoI. Cumulative expenditure of `4.63 crore was incurred on this project upto 31/3/2009. Government of India has decided to continue APDRP in the restructured form during 12th plan (APDRP-II) as central sector scheme.

4.1.7 R-APDRP (2009-2012): The focus of the programme on the establishment of reliable/automated baseline & reduction of Aggregate Technical & Commercial losses. It will cover urban areas with population above 30,000. The activities are being taken up in two parts A and B. Part A covers consumer indexing, GIS Mapping and Automatic Data Logging for all distribution transformers and feeders as well as establishment of IT enabled consumer service centres. For Part-A 47 schemes/works costing `354.11 crore have been approved and loan amount of `272.83 crore has been sanctioned. M/s Wipro Ltd has been engaged as IT consultants. M/s Spanco has been selected as IT implementation agency and work has been started. For this part 100% financial assistance is admissible by way of loan which is convertible into grant after successful implementation of the project within an agreed time frame of 3 years from the date of approval of the DPRs. Part-B covers strengthening of sub-transmission and distribution system of 47 towns. For the part 25% funds will be provided by GoI as loan and remaining 75% are to be arranged by PSPCL from its own resources or from the financial institutions. Entire GoI loan plus 25% of the state contribution is convertible into grant. Schemes of 47 towns stands submitted to PFC out of which 42 schemes costing `1509.73 crore have been approved and loan sanctioned by PFC is 377.44 crore. The work for meters to be shifted out side and installation of LT Shunt Capacitor is under process. An expenditure of `103.23 crore has been incurred during 11th Plan. An outlay of `2680.00 crore and `680.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `500.00 crore is provided for Annual Plan 2013-14.

**PP-01(ii) Rajiv Gandhi Gramin Vidyutikaran Yojana (RGGVY) (GoI: PSPCL)
(90:10):**

Outlay – `0.00 crore

4.1.8 The Government of India under RGGVY has approved 17 Schemes for `183.91 Cr on 22/8/2008, the aim is to provide an infrastructure for electrification of un-electrified villages and rural households including the electrification of Below Poverty Line (BPL) house-holds. It is a centrally sponsored scheme, which facilitates the PSPCL for a grant of 90% of the project cost & balance 10% amount of scheme has to be funded by REC as a soft loan. REC released `57.36 crore in 2008-09 (Rs.46.88 crore for infrastructure works and `10.48 crore for BPL connections). An outlay of `25.00 crore and `25.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. All identified 80,000 beneficiaries have been covered by March, 2013. Total expenditure incurred during 2008-13 is `47.65 crore. No outlay is provided for this scheme in the Annual Plan 2013-14.

PP-02 Generation

PP-02(i) Renovation and Modernization of GNDTP unit III and IV based on Residual Life Assessment (RLA) study (Phase-II) –Bathinda:

Outlay – `105.00 crore

4.1.9 For renovation and modernization of Units-II and IV Residual Life Assessment (RLA) study has been carried out and a project report amounting to `290.00 crore (at 2002-03 level) on the basis of this study has been submitted to CEA, New Delhi for finalization. In this scheme renovation and modernization works on boiler, turbine and instrumentation etc are to be carried out to upgrade the capacity of GNDTP Units-III and IV from 110 MW to 120 MW each. Final memorandum for price negotiation with M/S BHEL has been approved. PO and work order were placed upon M/s BHEL on 14/11/2006. Design and drawing work is in progress. However latest cost of the project is `490.00 crore at price level 2006-07. After completion of renovation & modernization activities, capacity will be up rated from 110 MW to 120 MW, plant availability factor will improve, operational efficiency will increase and auxiliary consumption will reduce. An outlay of `609.00 crore was provided under this scheme in the 11th Plan against which an expenditure of `318.71 crore has been incurred. An outlay of `177.00 crore and `177.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `105.00 crore is provided for Annual Plan 2013-14.

PP-02(ii) GHTP Stage II Lehra Mohabat (2x250 MW):

Outlay – `23.00 crore

4.1.10 To meet with the acute power shortage in Punjab the project has been installed at village Lehra Mohabbat Distt. Bathinda with a capacity of 2x250 MW. This project is being executed by BHEL on erection, procurement and commissioning mode (EPC) basis. The Third & Fourth unit of this project has achieved COD on 16/10/2008 & 25.01.2011 respectively. An outlay of `1431.05 crore lacs was provided under this scheme in the 11th Plan against which an expenditure of `1256.67 crore has been incurred. An outlay of `22.15 crore and `22.15 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `23.00 crore is provided for Annual Plan 2013-14.

PP-02(iii) Mukerian Hydro Electric Project-II (18 MW):

Outlay – `85.00 crore

4.1.11 This Project is under execution and is being funded from loan of `211.576 crore taken from REC. This loan amount is for all the civil, electrical & mechanical works. Mukerian Small Hydel Project Stage-II is located at RD-880 M of the Mukerian Small Hydel Stage-II, which takes off from Mukerian Hydel Channel Stage-I at RD-35500 M. The project site is located about 5 KM from Unchi Bassi and 12 KM from Dasuya Township. Two Machines of 9 MW Kaplan Bulb Turbine are proposed for the project. The turbines are designed with net head of 8.23 M. The project envisages average annual generation of about 214.85 MUs at approximate generation cost of `1.85/KWh & `1.74/KWh with interest subsidy. Detailed work order for civil works have been allotted to M/S P&R Infra projects Ltd, Chandigarh. Supply-cum-Works Contract Agreement for E&M works of Mukerian Stage-II on Turnkey basis had been issued to M/s BHEL. Energy benefits provided by this project will be 214.85 MUs./ per year at 89.33% PLF.

4.1.12 In the 10th Plan, the expenditure incurred was `38.82 crore. An outlay of `101.29 crore was provided under this scheme in the 11th Plan against which an expenditure of `36.97 crore has been incurred. An outlay of `90.00 crore and `65.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `85.00 crore is provided for Annual Plan 2013-14.

PP-02(iv) Renovation and Modernization of GGSSTP, Ropar Phase I and II :

Outlay – `43.20 crore

4.1.13 Guru Gobind Singh Super Thermal Power Plant, Ropar is in operation for

the past about 25 years. Due to continuous running of plant and up-gradation of technology certain renovation and modernization activities are planned to be executed so as to improve the efficiencies, PLF and availability factor of Plant. The total cost of the renovation and modernization works involving all 6 units is approximately `568.00 crore and work is purposed to be completed during 12th Five Year Plan through 13 Nos schemes already formulated. In the 10th Plan, the expenditure incurred was `87.89 crore. An outlay of `96.60 crore was provided under this scheme in the 11th Plan against which an expenditure of `62.31 crore has been incurred. An outlay of `455.96 crore and `56.15 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `43.20 crore is provided for Annual Plan 2013-14.

PP-02(v) Renovation and Modernization works at Thermal Plant as per Residual Life Assessment (RLA) study of GNDTP (Unit I and II) GNDTP– Bathinda:

Outlay – `10.00 crore

4.1.14 Before renovation and modernization unit I & II of Guru Nanak Dev Thermal Plant were running at 90/95 MW i.e. below their rated capacity of 110 MW each. After renovation & modernization these are running at their rated capacity of 110 MW each and also plant load factor and plant availability factor have been improved considerably. Major renovation & modernization works of Unit I & II have been completed. Unit –II has taken over normal operation w.e.f. 20/1/06 and Unit-I has been taken over w.e.f. 31.5.07. Funds have been provided under this scheme for replacement of existing tools and machinery which have become obsolete with usage. In the 10th Plan, the expenditure incurred was `177.95 crore. An outlay of `84.00 crore was provided under this scheme in the 11th Plan against which an expenditure of `329.50 crore has been incurred. An outlay of `11.65 crore and `9.02 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `10.00 crore is provided for Annual Plan 2013-14.

PP-02(vi) Additional works of GNDTP Bathinda

Outlay – `77.00 crore

4.1.15 In this scheme works like Dry Fly Ash Handling system of GNDTP, Raising of Ash Dyke GNDTP, Augmentation of Fire Protection System of GNDTP, Procurement and installation of 2nd “In motion weighing system at GNDTP and Capital works other than

R&M works like replacement of CTs, PTs and replacement/addition of 3 phase 4 wire energy meters at GNDTP are proposed to be carried out. Under this scheme an amount of ` 50.00 crore was provided in the revised estimates of Annual Plan 2011-12, but no expenditure was incurred. An outlay of ` 173.98 crore and ` 70.24 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of ` 77.00 crore is provided for Annual Plan 2013-14.

PP-02(vii) Renovation and Modernization of Bhakra PHs and Associated works:

Outlay – ` 72.00 crore

4.1.16 All the 5 units of Bhakra Right Bank have been up-rated from 132 MW each to 157 MW each giving an additional power of 125 MW against which PSEB will be getting 63.6 MW of the additional installed capacity. 5 No. of Units of Bhakra Left Bank Power House of 90 MW capacity were commissioned during 1960-61. The units were however up- rated to 108 MW by changing the stator winding having class-B with Class-F insulation during the period 1980-85 enabling use of high cross-section of copper in some slots. Since these machines have already outlived their useful life and are also experiencing fall in turbine efficiency, the machines are thus due for carrying out renovation & modernization and up- gradation works. The works relating to renovation & modernization are to be taken in the 12th Five Year Plan. With the upgrading of 5 units of 108 MW each to 126 MW, it is estimated to have an extra-generation capacity 90 million units, equivalent to approximately annual revenue of ` 21.00 lac to the partner states. An outlay of ` 16.10 crore was provided under this scheme in the 11th Plan against which an expenditure of ` 131.38 crore has been incurred. An outlay of ` 62.00 crore and ` 62.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of ` 72.00 crore is provided for Annual Plan 2013-14.

PP-02(viii) Shahpur Kandi Dam Hydro Electric Project (206 MW):

Outlay – ` 242.14 crore

4.1.17 The Shahpur Kandi project is a sister project of Ranjit Sagar Dam project (which is now completed). The construction of Shahpur Kandi Dam project is essential to get the optimum benefits of power and irrigation potential created by Ranjit Sagar Dam project. The proposed dam is situated on the river Ravi, down stream of the Ranjit Sagar Dam and 8 km. upstream of the Madhopur Head Works. The concrete dam is flanked by two head regulators on its right and left abutments falling in J & K and in Punjab.

4.1.18 Shahpur Kandi Dam project has been declared as National project by the Ministry of Water Resources, Government of India. Planning Commission, Government of India has accorded investment clearance of the project during 2010 amounting to ₹2285.81 crore. As per guidelines for the National Projects, 90% of the cost of the irrigation component is being provided by Ministry of Water Resources, Government of India as central assistance & balance 10% of the cost of the irrigation component is to be provided by the state government. Power component of the project which is 71.39% of the total cost is being provided by Punjab State Power Corporation Limited. Power Finance Corporation has already given approval for 80% of the cost of power component as loan and remaining 20% of the cost of power component shall be arranged by Punjab State Power Corporation Limited. The project will be completed in four years from 2013-17. After completion of the project the potential of 5000 Ha in Punjab State and 32713 Ha. in J&K State shall be created. With the completion of Shahpur Kandi Dam project, the full generation capacity of the R.S.D. Project (600 MW) will be utilized when all the turbines at the project will be made functional. An outlay of ₹2156.77 crore lac was provided under this scheme in the 11th Plan against which an expenditure of ₹20.00 crore has been incurred. An outlay of ₹2054.29 crore and ₹242.14 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of ₹242.14 crore is provided for Annual Plan 2013-14.

PP-02(ix) Renovation and Modernization of PSEB Hydel Projects:

Outlay – ₹45.00 crore

4.1.19 It covers renovation and modernization of activities like capital maintenance of machinery, replacement of existing AVR with new technology, replacement of existing relay panels, annunciation panels, turbine control panels & control desk etc of PSEB hydel projects namely Shanan HEP (110 MW), Mukerian Hydel Project-1, UBDC HEP- I&II (91.35 MW), Anandpur Sahib HEP (134 MW), Ranjit Sagar Power Project (600 MW). An expenditure of ₹34.64 crore has been incurred during 11th plan. An outlay of ₹134.29 crore and ₹45.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of ₹45.00 crore is provided for Annual Plan 2013-14.

PP-02 (x) Gas based Power Plants at Ropar

Outlay – ₹1.66 crore

4.1.20 Under the scheme no outlay has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13. An outlay of ₹1.66 crore is provided in the Annual Plan 2013-14.

PP-02 (xii) Renovation & Modernization of GHTP Stage I

Outlay – `25.00 crore

4.1.21 Rs.10 crore are proposed for the renovation & modernization of Guru Har Gobind Thermal Plant, Lehra Mohabbat stage-I. Works like improvement in lighting system for energy efficiency, replacement of conventional bolted type clamps, replacement of station building, handling plant, raising of plant boundary wall, procurement of spare 6.6KV HT motors for Stage-II etc., are some of the works planned during 2012-13 for GHTP Stage-I, Lehra Mohabbat. An expenditure of `5.89 crore was incurred during 11th Plan. An outlay of `136.92 crore and `20.89 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `25.00 crore is provided for Annual Plan 2013-14.

PP-02(xiii) 1320 MW State Sector Thermal Plant near Mukarian

Outlay `15.00 crore

4.1.22 The Punjab Govt. has approved the development of 1320 MW (2x660 MW) Thermal Power Project with Super-Critical technology as a State Power project at Hazipur (Mukerian), Punjab.

4.1.23 To deal with the activities like conducting the various studies, preparation of project information report, obtaining the requisite clearances, preparation of bid documents, rafting of agreements and assistance in the bid process for the project, it is proposed to appoint a Consultant for the Project. This project will take approx. 6.5 years to complete and commission. The total project cost shall be around `7000 crore. The 90% cost of project shall be met by raising loans from PFC/REC and balance 10% shall be arranged by PSPCL through its own resources/raising loans from market. An outlay of `5910.00 crore and `10.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `15.00 crore is provided for Annual Plan 2013-14.

PP-02(xiv) Computerization of Thermal Power Plants

Outlay `1.00 crore

4.1.24 For efficient functioning & Management of thermal plants, M/s TCs, New Delhi has been engaged by PSPCL for the work of on-line Computerization of Thermal Plants, Thermal Designs & Director/G office4 (Cost `6.5 Crores approx.) TCS is to supply, install & commission Hardware & Networking Hardware components and various System Software's as per the qty. indicated in the W.O. In addition firm has to develop & configure Application Software having modules like Financial accounting, Purchase Management, Inventory Management, Operation & maintenance, Fuel Management, HRMS, Generation of MIS reports etc. for all the plants (GNDTP

Bathinda, GHTP Lehra Mohabbat and GGSSTP Ropar), Thermal Designs Patiala & Director/G office. Imparting/G office. Imparting training. Job of data conversion/data entry. Operation & Support. AMC is also to be provided by TCS. An outlay of `5.00 crore and `1.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `1.00 crore is provided for Annual Plan 2013-14.

PP-02(xv) Institute of Power Management (IPMP) Patiala

Outlay `5.00 crore

4.1.25 Institute of Power Management (IPMP) is being setup at Patiala for providing in house training facility for both new as well as existing staff of Punjab State Power Corporation. An outlay of `19.00 crore and `10.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `5.00 crore is provided for Annual Plan 2013-14.

PP-03 Distribution

Outlay – `750.00 crore

4.1.26 During the past 30 years, more emphasis was laid on generation side as compared to distribution system. The maximum amount of plan outlays was allocated to addition in generation capacity. PSPCL has vast network of 11KV lines, 11KV transformers, general connections i.e GSC, ISC, bulk supply and other, tubewell connections and it has connected all villages for 24-hour urban pattern power supply. It has now been proposed to give priority to the distribution system till the distribution system is brought to the level of delivering qualitative supply to ultimate consumers in the State. The length of 11 KV lines, which was 1,27,734 ckt km in 2007-08 has been increased to 205693.4 ckt km as on 28/2/2013. Similarly, the number of 11 KV transformers, which was 2,74,637 in 2007-08 are increased to 605153 as on 28/2/2013. A total no of 50.88 lac meters will be shifted in pillar boxes which include 31.88 lac meters in rural areas and 19 lac meters in urban areas. The total cost of this project is `817 crore out of which `661.77 crore will be provided by REC in the form of loan and `155.23 crore by the PSPCL from its own sources, it will result in following benefits:-

4.1.27 Improvement of voltage at tail end Minimal damage of transformers Minimum Fuse off complaints Reduction of LT Losses by 1-1.5% saving of 500 to 600 Mu's /yr (`180 crore/Yr). An expenditure of `2757.15 crore has been incurred during 11th Plan. An outlay of `4939.50 crore and `769.00 crore has been provided in the 12th Plan 2012-17 and Annual Plan 2012-13 respectively. An outlay of `750.00 crore is provided for Annual Plan 2013-14.

4.2 NON CONVENTIONAL SOURCES OF ENERGY

Outlay `15.14 crore

4.2.1 The major portion of the country's energy requirement is met from conventional energy sources like coal and petroleum. However, the vast majority of our rural population still depends upon the locally available non-conventional sources of energy like animal dung, crop waste and fuel wood. In order to ensure the efficient use of these energy resources in an environmental friendly manner, it is important to promote the programmes of non-conventional sources of energy.

4.2.2 The state government has accorded top priority to the development of new and renewable sources of energy (NRSE). 30 mini hydel plants of 36.90 MW capacity have already been commissioned on different canals in the state. 33 more projects have been allocated to various agencies on BOO basis and are under execution.

4.2.3 32 biomass co-generation power projects of 333.50 MW capacity have been commissioned in distilleries/ paper and pulp/ rice shellers/ sugar mills in the Punjab state and another 25 projects of 290.50 MW capacity are under implementation.

4.2.4 Considerable potential for energy conservation exists in the state in industry, agriculture and domestic sectors where energy conservation can be realized to a large extent at the lowest cost. As per the central and state government guidelines, PEDDA has made a special programme to undertake the conservation of energy in domestic, commercial, agriculture and industrial sector for effecting saving of about 20% by the end of 12th Plan equivalent generation capacity of 1000 MW. Steps have been taken for introduction of CFL's and energy efficient lighting in the state. The incandescent lamps are being replaced with energy efficient CFL in domestic sector. About 5.50 lac incandescent lamps have been replaced with CFLs. Besides, about 1.60 lac incandescent lamps have been replaced on agriculture tubewell kothas.

4.2.5 Punjab Energy Development Agency has allotted 6 solar power projects of 13.5 MW capacity to private companies on BOO basis and a plan to generate additional 100 MW of solar power is being drawn up. The Punjab State Electricity Regulatory commission has approved tariff of `7 per KW with 5 % escalation upto 2012 to encourage the developers to set up solar base power projects. 6 solar wind hybrid system of 30 KW capacity has also been commissioned.

4.2.6 Against an expenditure of `127.88 lac incurred during 11th Five Year Plan, an outlay of `22665.00 lac and `1349.00 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of `1514.00 lac is provided for the Annual Plan 2013-14, for the following schemes:-

On Going Schemes

Centrally Sponsored/Funded Schemes

NC-01 Power Generation from Agro Waste. (CS: State: Beneficiary)

(33:33:34)

Outlay `1.00 crore

4.2.7 The objective of the scheme is to identify & commercialize the technology for the most efficient conversion of agro waste into energy. In order to harness the available potential and to promote technology based demonstration project in this sector during the period (2007-12), PEDA proposes to setup one MW demonstration biomass based power project utilizing the bio-methanation route by up scaling the technology developed by at Sardar Patel Renewable Energy Research Institute (SPRERI). The project proposes to utilize rice straw as a fuel for converting this into biogas and then to generate power.

4.2.8 The proposal is based on the technique developed at Sardar Patel Renewable Energy Research Institute (SPRERI) at Vallabh Vidyanagar to biologically convert rice straw into methane rich gas and semi decomposed organic matter which can be matured into high quality compost or made into briquette fuel.

The estimated project cost is `9.00 crore, which is proposed to be met as under:

Grant from MNRE, GoI	-	` 3.00 crore
PEDA / PGL share	-	` 3.00 crore
State Government	-	` 3.00 crore

This research & development and technology development project, shall help in utilizing the abundant rice straw in the state in a useful manner for energy recovery. Earlier this project was proposed as externally aided project but the same has been dropped by JBIC and is now converted into centrally sponsored scheme. Against an expenditure of `14.00 lac incurred during 11th Five Year Plan, an outlay of `300.00 lac and `100.00 is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of `1.00 crore is provided for the Annual Plan 2013-14,

NC- 02 Mini/Micro Hydel Projects (70:20:10) (EAP) (JBIC:CS:SS)

Outlay `1.00 lac

4.2.9 Mini/Micro Hydel Power generation is now an established technology and very important source of renewable energy. PEDA has taken a lead in the country by setting up eight technology demonstration mini/micro hydel power projects having total capacity of

9.8 MW. After the successful demonstration of this technology, PEDA has attracted private sector participation for such projects.

4.2.10 Against an expenditure of ` 18.88 lac incurred during 11th Five Year Plan, an outlay of ` 1000.00 lac and ` 100.00 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of ` 1.00 lac is provided for the Annual Plan 2013-14.

**NC-03 Solar Photovoltaic Demonstration Programme in Punjab (50:15:35)
(CS:SS: Beneficiary) (Direct Release)**

Outlay ` 1.26 crore

4.2.11 Solar photovoltaic (SPV) technology converts sunlight directly and instantaneously into DC electricity in an environmentally clean and reliable manner. Under this programme solar lanterns, SPV street lighting systems, domestic lighting systems, SPV power plant for village electrification etc are being installed. Against an expenditure of ` 95.00 lac incurred during 11th Five Year Plan, an outlay of ` 870.00 lac and ` 113.00 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of ` 1.26 crore is provided for the Annual Plan 2013-14,

NC-04 Solar Power Generation (CS: Beneficiary) (50:50) (Direct Release)

Outlay ` 3.25 crore

4.2.12 PEDA plans to set up a demonstration 1 MW solar photovoltaic power plant in Bathinda district under demonstration programme on tail end grid connected solar power plant of MNRE, GOI for providing village support to strengthen the grid and to provide additional power for day time use. The proposed cost of this project is ` 20.00 crore which is proposed to be met as under:

MNRE, GOI grant	:	` 10.00 Crore
PEDA	:	` 5.00 Crore
PGL	:	` 5.00 Crore

An outlay of ` 1625.00 lac and ` 125.00 lac Annual Plan 2012-13. An outlay of ` 3.25 crore is provided for the Annual Plan 2013-14,

**NC- 05 Energy Recoveries from Urban Municipal Industrial Waste
(20:80) (CS:SS)**

Outlay ` 1.00 lac

4.2.13 This project aims at promotion, development, demonstration and adoption of conversion technologies for both liquid and solid waste to serve as means of improvement of waste management. State government has directed PEDA to implement such type of projects through public private partnership (PPP) mode. The private developer will claim its capital subsidy admissible under the rules from MNRE, GOI as per their scheme only after

commissioning of the projects, depending upon the applicability of the scheme. The private entrepreneurs are approaching PEDDA for setting up of such type of projects on BOO basis. 1 MW capacity project at Jansher Diary Complex, Jalandhar, is under process for allotment to M/s. Shakti Environ Greens Pvt. Ltd., on BOO basis. An investment of ` 1650.00 lac will be done by the company for this project, if allotted by the government. All Municipal Corporations have been also requested by PEDDA to implement such type of projects in the area under their jurisdiction. The private developer will claim its capital subsidy admissible under the rules from MNRE, GoI as per their scheme only after commissioning of the projects, depending upon the applicability of the scheme.

4.2.14 An outlay of ` 2000.00 lac and ` 100.00 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of ` 1.00 lac is provided for the Annual Plan 2013-14.

NC-06 Implementation of Energy Conservation Act, 2001(50:50) (CS:SS)

Outlay ` 2.00 crore

4.2.15 Government of India enacted the Energy Conservation Act, 2001 which came into force from March, 2002. State government has declared PEDDA as designated agency to coordinate, monitor and enforce Energy Conservation Act, 2001 in the state. As per requirement of GoI, the state has established "Punjab State Energy Conservation Fund" for promotion of efficient use of energy and its conservation within the state.

4.2.16 An outlay of ` 1000.00 lac and ` 200.00 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of ` 2.00 crore is provided for the Annual Plan 2013-14,

NC-07 Mass Awareness and Publicity Programme (50:50) (CS:SS) (Direct Release)

Outlay ` 0.20 crore

4.2.17 The new and renewable sources of energy, being relatively new concepts, are encountering social and psychological barriers in their acceptance on the part of large masses as a whole. Mass-awareness and publicity programmes can play an important role for promoting NRSE programmes with liberal financial support being provided by the Ministry of New & Renewable Energy, Government of India. In order to create mass-awareness and effectively promote and popularize the use of renewable energy and energy conservation systems in the urban and rural areas of the state, publicity through print, non-print media and other extension work through films, radio and TV programmes, press advertisements and outdoor media need to be strengthened. Under this scheme MNRE, GoI will provide 50%

grant. An outlay of `100.00 lac and `20.00 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of `0.20 crore is provided for the Annual Plan 2013-14.

NC-08 Solar wind Hybrid Programme (75:25) (CS:SS) (Direct Release)

Outlay `1.00 lac

4.2.18 Hybrid system commonly takes the form of photovoltaic systems combined with wind turbines and aero generators running on diesel or bio-fuels. During the day, power generated by the PV array is stored in the battery bank through an energy manager, which controls the complete system. This device maximizes the charging current and prevents excessive discharging/overcharging of the battery bank. The generator starts generating power when wind reaches the cut-in speed of 3 m/s. Output from the wind turbine is also stored in the battery and controlled by the energy manager. The energy stored in the battery is drawn by the electrical loads through the inverter, which converts DC power into AC power.

4.2.19 PEDDA plans to install 25 hybrid systems in government institutions and set up the computer labs in schools/colleges/district courts, campus cells and police control rooms etc for which MNRE, Government of India, provides liberal subsidy of 75% maximum upto `10.00 lac for SPV wind hybrid system. The total cost per system is `15.00 lac out of which `10.00 lac will be provided by GOI. An outlay of `400.00 lac and `20.00 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of `1.00 lac is provided for the Annual Plan 2013-14,

NC- 09 SPV Water Pumping Programme under Jawaharlal Nehru National Solar Mission (JNNSM) (CS:SS: beneficiary) (30:46:24)

Outlay `0.72 crore

4.2.20 Water is an absolute necessity for human survival. Tapping water with economical and pollution free energy sources has become almost mandatory for rural development and agricultural self reliance. Fossil fuels are fast depleting and therefore, it is essential to develop renewable sources of energy to meet our long term energy requirements. Solar energy can meet the growing requirements of energy effectively. Solar photovoltaic (SPV) devices, which produce electricity directly from the sunlight, are the ideal source to meet future energy requirements. Solar water pumping systems in particular are totally pollution-free and require very little maintenance as compared to the diesel operated pump sets. The solar water pumping system functions only during the sunshine hours, thereby eliminating the use of costly battery bank. These pumping systems are ideal for small/middle farmers to meet their irrigation requirements.

4.2.21 From the Year 2010-11 the Government of India has launched the scheme of Jawaharlal Nehru National Solar Mission (JNNSM) by providing 30% subsidy upto 5 KWP for SPV water pumps for irrigation and community drinking water for making the system acceptable to the farmers. This scheme will benefit directly the farmers of the state. Since the cost of SPV pumps is still high and out of reach of the small farmers, so financial assistance of 40% of the cost of pumps would be provided to general category farmers 60% subsidy would be provided to Scheduled Castes & 50% to women, by the state government under this scheme.

4.2.22 An outlay of ` 1380.00 lac and ` 276 lac is provided for 12th Five Year Plan and Annual Plan 2012-13. An outlay of ` 0.72 crore is provided for the Annual Plan 2013-14.

NC-09(i) SPV Water Pumping scheme for Drop Irrigation in Horticulture sector SC: Benifit (30:46:24)

Outlay ` 1.00 lac

4.2.23 The state of Punjab has always taken lead in the implementation of new technologies. Govt. of Punjab has planned to install 100 SPV Pumps for drip irrigation in Horticulture sector during the current F.Y. 2013-14 and has given approval to implement the scheme under 40% state subsidy. The benefits of the scheme are:

- (i) Eco friendly energy, No CO₂ emissions and No T&D Losses.
- (ii) Convenience for farmers as the power is available during day time.
- (iii) Water will be saved and there will be no misuse of the free power at night as the pumps will only work during the day time.

For installation of 100 Pumps, funds amounting to ` 112 Lacs would be the expenditure of State Govt., ` 84 Lacs of MNRE, GOI and ` 84 Lacs of farmers. Ministry of New & Renewable Energy, GOI has already released ` 100 Lacs to PEDDA for implementation of the Scheme. An outlay of ` 1.00 lac is provided for the Annual Plan 2013-14.

NC-10 Solar Water Heating Scheme (CS:SS:Benf) (50:25:25)

Outlay ` 1.40 crore

4.2.24 Hot water is used for bathing, washing and cooking of food in homes and for that purpose electricity, kerosene/LPG is used, which are very costly and are not available in abundance. Solar Power is free and almost it is available for 300 days in a year in the state Punjab which can be used for heating of water by installing solar water heating systems in homes. A solar water heating system of capacity 100 litres can replace an electric geyser and can save 1500 units of electricity and 180 litres of kerosene in a year. At today's price this

amount of energy is around ₹ 8000. A SWHS of 100 litre capacity can prevent emission of 1.5 tonnes of carbon dioxide per year into the atmosphere. Keeping in view the broader benefits of the scheme the Govt. has made the use of SWHS mandatory. The budgetary outlay of the scheme for the F.Y.2013-14 is as under:

Sr. No.	Particular	Category of Beneficiaries	Capacity in litres	Rate Per Litre (₹)	Total Estimated budget (₹ In Lacs)	Funding Pattern (Rs in lac)		
						MNRE GOI (30%) ₹ 66 per litre	State Govt subsidy Gen. catgry ₹ 40 per LPD (18%) SC Catgry- ₹ 60 per LPD (27%)	Benf. Share (52%)
1.	Solar Water Heating systems	General	2 lac LPD	220	440	132	80	228
		SC	1 lac LPD	220	220	66	60	94
	Total		3 lac LPD		660	198	140	322

An outlay of ₹ 1.40 crore is provided for the Annual Plan 2013-14.

NC-10(i) Special Area Demonstration Programme (CS:SS) (50:50)

Outlay ₹ 1.25 crore

4.2.25 The objective of the programme would be to create publicity of the renewable energy technologies, systems and also to disseminate information on technological developments and promotional activities taking place in the area of the New and Renewable energy. Under Special Area Demonstration Project Scheme, additional components has been introduced on demonstration of Renewable Energy Systems/devices at places of National and International Importance, at centralized kitchens and at roadside eating joints and restaurants where large flow of people and tourists takes place every day with an objective to popularize the renewable energy system and devices to create greater awareness.

Special Area Demonstration Project Scheme

The Special Area Demonstration Project Scheme is proposed to be implemented in the SADP scheme.

- (a) **Demonstration of Renewable Energy Systems at places of National and Inter National Importance**

4.2.26 Renewable Energy Systems/ devices will be installed at places of national and inter national importance such as Raj Ghat, Rashtrapati Bhawan, Presidential retreats, Parliament premises, Raj Bhawans, World Heritage sites, and Assembly premises, national parks, tourist and religious places, zoological parks, Science Museums, Secretariats, Collectorates etc. to illuminate these places to supplement the energy requirement through clean and green energy. The demonstration of Renewable Energy Systems at places of National and Inter national Importance will be taken up in four categories, depending upon the importance /popularity of the site. The details are given below:

I. Category I: Rajghat, Rashtrapati Bhawan, Presidential Retreat Building at Mashobara, Shimla and Rastrapati Nilayam, Bolarum, Hyderabad, Parliament premises, Raj Bhawans, and “World Heritage Sites”

4.2.27 Raj Ghat, Rashtrapati Bhawan, Presidential Retreat Building, Mashobara, Shimla and Rashtrapati Nilayam, Bolarum, Hyderabad, Raj Bhawans and Parliament premises are not only places of nation’s pride but attract large number of Indian as well as foreign visitors round the year. For Rashtrapati Bhawan Retreats and Raj Bhawans, the load is expected of supplementing the energy requirement during day time for lighting, fan, air conditioners, computers etc., SPV pumps for irrigation and drinking water supply. Biogas plant based on kitchen waste and solar kitchen may be set up for cooking. Solar water heaters can meet hot water requirement. During night time, the load is expected of supplementing the energy requirement for lighting, fan, air conditioners, computers etc. for indoor application and LED based flood lights, out door lights and garden lights etc. Central Financial assistance up to ` 100 lakhs per site will be provided for meeting full cost of procurement and installation of systems and devices and Annual Maintenance (AMC) charges for five years. The support will be as per the DPR prepared for each location for which an additional support of up to ` One lakh will be supported by the Ministry.

II. Category II Places of tourists and religious interest and of national importance

4.2.28 There are number of places of tourist’s interest in the country which are frequented by large number of tourists (with at least five lakhs and above visitors per year/site)*. In addition, there are number of religious places of national importance of various religions in the country frequented by large number of pilgrims. In addition to the above sites, the **State Assembly premises** will also be covered under category II sites. Renewable energy systems and devices will be demonstrated at these places so as to illuminate these locations/monuments as also to supplement the energy requirement by way of providing green and clean energy as per the requirement of individual locations. Mainly

Solar Power Plant will be used to meet the energy requirement. The amount of battery back up, however, will depend upon the type of load which will be assessed at the time of preparation of the DPR.

4.2.29 For tourist sites, day time load is expected of indoor lighting and fans, ventilation, SPV pumps for irrigation, information kiosks and supply at the ticketing counters. The night load will be of LED based flood lights, garden and out door lights. For the State Assembly Premises and the religious places, the load is expected of supplementing the energy requirement during day time for lighting, fan, computers etc., SPV pumps for irrigation and drinking water supply. Biogas plant based on kitchen waste and cow dung, if available and solar/biomass kitchen may be set up for cooking. Solar water heaters can meet hot water requirement. During night time, the load is expected of supplementing the energy requirement for lighting, fan, computers etc. for indoor application and LED based flood lights, out door lights and garden lights etc.

4.2.30 Central Financial assistance up to `50 lakhs per site will be provided for meeting full cost of procurement and installation of systems and devices and Annual Maintenance Charges (AMC) for five years. The support will be as per the DPR prepared for each location.

III. Category III sites for places of national and religious importance other than covered in category II.

4.2.31 There are number of places of national repute where it would be important to demonstrate the renewable energy technologies for creating demonstration effect as also to create awareness amongst large visiting community.

The Secretariats in various States/ UTs will also be covered under this category.

IV. National Parks, Zoological Gardens, Government Science Museums/Science Cities, Collectorates.

4.2.32 There are number of places such as National Parks, Government Science Museums/ Science Cities, Zoological Gardens and Collectorates which are frequented by large number of visitors every day.

4.2.33 Renewable energy systems and devices will be demonstrated at these places so as to supplement the energy requirement by way of providing green and clean energy as per the requirement of individual locations. Mainly Solar Power Plant will be used to meet the energy requirement. The amount of battery back up, however, will depend upon the type of load which will be assessed at the time of preparation of the project report.

The achievement / target both physical as well as financial for the proposed target for 12th Five year plan as per the Financial/ Physical performas hereby attached. An outlay of ` 1.25 crore is provided for the Annual Plan 2013-14.

New Schemes:

NC-11 Development of Amritsar city as a Model solar city (CS:SS) (50:50)

Outlay ` 1.00 lac

4.2.34 The proposed Programme on "Development of Solar Cities" would support/ encourage Urban Local Bodies to prepare a Road Map to guide their cities in becoming 'renewable energy cities' or 'solar cities' or 'eco/green cities'. The MNRE, GOI has already initiated various programmes in the Urban Sector for promoting solar water heating systems in homes, hotels, hospitals and industry, deployment of SPV systems/ devices in urban areas for demonstration and awareness creation; establishment of ' Akshaya Urja Shops"; design of Solar Buildings and promoting urban and industrial waste/ biomass to energy projects. The programme aims to consolidate all the efforts of the Ministry in the Urban Sector and address the energy problem of the urban areas in the holistic manner.

4.2.35 The Goal of the program is to promote the use of Renewable Energy in Urban Areas by providing support to the Municipal Corporations for preparation and implementation of a Road Map to develop their cities as Solar Cities. The objectives of the programme are given below:

- to enable/ empower Urban Local Governments to address energy challenges at city-level.
- to provide a frame work and support to prepare a Master Plan including assessment of current energy situation, future demand and action plans.
- to build capacity in the Urban Local Bodies and create awareness among all sections of civil society.
- to involve various stakeholders in the planning process.
- to oversee the implementation of sustainable energy options through public – private partnerships.

4.2.36 In the state, it is planned to develop 5 cities as Solar Cities under the 12th Five year plan with Amritsar to be developed as a Model Solar City for which ` 950 lacs shall be provided by the MNRE, GOI and equivalent matching grant of ` 950 lacs is required from the

State Govt. for 2012-13 & 2013-14 during the 12th Five Year Plan, `950 lacs may be allocated. The detail of state budget is asunder

S.No	Name of city	Name of scheme	Tentative cost of the projects (` lacs)	Proposed MNRE share 50% (` lacs)	Proposed state share 50% (` lacs)	Proposed state share for F.Y. 2012-13 (` lacs)	Proposed state share for F.Y. 2013-14 (` lacs)
1.	Amritsar	Modal Solar City	1900	950	950	425	425

It is requested that budget provision of `950 lacs may please be made for F.Y. 2012-13 & 2013-14 and `425 lacs may please be allocated for F.Y. 2013-14 for Development of Amritsar City as Model Solar City under Solar City programme. An outlay of `1.00 lac is provided for the Annual Plan 2013-14.

NC-12 Installation of Solar power Plant in Govt. Offices /Buildings in Border area (CS:SS) (90:10)

Outlay `4.01 crore

4.2.37 Punjab is an Agricultural based border State and about 80% polulation lives in rural areas. The total area of 12278 villages of the state is 50362 Sq. Km with a population of 243.59 lacs. It is having neighboring states as Rajasthan, Haryana, Himachal Pradesh, Jammu and Kashmir. Amritsar, Gurdaspur, Tarn Taran, Ferozepur and Fazilika Districts are lying on Indo – Pak International Border. Villages which are lying on the Indo Pak Border are very backward and peoples are living below poverty level. The length of International Border is 553 KMs.

4.2.38 Energy of any kind has been recognized as the foremost requirement and most important input for economic development. Energy from its early role, which are confined to the Kitchen as a fuel for household, is now a major input for developmental services required particularly in rural areas. Though Punjab was 100% electrified in 1970s, but with the industrialization and boom in Agriculture sector, the demand of the electricity has been increased many folds due to which the gap between demand and supply is increasing. This

has lead to frequent power cuts specifically in the rural areas of International Borders Districts. The problems of border area peoples are as under:

1. The border have suffered a lot and lagged behind due to their proximally to be border, 3wars with Pakistan and long spread of crops border terrorism.
2. Farmers living in Border area face acute hardships as they cannot cultivate their crop. The problems are compounded by inadequate accessing facilities to the farmers after the erection of fencing along with international border.
3. Rivers Ravi & Satluj and number of Choes and district borders are passing through the border districts of Gurdaspur and Ferozepur respectively causing damage to the crops particularly during the rainy seasons.
4. Border area lack basic amenities of education, health sanitation, transportation, roads etc. The lac of environment for development of industries and marketing infrastructure have further accentuate the problems of the local people.

4.2.39 PEDDA has completed the survey work of 432 nos Govt. Buildings/ Institutions i.e Govt. Sr. Sec Schools, Primary Health Centre, Distt. Admn. Complex, DC Office, BDPO Office, Veterinary Hospitals, Police stations etc. In these Govt buildings 214082 sq yard shadow free roof top area is available, thus total aggregate capacity of 9 MW roof top SPV Power Plants will be installed under "Off Grid and Decentralized Solar Applications" programme. Thus 9 MW roof top SPV Power Plants could be installed during the F.Y. 2012-13, 2013-14 and 2014-15 as per detail given below :

S.No	Name of District	No of Govt Buildings / Institutions	Total roof top area available (Sqft)	Proposed cumulative capacity of SPV roof top (MW)	Tentative cost of the projects (in crore)	Proposed MNRE share 90% (in crore)	Proposed state share 10% (in crore)
1	Amritsar	89	431218	1.5	40.50	36.45	4.05
2.	Gurdaspur	56	557220	1	27	24.3	2.70
3.	Tarn Taran	97	810835	1.5	40.5	36.45	4.05
4.	Ferozepur	85	1565281	3.0	81	72.90	8.10
5.	Fazilika	105	897067	2	54	48.6	5.4
	Total	432	4261621	9	243	218.7	24.3

4.2.40 It is hereby proposed that for the outlay of ` 24.3 crore may please be approved for implementation of Off Grid and Decentralized Solar Applications" programme in the State as detail below:

S.No	Financial Year	Proposed cumulative capacity of SPV roof top (MW)	Tentative cost of the projects (` in crore)	Proposed MNRE share 90% (` in crore)	Proposed state share 10% (` in crore)
1	2012-13	3	81	72.9	8.1
2	2013-14	3	81	72.9	8.1
3	2014-15	3	81	72.9	8.1
	Total	9	243	218.7	24.3

4.2.41 It is requested that budget provision of ` 24.3 crore may please be allocated for F.Y. 2012-13, 2013-14 & 2014-15 and out of this ` 8.1 crore may please be provided during annual plan 2013-14 for implementation of Off Grid and Decentralized Solar Applications" programme. An outlay of ` 4.01 crore is provided for the Annual Plan 2013-14.