

## CHAPTER – V

### ENERGY

#### 5.1 POWER

5.1.1. The proposed outlay for the **Eleventh Plan (2007-2012) is Rs.1,05,788.00 lakhs** and the approved outlay for the Annual Plan 2007-08 was **Rs. 24885.00.00 lakhs** and the actual expenditure Rs.23293.00 lakhs. The approved outlay during 2008-09 is Rs.42593.00 lakhs which is expected to be utilized in full. **The proposed outlay for the Annual Plan 2009-10 is Rs.52780.00 lakhs.**

5.1.2. The broad break- up for the Annual Plan 2009-2010 is as indicated below:-

(Rs.Lakhs)

Sl. No.	Items	Eleventh Plan 2007-2012 Proposed Outlay	Annual Plan 2007-2008 Approved Outlay	Actual Expenditure 2007-2008	Annual Plan 2008-2009 Approved Outlay	Proposed Outlay Annual Plan 2009-10
1	<b>Generation scheme:</b>					
	<b>A.On-going Schemes :</b>					
	1.Construction of Myntdu Leshka Stage –I H.E.P (2x42 MW) <b>inclusive of the SPA component of Rs. 8063.00 Lakhs</b>	31886.00	15836.00	15183.00	19000.00	17472.00
	2.Construction of New Umtru HEP		3000.00	369.00	1470.00	10000.00
	<b>B.New Schemes:</b>					
	1.Sonapani HEP (1.5) MW	350.00	-	-	-	264.00
	2.Lakhroh HEP(1.5MW)	600.00	-	-	-	
	3.Umran HEP(0.2MW)	177.00	-	-	-	
	4.Tyrsaw HEP(0.5 MW)	499.00	-	-	-	
	5.Risaw HEP(0.1MW)	166.00	-	-	-	
	6. Ganol HEP (3 x 7.5 MW)	-	-	-	980.00	5000.00
	<b>Sub – Total -1</b>	<b>33678.00</b>	<b>18836.00</b>	<b>15552.00</b>	<b>21450.00</b>	<b>32736.00</b>
2.	<b>Renovation &amp; Modernisation Works</b>					
	1.Renovation & Modernisation of Umiam Stage –II (EAP)	8530.00	400.00	266.00	2493.00	4981.00
	2. Renovation & Modernisation of Umiam Stage –III (EAP)	13438.00	-	-	-	-
	<b>Sub – Total -2</b>	<b>21968.00</b>	<b>400.00</b>	<b>266.00</b>	<b>2493.00</b>	<b>4981.00</b>
3.	<b>Re – Engineering Work</b>					
	1.Replacement of Governor system with the latest technology at Umiam – Umtru Stage – IV Power Station	-	-	-	200.00	-
	2.Re – engineering of the Switchyard of Umiam Stage – I Power Station	-	-	-	100.00	-
	<b>Sub – Total -3</b>				<b>300.00</b>	<b>-</b>
4.	<b>Transmission Scheme:</b>					
	1.Construction of 132 KV D/C Line from the Myntdu Leshka Stage – I HEP to the 132 KV/33 KV Sub – Station at Khliehriat.	1000.00	-	-	-	-
	2.Construction of 132 KV /33KV.2x20 MVA Sub- station at	-	-	128.00	100.00	200.00

Sl. No.	Items	Eleventh Plan 2007-2012 Proposed Outlay	Annual Plan 2007-2008 Approved Outlay	Actual Expenditure 2007-2008	Annual Plan 2008-2009 Approved Outlay	Proposed Outlay Annual Plan 2009-10
	Umiam along with the construction of the LILO at the Sub- station.					
	3.Construction of the 132 KV double circuit line from the EPIP Sub-station 1 to the proposed Sub-station at Killing	-	-	-	250.00	-
	4.Construction of 132KV Single Circuit LILO on the 132 KV Mawlai-Cherra Line & on the 132 KV Mawlai Nongstoin line at the Sub station at Mawngap					250.00
	5.Construction of the 132 KV/ 33KV ,2x20MVA sub station at Mendipathar along with the construction of the LILO on the 132 KV Agia Nangbalbibra line at the 132KV/33/KV Substation at Mendipathar.					141.00
	<b>Sub – Total -4</b>	<b>1000.00</b>	<b>-</b>	<b>128.00.</b>	<b>350.00</b>	<b>591.00</b>
5.	<b>Accelerated Power Development &amp; Reforms Programme (APDRP)</b>	22688.00	4649.00	6347.00	14000.00	4500.00
	<b>Sub- Total -5</b>	<b>22688.00</b>	<b>4649.00</b>	<b>6347.00</b>	<b>14000.00</b>	<b>4500.00</b>
6.	<b>Rural Household Electrification (RGGVY)</b>	26454.00	-	-	1000.00	-
	<b>Sub- Total -6</b>	<b>26454.00</b>	<b>-</b>	<b>-</b>	<b>1000.00</b>	<b>-</b>
7.	<b>Special Plan Assisstance :</b>					
	1.Misa – Byrnihat Transmission Line	-			1756.00	7972.00
	2.Umiam -Mawngap Transmission Line	-	1000.00	1000.00	1244.00	
	3. Construction of 2 Nos, 132 KV Dc Line from Killing Byrnihat to EPIP Industrial Area.	-	-	-	-	2000.00
	<b>Sub- Total -7</b>	<b>-</b>	<b>1000.00</b>	<b>1000.00</b>	<b>3000.00</b>	<b>9972.00</b>
	<b>GRAND TOTAL :</b>	<b>105788.00</b>	<b>24885.00</b>	<b>23293.00</b>	<b>42593.00</b>	<b>52780.00</b>

### 5.1.3 Generation Schemes:

- (i) **Myntdu Leshka Stage I HEP (2 x 42 + 1 x 42) MW:-** Completion of this Project is on the top most priority of the Scheme proposal, in order to enhance the capacity addition to the existing installed capacity of 185.20 MW by 2009-10. The revised completion cost of the Project is Rs 671.29 Crores, as per the 2006 price level. The cumulative expenditure as on 30<sup>th</sup> September, 2008 is Rs 508.37 Crores. The approved outlay for the Annual Plan 2008-09 is Rs.190.00 Crores, out of which Rs 84.63 Crores was already spent till September, 2008 and the entire amount is expected to be utilised in full. It is, therefore, presumed that with the proposed outlay in the current financial year, the Units I & II are expected to be commissioned. However, with the coming up of Unit-III which is expected to be completed on June, 2010, an amount of Rs 174.72 Crores (including Rs. 80.63 Crore as SPA) is proposed for meeting part expenditure of Unit III also.
- (ii) **New Umtru HEP (2 x 20) MW:-** The total Project cost is estimated at Rs 226.00 Crores and the E & M package is under tendering process, which is likely to be

finalized within a month's time. The Project is targeted to be completed during the 11<sup>th</sup> Plan Period. An amount of Rs 14.70 Crores is expected to be utilised during 2008 – 09, and the civil work of the project is in full progress. An amount of Rs 100.00 Crores is proposed for the year 2009-10.

- (iii) **Ganol HEP (3 x 7.50) MW:-** The total Project cost is estimated at Rs **177.53** Crores and is targeted to be completed during the 11<sup>th</sup> Plan Period. The E & M package is under tendering process and the preliminary civil work is in progress. An amount of Rs 9.80 Crores is expected to be utilised during 2008-09. An Outlay of Rs 50.00 Crores is proposed for the Annual Plan 2009-10
- (iv) **Renovation & Modernization Schemes of Umiam Stage-II Power Station(EAP):-** To tap the benefits from the old existing machines of Hydro Plants which have outlived their life span, an amount of Rs 49.81 Crores is proposed for taking up the R & M works of the Umiam Stage II (2 x 9 MW) under EAP during 2009-2010. The Project is proposed for renovation and up gradation by 2 MW and is targeted to be completed by the year 2010-11. The tendering work is in progress and is expected to be finalized by December, 2008.

This project is funded under Externally Aided Projects by JBIC. The project cost is Rs.90.46 crores (2343MJY taking exchange rate Rupee 1=2.59 Yen.) which includes the capacity building work for MeSEB along with the consultancy fee for the project. The loan amount sanctioned by JBIC is Rs.75.83 crores (equivalent 1964MJY) for which the component indicated are as follows :-

(a)	Electrical and Mechanical Equipment	-	1,347 MJY
(b)	Consulting Service	-	415 MJY
(c)	Interest during Construction	-	67 MJY
(d)	Contingencies	-	135 MJY
<b>Total</b>		<b>-</b>	<b>1,964 MJY</b>

The local component to be sanctioned by the State Government as per Loan Agreement is Rs.14.63 crores (eqv.379MJY). The amount released by the State Government against the local component during the year 2007-08 is Rs.2.00 crores. Therefore, the balance amount yet to be released by the State Government against the local component is Rs.12.63 crores. The loan component is released directly to the Contractor through transfer procedure as per JBIC guideline. After the invoices are duly verified by MeSEB and certified by the Ministry of Finance, Government of India, JBIC is accordingly directed to pay the amount to the Contractor. The total amount so far paid to the contractor from the loan component is Rs.8.16 crores. Hence, an amount of Rs.49.81 crores (L.C.= Rs.9.96 crores F.C.= Rs.39.85 crores) is proposed for the financial year 2009-10. Tendering process for the project is in the final stage and expected to be finalized by May, 2009.

#### 5.1.4 Transmission Schemes.

In order to strengthen the Intra State Transmission network, an amount of Rs 99.72 Crores is proposed for the year 2009-10 under Special Plan Assistance (SPA) for implementation of the ongoing inter state transmission scheme of 220 KV Misa - Byrnihat line, and the Construction of 132 kV 3 circuits on 4 circuit tower from Killing (Byrnihat) 220/132 KV Sub-station to EPIP I & 132 kV D/C Line from

Killing Sub – station to EPIP II. Further, an amount of Rs. 591.00 Lakhs is proposed for 2009-10 for the following Transmission schemes:-

- (i) Construction of 132 KV /33KV.2x20 MVA Sub- station at Umiam along with the construction of the LILO at the Sub- station.
- (ii) Construction of 132KV Single Circuit LILO on the 132 KV Mawlai- Cherra Line & on the 132 KV Mawlai Nongstoin line at the Sub station at Mawngap
- (iii) Construction of the 132 KV/ 33KV ,2x20MVA sub station at Mendipathar along with the construction of the LILO on the 132 KV Agia Nangbalbibra line at the 132KV/33/KV Substation at Mendipathar.

**5.1.5 Distribution Schemes:-** The ongoing APDRP Scheme for improvement of the Sub Transmission and Distribution network in the State, is in full progress. The Scheme is expected to be completed by March, 2009 at an estimated cost of Rs 227.44 Crores, the balance amount of Rs 90.00 Crores, which is yet to be released by the Government of India, is required in the current financial year. However, as per the Government of India's order, this Scheme will be short closure, even if it is not completed and carry over to the APDRP phase-II which is to be submitted fresh to the Government of India, with effect from the next financial year 2009-10. MeSEB is under preparation of the said Scheme under APDRP II, for further improvement of its Sub Transmission and Distribution network. An amount of Rs 45.00 Crores is proposed for the work to be taken up during 2009-10.

**5.1.6 Survey & Investigation Schemes:-** An amount of Rs 264.00 Lakhs is proposed for completion of the ongoing Survey & Investigation Schemes and preparation of DPR for Small Hydro Projects namely; Sonapani HEP (1.50 MW), Lakroh HEP (1.50 MW), Umran HEP (0.20 MW), Tyrsaw HEP (0.50 MW) & Risaw HEP (0.1MW).

**5.1.7 R.E Works:-** For 100% Village and Household Electrification in the State, Central Scheme under RGGVY is under implementation, at an estimated cost of Rs 290.42 Crores. This fund is released directly to the MeSEB in the form of 90% grant and 10% loan.

**5.1.8. Special Plan Assistance (SPA):**

(a) **Construction of the Myntdu Leshka Stage I (3 x 42 MW) HE Project:**

The Unit I & Unit II of the project is targeted to be completed for by June 2009 and for unit-III by June 2010. The financial status of the scheme is summarized as shown below:

1)	Total cost of Unit I & II	-	Rs. 671.29 crs.
2)	Loan	-	Rs. 469.70 crs.
3)	Equity	-	Rs. 201.30 crs.
4)	Tentative cost of Unit III	-	Rs. 176.21 crs.
5)	30 % Equity of unit III	-	Rs. 52.80 crs.
6)	Project escalation cost for Unit I & Unit II	-	Rs. 60.84 crs.
7)	30% of Sl. 6	-	Rs. 18.25 crs.
8)	Balance equity for Unit I & II-		Rs. 9.58 crs.
	Rs. {201.30 – (102.72 + 90.00)		

Therefore, an amount of Rs. (Sl. 5 + Sl. 7 + Sl. 8) 80.63 Crores is required as an equity for completion of this project.

**(b) Construction of the 220 kV D/C Transmission line between Misa (Assam) – Byrnihat (Meghalaya):-**

This vital transmission project for Meghalaya State was set to be completed by March 2010. LOA was awarded to PGCIL on 17<sup>th</sup> December 2007 after signing the contract Agreement with PGCIL on 20<sup>th</sup> Sept 2007 and scheduled to be completed by 30 (thirty ) months from the effective date, which falls on March 2010. The work is in full progress. Stringing of the Line has also been started for about a week as on date. Progress of the sub station work at Killing (Byrnihat) is also quite substantial. Therefore to match with the progress of work , releasing of Fund is urgently required. The Fund released by DONER in 2007-08 for an amount of Rs19.96 crs was fully utilized. There is no fund released by the DONER till date against the financial year 2008-09. An amount of Rs. 17.56 crores was sanctioned by Planning Commission and expected to be received by MeSEB shortly. PGCIL the Contractor of the Project has been raising fund requirement and pressing hard for releasing of the same to keep pace with the progress of the work. Latest fund requirement raised by PGCIL are as follows :-

2007 - 08	-	Rs. 19.96 crores
2008 – 09	-	Rs. 73.16 crores
2009 - 10	-	Rs. 59.60 crores
2010 - 11	-	<u>Rs. 8.04 crores</u>
		Rs. 160.76 crores.

Out of the total project cost of Rs.160.65 crores prepared by Power Grid, only Rs.150.64 crores was vetted by CEA when submitted to DONER for funding. The detail components of the estimates are attached as per Annexure I & II respectively. However, the Ministry of DONER has sanctioned for Rs.126.74 crores only out of which 50% (Rupees 63.74 crore) each to be funded by DONER and Planning Commission. The detail break up of the sanctioned amount of the DONER is enclosed at Annexure III.

The Ministry of DONER and Planning Commission are yet to release the balance sanction amount of Rs.43.41 crores & Rs.45.81 crores respectively. The balance cost of the project which is yet to be sanctioned is Rs.33.91 crores (Rs.160.65 – 126.74). Therefore, an amount of **Rs.79.72** crores is urgently required as an equity from the Planning Commission during the year 2009-10.

**Annexure I**

**Estimated project cost for Misa – Byrnihat of Transmission system of MeSEB**

Sl. No.	Description	Total Cost (Rs. In crores)
A	Preliminary Survey & Soil Investigation	0.23
B	Land acquisition for sub – station and R & R compensation	0.99
C	Cost of compensation for Transmission Lines	
i	Compensation towards crop, tree & PTCC	0.50
ii	Compensation towards forest	9.24

Sl. No.	Description	Total Cost (Rs. In crores)
D	Civil Works	
i	Infrastructure for sub – stations	2.34
ii	Non residential buildings	1.11
iii	Colony for Trans Lines & Sub – station	8.87
	<b>Sub – total of D</b>	<b>12.32</b>
E	Equipment (Supply & Erection) Cost:-	
a	Trans. Lines	67.49
b	Sub – stations	44.47
	<b>Sub – total of E</b>	<b>111.96</b>
F	Sub total of estimated cost (A to E)	<b>135.24</b>
G	Contingencies @ 2% on Sl. No. E above (as approved by DONER)	2.24
H	Total estimated project cost incl. contingencies	137.48
I	Estimated consultancy Fee @15%	20.62
J	Service Tax @13.36% on consultancy Fee	2.55
K	<b>Grand Total including Consultancy Fee &amp; Service Tax</b>	<b>160.65</b>

**Annexure II**  
**Component wise cost of the project as vetted by CEA**

Sl. No.	Description	Total Cost (Rs. In crores)
A	Preliminary Survey & Soil Investigation	0.23
B	Land acquisition for sub – station and R & R compensation	0.99
C	Cost of compensation for Transmission Lines	
i	Compensation towards crop, tree & PTCC	0.50
ii	Compensation for Trans. Lines & Substations	9.24
D	Civil Works	
i	Infrastructure for sub – stations	2.34
ii	Non residential buildings	1.11
iii	Colony for Trans Lines & Sub – station	8.87
E	Equipment (Supply & Erection) Cost:-	
a	Trans. Lines	67.49
b	Sub – stations	44.47
	<b>Sub – total of E</b>	<b>111.96</b>
F	Misc. Tools & Plants (@ 1% of E)	1.12
G	Maintenance during construction (@ 1% of E)	1.12
H	Engg. & Administration (@ 8.5 % of E)	9.52
I	Losses on Stock (@ 0.25% of E)	0.28
J	Contingencies (@ 3% of E)	3.36
K	<b>Grand Total excl. IDC (A to J)</b>	<b>150.64</b>
L	<b>Interest during construction (IDC) (No IDC as project is grant funded)</b>	<b>Nil</b>
M	<b>Grand Total Incl. IDC (A to J)</b>	<b>150.64</b>

**Annexure III****Approval from Ministry of DONER**

Sl. No.	Components of work	Amount	50% of Approved Cost
		(Rs. In crores)	
A	Preliminary Survey & Soil Investigation	0.23	0.115
B	Civil Works		
i	Infrastructure for sub – stations	2.34	1.170
ii	Non residential buildings	1.11	0.555
iii	Colony for Trans Lines & Sub – station	8.87	4.435
	<b>Sub – total of B</b>	<b>12.32</b>	<b>6.160</b>
C	Equipment (Supply & Erection) Cost:-		
	Trans. Lines	67.49	33.745
	Sub – stations	44.47	22.235
	<b>Sub – total of C</b>	<b>111.96</b>	<b>55.980</b>
D	Contingencies (@ 2% of C)	2.23	1.115
	<b>Grand Total</b>	<b>126.74</b>	<b>63.370</b>

(c) **Construction of 132 kV 3 circuits on 4 circuit tower from Killing (Byrnihat) 220/132 KV Sub-station to EPIP I & 132 kV D/C Line from Killing Sub – station to EPIP II.**

It is urgently necessary to take up the construction of the 132 kV 3 circuits on 4 circuit tower from Killing (Byrnihat) 220/132 KV Sub-station to EPIP I & 132 kV D/C Line from Killing Sub – station to EPIP II. This scheme is in fact a continuation of the Misa – Byrnihat project. Meghalaya has its transmission net work at 132 KV and this line will

interconnect the 220/132 KV Sub-Station to the existing system at 132 KV EPIP Sub-Stations. The lines are expected to transmit 320 MVA of power from the 220KV system to the 132KV system of MeSEB. In the event of surplus power, this line can also be utilized for evacuation of power generated in the state to other states.

On completion of the 220 KV D/C line from Misa to Byrnihat and the 2 x 160 MVA, 220/132 KV Sub-Station at Byrnihat, Meghalaya will be immediately relieved by that quantum of power. Misa to which Byrnihat will be connected by a 220 KV D/C line, is a 400 KV Sub-Station which is connected to the Eastern Grid at Balipara and the existing and upcoming generating stations in Arunachal Pradesh. This will always be a very vital link for Meghalaya. The construction of the 132 KV D/C lines between the 220/132KV, 2 x 160 MVA Killing and EPIP Sub-Stations is necessary to provide a downstream link for the 220KV system which is scheduled to be completed by March 2010. The estimated cost of the scheme is Rs. 21.74 Crores. The works proposed to be taken up are as follows:

Sl No.	Name of Works	Amount (in Lakhs)
1	Construction of 132 KV D/C line from 220/132KV Sub-Station Killing to 132KV EPIP-II Sub-Station, Byrnihat	Rs 709.00
2.	Installation of terminal equipments & extension of bay at 132KV EPIP-II Sub-Station, Byrnihat.	Rs 250.00
3.	Construction of 132 KV 3(three) Circuits on 4(Four) Ckt Tower line from 220/132KV Sub-Station Killing to 132KV EPIP-I	Rs 868.00

	Sub-Station, Byrnihat	
4.	Installation of terminal equipments & extension of bay at 220/132KV Sub-Station, Killing and at 132KV EPIP-I Sub-Station, Byrnihat.	Rs 160.00
5	Providing PLCC, OFC, RTUs and other accessories for EPIP-I,II, Umtru and Killing	Rs.187.00
<b>TOTAL</b>		<b>Rs 2,174.00</b>

(Rupees Two Thousand One Hundred And Seventy Four Lakhs) Only

Keeping in view the urgency of the project as stated above, an amount of Rs. 21.74 Crores is urgently required and Rs. 20.00 crore is proposed under SPA during the year 2009-2010.

## 5.2. NON CONVENTIONAL SOURCES OF ENERGY.

5.2.1. Energy crisis caused by dwindling resources of fossil fuel like petroleum and coal and their pollution have compelled us to find a safe and environmentally alternative sources of Energy. The alternative new sources of energy like Solar, Hydro, Wind and Bio-Energy have already demonstrated that it can fit the bill even though it may be a small contribution to our total energy requirements. The potential of these sources will grow as the technologies in this field are improved year by year. The outlines of a successful climate sensitive energy strategy already existed. Schemes and projects under new and renewable sources of Energy though on a limited scale have been pursued with notable success in the State.

5.2.2. The projected outlay for the **11<sup>th</sup> Five Year Plan (2007-2012) is Rs. 1200.00 lakhs. The approved outlay for 2007-08 was Rs.100.00 lakhs** and the actual expenditure incurred **Rs.60.00 lakhs**. The approved outlay for the Annual Plan 2008-2009 is **Rs.125.00lakhs** which is expected to be utilized in full. **The proposed outlay for the Annual Plan 2009-10 is Rs.170.00 Lakhs.** All the schemes under this sector have different funding pattern between the Centre, State and Beneficiary contribution.

### 5.2.3. Programme for the Annual Plan 2009-10 :

The main programmes and activities are as follows:-

**1.Direction and Administration :** For Administrative expenses an amount of Rs.105.00 lakhs is proposed during the current year. Earlier the Ministry of New and Renewable Energy Sources provided a fixed amount of Rs.14.20 lakhs yearly towards Administrative expenses. However during the 11<sup>th</sup> Plan the MNRE has stopped the support. Therefore the whole burden of Administrative expenses has to be borne by the State Agency.

### **2 Bio-Energy :**

(i) **National Project on Biogas Development:** For cooking & lighting needs, construction of Biogas Plant family size of 3 cu.m was a successful programme.. These small size Biogas Plants are mainly for cooking purposes and also for lighting purposes. During the 11<sup>th</sup> Plan it is proposed to achieve 2000 nos. of Biogas Plant. Under this programme an amount of

**Rs.10.00lakhs** is proposed as State share for construction of 400 Nos. of 2 cum capacity biogas plant during 2009-2010.

(ii) **Community & Night soil Biogas Plant:** The total availability of cattle and buffalo dung in the State as identified by a survey have been estimated to be approximately 10 lakhs tonned / year. Experiments have been carried out with KVIC/DEENBANDHU/FLEXI Type of Biogas Plants which is made out of strong Rubberised Fabric and Fixed Dome Type which is made out of cement concrete is found suitable to this Hill Station with an advantage of easy and faster installation. It is also maintenance free and cost effective. Community Night Soil Biogas Plant installed in the Institution was found to be another advantage which can be used for both cooking and lighting purposes. 20 (Twenty) nos. of 10 cu.m each Community Night Soil Biogas Plant are proposed to be installed in Meghalaya during the 11<sup>th</sup> Plan to reduce the traditional use of firewood and economic upliftment of the rural poor areas. The Scheme is being transferred to the State Plan during the 11<sup>th</sup> Plan. An amount of **Rs.5.00 lakhs** as State Plan is proposed for installation of 4(four) Nos. of 10 cum Night Soil Biogas plant during 2009-10.

(3) **Solar Photovoltaic:** Solar Photovoltaic Cell has been found to be efficient especially because of the temperature conditions prevailing in the State. Photovoltaic are already an economical electricity source for the dispersed villages in the State and as the costs fall further they shall become more economical when compared to the grid power. During the 11<sup>th</sup> Plan 40,000 Nos. Solar PV Lantern is proposed to be distributed in rural areas at a subsidized rate and 5000 nos. Solar Home Lighting System is proposed to be installed in un-electrified Villages in Meghalaya. In 2009-10, 5000 Nos. of solar lanterns and 1000 Nos. of two point system Domestic Home Lighting System are proposed to be distributed with an outlay of **Rs.5.00 lakhs** each. An amount of **Rs 15.00 lakhs** is proposed for installation of 1000 Nos. of 74 Wp Street Lighting System, 14 Nos. (2 in each district) of 2KW SPV Power Plant, and Urban areas SPV Demonstration Programme during 2009-10.

(4) **Other Programmes :-**

(i) **Micro Hydel Project:**

The rising cost of grid electricity have created a growing interest in Micro Hydel Technology as an efficient low cost alternative in the State especially in the remote isolated areas of different terrain of this hill state. It is also simple where ordinary people will be able to manage and control. It has an added advantage of short gestation period, no submergence of deforestation problems, reduced transmission losses and the schemes are environmentally more benign.

Under the Micro Hydel Power sub sector during the 11<sup>th</sup> Plan, it is proposed to take up the works of exploitation of Pico, Micro and Mini Hydel Projects for individual and community use. During 2009-10, an amount of **Rs.10.00 lakhs** is proposed for Survey & Investigation and preparation of DPR in 10 (ten) Nos. of sites.

(ii) **Water Mill Project:** 50 (fifty) Nos. of identified water mill projects will be implemented from the 11<sup>th</sup> Plan. These water mill will be of both mechanical application and electricity generation. During 2009-10 an amount of **Rs.5.00 lakhs** is proposed.

(iii) **Wind Mill Programme;** A study is being undertaken for the Wind Potential availability and at present 3 nos of Wind Mapping station has been set up and another 16 Nos of Wind Mapping Station is to be taken up .An amount of **Rs. 5.00 lakhs** is proposed during 2009-10.

(iv) **Bio – Fuel:** Locally available resources from the Renewable Sources can be exploited either for briquetting fuel or for electricity generation. To undertake the study of this programme an amount of **Rs 5.00 lakhs** is proposed.

5.2.4. The programme - wise outlay proposed for the 11<sup>th</sup> Five Year Plan 2007-2012 and the Annual Plan 2007-08, 2008-09 and the proposed outlay for 2009-10 is indicated below:-

(Rs.in Lakhs)

Sl. No.	Name of Scheme	11 <sup>th</sup> Plan (2007-2012)	Annual Plan Approved Outlay 2007-2008	Actual Expenditure 2007-2008	Annual Plan Approved Outlay 2008-2009	Anticipated Expenditure 2008-2009	Annual Plan Proposed Outlay 2009-2010
1.	Direction and Administration	240.00	45.00	45.00	55.00	55.00	105.00
2.	Bio Energy – National project for Bio-gas Development	220.00	15.00	15.00	30.00	30.00	15.00
3.	Solar Thermal Energy	500.00	25.00	-	15.00	15.00	25.00
4.	Micro Hydel Project	240.00	15.00	-	25.00	25.00	25.00
	<b>Total</b>	<b>1200.00</b>	<b>100.00</b>	<b>60.00</b>	<b>125.00</b>	<b>125.00</b>	<b>170.00</b>

### 5.3. INTEGRATED RURAL ENERGY PROGRAMME

5.3.1. The scope of Integrated Rural Energy Programme is sought to be enlarged and intensified to improve the availability of commercial sources and improve the usage of Non-conventional sources in rural areas. The scope of expansion of Renewable sources in every nook and corner of the State will purely determined by how much we can propagate and popularize the Renewable gadgets and devices in the remote and rural villages of the state.

5.3.2. The projected outlay during the 11<sup>th</sup> Plan is **Rs.900.00 lakhs**. The approved outlay for 2007-08 was Rs.100.00 lakhs and the actual expenditure incurred Rs.65.31 lakhs. **The approved outlay for the Annual Plan 2008-09 is Rs.125.00 lakhs** which is expected to be fully utilized. The proposed outlay for the Annual Plan 2009-2010 is **Rs.170.00 lakhs** All the schemes under this sector have different funding pattern between the Centre, State and Beneficiary contribution.

5.3.3. The Programme during the Annual Plan 2009-10 are briefly stated below :-

**1.Direction and Administration** :- An amount of Rs.120.00 lakhs is proposed for Administrative expenses for the year 2009-2010. Earlier, the Govt.of India MNRE, provided a fixed CFA of Rs.26.50 lakhs per year but during the 11<sup>th</sup> plan period the MNRE has stopped the CFA. As such the whole burden of Administrative expenses has to be borne by the State Agency.

**2.Regional Institute for IREP Centre** : An amount of Rs. 20.00 lakhs is proposed for the year 2009-2010 for renovation and repairing of the main Administrative Building, Auditorium and 2(two) Nos. of Type E. Quarter.

**3. Solar Water Heating System** :- Solar Water Heating System for individual & for community and Institutional are found to be the most successful in thermal programme.

During 2009-10, 10 (ten) Nos. of Solar Water Heating System is proposed to be taken up with an amount of **Rs.10.00lakhs** as the State contribution.

**4. Biomass Gasification :** An amount of Rs.10.00 lakhs is proposed under this programme for taking the work programme in developing of Biomass either for village electrification of Captive Power Generation. A DPR for 10(ten) Nos. of sites ranging capacity from 5-20 KW will be prepared at a state subsidy of Rs.5.00 lakhs. The balance state subsidy of Rs.5.00 lakhs is towards Briquetting Technology.

**5. Field Project :** An amount of Rs.10.00 lakhs is proposed under this programme to undertake the Energy Conservation Devices or Project like improved Chullahs, hybrid system and Briquetting Technology. 1000 Nos. of Community Fixed Improved Chullahs will be constructed in 2009-2010 at a state subsidy of Rs.1000/- per Chullahs.

5.3.4. The broad break-up of the proposed outlay for the 11<sup>th</sup> Plan and the Annual Plan 2007-2008, 2008-2009 and the proposed outlay for 2009-10 is indicated below:-

Sl. No.	Name of Scheme	11 <sup>th</sup> Plan 2007-2012	Approved Outlay 2007-2008	Actual Expenditure 2007-2008	Approved Outlay 2008-2009	Anticipated Expenditure 2008-2009	Annual Plan Proposed Outlay 2009-2010
1.	Regional Institute for Integrated Rural Energy Planning & Development	40.00	5.00	-	-	-	20.00
2.	Direction and Administration	400.00	60.00	60.00	90.00	90.00	120.00
3.	Solar Thermal Programme	100.00	5.00	-	5.00	5.00	10.00
4.	Biomass Gassification	100.00	5.00	5.31	5.00	5.00	10.00
5.	Field Projects	240.00	25.00	-	25.00	25.00	10.00
6.	Cluster preparation of DPR for villages	20.00	-	-			
	<b>Total</b>	<b>900.00</b>	<b>100.00</b>	<b>65.31</b>	<b>125.00</b>	<b>125.00</b>	<b>170.00</b>

#### 5.4. VILLAGE ELECTRIFICATION (MNES SPECIAL SCHEME)

5.4.1 The Government of India has a plan to electrify all census un - electrified villages in the country by the year 2008-2009 and all household should be provided electricity by 2012. As part of this programme the Ministry of New and Renewable Energy (early known as Ministry of Non Conventional Energy Sources) take up to electrification of the census remote villages in the country through Renewable Sources.

5.4.2. The State Govt. with the approval of the Govt. of India has identified 158 Nos. of villages in the State as remote villages and these villages are to be electrified through renewable source of energy. Out of these 158 Nos., 5 Nos. of villages are already completed and progress is on for another 74 Nos. of villages. The balance villages of 79 Nos. is to be taken up during 2009-10.

5.4.3. The projected outlay for the 11<sup>th</sup> Plan for this sector is **Rs. 600.00 lakhs** and the approved outlay for 2008-2009 is **Rs.65.00 lakhs**. An amount of **Rs. 70.00 lakhs** is proposed as State's share for the Annual Plan 2009-2010.