Government of India
Institute of Secretariat Training and Management
(Department of Personnel & Training)

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Reading Material

ORIENTATION TRAINING PROGRAMME
of
ASSISTANTS, SECTION OFFICERS, UNDER SECRETARIES
of

MINISTRY OF POWER

Sponsored by
DEPARTMENT OF ADMINISTRATIVE REFORMS & PUBLIC GRIEVANCES
As part of the
DFID funded Capacity Building for Poverty Reduction Programme

September 2009

Reading Material

Prepared by

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CONSULTANCY TEAM

- Sh. M.S. Kasana, Joint Director, ISTM
- Sh. P.S. Sareen, Deputy Director, ISTM
- Sh. S.K. Dasgupta, (Former Director, Government of India), External Consultant

Staff Members

- Smt. R. Mahalakshmi, PA
- Smt. Smitha Viju, PA
- Sh. Ravi Shankar, Peon

MENTOR

Dr. Khwaja M. Shahid, Director, ISTM

FOREWORD

The utility and need for training in any organization is universally accepted. This is more so in Ministries and Departments of Government of India, where apart from rules and regulations on various subjects, policies in the area of social welfare at National, State and grass-root level are formulated and implemented.

2. The focus of training is generally directed towards foundational level, where the newly recruited officials are required to undergo intensive training on various aspects of administration. Also, the concept of in-service training at various levels focusing on requirements as and when such officials move up on promotion is also firmly established.

3. However, one aspect, which generally goes un-noticed, is when officials are moved from one Ministry/Department to another, as a result of routine transfer policy or on promotion and also, officials directly recruited are allotted Ministries/Departments and join after receiving Foundational Training on general subjects. Such officials are faced with the problem of familiarizing and learning the working of the new Ministry/Department. The concept of any kind of Orientation training, focusing on the need of the Ministry/Department, is by and large not in place. The problem of such officers is more acute in Techno-economic Ministries where work relating to policy formulation and implementation requires knowledge about the technical experts of various processes and functional aspects, besides project monitoring and evaluation and working of public sector undertakings.

4. The newly posted officials find it extremely difficult to come to terms with the situation at the ground levels, like the various components of power sector like, Thermal Hydro, etc. Besides, various projects of the Ministry also should be made known to such officers.

5. DARPG as part of the DFID funded Capacity Building for Poverty Reduction Programme has taken initiative to bridge this gap by providing Orientation Training to the officials posted to a ministry on promotion, transfer, deputation or direct recruitment. The task of identifying training needs for such orientation training programme and based on the same, designing training and development of training material has been assigned to ISTM as Consultant.

6. To undertake the task assigned, ISTM has constituted a consultancy team consisting of Sh. M.S. Kasana, Joint Director, Sh. P.S. Sareen, Deputy Director and Sh. S.K. Dasgupta, former Director, DOPT (as External Consultant).

7. It gives me great pleasure that the consultancy team has conducted extensive research and studies to conduct Training Needs Analysis, design training programme and develop qualitative training material to enable the participants to master the organisation structure and co-ordination mechanisms for activities of various departments within the ministry, appreciate the sectoral scenario and major policies and programme in operation, etc.

8. I am confident that this training material prepared by the consultancy team for orientation training programme for the target group (Chapters 1 to 12) will prove to be useful reference material for the capacity building initiative in the area which has remained unattended till now.

(KHWAJA M. SHAHID)
DIRECTOR

September 2009

PREFACE

This reading material is an outcome of DARPG initiative as implementing agency for DFID funded Capacity Building for Poverty Reduction Programme to operationalise Orientation Training Programme for Assistants, Section Officers and Under Secretaries on their posting to the Ministry of Power. DARPG assigned the task to ISTM as Consultant, which in turn constituted a consultancy team consisting of the undersigned along with Sh. P.S. Sareen, Deputy Director, ISTM and Sh. S.K. Dasgupta, former Director, DOPT (as External Consultant) to conduct training needs analysis , design training and develop training material. The consultancy team undertook extensive research and studies to conduct training needs analysis, design training programme and develop training material.

2. Subsequent to the training needs identification and design of the programme, task of compiling the reading material pertaining to Ministry of Power was undertaken. This monograph containing 14 chapters is an endeavour in that direction.

3. To begin with, list of abbreviations relating to the ministry has been prepared. Chapter 1 of the monograph provides the overview of the Ministry of Power and its functions, while Chapter 2 covers the Capacity Addition Programme in the XI Plan.

4. Chapters 3, 4 and 5 covers status of power sector reforms, rural electrification programme and energy conservation.

5. Chapter 6 and 7 elaborates the private sector participation in power sector and international cooperation. Chapter 8 to 10 provides an overview of various authorities under the Ministry of Power, viz., Central Electricity Authority, Central Electricity Regulatory Commission and Appellate Tribunal for Electricity.

6. Chapter 11 covers the various Public Sector Undertakings working under Ministry of Power, whereas Chapter 12 provides details about Ministry of Power's initiatives in E-governance and Information Technology.

7. The members of the Consultancy Team have scanned substantive amount of literature made available by the ministry and have compiled this reading material with the objective that the learning of the participants is supplemented in providing domain specific knowledge and skills.

8. We look forward to constructive suggestions / comments for making this monograph richer both in content and context. Please feel free to give us feedback on this monograph.

(M.S. KASANA)
JOINT DIRECTOR
Email: ms.kasana@nic.in
011-26180589

September 2009

ACKNOWLEDGEMENT

The initiative taken by Department of Administrative Reforms and Public Grievances to institutionalize a system of Orientation Training as a pilot project in five Ministries will go a long way in increasing efficiency and productivity of the concerned Ministries. The Institute of Secretariat Training and Management (ISTM) and the Consultancy Team express their deep gratitude to Department of Administrative Reforms and Public Grievances for entrusting this responsibility to them, which involves the entire gamut of collection of data, identification of training needs, design of training and also preparing the training material.

2. The Consultancy team is grateful to Secretary, Department of Administrative Reforms and Public Grievances and all other officers of the Department for their guidance and assistance extended to the team from time to time.

3. The Consultancy Team is grateful to Shri A.A. Tazir, Deputy Secretary, Ministry of Power and also, the Nodal Officer nominated for this purpose, for coordinating the visit of the team to the Ministry for collection of statistical data and for facilitating meeting with other officers to ascertain their views. The Team is also grateful to Shri Tazir and all the officers of his Division for providing relevant material pertaining to the Ministry and also, copies of various circulars issued by the Ministry from time to time.

4. The Consultancy Team is grateful to Shri R.K. Gupta, Director, Sh. Sisir Das, Deputy Secretary, Sh. K. Chugh, Deputy Secretary and Ms. Kalyani Misra, Deputy Secretary, Ministry of Power for sparing their valuable time for interacting with the Team and providing valuable suggestions and information relating to Orientation Training in the Ministry.

5. Dr. Khwaja M. Shahid, Director, ISTM has been a great source of strength and morale-booster by providing necessary guidance and assistance to the

Consultancy Team as and when required. The Team is grateful to Dr. Shahid for guidance in undertaking the task.

6. Finally, the Consultancy Team acknowledges the contribution and assistance provided by the supporting staff consisting of Smt. R. Mahalakshmi, PA, Smt. Smitha Viju, PA. and Shri Ravi Shankar, Peon. It was due to their untiring efforts, the Team could proceed for submitting this monograph.

M. S. Kasana,
P.S. Sareen and
S.K. Dasgupta

LIST OF ABBREVIATIONS

1.	CEA	Central Electricity Authority
2.	NTPC	National Thermal Power Corporation
3.	NHPC	National Hydro-Electric Power Corporation
4.	NEEPCO	North-Eastern Electric Power Corporation
5.	PGCIL	Power Grid Corporation of India Limited
6.	SJVNL	Satluj Jal Vidyut Nigam Ltd
7.	THDC	Tehri Hydro Development Corporation
8.	DVC	Damodar Valley Corporation
9.	REC	Rural Electrification Corporation
10.	PFC	Power Finance Corporation
11.	CPRI	Central Power Research Institute
12.	BEE	Bureau of Energy Efficiency
13.	NPTI	National Power Training Institute
14.	NEP	National Electricity Policy
15.	PPMP	Power Project Monitoring Panel
16.	FOR	Forum of Regulators
17.	STU	State Transmission Utility
18.	PMGY	Pradhan Mantri Gramodaya Yojana
19.	AREP	Accelerated Rural Electrification Programme
20.	RGGVY	Rajiv Gandhi Grameen Vidyutikaran Yojana
21.	VEI	Village Electricity Infrastructure
22.	DDG	Decentralized Distributed Generation
23.	BPL	Below Poverty Line
24.	BLY	Bachat Lamp Yojana
25.	ECBC	Energy Conservation Building Code
26.	SME	Small and Medium Enterprises
27.	SECF	State Energy Conservation Fund
28.	JSTC	Joint Standing Technical Committee
29.	WAPCOS	Water & Power Consultancy Services
30.	CERC	Central Electricity Regulatory Commission
31.	APTEL	Appellate Tribunal for Electricity
32.	NTECL	NTPC Tamil Nadu Energy Company Ltd.
33.	RGPPL	Ratnagiri Gas and Power Private Ltd.
34.	APCPL	Aravali Power Company Private Ltd.
35.	NVVN	NTPC Vidyut Vyapar Nigam Ltd.
36.	NESCL	NTPC Electric Supply Company Ltd.
37.	NHL	NTPC Hydro Ltd.
38.	GEB	Gujarat Electricity Board

39.	TELK	Transformers and Electricals Kerala Ltd.
40.	IWAI	Inland Waterways Authority of India
41.	KEPCO	Kyushu Electric Power Company
42.	POWERGRID	Power Grid Corporation of India Limited
43.	ULDC	Unified Load Despatch and Communication
44.	PFCCL	PFC CONSULTING LIMITED
45.	RECPDCL	REC Power Distribution Company Ltd.
46.	REC TPCL	REC Transmission Projects Company Ltd.
47.	JBIC	Japan Bank for International Cooperation
48.	ADB	Asian Development Bank
49.	CDM	Clean Development Mechanism

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1. MINISTRY OF POWER – ORGANIZATION AND FUNCTIONS

The Ministry of Power started functioning independently with effect from 2nd July, 1992. Earlier it was known as the Ministry of Energy comprising the Departments of Power, Coal and Non-Conventional Energy Sources.

Electricity is a concurrent subject at entry number 38 in the List III of the Seventh Schedule of the Constitution of India. The Ministry of Power is primarily responsible for the development of electrical energy in the country. The Ministry is concerned with perspective planning, policy formulation, processing of projects for investment decisions, monitoring of the implementation of power projects, training and manpower development and the administration and enactment of legislation in regard to thermal, hydro power generation, transmission and distribution. The Ministry has developed its website www.powermin.nic.in.

The Ministry of Power is mainly responsible for evolving general policy in the field of energy. The main items of work dealt with by the Ministry of Power are as given below:

- General Policy in the electric power sector and issues relating to energy policy and coordination thereof. (Details of short, medium and long-term policies in terms of formulation, acceptance, implementation and review of such policies, cutting across sectors, fuels, regions and intra-country and inter-country flows);

- All matters relating to hydro-electric power (except small/mini/micro hydel projects of and below 25 MW capacity) and thermal power and transmission & distribution system network;

- Research, development and technical assistance relating to hydro-electric and thermal power, transmission system network and distribution systems in the States/UTs;

- Administration of the Electricity Act, 2003, (36 of 2003), the Energy Conservation Act, 2001 (52 of 2001), the Damodar Valley Corporation Act, 1948 (14 of 1948) and Bhakra Beas Management Board as provided in the Punjab Reorganisation Act, 1966 (31 of 1966);

- All matters relating to Central Electricity Authority, Central Electricity Board and Central Electricity Regulatory Commission;

- Rural Electrification;

- Power schemes and issues relating to power supply/development schemes/programmes/ decentralized and distributed generation in the States and Union Territories;

- Matters relating to the following Undertakings /Organizations:

    a. Damodar Valley Corporation;

    b. Bhakra Beas Management Board (except matters relating to irrigation);

    c. NTPC Limited;

    d. National Hydroelectric Power Corporation Limited;

    e. Rural Electrification Corporation Limited;

    f. North Eastern Electric Power Corporation Limited;

    g. Power Grid Corporation of India Limited;

    h. Power Finance Corporation Limited;

    i. Tehri Hydro Development Corporation;

    j. Satluj Jal Vidyut Nigam Limited;

    k. Central Power Research Institute;

    l. National Power Training Institute;

    m. Bureau of Energy Efficiency;

- All matters concerning energy conservation and energy efficiency pertaining to Power Sector.

ORGANISATIONS UNDER THE MINISTRY OF POWER

In all technical and economic matters, Ministry of Power is assisted by the Central Electricity Authority (CEA), constituted under section 3 (1) of the Electricity (Supply) Act, 1948 which has now been replaced by Electricity Act, 2003. The CEA advises the Ministry of Power on all technical and economic matters.

The construction and operation of generation and transmission projects in the Central Sector are entrusted to Central Sector Power Corporations, viz. The NTPC Limited, the National Hydro-Electric Power Corporation (NHPC), the North-Eastern Electric Power Corporation (NEEPCO) and the Power Grid Corporation of India Limited (PGCIL). The PGCIL is responsible for all the existing and future transmission projects in the Central Sector and also for the formation of the National Power Grid. Two Joint Venture Power Corporations namely, Satluj Jal Vidyut Nigam Ltd. (SJVNL) and Tehri Hydro Development Corporation (THDC) are responsible for the execution of the Satluj Jal Vidyut Nigam Ltd. (SJVNL) in Himachal Pradesh and projects of the Tehri Hydro Power Complex in Uttarakhand respectively. Statutory bodies i.e., Damodar Valley Corporation (DVC) and Bhakra Beas Management Board (BBMB) are also under the administrative control of the Ministry of Power. Programmes of rural electrification are provided financial assistance by the Rural Electrification Corporation (REC) under the Ministry of Power. The Power Finance Corporation (PFC) provides term-finance to projects in the power sector.

Further, the Autonomous Bodies (Societies) i.e. Central Power Research Institute (CPRI), the National Power Training Institute (NPTI) and the Bureau of Energy Efficiency (BEE) are also under the administrative control of the Ministry of Power.

2. CAPACITY ADDITION PROGRAMME IN THE XI PLAN

The National Electricity Policy (NEP) stipulates power for all and annual per capita consumption of electricity to rise to 1000 units by 2012 This entails provision of adequate reliable power, at affordable cost with access to all citizens. Electricity is in the Concurrent List in the Constitution and the primary responsibility of structuring its availability and distribution is that of the States. However, both the Centre and the States have to play a decisive and positive role. While shortages are presently being experienced by each region, it is much more acute in the case of some regions/States.

The all India installed power generation capacity as on 31.03.2009 was 147965 MW comprising of 93725 MW thermal, 36878 MW hydro, 4120 MW nuclear and 13242 MW R.E.S. The Central Sector's share in generation has gradually increased from 12% in 1979 to 33% as on 31.3.2009. On the other hand the share of the State Sector has declined from 82.5% to 51% while the share of Private Sector has gone up from 5.2% to 16% during the same period.

To fulfill the objectives of the NEP, a capacity addition of 78,700 MW has been proposed for the 11th Plan. This capacity addition is expected to provide a growth of 9.5% to the power sector. The breakup of the capacity addition target is given as under:

(in MW)

Source	Central	State	Private	Total	Share(%)
Hydro	8654	3482	3491	15627	19.9
Thermal	24840	23301	11552	59693	75.8
Nuclear	3380	--	--	3380	4.3
Total	36874	26783	15043	78700	100
Share (%)	46.9	34	19.1	100	

Monitoring of Capacity Addition Programme

In order to ensure that the power projects cleared are executed in time, the Ministry of Power has adopted a system of close monitoring of all ongoing projects. The monitoring is carried out at three broad levels viz. by the Central Electricity Authority; by the Ministry of Power; and through the Power Project Monitoring Panel (PPMP).

Monitoring by the Central Electricity Authority

The Central Electricity Authority (CEA) has a nodal officer associated with each on going project which continuously monitors the progress at site through frequent visits and continuous interaction. The respective nodal officer is responsible for submitting a report on the progress of each of the on going power project on monthly basis highlighting the critical areas where corrective actions are required. The Chairperson, CEA reviews monthly progress of the ongoing projects with the nodal officers. The CEA also holds quarterly review meeting with the developers and other stakeholders.

Monitoring by the Ministry of Power

Regular Quarterly Progress Reviews (QPRs) with CEA and the nodal officers of the projects are held by the Ministry of Power to review the critical milestones associated with each on-going project. QPRs with the leading equipment manufacturers, especially BHEL are organized to review the critical supplies to the projects. QPRs are also organized separately for each CPSU to review the status of the Central Sector projects. For State Sector Projects periodical reviews are organized on regional basis.

Power Project Monitoring Panel (PPMP)

As a follow up to the decision in the Conference of Chief Ministers' held on May 28th, 2007, the Ministry of Power has set up a "Power Project Monitoring Panel" (PPMP) for monitoring of Thermal and Hydro Generation Projects targeted for commissioning during the 11th Plan along with the associated transmission schemes. The PPMP at present comprises of five independent project monitoring consultants. Each consultant is given specific projects. The individual consultants make visits to the project sites and furnish their progress report which is compiled by the coordinating consultant and along with the Exception Report submitted to the Secretary. The progress of implementation of the projects is accordingly reviewed by the Ministry on the basis of the report received from the Monitoring Panel.

Performance Highlights

The Power Project Monitoring Panel comprising of five Independent Consultants has been made functional.

3. STATUS OF POWER SECTOR REFORMS

Electricity (Amendment) Act, 2007

The Electricity (Amendment) Act, 2007, amending certain provisions of the Electricity Act, 2003, has been enacted on 29th May, 2007 and brought into force w.e.f 15.6.2007. The main features of the Amendment Act are:

- Central Government, jointly with State Governments, to endeavour to provide access to electricity to all areas including villages and hamlets through rural electricity infrastructure and electrification of households.

- No License required for sale of electricity from captive units.
- Definition of theft expanded to cover use of tampered meters and use for unauthorized purpose.
- Theft made explicitly cognizable and non-bailable.
- Deletion of the provision for elimination of cross subsidies. The provision for reduction of cross subsidies would continue.

Operationalisation of open access:

Open access is one of the key features of Electricity Act, 2003 for making the electricity industry competitive. Open access in inter-State transmission is fully operational. To give a fresh impetus to implementation of open access over transmission lines of State Utilities and over the distribution networks, the Ministry of Power convened the Conference of the Chief Secretaries in April, 2007 and the Conference of Chief Ministers in May, 2007, in which open access were one of the agenda items. The Ministry also convened interaction with the Forum of Regulators (FOR) and the State Power Secretaries on 5.11.2007 exclusively on Operationalisation of open access at State level. The SERCs have resolved to actively operationalise open access. The Forum has also launched a website www.forumofregulators.org to display the open access charges and status of open access applications in various States.

Power exchanges

CERC has issued guidelines for setting up power exchanges. Two Power Exchanges i.e. Indian Energy Exchange and Power Exchange India Ltd. are functional. This action is expected to stabilize the market rate of surplus power.

Guidelines for procurement of electricity

In compliance with section 63 of the Electricity Act, 2003, the Central Government on January 19, 2005 had notified guidelines for procurement of power by Distribution Licensees through competitive bidding. On March 31, 2006, Central Government had issued the standard bid document containing Request For Qualification (RFQ), Request For Proposal (RFP) and model Power Purchase Agreement (PPA) for long term procurement of power from projects having specified site and location through tariff based competitive bidding. The Central Government has also issued Standard Bidding Document for Case-1 on April 2, 2009, where the location, technology, or fuel is not specified by the procurer.

Successful tariff based bidding for four Ultra Mega Power Project of 4000 MW each capacity has shown that competitive procurement of power leads to significant benefits to the consumers.

Reorganisation of the State Electricity Boards

Before enactment of the Electricity Act, 2003, various States had enacted State Electricity Reforms Acts, which provided for reorganization of their State Electricity Boards (SEB). Section 172 (a) of the Electricity Act, 2003 provides that the SEB shall be deemed to be the State Transmission Utility (STU) and a licensee under the provisions of the Act for a period of one year from the appointed date, i.e. 10th June, 2003. However a SEB can continue for some more time as agreed to mutually by State and Central Government.

So far, 14 states have reorganized their SEBs. 10 States namely, Orissa, Haryana, Andhra Pradesh, Karnataka, Uttar Pradesh, Uttarakhand, Rajasthan, Delhi, Gujarat and Madhya Pradesh have done so under their State Electricity Reforms Acts. Assam, Maharashtra, West Bengal (w.e.f. 1.4.2007), Chhattisgarh (w.e.f. 1.1.2009) have reorganized their SEBs under the provisions of the Electricity Act, 2003. The SEB of Assam presently continues to discharge the licensee function only for trading of electricity. Government of Tripura has corporatised its electricity department. The remaining states of Bihar, Jharkhand, Kerala, Punjab, Tamil Nadu, Meghalaya and Himachal Pradesh are in the process of formulating schemes for reorganisation of their SEBs.

4. RURAL ELECTRIFICATION PROGRAMME

Rural electrification has been regarded as a vital programme for the development of rural areas. In 1947, only 1500 villages were electrified in India. The per capita consumption was 14 units. The initial focus was on 'electrification for irrigation' to enhance agricultural produce which was reflected in the definition of village electrification accepted till 1997 - that "a village was deemed to be electrified if electricity is being used within its revenue area for any purpose whatsoever".

This definition of village electrification was reviewed in consultation with the State Governments and State Electricity Boards and following new definition was adopted after 1997:

"A village will be deemed to be electrified if-electricity is used in the inhabited locality within the revenue boundary of the village for any purpose whatsoever.

In February, 2004, the definition was made even more encompassing as also target specific. "A village would be declared electrified if :

(i) Basic infrastructure such as distribution transformer and distribution lines are provided-in the inhabited locality as well as the dalit basti/ hamlet where it exists. (For electrification through Non-conventional Energy Sources a distribution transformer may not be necessary).

(ii) Electricity is provided to public places like schools, panchayat offices, health centres, dispensaries, community centres, etc. and

(iii) The number of households electrified should be at least 10% of the total number of households in the village.

Government of India from time to time had launched the following programmes for electrification of rural areas in the country :

(i) Rural Electrification under Minimum Needs Programme(MNP)

This was started in 5th Five Year Plan with rural electrification as one of the components of the programme. Under this programme funds were provided as Central assistance to the states in the form of partly grants and partly loans. Since the inception of the MNP, the component that relates to rural electrification had been set off against the loan component of MNP. The areas covered under the MNP for the purposes of rural electrification were remote, far flung and difficult villages with low load potential. The scheme has been discontinued from 2004

onwards and has been subsequently merged with the new scheme, Rajiv Gandhi Grameen Vidyutikaran Yojana.

(ii) Pradhan Mantri Gramodaya Yojana (PMGY)

This scheme was launched in 2000-01 but rural electrification component was added in the next financial year 2001-02. It was being implemented by State Electricity Boards / Electricity Departments / Power Utilities which were designated as implementing agencies. Funds were being released by State Government to the implementing agencies. Funds under the programme were provided to the states as Additional Central Assistance which followed the normal-pattern of central assistance i.e.90% grant and 10% loans for special category states, 30% grant and 70% loan for other states. The scheme has been discontinued from 2005-06 onwards.

(iii) Kutir Jyoti Scheme

This programme was launched in 1988-89 to provide single point light connections to households of rural families below the poverty line including harijans and adivasi families. The allocation amongst the States was based on the size of rural population below the poverty line and level of village electrification in the State, with higher, weightage given to States having larger population of rural poor and low electrification levels. This scheme has been now merged with RGGVY.

(iv) Accelerated Rural Electrification Programme(AREP)

The scheme was introduced in the year 2003-04 under which interest subsidy of 4% was to be provided on loans availed by State Governments/Power Utilities from Financial Institutions for carrying out rural electrification programme. The assistance was limited to electrification of un-electrified villages, electrification of hamlets/dalit bastis/tribal villages and electrification of households in villages through both conventional and non-conventional sources of energy.

(v) Accelerated Electrification of One lakh villages and One crore households

Government of India in 2004-05 introduced a scheme "Accelerated Electrification of One lakh villages and One crore households" by merging the interest subsidy Scheme- AREP (Accelerated Rural Electrification Programme) and Kutir Jyoti Programme. Under this scheme there was a provision for providing 40% capital subsidy for rural electrification projects and the balance as loan Assistance on

soft terms from REC. The scheme has now been merged with the new scheme RGGVY.

(vi) Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)

This Scheme of Rural Electricity Infrastructure and Household Electrification has been introduced in April, 2005 for achieving the National Common Minimum Programme objective of providing access to electricity to all Rural Households over a period of four years. Rural Electrification Corporation (REC) is the nodal agency for the programme.

Under this scheme 90% Capital Subsidy will be provided for rural -electrification infrastructure through: -

(i) Creation of Rural Electricity Distribution Backbone (REDB) with one 33/11 kV (or 66/11 kV) substation in every block where it does not exist.

(ii) Creation of Village Electricity Infrastructure (VEl) for electrification of all un-electrified villages/habitations and provision of distribution transformer(s) of appropriate capacity in every village/habitation.

(iii) Decentralized Distributed Generation (DDG) and Supply System from conventional sources for Villages/Habitations where grid supply is not cost effective and where Ministry of Non-Conventional Energy Sources would not be providing electricity through their programme(s).

Balance 10% will be loan assistance on soft terms by REC.

The scheme, inter-alia, provides for funding of electrification of all un-electrified Below Poverty Line (BPL) households with 100% capital subsidy.

The scheme aims at electrifying all un-electrified villages over a period of four years and provide access to electricity to all rural households.

The Official website of RGGVY is rggvy.gov.in

Continuation of Rajiv Gandhi Grameen Vidyutikaran Yojana in Xi Plan Period

The continuation of VGGVY has been approved by the Government in the XI Plan for attaining the goal of providing access to electricity to all households, electrification of about 1.15 lakh un-electrified villages and electricity connections

to 2.34 crore BPL households. The approval has been accorded for capital subsidy of Rs. 28,000 crore during XI Plan period, at this stage.

Decentralized Distribution Generation (DDG) UNDER RGGVY

There is a provision of subsidy of Rs. 540 crore for DDG during XI Plan period which is included in capital subsidy of Rs. 28000 crore available for RGGVY in XI Plan period. The guidelines on DDG has been finalized and an order in this regard has been issued on 12.1.2009.

5. ENERGY CONSERVATION

Energy is an important input required for economic and social development. India ranks the world's sixth largest energy consumer accounting for about 3.5% of the world's total annual energy consumption, but, per capita consumption of energy is very low at 631kwh as compared to world consumption of 2873 kwh which needs to be increased to meet the goals of economic and social development. The installed power generation capacity has grown 94 times since independence and the total installed capacity of power generation in India has reached 1,40,627 MW (as on 5.01.2008). However, there is still a peak demand shortage of around 14.8% and an energy deficit of 8.4% in the country. To mitigate shortage of energy in general and electricity in particular, in addition to augmenting the capacity of energy supply, its efficient use and conservation is also essential. Keeping this in view and to maintain GDP growth of 8 to 10%, the government has initiated several policy measures to accelerate power generation and promote energy efficiency to meet power requirements.

The conventional sources of energy such as Thermal, Hydro and Nuclear are major sources of generation of electricity in India. Conventional sources of energy are valuable, because their formation takes millions of years whether it is oil or coal. Moreover, the conventional sources of energy are exhaustible. Energy prices may rise in the long run to reflect the relative scarcity and high cost of exploration and extraction. Hence, all initiation has to be taken to optimal use of the available resources so that they can continue for a long duration. Energy Efficiency improvements not only reduce the energy consumed per unit products and services made available but also improve energy security of the country to ensure sustained availability of energy resources at affordable price.

In order to institutionalize energy conservation efforts in the country, the Government has passed the Energy Conservation Act in 2001, and established the Bureau of Energy Efficiency, (BEE) under Ministry of Power, Government of India, on 1st March 2002 to promote the efficient use of energy and its conservation. Ministry of Power, through BEE, has initiated a number of energy efficiency initiatives through a range of measures, including the launch of Energy Conservation Building Code for large, new commercial buildings; the launch of energy labeling scheme for appliances; the initiation of process for the development of energy consumption norms for industrial sub sectors and an annual examination to certify energy auditors and energy managers. However, the effectiveness of this and other measures ultimately depends on their adoption by all energy users and consequently on their awareness of the energy savings opportunities around them. Keeping this in view, Ministry of Power has

initiated National Campaign on Energy Conservation and National Painting Competition on Energy Conservation for school children.

Schemes for Promoting Energy Efficiency in India during XI Plan

(a) Bachat Lamp Yojana (BLY) Scheme

Ministry of Power, through Bureau of Energy Efficiency (BEE), is coordinating voluntary efforts under this scheme to provide high-quality CFLs to domestic onsumers for Rs. 15 per lamp, i.e., at a rate comparable to that of incandescent bulbs. This would remove the barrier of high CFL price (which is currently Rs. 80 to 100 per lamp) which is constraining its penetration into households. It targets replacement of about 400 million incandescent bulbs in use in the country, leading to a possible reduction of about 6,000 MW of electricity demand, and a reduction of about 24 million tones of CO2 emissions every year. The price reduction would be achieved by utilizing the Clean Development Mechanism (CDM) of the Kyoto Protocol through which the CFL suppliers would earn Certified Emissions Reductions (CERs) on the basis of the CO2 emissions reductions that would occur because of the low electricity consumption of CFLs compared to incandescent bulbs.

Targeted Avoided Capacity during XI plan: 4000 MW

Avoided Investment in generation, transmission and distribution: Rs. 40,000 crores

(b) Standards and Labeling

The Bureau of Energy Efficiency, Ministry of Power has developed a scheme for energy efficiency labelling of equipment, under clause (a-d) of section 14 of the Energy Conservation Act, 2001 by the Central Government. Central Government, under the Energy Conservation Act, 2001 has powers to:

- Direct display of labels on specified appliances or equipment (14.d)

- Enforce minimum efficiency standards by prohibiting manufacture, sale, and import of products not meeting the minimum standards (14.c)

The scheme initiated as Standards and labeling of appliances and equipments. Under this program, the end use equipments and appliances are tested and certified as compliant to energy saving norms and standards by self certification by the manufacturers and based on their performance, they are given STAR rating, ranging from 1 to 5 in the increasing order of energy efficiency. The

scheme has been developed in collaboration with all the stakeholders, and aims at providing information on energy performance so that consumers can make informed decisions while purchasing appliances. Other than the objective of informed choices to consumers, this program also leads to energy saving, and thereby the cost saving potential of the marketed household and other equipment. Along-with the fact that this would impact the energy savings in the medium and long run, it will also position domestic industry to compete in such markets where norms for energy efficiency are mandatory.

(c) Energy Conservation Building Codes

The Energy Conservation Building Code (ECBC) was launched by the Govt. of India on 27th May 2007. This code is intended for new commercial buildings having a connected load of more than 500 kW and has initially been launched on voluntary basis.

The ECBC defines norms of energy performance and takes into consideration the climatic regions of the country where the building is located. The major components of the building which are being addressed through the code are:

(a) Envelope (walls, roofs, windows)
(b) Lighting systems
(c) HVAC System
(d) Water heating and pumping system
(e) Electrical distribution system.

Under section 14 (p) of the Energy Conservation Act,2001, Central Government has powers to prescribe ECBC for commercial buildings having a connected load of 500 KW or building complex for efficient use of energy and its conservation. The state governments have the flexibility to modify ECBC to suit local or regional needs. The central Government is also empowered to include such commercial buildings in the list of designated consumers under section 14(e). The state governments are empowered, under section 15(a) to amend the ECBC to suit regional / local climatic conditions and notify ECBC in the states.

Energy Conservation Building Code (ECBC) addresses the five climatic zones of the country (hot & dry, warm & humid, composite, temperate and cold).

Target of Avoided Capacity during XI plan: 500 MW

(d) Agricultural (Ag DSM) and Municipal (Mu DSM) Demand Side Management scheme

Ag DSM promises immense opportunity in reducing the overall power consumption, improving efficiencies of ground water extraction and reducing the subsidy burden of the states without sacrificing the service obligation to this sector. It also presents a promising prospect of targeting subsidy to the beneficiary farmer. In terms of electricity saved, given that most of the pilot projects as well as other studies project potential savings of 45-50% by mere replacement of inefficient pumps, the overall electricity savings (from 20 million pumps) is estimated at 62.1 billion units annually. A successful implementation model must address all the above variables and include all stakeholders. Provision of adequate incentive to farmers, given that they do not largely pay for electricity, is one of the major constraints in implementation of the scheme. Mu DSM also assumes significance given that the Municipalities consume 10% of energy overall and the cost input of energy is as high as 60% of the costs incurred by the municipalities. Energy costs constitute up to 60-70 % of an Indian municipality's total cost of pumping water to its residents. This financial constraint, coupled with inadequate or antiquated infrastructure and the lack of adequate managerial and technical capacities, greatly limits the ability of municipalities to improve water services while allowing inefficient usage of electricity. The electricity bills of the municipalities accounts for a significant part of its expenditure, given that an estimated 10% of electricity is consumed for urban water pumping. The cash starved municipalities are, therefore, unable to meet the service delivery standards that are fast growing urban area demands. The fact that efficient water delivery systems can translate into measurable energy savings due to reduced pumping requirements and improved performance is vastly unknown to most of the municipal authorities. Absence of enabling state level policies or regulatory interventions to implement water and energy efficiency measures to improve service and reduce costs, while on the other hand, reduce power consumption of the utility does not help matters.

(e) Energy Efficiency in Small and Medium Enterprises (SMEs) Scheme

The proposal seeks to promote Energy Efficiency in SMEs during the XI plan. Many energy-intensive SMEs clusters located in various states of the country have large potential for energy savings. In quantitative terms, there is little reliable information and data available with respect to their energy consumption and energy saving opportunities. Bureau of Energy Efficiency (BEE), in consultation with Designated State Agencies, will initiate diagnostic studies in 25 SME clusters in the country, including a cluster in North East Region, and develop cluster specific energy efficiency manuals/booklets, and other

documents to enhance energy conservation in SMEs. The scheme seeks to provide comprehensive energy efficiency solutions to 25 SME clusters by:

(a) Investment grade energy audits (bankable DPRs) for about 10 units in each of the 25 clusters.
b) Template for DPR preparation for the balance units in clusters, given their similarities.
c) Adequate provision of expertise for the local service providers to help reach out to the units.
d) Availability of financing by capacity building of banking personnel in matters like project appraisal of performance contracting.

(f) Strengthening Institutional Capacity of SDAs Scheme

State Designated Agencies (SDAs) are statutory bodies set up by states to implement energy conservation measures at state level. SDAs are expected to play three major roles namely:

As a Development Agency

As a Facilitator

As a Regulator/Enforcing body

The main emphasis of the scheme is to build capacity necessary to enable them to discharge regulatory, facilitative and enforcement functions under the Act, given that the institutional capacity is limited - both in terms of human and infrastructure resources. Most of the states have notified SDAs in the last 2 years. 30 States have designated their agencies so far. The scheme seeks to develop and implement Energy Conservation Action Plan (ECAP) based on a uniform template evolved for taking measures necessary to build institutional and human capacity, enabling the SDAs to implement energy efficiency programmes and undertake evaluation and monitoring of the energy conservation activities implemented in the state. ECAPs are being developed for various states and till now 15 states have already completed them.

(g) Contribution to State Energy Conservation Fund (SECF) Scheme

This scheme is intended to be submitted in FY 2009-10 after the above scheme for institutional strengthening takes off in states. SECF is a statutory requirement and is one of the key elements of the ECAP. A provision of Rs. 140 crores has been kept for this scheme. The risk factors and deliverables are similar to that of the above scheme. The scheme will provide contribution to SECF after it is

notified by states and will be pari-passu with the contribution made by the states. The effort will be to create a pool of financially sustainable activities for SDAs (like training programmes, fee for services, etc) which can augment the fund. The scheme is expected to commence in 2009-10.

(h) Institutional Strengthening of BEE

The proposed scheme seeks to provide resources allocated during the XI plan for:

(a) Setting up of Energy Conservation Information Center (ECIC) christened BEEnet as a web enabled online data collection and collation system. The project will provide the following facilitation functions that BEE/ SDAs are accredited with:

Web based online system that facilitates seamless filing of returns by the Designated Consumers as required under section 14 (k) and 14 (l) of the Energy Conservation Act. The notification of the same has been issued by Government in March, 2007 and the returns will be required to be filed before the State Designated Agencies from FY 2008-09.

(b) Infrastructure and resource augmentation of BEE; and

(c) Support to finance R& D in energy efficiency in IITs and Policy research from ASCI, IIP, etc.

(i) National Energy Conservation Awards, 2008

Ministry of Power had instituted National Energy Conservation Awards to motivate industrial units to conserve and use energy efficiency. This award scheme has been extended to building sector and zonal railways.

Verifiable Savings:

1. The Standards and Labelling (S&L) Programme have resulted in electricity saving of 1425.87 Million units, equivalent to avoided capacity generation of 260.4 MW.

2. The National Energy Conservation Award Programme has resulted in electricity saving of 1612.3 Million units, equivalent to avoided capacity generation of 236 MW. Apart from this, these programmes were able to reduce 2,205,623 MTOE of thermal energy.

3. The Energy Conservation & Demand Side Management (DSM) programmes at state level have resulted in electricity saving of 693 Million units, equivalent to avoided capacity generation of 126.7 MW. Apart from this, these programmes were able to reduce 68429 MTOE of thermal energy.

Potential Savings:

(a) The ECBC programme has stimulated construction of commercial buildings with a potential saving of about 316 MW on completion.

(b) Bachat Lamp Yojana (BLY) is to be submitted to the CDM Executive Board (CDM- EB), Bonn this year for approval after the first two pilots, which are currently under consideration of CDM-EB, are registered. By the end of the year, about 10-12 projects are expected to be rolled out in various states thereby adding an estimated 10 million CFLs in the household sector. The programme coverage will be increased to all the states in the year 2009-10. The scheme targets to replace 400 million incandescent bulbs leading to a possible reduction of 6000 MW and a reduction of about 24 million tonnes of CO2 emissions.

(c) The Agriculture and Municipal DSM programme as well as the SME programme will be taken up this year. 350 investment grade audits (IGAs) in Agriculture and Municipal sector and about 600 IGAs in SME sector will be completed in 2 years time. In the year 2008-09, IGAs with identified savings equivalent to about 1000 MW of avoided thermal capacity will be prepared.

6. PRIVATE SECTOR PARTICIPATION IN POWER SECTOR

POLICY ON PRIVATE SECTOR:

Ministry of Power recognizes the fact that private investors have important role to play in the power sector growth map of India. The stipulation under section 63 of Electricity Act 2003 has provided impetus to the participation of private sector in Generation and Transmission. Provision of open access and tariff framework under Tariff Policy has been put in place to create an enabling environment for the private investors.

RESPONSE FROM THE PRIVATE SECTOR:

The private investors have responded to the policy initiatives very positively. As a result, out of 20897 MW envisaged under private sector during 11th Plan, 19897 MW is actively progressing and 1000 MW is already added to the energy basket of the country. In addition, a large number of IPPs have applied for coal linkage totaling to nearly 1,87,000 MW. They are in simultaneous coordination with Sates for acquiring land, water and other inputs for setting up these projects.

Many utilities in States like Haryana, Punjab, Madhya Pradesh, Uttar Pradesh, Chhattisgarh, Maharashtra, Karnataka etc. have proposed to set up thermal power projects through tariff based competitive bidding (Case-II) route.

MAJOR POLICY INITIATIVES TO STREAMLINE THE PROCESS OF PROJECT DEVELOPMENT:

To accelerate capacity addition several policy initiatives have been undertaken by Ministry of Power. Some of the prominent policies which have boosted the private player's confidence in the sector are:

- National Electricity Policy.
- Ultra Mega Power Project Policy.
- Mega Power Policy.
- Tariff Policy.

Captive Power Plants:

The Electricity Act, 2003 does away with the requirement of approval / clearance of any authority for setting up a captive generating plant. The new law (as amended) also ensures non-discriminatory open access for transmission of electricity generated from a captive generating plant to the destination of its use, subject to availability of transmission capacity. The surcharge and cross subsidies are being progressively reduced in a manner as may be specified by the State Regulatory Commission. Any person setting up a captive power plant can also establish and maintain dedicated transmission lines.

Open access to transmission:

Under the new Electricity Act, 2003, non-discriminatory open access in Transmission has been envisaged. The move is intended to encourage competition amongst generators and distributors and trading in power from surplus to deficit regions.

Generating Company permitted to distribute electricity in Rural Areas:

Section 14 of the Electricity Act, 2003 allows any generator of electricity to distribute electricity in a rural area without the requirement of any license, subject to compliance with the measures as may be specified by the Central Electricity Authority under Section 53. Under the provisions of Section 4 of the Act, the Central Government, in consultation with the State Governments, has prepared and notified a National Policy, facilitating stand alone systems (including those based on renewable sources of energy and other non-conventional sources of energy) for rural areas.

Automatic approval for FDI:

Automatic approval (RBI route) for 100% foreign equity is permitted in generation, transmission, and distribution and trading in power sector without any upper ceiling on the quantum of investment.

Facilitating Financial Closure:

It is expected that with the reforms and restructuring of the power sector, the confidence of investors in power sector will improve and the precondition of payment security for investment funding would not be an impediment to attract investments. Encouraged with the reforms measures being undertaken, the

financial institutions have shown renewed interest in investing in the power sector for viable projects being set up by promoters with credible background.

An Inter-Institutional Group (IIG) comprising senior representatives from the financial institutions and the Ministry of Power has been set up for facilitating early financial closure of private power projects. This Group has been focusing closely on projects which could achieve early financial closure.

7. INTERNATIONAL COOPERATION

CO-OPERATION WITH NEIGHBOURING COUNTRIES IN HYDRO POWER

Development of water resources of the common rivers of India and neighbouring countries of Nepal, Bhutan and Myanmar for mutual benefits has been under consideration with these countries. There is regular exchange of electric power between India and the neighbouring countries for the supply of surplus power and meeting power requirements in the border areas. The details of cooperation with neighbouring countries are described below:

NEPAL

India has been assisting Nepal in the development of its hydro power potential and four HE schemes viz. Pokhra (1 MW), Trisuli (21 MW) Western Gandak (15 MW) and Devighat (14.1 MW) have been implemented in the past with financial and technical assistance from Govt. of India. Three major multipurpose projects in Nepal viz. Pancheshwar, Saptakosi and Karnali are presently under discussion at various levels as mutual benefits projects.

A Joint Committee on Water Resources (JCWR) headed by Water Resources Secretaries of India and Nepal has been constituted to act as an umbrella Committee to ensure implementation of existing agreements, understanding and also to oversee work of all technical and expert level Committees related with Water Resources. The Joint Ministerial Commission on Water Resources that is headed by the Minister of Water Resources of the 2 countries addresses bilateral co-operation between the 2 countries on Water Resources. In the 3rd meeting of the JCWR it was agreed to constitute Joint Standing Technical Committee (JSTC) to coordinate all existing committees and sub-committees.

MYANMAR

As per the MoU signed on 16.9.2008 between Department of Hydropower Implementation (DHPI), Govt. of Union of Myanmar (GoUM) & NHPC Limited, NHPC carried out the study and appraisal of the Detailed Feasibility Reports of 1200 MW Tamanthi HE Project (report prepared by M/s Colenco Power Engineering Ltd; Switzerland) & 642 MW Shwezaye HE Project (report prepared by M/s Kansai Electric Co. Japan) vis-a-vis master plan of Chindwin River Basin. Accordingly, NHPC has submitted 'Project Review Reports' suggesting need for carrying out additional studies/ investigations for preparation of DPRs for these projects to MEA/MoP and the GoUM on 19.12.2008.

BHUTAN

In Bhutan, Chukha HE Project (336 MW) implemented with Indian Financial and technical assistance and operating in an excellent manner is a shining example of cooperation between the two countries for mutual benefits. Kurichhu HE Project (60 MW) in Eastern Bhutan has also been implemented with Indian financial and technical assistance. Another project viz. Tala HE Project (1020 MW) has also been commissioned in 2006-07 by Tala Hydro-Electric Project Authority (THPA) comprising of Indian and Bhutanese Officers & Engineers. Design & Engineering consultancy for the project in respect of electro-mechanical and civil works had been rendered by Central Electricity Authority (CEA), Central Water Commission (CWC) and Water & Power Consultancy Services (WAPCOS). The project had been funded by India through grant and loan. PTC has been designated as nodal agency for transfer of Power from Tala Project to India. Surplus power from these projects is being imported by India.

An agreement has been signed between GoI and RGoB in July'07 for execution of the Punatsangchhu-I (1200 MW) project with Indian financial and technical assistance. The project is presently under execution.

TAJIKISTAN

NHPC has undertaken the work of Renovation, modernization and Uprating of Verzob Hydro Power Plant– I (2x3.67 MW) in Tajikistan. In this regard, a tripartite agreement has been signed between Ministry of External Affairs (MEA), NHPC Ltd. and Bharat Heavy Electrical Ltd (BHEL) on 12.08.2008 in MEA. The total cost of the assignment is Rs. 73.20 Crore, wherein NHPC has to execute the Civil & HM works for an amount of Rs. 23.95 Crore. The work is going as per schedule.

LIST OF ON-GOING EXTERNALLY AIDED POWER PROJECTS

World Bank

- Power System Development Project – III (PSDP-III) /PGCIL (USD 400 million)
- 4th PSDP / PGCIL (USD 1000 million)
- Rampur HEP / SJVNL (USD 400 million)

ADB

- Assam Power Sector Development Project / ASEB (USD 100 million)
- Powergrid Transmission (Sector) Project – III (USD 400 million)
- National Powergrid Development Investment Programme – IV (USD 600 million)
- M.P. Power Sector Investment Programme / MPPTCL and E.W.C. Discoms (USD 600 million)
- Uttarakhand Power Investment Programme / UVNL and PTCL (USD 300 million)
- Himachal Pradesh Clean Energy Development Programme / HPPCL (USD 800 million)
- JICA TPP / WBPDCL (JY 36771 million)
- R&M of Umiam HEP / MeSEB (JY 1964 million)
- North Karapura TPP/NTPC (JY15916 million)
- Rural Electrification Programme (M.P., A.P. and Maharashtra) REC (JY20629 million)
- EHV Transmission System in Haryana / REC (JY20902 million)
- Transmission System Modernization in Hyderabad / APTRANSCO (JY 23697 million)
- Bangalore Distribution Upgradation Project / BESCOM (JY10643 million)
- Maharashtra EHV Transmission System Project /MSETCL (JY 16749 million)

KfW (Germany)

- 2*800 MW Krishnapatnam TPP / APPDCL (Euro 281 million)
- PFC Energy Investment Programme / PFC / UJVNL (Euro 103.59 million)
- High Voltage Distribution System (HVDS) in A.P. / REC (Euro 70 million)
- High Voltage Distribution System (HVDS) in Haryana/ REC (Euro 70 million)
- are HEP / NEEPCO (Euro 80 million)

8. CENTRAL ELECTRICITY AUTHORITY

CONSTITUTION OF CEA

The Central Electricity Authority (CEA) is a statutory organisation originally constituted under Section 3(1) of the repealed Electricity (Supply) Act, 1948 since substituted by Section 70 of the Electricity Act, 2003. It was established as a part-time body in the year 1951 and made a full- time body in the year 1975.

As per section 70(3) of the Electricity Act, 2003, Authority shall consist of not more than 14 members (including its Chairperson) of whom not more than 8 are full-time members who are appointed by the Central Government from amongst the eminent engineers/executives having knowledge and experience in various areas of Power Sector.

CEA is headed by a Chairperson who oversees largely the development of Power Sector in the country. A Secretary, appointed by the Authority with the approval of the Central Government under section 72 of Electricity Act 2003, assists him in the discharge of CEA's statutory functions. The Secretary also assists the Chairperson in all matters pertaining to administration and technical matters including Human Resource Development and techno-economic appraisal & concurrence of power projects etc. Presently, there are six wings namely Planning, Hydro, Thermal, Grid Operation & Distribution, Economic & Commercial and Power System each headed by a Member of the Authority. Under each Member, there are technical Divisions each headed by an officer of the rank of Chief Engineer.

FUNCTIONS OF CEA

The functions and duties of the Authority are delineated under Section 73 of the Electricity Act, 2003. Besides, CEA has to discharge various other functions as well under Section 3, 7, 8, 53, 55 and 177 of the Act.

During the year 2008-09 (up to 30-11-2008), two Regulations viz. Regulations on 'Measures relating to Safety and Electricity Supply' and Regulations on 'Grid Standards for Operation & Maintenance of Transmission Lines' have been sent to MoP for vetting and approval. The Regulations on 'Technical Standards for Constructions of Electrical Plants and Electric Lines' and the Regulations on 'Safety Requirements for Construction, Operation & Maintenance of Electrical Plants and Electric Lines' are being finalized considering the comments/suggestions of various stakeholders in the Power Sector.

TECHNO-ECONOMIC APPRAISAL OF POWER DEVELOPMENT SCHEMES

The Central Electricity Authority, has been according Concurrence/ Appraisal to hydro generation schemes under the provisions of The Electricity Act, 2003.

9. CENTRAL ELECTRICITY REGULATORY COMMISSION

The Central Electricity Regulatory Commission (CERC) an independent statutory body with quasi-judicial powers, was constituted on 25th July, 1998 under the Electricity Regulatory Commission's Act, 1998 and has been continued under Electricity Act, 2003. The Commission consists of a Chairperson and four other Members including the Chairperson, CEA as the Ex-officio Member. The functions of CERC include inter alia

- tariff regulation – regulation of tariff of (i) generating companies owned or controlled by the Central Government, (ii) other generating companies having a composite scheme for generating and sale of electricity in more than one State, (iii) inter-state transmission of electricity
- regulation of inter-State transmission of electricity;
- granting licence for inter-state transmission and inter-State trading in electricity;
- adjudication of disputes;
- specifying Grid Code
- specifying and enforcing the standards with respect to quality, continuity and reliability of service by licensees;
- fixing trading margin in the inter-State trading of electricity, if considered, necessary;

The Commission also has advisory functions

(i) on formulation of National Electricity Policy and Tariff Policy;

(ii) promotion of competition, efficiency and economy in the activities of the electricity industry;

(iii) promotion of investment in electricity industry;

(iv) any other mater referred to the Central Commission by the Central Government.

10. APPELLATE TRIBUNAL FOR ELECTRICITY

The Appellate Tribunal for Electricity (APTEL) has been setup under the provisions of the Electricity Act, 2003 (section 110) with all India jurisdiction and it started functioning on 21st July, 2005. The Tribunal is presently located at 7th Floor, Core-4, SCOPE Complex, Lodhi Road, New Delhi.

The Tribunal has also been conferred jurisdiction under the Petroleum and Natural Gas Regulatory Board Act, 2006 to hear appeals against the orders/decisions of the Petroleum and Natural Gas Regulatory Board set up under the Act

APTEL hears and disposes of appeals filed against the orders of the Central Electricity Regulatory Commission, State Electricity Regulatory Commissions, Joint Commissions and Adjudicating Officers. Subsequent to the setting up of APTEL, the appeals pending in the High Courts of all States except the State of Jammu & Kashmir on the subject were also transferred to this Tribunal.

Proceedings are conducted in two Courts, each Court consisting of one Judicial Member and a Technical Member.

11. PUBLIC SECTOR UNDERTAKINGS

NTPC LIMITED

With a view to supplement the efforts of the "States" for quicker and greater capacity addition, Electricity (Supply) Act of 1948 was amended in 1975 to facilitate establishment of large regional power stations in the central sector. In the same year, National Thermal Power Corporation Ltd. Was incorporated in November, 1975 with the mandate for planning, promoting and organising integrated development of thermal power (including Associated Transmission Systems) in the country. In 2004, NTPC became a Listed Company with majority government ownership of 89.5% and became third largest by Market Capitalization of Listed Companies. The Company has acquired a new identity, "NTPC Limited" in November, 2005. This new identity signifies that the Company has diversified its operations beyond thermal power segment and has added new business activities by way of forward, backward and lateral integration, to be an integrated power company with presence across entire energy value chain. Today NTPC Ltd. is the leading power generating schedule 'A' Navratna Company of Government of India with a diversified portfolio. NTPC Ltd. has a vision to become **"A World class integrated power major, powering India's growth, with increasing global presence".** The total approved investment of the Company as on 31.03.2009 stands at Rs. 145309.46 crores.

Presently, NTPC has to its credit coal based thermal power stations at 15 locations and gas/ liquid fuel based combined cycle power stations at 7 locations. The commissioned capacity of these NTPC owned stations is 27,850 MW. In addition to this, 2,294 MW generation capacity has been acquired/ setup by NTPC under Joint Ventures at 4 locations. **Thus total present installed generation capacity of NTPC is 30,144 MW as on 31.03.2009**

NTPC STATIONS & GENERATION PERFORMANCE

As on 31.03.2009, a total capacity of 30144 MW is under operation at various NTPC stations. This comprises 35 units of 200/210 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhyachal, Dadri, Unchahar, Kahalgaon, and Badarpur, 31 units of 500 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhaychal, Rihand, Kahalgaon, Talcher-Kaniha Simhadri and Sipat, 6 units of 110 MW at Tanda and Talcher, 4 units of 60 MW at Talcher, 3 units of 95 MW at Badarpur and 22 Gas Turbines and 10 Steam Turbines at Anta, Auraiya, Kawas, Dadri, Jhanor Gandhar, Kayamkulam and Faridabad combined cycle power plants and 814 MW Captive Power Plants at Durgapur (2x60), Rourkela (2x60) and Bhilai (1x14 +2x30+2x250), under Joint Ventures with SAIL and 1480 MW

(4x240+2x260 MW) Ratnagiri Gas and Power Private Limited under Joint Venture with GAIL and others.

NTPC's Foray into Nuclear Power Generation

NTPC has set a target for itself of commissioning a 2000 MW Nuclear Power Plant in the twelfth plan period. NTPC Board has accorded its "in-principle approval" for entering into business of nuclear power generation subject to approval of GOI under Atomic Energy Act 1962. Subsequently, Ministry of Power, GOI has conveyed on 06.02.2007 its approval for amendment of Object Clause of Memorandum of Association (MOA) of NTPC for setting up 2000 MW Nuclear Power Plant. An MOU has been signed between NPCIL and NTPC on 14.02.09 to form the joint venture company (with 51% stake of NPCIL and 49% stake of NTPC) for establishing nuclear power projects. Joint venture agreement is under finalization.

Joint Ventures

NTPC-SAIL Power Company Private Ltd. (NSPCL)

NTPC-SAIL Power Company Private Limited (NSPCL), a Joint Venture of NTPC and SAIL on 50:50 basis, incorporated on 16.03.2001 (BESCL incorporated in March 2002 was also merged with the company w.e.f 05.09.2006) owns, operates and maintains Captive Power Plants of SAIL located at Bhilai, Durgapur and Rourkela. NSPCL has also implemented 500 MW Bhilai Expansion Power Project (2x250 MW) primarily for meeting 280 MW captive power requirement of Bhilai Steel Plant and other units of SAIL. Balance surplus capacity of 220 MW has been allocated to Chhattisgarh State Electricity Board (CSEB) – 50 MW, UT Daman & Diu – 70 MW and UT Dadra & Nagar Haveli – 100 MW. First 250 MW Unit has been synchronized in April 2008 and the Second 250 MW Unit is synchronized in March 2009.

Total installed capacity under operation of NSPCL now is 814 MW (initially 314 MW), consisting Captive Power Plants of 574 MW (2x30+1x14+2x250 MW) located at Bhilai Steel Plant, 120 MW (2x60 MW) at Durgapur Steel Plant and 120 MW (2x60 MW) at Rourkela Steel Plant. During the year 2008-09, NSPCL achieved generation of 2389 Million Units. Provisional and un-audited Gross Income and Profit (after tax) of the company for the year 2008-09 are Rs. 580 crores and Rs. 33 crores respectively.

NTPC Alstom Power Services Ltd. (NASL)

NTPC Alstom Power Services Limited (NASL), a 50:50 joint venture between NTPC and Alstom Power Generation AG, was incorporated on 27.09.1999 for taking up Renovation & Modernisation (R&M) assignments of power plants in India and abroad. NASL is engaged in undertaking works of Renovation & Modernization of Power Plants in India for plant life extension, performance optimization and improvement of availability & efficiency. Provisional and unaudited Gross Income and Profit (after tax) of the company for the year 2008-09 are Rs. 58.9 crores and Rs. 4.1 crores respectively.

Utility Powertech Ltd. (UPL)

Utility Powertech Limited (UPL) (a 50:50 Joint Venture Company of NTPC and Reliance Energy), incorporated on 23.11.1995 to take up assignments of construction, erection and project management in power and other sectors in India and abroad is progressing satisfactorily.

PTC India Ltd.

Joint Venture company formed on 23.05.2003 for trading of power, has 8% equity contribution each from NTPC (Now NTPC equity stands at 5.28%), Power Grid Corporation of India Ltd., Power Finance Corporation and NHPC and the balance from Damodar Valley Corporation, Financial institutions, Banks and general public.

NTPC Tamil Nadu Energy Company Ltd. (NTECL)

NTPC and TNEB have formed a 50:50 Joint Venture Company under the name of NTPC Tamil Nadu Energy Company Limited (NTECL) on 23.05.2003. The company is setting up a coal-based power station of 1000 MW capacity at Vallur (Ennore), using Ennore port infrastructure facilities. Construction work at site is under progress. Bids for the Main Plant award for 500 MW Stage-I, Phase-II of Vallur have also been received in Sept. 08 and evaluation is under progress.

Ratnagiri Gas and Power Private Ltd. (RGPPL)

Ratnagiri Gas and Power Supply Pvt Ltd was formed on 08.07.2005 as a joint venture company between NTPC, GAIL, Maharashtra State Electricity Board and Indian Financial institutions with NTPC having a stake of 28.33% for taking over and operating Dabhol Power Project with LNG terminal. NTPC has invested Rs 500 Cr as 28.33% equity. NTPC's shareholding is to be revised to 32.88%. The project has begun operations and 1480 MW is already under operation.

Aravali Power Company Private Ltd. (APCPL)

Aravali Power Company Private Limited was formed on 21.12.2006 as a 50:25:25 joint venture company between NTPC, HPGCL (Haryana Power Generation Corporation Ltd., a Govt. of Haryana undertaking) and IPGCL (Indra Prastha Power Generation Company, Govt. of NCT of Delhi undertaking) to set up and operate a coal fired power plant namely Indira Gandhi Super Thermal Power Project of 1500 MW (3x500 MW), in Jhajjar District of Haryana. Construction activities at site are going on and Unit-I is expected to be ready during 2010-11. Project is linked to Commonwealth Games scheduled to be held in October 2010.

NTPC-SCCL Global Ventures Private Ltd.

NTPC-SCCL Global Ventures Private Limited has been incorporated on 31.07.2007 as a 50:50 joint venture Company with SCCL for jointly undertaking the Development & O&M of Coal Block(s) & Integrated Coal based Power Projects in India and Overseas.

Meja Urja Nigam Pvt. Ltd.

JV company with UPRVUN, with 50% NTPC equity, Meja Urja Nigam Pvt. Ltd. has been incorporated on 02.04.2008 for setting up 1320 MW (2x660 MW) power plant at Meja tehsil in Allahabad district, UP. Feasibility Report has been approved by the JV Board. Land has been acquired. Various clearances and tie-ups are under progress.

Nabinagar Power Generating Company Pvt. Ltd.

JV company with BSEB, with 50% NTPC equity, Nabinagar Power Generating Company Pvt. Ltd. has been incorporated on 09.09.2008 for setting up 1980 MW (3x660 MW) power plant at Nabinagar, Bihar. Feasibility report for the project is under preparation. Land acquisition activities have been initiated and various clearances and tie-ups are under progress. Site specific studies have commenced.

NTPC-BHEL Power Projects Pvt. Ltd.

JV company of NTPC and BHEL namely NTPC-BHEL Power Projects Pvt. Ltd. has been incorporated, with 50% NTPC equity, on 29.04.2008 to take up EPC and manufacturing of equipments for Power Projects and other infrastructure projects in India and abroad. Business plan for Phase-I for BOP has been prepared and approved by NBPPL board.

BF-NTPC Energy Systems Ltd.

JV company BF-NTPC Energy Systems Ltd. has been incorporated on 19.06.2008, with Bharat Forge Ltd. with 49% NTPC equity, to initially take up manufacture of castings, forgings, fittings and high pressure pipings required for Power and other industries, Balance of Plant (BOP) equipment, for the power sector and also to explore manufacturing of power equipments. Joint Business development group constituted. Appointment of consultant for preparing Business plan is under progress.

National Power Exchange Ltd.

Power Exchange – "National Power Exchange Limited" has been registered on 02.01.2009 to facilitate nation wide trading in all types of contracts for buying and selling all form of energy. 16.33% of Equity each, is held by , NTPC, NHPC and PFC and balance 50% Equity is held by TCS. CERC permission to set up the Power Exchange is under progress.

Subsidiary Companies

NTPC Vidyut Vyapar Nigam Ltd. (NVVN)

NTPC Vidyut Vyapar Nigam Ltd. (NVVN) is a wholly owned subsidiary of NTPC. The company was granted category "F" license in the year 2004-05, the highest category of license for power trading at that time. As per the CERC Regulations, 2009 dated 16th February, 2009, NVVN would be under now highest category "I'.

NTPC Electric Supply Company Ltd. (NESCL)

NTPC Electric Supply Company Limited (NESCL) is a wholly owned subsidiary of NTPC, formed on 21.08.2002. The business objectives of the company are to acquire, establish & operate Electricity Distribution Network in various circles/cities across India with a clear mission to create a role model in the electricity distribution business by setting new benchmarks. Further the company was also mandated to take up consultancy and other assignments in the area of Electrical Distribution Management system.

NTPC Hydro Ltd. (NHL)

NTPC has formed NTPC Hydro Ltd., a wholly owned subsidiary company with an objective to develop small and medium size Hydro Electric Power Projects up

to 250 MW capacities. Presently, Company is implementing two projects namely, Lata Tapovan Hydro Electric Project (171 MW capacity) in the state of Uttarakhand and Rammam Hydro Electric Project, Stage–III (120 MW capacity) in the states of West Bengal and Sikkim.

Kanti Bijlee Utpadan Nigam Ltd. (formerly known as Vaishali Power Generating Company Ltd.)

Kanti Bijlee Utpadan Nigam Ltd. (formerly known as Vaishali Power Generating Company Ltd.) with NTPC's equity articipation being 67.66%, was incorporated on 6th September, 2006 as a joint venture between NTPC and BSEB. Revival / R&M of existing 2x110 MW Units is under progress. Further, feasibility report of 500 MW expansion of the project is already prepared and various clearances and tie-ups are under process.

Bhartiya Rail Bijlee Company Ltd. - Joint Venture between NTPC & Railways

A subsidiary of NTPC under the name of "Bhartiya Rail Bijlee Company Ltd." was incorporated with Railways on 22.11.2007 with 74:26 equity contribution from NTPC Ltd. and Ministry of Railways, GoI respectively for setting up a 1000 MW (4x250 MW) coal based power plant at Nabinagar in Aurangabad district of Bihar. Major power from this project is to be supplied to Railways to meet the traction and nontraction power requirements of Railways.

Pipavav Power Development Company Ltd. (PPDCL)

An MOU was signed between NTPC, Gujarat Power Corporation Ltd. (GPCL) and Gujarat Electricity Board (GEB) on 20.02.2004 for development of a 1000 MW thermal power project at Pipavav in Joint Venture with GPCL. In view of Govt. of Gujarat's decision to develop the project with another strategic partner, the process has been initiated for settlement of dues of NTPC on GPCL and State Govt. of Gujarat and thereafter steps will be taken for winding up of PPDCL.

Business Development

Several Initiatives are being taken to develop business of the NTPC in both core as well as other related areas. Details of the same are as follows:

Joint Venture with ADB

An MOU was signed between NTPC and ADB on 23.07.07 for Establishment of Power Generation of about 500 MW through Renewable Energy Sources. Further, NTPC, ADB, GE Energy Financial Services, Kyushu Electric Power

Company Inc. and Brookfield Renewable Power Inc. have signed an MoU on 04.08.2008 to form a Joint Venture company for undertaking the renewable power generation activities. The JVA and business plan are being finalised.

Joint Venture with NPCIL for setting up 2x1000 MW Nuclear Power Project

An MOU has been signed between NPCIL and NTPC on 14.02.09 to form the joint venture company (with 51% stake of NPCIL and 49% stake of NTPC) for establishing nuclear power projects. Draft Joint Venture Agreement is being prepared for submission to NPCIL for its consideration.

Joint Venture with CIL

An MoU has been signed between NTPC and Coal India Limited on 15.03.2007 for formation of JVC(s) with Coal India Ltd. (CIL) for Development, Operation & Maintenance of Coal Block(s) & Integrated Power Project(s). Draft Joint Venture Agreement for development of Brahmini and Chichro Patsimal Coal Blocks is being finalized with CIL.

Acquisition of Stake in Coal Mines Abroad

Proposals for acquisitions of stake in coal mines in Indonesia and Mozambique, as received from Investment Bankers and coal mine owners are under review and discussion with the concerned parties.

SPV among CIL, SAIL, NMDC, RINL and NTPC

MOU has been signed on 31.08.2007, amongst NTPC, RINL, SAIL, NMDC and CIL for Securing metallurgical coal and thermal coal assets from overseas. Subsequently a JVA has been signed on 14.01.2009. Unincorporated SPV in the name of "International Coal Ventures Ltd" (ICVL) is exploring various opportunities in Australia, Mozambique, Canada, Indonesia and USA, etc for acquisition of stake in coking coal and thermal coal mines. Activities related to registration of the Joint venture company are under progress

Acquisition of stake in Transformers and Electricals Kerala Ltd. (TELK)

A Business Collaboration and Share Holder's Agreement has been signed with Govt. of Kerala and TELK to acquire around 44.6% stake of TELK, held by Govt. of Kerala. Most of the Conditions Precedents required to acquire the shares of TELK have been fulfilled. Dematerialization of Shares has been done.

MoU with Inland Waterways Authority of India (IWAI)

An MoU has been signed between NTPC and IWAI on 24.09.2008 for exploring the feasibility of transportation of imported coal to Farraka and Kahalgaon Projects.

MoU with HAL for preparation of a Detailed Project Report for "Repairs of Hot gas path components"

MoU with HAL for preparation of a detailed Project Report for "Repairs of Hot gas path components" has been signed on 06.01.2009.

MoU with NTPC, NHPC, POWERGRID, and DVC for incorporation of JVC for setting up an Online High Power Test Laboratory for short circuit testing in the country

MoU has been signed on 1st December, 2008 with NTPC, NHPC, POWERGRID and DVC for incorporation of JVC for setting up an Online High Power Test Laboratory for short circuit testing in the country. JVA has been signed on 08.04.09.

MOU with Kyushu Electric Power Company (KEPCO) Japan

MoU was signed on 19.02.07 to adopt best practices between NTPC & KEPCO. A visit by NTPC delegation was made to KEPCO Japan in the month of September 2008. The data related to the compact layout, civil design of structures and other issues relating to operation and maintenance were collected.

Overseas Business Initiative

NTPC is making consistent efforts to enter in overseas market in Middle East, Asia Pacific and African regions for consultancy business. During 2008-09, it has bagged seven orders which include orders from M/s Green Energy Consultancy, Dubai for review engineering of 132/11 kV GTS sub-stations, order from M/s Alghanim International General Trading and Contracting Co. (AIGT), Kuwait for providing experts supervision services for operation of 800 MW Az Zour open cycle gas based power plant in Kuwait. The representative office of NTPC in Dubai has been functioning since November 2006 for marketing of its services in Middle East region.

Sri Lanka :

Memorandum of Agreement between NTPC, Govt. of Sri Lanka (GOSL) and Ceylon Electricity Board (CEB) was signed in December'06 for setting up a 2x250 MW coal based power plant in Trincomalee region of Sri Lanka through a 50:50 Joint Venture Company (JVC) to be established between CEB and NTPC. Muttur-East (Site no. 5) was identified as a suitable site for setting up the power project subject to techno-economic feasibility. NTPC has been appointed as the consultant for preparation of Feasibility Report for the proposed power plant. For the purpose of preparation of FR, activities for award of Site specific studies as well as EIA studies are under progress. The Joint Venture Agreement (JVA) and the Definitive agreements are under finalization between NTPC & CEB.

Nigeria :

MOU for Energy Cooperation was signed between NTPC and Ministry of Energy, Federal Govt. of Nigeria (FGN) in May, 2007. As per the MOU, NTPC shall setup one 500 MW coal based and one 700 MW gas based power projects in Nigeria in lieu of long term supply of 3 MTPA of LNG to NTPC for its use in NTPC's Indian Power Stations. Pre-feasibility Report (Pre-FR) for setting up the proposed 500 MW coal based and 700 MW gas based power plants in Nigeria was submitted to Director (Power), Ministry of Energy (Power), Federal Government of Nigeria (FGN) on 11.06.2008. NTPC is following up with FGN and is in constant touch with Indian high commission at Nigeria on the matter.

ENVIRONMENT MANAGEMENT

NTPC is continuously pursuing the objective of its sustainable power development programme and has taken a number of initiatives towards preservation of environment by providing the required state-of-the-art pollution control systems, strict environment monitoring and judicious use of natural resources such as coal, gas, water and land. High efficiency Electro-static Precipitators (ESPs) with efficiency of the order of 99.9% or higher and advanced control systems have been provided in all coal based plants to keep Suspended Particulate Matter (SPM) below the permissible level of 150 mg/Nm3. All coming up new plants are being provided with ESPs designed for outlet dust burden of below 100 mg/Nm3. Performance enhancement of ESPs operating over the years have been carried out by augmentation of ESP Fields, retrofit of Advanced ESP Controllers and adoption of sound O&M practices. Flue Gas Conditioning (FGC) system has also been provided at our old Units which is helping in reduction of SPM emissions below statutory limits as and when coal quality is deteriorating.

In the area of water management, the organization has implemented the concept of 3Rs - Reduce, Recycle & Reuse in its power stations. Provision of advanced treatment facilities in its Liquid Waste Treatment Plants (LWTP), installation of recycling systems for ash pond effluent called Ash Water Recirculation System (AWRS) and installation / operation of closed cycle condenser cooling water systems with higher Cycle of Concentration (COC) are some of the measures implemented in most of its stations. With implementation of improved cooling water treatment system, NTPC has achieved operating COC of 4.5 to 5.0 against design COC of 1.65 to 2.0 at gas based combined cycle power plants at Kawas and Gandhar. This has resulted in considerable reduction in fresh water intake of the order of 20 to 30% and reduction in effluent discharge from the power plants after effective treatment and monitoring.

Ash Pond Management is another area of concern in coal based Thermal Power Plants since poor quality coals having high ash contents are available for power generation in these stations. Ash dykes are engineered to ensure that all safety & environmental issues are addressed at design stage itself. Multi-lagoon ash ponds with provision of over flow Lagoons and garlanding arrangement for change over of ash slurry feed points have been provided for effective settlement of ash particles. Water sprinklers have been provided in the Ash Pond areas for control of fugitive dust. As a proactive measure and to effectively utilize bio-degradable solid wastes generated in NTPC project canteens and townships, a pilot scale Bio–methanation Plant has been set up at Faridabad in order to convert the waste into useful energy and bio-fertilizer.

In order to monitor key environmental parameters of stack emissions, ambient air and effluents continuously on real time basis, automation in monitoring techniques has been taken up in NTPC. 61 Nos. of Continuous Ambient Air Quality Monitoring System (AAQMS) are presently under final stage of commissioning at 20 stations located all over India.

NHPC LIMITED

NHPC Limited (earlier known as National Hydroelectric Power Corporation Ltd.) is a Schedule "A" Mini-Ratna Enterprise of the Government of India with an authorized share capital of Rs. 15,000 Crore and an investment base of more than Rs. 30,800 Crore. NHPC was set up in 1975 and has now become the largest organization for hydro power development in India, with capabilities to undertake all the activities from conceptualization to commissioning of Hydro Projects. The main objects of NHPC include, to plan, promote and organize an integrated and efficient development of power in all its aspects through Conventional and Non Conventional Sources in India and Abroad and transmission, distribution, trading and sale of power generated at stations. NHPC has signed an MoU with Rural Electrification Corporation Ltd. (REC) for formulation and implementation of projects under the programme of accelerated electrification of one lakh villages and one crore households. NHPC has also entered into an agreement with the Ministry of Rural Development for development and maintenance of rural access roads in six districts of Bihar under Pradhan Mantri Gram Sadak Yojana, a 100% centrally sponsored scheme. Works are in progress on these schemes.

PROJECTS UNDER OPERATION

NHPC has so far commissioned 13 hydroelectric projects with aggregate installed capacity of 5175 MW which includes 2 projects with total installed capacity of 1520 MW in Joint Venture with Govt. of Madhya Pradesh. The list of power stations under operation is as under:

S. No.	Name of Project	State	Installed Capacity (MW)
1	Bairasiul	Himachal Pradesh	180
2	Loktak	Manipur	105
3	Salal-I & II	Jammu & Kashmir	690
4	Tanakpur	Uttarakhand	120
5	Chamera-I	Himachal Pradesh	540
6	Uri-I	Jammu & Kashmir	480
7	Rangit	Sikkim	60
8	Chamera-II	Himachal Pradesh	300
9	Dhauliganga-I	Uttarakhand	280
10	Dulhasti	Jammu & Kashmir	390
11	Teesta-V	Sikkim	510
12	Indirasagar (JV)	Madhya Pradesh	1000
13	Omkareshwar (JV)	Madhya Pradesh	520
Total			5175

In addition to above, NHPC has commissioned 3 projects namely Kalpong (5.25 MW) in Andaman & Nicobar Islands, Sippi (4 MW) & Kambang (6 MW – 2 units out of 3 units commissioned so far) in Arunachal Pradesh on turnkey / deposit basis.

PROJECTS UNDER CONSTRUCTION

The Corporation is presently engaged in construction of 11 hydro electric projects with total capacity of 4622 MW. The list of these projects is as under

S. No.	Name of Project	State/ UT/ Country	Installed Capacity (MW)
1	Sewa – II	J&K	120
2	Teesta Low Dam -III	West Bengal	132
3	Uri –II	J&K	240
4	Teesta Low Dam - IV	West Bengal	160
5	Chamera – III	Himachal Pradesh	231
6	Nimoo Bazgo	J&K	45
7	Parbati – III	Himachal Pradesh	520
8	Parbati – II	Himachal Pradesh	800
9	Chutak	J&K	44
10	Subansiri Lower	Arunachal Pradesh	2000
11	Kishanganga	J&K	330
Total			4622

Proposed XIth Plan Capacity addition Programme NHPC had proposed to add 12 Projects with installed Capacity of 5322 MW during XIth Plan which includes projects of 520 MW in joint venture with Govt. of Madhya Pradesh (MP), Gist of projects is as under.

S. No.	Name of Project	State/ UT/ Country	Installed Capacity (MW)
1	Teesta-V	Sikkim	510
2	Parbati – II	Himchal Pradesh	800 (may likely to be commissioned in the XII plan).
3	Sewa – II	J&K	120
4	Teesta Low Dam - III	West Bengal	132
5	Subansiri Lower	Arunachal Pradesh	2000 (may likely to be commissioned in the XII plan).

6	Uri –II	J&K	240
7	Chamera – III	Himchal Pradesh	231
8	Parbati – III	Himchal Pradesh	520
9	Teesta Low Dam - IV	West Bengal	160
10	Nimoo Bazgo	J&K	45
11	Chutak	J&K	44
12	Omkareshwar (JV)	Madhya Pradesh	520
Total			5322

PROJECTS IN NORTH-EAST AND SIKKIM

In North-East, NHPC has already commissioned Loktak project (installed capacity of 105 MW) in Manipur, which is under operation. Subansiri Lower project (2000 MW) in Arunachal Pradesh is under active construction. 2 projects (including 1 project in joint venture) with total aggregate capacity of 3066 MW, are under Govt. Sanction / clearance. In addition, 4 projects with total aggregate capacity of 5100 MW are under FR / DPR stage. List of NHPC projects in North East is as follows:

S. No.	Name of Project	State	Installed Capacity (MW)
	Under Operation		
1	Loktak	Manipur	
	Under Construction		
1	Subansiri Lower	Arunachal Pradesh	
	Under Govt. Clearance / Sanction		
1	Loktak Downstream $$	Manipur	
2	Dibang	Arunachal Pradesh	
	Under FR/ DPR Preparation		
1	Tawang - I	Arunachal Pradesh	
2	Tawang – II	Arunachal Pradesh	
3	Subansiri Middle	Arunachal Pradesh	
4	Subansiri Upper	Arunachal Pradesh	
TOTAL			10271

$$ Joint Venture project between NHPC and Govt. of Manipur

CONSULTANCY SERVICE

NHPC is providing consultancy services in the various fields of hydro power viz. river basin studies, survey works, design and engineering, geological studies, geotechnical studies, hydraulic transients studies, hydrological studies, contract management, construction management, equipment planning, under ground construction, testing commissioning, operation & maintenance etc. to leading organizations of the country. The organizations to whom consultancy services are currently being given include A&N Administration, KRCL, MEA (for hydro projects in Union of Myanmar - Department of Hydropower, Govt. of Union of Myanmar, Implementation and Renovation & Modernization of Varzob-I Power Station in Tajikistan), Deptt. of Energy, Royal Govt. of Bhutan, NHDC, PIDB, PGCIL, WBREDA, WBPDCL, Athena Demwe Power Pvt. Ltd., JKPDC.

NHPC has earlier given consultancy services to BBMB, BSHPC, CEA, CSEB, CWC, DVC, Govt. of Arunachal Pradesh, Govt. of Bihar, Govt. of Goa, Govt. of Mizoram, Govt. of Nagaland, KPA, KSEB, LAHDC, Northern Railways, NTPC, REC, THPA, SJVNL, THDC, UJVNL, CES, ICICI, IFCI and Jaiprakash Hydro Power Ltd.

NHPC is registered with World Bank, Asian Development Bank, African Development Bank and Kuwait Fund for Arab Economic Development, Central Water Commission, and Consultancy Development Centre as a Consultant.

CO-OPERATION WITH NEIGHBOURING COUNTRIES IN HYDRO POWER

- Mangdechhu He Project (720 mw), Bhutan
- Chamkharchhu-I (670 mw) & Kuri-Gongri (1800 mw) H.E. Projects, Bhutan
- Varzob Hydro Power Plant – I (2 x 3.67 mw), Tajikistan
- Development of Hydropower Projects in Chindwin River Basin, Myanmar

POWER GRID CORPORATION OF INDIA LTD. (POWERGRID)

Power Grid Corporation of India Limited (POWERGRID) was incorporated on October 23, 1989 with an authorized share capital of Rs. 5,000 Crore (subsequently enhanced to Rs. 10,000 Crore in FY 2007-08) as a public limited company, wholly owned by the Government of India.

POWERGRID started functioning on management basis with effect from August, 1991 and it took over transmission assets from NTPC, NHPC, NEEPCO and other Central/Joint Sector Organizations during 1992-93 in a phased manner. In addition, it also took over the operation of existing Regional Load Despatch Centers from CEA in a phased manner, which have been upgraded with State of-the-art Unified Load Despatch and Communication (ULDC) schemes. According to its mandate, the Corporation, apart from providing transmission system for evacuation of central sector power, is also responsible for Establishment and Operation of Regional and National Power Grids to facilitate transfer of power within and across the regions with Reliability, Security and Economy on sound commercial principles.

ACHIEVEMENTS OF POWERGRID

POWERGRID, the Central Transmission Utility of the country, has been contributing significantly towards development of Indian power sector by undertaking coordinated development of power transmission network along with effective and transparent operation of regional grids and through continuous innovations in technical & managerial fields. Recognizing the contribution of Power GRID for over all development of power sector, the company's performance during the year 2007-2008 exceeded the performance parameters set for "Excellent" rating under Memorandum of understanding (MOU) signed with Ministry of power, Govt. of India, it has been conferred with **'Navratna'** status by Government of India in May, 2008 for more functional and financial autonomy. This reflects GoI's confidence in POWERGRID's capability and the ability to discharge enhanced responsibilities.

POWERGRID has achieved 'Excellent' rating under Memorandum of Understanding (MoU) signed with Ministry of Power, Government of India. The Company has also been chosen for the prestigious **"MoU Excellence Award"** for year 2006-07 for being amongst the top ten PSUs. POWERGRID is the only utility in Power Sector which has been chosen for this award. In fact, POWERGRID had received this prestigious Award in the past also on six occasions. Over the years, Company has been contributing significantly towards

development of power sector in India through continuous innovations in technical & managerial fields and by undertaking coordinated development of power transmission network along with effective and transparent operation of regional grids. Business Standard, a leading financial daily of the country, has chosen POWERGRID for the prestigious **"Star" Public Sector Company Award for 2007-08** for its game-changing role in the industry. POWERGRID has been conferred the **"The First DSIJ PSU Awards 2009"** by Dalal Street Group of Publications for being "one of the largest transmission utilities in the world." POWERGRID has also received **Three National Awards for meritorious performance** in the field of Transmission Sector for system availability and early completion of project for the year 2007-08. POWERGRID has also received **IEEMA Power Awards 2009** for "Excellence in Power Transmission" & **All India Organization of Employers Industrial Relations Award 2007-08.**

POWERGRID achieved unique distinction of being **First Power Utility and Second Company in the world** to get certified with **Integrated Management System (IMS) as per Publicly Available Specification, PAS 99:2006** integrating requirement of ISO 9001:2000 (Quality), ISO 14001:2004 (Environment) & OHSAS 18001:1999 (Occupational Health & Safety Management System) after extensive audit. During the FY 2007-08, POWERGRID achieved another milestone in its quest for excellence in quality management and got certified to **Social Accountability Standard, SA 8000:2001.**

GRID MANAGEMENT

Planned rapid expansion of regional grids and their integration to form National Grid poses great challenges in Grid Operation & Management. Modernization of Regional Load Despatch Centres along with State/ sub-State Load Despatch Centres and dedicated communication schemes in all the regions Northern, Southern, North-Eastern, Eastern and Western Regions have been successfully completed. These centres have become epitome of technological excellence in grid operation through three tier hierarchical system, a unique feature in grid operation in the world. These are world's one of the largest and most complex projects. These complex projects involving the state-of-the-art technology have resulted in real time monitoring and control of the grid to enhance safety, security, reliability and stability in all regions of the country. These facilities minimize grid disturbance/failure and facilitate quick grid restoration, in case of failure.

For overall co-ordination at national level, National Load Despatch Centre (NLDC) at Delhi with back up at Kolkata, has been commissioned in February, 09. NLDC is the apex body to ensure integrated operation of the national power system.

POWERGRID, in its efforts to ensure delivery of quality power and to maintain grid discipline, implemented "Availability Based Tariff (ABT)" in all the five regions. This has stabilized the frequency to the prescribed band as per IEGC, i.e. 49.0 Hz to 50.5 Hz for large percentage of time in all the five regions. ABT has also encouraged inter-State and inter-regional bilateral trading resulting in meeting higher demand from the existing sources. Merit order operation of generating units is gaining importance and many States are utilizing this facility to utilize the system commercially. There is overall improvement in Grid stability and partial blackouts have been drastically reduced, while it has been possible to save the grid from total blackouts.

With the development of various inter-regional transmission links, surplus power of Eastern Region is being gainfully utilized by the power deficit regions. POWERGRID was able to facilitate transfer of 43,000 MU of energy across the regions during the year 2007-08, an increase of about 13% compared to previous year (i.e. 38,000 MU during 2006-07). Growth of inter-regional power exchange has helped in meeting more demand in energy deficit regions besides achieving overall economy. In FY 2008-09, till March, 09 POWERGRID was able to facilitate transfer of 46,000 MU of energy across the regions.

Efforts made by POWERGRID in modernizing the Regional Load Despatch Centers (RLDCs), implementation of Availability Based Tariff (ABT), power transfer through interregional links and effective Operation & Maintenance measures using State-of-the-Art technologies have led to overall improvement in power supply position in all parts of the country. POWERGRIID could **successfully manage to arrest occurrence of any major grid disturbance in the country during last more than six years.** Minor grid disturbances in regional grids have also come down significantly.

RESEARCH & DEVELOPMENT

POWERGRID has undertaken several technological innovations aimed at conserving Right-of-Way (RoW), minimizing impact on natural resources & human habitat and cost effectiveness in evacuation of power from the future generation projects.

POWERGRID has been continuously upgrading and uprating its existing transmission lines to meet the short-term requirements. 400 kV EHV AC lines with triple/ quad conductor and/ or application of series compensation have been implemented to handle bulk transfer of power over short distances.

POWERGRID has taken initiative for development of major transmission highways using higher transmission voltage levels, i.e. 765 kV EHV AC and ±500 kV HVDC as a viable alternatives to achieve efficient utilisation of existing RoW and increased power transfer capability for transfer of bulk power over long distances.

POWER FINANCE CORPORATION LTD

OBJECTIVES & STATUS

The Power Finance Corporation Limited (PFC) incorporated in 1986 is a leading Power Sector Public Financial Institution and a Non-Banking Financial Company, providing fund and non fund based support for the development of the Indian Power Sector. Occupying a key position in the Government of India's plan for the power sector, PFC performs a major role in channelizing investment into the power sector and functions as a dedicated agency for its development. PFC is a Schedule-A, Navratna CPSE, under the administrative control of the Ministry of Power, with 89.78% shareholding of the Government of India.

The Corporate Headquarter of PFC is located at New Delhi. It has two Regional Offices at Chennai and Mumbai.

The main objectives to be pursued by PFC are enumerated in the Memorandum of Association of PFC and are as under:-

To Finance:

- Power Projects, in particular, Thermal and Hydro Projects.
- Power Transmission & Distribution works.
- Renovation & Modernization of power plants.
- System Improvement and Energy Conservation schemes.
- Maintenance and repair of capital equipment etc.
- Survey and investigation.
- Studies, schemes and experiments.
- Other energy sources and to
- Promote and organize consultancy services.

All the three main Divisions of PFC namely, Projects, Finance and ID&A are now "ISO 9001:2000 certified".

PFC had received MoU "Excellence Award" for 5th time for being amongst the Top 10 PSUs and consistently rated "Excellent" by Government of India based on MoU Performance since 1993-94 (Very Good in 2004-05).

PFC is a Schedule "A" PSE according to the DPE guidelines and accorded "Navratna" status on 22nd June 2007 by Government of India, keeping in view PFC's continued impeccable financial and operational performance and its contribution to the development of Indian Power Sector. This has been accomplished by PFC in less than a decade as it was earlier a Mini-Ratna Category-1 PSE in the year 1998. "Navratna" status provides PFC a greater flexibility and autonomy in terms of making investment and operational decisions. This status would help PFC further consolidate position in the Power Sector for meeting the ever growing needs of Indian Power Sector.

PFC has been providing financial assistance to State Power Utilities and Municipal Utilities, besides playing a catalytic role in bringing about overall improvement in the power sector performance. In line with the GoI policy initiatives, PFC has expanded its lending portfolio to cover the joint, central and private sector. The Corporation has widened its range of services / facilities by introducing bridge loan, leasing, supplier's credit assistance for studies / consultancies / trainings, bill discounting and rediscounting, working capital schemes, bonds, shares, guarantees services etc.

PFC's clients include State Electricity Boards and state departments engaged in the development of power projects (like irrigation department), state power utilities, central power utilities, state power departments, private power sector utilities (including independent power producers), joint sector power utilities, power equipment manufacturers and power utilities run by local municipalities. These clients are involved in various aspects of the generation, transmission and distribution and related activities in the power sector in India.

Funds by PFC are not pre-allocated to the states. PFC's funding criteria are based on borrower's credit worthiness and project viability.

PFC's primary activities consist of funding power projects and advisory services to the Indian power utilities. Consistent with its developmental role, PFC places emphasis on the Institutional Development of State Power Utilities. PFC also conducts training programs and workshops on various topics and critical issues affecting the Indian Power Sector.

PFC's ROLE IN THE POWER SECTOR

PFC in its role of financial institu tion funds most of the power utilities and helps them in completing their generation projects (Hydro as well as Thermal), transmission projects and system improvement projects in time. Distribution networks of number of towns in various states have been strengthened with PFC's financial assistance.

PFC has also been providing grant / interest free loans/soft loans to State Government / State Power Utilities and State Electricity Regulatory Commissions to carry out reforms related studies. Technical assistance from multilateral agencies is also channelized as grant to support further studies. PFC has been conducting workshops/seminars for dissemination of vital information concerning the improvements in the power sector and the emerging requirements, and also conducting training for power sector personnel.

PFC provides financing products and fee-based services to projects related to the power sector. PFC generally disburses funds either directly to a supplier or contractor of a project or by way of reimbursement to the borrowers against satisfactory proof of eligible expenditure on the project. In case of independent power projects, PFC disburses funds through a trust and retention account. PFC provides the following products and services for its clients:

- Rupee term loans, foreign currency loans, bridge loans, short term loans and reform-linked transitional loans;
- Bill discounting, equipment leasing, buyers' line of credit, loans to equipment manufacturers, line of credit for the import of coals;
- Debt refinancing;
- Letters of comfort; and non-fund based products such as guarantees.
- Consultancy & advisory services.

FINANCING OF POWER PROJECT

Besides the main activities as listed above, PFC is also financing installation of capacitors, Communication & Load Dispatch, Non-Conventional Energy Sources, Studies, Consultancy & Training and Computerization.

PFC is funding all types of power utilities including State Electricity Boards, State sector power utilities like state generation, transmission and distribution corporations/companies, State Power Development, State Electricity Departments and other State Departments associated with the development of power projects. Besides this PFC is financing the Central Sector Power Utilities, Joint Sector Utilities, Cooperative Sector Power Utilities, Municipal Utilities, Private Sector Utilities and Independent Power Producers. The major beneficiaries of PFC financing continue to be the state power utilities.

PFC is also complementing the **Accelerated Development & Reform Programme** (APDRP) of Govt. of India by providing funding support to the power utilities for the schemes identified under APDRP.

PFC CONSULTING LIMITED (PFCCL)

PFC has been providing Consultancy services to Power sector through its Consultancy Services Group (CSG) since October 1999. With a reforming power sector, new entities being operationalised, regulatory mechanism coming into operation and Electricity Act 2003 being implemented; leveraging the experience of its CSG Unit, PFC incorporated PFC Consulting Limited (PFCCL) as a wholly owned subsidiary of PFC on 25th March 2008 for providing consultancy services to Power Sector. The company commenced its business on 25th April 2008.

RURAL ELECTRIFICATION CORPORATION LIMITED (REC)

Rural Electrification Corporation Limited (REC) was incorporated as a company under the Companies Act, 1956 in the year 1969 with the main objective of financing rural electrification schemes in the country. The expanded mandate of REC includes financing of all projects including transmission and generation without any restriction of population, geographical location or size. REC is a Public Financial Institution under Section 4A of the Companies Act, 1956. REC is also registered as a Non-Banking Financial Company (NBFC) under Section 45 IA of the RBI Act, 1934. REC is presently a Schedule 'A' Enterprise with Navratna Status granted by Government of India.

REC has grown over the years to be a leading financial institution in power sector. Besides attending to its core objectives of financial schemes for extending and improving the rural electricity infrastructure, REC is presently funding large/mega generation projects and transmission and distribution projects, which are critical to the projected addition of installed capacity during the Tenth and Eleventh Plans.

REC is also the Nodal Agency for implementation of "Rajiv Gandhi Grameen Vidyutikaran Yojana – a scheme of Rural Electricity Infrastructure and Household Electrification" launched by the Government of India in April, 2005, for attainment of the National Common Minimum Programme (NCMP) goal of providing access to electricity to all households in five years

SUBSIDIARY COMPANIES

REC Power Distribution Company Ltd. (RECPDCL)

REC Power Distribution Company Ltd. (RECPDCL), which was established on 12th July, 2007, has been doing third party inspection of RGGVY, FRP works etc. of various state power utilities and providing consultancy in the field of power distribution.

REC Transmission Projects Company Ltd. (REC TPCL)

REC TPCL was incorporated on January 8, 2007 as a Public Limited Company. It received its Commencement of Business Certificate on February 5, 2007. The main object of REC TPCL is to promote, organize and carry on the business of consultancy services and/ or Project implementation in any field of activity relating to transmission & distribution of electricity in India or abroad.

INTERNATIONAL COOPERATION AND DEVELOPMENT (IC & D)

Japan Bank for International Cooperation (JBIC) - 2nd Line of Credit

REC has entered into a second Loan agreement with JBIC on 10th March 2008 for official Development Assistance (ODA) of 20.902 billion Yen for implementation of Transmission System Project by Haryana Vidyut Prasaran Nigam Ltd (HVPN). The objective of the project is to achieve stability in power supply and to meet the fast growing load demand by strengthening intra-state transmission systems in the State of Haryana, thereby contributing to local economic development and improvement of living standard of local residents in the State. The loan has been effectuated on 12th September 2008 and drawl of funds has commenced under the loan.

Indo German Bilateral Cooperation (KfW) - 2nd Line of Credit

REC has entered into a Second Loan Agreement with KfW on 16.03.09 for Official Development Assistance (ODA) of EUR 70 million & Financing Agreement for financial Contribution of EUR 500,000 under Energy Efficiency Programme-II for implementation of Energy Efficiency and System improvement Project of Uttar Haryana Bijli Vitran Nigam Ltd (UHBVN), Haryana. The objective of the project is to promote energy efficiency by reduction in distribution losses, reduction in failures in electricity distribution and to provide higher quality of services to predominantly agricultural consumers in UHBVN's distribution network.

Asian Development Bank (ADB)

ADB has approved a line of credit amounting to US $ 225 million to REC on 27.11.08 to finance transmission and distribution networks in rural sector. Further negotiations with ADB in availing the loan are under progress.

Clean Development Mechanism (CDM)

The 4 nos of Project Design Documents (PDDs) on HVDS Project of APSPDCL financed by REC under REC-KfW Energy Efficiency Programme-I have received Host Country Approval from MoEF in January 2009 for availing carbon credits under CDM and this approval is first of its kind in the Indian Power Distribution Sector.

NORTH EASTERN ELECTRIC POWER CORPORATION LTD.

North Eastern Electric Power Corporation Ltd. (NEEPCO) was constituted in 1976 under the Indian Companies Act, 1956 with the objective of developing the power potential of the North Eastern Region of the country through planned development of power generation projects, which in turn would effectively promote the development of the North Eastern Region. Since then NEEPCO has grown into one of the pioneer Public Sector Undertaking under the Ministry of Power, Govt. of India, with an authorized share capital of Rs. 3,500 Crores and having an installed capacity of 1,130 MW (755 MW hydro & 375 MW thermal), which meets more than 60% of the energy requirements of the N.E. Region. The main objectives of the Corporation are to add to the power generating capacity in the North Eastern Region by ensuring optimum utilization of commissioned generation projects, to generate adequate internal resources ensuring justifiable return on investment, to continue sustained efforts to obtain the receivables from State Electricity Boards/Departments, to execute and commission power projects, both hydro and thermal, within prescribed time frames, and to undertake long term feasibility studies for optimum development of hydro power resources of the North Eastern Region.

PROJECTS UNDER CONSTRUCTION

Kameng H.E. Project (600 MW), Arunachal Pradesh:

The Kameng H.E. Project is located in West Kameng district of Arunachal Pradesh. The Project is accessed through Tezpur town in the state of Assam. The objective of the project is to generate electricity by diverting the water of River Bichom, with augmentation of water from river Tenga during lean period, to *Surge Shaft work in Progress (Kameng HEP)* Tuirial H.E. Project (60 MW), Mizoram.

The project activities against Tuirial H.E. Project had been totally stopped w.e.f. 09.06.04 due to illegal demand of crop compensation on forest land and huge time & cost overrun on account of design changes. the power house situated on the right bank of River Kameng near Kimi village having installed capacity of 600 MW.

Pare H.E. Project (110 MW), Arunachal Pradesh:

The MOA was signed with the Government of Arunachal Pradesh on 21st September 2006 for execution of this project. The Foundation Stone of the Project was laid by Hon'ble Prime Minister, Govt. of India on 31.01.08. The CCEA clearance for implementation of the Project (110 MW) was accorded on 4th

December 2008 at an approved estimated cost of Rs. 573.99 crores, IDC and Finance Charges of Rs. 68.06 crores at June 2007 Price Level. The Project is scheduled to be commissioned in 44 months. The power from the project would be utilized within the North Eastern Region itself, using the existing 132 kV transmission system of Ranganadi Hydro Electric Project to meet the needs of Arunachal Pradesh, Assam and other North Eastern Region States.

POWER PROJECTS UNDER PIPELINE (HYDRO):

Tipaimukh H.E. (Multipurpose) Project (1500 MW), Manipur:

Located in the Churachandpur district of Manipur, the estimated firm power of the project is 434.44 MW and the annual design energy is 3,806 MU at 90% dependable year. In addition, the project would provide flood moderation in Barak Valley of Assam as secondary benefit.

Mawphu H.E. Project (90 MW), Meghalaya:

The Project is a run of the river scheme and located in the East Khasi Hills District of Meghalaya. The project with a proposed installed capacity of 90 MW (2 X 45 MW) would afford an annual energy generation of 346.82 MU in 90% dependable year on 95% plant availability basis. The cost of the project has been assessed at Rs.408.23 Crs. at March, 2007 Price Level including IDC of Rs.51.04 Crs. The Project is scheduled to be commissioned within 4½ years from the date of CCEA clearance.

POWER PROJECTS UNDER PIPELINE (THERMAL)

- Tripura Gas Based Power Project (104.74 MW), Tripura
- 500 MW Garo Hills Thermal Power Project, Meghalaya
- 240 MW West Khasi Hills Thermal Power Project, Meghalaya
- 250 MW Margherita Thermal Power Project, Assam

SATLUJ JAL VIDYUT NIGAM LIMITED

The Satluj Jal Vidyut Nigam Limited – SJVN (formerly Nathpa Jhakri Power Corporation Limited - NJPC) was incorporated on May 24, 1988 as a joint venture of the Government of India (GOI) and the Government of Himachal Pradesh (GOHP) to plan, investigate, organize, execute, operate and maintain Hydro-electric power projects in Satluj basin in the state of Himachal Pradesh and at any other place. The present authorized share capital of SJVN is Rs 4500 crores. The Nathpa Jhakri Hydro – Power Station – NJHPS (1500 MW) was the first project undertaken by SJVN for execution and its all six units of 250 MW each was commissioned and are under commercial operation since May18,2004.
Since its commissioning NJHEPS has generated total of 29597 MUs (Gross Energy Generation) upto March 31,2009 and SJVN has paid a total dividend of Rs. 891.59 Crores.

TEHRI HYDRO DEVELOPMENT CORPORATION LTD.

Tehri Hydro Development Corporation Ltd. (THDC), was incorporated as a Joint Venture Corporation of the Govt. of India (GOI) and Govt. of U.P.(GOUP), under the Companies Act, 1956, in July'1988. The main objectives of THDC are to develop, operate and maintain the Tehri Hydro Power Complex & other Hydro Projects and to provide quality, affordable and sustainable power with commitment to environment, ecology and social values.

THDC has an Authorized Share Capital of Rs. 4000 Cr. And the Paid up Capital is Rs. 3300.36 Cr. as on 31.03.09. The financial participation of GOI & GOUP in the implementation of the Projects is 75:25 for power component.

THDC has established their presence in the Power Sector and has successfully commissioned the 1000 MW Tehri Power Station, which was a distant dream due to various social and other issues associated with it. With the commissioning of Tehri Power Station, agricultural scenario in Uttar Pradesh has changed with the additional water available for irrigation from the Tehri Dam and the drinking water position in Delhi has also improved considerably.

DAMODAR VALLEY CORPORATION

Damodar Valley Corporation (DVC), one of the major infrastructural projects of independent India, came into being on the 7th July, 1948 by an Act of the Central Legislature.

DVC's ORGANISATIONAL STRUCTURE

The Corporation consists of the Chairman and two part-time Members appointed by the Central Govt. in consultation with the State Govts. of Jharkhand and West Bengal. The Chief Executive Officer is the Secretary who alongwith the Financial Adviser of the Corporation is appointed by the Central Govt. The Head of the Engineering Wing are the Director (Technical), Director (Operation), Director (System) and Director (Commercial). They are assisted by Sr. Chief Engineer/Chief Engineers who head the different groups in the engineering wings, viz. Generation, System, Projects, Civil Engineering etc.

FUNCTIONS OF DVC

- Promotion and operation of schemes for irrigation, water supply and drainage.

- Promotion and operation of schemes for the generation, transmission & distribution of electrical energy, both hydro electric and thermal.

- Promotion and operation of schemes for flood control in the Damodar river and its tributaries and the channels and navigation.

- Promotion of afforestation and control of soil erosion in the Damodar Valley.

- Promotion of public health, agricultural, industrial, economic and general well-being in the Damodar Valley and its area of operation.

However, in keeping with rapid industrialization in the Damodar Valley area, power generation, transmission and distribution gained priority for providing electricity to the core industries like steel, coal, railways and other industries/consumers directly and through respective State Electricity Boards.

TRANSMISSION PROJECTS

In order to distribute power to the various consumers at different load distribution centers from DVC Grid, a network of Transmission and Distribution lines has been established which is being re-inforced according to need. For evacuation of power generated through the Eleventh Plan Capacity Addition and also to meet the internal load growth, a master plan has been prepared in consultation with CEA both at 400 KV (for export) and at 220 KV (for internal

load) and action has been taken for implementation of new transmission infrastructure.

BHAKRA BEAS MANAGEMENT BOARD

Bhakra Management Board (BMB) was constituted under Section 79 of the Punjab Re-Organisation Act, 1966 for the administration, maintenance and operation of Bhakra Nangal Project with effect from Ist October, 1967. The Beas Project Works, on completion, were transferred by the Government of India from Beas Construction Board (BCB) to BMB as per Section 80 of the Act and Bhakra Management Board was renamed as Bhakra Beas Management Board (BBMB) with effect from 15.5.1976.

FUNCTIONS

Bhakra Beas Management Board is responsible for the administration, operation and maintenance of Bhakra Nangal Project, Beas Satluj Link Project and Pong Dam including Power Houses and a network of transmission lines and grid sub-stations.

The functions of Bhakra Beas Management Board are:

- To regulate the supply of waters from Bhakra- Nangal and Beas projects to the states of Punjab, Haryana and Rajasthan.

- To regulate supply of power generated at the Bhakra- Beas Power Houses to power utilities in charge of distribution of power in the participating States.

Keeping in view the technical expertise available with BBMB, the Government of India, through a notification in April, 1999 has also entrusted additional functions to Bhakra Beas Management Board, of providing and performing engineering and related technical and consultancy services in various fields of Hydro Electric Power and Irrigation Projects and to carry on all kinds of business related thereto either independently or as a joint venture with any Central/State/Public Sector Undertaking(s) or Establishment(s) under the administrative control of Ministry of Power or as a joint venture with any other agency/organization with the approval of Government of India.

The works being managed by BBMB are broadly grouped as three large multipurpose projects viz. Bhakra Nangal Project, Beas Project Unit-I (BSL Project) and Beas Project Unit-II (Pong Dam).

The Bhakra Nangal project comprises the Bhakra Dam, Bhakra Left Bank & Bhakra Right Bank Power Houses, Nangal Dam, Nangal Hydel Channel Ganguwal & Kotla Power Houses and associated transmission system. Bhakra Dam is a majestic monument across the river Satluj. It is a high straight gravity concrete Dam rising 225.55 metres above the deepest foundation and spanning the gorge with 518.16 metre length at the top. The Gobind Sagar Lake created by the Dam has 168.35 square kilometer area and a gross storage capacity of 9621 million cubic metres. The two power houses, one on the Left Bank and the other on the Right Bank, have a combined installed capacity of 1325 mega watt. The Ganguwal and Kotla Power Houses fed from Nangal Hydel Channel have an installed capacity of 153.73 mega watt. The Beas Project Unit – I (BSL Project) diverts Beas Water into the Satluj Basin, falling from a height of 320 metres and generating power at Dehar Power House having an installed capacity of 990 mega watt. This project comprises a diversion dam at Pandoh, 13.1 kilometre long Pandoh Baggi Tunnel, 11.8 kilometre long Sundernagar Hydel Channel, Balancing Reservoir at Sundernagar, 12.35 kilometre long Sundernagar Satluj Tunnel, 125 metre High Surge Shaft and Dehar Power House. The Beas Dam at Pong is earthfill (earth core, gravel shell) Dam 132.6 metre high with a gross storage capacity of 8570 million cubic metres. The Pong Power House (6x66 = 396 mega watt) is located in the stilling basin downstream of penstock tunnels.

IRRIGATION

At the time of partition of India, about 80% of the irrigated area of Punjab went to West Pakistan leaving India with very meagre irrigation resources. The mighty Bhakra- Nangal and Beas Projects changed the scenario and turned Northern India into Granary of the Nation. The Bhakra Nangal and Beas Projects have not only brought Green Revolution in the States of Punjab, Haryana and Rajasthan, but also White Revolution by way of record production of milk. The States of Punjab, Haryana and Rajasthan are being supplied on an average about 28 millon acre feet of water every year which irrigates 125 lac acres of land.

BUREAU OF ENERGY EFFICIENCY

The Government of India has enacted the Energy Conservation Act 2001, and for implementing various provisions in the EC Act, Bureau of Energy Efficiency (BEE) was operationalised from 1st March 2002. The EC Act provides a legal framework for energy efficiency initiatives in the country. The Act has mandatory and promotional in initiatives which broadly relates to Designated Consumers, Standards and Labeling programme for equipment and appliances and Energy Conservation Building Codes (ECBC) for new commercial buildings. The Bureau is spearheading the task of improving the energy efficiency in various sectors of the economy through regulatory and promotional mechanism. Bureau of Energy Efficiency co-ordinates with designated consumers, designated agencies and other organizations recognize, identify and utilize the existing resources and infrastructure, in performing the functions assigned to it under the EC Act.

Mission of BEE

The Mission of Bureau of Energy Efficiency (BEE) is to develop policy and strategies with a thrust on self-regulation and market principles, within the overall framework of the Energy Conservation Act (EC Act), 2001 with the primary objective of reducing energy intensity of the Indian economy. This will be achieved with active participation of all stakeholders, resulting in accelerated and sustained adoption of energy efficiency in all sectors.

Objectives and Strategies

The primary objective of BEE is to reduce energy intensity in the Indian economy. In order to translate the objectives into result-oriented action the broad strategies of BEE include:

- To coordinate policies and programmes on efficient use of energy and its conservation with the involvement of stakeholders.
- To plan, manage and implement energy conservation programmes as envisaged in the EC Act.
- To assume leadership and provide policy framework and direction to national energy efficiency and conservation efforts and programmes.
- To demonstrate energy efficiency delivery mechanisms, as envisaged in the EC Act, through private-public partnership.

- To establish systems and procedures to measure, monitor and verify energy efficiency results in individual sectors as well as at the national level.

- To leverage multi-lateral, bi-lateral and private sector support in implementation of programmes and projects on efficient use of energy and its conservation.

Functions of BEE

BEE co-ordinates with designated consumers, designated agencies and other organizations; recognizes, identifies and utilizes the existing resources and infrastructure, in performing the functions assigned to it under the EC Act. The EC Act provides for regulatory and promotional functions.

Regulatory functions

The major regulatory functions of BEE include:

- Develop minimum energy consumption standards and labelling for equipment and appliances.

- Develop specific energy conservation building codes.

- Activities focusing on designated consumers.

- Develop energy consumption norms.

- Certify energy managers and energy auditors.

- Accreditation of energy auditors.

- Define the manner and periodicity of mandatory energy audits.

- Develop reporting formats on energy consumption and action taken on the recommendations of the energy auditors.

Promotional functions

The major promotional functions of BEE include:

- Create awareness and disseminate information on energy efficiency and conservation.

- Arrange and organize training of personnel and specialists in the techniques for efficient use of energy and its conservation.
- Strengthen consultancy services.
- Promote research and development.
- Develop testing and certification procedures and promote testing facilities.
- Formulate and facilitate implementation of pilot projects and demonstration projects.
- Promote use of energy efficient processes, equipment, devices and systems.
- Take steps to encourage preferential treatment for use of energy efficient equipment or appliances.
- Promote innovative financing of energy efficiency Projects.
- Give financial assistance to institutions for promoting efficient use of energy and its conservation.
- Prepare educational curriculum on efficient use of energy and its conservation.
- Implement international co-operation programmes relating to efficient use of energy and its conservation.

CENTRAL POWER RESEARCH INSTITUTE

An autonomous Registered Society under the Ministry of Power, the Central Power Research Institute (CPRI) undertakes applied research in electric power engineering besides functioning as an independent Testing and Certification Authority for electrical equipment and components to ensure reliability and improve, innovate and develop new products. The laboratories are located at Bangalore, Bhopal, Hyderabad, Noida, Nagpur, Kolkota and Guwahati.

New Test Facility Created

Balance Ambient Calorimeter test facility to test Air Conditioners has been established which would help to label the room Air Conditioners under the BEE (Bureau of Energy Efficiency) labeling programme.

CAPITAL PROJECTS

National/International accreditation for CPRI laboratories

CPRI has obtained accreditation from NABL(INDIA), INTERTEK ASTA BEAB UK. CPRI laboratories have been accredited by Association of Short-Circuit Testing Authorities (ASTA), British Electro technical Approvals Board(BEAB), UK for testing of low Voltage and Medium Voltage (LV & MV) equipment. CPRI is having its own Observers for witnessing the testing under ASTA certification Scheme at CPRI laboratories. The project was completed in March 2009.

Augmentation & Modernization of CPRI Laboratories

Laboratories such as High Voltage, Short Circuit, High Power, Di-electric Materials and Mechanical Engineering Laboratory have been augmented. Modernisation of CPRI laboratories under rejuvenation programme involving activities such as interior works, additions and alteration under civil works have been carried out and completed.

Relocation of Regional Testing Laboratory(RTL) Muradnagar, to Noida

To cater to the Northern Indian utilities, the Regional Testing Laboratory was started in 1992 at Muradnagar (near Ghaziabad) UP. The RTL unit is now being shifted to NOIDA to provide better service to the utilities. To facilitate the shifting, the NOIDA authorities have allotted land at Sector- 62, Noida. The civil

works for the laboratory and office building are complete and shifting of the Laboratories from Muradnagar to Noida is in progress.

Development of a Centre of Excellence for simulation of power system and failure analysis

The limitations existing in the present Real Time Digital Simulation (RTDS) is being overcome by enhancing capabilities in terms of 3 phase buses, single phase switches, protection schemes, High Voltage Direct Current (HVDC) bipolar lines, interfacing cards etc.

RTDS racks and associated components were procured and commissioned. The project has been completed in January 2009. Advanced training for CPRI Officers at M/s Winnipeg, Canada has been completed.

Refurbishment of 1500 MVA Short-Circuit Generator

The rotor has been refurbished with new insulation, wedges and suitable packers for 1500 MVA short circuit generator.

NATIONAL POWER TRAINING INSTITUTE

INTRODUCTION

National Power Training Institute (NPTI), an ISO 9001 & ISO 14001 organization, was set up by the Government of India under the Ministry of Power to function as an Apex Body at the National Level for development of human resources for the power & energy sectors. Its Corporate Office is located at Faridabad (Haryana). It functions on an all India basis through its Regional Institutes located at Neyveli (Tamil Nadu), Durgapur (West Bengal), Badarpur (New Delhi), Nagpur (Maharashtra), and Guwahati (Assam). In addition, NPTI also has a Power Systems Training Institute (PSTI) & a Hot Line Training Centre (HLTC) at Bangalore (Karnataka) and a Centre for Advanced Management and Power Studies (CAMPS) at Faridabad (Haryana). To address the training requirement of hydro power sector, a specialized Hydro Power Training Centre is being set up at Nangal.

HI-TECH TRAINING TOOLS

NPTI has infrastructural facilities for conducting different courses on technical as well as management subjects covering the needs of thermal, hydro and nuclear power plants, transmission & distribution systems and other fields of power and allied energy sectors.

MANPOWER TRAINING

Several long-term and short-term training programs in the areas of Thermal, Hydro, Transmission & Distribution and Management etc. are being conducted in the various Institutes of NPTI. Besides imparting training in the areas of Thermal, Hydro and Transmission & Distribution covering nearly 10,000 power professionals of various levels annually, NPTI also conducts the following industry interfaced academic programs with the objective to create a pool of committed and competent power sector professionals equipped with appropriate technical skills:-

- One Year Post Graduate Diploma Course in Thermal Power Plant Engineering
- Four Year B.Tech./B.E Degree in Power Engineering
- Two Year MBA in Power Management
- One Year Post Diploma Course in Thermal Power Plant Engineering
- Six Months O&M of Transmission and Distribution System for Engineers
- Nine Months Post Graduate Diploma Course in Hydro Power Plant Engg.
- One Year Post Graduate Diploma in GIS and Remote Sensing

12. E-GOVERNANCE / INFORMATION TECHNOLOGY (IT) INITIATIVES

Computer Cell of the National Informatics Centre (NIC) extends ICT (Information & Communication Technology) services to the Ministry of Power in close coordination with IT cell of the Ministry. These services include provision of Network Backbone, efficient Network Services, Web Services, System Requirement Study, Design & Development of various Management Information Systems (MIS)/ Decision Support Systems (DSS) and related training for promoting e-Governance in the Ministry.

Major Projects/Activities during 2008-09

Several ICT projects/activities have been taken up and the same are implemented/ under different stages of development and implementation in the Ministry during this period . These are described below under different categories :

Web Sites
Web Site for Ministry Of Power

The web site for Ministry of Power (both in Hindi and English version) available at **http://powermin.gov.in** was further updated by uploading the contents on New Government policies and programmes, notifications, tenders, appointments, budget details, summary of monthly accounts of Principal Accounts Office, annual report apart from other regular reports related to distribution , generation, transmission & rural electrification.

Web Site for Rajiv Gandhi Grameen Vidyutikaran Yojana (RGGVY)

The web site for RGGVY (both in Hindi and English version) designed, developed and hosted by (NIC) was launched by Minister of Power on 28th May,2008 and is available at http://rggvy.gov.in.

The objective of implementation of the web site is to bring the static as well as updated information related to RGGVY into public domain to promote transparency as well as to provide a platform for active public feedback and participation to facilitate an efficient, effective and responsive administration/implementation of RGGVY.

The website provides useful information (appropriately structured with ease of navigation) regarding RGGVY since its inception in the 10th Plan and its

updated status in 11th plan. The information broadly includes details like RGGVY at a glance, definition of electrified village , RGGVY in 10th Plan, RGGVY in 11th Plan, Office Orders/O.M., franchisee system, milestones, monitoring, REC project offices , implementing agencies involved in RGGVY ,etc.

Apart from above, the website also provides important facility in the form of Public Forum wherein anyone can post his feedback (observations /comments / suggestions) about the scheme and its implementation. Implementing Agencies can in turn respond to these comments/suggestions (using their Login-Ids.) and the same can also be viewed by the public through this website.

Web Sites for Associated organizations

Necessary technical support was provided to associated organizations in Power Sector to host their web sites at NIC Internet Data Center. They are being given regular support to maintain /update their web sites on NIC Server using VPN account. The following web sites are being maintained:

S.No.	Website URL	Website Title
1	cea.nic.in	Central Electricity Authority
2	ntpctender.com	National Thermal Power Corp. Ltd. (with a provision of payment gateway for on line financial transaction using NIC Data Center Server)
3	ntpcindia.com	National Thermal Power Corp. Ltd.
4	nhpc.gov.in	National Hydroelectric Power Corp. Ltd.
5	thdc.gov.in	Tehri Hydro Dev. Corp. Ltd.
6	nreb.nic.in	Northern Regional Electricity Board
7	bee-india.nic.in	Bureau of Energy Efficiency
8	cercind.gov.in	Central Electricity Regulatory Commission
9	pfcindia.com	Power Finance Corporation Ltd.
10	neepco.gov.in	North Eastern Electric Power Corp. Ltd.
11	recindia.com	Rural Electricity Corporation Ltd.
12	npti.nic.in	National Power Training Institute
13	pmintpc.com	NTPC Power Management Institute

Web Portal for Right to Information Act, 2005

As per the directives of Deptt. Of Personnel & Training, a new web page for Right to Information Act, 2005 was designed , developed and incorporated in the official web site of the Ministry. The web page is available at http://powermin.gov.in/rti/rti_portal.htm.

Content Updation of Bharat Nirman Web Portal

MIS Reports for RGGVY under Bharat Nirman web portal are being updated fortnightly and are available at http://bharatnirman.gov.in under "Electrification" Option.

Web Portal for RGGVY under Flagship Programme of Planning Commission

RGGVY has been covered under flagship programme of Planning Commission. The input parameters to capture district level aggregated data and report formats to generate monitoring reports for RGGVY under this Programme were finalized, the required software module was developed and incorporated in the portal. The report enable to display/print the data from national level to block level. It is available at http://pcserver.nic.in/flagship and is being updated regularly.

IntraPower Portal

IntraPower portal available at http://intrapower.nic.in implemented in the Ministry with an objective to provide Government to company expand services to its employees was further enriched by incorporating new modules. Ministry officials access this portal using their authenticated Login- Ids. More officials were given authorization to access the portal. The portal facilitates on line access of circulars/ notices, telephone /e-mail directory, printing of forms (leave, LTC, medical, GPF, higher education, HBA, loans, tour, income tax, general stores etc.), generation/printing of pay slips etc.

Management Information Systems (MIS)/Decision Support Systems (DSS)

Web Based Management Information System (MIS) for RGGVY :

A Web Based Management Information System (MIS) for RGGVY has been designed, developed and implemented to help capture village level data on the coverage/ progress details of the scheme from the field-level offices of the implementing/executing agencies at remote locations and generate the required reports for monitoring and review at various levels. This system has also been integrated with RGGVY web site and is accessible only through authenticated Login-Ids. The designated users from districts, states, REC corporate office & implementing Agencies can logon to MIS and enter the desired data. Based on this data, reports on the following are being generated and placed in the public domain through this website.

- Villages Covered (DPR) – List and snapshots of villages targeted for electrification/intensive electrification under RGGVY .

- Villages Completed – List of the un-electrified/deelectrified villages (District/Block-wise) where the electrification works are completed under RGGVY.

- Progress Reports (State / District level DPR Coverage, Physical & Financial Progress based on District Level Aggregated Data).

- The reports enable to show data from National level to village level.

Web Based Milestones Monitoring System for RGGVY

Design, development & implementation of Web Based Milestones Monitoring System for RGGVY has been taken up . This system will be helpful to monitor physical and financial progress of projects under RGGVY implementation in 11th Plan . The major objectives of the desired system are to facilitate entry of milestones related data from remote locations and generation of the desired queries/reports for monitoring purpose depending on various milestones related criteria. The formats for quarterly data entry have been finalized and Data Entry module for first quarter has been designed and incorporated in web based MIS of RGGVY.

Hydropowernet Project

The details of hydro generation data of various Projects, Projects under construction, billing & collection , CEA data about PFR of Schemes, Hydro Electric (HE) schemes under survey and investigation, appraisal status of HE schemes were further entered in web based application of Hydropowernet Project. Hydro sector organizations and CEA are updating the data in this system from remote location using VPN account. The domain registration for corresponding domain http://hydropowernet.gov.in was renewed and necessary follow up was done with various organizations for data updation.

Thermopowernet Project

The implementation of web based system for monitoring of Thermal Power Projects was expedited further for data entry from remote location by the concerned thermal sector organizations. The system is available at http://thermopowernet.gov.in and is accessible by the concerned organizations using their respective Login-ids.

Centralized Pubilc Grievance Redressal and Monitoring System (CPGRAMS)

Necessary technical support was provided to Grievance cell to facilitate on line disposal of Grievances submitted by citizens to DARPG and to ministry/departments/ organizations using Web Based Centralized System for public grievance redressal and monitoring system (CPGRAMS). Launched by Department of Administrative Reform & Public Government

Comprehensive DDO (CompDDO) Package

A new package called compDDO was implemented to provide added features in composite payroll system (which was implemented earlier in the Ministry). Necessary modifications were carried out in the software to incorporate the recommendations of the sixth Central Pay Commission. The module for generation of pay slips was redesigned and linked to Intra power Portal to generate pay slips of the Ministry officials as per revised pay after incorporating the recommendations of the sixth Central Pay Commission.

RTI-MIS and RTI Annual Return Information System

The web based system for RTI-MIS implemented by NIC is being used to maintain all requests accompanied with specified fee as per provisions of Section 6(1) of the Act., Annual Report for the year 2007-08 has been posted on annual return information system.

ACC Vacancy Monitoring System (AVMS)

The data updation in web based application of AVMS implemented to maintain the record of the vacancies falling under the purview of ACC (either DPC based or Non DPC based) was continued and necessary support is being provided to Administration Section.

Video Conferencing (VC)

The Video Conferencing (VC) facility established in National Power Monitoring Center (NPMC) of the Ministry is being used to conduct meetings by Senior officers of the Ministry with necessary technical support of NIC cell. The use of VC to conduct meetings provides a cost effective solution in terms of saving time and money.

Establishment of Executive Video Conferencing System (EVCS)

Govt. had directed NIC to set up Executive Video Conferencing System (EVCS) based on NICNET on the desks of Secretaries to the Govt. of India and Chief Secretaries of State Governments and Union Territories for inter-departmental consultations as an effective mode of communication in order to carry forward e-governance as practical and effective tool. Accordingly, EVCS system was installed at the desk of the Secretary (Power).

ICT Infrastructure Development and Support

Network Services and LAN (Local Area Network) Management The Network Services in Shram Shakti Bhawan are provided from Network Operation Centre (NOC) established in NIC Cell, Ministry of Power. The proxy server, patch server and anti- virus server are being regularly monitored in the center.

Technical Support to National Power Monitoring Center (NPMC)

Necessary technical support is being provided to NPMC to facilitate capturing of real time operational data of generation and transmission system as well as off line data regarding progress/achievement of generation, capacity addition, implementation of various transmission and distribution systems including APDRP, financial aspects and Rural Electrifications schemes and generation of various monitoring reports through computer and network facilities established in NPMC of the Ministry.

Apart from above, regular technical support is being provided to Ministry officials in operating various applications, making presentations during meetings, maintaining computer systems and uploading of various system software.