

V ENERGY

5.1 POWER DEVELOPMENT

In the Annual Plan 2008-09, outlay set apart for the Energy Development sector is Rs.93435 lakh, of which, Rs. 91435 lakh is for KSEB, Rs.900 lakh is for ANERT, Rs.500 lakhs for Flagship Programme on Rural Energy (TESM), Rs.30 lakhs for Meter Testing and Standards Laboratory, Rs.70 lakhs for Energy Management Centre and Rs.500 lakhs for development of SHP under RIDF –Scheme.

Scheme wise details under Energy Development are given below.

Kerala State Electricity Board

HYDEL PROJECTS

1. KUTTIYADI TAIL RACE (3.75 MW/17.1 MU)

(Outlay Rs.125.00 Lakh)

The project is situated in the Koorachund Panchayath in Kozhikode district. The scheme envisages the utilisation of the tail water of Kuttiadi HEP and Kuttiadi extension scheme for generating 17.1 MU/annum. The project consists of the construction of diversion weir, power channel, forebay tank, penstock and a power house. The construction of the diversion weir and the power channel were completed in 1996. The balance major civil works such as construction of forebay tank, balance portion of power channel, trash rack arrangement, scour channel penstock track cutting, tail race pool & channel were tendered. Latest overall physical progress of the scheme is 84%. An amount of Rs. 125.00 Lakh is provided for the project in the Annual Plan 2008-09.

2. KUTTIYADI ADDITIONAL EXTENSION (100 MW/240 MU)

(Outlay Rs. 6000.00 Lakh)

The project aims at utilizing the additional inflow to the Kuttiyadi Reservoir from the Kuttiyadi Augmentation Scheme. Two additional generating units of 50MW each are proposed. The water conductor system from the Kuttiyadi reservoir is by an independent tunnel parallel to the existing one. Latest overall physical progress is 50%. The project is expected to be completed by October 2008. An amount of Rs.6000.00 lakh is provided in the Annual Plan 2008-09.

3. NERIAMANGALAM EXTENSION (25 MW/58.27 MU)

(Outlay Rs.200.00 Lakh)

The project is situated in the Panamkuttu village of the Devikulam Taluk of Idukki District. The project envisages the Utilisation of the spill water of the existing Neriamangalam hydroelectric project for generating 58.27 MU /annum of additional power. The scheme envisages putting up of a 4th pipe line, branching off from the existing low pressure pipe just above the existing valve house to utilise the higher discharge capacity of the existing power tunnel. Work was started in 03.07.2003, and the

date of completion of the work as per the agreement is 30.06.2006. Overall physical progress up to Oct 2007 is 69.5%. Outlay provided for the scheme in the Annual Plan 2008 – 09 is Rs.200.00 Lakh.

4. KUTTIYADI AUGMENTATION (223 MU)

(Outlay Rs.100.00 Lakh)

This project aims at harnessing the river Karamanthode, a tributary of Kabani, by diversion of the water to the existing reservoir of the Kuttiadi Hydro Electric Scheme at Kakkayam.

The project is located in Wayanad District and at 88 Kms from Kozhikode via Vythiri. The reservoir is having a gross storage capacity of 209 mm³. The 4.763 kms long tunnel, the main earthen dam and 6 saddle dams are completed in all respect. Project commissioned on 16.12.2005. Overall physical progress up to Oct 2007 is 99%. An amount of Rs.100.00 Lakh is provided in the Annual Plan 2008-09.

5. KUTTIAR DIVERSON (37 MU)

(Outlay Rs. 20.00 Lakh)

The project envisages diversion of water of Kuttiar (Muvattupuzha basin) to Idukki reservoir by constructing a diversion weir 61m long and 14.5m high and an unlined diversion tunnel of 2696m long for augmenting the power potential of Idukki power station. The project was sanctioned in Feb 1989. 53.4% of tunnel driving and 44.88% of weir excavation has been completed. Balance work was awarded on 02.04.03 at a rate of 87% above the estimated rate. Partial diversion effected from 08.06.07. Overall progress as on 31.10.07 is 99.7%. An amount of Rs.20.00 Lakh is provided in the Annual Plan 2008-09.

6. OTHER SCHEMES

a) PALLIVASAL EXTENSION (60 MW/153.90 MU)

(Outlay Rs.3775.00 Lakh)

Pallivasal Extension project is a Hydro project on the River Mudirappuzha of Periyar basin in Idukki district, Kerala State. The project envisages the efficient utilization of available water at RA Head works by diverting water through a new water conductor system for power generation in the existing Pallivasal power house and proposed power house to be located near the existing one.

The component structures of the project include, leading channel of length 115.1m, intake, power tunnel, surge shaft, pressure shaft, buried penstock, penstocks, power house of 52mX21m, switch yard, tail race, tailrace forebay weir. The revised estimated cost of the project is 222 Crores. The work was awarded and executes the agreement on 01-02-07. The work commenced on 09.03.07 and the period of completion of the project is 48 months. Overall physical progress up to Oct 2007 is 0.54%.

An amount of Rs.3775.00 Lakh is provided in the Annual Plan 2008-09 for the project

b) SENGULAM AUGMENTATION (85 MU)**(Outlay Rs. 754.00 Lakh)**

The project envisages the diversion of water from the western Kallar River to the Sengulam reservoir for augmenting the power generation at Sengulam power house. The project is located in Pallivasal village of Devikulam taluk. The approximate cost of the project is Rs 37.74 crores at 2004 schedule of rates. Tenders of this scheme is floated on 10.8.2005. An amount of Rs.754.00 Lakh is provided in the Annual Plan 2008-09 for this project.

c) SENGULAM TAIL RACE (3.6MW/12.57 MU)**(Outlay Rs.350.00 Lakh)**

The Sengulam tailrace project is located at Vellathooval Panchayath in Devikulam taluk in Idukki District. The main source of water for power generation for this scheme is the tail discharge of Sengulam powerhouse. Moreover water from down stream of Panniar Augmentation and spill of Panniyar Augmentation are utilized. An amount of Rs.350.00 Lakh is provided in the Annual Plan 2008-09 for this project.

d) THOTTIYAR HYDRO ELECTRIC PROJECT (40MW/99MU)**(Outlay Rs. 1593.00 Lakh)**

This project is located in Devikulam Taluk of Idukki District with an installed capacity of 40 MW and generation potential of 99 MU. The scheme envisages the utilisation of water from Thottiyar catchment and it involves construction of 7.5-m high overflow weir and a pondage of gross capacity of 0.39 mm³. Total forestland required to be diverted for the project is only 3.8134 Ha.

Second stage forest clearance was obtained and reconstruction survey is in progress. An amount of Rs.1593.00 Lakhs is provided for this project in the Annual Plan 2008-09.

e) MANKULAM HYDRO ELECTRIC PROJECT (40MW/82MU)**(Outlay Rs.500.00 Lakh)**

This Project is located in Devikulam Taluk of Idukki District with an Installed capacity of 40 MW and generation potential of 82 MU. The Scheme aims at developing the power potential of the melachery River, a tributary of Pooyankutty River. The project involves construction of a dam with a reservoir extending over 64.83 Ha of private land. Submergence area does not involve any forestland. However for water conductor system, power house etc 11.913 Ha of forestland is required to be diverted.

The first stage forest clearance has already been obtained and preparation of estimate and tender documents are in progress. Pre construction survey is in progress and the design drawings for the component structures are to be finalised. The land acquisition activities for the private land required are in initial stage. The project completion period is 4 years. The works for the implementation of the project is expected to be tendered on Feb 2008 and the letter of award is expected to be issued on June 2008.

An amount of Rs.500.00 Lakh is provided for this project in the Annual Plan 2008-09.

f). VILANGAD SHEP (7.5MW/22.63MU)

(Outlay Rs. 600.00 Lakh)

Vilangad small hydroelectric project envisages utilisation of water from Vaniampuzha and Kavadiapuzha tributaries of Mahe River. The project lies in Valuk village and Vilangad village of Vadakara Taluk in Kozhikkode District. The component structures of the scheme are two diversion weirs, two power channels, a fore bay tank, a penstock and a power house. The installed capacity of the scheme is 7.5 MW. The average annual energy generation is 22.63 MU. The cost of the project at 2004 price level is Rs 3434 Lakh. 11.33 Ha of private land is required for the project. The DPR of the project has been approved and administrative sanction obtained on 09.12.2004. Pre-construction survey, land acquisition survey and soil investigation works are carried out. Tenders were invited for the project but decided to retender as per the revised documents, for standard general condition of contract and prequalification. Action being taken to revise the estimate as per 2007 Schedule of rates to retender the work.

An amount of Rs. 600.00 Lakh is provided in the Annual Plan 2008-09 for this project.

g). PASSUKKADAVU SHEP (2MW/ 5.8MU)

(Outlay Rs. 755.00 Lakh)

The Passukkadavu Small HydroElectric project in Kuttiadi basin is in Badagara Taluk, Kozhikode District, The scheme proposes to utilise the water from Meenpattipuzha, a tributary of Kuttiadi River. The installed capacity of the Project is 2MW (2X1MW) and expected annual energy generation is 5.8MU

The estimated cost of the scheme is Rs. 1293 Lakh at 2004 price level. 5ha of private land is required. The DPR of the project has been approved. Land acquisition, survey and property surveys were completed. An outlay of Rs. 755.00 Lakh provided for this project in the Annual Plan 2008-09.

h). PUZHITHODE SHEP (4.8MW/10.97MU)

(Outlay Rs.756.00 Lakh)

The Puzhithode Small H.E.Project is proposed in Kadantharapuzha, a tributary of Kuttiadi River. The scheme is located in Quilandy Taluk of Kozhikode District. The components of the scheme are a diversion weir, a power channel, forebay tank a penstock and a powerhouse. The installed capacity of the Project is 4.8 MW (1.6X3MW) and expected average annual energy generation is 10.97MU

The estimated cost of the project is Rs 2340 Lakh at 2004 price level. 7.0Ha of private land is required for the project. The DPR of the project is approved and administrative sanction is obtained on 11.01.2005. Geological investigation has been

carried out. Tenders were invited for the project and Pre Qualification evaluation is in progress.

An amount of Rs. 756.00 Lakh is provided for this project in the Annual Plan 2008-09.

i) MANIYAR TAIL RACE SHEP (4MW/16.73MU)

(Outlay Rs. 453.00 Lakh)

The Maniyar Tail Race, a small hydroelectric project, is a run off River scheme in River Kakkad of Pamba basin, which envisages the development of power by utilizing the tailrace water from the existing Maniyar powerhouse operated by M/s. Carborandum Universal Ltd. The scheme comprises of a diversion weir, an intake, two penstock pipes and a powerhouse. The installed capacity of the scheme is 4MW (2X2MW). The annual average generation is 16.73 MU. The cost of the project at 2004 price level is Rs 1800 Lakh. 2Ha of private land is to be acquired for the project. Administrative sanction for the project is obtained on 9.11.2004. An amount of Rs. 453.00 Lakh is provided for this project in the Annual Plan 2008-09.

j). PERUMTHENARUVI SHEP (6MW/25.77MU)

(Outlay Rs.650.00 Lakh)

The Perumthenaruvi Small Hydroelectric project is a run of the River scheme in River Pamba of Pamba basin in Pathanamthitta District. The main components of the scheme are a diversion weir, a power channel, a fore bay, two penstock pipes and a powerhouse. The installed capacity of the scheme is 6 MW (2X3MW) the annual average generation is 25.77 MU. The cost of the project at 2004 price level is Rs 3000 Lakh. 4.1Ha of private land and 6.5 Ha of forestland is required for the project. Administrative sanction for the project is obtained. Govt: had accorded sanction to purchase the private land required for the implementation of this scheme and action is being followed up to constitute a negotiated purchase committee. Forest clearance is yet to be obtained. Rs. 650.00 Lakh is provided for this project in the Annual Plan 2008-09.

k). CHATHANKOTTUNADA II SHEP (6MW/14.76MU)

(Outlay Rs. 400.00 Lakh)

The Chathankottunada Small H.E.Project envisages the utilisation of water from two streams namely Poothampara and Karingad tributaries of Kuttiady River. The scheme is located in Vadakara taluk of Kozhikode district. The component structures of the scheme are 3 diversion weirs, two power channels, a fore bay, a penstock and a power station. The installed capacity of the scheme is 6 MW (2X3MW) and the annual average generation is 14.76 MU. The cost of the project at 2004 price level is Rs 2992 Lakh. 12ha of private land is required for the project. The DPR of the project has been approved and administrative sanction issued on 9.12.2004.

An amount of Rs.400.00 Lakh is provided for this project in the Annual Plan 2008-09.

l). KAKKADAMPOIL-I (21 MW/ 57.4 MU)**(Outlay Rs. 60.00 Lakh)**

Kakkadampoil- I is located in the Akampadam Village of Malappuram District and the project envisages the utilisation of water of the Rivers Kurumanpuzha with a catchment area of 23.25 Sq.km and Perimpilavupuzha with a catchment area of 3.75 sq.km. The scheme will generate energy to the tune of 57.40 MU per annum with an installed capacity of 21 MW. The completion period is 42 months.

DPR preparation of the scheme is in progress. An amount of Rs.60.00 Lakh is provided for this project in the Annual plan 2008-09.

m). KAKKADAMPOIL- II (11MW/30.92 MU)**(Outlay Rs. 10.00 Lakh)**

Kakkadampoil- II is located in the Koodaranji Villages of Kozhikode District and the scheme proposes to utilize the tailrace discharge of Kakkadampoil High Head scheme in and the water of Akampuzhathodu with a catchment area of 5.25 sq. km. The scheme will generate energy to the tune of 30.92 MU/annum with an installed capacity of 11 MW (2 x 4 + 2 x 1.5 MW). The completion period is 32 months. DPR preparation of the project is in progress. Outlay Rs. 10.00 Lakh is provided for this scheme in the Annual Plan 2008-09.

n). BARAPOLE (21 MW/51 MU)**(Outlay Rs. 1420.00 Lakh)**

Barapole Small HE Project envisages utilization of yield from 310 sq.km of catchment of Barapole River, a tributary of Valapattanam River for power generation and is located in Thalassery Taluk of Kannur district. It will generate energy to the tune of 51 MU with an installed capacity of 21MW. The entire scheme is within the territory of Kerala but catchment area is entirely in Karnataka. No forestland is involved. 20 Ha. of private land is acquired.

Government of Kerala had earlier allotted the Barapole HE Scheme to M/s Travancore Cochin Chemicals Ltd., Kochi for captive generation of power on 3/11/2000. Due to inability of TCC Ltd, KSEB has taken over the project.

As per the revised documents for standard general condition of contracts & prequalification, tenders invited on 04.07.2007. The scheme is proposed to be completed in a period of 3 years.

An amount of Rs.1420.00 Lakh is provided for this project in the Annual Plan 2008-09.

o). ADYANPARA (3.75 MW/9.01 MU)**(Outlay Rs.1132.00 Lakh)**

The scheme envisages hydropower development from Kanjirappuzha River – a tributary of Chaliyar by constructing a diversion weir of 5 m height, 1174 m power channel, a single line penstock of 320 m length and there by availing a head of 97 m to

produce a power of 3.50 MW and an annual generation of 9.01 MU. The site is 17 Km away from Nilambur and powerhouse is located on the left bank of Kanjirapuzha, just above Adyanpara falls.

Earlier this scheme was allotted to Malappuram Jilla Panchayat for implementation as per G.O. (Rt) No. 79/99/PD dated 17-03-1999. But due to the poor financial condition of Jilla Panchayat, the Panchayat decided to drop the project. Accordingly the allotment was cancelled. KSEB proposes to take up implementation of this scheme. The completion period of the scheme is 24 months.

Administrative sanction for the implementation of the scheme was accorded. Process of tender and evaluation of pre-qualification bid is in progress. Total land required is 9.79 ha. of private land. The Government had accorded sanction for the acquisition of 9.79 ha. of private land for the implementation of the scheme on 21-04-2006.

An outlay of Rs. 1132.00 Lakh is provided for this project in the Annual Plan 2008-09.

7. NEW SCHEMES

a). CHIMONY (2.5MW/6.03MU)

(Outlay Rs.400.00 Lakh)

The power generation project under Chimony Irrigation Project envisages the utilization of water released for irrigation from the Chimony reservoir for power generation, during the month of December to May. The scheme is located in Thrissur district. The installed capacity of the scheme is 2.5 MW and the expected annual generation is 6.03 Mu. The power generated is proposed to be transmitted to the nearest 66KV Sub Station at Puthukkad.

The scheme envisages the construction of a Dam Toe Power House, fabrication and erection of penstock pipe, construction of powerhouse, tailrace, switchyard and erection of electromechanical equipments. The total cost of the project is Rs 1059 Lakh at 2003-04 price level. Tender Drawings and tender documents are under preparation and the work can be tendered immediately.

An amount of Rs.400.00 Lakh is provided for this project in the Annual Plan 2008-09.

b). ACHANCOVIL (30 MW 76.5 MU)

(Outlay Rs. 30.00 Lakh)

Achencovil Hydro electric scheme [Pathanamthitta District of Kerala; Kozhencherry Taluk; Aruvappulam Panchayat], envisages development of power by utilising the waters of Achencovil- Kallar, which is a main tributary of Achencovil river. Catchment Area of the scheme is 132 Km². Forest land required for this scheme is about 100 ha and Private land is about 3 ha. Power potential studies and preliminary design of component structures have been done.

Outlay of Rs. 30.00 Lakh is provided for this project in the Annual Plan 2008-09.

c). CHINNAR HEP (2 x 14 MW, 83 MU)**(Outlay Rs. 400.00 Lakh)**

Chinnar Hydro Electric project is a runoff River scheme proposed for utilising the power potential of Perinjankutty River locally known as Chinnar in Periyar basin. This scheme is located in konnathady village at Udumbanchola Taluk in Idukki District of Kerala.

The land requirement is 20 ha. The land at reservoir area, intake and weir site is non-patta land and land at surge, valve house; penstock route and powerhouse are mainly patta land. Forestland required is 1 ha. The cost of project is estimated as Rs.11125 Lakh. The DPR of the scheme has been approved.

An amount of Rs. 400.00 Lakh is provided for this project in the Annual Plan 2008-09.

d). PEECHI (1.5MW/3.3MU).**(Outlay Rs. 460.00 Lakh)**

Peechi Mini Project envisages development of power by utilising the water released for irrigation from Peechi reservoir. The Scheme involves the construction of a dam toe powerhouse and Erection of Electromechanical equipments. The installed capacity is 1.5 MW and the expected annual generation is 3.315 MU. The total cost of the project is Rs 745 Lakh at 2004 price level. Administrative Sanction for implementation of the scheme was accorded.

An amount of Rs.460.00 lakh is provided for this project in the Annual Plan 2008-09.

8. ATHIRAPALLY (163 MW/386 MU)**(Outlay Rs.6000.00 Lakh)**

Athirappally Hydro Electric Project is located in the Chalakkudy River basin in Trissur district of Kerala State. The scheme envisages the utilization of the tail waters from the upper Poringalkuth powerhouses, spill from the Poringalkuttu reservoir and inflow from its own catchment area. In order to maintain the Vazhachal cascade and Athirappilly falls, a small power house of (2 x1.5 MW) is proposed at the toe of the Athirappilly dam, in addition to the construction of (2 x 80 MW) Power House at Kannamkuzhi.

All the clearances such as environmental clearance from MoE & F, Techno Economic Clearance from CEA has been received on 10-02-2005 and 31-03-2005 respectively. Accordingly the letter of acceptance to the lowest bidder M/s HCC-BHEL Consortium was issued. Due to the interventions of the Honb'le High Court with regard to the Public Interest Litigation for the implementation of this project, the work could not be awarded. The Hon'ble High Court cancelled the Environmental Clearance for the scheme and directed Board to apply for Environmental Clearance afresh and for conducting public hearing.

The Board decided to issue revised letter of award to M/s. HCC-BHEL Consortium at the negotiated price of Rs.570 crores, for the turn key execution of the project, after obtaining Government sanction and approval by KSERC. Accordingly, the Board has taken up the matter with the Government to communicate early decision on the matter.

As per the judgment of Hon'ble High Court the public hearing was conducted by the State Pollution Control Board on 15.06.2006 at Chalakudy, Thirssur and the report was forwarded to the MoE & F by Kerala State Pollution Control Board on 22.07.2006. Obtained fresh Environmental Clearance from MoE & F. The work can be completed within 48 months after commencement of work.

An outlay of Rs. 6000.00 Lakh is provided for the scheme in the Annual plan 2008-09.

9. SMALL SCHEMES UNDER CHINESE COLLABORATION (Completed Scheme)

a)CHEMBUKKADAVU STAGE-I (2.7 MW/6.59 MU)

b) URUMI STAGE –I (3.75 MW/9.72 MU)

(Outlay Rs. 10.00 Lakh)

The above two projects under Chinese participation, which were completed and dedicated to the nation on 25.01.2004. The power generations from the schemes have been commenced. An amount of Rs. 10.00 lakh is provided for these scheme in the Annual Plan 2008-09 for procurement of spares and installation of signalling system in fore bay for the two pilot projects.

10.SURVEY, INVESTIGATION & ENVIRONMENTAL STUDIES

(Outlay Rs. 425.00 Lakh)

The investigation work of major, small, mini and micro hydro electric projects of the state are being carried out under the office of the Chief Engineer (IPDS) through the Investigation circle, Thrissur. The provided outlay for the scheme in the Annual plan 2008-09 is Rs. 425.00 Lakh.

11. RESEARCH AND DEVELOPMENT WORKS (CIVIL)

(Outlay Rs. 150.00 Lakh)

A. Dam Safety Works

The monitoring and maintenance of 33 dams under Kerala State Electricity Board is being carried out under the office of the Chief Engineer (IPDS). The safety monitoring and behavioral studies of all the dams of KSEB including Idukki Arch Dam is being carried out and shall be continued during the plan period. Various proposals for carrying out dam monitoring activities, acquisition of new equipments, repair and maintenance of various dams are also included for the plan period.

The Research activities include conducting model studies in respect of various schemes. Mix design for concrete mixes and allied materials testing of all ongoing projects and pole casting yard are also being conducted in the concrete control laboratory

functioning at Idamalayar. The seismic data obtained from the network of 11 stations are being analysed which is also a research work carried out under R.O.Pallom.

B. Research & Development (Electrical)

The following works are included during the plan period.

- ??Detailed investigation on the effects of high harmonics and low power factor
- ??Study and design of concrete embedded earth mat for EHV substation
- ?? Other projects requiring urgent attention.

An amount of Rs.150.00 Lakhs is provided for this scheme in the Annual Plan 2008-09 .

12.TRANSMISSION -NORMAL

(Outlay Rs. 16000.00 Lakhs)

An amount of Rs.16000.00 Lakhs is provided for Transmission Normal in the Annual Plan 2008-09 for the following works

- Construction of 110KV Substations : 11 Nos
- Construction of 66KV Substations : 4 Nos
- Construction of 33KV Substations : 26 Nos
- And connected transmission lines

13.Institutional Development Programme

(Outlay Rs. 225.00 Lakhs)

Following programmes are included under Institutional Development Programme in the Annual Plan 2008-09.

- Training of employees in the in-house training centre
- Training of employees in other training centres
- Setting up of a new international power training centre at Thiruvananthapuram
- Setting up a new training centre at Kozhikkode.

An amount of Rs. 225.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

14. MODERNISATION OF LOAD DESPATCH STATION

(Outlay Rs. 60.00 Lakhs)

The work envisaged under this scheme mainly include data acquisition from major generating stations and sub stations, associated works in the SCADA and computer networking, reservoir level monitoring from SLDC, other works at SLDC and modernisation and expansion of meter testing facilities for better energy accounting. SCADA is to be provided in Kannur and Kalamassery circles.

An amount of Rs. 60.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

15. MODERNISATION OF COMMUNICATION SYSTEM & RELAY

(Outlay Rs.200.00 Lakh)

Communication system comprises of PLCC, micro wave (MW) and optical fibre (OF) for data acquisition and speech. The scheme is mainly for modernisation of PLCC. On commissioning of new stations and commissioning / rearrangement of EHT lines, additional PLCC equipments are to be provided. Protection couplers are necessary for major feeders. Purchase of PLCC equipments, protection couplers, spare is to be made for the proper maintenance of the communication system.

As far as relay wing is concerned, proper and efficient relay protection scheme is inevitable for maintaining stable and reliable power system. For this the relay wing has to be equipped with modern testing equipments. The relay system is envisaged for the modernisation of the relay testing equipments and acquisition of modern testing equipments. Retrofitting of old relay panels is also included in the major stations.

An amount of Rs. 200.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

16. RENOVATION AND MODERNISATION(R&M) OF EXISTING SCHEMES

(Outlay Rs.2000.00 Lakhs)

Following Renovation and modernisation works are proposed in the Annual Plan 2008-09. They are follows.

a). Neriamangalam Hydro Electric Project (3x15MW)

For the Neriamangalam H E Project, scope of work includes replacement of stator core, winding with F class insulation, excitation of static type governors of electronic type, runner, guide vanes, shaft seals, overhauling and replacement of seals MIV, PRV, cooling water pipes and pumps etc.

b). Pallivasal, Sengulam & Panniar HEPs

The renovation & modernization works included the following.

1. The replacement of old generators and turbines at Pallivasal and Sengulam
2. The refurbishment of generators and turbines of Panniar
3. Modernizing the protecting and control equipment.
4. Renovating the switchyard.

c). Sabarigiri Hydro Electric Project(6 x 50 MW)

The main work involves changing of pole winding, excitation system, governor, runner, control and protection system, switch yard equipment, electrical and mechanical auxiliary equipment of all units.

d). Idamalayar

Renovation & Modernization work of Governor, Special repair to AVR and Bearing modification (Changing Semi umbrella type machine to suspension type machine)

e). Idamalayar-Idamalayar –(110/66 kv Sub Station)

The work involves installation of 110/66KV Transformer at Idamalayar Power house and shifting of the existing 66/11KV substation to the Powerhouse.

f). Poringalkuttu and Sholayar.

Poringalkuttu and Sholayar are also included under R&M works.

An amount of Rs. 2000.00 Lakhs is provided for all R&M works in the Annual Plan 2008-09.

17). DISTRIBUTION- NORMAL

(Outlay Rs. 21000.00 Lakh)

The following works are provided to be completed during the year 2008 – 09

Total Normal Works

?? No. of service connections	:400000 Nos
?? Construction of 11KV lines	:3000 KM
?? Construction of LT lines	:6000 KM
?? Erection of distribution Transformers	:2000 Nos
?? Replacement of faulty meters	:6Lakhs
?? Street light installations	:30000 Nos
?? HT/LT Ratio	:1:5.21

In addition to above following components are also included under Distribution Normal.

- ?? High Voltage Distribution System
- ?? Reconductoring of old L T lines
- ?? Power factor compensation Using Shunt and series capacitance
- ?? Introducing Automatic Voltage Boosters in Select Area of Low voltage Asan Interim measures
- ?? TCMS
- ?? Automatic Meter Reading System
- ?? Infrastructure for improving Customer Care
- ?? Special Scheme for providing Service Connections to socially and economically Backward Sections.

An amount of Rs.21000.00 Lakhs is provided for the distribution in the Annual Plan 2008-09.

17 (a). Rajiv Gandhi Grameen Vaidyuteekaran Yojana(RGGVY) Scheme

(Outlay Rs.2492.00 Lakh)

Govt of India introduced RGGVY scheme, which includes creation of Village Electrification Infrastructure (VEI), for electrification of household in electrified villages/habitations and providing REDB package for construction of 33/11KV or 66/11KV Sub Stations. The scheme also covers electrification of SC& ST colonies, improvement of HT/LT ratio and electrification of hilly and coastal areas and electrification of unelectrified hamlets in the state. The erstwhile Kutir jyothi scheme aimed for electrification of poor households (BPL) has also been included in the RGGVY. Efforts shall be made to integrate RGGVY with TESSM programme.

An amount of Rs.2492.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

18.ACCELERATED POWER DEVELOPMENT & REFORMS PROGRAMME (APDRP) (City scheme) (Other ACA –Scheme)

(Outlay Rs. 9500.00 Lakh)

APDRP pursued by the Ministry of Power, Govt of India, aims to improve the sub transmission and distribution network. Works provided to the APDRP in the Annual Plan 2008-09 are as follows.

- ?? Laying of UG Cable
- ?? Installation of Distribution transformers
- ?? Distribution Automation
- ?? SCADA
- ?? TCMS
- ?? GIS mapping etc.
- ?? Improving sub transmission and distribution network in Thiruvananthapuram, Kochi, and Kozhikode cities.

An amount of Rs.9500.00 Lakhs is provided for the scheme under Other ACA in the Annual Plan 2008-09.

19. CAPITAL CITY DEVELOPMENT

(Outlay Rs.150.00 Lakh)

Strengthening of Transmission and Distribution net work and providing quality power supply are the works towards the Capital City Development in the Annual Plan 2008-09. An amount of Rs.150.00 Lakhs is provided for the scheme in the Annual Plan 2008-09.

20. REVAMPING OF SEISMIC NETWORK IN IDUKKI REGION**(Outlay Rs. 50.00 Lakh)**

KSEB is presently running a seismic network of 11 No Seismic stations. As part of the scheme, ongoing works and studies are to be continued.

An outlay of Rs. 50.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

21. ADMINISTRATIVE COMPLEXES AND CIVIL CIRCLE, PALLOM.**(Outlay Rs. 2000.00 Lakh)**

The components under the scheme are Administrative Complexes includes buildings under construction, construction of new electrical section offices. Under the works of civil circle Pallom includes other civil works, Fabrication works in CM Division and setting of New Fabrication Units. For the above works, Rs.2000.00 Lakhs is provided in the Annual Plan 2008-09.

22. WIND ENERGY PROGRAMME AT RAMAKKALMEDU**(3.75– 5) MW/11.6 MU****(Outlay Rs. 500.00 Lakh)**

KSE Board had accorded in principle approval for establishing a 3.5 MW – 5 MW demonstration wind project at Ramakkalmedu in Idukki district jointly by KSE Board and ANERT vide B.O. (FB) NO.2520/2005 (CP/IPC-147/wind) dated 29.8.2005. The MoU for the implementation of the project was signed on 18.01.2006. KSEB will carry out the execution of the project through turnkey contract. The tenders were invited on 21.2.2006 and pre-qualification bids were opened on 15.03.2006. The evaluation of pre-qualification bid is in progress.

An amount of Rs.500.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

23. IT Enabled Services**(Outlay Rs. 75.00 Lakh)**

An amount of Rs.75.00 Lakhs is provided in the Annual Plan 2008-09 for the following works.

- ?? Establishment of central data base with disaster data recovery centre
- ?? Providing web enabled services for complaint registration, bill payment, customer information, consumer registration etc.
- ?? GIS support for power line mapping taken up in local Governments under TESM.

24. IMPROVEMENT OF QUALITY POWER SUPPLY IN MUNICIPALITIES AND CORPORATIONS.

(Outlay Rs. 200.00 Lakh)

An amount of Rs.200.00 Lakhs is provided for implementing the quality power supply scheme in Municipalities and Corporations in the Annual Plan 2008-09.

25. TSUNAMI EMERGENCY ASSISTANCE PROJECT (TEAP)

(Outlay Rs. 2200.00 Lakh)

TEAP is an ADB assisted project for reconstruction of damaged electricity line net work and distribution transformers in tsunami affected coastal areas.”**The outlay proposed towards Tsunami would be only drawn and managed by the Project Director , TEAP without disturbing the overall departmental allocation”.**

An amount of Rs.2200.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

26. Tsunami Rehabilitation Programme (TRP) (Other ACA-Scheme)

(Outlay Rs. 3935.00 Lakh)

An amount of Rs.3935 Lakh is provided under Tsunami Rehabilitation Programme (TRP).

”The outlay proposed towards Tsunami would be only drawn and managed by the Project Director, TRP without disturbing the overall departmental allocation”.

27. REHABILITATION OF PANNIAR POWER HOUSE

(Outlay Rs. 1000.00 Lakh)

An accident due to the breaking of Penstock pipe at Panniar PowerHouse occurred on 17-9-2007 and this resulted in a heavy loss due to damage of machinery.

An amount of Rs. 1000.00Lakhs is provided for recovery of Panniar Power House and related works in the Annual Plan 2008-09.

28. COAL BASED POWER PROJECT

(Outlay Rs. 2000.00 Lakh)

Baitarani West coal block has been jointly allotted to OHPC, KSEB and GPCL. MoU has been signed between the allottees on 12-11-2007 for the formation of SPV/JVC for the development of mines and mining of coal from Baitarani west coal block. SPV/JVC is expected to be registered by allottees by the end of December, 2007.

An amount Rs. 2000.00 Lakhs is provided for the initial expenses of the proposed coal based power plant.

29. WATCH TOWER MOOLAMATTOM SWITCHYARD

(Outlay Rs. 20.00 Lakh)

The Intelligence Bureau, Ministry of Home Affairs, Government of India inspected Moolamattom Power Station in the year 2000 and suggested some security

measures to be taken by Board for the protection of Moolamattom. One of their recommendations is the Construction of a watchtower with revolving searchlight in Moolamatom switchyard. The Ministry of Home Affairs persuades KSE Board to construct and complete the WatchTower at the earliest.

An amount of Rs.20.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

30. TRANSFORMER AT IDUKKI POWER HOUSE

(Outlay Rs. 300.00 Lakh)

One of the 48 MVA 11/220 kV Generator Transformer of unit No.2 Generator in Idukki Power station failed in the year 2005-06 the same was replaced with the spare transformer and unit was put into operation. Initially it was decided to repair the same but later on it was found that repairing cost of transformer is almost equal to the cost of a new transformer. Hence it was decided to purchase a new transformer.

An amount of Rs. 300.00 Lakhs is provided for this scheme in the Annual plan 2008-09.

5.2 NON-CONVENTIONAL AND RENEWABLE SOURCES OF ENERGY

ANERT is the nodal agency involved in the propagation and implementation of Non-Conventional Sources of Energy. The programmes are implemented through two heads. ANERT programmes and IREP programmes.

31. SCHEMES OF ANERT

(Outlay Rs. 900.00 Lakh)

ANERT has reformulated its programmes in line with Total Energy Security Mission (TESM). In the year of 2008-09 onwards its Plan fund is proposed entirely as State Government Scheme.

An amount of Rs. 900.00 Lakhs is provided for the following programme in the Annual Plan 2008-09.

1. Rural Energy Programme done jointly with TESSM and local governments

From the total provision of Rs.900.00 lakhs for the current year Rs. 800.00 lakhs shall be used primarily for strengthening the district level functioning of ANERT. Since the IREP scheme in its original form has been discontinued, provision has been made in the State plan so that the district offices can start working with the district Panchayat and the three tier Panchayat Committees reporting to the District Level Energy Co-ordination Committees and the District Planning Committee on matters relating to the local programme implementation. 300 local governments and 14 District Panchayat have become part of the TESSM Programme for 2007-08. Efforts should be made to mobilise

an equal number of local governments during the year 2008-09. All subsidy programme of ANERT shall be integrated with TESM programme.

??Rural Energy (RE) projects appropriately restructure (biomass gasifiers/ combustion systems, biogas plants, improved cook stoves, community chulhas, solar thermal energy programmes, etc) already taken up by 14 District Panchayats).

??To support new RE projects of District Panchayats which shall include expenses of State Level Co-ordination Committee, District Level Co-ordination Committee, travel and stay expenses of functionaries for workshops /programme of TESM etc.

??To detailed Energy Studies and Energy Plan Preparation in Mission Panchayats of 2008-09

II. Support for Infrastructure development for restructuring of ANERT

The programmes of the ANERT shall be reworked in accordance with the challenges following the 73rd and 74th constitutional amendments. The subsidy programmes and implementation programmes shall be reworked for suitable integration with TESM. Capacity building, Information Education Communication programmes shall be also re-organised suitably. Restructuring of the existing manpower shall be also done. The organisation shall undertake suitable e-governance programme to make it result oriented and effective and also in tune with the Rural Energy reforms programme of the government. The following specific programmes shall be also taken up.

?? Skill upgradation/in house capacity Building, Research Projects, Programmes at RERTC, etc.

??Wind Energy Programme

??Strengthening of infrastructure, IT services publications, library, workshops, and seminars.

??Consultancy projects

A master plan for infrastructure building shall be prepared and got approved.

Balance provision of Rs. 100 lakhs is earmarked for the above programme.

32. METER TESTING AND STANDARDS LABORATORY

(Outlay Rs. 30.00 Lakh)

An amount of Rs. 30.00 Lakhs is provided for the following programmes of the Meter Testing and Standards Laboratory in the Annual Plan 2008-09.

- a) equipments for testing of safety of household appliances, such as electric iron, cooker and motor operated or magnetically driven appliances.
- b) equipments for testing PVC conduits.

- c) System study for power quality improvement in the State Infrastructure requiredload Analyser. (Salary and establishment expenses are not in the provision.)
- d) Calibration /Service/repair/error correction/testing of equipments and standards and other connected expenses like NABL assessment/accreditation, proficiency testing and inter laboratory comparison.
- e) Office Automation software/ Hardware of the Dept of Electrical Inspectorate.

A special project shall be taken up on analysis of the power distribution network in Trichur Corporation Area. An outlay of Rs. 10 lakhs is earmarked for this from the outlay of Rs.30 lakh.

33. ENERGY MANAGEMENT CENTRE (EMC)

(Outlay Rs. 70.00 Lakh)

E M C is a nodal agency for implementing energy conservation activities, energy saving in the various PSUs/ Govt Depts, etc, Analysing the possibilities of taking up Small Hydro Projects in the State. The major programmes of EMC during the Annual Plan 2008-09 are following.

- ?? Research and Development
- ?? Industrial Energy Conservation Programme
- ?? Demonstration Programmes
- ?? Education, Training & Awareness Programmes
- ?? State Energy Conservation Awards
- ?? Formation of Energy Conservation Fund
- ?? Energy Management Institute
- ?? Capacity Building and Institutional Strengthening
- ?? Small Hydro Power Development
- ?? Master Plan for SHP Project Development
- ?? UNIDO Regional Centre for Small Hydro Power

All awareness building programmes of EMC at the local level shall be integrated with the Total Energy Security Mission (TESM). The small hydro development programme shall be also integrated with the TESSM activities.

An amount of Rs. 70.00 Lakhs is provided for EMC in the Annual Plan 2008-09.

34. FLAGSHIP PROJECT ON RURAL ENERGY

(Outlay Rs. 500.00 Lakh)

The Programme aims at converging various initiatives of local governments with those of agencies promoting rural electrification and non-conventional energy in the state and with the new initiatives in rural electrification and in energy sector launched as a part of the Common Minimum Programme by the Government of India.

The status of household electrification in Kerala is surprisingly poor and Kerala ranks 11th in the 2001 census below Gujarat, Karnataka and Tamilnadu. The 59th round of survey by the NSSO and BPL survey also reveals serious issues of inequity and spatial imbalance in coverage of rural electrification. The percentage of un-electrification houses among the PBL families varies from 24% to 50%. As much as 70% of the ST colonies are still un-electrified, In order to achieve the targets of the Common Minimum Programme for achieving a percapita consumption of one unit per day in all households by 2012.

There is the need for a mission mode programme to promote in a focussed and time bound manner small hydro, biomass based energy generation, as well as for tapping available resources in wind and solar along with strengtheing rural electrification initiatives. The focus shall be on working through local governments to achieve these objectives by 2010. The activities of the Clean Kerala Mission, the Sanitation Mission and initiatives in tourism for clean tourist sites etc. shall be integrated. Watershed management and Joint Forest Management initiatives shall be linked with biomass generation through innovative neighborhood based commnity organisation forms. End-use based demand side management measures, energy audits and regulatory mechanisms for promoting new and renewable energy sources shall be also accorded top priority.

The mission during 2007-08 has worked out projects jointly with local government which aims at preparing toal energy plans for local level execution. The Mission support during 2008-09 is meant for providing knowledge support to the local government programmes. The provision shall be used for meeting expenses of IEC programmes, workshops, seminars, action research programmes capacity building programmes of functionaries of TESM at the State, district and local level. Support for project implémentation in local governments and establishment expenses. Infrastrucutre support for the Mission inclding speical tools, hardware and software etc shall be covered. Honorarium and other expenses of consultants and project staff shall be also met from the head. The programmes approved by the State Level Co-ordination Committee of TESM shall be taken up directly by Mission or outsourced to various agencies.

In the Annual Plan 2008-09 the Mission shall intends to implement the following specific programmes.

- ?? Prelimiminary reconnaissance study and preparation of a database of potential small hydro sites with the participation of local governments
- ?? Knowledge Support to be obtained from premier national level research/consultancy groups for specific action research programmes, technology adaptation programme, capacity building of TESM functionaries and implementation support for various filed implementation activities
- ?? New action research problems identified through field studies in 2007-08

ANERT will be the nodal agency for Co-ordinating the implementation of the scheme.

An amount of Rs. 500.00 Lakhs is provided for this scheme in the Annual Plan 2008-09.

35). RIDF-SCHEME for Small Hydro Generation

(Outlay Rs. 500.00 Lakh)

An amount of Rs.500 lakhs is provided under RIDF for small hydro schemes. The amount is set apart for implementation of small hydro schemes developed by TESM as a part of the study preliminary reconnaissance study and preparation of a database of potential small hydro power sites for the TESM with the participation of local government'. The schemes are sought to be implemented by local governments after the specific project proposals are approved by NABARD. Catchment conservation, non conventional site specific design features, clustering, standardisation of heads and discharges to reduce cost of turbo generating equipment etc shall be priority areas. Load development and providing hybrid systems for ensuring higher plant load factor shall be also attempted. ANERT shall be the nodal agency for the scheme. The programme shall be implemented with the technical support of the Energy Management Centre.