MAP OF INDIA
SHOWING
INSTALLED GENERATING CAPACITY
STATEWISE
(Including allocated shares in Joint and Central Sector)
(Map not to scale)
ALL INDIA CAPACITY 1,14,739 MW
(As on 31.12.2004, Figures in MW)

ALL INDIA CAPACITY 1,14,739 MW
(As on 31.12.2004, Figures in MW)

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2004-05
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<td>21.18</td>
<td>Power Grid Corporation of India</td>
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<td>21.19</td>
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Chapter 1

PERFORMANCE HIGHLIGHTS

THE NATIONAL ELECTRICITY POLICY HAS BEEN NOTIFIED

The Policy aims at accelerated development of the power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders keeping in view availability of energy resources, technology available to exploit these resources, economics of generation using different resources, and energy security issues. Salient features of the policy are as under:

- Access to Electricity: Available for all households in next five years.
- Availability of Power: Demand to be fully met by 2012.
- Supply of Reliable and Quality Power of specified standards in an efficient manner and at reasonable rates.
- Per capita availability of electricity to be increased to over 1000 units by 2012.
- Minimum lifeline consumption of 1 unit/household/day as a merit good by year 2012.
- Financial Turnaround and Commercial Viability of Electricity Sector.
- Protection of consumers’ interests.

GENERATION PERFORMANCE

- Generation during the year 2004-05 is targeted at 586 BUs i.e. growth of +5% over previous year generation of 558 BUs.
  - In the current financial year during period Apr.- Feb., the actual generation was 534 BUs against 507 BUs generated during corresponding period of previous financial year i.e. growth rate of +5.5%.
- Overall PLF during the period Apr.- Feb. in current financial year has improved from 72% to 74.3%.
  - The PLF of Central stations has improved from 78.1% to 81.1%.

GENERATION DURING APR.- FEB. (BUs)

<table>
<thead>
<tr>
<th></th>
<th>2003-04</th>
<th>2004-05</th>
</tr>
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<tbody>
<tr>
<td>All India</td>
<td>507</td>
<td>534</td>
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<tr>
<td>Central Sector</td>
<td>206</td>
<td>218</td>
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</table>
PLF OF THERMAL STATIONS DURING APR. - FEB. (%)

<table>
<thead>
<tr>
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<th>Central Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>2003-04</td>
<td>72%</td>
<td>78.1%</td>
</tr>
<tr>
<td>2004-05</td>
<td>74.3%</td>
<td>81.1%</td>
</tr>
</tbody>
</table>

50,000 MW Hydro Electric Initiative:
- Preliminary Feasibility Reports of 162 H.E. schemes have been prepared aggregating to installed capacity of 47,970 MW. Out of these 162 schemes, 73 low tariff H.E. schemes having tariff upto Rs. 2.50/KwH with installed capacity of approx. 33000 MW have been identified for preparation of DPRs. The agencies to prepare the DPRs have largely been identified and the concerned State Governments requested to give their consent for preparation of DPRs.
- In principle approval of Planning Commission is being obtained to fund the schemes.

1,00,000 MW THERMAL INITIATIVE:
- 46 thermal projects with aggregate capacity of over 1,00,000 MW have been included. Out of this, 20 project sites totaling 50,000 MW have been identified.
- 13 pit head coal based plants totaling 36,000 MW identified and another 10 sites totaling 23,000 MW are being identified.
- 6 coal based coastal sites totaling 11,000 MW identified. Another 4 sites totaling 10,000 MW are being identified.
- One gas based project (3,000 MW) has been identified. Another 6 projects totaling 12,000 MW are being identified.
- 6 lignite projects totaling 5,000 MW are being identified.

FORMATION OF NATIONAL GRID:
- Inter-Regional transmission for optimal development of generation projects.
- Present Inter-Regional transfer capacity is 9,500 MW which is being enhanced to 30,000 MW by 2012.
- Inter-Regional transmission system has been planned with hybrid systems, consisting of HVDC Back to Back, HVDC Bipolar, Ultra-High Voltage AC (765 kV) & Extra High Voltage AC (400 kV lines)
- Matching Intra-Regional expansion of transmission system is also planned.

Accelerated Power Development & Reforms Programme (APDRP)
- Distribution Sector Reforms as its objectives.
- Investment component for distribution:
  - 25% of project cost as grant; 25% as loan; balance 50% counter part funding through PFC/REG or other resources.
- Under Investment Component Rs. 4,112 crore have been released for 499 projects totaling Rs.17,612 crore.
- Rs. 5,163 crore have been utilised.
- Incentive component for loss reduction:
  - 50% of actual cash loss reduction.
- Under Incentive Component Rs. 955.58 crore have been released to six states: Andhra Pradesh, Gujarat, Haryana, Maharashtra, Rajasthan and West Bengal.
- Incentive claims of some more states, M.P., Goa, Kerala, Assam, U.P, Gujarat and Tripura are under process.

REFORM STATUS:
- National Electricity Policy has been notified.
- All states have signed MoU & MoA.
- All the states have signed Tripartite Agreements.
- 24 States have constituted SERCs and 18 SERCs have issued tariff orders.
- 13 States unbundled/corporatised. Delhi & Orissa privatised their SEBs. Orissa turned around in 2003-04, Delhi on track.
- 100% feeder metering completed in 15 States and one State has achieved more than 90% metering.
- 100% consumer metering completed in 4 States and 10 States have achieved more than 90% metering.

PRIVATE SECTOR PARTICIPATION IN POWER SECTOR:
- Post Electricity Act 2003, Private sector interests have revived.
- ‘Inter Institutional Group (IIG) & Green Channel’ constituted to facilitate financial closure of Independent Power Producers (IPPs).
- 11 IPPs of more than 4,000 MW capacity have achieved financial closure during January-October, 04.
- 8 more IPPs for about 10,000 MW capacity are being monitored by IIG. These projects are being targeted for early financial closure.
- NTPC IPO oversubscribed 13.17 times. A range of new global investors including hedge funds and insurance companies have subscribed to NTPC IPO.
- IPO of PTC was oversubscribed about 7 times.

Rural Electricity Infrastructure and Household Electrification
In compliance of NCMP objective of meeting the target of providing power access to all rural households within five years, a new Scheme on Rural Electricity Infrastructure and Household Electrification has been approved by the Cabinet with an outlay of Rs. 5000 crore for remaining two years of the current Five Year Plan, that provides 90% capital subsidy for:

i) Creation of Rural Electrification Distribution backbone of 66/11 kV or 33/11 kV substations of adequate capacity in each block.
ii) Creation of Village Electricity Infrastructure network with Distribution Transformers for electrification of unelectrified villages and habitations.
iii) Decentralised distributed generation system, wherever the grid connected solutions are not feasible or are not cost effective.
iv) 100% subsidy for providing connection to households below poverty line (BPL).
Chapter - 2
MINISTRY OF POWER

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 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/minimicro hydel projects of and below 25 MW capacity) and thermal power and transmission & distribution systems in the States/UTs;
- 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;

Shri P.M. Sayeed, Minister of Power presenting the Tsunami Relief Cheque of Rs. 15 crore on behalf of Ministry of Power and its CPSUs to Dr. Manmohan Singh, Hon’ble Prime Minister of India. Shri R.V. Shahi, Secretary (Power) was also present.

Ministry of Power Annual Report 2004-05
Matters relating to the following Undertakings / Organizations:
- a. Damodar Valley Corporation;
- b. Bhakra Beas Management Board (except matters relating to irrigation);
- c. National Thermal Power Corporation Limited;
- d. National Hydro-lectric 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;

Matters relating to 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.

Badarpur Thermal Power Station Management Contract Cell (BMC), a subordinate office of this Ministry, is responsible for administering the Badarpur Thermal Power Station (BTPS) Management Contract between the Government of India and NTPC.

The construction and operation of generation and transmission projects in the Central Sector are entrusted to Central Sector Power Corporations, viz. The National Thermal Power Corporation (NTPC), 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 (SJVN) and Tehri Hydro Development Corporation (THDC) are responsible for the execution of the Satluj Jal Vidyut Nigam in Himachal Pradesh and 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-financing 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. Power Trading Corporation (PTC) was also set up in 1999 to catalyse development of mega power projects, as well as vibrant power market and to promote exchange of power with neighbouring countries.

ORGANISATIONAL SET-UP

Shri P.M. Sayeed is the Minister of Power since the 25th May, 2004. Shri R.V. Shahi is the Secretary in the Ministry of Power since the 13th April, 2002. Shri A.K. Jain is the Special Secretary in the Ministry of Power since the 1st October, 2004. The Ministry has two Additional Secretaries and four Joint Secretaries, including the Financial Advisor. Smt. Gauri Chatterji, Additional Secretary, oversees the work relating to Thermal and Distribution Reforms and Accelerated Power Development & Reforms Programme.


The allocation of work among the four Joint Secretaries in the Ministry of Power is as under:

(i) Thermal, Distribution Reforms, Accelerated Power Development & Reforms Programme (APDRP), Information Technology (IT) and Rural Electricity Supply Technology (REST) Mission;
(ii) Hydro Power, Operation Monitoring (OM), Investment Promotion Cell (IPC), Coordination and Press & Publicity;

There is a Principal Accounts Office headed by the Controller of Accounts, who in turn reports to the Financial Advisor in the Ministry of Power. Matters relating to reservations for SC, ST, Physically Handicapped and Ex-Servicemen in the Ministry including PSUs under its administrative control are dealt by the Deputy Secretary(Admn.), who is also the Liaison Officer for SC/ST and there is separate Liaison Officer for OBCs. Matters relating to recreation activities are dealt by Power Sports Control Board. The total sanctioned strength of the Ministry is 312.
Chapter - 3

GENERATION & POWER SUPPLY POSITION

The power supply position from 1997-98 onwards is as under:

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<th>Private</th>
<th>Overall</th>
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<td>58.4</td>
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<td>1998-99</td>
<td>70.9</td>
<td>58.0</td>
<td>72.3</td>
<td>63.0</td>
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<td>2000-01</td>
<td>74.3</td>
<td>65.8</td>
<td>73.0</td>
<td>69.9</td>
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<td>2001-02</td>
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<td>2002-03</td>
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<td>2003-04</td>
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<td>72.7</td>
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<td>2004-05</td>
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<td>69.3</td>
<td>84.5</td>
<td>74.3</td>
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</table>

INCENTIVE SCHEME

With a view to inculcate competitive spirit and to motivate Power Utilities to achieve high level performance, as well as achieve efficient and economic operation of thermal power stations in the country, Ministry of Power had introduced the scheme of Meritorious Productivity Awards and Incentive Awards for Reduction of Secondary Fuel Oil Consumption and Auxiliary Power Consumption. The Awards for the years 2000-01, 2001-02, 2002-03 and 2003-04 were given away by Hon’ble President of India at a function held at Vigyan Bhawan on 24.8.04. In all, 54 power stations, all over the country, including 4 nuclear power plants (first time) received the awards.

Chapter - 4

CAPACITY ADDITION: PROGRAMME AND ACHIEVEMENTS

INSTALLED CAPACITY

The all India installed capacity of electric power generating stations under utilities was 112056.42 MW as on 31.3.2004 consisting of 77868.53 MW of thermal, 29000.23 MW of hydro, 2720.00 MW of nuclear and 1696.66 MW wind which has increased to 115544.81 MW as on 31.01.2005 consisting of 80201.45 MW of thermal, 30315.23 MW of hydro, 2720.00 MW of nuclear and 2488.13 MW of wind. The growth of installed capacity is shown below in the chart:

GROWTH OF ALL INDIA INSTALLED ELECTRICITY GENERATION CAPACITY

CAPACITY ADDITION PROGRAMME FOR THE 10TH FIVE YEAR PLAN

A capacity addition of 41,110 MW has been targeted for the 10th Five Year Plan. Sector-wise details are as under:

<table>
<thead>
<tr>
<th>Year</th>
<th>Central</th>
<th>State</th>
<th>Private</th>
<th>Total</th>
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<td>4481</td>
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<td>14393</td>
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<td>2005-06</td>
<td>12790</td>
<td>6676</td>
<td>5951</td>
<td>25417</td>
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<td>2006-07</td>
<td>1300</td>
<td>-</td>
<td>-</td>
<td>1300</td>
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<tr>
<td>Total</td>
<td>22832</td>
<td>11157</td>
<td>7121</td>
<td>41110</td>
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**Chapter 5**

**POWER SECTOR REFORMS**

**ELECTRICITY ACT, 2003**

The Electricity Act, 2003 was enacted and the provisions of this Act were brought into force on 10.6.2003. With the coming into force of the Electricity Act, 2003, the Indian Electricity Act, 1910, Electricity (Supply) Act, 1948 and Electricity Regulatory Commissions Act, 1998 stand repealed.

**Framing of Rules by the Central Government under the Electricity Act, 2003**

As per Section 176 of the Electricity Act 2003, the Central Government is required to make rules for carrying out the provisions of the Act. The following 15 rules have been notified:

i) The time within which the objections and suggestions of the draft National Electricity Plan to be invited by the Authority. (Section 176(2)(a)(Notification dated: 6.4.2004)

ii) The payment of fees for application for grant of licence. (Section 176(2)(c)(3.3.2004)

iii) The procedure for conducting inquiry against Member of Appropriate Commission. (Section 176(2)(l)(21.6.2004)

iv) The salary, allowances and other conditions of service of Chairperson and Members of Central Commission. (Section 176(2)(j)(8.3.2004)

v) The form and manner in which and the authority before whom oath of office and secrecy should be subscribed. (Section 176(2)(k)(8.3.2004)

vi) The salary and allowances payable to and the other terms and conditions of service of the Chairperson and Members of the Appellate Tribunal. (Section 176(2)(r)(13.4.2004)

vii) The form and manner of verifying such form, and fee for filing appeal. (Section 176(2)(q)(13.4.2004)

viii) Appeal to the Appellate Authority. (Section 176(2)(a)(16.4.2004)

ix) The manner of delivery of every notice, order or document to be served. (Section 176(2)(y)(21.6.2004)

x) The manner of holding inquiry by an adjudicating officer. (Section 176(2)(v)(31.8.2004)

xi) The salary and allowances and other conditions of service of the Chairperson and Members of the Appellate Tribunal. (Section 176(2)(s)(28.10.2004)

xii) The form in which and the time at which service of notices to any person or to the Central Government. (Section 176(2)(w)).

xiii) The form in which and time at which the Central Commission shall prepare its annual report. (Section 176(2)(x)(28.1.2005).

xiv) Forum of Regulators Rules, 2005. (Section 166 (2&3) and 176(1) (16.2.2005).

(xv)The constitution and functions of the National Load Despatch Centre. (Section 176(2)(d)).

**POLICIES TO BE FRAMED UNDER THE ELECTRICITY ACT, 2003**

Under the provisions contained in sections 3, 4 and 5 of the Act, the Central Government is required to formulate the following policies:

i) National Electricity Policy and Tariff Policy;

ii) National Policy on Stand Alone Systems for rural areas and non-conventional energy systems; and

iii) National Policy for rural electrification and local distribution in rural areas.

National Electricity Policy has been notified. Other policies are at final stage.

**NATIONAL ELECTRICITY POLICY**

The Policy has been evolved after extensive consultations with the States, other stake holders, the Central Electricity Authority and after considering the advice of the Central Electricity Regulatory Commission.

The National Electricity Policy is one of the key instruments for providing policy guidance to the Electricity Regulatory Commissions in discharge of their functions and to the Central Electricity Authority for preparation of the National Electricity Plan.

**Salient features of the National Electricity Policy**

i) Aims at accelerated development of power sector, providing supply of electricity to all areas and protecting interests of consumers and other stakeholders.

ii) Objectives:

- Access to Electricity-Available for all households in next five years.
- Availability of Power-Demand to be fully met by 2012. Energy and peaking shortages to be overcome and spinning reserve to be available.
- Supply of Reliable and Quality Power of specified standards in an efficient manner and at reasonable rates.
- Per capita availability of electricity to be increased to over 1000 units by 2012.
- Minimum lifeline consumption of 1 unit/household/day as a merit good by year 2012.
- Financial Turnaround and Commercial Viability of Electricity Sector.
- Protection of consumers’ interests.
iii) CEA to notify first National Electricity Plan in six months with a perspective upto 12th Plan period. The Plan prepared by CEA to be used by prospective generating companies, transmission utilities and transmission/distribution licensees as a guide.

iv) Development of Rural Electrification Distribution backbone, village electrification and household electrification to achieve the NCMP target of completing household electrification in next five years. Financial support in terms of capital subsidy to States for rural electrification. Special preference to Dalti Bastis, Tribal Areas and other weaker sections for rural electrification to be nodal agency for rural electrification at Central Government level.

v) Creation of adequate generation capacity with a spinning reserve of at least 5% by 2012 with availability of installed capacity at 85%.

vi) Full development of hydro potential. Provision of adequate transitional financial support for additional power generation capacity.

vii) Choice of fuel for thermal generation to be based on economics of generation and supply of electricity.

viii) Development of National Grid.

ix) Cost of recovery of service from consumers at tariff reflecting efficient costs to ensure financial viability of the sector.

x) Provision of support to lifeline consumers (households below poverty line having consumption of 30 units per month) in terms of consumption of 30 units per month (households below poverty line) in terms of tariffs.

xi) Availability Based Tariff (ABT) to be extended to State level for better grid discipline through economic signaling.

xii) Special emphasis on time bound reduction of transmission and distribution losses.

xiii) Measures to promote competition aimed at bringing efficiency linked tariff.

xiv) Reliability and quality of power supply to be monitored by State Electricity Regulatory Commissions.

xv) Exploitation of non-conventional energy sources such as small hydro, solar, biomass and wind for additional power generation capacity.

xvi) Emphasis on achieving higher efficiency levels of generating plants through necessary renovation and modernization.

xvii) Central Government to facilitate the continued development of national grid. CTU and STU to undertake coordination planning and development.

xviii) Transmission capacity to have redundancy level and margins as per international standards.

xix) Adequate transitional financial support for reducing power utilities. Encouragement for private sector participation in distribution.

v) The State Regulatory Commissions to put in place independent third party meter testing arrangement.

vi) Support for adoption of IT system for ensuring correct billing to consumers.

vii) Speedy implementation of stringent measures against theft of electricity.

viii) Full emphasis on augmentation of R&D base. The Act has approved an identified priority areas.

ix) Demand side management through energy conservation measures. Labels regarding energy efficiency to be displayed on appliances. Efficient agricultural pumps and efficient lighting technologies to be promoted. Appropriate tariff structure for managing the peak load.

x) Special attention for developing training infrastructure in the field of regulation, trading and power market.

xi) For giving boost to renewable and non-conventional energy sources, a prescribed percentage of power, as specified by State Regulatory Commissions, to be purchased from such sources of energy at the earliest.

xii) Necessary regulations and appointing Ombudsman for redressal of consumers’ grievances to be in place in six months.

Guidelines for determination of tariff by bidding process:

The Electricity Act, 2003 provides that the Regulatory Commissions shall adopt the tariff if it is determined through transparent process of bidding in accordance with the guidelines issued by the Central Government. This aims at moving away from cost plus approach for tariff determination and is expected to further encourage private sector investment.

Central Government has notified the guidelines for competitive bidding for determination of tariff for procurement of power for the year 2004-05 and 2005-06 on 19th January 2005. The main objects of the guidelines are:

- Promoting competitive procurement, facilitating transparency and fairness, reducing information asymmetry, protecting consumer’s interests, enhancing standardized procedures and reducing time for procurement.
- Maximizing the amount of power, while ensuring certainty on tariffs for buyers.

The guidelines provide for a long term procurement of electricity for a period of 7 years and above and for medium term procurement for a period ranging from one to seven years. They permit procurement which is location, technology or fuel neutral and also allows development of projects based on specific location or fuel tie-ups.

Central Government shall issue standard bid documents which will reduce the delays in getting approvals on bid documents. The procurers are required to constitute a committee for evaluation of bids with at least one external member. The procurer has been mandated to make evaluation of bids publicly indicating terms of winner bid and anonymous comparison of all other bids. CERC has been mandated to notify the values of relative parameters for fuel escalation, discounting and inflation rates to reduce uncertainties.

APPELLATE TRIBUNAL FOR ELECTRICITY

The Appellate Tribunal for Electricity under Section 110 of the Electricity Act, 2003 has been notified on 7th April, 2004. It would be operationalised soon.

STATE ELECTRICITY REGULATORY COMMISSIONS

Twenty four states namely, Orissa, Haryana, Andhra Pradesh, Uttar Pradesh, Jammu and Kashmir, Rajasthan, Madhya Pradesh, Himachal Pradesh, West Bengal, Punjab, Tamil Nadu, Assam, Uttrakhand, Jharkhand and Kerala have issued tariff orders. Eighteen SERCs viz. Orissa, Andhra Pradesh, Uttar Pradesh, Maharashtra, Gujarat, Haryana, Karnataka, Rajasthan, Delhi, Madhya Pradesh, Himachal Pradesh, West Bengal, Punjab, Tamil Nadu, Assam, Uttrakhand, Jharkhand and Kerala have issued tariff orders.

The reform process has started showing signs of improvement in power sector. The new Electricity Act has many provisions which safeguard the interest of consumers. The Act has revised the NEMP target of achieving 40% target of net-electricity in the power sector. Eleven Independent Power Projects (IPPs) of more than 400 MW capacity have achieved financial closure since January 2004.

An investment commitment of about Rs. 13,700 crore has been made. Lenders have become more positive. Eight IPPs of about 10,000 MW capacity for investment of Rs. 33,000 crores are being examined by the lenders.

Over subscription of about 13.17 times to the NTPC IPO has demonstrated the investor’s confidence in the power sector against an issue of Rs.5360 crores the market has committed about Rs.5900 crores in the form of new global investors including hedge funds and insurance companies have subscribed of NTPC’s IPO. Besides this about 5 lakh retail investors subscribe the issue. Similarly IPO’s of PTC was also over subscribed by seven times.

PFC has conducted a study on the financial health of the State Utilities. Based on the data made available by the 16 States the study has come to the conclusion that operating losses of State Power Utilities which was Rs. 25,207 crores during the year 2001-02 has been reduced to Rs. 17,593 crores during the year 2002-03 representing reduction of Rs.7614 crores.

The gap between Average Cost of Fuel and Average Revenue Realised (ARR) which was 110 paisa per KWH during the year 2001-02 has been reduced to approximately 63 paisa per KWH during the year 2002-03.

Past dues of the State Utilities were securitised by issue of Government Guaranteed Tax Free Bonds. Since 2003-04 the realization of dues by CPSUs improved to about 100% of billed amount.

The Power Trading Corporation (PTC) and Vidyut Vyaapar Nigam (of NTPC) have been important players in the national area of power trading. CERC has granted licence to six other companies also. The creation of inter-regional link lines of nearly 9000 MW capacity, and online information available through a network on National Load Dispatch Centre (RLDCs), have also played a part. These initiatives have resulted in trading of 11 billion units of electricity, or roughly 2 per cent of the generation in the country during the year 2003-04.

ACCELERATED POWER DEVELOPMENT AND REFORM PROGRAMME (APDRP)

The Government has launched the Accelerated Power Development & Reform Programme (APDRP) which aims at upgradation of the Sub-transmission and Distribution (ST&D) system in the Country and improving the commercial viability of State Electricity Boards (SEBs) by reducing their aggregate technical & commercial (AT&C) losses to around 15% as against
the existing over 50%. This strategy envisages technical, commercial, financial and IT initiatives.

**SCHEME FOR ONE-TIME SETTLEMENT OF OUTSTANDING DUES PAYABLE BY SEBs TO THE CPSUs SECURITISATION OF OUTSTANDING DUES**

An expert Group under the Chairmanship of Shri Montek Singh Ahluwalia, the then Member (Energy), Planning Commission recommended a scheme for one-time settlement of dues payable by State Electricity Boards (SEBs) to Central Public Sector Undertakings (CPSUs) and the Railways. The recommendations were accepted by the Government of India. All the 28 State Governments signed the Tripartite Agreement envisaged under the scheme which is between the State Government, Reserve Bank of India and the Government of India. Bonds amounting to Rs. 29882.92 crore have been issued by 27 States.

Goa has no outstanding dues. Government of National Capital Territory of Delhi securitized its outstanding dues by converting the dues into long-term advances of Rs. 3316.28 crore payable to the CPSUs concerned under Bi-partite Agreement as they do not have power to issue Bonds.

Consequent upon the issue of final orders by the Ministry of Power on 04.11.2004 on the division of assets and liabilities of the erstwhile Bihar SEB between the new Bihar and Jharkhand SEBs and Madhya Pradesh Electricity Board between the new Madhya Pradesh and Chhattisgarh SEBs, the CPSUs are in the process of reworking out the balance amount of the dues payable by these 4 SEBs. While the reconciliation of the dues is on, RBI has been requested to initiate the process of securitization of the balance amount of dues.

**State-wise details of the bonds issued under the scheme is given as under:**

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>State</th>
<th>Bond Value (Rs. in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>2436.0980</td>
</tr>
<tr>
<td>2</td>
<td>Arunachal Pradesh</td>
<td>24.0702</td>
</tr>
<tr>
<td>3</td>
<td>Assam</td>
<td>857.5340</td>
</tr>
<tr>
<td>4</td>
<td>Bihar</td>
<td>1593.5200</td>
</tr>
<tr>
<td>5</td>
<td>Chhattisgarh</td>
<td>483.2200</td>
</tr>
<tr>
<td>6</td>
<td>Goa</td>
<td>0.0000</td>
</tr>
<tr>
<td>7</td>
<td>Gujrat</td>
<td>1628.7120</td>
</tr>
<tr>
<td>8</td>
<td>Haryana</td>
<td>2022.2800</td>
</tr>
<tr>
<td>9</td>
<td>Himachal Pradesh</td>
<td>70.2480</td>
</tr>
<tr>
<td>10</td>
<td>Jammu &amp; Kashmir</td>
<td>1590.8120</td>
</tr>
<tr>
<td>11</td>
<td>Jharkhand</td>
<td>899.0636</td>
</tr>
<tr>
<td>12</td>
<td>Karnataka</td>
<td>550.9540</td>
</tr>
<tr>
<td>13</td>
<td>Kerala</td>
<td>1158.2520</td>
</tr>
<tr>
<td>14</td>
<td>Madhya Pradesh</td>
<td>2863.9680</td>
</tr>
<tr>
<td>15</td>
<td>Maharashtra</td>
<td>1018.5940</td>
</tr>
<tr>
<td>16</td>
<td>Manipur</td>
<td>157.0940</td>
</tr>
<tr>
<td>17</td>
<td>Meghalaya</td>
<td>13.9800</td>
</tr>
<tr>
<td>18</td>
<td>Mizoram</td>
<td>45.5660</td>
</tr>
<tr>
<td>19</td>
<td>Nagaland</td>
<td>78.9200</td>
</tr>
<tr>
<td>20</td>
<td>Orissa</td>
<td>1102.8740</td>
</tr>
<tr>
<td>21</td>
<td>Punjab</td>
<td>637.3480</td>
</tr>
<tr>
<td>22</td>
<td>Rajasthan</td>
<td>368.7820</td>
</tr>
<tr>
<td>23</td>
<td>Sikkim</td>
<td>47.8020</td>
</tr>
<tr>
<td>24</td>
<td>Tamil Nadu</td>
<td>1962.1400</td>
</tr>
<tr>
<td>25</td>
<td>Tripura</td>
<td>63.5080</td>
</tr>
<tr>
<td>26</td>
<td>Ultrachannel</td>
<td>572.0000</td>
</tr>
<tr>
<td>27</td>
<td>Uttar Pradesh</td>
<td>5871.8600</td>
</tr>
<tr>
<td>28</td>
<td>West Bengal</td>
<td>1983.7760</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>29882.9170</td>
</tr>
<tr>
<td>Add</td>
<td>Delhi (excluding DEU period)</td>
<td>3316.2800</td>
</tr>
<tr>
<td>Total including Delhi</td>
<td>33199.1976</td>
<td></td>
</tr>
</tbody>
</table>

**COLLECTION EFFICIENCY:**

The scheme has resulted in improvement in collection of dues of the power sector CPSUs. The details of collection efficiency (in percentage) are shown in the table below:

<table>
<thead>
<tr>
<th>Sl. No</th>
<th>CPSU</th>
<th>2001-02</th>
<th>2002-03</th>
<th>2003-04</th>
<th>2004-05 (till Dec)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>NTPC</td>
<td>76.74</td>
<td>92.30</td>
<td>100.70</td>
<td>100.00</td>
</tr>
<tr>
<td>2</td>
<td>NHPC</td>
<td>69.03</td>
<td>94.44</td>
<td>97.06</td>
<td>99.46</td>
</tr>
<tr>
<td>3</td>
<td>PGCIL</td>
<td>88.92</td>
<td>95.16</td>
<td>98.30</td>
<td>98.57</td>
</tr>
<tr>
<td>4</td>
<td>NEEPCO</td>
<td>74.78</td>
<td>71.49</td>
<td>87.50</td>
<td>94.61</td>
</tr>
</tbody>
</table>

**ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME (APDRP)**

The Government of India approved Accelerated Power Development and Reform Programme (APDRP) in March 2003 with a focus on bringing orderliness to ragtag sector reforms. The programme has an outlay of Rs. 40,000 crore as additional central plan assistance to State Governments during Tenth Five-Year Plan.

DISTRIBUTION REFORMS & ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME (APDRP)

**Distribution Reforms:** The Government of India identified Distribution Reforms as the key area to bring about the efficiency and commercial viability into the power sector. Ministry of Power took various initiatives in this direction in the recent past. Ministry of Power signed the Memorandum of Understanding with the States to undertake distribution reforms in a time bound manner, which includes setting up of State Electricity Regulatory Commission (SERC), unbundling of State Power Utilities, metering of feeders & consumers, starting energy accounting & auditing, securitisation of outstanding dues of CPSUs, grid discipline etc. Subsequently, 26 States have either constituted or notified SERCs and 18 have issued tariff orders in the direction of rationalizing the tariffs. States are now better committed towards subsidy payment to the consumers. All the States have securitised their outstanding dues towards CPSUs. 13 States have unbundled/corporated respective power utilities and 9 others are expected to corporatise shortly. Electricity Distribution has been privatized in Orissa & Delhi and Uttar Pradesh has invited Expression of Interest for privatization of its distribution companies.

Progress on metering in the distribution sector is as shown below:

**ACCELERATED POWER DEVELOPMENT AND REFORMS PROGRAMME**

The Government of India approved Accelerated Power Development and Reform Programme (APDRP) in March 2003 with a focus on distribution reforms with the following objectives:

- Reduce aggregate technical & commercial (AT&C) losses.
- Bring about commercial viability in the power sector.
- Reduce outages & interruptions.
- Increase consumer satisfaction.

The programme has an outlay of Rs. 40,000 crore as additional central plan assistance to State Governments covering power sector during Tenth Five-Year Plan. The programme has two components:

**Investment Component:** The Government of India provides Additional Central Plan Assistance to the States for undertaking projects for strengthening and upgradation of the transmission and Distribution network for reduction in technical & commercial losses & feeder outages and better reliability and increased customer satisfaction and to bring commercial viability to the power sector. 50% of the project cost is provided as Additional Central Plan Assistance in form of 50% grant and 50% loan to the State utilities. Utilities have to arrange remaining 50% of the project cost from Financial Institutions like PFC/REC or their internal resources. Special category States (NE states, J&K, H.P., Uttarakhand and Sikkim) are entitled for 100% assistance in the form of 50% grant and 50% loan. The focus is on high-density networks i.e. urban centers where investment could lead to substantial, quick & demonstrable results.

The investment component has an expected outlay of Rs. 20,000 crore during X plan.

- Projects sanctioned: Rs. 17612.36 Cr.
- Number of projects: 499
- Funds released: Rs. 4112.03 Cr.
- Counterpart funds tied up: Rs. 6638.64 Cr.
- Counterpart funds drawn: Rs. 2451.65 Cr.
- Funds Utilised: Rs. 5163.16 Cr.

**Incentive Component:** This component has been introduced to motivate the SEBs/Utilities to reduce their cash losses. Funds are provided to SEBs/Utilities for actual cash loss reduction by way of one for two matching grants. Financial year 2000-01 has been fixed as base year. Expected outlay under the incentive component is Rs. 20,000 crore.

State-wise incentive amount released is as under:

<table>
<thead>
<tr>
<th>State</th>
<th>Rs. in Cr.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Andhra Pradesh</td>
<td>265.105</td>
</tr>
<tr>
<td>Gujarat</td>
<td>236.370</td>
</tr>
<tr>
<td>Haryana</td>
<td>105.490</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>137.890</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>137.710</td>
</tr>
<tr>
<td>West Bengal</td>
<td>73.000</td>
</tr>
<tr>
<td>Total</td>
<td>854.565</td>
</tr>
</tbody>
</table>

Incentive claims of Assam, Himachal Pradesh, Gujarat (2002-03), Goa, Karnataka, Kerala, Maharashtra (2002-03) and M.P. are under scrutiny at various levels. The Ministry organized a workshop in July 2004 to
APDRP is an instrument to leverage distribution reforms in the States. The States were asked to commit a time-bound programme of reforms as elaborated in the Memorandum of Understanding (MoU) and Memorandum of Agreement (MoA). States have to take administrative and commercial steps in addition to the technical interventions, which will help them in efficiency improvement in the sector. The Ministry is closely monitoring the progress of States on activities committed under MoA and implementation of APDRP projects directly and through NTPC and PGCIL, who are working as Advisor cum Consultant to the States. Secretary (Power) took region-wise annual review of all the States during November 2004. The States have also constituted Distribution Reforms Committees in their respective States for reviewing and monitoring of progress on reforms and implementation of APDRP schemes. A three day workshop was organised by the Ministry in December, 2004 to deliberate upon the best practices being followed by the SEBs/Utilities which could be adopted by others.

The States have identified feeder managers to increase accountability, which is helping the utilities in reduction of AT&C losses. Computerised billing and consumer complaint centres have been started in selected towns of Andhra Pradesh, Bihar, Delhi, Gujarat, Himachal Pradesh, Karnataka, Mahayda Pradesh, Punjab, Tamil Nadu and Uttar Pradesh and work is under progress in other States. A few of them have also started web based bill information and payment system. States of Assam, Andhra Pradesh, Gujarat, Karnataka, Nagaland and Orissa have started handing over parts of distribution system on different models to franchisees/ user associations. Other States are also actively considering for taking up pilot projects.
**APDRP INCENTIVE STATUS As on 1st January 2005**

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>State</th>
<th>Incentive Released during Year</th>
<th>(Rs. in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Andhra Pradesh</td>
<td>265.11</td>
<td>265.11</td>
</tr>
<tr>
<td>2</td>
<td>Bihar</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Chhattisgarh</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Delhi</td>
<td></td>
<td></td>
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<tr>
<td>5</td>
<td>Goa</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Gujarat</td>
<td>236.38</td>
<td>236.38</td>
</tr>
<tr>
<td>7</td>
<td>Haryana</td>
<td>5.01</td>
<td>105.49</td>
</tr>
<tr>
<td>8</td>
<td>Jharkhand</td>
<td></td>
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<tr>
<td>9</td>
<td>Karnataka</td>
<td></td>
<td></td>
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<td>10</td>
<td>Kerala</td>
<td></td>
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<td>11</td>
<td>Madhya Pradesh</td>
<td></td>
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<tr>
<td>12</td>
<td>Maharashtra</td>
<td>137.89</td>
<td>137.89</td>
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<td>13</td>
<td>Orissa</td>
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<td>14</td>
<td>Punjab</td>
<td></td>
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<tr>
<td>15</td>
<td>Rajasthan</td>
<td>137.71</td>
<td>137.71</td>
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<tr>
<td>16</td>
<td>Tamil Nadu</td>
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<td></td>
</tr>
<tr>
<td>17</td>
<td>Uttar Pradesh</td>
<td></td>
<td></td>
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<tr>
<td>18</td>
<td>West Bengal</td>
<td>73.00</td>
<td>73.00</td>
</tr>
<tr>
<td>19</td>
<td>Arunachal Pradesh</td>
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<td></td>
</tr>
<tr>
<td>20</td>
<td>Assam</td>
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<tr>
<td>21</td>
<td>Himachal Pradesh</td>
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<td>22</td>
<td>J&amp;K</td>
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<td>23</td>
<td>Manipur</td>
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<tr>
<td>24</td>
<td>Meghalaya</td>
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<td>25</td>
<td>Mizoram</td>
<td></td>
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<tr>
<td>26</td>
<td>Nagaland</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>Sikkim</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>Tripura</td>
<td></td>
<td></td>
</tr>
<tr>
<td>29</td>
<td>Uttarakhand</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>379.28</td>
<td>503.30</td>
</tr>
</tbody>
</table>

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**TRANSMISSION**

Transmission projects continue to be accorded a high priority in the context of the need to evacuate power from the generating stations to the load centres, system strengthening and creation of National Grid. The construction targets for the year 2004-05 and achievement of Central Sector Transmission projects are summarised below:

**CENTRAL SECTOR TRANSMISSION**

Ministry of Power has planned to establish the requisite transmission capacity in the Central Sector to match the generation capacity addition and encourage inter-state/inter-regional exchange of power to mitigate the situation of surplus/deficit of power in various regions. Transmission lines and Sub-stations completed during the year 2004-05 (upto Nov., 04) are shown in the following table:

**TOWARDS FORMATION OF NATIONAL GRID**

Ministry of Power has envisaged establishment of an integrated National Power Grid in the country by the year 2012 with an inter-regional power transfer capacity of 30,000 MW. A perspective transmission plan has been evolved for strengthening the regional grids with ultimate objective of establishment of strong and vibrant National Power Grid in a phased manner to support the generation capacity addition programme of about 1,00,000 MW during X & XI Plans. The exploitable energy resources in our country are concentrated in certain pockets. As a result, some regions do not have adequate natural resources for setting power plants to meet their future requirements whereas others have abundant natural resources. This has necessitated the formation of National Power Grid to transmit power from resource rich to deficit area as well as facilitate scheduled/ unscheduled exchange of power.

Further, acquiring Right of Way (ROW) for constructing transmission system is getting increasingly difficult. This necessitates creation of high capacity “Transmission Highways”, so that in future, constraints in ROW do not become bottleneck in harnessing natural resources. It is envisaged to establish such an integrated National Grid in a phased manner by the year 2012, which can support inter-regional transfer of power to the extent of 30,000 MW. Working towards this plan, PGCIL has implemented various inter-regional schemes and an inter regional power transfer capacity of 9500 MW has already been established.
PRIVATE SECTOR PARTICIPATION IN TRANSMISSION

For creation of National Grid including the evacuation system for associated generation projects, the total investment requirement in the Central transmission sector during X & XI plan has been envisaged to be about Rs. 70,000 crore. Out of this, PGCIL has to invest to the tune of Rs. 50,000 crore, while the balance of Rs. 20,000 Crore is envisaged to be mobilized through private participation.

POWERGRID has established First Public-Private Joint Venture in Indian Power Sector with M/s Tata Power (51% stake in the JV Company viz. Powerlinks Transmission Limited) for implementation of major transmission lines of Transmission system associated with Talga HEP in Bhutan, East-North inter-connector and Northern Region Transmission System costing about Rs. 1,500 crore. This project received excellent response from International Funding Institutions like IFC, Washington including multilateral financing from private sector arm of ADB, Manila and Indian Financial institutions like IDFC, SBI. The project recourse loan is without any guarantee from Government of India. The JV Company has received its transmission license from CERC, the first such license in Indian Power Sector.

Financial closure of the project was achieved in May’04. A total debt of Rs. 1980 crore has been tied up with the consortium of multilateral and domestic financial institutions. In fact this JV model of Public - Private Partnership, developed by POWERGRID, is first in India and in Asia and would be trend setter for future private investment not only in India but abroad as well.

With the success of above project, Ministry of Power has initiated action to bring in more private investment in transmission projects and two more projects i.e. transmission system associated with Koldam, Parmal & Matthon, estimated to cost Rs. 1400 crore, have been floated by POWERGRID under joint venture route.

In addition, transmission lines under Western Region Strengthening Scheme (estimated project cost: Rs. 4900 crore) is also envisaged for implementation under JV route. Besides the JV route, the Ministry is also working to come out with a detailed guidelines to encourage private investment in transmission sector.

RURAL ELECTRIFICATION PROGRAMME

Rural Electrification involves supply of energy for two types of programmes:

(a) Production oriented activities like minor irrigation, rural industries etc.
(b) Electrification of villages.

While the emphasis is laid on exploration of ground water potential and energisation of pumpsets/tubewells, which has a bearing on agricultural production, the accent in respect of areas covered under the Revised Minimum Needs Programme (RMNP), is on village electrification.

According to the earlier definition: “A village is classified as 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 new definition was adopted:

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

It has been decided now to revise the definition of village electrification and a new definition of village electrification is as under:

A village would be declared as 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 Office, Health Centres, Dispensaries, Community centers etc. and

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

SCHEMES OF VILLAGE & HOUSEHOLDS ELECTRIFICATION

i) From the year 2001-02, Rural Electrification including electrification of dalit bastis and hamlets has been treated as Basic Minimum Service and has been included under Pradhan Mantri Gramodaya Yojana (PMGY) as one of the six components of the scheme. During the year 2003-04, Rs. 36665.95 lakh were released under PMGY for rural electrification. The States have to make the inter-state allocation of funds.

ii) Under Minimum Needs Programme (MNP), Rs. 600 crore were released during 2003-04 under MNP. MNP is proposed to be merged in the new scheme “Rural Electricity Infrastructure and Household Electrification”.

iii) Under Kutir Jyoti Programme Government provides funds to the States as 100% grant for providing single point light connection to Below Poverty Line (BPL) Households. During the year 2003-04, Rs. 100 crore were released to the States under this programme. 5.09 lakhs single light connections have been reported to be released by the States.

iv) Rural Electrification Corporation (REC) has been offering loans to State Utilities at a very low rate of interest to supplement the resources of State Governments for electrification of villages, hamlets and dalit bastis. More than three lakh villages have been electrified and 80 lakh pumpsets energized so far under the projects financed by REC. REC has earmarked Rs. 500 crore every year for village electrification for the next three years.

v) Programme of “Accelerated Electrification of One Lakh Villages & One Crore Households”

The Government approved a new scheme in February, 2004 namely “Accelerated Electrification of One Lakh villages and One Crore Households” by merging Accelerated Rural Electrification Programme (AREP) and Kutir Jyoti Programme. Under this programme, there is a provision of 40% grant from Govt of India and the balance would be financed through loan assistance by REC. The scheme would be implemented through the Rural Electrification Corporation which may associate other financial institutions in the implementation of the programme. These guidelines will be aligned with the policies being formulated under sections 4 and 5 of the Electricity Act, 2003 that would facilitate sustainable provision of electricity in rural areas. The guidelines of the above scheme are as given below.

(a) Village Electrification with Household Electrification:

The scheme shall cover electrification of un-electrified villages as on 31st March, 2004 (according to the prevailing definition of absence of use of electricity by
even one person in the village habitation). In addition the scheme may also cover de-electrified villages on a case-by-case basis.  Electrification projects based on grid extension as well as stand-alone electrification projects based on distributed generation would be eligible for capital subsidies under the scheme. The project cost that qualifies for the capital subsidy under the scheme include the cost of the decentralized generation system and the distribution network (poles, transformers, service connections up to the household premises and meters). Single point connection for BPL households would be provided free of cost and from the subsidy granted under this scheme.

The project would have the universal obligation to provide electricity to all consumers on demand as per the tariff proposal agreed between the beneficiaries and the Rural Electricity Supply Provider. In any event, it is mandatory that at least 10% of the households in each village included in the project are electrified as provided under the new definition of village electrification.

Panchayats, Cooperatives, NGOs, Users Associations, Franchisees, State/Regional Utilities or any other Individual/entity desirous of becoming a Rural Electricity Service Provider would be eligible for the capital subsidy under the scheme. However, in order to avail of the subsidy under the scheme, the Rural Electricity Service Providers must ensure active support/participation of the beneficiaries through Panchayat Raj Institutions, Consumers Cooperatives/Associations, NGOs etc. Where the SEB/State Utility becomes the Rural Electricity Service Provider under this scheme, it would need to put in place satisfactory arrangements for decentralized management and revenue collection through Panchayats/Users Associations /Cooperatives /NGOs/ Franchisees.

To be eligible for the capital subsidy all projects would need to demonstrate revenue streams that results in sustainable operations with the given level of capital subsidy. The revenue streams are based on continuing subsidies from State Governments, the same would need to be supported by satisfactory evidence of continuing support.

The State Governments are required to make all projects subsidy under the scheme compliant with Sections 13 and 14 of the Electricity Act, 2003 so as to enable the Rural Electricity Service Providers (other than existing State Utilities/Distributor/Licenses) to act outside the purview of the State Electricity Regulatory Commission for purposes of tariff determination (Sections 61, 62 and 86 of the Electricity Act, 2003).

All projects supported under the scheme would have tariffs that are acceptable to the end beneficiaries.

Projects under the scheme would be fully financed by distributed generation systems and that the sector would be provided by REC and other financial institutions involved in the implementation of the programme.

About forty percent of the capital cost could be given as a subsidy and this would be linked to sustained delivery of electricity to the targeted beneficiaries over the project life or 15 years, whichever is earlier. Subsidy would be admissible only for the actual cost incurred for distributed generation equipment as well as stand alone projects based on distributed generation. It would, however, be ensured that the total subsidy for any State is forty percent of the total approved project costs for that State.

Where feasible, bids may be sought for the capital subsidy required for Rural Electricity Service provisions.

The District Electricity Committee constituted under Section 166(5) of the Electricity Act 2003 by the State Government would facilitate project preparation and execution and take a proactive role for expeditious rural electrification in the district. The District Electricity Committee would monitor the functioning of these projects.

The scheme would be implemented under the overall supervision and control of REC in its capacity as the lead agency responsible for the scheme.

(b) Household Electrification

In electrified villages, 100% grant would be provided for electrification this task that holds as per existing guidelines of the Kutir Jyoti Scheme.

(v) National Common Minimum Programme

As per National Common Minimum Programme, rural household electrification is to be completed in next five years. Accordingly a new strategy has been drawn which envisages:

(a) Creation of Rural Electric Distribution Backbone (REDB) of 33/11 KV substations, with one such substation in each block appropriately networked and linked to the State transmission system.

(b) Creation of Village Infrastructure (VI) through providing Distribution Transformer(s) with at least one per village.

(c) Rural Households Electrification of unelectrified households from village distribution transformer(s)

(d) Decentralized management and revenue generation system for such villages where grid connectivity is either not feasible or not cost effective.

To accomplish this task the Government of India has decided to replace the existing programme as referred to as (i) above by a new strategy known as ‘Rural Electrification of BPL Households as per existing guidelines of the Kutir Jyoti Scheme’.

To that end the newly constituted Core Committee on electrification has been established which envisages a provision of 90% capital subsidy.

The services of GSPs have been offered to the States for assisting them in the execution of Rural Electrification Projects as per their willingness under the programme.

PRESENT STATUS OF RURAL ELECTRIFICATION

During the year 2004-2005, 2102 (Provisional) inhabited villages and 17506 (Provisional) Irrigation pumps / Tubewells energized as on 31.12.2004. Cumulatively, 497133 villages have been electrified and 14290457 electric irrigation pumps have been energized as on 31.12.2004. As regards the electrification of tribal villages, out of a total of 106385 tribal villages in the country, 83510 (Provisional) villages constituting 78.5% have been electrified as on 30.09.2004. Similarly, 561503 (Provisional) Dalit Basties have been electrified as on the same date.

Chapter 9

ENERGY CONSERVATION

The demand for energy is growing manifold and the energy sources are becoming scarce and costlier. In particular, growth in electricity consumption is very much related to economic growth. Energy conservation and energy efficiency are a part of the Government’s strategy to decouple economic growth from growth in energy consumption and reduce the energy intensity of the economy.

Among the various strategies to be evolved for meeting energy demand, efficient use of energy and its conservation is by far the least cost environment friendly option. The optimal use of resources and energy efficiency is the mantra that leads to sustainable energy system.

Ministry of Power has included energy efficiency improvement in generation, distribution and consumption of all forms of energy i.e. coal, gas, oil and electricity in its priority instead of pursuing a single-track goal of fresh capacity addition to meet the demand supply gap. The new Electricity Act 2003 and the Energy Conservation Act 2001 are the Government’s major initiatives towards a more sustainable and efficient management of primary and secondary energy resources.

ENERGY CONSERVATION ACT, 2001

Ministry of Power took all these factors into account and enacted the Energy Conservation Act 2001 which came into force with effect from March 2002. The Act provides necessary legal and institutional framework to enable the government to rapidly promote efficient use of energy and its conservation in different sectors of the economy. The Ministry of Power has also created, under this Act, a central coordinating body called ‘Bureau of Energy Efficiency’ (BEE) w.e.f. 1.03.2002, which is responsible for promoting energy saving measures.

The Ministry of Power and the Bureau of Energy Efficiency have adopted self-regulation and market based mechanism for promoting efficient use of energy.

The Ministry of Power and the Bureau of Energy Efficiency have initiated various actions on the thrust areas and moved forward, in establishing institutional mechanisms and infrastructure facilities under the mandate of the EC Act, 2001 and took steps to involve industries, equipment manufacturers, financial institutions and other stakeholders for implementing the provisions of the EC Act, 2001. The various activities undertaken by the Ministry of Power and Bureau of Energy Efficiency are as follows:

INDIAN INDUSTRY PROGRAMME FOR ENERGY CONSERVATION (IPEC)

BEE has taken an initiative to launch the Indian Industry Programme for Energy Conservation (IPEC) which would assist Indian Industry to improve competitiveness through improved energy efficiency as well as to enable them to meet the mandatory provisions of the EC Act. IPEC has provided a forum for cooperation between the Government and industries to work together to explore ways to improve energy efficiency through the mechanism of exchange of information on best practices, to identify energy efficiency potential, establish efficiency targets, implement and manage conservation programmes and to report on the progress.

Six Sectoral Task Forces, as envisaged in the BEE’s Action Plan, have been formed for sharing information and best practices. Task forces formed under Indian Industry Programme for Energy Conservation (IPEC) to support designated consumers in Cement, Pulp and Paper, Textile, Fertilizer, Chlor-Alkali, and Aluminium sectors. One or two meetings have been held for each sector. The activity has further been extended and a combined Task Force for Petrochemicals and Refinery sector has also been formed. Each Task Force is headed by a Task Force leader from the industry who provides overall direction to the programme.

BEE has selected ‘Cement’ and ‘Pulp & Paper’ sectors for the development of specific energy consumption norms. Technical Committee comprising experts from R&D organization, sector specific industry associations and members from task force members have been formed to guide on the project. Presently, data collection and its analysis phase are in progress.

Best Practices on energy conservation were collected and shared among the various seats and IPEC Task Force Practices has also been posted on Bureau’s website for wider dissemination. In the Textile and Cement sectors, a couple of Pilot plants have been visited plants to guide them on energy saving measures.

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DEMAND SIDE MANAGEMENT (DSM)

DSM covers activities which will help an electric utility in reducing peaktolow demand by shifting demand from peak to off-peak periods, and reducing overall electricity demand. The programme is being implemented on a pilot scale in government buildings and industries in Karnataka and Maharashtra. DSM Recommendations were developed for an organizational and management framework. The project provides comprehensive training to utility DSM Cell Staff for load research, programme analysis, planning, design, implementation and evaluation.

STANDARDS & LABELLING PROGRAMME

For various equipment and appliances of common use, there is wide variation in energy consumption of products made by different manufacturers. Further, information on a product’s energy consumption is often not easily available or easy to understand. These factors lead to continued manufacture and purchase of inefficient products. The labeling program when in place, would provide the much needed market pull for energy-efficient hardware and services to reduce energy intensities in a financially attractive manner. This is one of the prime activities of the Bureau through which EEC would undertake an energy management system in the Indian industry. Capacity building of Energy Managers and Energy Auditors will have a long-term positive impact on the Indian economy.

ENERGY EFFICIENCY IN BUILDINGS AND DELIVERY MECHANISMS FOR ENERGY EFFICIENCY SERVICES

The Bureau of Energy Efficiency (BEE) has initiated this activity for undertaking energy efficiency programme in various Central Government buildings and establishments such as administrative buildings of the Ministry of Defence, Indian Railways, defence establishments, port trust etc. Energy Audit studies were initiated by BEE from November 2002 onwards, by forming a consortium of energy audit consultants. The Energy Audit studies have been completed in various identified buildings viz. Rashtrapati Bhawan, Prime Minister’s Office, Defence Ministry blocks in South Block, Rail Bhawan, Sanchar Bhawan, Shram Shakti Bhawan, Transport Bhawan, AIIMS, R.R. Hospital and Terminal I, I & Cargo Section of Indira Gandhi Airport. Energy savings to the tune of 23% to 46% have been identified.

The project provides comprehensive training to utility DSM Cells. Recommendations were developed for an organizational and management framework. The project provides comprehensive training to utility DSM Cell Staff for load research, programme analysis, planning, design, implementation and evaluation.

ENERGY CONSERVATION BUILDING CODES

Energy Conservation Building Codes (ECBCs) are to be prepared for each of the six climatic zones of India for notified commercial buildings. The codes will cover energy efficiency aspects of building envelope, heating, ventilation, and air conditioning (HVAC) system; lighting system; electrical system; also building management system, and service water heating and pumping system. A Committee of Experts has been constituted to guide the development of the codes. A detailed work plan has been developed. The development of codes will involve collection and compilation of codes and work done relating to development of other codes of the region, followed by preparation of draft codes consistent with prevalent Indian Standards and building bye laws.

PROFESSIONAL CERTIFICATION AND AWARDING

One of the important activities mandated under the EC Act is to promote efficient use of energy and its conservation in the energy intensive industries (the Designated Consumers) and promoting the use of energy-efficient hardware and services to reduce energy intensities in a financially attractive manner. This is one of the prime activities of the Bureau through which EEC is undertaking a proper Energy Management System in the Indian industry. Capacity building of Energy Managers and Energy Auditors will have a long-term positive impact on the Indian economy.

QUALIFIED ENERGY MANAGERS & 2142 ENERGY AUDITORS

To bring about attitudinal and behavioral changes in the society, it is necessary to introduce the concepts of energy conservation and efficiency to children through school education. Suitable material has to be developed for mass distribution in the schools. The project has been completed in November, 2004.

INDO-GERMAN ENERGY PROGRAMME (IGEN)

A technical cooperation program is being implemented by the Chamber of German Industry and Partners in India (Fur Technische Zusammenarbeit GmbH) which is the Indo-German Energy Programme. This inter-alia includes support to the implementation of EC Act 2001, capacity building for energy efficiency and certification of Energy Managers and Energy Auditors.

NATIONAL ENERGY CONSERVATION AWARDS

As one of the voluntary initiative, Bureau of Energy Efficiency executes the ‘National Energy Conservation Awards’ Scheme of Ministry of Power to motivate and recognize the industrial units who have taken extra efforts to reduce energy intensities while maintaining the production levels. The scheme is intended to create an environment that would spur industries in achieving performance standards.
excellence in efficient use of energy and its conservation. 28 Sub-sectors of the industries have participated in the
above scheme.
In EC Award 2004, 297 participating industrial units saved Rs. 763 crore per year against an investment of Rs. 1364
crore on account of implementation of various energy conservation projects. Electricity savings achieved by the
participating industrial units resulted in saving in avoided capacity equivalent to 155 MW. Savings of 615 MW of
electric power, as equivalent avoided capacity, has been achieved cumulatively by the participating industrial units
during 1999-2004 through National Energy Conservation Award Scheme.

Energy savings achieved by the participating units (1999-2004)

<table>
<thead>
<tr>
<th>Year</th>
<th>Savings Rs. Crore</th>
<th>Investment Rs. Crore</th>
<th>Electrical Energy Saving Million KWH</th>
<th>Equivalent Avoided Capacity (MW)</th>
<th>Furnace Oil Savings Lakh KL</th>
<th>Coal Savings Lakh Metric tonnes</th>
<th>Gas savings Lakh Cubic Metres</th>
</tr>
</thead>
<tbody>
<tr>
<td>2004</td>
<td>763</td>
<td>1364</td>
<td>814</td>
<td>155</td>
<td>2.49</td>
<td>5.37</td>
<td>18585</td>
</tr>
<tr>
<td>2003</td>
<td>539</td>
<td>1071</td>
<td>542</td>
<td>103</td>
<td>2.21</td>
<td>12.65</td>
<td>73181</td>
</tr>
<tr>
<td>2002</td>
<td>594</td>
<td>691</td>
<td>641</td>
<td>122</td>
<td>1.7</td>
<td>7.4</td>
<td>35588</td>
</tr>
<tr>
<td>2001</td>
<td>587</td>
<td>659</td>
<td>485</td>
<td>90</td>
<td>2.21</td>
<td>4.79</td>
<td>3929</td>
</tr>
<tr>
<td>2000</td>
<td>366</td>
<td>630</td>
<td>524</td>
<td>100</td>
<td>1.327</td>
<td>0.64</td>
<td>707</td>
</tr>
<tr>
<td>1999</td>
<td>205</td>
<td>840</td>
<td>205</td>
<td>45</td>
<td>1.62</td>
<td>2.15</td>
<td>2444</td>
</tr>
</tbody>
</table>

Money savings achieved by participating units in EC Award Scheme (1999-2004)

<table>
<thead>
<tr>
<th>Year</th>
<th>Savings Rs. Crore</th>
<th>Year</th>
<th>Savings Rs. Crore</th>
<th>Year</th>
<th>Savings Rs. Crore</th>
<th>Year</th>
<th>Savings Rs. Crore</th>
</tr>
</thead>
</table>

Encouraging response from Indian Industry in the EC Award Scheme (1999-2004)

NETWORKING WITH STATE DESIGNATED AGENCIES
Effective implementation of the provisions of the Energy Conservation Act throughout the country requires
institutional and administrative support of the State Governments. Thus on the request of BEE, the Governments of
States and Union Territories (UT) have designated government agencies to facilitate implementation of the Act.
The Hon'ble Prime Minister, Dr. Manmohan Singh, released the commemorative postage stamp on Energy Conservation and launched a National Campaign on Energy Conservation, synchronizing with the National Energy Conservation Day, which was celebrated on 14th December 2004.

National Campaign on Energy Conservation primarily focuses on the creation of public awareness and understanding of the significance of energy conservation. Involvement and mobilization of support has also been solicited from the general public, as well as private and state enterprises, to cooperate and take part in the energy conservation implementation, which would contribute to the overall effectiveness of energy conservation in the country.

The National Campaign includes:

- Spreading information about energy situations, simple energy saving methods that can be applied in everyday life.
- In terms of the communication strategy, mass media and campaign events are to be used to create energy conservation awareness effectively and rapidly among the audience nationwide at the initial stage.
- Information dissemination about wider variety of energy conservation methods to improve energy consumption behaviour, including prevention of energy waste and leakage. The National Campaign is targeting various sectors of the economy and special emphasis is being given for active involvement of the children and the youth thereby forming the energy saving habit from childhood.
- A national movement for energy efficiency and its conservation can significantly reduce the need for fresh investment in energy supply systems in coming years. It is imperative that all-out efforts are made to realize this potential. Energy conservation is an objective to which all citizens of the country can contribute.
SEBs/PSUs/PFC while finalizing the X & XI Plan programme. As per the X Plan programme, a total of 74 hydro R&M schemes (11 under Central Sector and 63 under State Sector) have been identified for implementation/completion. For the XI Plan, a total of 31 hydro R&M schemes (2 under Central Sector and 29 under State Sector) have been identified for implementation/completion. The progress of R&M activities during the first two years of the X Plan being slow, CEA reviewed the X/XI Plan programme in April/May, 2004 by convening meetings of the representatives of concerned SEBs/PSUs/PFC/REC. After taking into consideration the views of the utilities for the delays in completion of the schemes under implementation as well as submission of some new R&M proposals by them, the Reviewed X/XI Plan programme, a total of 62 schemes (11 in Central Sector and 51 in State Sector) are programmed for completion during the X Plan. 50 Schemes (3 in Central Sector and 47 in State Sector) are programmed for completion during the XI Plan.

**e) Plan wise summary of hydro R&M schemes:**

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Plan Period</th>
<th>No. of Schemes</th>
<th>Installed Capacity (MW)</th>
<th>Cost (Rs. in cr.)</th>
<th>Benefit (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Central State Sector</td>
<td>State Sector</td>
<td>Total</td>
<td>Actual</td>
<td>Estimated</td>
</tr>
<tr>
<td>1</td>
<td>Upto V/ VIII Plan</td>
<td>13</td>
<td>1282.0</td>
<td>127.370</td>
<td>125.570</td>
</tr>
<tr>
<td>2</td>
<td>IX Plan (Completed)</td>
<td>20</td>
<td>4832.1</td>
<td>567.5712</td>
<td>597.640</td>
</tr>
<tr>
<td>3</td>
<td>X Plan</td>
<td>62</td>
<td>9977.5</td>
<td>2300.8</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>i) Programmed</td>
<td>62</td>
<td>626.639</td>
<td>-</td>
<td>549.470</td>
</tr>
<tr>
<td></td>
<td>ii) Completed</td>
<td>18</td>
<td>2227.062</td>
<td>1081.11</td>
<td></td>
</tr>
<tr>
<td></td>
<td>As on 30.11.2004</td>
<td>18</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>XI Plan (Programmed)</td>
<td>50</td>
<td>7676.7</td>
<td>8534.3</td>
<td>2888.630</td>
</tr>
</tbody>
</table>

**f) Programme for the year 2004-05:**

As per the reviewed X Plan programme, the following 13 schemes to accrue a benefit of 280.35 MW having an installed capacity of 2757.95 MW at an estimated cost of Rs. 416.07 crore have been programmed for completion during the year 2004-05.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of scheme (I.C. in MW), Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tillari (1x60), MSEB</td>
</tr>
<tr>
<td>2</td>
<td>Koyyna Gen. Complex (4x70+4x80+4x80), MSEB</td>
</tr>
<tr>
<td>3</td>
<td>Chhiro (4x60), UJVNL</td>
</tr>
<tr>
<td>4</td>
<td>Chilla (4x36), UJVNL</td>
</tr>
<tr>
<td>5</td>
<td>Khodri (4x30), UJVNL</td>
</tr>
<tr>
<td>6</td>
<td>Bhadra (1x2), KPCL</td>
</tr>
<tr>
<td>7</td>
<td>Sharavathy Ph-A, (10x103.5), KPCL</td>
</tr>
<tr>
<td>8</td>
<td>Sharavathy Ph-B, (4x103), KPCL</td>
</tr>
<tr>
<td>9</td>
<td>Mettur Dam (4x10), TNEB</td>
</tr>
<tr>
<td>10</td>
<td>Papansam (4x7), TNEB</td>
</tr>
<tr>
<td>11</td>
<td>Pykara (3x6.65 + 1x11 + 2x14), TNEB</td>
</tr>
<tr>
<td>12</td>
<td>Maithon (1x20), DVC</td>
</tr>
<tr>
<td>13</td>
<td>Hirakud-1 U-3&amp;4 (2x24), OHPC</td>
</tr>
</tbody>
</table>

**g) Achievement during the period 1.4.2004 to 30.11.2004:**

The following 3 schemes with an installed capacity of 1022.00 MW have been completed at an expenditure of Rs. 88.91 crore against the estimated cost of Rs. 84.88 crore to accrue a benefit of 50.20 MW till 30.11.2004.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of scheme (I.C. in MW), Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tillari (1x60), MSEB</td>
</tr>
<tr>
<td>2</td>
<td>Koyyna Gen. Complex (4x70+4x80+4x80), MSEB</td>
</tr>
<tr>
<td>3</td>
<td>Shivasamudram (8x3+4x6), VVNL</td>
</tr>
</tbody>
</table>

**h) Programme for the remaining period of the year 2004-05 i.e. from 1.12.2004 to 31.3.2005:**

The following 10 schemes to accrue a benefit of 230.15 MW having an installed capacity of 1735.95 MW at an estimated cost of Rs. 331.19 crore have been programmed for completion during the remaining period of the year 2004-05. Works on these 10 schemes are in advanced stages of completion.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of scheme (I.C. in MW), Agency</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chhiro (4x60), UJVNL</td>
</tr>
<tr>
<td>2</td>
<td>Chilla (4x36), UJVNL</td>
</tr>
<tr>
<td>3</td>
<td>Khodri (4x30), UJVNL</td>
</tr>
<tr>
<td>4</td>
<td>Bhadra (1x2), KPCL</td>
</tr>
<tr>
<td>5</td>
<td>Sharavathy Ph-A, (10x103.5), KPCL</td>
</tr>
<tr>
<td>6</td>
<td>Mettur Dam (4x10), TNEB</td>
</tr>
<tr>
<td>7</td>
<td>Papansam (4x7), TNEB</td>
</tr>
<tr>
<td>8</td>
<td>Pykara (3x6.65 + 1x11 + 2x14), TNEB</td>
</tr>
<tr>
<td>9</td>
<td>Maithon (1x20), DVC</td>
</tr>
<tr>
<td>10</td>
<td>Hirakud-1 U-3&amp;4 (2x24), OHPC</td>
</tr>
</tbody>
</table>
Chapter-11
PRIVATE PARTICIPATION IN POWER SECTOR

The first major step towards encouraging private investment in the Power sector was taken in 1991 by providing a legal framework through an amendment of the then existing Electricity (Supply) Act, 1948. Subsequently, a definite tariff framework was also put in place through notification issued by the Government of India. Further, to bring about rationalization and transparency in tariff setting process, the institution of Independent Regulatory Commission was created through an enactment in 1998. Under the Electricity Act, 2003, tariff for supply of power by a generating company to a distribution licensee through long term Power Purchase Agreement (PPA), is to be determined by the Regulatory Commission. Tariff for supply involving a short term PPA (one year or less) would not, however, be regulated. Where open access has been allowed to a consumer, he can reach an agreement with his supplier for purchase of electricity and the tariff for such transaction would not be regulated. Tariff determined through competitive bidding is also not to be regulated.

RESPONSE FROM THE PRIVATE SECTOR

Private power projects being monitored by Central Government:

The response to GOI's energy policy has been encouraging. Since 1991, a total capacity of around 7400 MW from 37 private power plants has so far been commissioned. Another capacity of around 4500 MW from 12 projects is reported to be under construction.

MAJOR POLICY INITIATIVES TAKEN TO STREAMLINE THE PROCESS OF PROJECT DEVELOPMENT

Captive Power Plants

Captive Generation is now free from controls. Unlike in the Electricity (Supply) Act, 1948, the Electricity Act, 2003 does away with the requirement of approval / clearance of any authority (SEB/CEA) for setting up of captive generating plant. The new law also ensures non-discriminatory open access for conveyance of electricity generated from a captive generating plant to the destination of its own use, subject to availability of transmission capacity. For such open access, the person owning the captive generating plant has also been exempted from the requirement of payment of surcharge. Sale of surplus power from the captive generating plant to the grid is, however, subject to regulatory control. 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 introduced from the outset. The transmission utilities/companies have been debarred from engaging in the business of trading. This will encourage competition amongst generators and distributors. Open access in distribution is to be introduced in phases after elimination of cross subsidies. Even before elimination of cross subsidies, open access can be allowed on payment of a surcharge to take care of the current level of cross subsidies and licensees' obligation to supply. Section 10(1) of the Electricity Act, 2003, states that the duties of a generating company will include establishment, operation and maintenance, inter-alia, of the dedicated transmission lines connected to the generating station. Section 10(2) provides that a generating company may supply electricity to any distribution licensee or to any consumer in accordance with the relevant rules and regulations.

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 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, is to prepare and notify a national policy, permitting stand alone systems (including those based on renewable sources of energy and other non-conventional sources of energy) for rural areas.

Setting up of Mega Power Projects:

To facilitate setting up of large sized thermal power plants in the country and in order to derive the economies of scale, the Ministry of Power issued guidelines on 10th November, 1995, for setting up of Mega Power Projects. Power projects having a capacity of 1000 MW or above and supplying power to more than one State were defined as Mega Projects. After experiencing the effect of this policy, the policy was revised in November 1996. Under the revised policy, specific Inter-state and Inter-regional Mega Power Projects were identified for being developed in the public as well as private sector. A Power Trading Company (PTC) has been established to purchase power from the private sector Mega Projects and sell it to the beneficiary States. The policy has been further liberalized and with effect from 1.3.2003, all inter-state projects with a capacity of 1000MW and above for thermal and 500MW and above for hydel projects are being treated as Mega Power Projects subject to fulfilment of the required conditions and would be extended the concession of ‘Zero’ customs duty on import of capital goods. In order to ensure that domestic bidders are not adversely affected, price preference of 15% would be given for the projects under public sector, while deemed export benefits as per the EXIM policy would be given to domestic bidders for projects under public and private sector. In addition, the income tax holiday would be continued with the provision that the tax holiday period of 10 years can be claimed by a promoter in any block of 10 years with the first 15 years. The State Governments are requested to exempt supplies made to Mega Power Plants from sales tax and local levies.

Doing away with the requirement of Techno-Economic Clearance of CEA

Generation has been de-licensed under the Electricity Act, 2003. The requirement of Techno-Economic Clearance of CEA for thermal power plants has also
been done away with. The intention is to provide enough freedom and flexibility in the system for promoters of power plants to put up generating stations. The Regulatory Commissions would ensure that the tariffs are competitive and reasonable. This is a continuation of the policy where tariff based bidding for new IPPs has been prescribed. The objective is to get lower tariffs by promoting competition in the new liberal framework in place of the earlier system of centralised planning and detailed cost scrutiny by CEA. Under Section 8 of the Electricity Act, 2003, any generating company intending to set up a hydro generating station is required to obtain concurrence of the CEA for the scheme wherever the scheme is estimated to involve a capital expenditure exceeding such sum, as may be fixed by the Central Government, from time to time, by notification.

Automatic approval for foreign direct investment

It has been decided to allow automatic approval (RBI route) for 100% foreign equity without any upper ceiling on the quantum of investment. The categories which would qualify for such automatic approval are:

(i) Hydro - electric power plants
(ii) Coal/ignite based thermal power plants
(iii) Oil / gas based thermal power plants

Delegation of environmental clearance:

The following delegations have been made to the State Governments in the matter of environment clearance to power projects:

(i) All co-generation plants and captive power plants upto 250 MW.
(ii) Coal based plants upto 500 MW using fluidized bed technology subject to sensitive area restrictions.
(iii) Power stations upto 250 MW on conventional technology.

(iv) Gas/Naphtha based station upto 500 MW.

A new procedure for getting environmental clearance for pithead thermal project has also been laid down.

RENEWED INTEREST IN POWER SECTOR:

Enhancing the confidence level of investors:

Government of India has been assisting wherever required, to resolve issues coming in the way of implementation of these projects. The Electricity Act, 2003 creates a liberal framework for power development and has revived interest among private sector as well as the lending institutions for making greater investments in the power sector. Encouraged by the Act and other measures, the financial institutions have indicated availability of sufficient funds for good projects with viable tariffs and sponsored by credible investors.

Close monitoring of IPPs for capacity addition in the 10th Plan - constitution of the Inter-Institutional Group:

Ministry of Power has been closely monitoring the power projects in the private sector which are considered possible for early financial closure. An Inter-Institutional Group (IIG) comprising senior representatives from the lenders and Ministry of Power has been constituted to jointly appraise such projects and facilitate financial sanction in a time bound fashion. Eleven power projects with a total capacity of about 4000 MW have since achieved financial closure and eight more projects with a total capacity of about 10,000 MW are being pursued for early financial closure, possibly by the 1st quarter of 2005-06. A Green Channel has been constituted in the Ministry of Power to facilitate statutory clearances and provide online exchange of information between the project developers, Financial Institutions and the Ministry through dedicated websites.

Development of water resources of the common rivers of India, 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.

Nepal

India has been assisting Nepal in the development of its hydro power potential and four HE schemes viz. Pokhra (1 MW), Trisuli (21MW) Western Gandak (15 MW) and Devigahat (14.1 MW) have been implemented with financial and technical assistance from Govt. of India. Three major multi purpose projects in Nepal viz. Karnali, Pancheshwar and Saptakoshi are presently under discussions at various levels as mutual benefits projects. Feasibility report of Karnali multi-purpose project (10800 MW) was prepared in 1985. Key parameters of this project are to be finalised after mutual discussions. A Joint Committee on Water resources (JCWR) headed by respective Water Resources Secretaries 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. During meeting of JCWR, it has been decided to initiate consultation for development of Karnali Project. Investigations have been carried out in respect of Pancheshwar MPHP (5600 MW) by the two countries in their respective territories. A Joint Project Office (JPO) was established in Kathmandu in Dec., 1999 to carry out additional investigations and for preparation of Detailed Project Report (DPR). The JPO has been closed in July, 2002. A draft DPR has been prepared by Indian side which is to be mutually agreed to. Development of this project is covered under Integrated Mahakali Treaty signed between HMG, Nepal and India in Feb., 1996. India has offered financial and technical assistance for investigation and preparation of DPR of Saptakosi High Dam Multipurpose project and Sun Kos Storage cum Diversion Scheme. A Joint Project Office has been established on 4.8.2004 in Biratnagar, Nepal for taking up field investigations and studies for preparation of Joint DPR in a period of about 30 months. Besides above, a number of other projects like Burhi Gandaki (600 MW), and Upper Karnali (300 MW) are also under discussions between India and Nepal. Joint Technical Expert Groups have been constituted for the above projects for guidance for carrying out investigations and preparation of detailed project reports (DPRs).

Chapter -12

COOPERATION WITH NEIGHBOURING COUNTRIES IN HYDRO POWER

Steel Supports for Underground Tunnelling at Tala Hydroelectric Project (1020 MW), Bhutan
By India. In addition, Kurich 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 been taken up for implementation and is being executed by Tala Hydro Electric Project Authority (THPA) comprising Indian and Bhutanese Officers and Engineers. Design and Engineering consultancy for the project in respect of electro-mechanical and civil works is being rendered by Central Electricity Authority (CEA), Central Water Commission (CWC) and Water & Power Consultancy Services (WAPCOS). The project is being funded by a loan through grant and loan and major portion of the power generated will be utilised by India. The project is scheduled for completion by 2005-06. Investigation of Sankosh Multi-purpose Project (4000 MW) has been completed by CWC and DPR prepared by CEA/CWC. In addition, Mamas-MPP (2000 MW) was reconnoitered by a Joint Indo-Bhutan team and pre-feasibility report was prepared in Aug., 1982. The investigation of the scheme could not be taken up due to objections to the scheme from environmental angle. Investigation of two Hydro-electric schemes namely Bumakha (180 MW) and Bunakha (180 MW) have been completed and DPR prepared. Further, Govt. of India has agreed to provide assistance for development of two hydro projects namely Mangdelchuu (360/600 MW) and Punatsangchu (870/1000 MW). A multi-disciplinary team comprising officers from CEA, CWC, WAPCOS and GSI visited Punatsangchu project site during May, 2004 for identification of alternative sites and also to firm up associated Survey and Investigation for preparation of DPR. As present the work of S & I is in progress.

Afghanistan

In Afghanistan, India has proposed to extend assistance for re-construction/ rehabilitation and completion of Salma dam multipurpose project (3x14 MW) through WAPCOS. With Myanmar, formal agreement for preparation of Pre-Feasibility Report for Tamanthi H. E. Project was signed on 13.04.2004 between Ministry of External Affairs (MEA) and NHPC Ltd. As per the agreement, NHPC has started field survey and investigations at the project site from mid October 2004 in association with the concerned departments of Government of Myanmar. The desk studies and preliminary designs in respect of above works are already in advance stage at NHPC office. Based on the field works and desk studies, write-up for Pre-Feasibility Report on Tamanthi Project is scheduled to be completed by February 2005. The final PFR is expected to be submitted to Ministry of External Affairs by March, 2005.

Uzbekistan and Tajikistan

A delegation from NHPC comprising Director (Technical), Executive Director (Design & Engineering) & Chief Engineer (Planning) visited Uzbekistan in the month of April, 2003 and Tajikistan in the month of October, 2003 to explore the possibility of setting up a small hydro power projects in those countries. Certain projects for development, preparation of DPR and renovation, modernization and up-grading were identified by the delegation and report submitted to Ministry of Power and Ministry of External Affairs. Further action is being taken to pursue these projects and enhance the area of cooperation with these countries.

HYDRO ELECTRIC POTENTIAL IN N. E. REGION

As per re-assessment studies carried out by the Central Electricity Authority (CEA), identified hydro potential of the N. E. Region has been estimated as 58971 MW in terms of Installed capacity. Out of the above, 1095 MW has been harnessed so far while another 2244 MW is under construction after investment approval. The State-wise estimated hydro electric potential of North-Eastern Region and its status of development is given below:

<table>
<thead>
<tr>
<th>Region/ State</th>
<th>Identified potential as per re-assessment study</th>
<th>Capacity developed (Above 3 MW capacity)</th>
<th>Capacity under construction (Above 25 MW capacity)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arunachal Pradesh</td>
<td>21800</td>
<td>185</td>
<td>84</td>
</tr>
<tr>
<td>Meghalaya</td>
<td>1574</td>
<td>105</td>
<td>0</td>
</tr>
<tr>
<td>Nagaland</td>
<td>680</td>
<td>275</td>
<td>100</td>
</tr>
<tr>
<td>Mizoram</td>
<td>326</td>
<td>224</td>
<td>100</td>
</tr>
<tr>
<td>Total</td>
<td>25971</td>
<td>1095</td>
<td>2244</td>
</tr>
</tbody>
</table>

SURVEY & INVESTIGATION

In North Eastern Region, 41 schemes totaling to 27753 MW are under Survey and Investigation. Stage-I clearance (under 3-stage clearance procedure) i.e. preparation of pre-feasibility report by NEEPCO for 4 schemes (1310 MW) namely Hint (50 MW), Papppumpam (60 MW), Bhareli lift dam - II (600 MW) and Kameng dam (600 MW) with a total estimated cost of Rs. 10.69 crore and 2 H.E. schemes by NHPC viz. Siang (lower), 1700 MW and Siang (Intermediate) with an estimated cost of Rs. 14.11 crore have been recommended by CEA.

Preparation of PFRs:

Under "50,000 MW Hydro Electric Initiative" 162 Hydro Electric Projects having aggregate installed capacity of 47970 MW were prepared at the Central/State Sector. This included 62 hydro electric Schemes with aggregate Installed Capacity of 30416 MW in North Eastern Region as per details below:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of State</th>
<th>No. of schemes</th>
<th>Installed Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arunachal Pradesh</td>
<td>42</td>
<td>27293</td>
</tr>
<tr>
<td>2</td>
<td>Manipur</td>
<td>3</td>
<td>362</td>
</tr>
<tr>
<td>3</td>
<td>Meghalaya</td>
<td>11</td>
<td>931</td>
</tr>
<tr>
<td>4</td>
<td>Nagaland</td>
<td>3</td>
<td>330</td>
</tr>
<tr>
<td>5</td>
<td>Mizoram</td>
<td>3</td>
<td>1500</td>
</tr>
<tr>
<td>Total</td>
<td>62</td>
<td></td>
<td>30416</td>
</tr>
</tbody>
</table>

PREPARATION OF DPRs:

As a follow up of preparation of PFRs, it has been decided to take up implementation/ preparation of DPRs for low tariff (first year tariff below Rs. 2.50/kWh) schemes selected from PFRs. Out of 162 PFRs, 73 Hydro Electric Projects having aggregate installed capacity of about 33,000 MW have been identified for preparation of DPRs. Out of these 73 projects, 25 projects lie in North Eastern Region as per details given below:

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of State</th>
<th>No. of schemes</th>
<th>Installed Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Arunachal Pradesh</td>
<td>19</td>
<td>21800</td>
</tr>
<tr>
<td>2</td>
<td>Meghalaya</td>
<td>6</td>
<td>582</td>
</tr>
<tr>
<td>Total</td>
<td>25</td>
<td></td>
<td>22382</td>
</tr>
</tbody>
</table>
DEVELOPMENT OF NORTH EASTERN REGION

Power generated by the Central Sector Power Station situated in NER is evacuated through the regional transmission system. Presently, the transmission system in NER consists of about 5,380 ckt. kms. of inter-regional lines between NER & ER and 14 substations. This system also carries the transmission of power generated by the Central Sector Power Undertakings, Autonomous bodies, Boards, Societies, Institutions under the administrative control of Ministry of Power.

The regional transmission system is the backbone of the National Grid. It facilitates and enables export of surplus power from Central Sector to other parts of the country, particularly to the Eastern Region.

iii. Facilitates integration of NER with the rest of the National Grid.

PowerGRID is executing few transmission lines on deposit work basis, which include 132 kV Ziro-Daporijo-Along transmission system, 220 kV Kathalguri-Deomali transmission system, and 132 kV Balipara-Khupi-Kimi transmission line.

The regional transmission system is the backbone of NER Grid and following benefits have accrued from construction of transmission system:

(i) It interconnects the networks of all the States in the region and facilitates inter-state transmission of Central sector power within the NER.

(ii) It enables and exports surplus power from Central Sector to other parts of the country, particularly to the Eastern Region.

The Ministry of Power, its attached and subordinate offices and Public Sector Undertakings, Autonomous bodies, Boards, Societies, Institutions under the administrative control of Ministry of Power have continued their efforts to ensure the effective implementation of the Official Language Policy of the Government and encourage progressively the use of Hindi in day-to-day official work.

In compliance with the Constitutional and statutory requirements of Section 3(3) of Official Language Act as amended from time to time and all documents required to be issued bilingually by the Ministries and the State Governments are being issued bilingually by the Ministry. Similarly, as per provision of the Official Language Rules, 1976, all communications received in Hindi are essentially replied to in Hindi.

To promote the progressive use of Hindi through positive competitiveness among the organisations under the administrative control of Ministry of Power, a scheme for awarding Vidyut Rajbhasha Shield is in operation where offices working in Hindi in ‘A’, ‘B’, ‘C’ and ‘D’ regions are awarded shields.

To encourage book writing originally in Hindi on the subjects related to Power Sector, ‘Kendriya Vidyut Pustak Lekhan Puraskar Yojana’ is being operationalised.

In compliance with the Official Language Policy, a Hindi Fortnight was organized from 14th September, 2004 to 27th September, 2004. During this period various competitions including Hindi Essay Writing, noting & drafting, typing, debate and poetry competition were organized in Hindi for the officers as well as staff of the Ministry, and they participated in them with great enthusiasm, and the winners were awarded certificates and prizes.

A quarterly Home magazine namely ‘Kendriya Vidyut Pustak Lekhan Puraskar Yojana’ is being published.

Eight sub-offices of CEA were inspected to assess the usage of Hindi in official work. Official Language Implementation Committee’s meetings were held regularly.

This scheme is also in operation for the year, 2004. The Hindi Fortnight was celebrated from 1st September, 2004 to 15th September, 2004. During this period, four Hindi Competitions namely Hindi Essay Writing, Hindi Noting & Drafting, Hindi Technical article writing and Hindi extempore speech were organized. Winners of these competitions were awarded Cash Prizes along with letter of appreciation on Hindi Day celebrations.

Ministry of Power were organized regularly. Reconstitution of the Hindi Sahakar Samiti of the Ministry is under process.

CENTRAL ELECTRICITY AUTHORITY

All out efforts are being made to enhance the usage of Hindi in official work in CEA. All incentive schemes sponsored by the Deptt. of Official Language are in operation in CEA. In addition a Running Shield is awarded to the Division/Section/Unit which does maximum work in Hindi throughout the year. During the year, Rajbhasha Shields were awarded to 12 Divisions/Sections where maximum correspondence is made in Hindi with Regions ‘A’, ‘B’, ‘C’. CEA is operationalising a Cash Award Scheme namely Kendriya Vidyut Pustak Lekhan Puraskar Yojana on All India basis to promote original book writing in Hindi from the Calendar Year 2003. Under this Scheme, winners will be awarded with the following prizes:-

First Prize : Rs. 50,000/-
Second Prize : Rs. 30,000/-
Third Prize : Rs. 20,000/-

For the Calendar Year 2003, four entries were received. After evaluation, the evaluation Committee recommended First Prize for the Book namely ‘Jai Vidyut Pradvyogi’ written by Shri. Mahipal Singh. This scheme is also in operation for the year, 2004. Hindi Fortnight was celebrated from 1st September, 2004 to 15th September, 2004. During this period, four Hindi Competitions namely Hindi Essay Writing, Hindi Noting & Drafting, Hindi Technical article writing and Hindi extempore speech were organized. Winners of these competitions were awarded Cash Prizes along with letter of appreciation on Hindi Day celebrations.

NTPC

Keeping in view the committed efforts of NTPC in the...
In pursuance of Govt. of India’s Rajbhasha policy to promote Indian languages and Rajbhasha ‘Hindi’, PGICL has proved its commitment to ensure progressive use of Hindi in all its office works. For outstanding and noteworthy contributions in Hindi, a number of incentive and reward schemes are in force. To increase the use of the official language and for its continued propagation, various activities like workshops to give training, meetings, poetry session, drama, publication of Hindi magazines/papers, lectures from eminent personalities are regularly organized. To achieve the goal as laid out in the Rajbhasha Annual Plan, PGICL has made all efforts to integrate use of Hindi in all aspects of management in the corporation and at all levels.

The efforts made by corporation in promoting the implementation of Rajbhasha has been applauded in many forums which is reflected in bagging the Rajbhasha Shield of Ministry of Power, and is the recipient of many other awards viz: Rajbhasha Vikas Samman, Gadzibad, First Prize to the Grid Darpan by (Aark 9), Rashtriya Hindi Academy, Rupambara, Calcutta, the Rashtriya Rajbhasha Shield for the best Patrika and excellent work in the last five years. PGICL

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PGICL
VIGILANCE ACTIVITIES/DISCIPLINARY CASES

Complaints other than anonymous / pseudonymous were taken up for investigation promptly and after completion of investigation formalities, reports submitted to the Disciplinary Authority for initiation of disciplinary proceedings.

Vigilance Division has carried out inspections of various formations of CEA with a view to apprise and ensure adaptation of proper procedure as well as suggesting improvement thereon. These inspections have also helped in increasing transparency in dealing with public. As a part of preventive vigilance, the Vigilance Division ensured job rotation in sensitive posts and also assisted in gathering the information on the postings of officers in non-posted sensitive posts. Premeditated complaints were also sent to CVC, MOP. Vigilance Awareness Week was observed from 1-11-2004 to 6-11-2004 in CEA Headquarters and its Subordinate Offices to spread a strong message of integrity and transparency.

NATIONAL THERMAL POWER CORPORATION

NTPC Vigilance Department is an ISO 9001-2000 accredited department of the NTPC, consists of six Units, namely Corporate Vigilance Cell, Departmental Proceeding Cell (DPC), MIS Cell, Task Cell, Technical Cell (TC) and Corporate Co-ordination & Vigilance Cell (CCVG). These units deal with various facets of Vigilance Mechanism. Exclusive and independent functioning of these Units ensure transparency, objectivity and quality in vigilance functioning.

There has been disposal of complaints in accordance with the time-frame prescribed by the CVC. 80 complaints were handled during the period. 80 complaints were handled during the period. 01 complaint was received from the CVC. These complaints were also taken up for investigation with the stipulated time-frame.

19 officials were proceeded against for major penalty disciplinary action. 53 officials were proceeded against for minor penalty action and 09 officials were proceeded against for administrative action from April 01, 2004 to Nov 30, 2004. Major penalty was imposed on 2 officials and minor penalties were imposed on 9 officials. Out of above cases, 17 employees were facing disciplinary action in CVC cases as on March 31, 2004. While 6 employees were facing major penalty action, 11 employees were facing minor penalty action. 01 case of major penalty action was disposed of during the period. Hence, as on Nov 30, 2004, disciplinary action is pending against 16 employees.

So far as CBI cases are concerned, 01 CBI case was withdrawn.
were scrutinized. Further, an amount of which included 46 surprise inspections, 41 site corporate level. About 116 inspections were conducted emphasis on inspections both at the regional as well as
Procurement and Quality Assurance with special inspections were carried out by the Chief Technical
overpayment arising out of defects pointed out by CTE
were issued. NTPC Vigilance Deptt. also brings out Annual Vigilance Journal 'Sachetak'. XII Volumes of 'Sachetak' is in the offering. Property Returns relating to immovable property are obtained from employees every two years. The maintenance of Property Returns has been computerized for an easy access. Internal Audit Reports pertaining to 11 NTPC Projects/Station, sites and Regional Headquarters received from NTPC Finance Deptt. during the year were examined from vigilance angle. Vigilance Awareness Week was observed all over NTPC with tremendous enthusiasm, in NTPC Project, Regional, Sites from November 01, 2004 to November 06, 2004.

NATIONAL HYDRO ELECTRIC POWER CORPORATION
Surprise inspections are being conducted by the Vigilance Department at regular intervals. Actionable points are identified by the PVO and intimated to the Head of the Project from time to time. Intensive examination of the work is carried out by Chief Technical Examiner of the CVC as well as personnel of Vigilance Department of NHPC. Emphasis is also on preventive vigilance by issuing circulars and guidelines. Various Vigilance awareness programmes are also conducted at regular intervals, so as to make working to the employees possible. At the end of every year, a Vigilance Journal named "Chetna" is also issued by the

POWER GRID CORPORATION OF INDIA LTD
During the year 2003 high priority was placed on transparency, particularly in areas of Works and Procurement and Quality Assurance with special emphasis being given to provisions both at the regional as well as Corporate level. About 116 inspections were conducted which included 46 surprise inspections, 41 site inspections and 29 inspections in which LOAs were scrutinized. Further, an amount of Rs. 100,84,646 has been recovered till date as a result of such inspections. The CTE's organization has also conducted 4 inspections of the major works. Thirty eight complaints have been closed by which 27 have been closed after preliminary verification and 13 complaints were taken in investigation. On two complaints, advisory memos have been issued to the concerned employees after investigation. 11 cases have also been disposed off during the year, out of which charge sheets were issued to 19 employees. Penalties have been imposed on 23 employees and 2 employees were exonerated of the charges. Enthusiasm marked the observance of the Vigilance Awareness Week during the year 2004 also. The media as well as the contractors/owners of POWERGRID were also associated with its observance specifically through panel discussions and in the 'Web-based complaint handling system' which was formally inaugurated during the occasion.
High priority was also placed on training in which various workshops were organized at the Corporation and regional levels as part of the HRD Calendar for training. Workshops were organized at the behest of the IIM, Kolkata, for about 25 executives of the Eastern and North-Eastern region, in which the primary focus was on ethics and values. Similarly, a workshop was conducted at the Corporate Centre by Prof. S.K. Chakraborty of IIM, Kolkata, in which about 40 executives, which also included EDs, Directors and CMD, participated. Besides, about 170 non-vigilance executives were exposed to vigilance matters in the various workshops organized at the regions during the year 2003 and 2004.

POWER FINANCE CORPORATION
Vigilance Unit is an integral asset to the top management for carrying out investigation into complaints, suggesting corrective measures for improving the system and in ensuring compliance of laid down procedures and also taking other preventive vigilance initiatives. During the period from April to November, 2004, the Vigilance Unit functioned as an effective tool of positive management with the thrust being on preventive vigilance. This was being done by conducting periodic & surprise inspection of files and by issuing effective guidelines to streamline systems & procedures with the aim of eliminating loopholes thereby minimizing scope for misuse. Vigilance Unit undertook a number of various activities of the Corporation. Comprehensive manuals in respect of Resource Mobilization (Overseas), Servicing of funds mobilized from Overseas and Training have already been notified after their review and others are in various stages of finalization.
As part of other preventive vigilance initiatives, Vigilance Unit reviewed the property returns of the employees on a continuous basis. It ensured job rotation in the sensitive posts and worked towards maintenance of transparency & objectivity in administration by suggesting adequate checks & balances.
In accordance with the directive of CVC, Vigilance Awareness Week was observed from 1st November to 6th November 2004 in the head office and regional offices of the Corporation with a view to highlighting the harmful effects of corruption and educating its employees & customers/citizens of the Corporation about their rights and the role they can play in fighting corruption. PFC organized a one-day Programme on 'Vigilance Awareness' for executives of the Corporation to disseminate a strong message of integrity and transparency. In addition, another programme/workshop on 'Customer Interface with Vigilance' to spread awareness about the customer complaints through improved systems & procedures was also organized by the Corporation exclusively for its customers. It organized Slogan Essay and Pictorial Theme Representation Competitions on themes relating to vigilance/corruption with the aim of involving employees and encouraging them to come forward with innovative ideas in spreading awareness about the ill effects of corruption.

RAJAJI FORESTRY CORPORATION
Vigilance Division of the Corporation is under the charge of Chief Vigilance Officer (of the rank of Functional Director). It ensures inculcating habits of adherence to systems and procedures amongst the employees of the Corporation and enforcing discipline in judicious exercise of administrative and financial powers by different field functionaries. Vigilance Awareness Week was observed both at the Corporation Office and at all the field offices in the country. Senior and Middle Level Executives of the Corporation were given exposure on the latest techniques in anti-corruption work. A number of officers were also deputed for training courses at CBI Academy, National Police Academy, Department of Public Enterprises and ICWA.

The Corporation continued to accord a major thrust on preventive vigilance, streamlining and strengthening systems and procedures. Agreed lists in respect of 18 out of the 19 offices of the Corporation were finalized after detailed discussions with the local branches of CBI. Regular inspections carried out by the officers of Vigilance Division helped in getting legal documents worth Rs. 321 crore rectified. Out of 3 disciplinary cases investigated during the year, one has been finalized and in 2 cases, S.O. and P.O. have been appointed. Inspections of office buildings constructed for the Corporation at various places were taken up as per CTE guidelines.

The performance of Vigilance Division was reviewed by CMC, REC, CVO, Ministry of Power, Central Vigilance Commission and other Vigilance Units from time to time. The performance of Vigilance Division was reviewed by CMC, REC, CVO, Ministry of Power, Central Vigilance Commission and other Vigilance Units from time to time. The performance of Vigilance Division was reviewed by CMC, REC, CVO, Ministry of Power, Central Vigilance Commission and other Vigilance Units from time to time.

DAMODAR VALLEY CORPORATION
The Vigilance Dept. continued to strive with renewed vigour for achievement of corporate objectives in an efficient manner. It provided supportive role to the other departments for achievement of their respective objectives without incurring wasteful and avoidable expenditure.
In order to strengthen the system, all other 5 Circles/O.Ms were issued by the Corporation on the basis of the recommendations of the Vigilance Deptt. Corporation also decided that employees drawing pay in the Pay Scale of Rs. 8,000/- and above would come within the jurisdiction of Central Vigilance Commission. As a result of efforts made by the Vigilance Deptt, in the whole Corporation, 36 disciplinary cases investigated during the year were taken up.

A number of disciplinary cases investigated during the year were taken up. The Vigilance Awareness Week was observed in the first week of Nov,2004 throughout the Valley with enthusiasm and due diligence. Special emphasis was laid on the Customer Education Programmes during the week. At Bokaro Thermal Power Station, the "Phiries " were taken out by the students of DVC Schools in which slogans against Corruption were chanted.

The recommendations of Vigilance Deptt. for making appropriate recruitment rules for the Officers of
Vigilance Deptt. have been accepted by the Corporation. In the area of ‘Preventive Vigilance’ too, significant efforts were made. Major penalty was imposed upon 2 employees while minor penalty was imposed upon 4 employees and other 2 employees were exonerated after conclusion of departmental proceedings. Major penalty proceedings were initiated against 3 nos. employees while minor penalty proceedings were initiated against 2 employees upto 30th Nov., 2004.

BHAKRA BEAS MANAGEMENT BOARD

The Vigilance Organisation in Bhakra Beas Management Board comprises a Chief Vigilance Officer (CVO) of the rank of Dy. Chief Engineer who is helped by 6 Vigilance Officers (VOs) of the rank of Superintending Engineers at various Project Stations of Bhakra Beas Management Board, viz Bhakra Dam, Nangal (Two VOs), Beas Dam, Talwara (One VO), Beas Satluj Link Project, Sundernagar (One VO), Chandigarh (One VO) and Panipat (One VO).

Any complaint received is got investigated through the VO and appropriate action is taken.

The Vigilance Organisation is making earnest efforts to inculcate in all the employees the following as a measure of preventive vigilance:

- To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
- To expose without fear those involved in acts of self gratification.
- To take pride in humble living and acts of honesty.
- To follow the rules, procedures, instructions, manuals, etc. meticulously.
- To avoid drawing illogical and dubious inferences so as to derive undue benefits, whenever an ambiguity in rules is encountered.
- To be firm in conviction that integrity is to be safeguarded and any price paid in this regard is insignificant.
- To keep a watchful eye on all possible breeding places of corruption.
- To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
- To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
- To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
- To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
- To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.
- To be always receptive to any suggestion by a colleague, superior or a subordinate which may result in savings to the exchequer.

Expedite the inquiries, their followup action to get decision from parent States/State Electricity Boards. Implementation of disciplinary actions without any delay wherever BBMB itself can take the same.

Besides above, Vigilance Awareness Week 2004 was celebrated from 1.11.04 to 6.11.04 in BBMB offices at Chandigarh as well as at Project Stations. An interactive session on vigilance awareness was also conducted on 5.11.04 at Chandigarh.

CENTRAL POWER RESEARCH INSTITUTE

- During the year upto December 2004 there were no major complaints received.
- There were 2 disciplinary cases initiated for major penalty and the disciplinary proceedings are under progress.
Chapter - 16

ACTIVITIES RELATING TO WOMEN EMPLOYEES

MINISTRY OF POWER

There are 44 women employees in the Ministry of Power. The representation of women employees at various levels in the Ministry of Power is indicated below:

<table>
<thead>
<tr>
<th>Group</th>
<th>Total Employees*</th>
<th>Women Employees</th>
<th>Percentage of overall staff strength</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>40</td>
<td>06</td>
<td>15.00</td>
</tr>
<tr>
<td>B</td>
<td>101</td>
<td>21</td>
<td>20.79</td>
</tr>
<tr>
<td>C</td>
<td>90</td>
<td>15</td>
<td>16.66</td>
</tr>
<tr>
<td>D</td>
<td>69</td>
<td>02</td>
<td>02.89</td>
</tr>
<tr>
<td>Total</td>
<td>300</td>
<td>44</td>
<td>14.66</td>
</tr>
</tbody>
</table>

*As on 30.11.2004

Employment of women in various grades in the Ministry of Power depends on the nominations received from the recruiting agencies such as the Union Public Service Commission (UPSC), Staff Selection Commission (SSC) etc.

CENTRAL ELECTRICITY AUTHORITY

Women employees of this office participate in all the activities such as sports, recreation, council activities. They are also made members of the Governing Bodies like CEA Departmental Canteen Management Committee.

NTPC

Details of Women Employees in NTPC Manpower as on 30.11.2004

<table>
<thead>
<tr>
<th>Category of Employees</th>
<th>Total Employees</th>
<th>Female Employees</th>
<th>% of Female Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Executives</td>
<td>14459</td>
<td>739</td>
<td>5.11</td>
</tr>
<tr>
<td>Executives</td>
<td>9088</td>
<td>282</td>
<td>3.10</td>
</tr>
<tr>
<td>Total</td>
<td>23547</td>
<td>1021</td>
<td>4.33</td>
</tr>
</tbody>
</table>

NHPC

Number & Percentage of women Employees in NHPC as on 30.11.2004 are:

<table>
<thead>
<tr>
<th>Cadre</th>
<th>Total no. of Employees</th>
<th>No. of Female Employees</th>
<th>% of Female Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive</td>
<td>3147</td>
<td>199</td>
<td>6.32%</td>
</tr>
<tr>
<td>Assistant Officer/ AE/ Supervisor</td>
<td>2418</td>
<td>146</td>
<td>6.03%</td>
</tr>
<tr>
<td>Workmen</td>
<td>7909</td>
<td>683</td>
<td>8.76%</td>
</tr>
<tr>
<td>Total</td>
<td>13474</td>
<td>1038</td>
<td>7.70%</td>
</tr>
</tbody>
</table>

Steps taken for welfare of women employees:

- Suitable mechanism for prohibition of harassment of women employees at work place.
- Special committees have also been set up to look into the grievances/complaints of harassment of women employees.

PGCIL

At present there are 365 Women Employees working at different levels in the corporation out of a total of 6901 employees. Details are given below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Total no. of Employees</th>
<th>No. of Female Employees</th>
<th>% of Female Employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executives</td>
<td>2754</td>
<td>105</td>
<td>3.81</td>
</tr>
<tr>
<td>Non-Executives</td>
<td>4147</td>
<td>260</td>
<td>6.27</td>
</tr>
<tr>
<td>Total</td>
<td>6901</td>
<td>365</td>
<td>5.29</td>
</tr>
</tbody>
</table>

REC

As on 31.3.2004, out of a total of 671 employees, 100 are women, including 41 in the executive/supervisory cadre. Thus it has about 15% women employees.

DVC

The Corporation has in its employment large number of women employees working almost at all levels of hierarchy. During the Financial Year 2003-04, fresh appointments of 43 women candidates were made.

All sports & games facilities are extended to women employees and they are encouraged to take part in competition of sports & cultural events.

All statutory facilities like maternity leave and other benefits are extended to the women employees. Their working conditions are governed under the statutory provisions of the Factory Acts & the Shops and Establishment Acts.

Complaint Committee (s) to address complaints of sexual harassment of women employees at work place function at different establishments of the Corporation.

BBMB

BBMB is a statutory body set up by the Ministry of Power consequent upon the enactment of Punjab Re-organisation Act, 1966 to carry out the functions of operation and maintenance of Bhakra Nangal Projects on behalf of the Partner States for which Staff for the operation & maintenance of BBMB works is provided by the Partner State Govts./SEBs on transfer basis. However, in the event of inability of Partner State Govts./SEBs, BBMB resorts to direct recruitment in respect of Group ‘C’ & ‘D’ employees only. BBMB is following the reservation policy of Punjab Govt. issued from time to time. Due representation is being given to the Women Employees in direct recruitment as per policy of the Punjab Govt.

CPRI

As on 01.12.2004, out of a total of 773 employees 11.38% (88) are women. Women’s cell in CPRI is functioning since 1997 to look after the welfare activities of women employees. The initiatives taken by the Woman Cell includes running of Crèche satisfactorily for last 5½ years for the employees children and grievance redressal of the women employees of the Institute.

BTPS

Out of a total number of 59 women employees, 9 are in supervisory category, 23 in executive category and 27 in workmen category.
Chapter-17

PHYSICALLY CHALLENGED EMPLOYEES

MINISTRY OF POWER

This Ministry has a strength of 10 Physically Handicapped persons (7 Group C and 3 Group D) against 851 posts (which include the posts belonging to Groups B and C in the Ministry of Non-Conventional Energy Sources and the Central Electricity Authority in respect of which the Ministry of Power is the Cadre Controlling Authority).

NTPC

Details of Physically Handicapped Employees in NTPC as on 30.11.2004

<table>
<thead>
<tr>
<th>Category of employees</th>
<th>Total employees</th>
<th>Physically Challenged Employees</th>
<th>% of physically Challenged employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-Executives</td>
<td>14459</td>
<td>339</td>
<td>2.34</td>
</tr>
<tr>
<td>Executives</td>
<td>9088</td>
<td>25</td>
<td>0.275</td>
</tr>
<tr>
<td>Total</td>
<td>23547</td>
<td>364</td>
<td>1.54</td>
</tr>
</tbody>
</table>

NHPC

Number & percentage of Physically Handicapped Employees in NHPC as on 30.11.2004

<table>
<thead>
<tr>
<th>Cadre</th>
<th>Total no. of employees</th>
<th>No. of PC employees</th>
<th>% of PC employees</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive</td>
<td>3147</td>
<td>20</td>
<td>0.63%</td>
</tr>
<tr>
<td>Assistant Officer / AE/</td>
<td>2418</td>
<td>30</td>
<td>1.24%</td>
</tr>
<tr>
<td>Supervision Workmen</td>
<td>7969</td>
<td>38</td>
<td>0.48%</td>
</tr>
<tr>
<td>Total</td>
<td>13474</td>
<td>88</td>
<td>0.65%</td>
</tr>
</tbody>
</table>

PGCIL

At present there are 28 numbers of Physically Handicapped Employees working at different levels in the corporation out of a total of 6951 employees.

NEEPCO

Reservation for Physically Challenged Person has been made by the corporation in all Groups of Posts. While initiating recruitment action, reservation is also made for Physically Handicapped Category, but as no suitable candidate qualified, hence none could be recruited.

DVC

Appointments are made as per GOI Rules. During employment, they are engaged on only those jobs which they can perform or they volunteer.

BBMB

BBMB discharges its functions as laid down in Section 79(1) of the Punjab Re-organization Act, 1966 for which the staff for the operation & maintenance of BBMB work is provided by partner State Govts./SEBs to provide the requisite staff, BBMB resorts to direct recruitment & promotion in respect of Group C & D employees only as Officers of Class I & II category and being provided by other States/SEBs, BBMB Class III & Class IV Employees (Recruitment & Conditions of Service) Regulations, 1994 were approved by the Central Govt. & published in Part-III Section 4 of the Gazette of India dated 8.10.1994. As per Regulation 11 of these Regulations, the members belonging to SC, ST, BC, EX-servicemen, Physically handicapped persons and other dependents of deceased employees in the service shall have the reservation in the service & all other concessions as prescribed by the Punjab Govt. from time to time. Accordingly, in view of provisions of Rule 6 of BBMB Rules, 1974 & Regulation 11 of BBMB Class III & IV Employees (Recruitment & Conditions of Service) Regulations, 1994, BBMB is following the reservation policy of Punjab Govt. issued from time to time in regard to implementation of provision of reservation in jobs for physically handicapped persons. According to the instructions of the Punjab Govt., 3% vacancies are to be filled up by direct recruitment reserved for physically handicapped persons 1% each in the category of blind, deaf & dumb and orthopaedically handicapped. Instructions have been issued to all Chief Engineers that the policy instructions of Punjab Govt. regarding reservation for persons with disability issued from time to time may be followed strictly at the time of making direct recruitment and also to ensure that reservation of persons with disabilities does not lapse.

CPIR

The number of Physically Challenged employees in the Institute as on 01.12.04 are 16 out of a total of 773 employees. Shri Suresha, Assistant Grade I who is orthopaedically handicapped, participated in the BELGIAN PARALYMPIC CHAMPIONSHIPS held at Blankenberge Flanders, Belgium on 8th and 9th May 2004 and won individual Gold and Silver Medals.

Chapter - 18

CENTRAL ELECTRICITY AUTHORITY

Organisation 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 provisions contained in Section 70(3) of the Electricity Act 2003, the Authority shall consist of not more than fourteen Members (including its Chairperson) of whom not more than eight shall be full-time Members to be appointed by the Central Government. Presently, the Authority comprises Chairperson, six full-time Members and seven part-time Members. The Chairperson is the head of the organisation and Members are overall in-charge of different functional wings.

Functions of CEA

The Authority is generally to exercise such functions and perform such duties and act in such a manner as prescribed in the Electricity Act, 2003. Under Section 73 of the Act, CEA is particularly charged with the following functions:

- To advise the Central Government on the matters relating to the national electricity policy, formulate short-term and perspective plans for development of the electricity system and coordinate the activities of the planning agencies for the optimal utilisation of resources to subserve the interests of the national economy and to provide reliable and affordable electricity for all consumers;
- To specify the technical standards for construction of electrical plants, electric lines and connectivity to the grid;
- To specify the safety requirements for construction, operation and maintenance of electrical plants and electric lines;
- To specify the grid standards for operation and maintenance of transmission lines;
- To specify the conditions for installation of meters for transmission and supply of electricity;
- To promote and assist in the timely completion of schemes and projects for improving and augmenting the electricity system;
- To promote measures for advancing the skill of persons engaged in electricity industry;
- To advise Central Government on any matter on which its advice is sought or make recommendation to that Government on any matter in the opinion of the Authority, the recommendation would help in improving the generation, transmission, trading, distribution and utilization of electricity;
- To collect and record the data concerning the generation, transmission, trading, distribution and utilization of electricity and carry out studies relating to cost, efficiency, competitiveness and such like matters;
- To make public from time to time the information secured under this Act, and provide for the publication of reports and investigations;
- To promote research in matters affecting the generation, transmission, distribution and trading of electricity;
- To carry out, or cause to be carried out, any investigation for the purpose of generating or transmitting or distributing electricity;
- To advise any State Government, licensees or the generating companies on such matters which shall enable them to operate and maintain the electricity system under their ownership or control in an improved manner and where necessary, in coordination with any other Government, licensee or the generating company owning or having the control of another electricity system;
- To advise the Appropriate Government and the Appropriate Commission on all technical matters relating to generation, transmission and distribution of electricity; and
- To discharge such other functions as may be provided under this Act.

Apart from the above functions, CEA also undertakes design & engineering of power projects with a view to develop in-house technical know-how and also to assist the State Electricity Boards, generating companies & State authorities requiring such assistance under Section 73(m) of the Electricity Act, 2003.
TECHNO-ECONOMIC APPRAISAL OF POWER DEVELOPMENT SCHEMES

(PERIOD 1.4.2004 TO 30.11.2004)

The Central Electricity Authority, had been accorded techno-economic clearance/appraisal to generation schemes (hydro and thermal) and transmission schemes etc. under the then Electricity (Supply) Act, 1948 before the enactment of the Electricity Act, 2003. CEA’s consultation u/s 44 (2A) of repeated Electricity (Supply) Act, 1948 was also being conveyed to the concerned state electricity boards/regulatory commissions for captive power plants. The Electricity Act, 2003 came into force w.e.f. 10 June, 2003. As per the Electricity Act, 2003, concurrence of CEA is now required for only hydro generating schemes. Techno-economic clearance of CEA to thermal generation and transmission schemes as well as consultation for captive power plants are not required now.

During the year 2004-05, upto 31.11.2004, Central Electricity Authority accorded TEC/TEA to 4 Nos. Hydro generating schemes aggregating to a capacity of 1224 MW. The details of these schemes are given below:

Details of Hydro Schemes Cleared techno-economically by CEA during 2004-05

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of Scheme/State/Executing Agency</th>
<th>Installed Capacity (MW)</th>
<th>Estimated Cost</th>
<th>Date of CEA Clearance</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Chutak HEP in J&amp;K by NHPC</td>
<td>4x11 (44)</td>
<td>Rs. 655.65 crore (Dec.03 PL)</td>
<td>23.4.2004 (TEA)</td>
</tr>
<tr>
<td>2</td>
<td>Loharinag Pala HEP in Uttarakhand by NTPC</td>
<td>4x150 (600)</td>
<td>US $ 34,15 Million+ Rs.2262.40 crore =Rs. 2417.17 cr. (March,04 PL)</td>
<td>11.8.04</td>
</tr>
<tr>
<td>3</td>
<td>Tapovan Vishnugad HEP in Uttarakhand by NTPC</td>
<td>4x130 (520)</td>
<td>US $ 43.64 Million+ Rs.2346.97 crore = Rs.2545.51 crs. (March,04 PL)</td>
<td>11.8.04</td>
</tr>
<tr>
<td>4</td>
<td>Mathar HEP in Chhattisgarh  by CSEB</td>
<td>3x20 (60)</td>
<td>Rs.313.35 Million (March, 04 PL)</td>
<td>19.8.04</td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td>1224 MW</td>
<td>Rs. 5931.68 crore</td>
<td></td>
</tr>
</tbody>
</table>

RESEARCH AND DEVELOPMENT

Under the provisions of the Electricity Act, 2003 Central Electricity Authority will function and perform such duties so as to promote research in matters affecting the generation, transmission, distribution and trading of electricity.

IMPORTANT TASKS HANDLED DURING 2004-2005 (UP TO NOVEMBER 2004)

1. Perspective Plan for Research & Development.
   A Standing Committee on R&D for preparation of a Perspective Research and Development Plan for next 15 years was constituted by the Ministry of Power under the Chairperson, CEA. The report of the Committee ‘National Perspective Plan for R&D in Power Sector’ has since been submitted. An action plan to carry out R&D on prioritized areas has been prepared by the Standing Committee on R&D. During its 8th meeting held on 15th September 2004, the Standing Committee on R&D has recommended 14 projects for forwarding to Ministry of Power. A combined SFC memo for these projects is under preparation and required inputs for the same have been requested from the respective lead agencies.

   As regards probable anticipated work up to March 2005, after approval of the SFC Memo and allocation/release of funds the projects will be taken up for research. It is estimated that funds to the tune of Rs. 5 crore would be required during the remaining period of the current financial year.

2. CEA Chairs at IIT, Delhi
   An MoU exists between CEA and the Indian Institute of Technology, Delhi for creation of two CEA Chair Professorships, one in the Center for Energy Studies alternatively Department of Mechanical Engineering and the other in Electrical Engineering Department to fulfill following objectives concerning Power Sector.
   • To take part in the academic programs of IIT, Delhi, as full time professors/faculty in the Center for Energy Studies alternatively Department of Mechanical Engineering and Electrical Engineering Department and coordinate HRD programmes in the frontier areas of Power Management.
   • To develop R&D programs relevant to the needs of CEA and in areas defined in the appendix to the MoU (subject to need based revision).
   • To initiate and develop HRD programs relevant to the needs of CEA and to coordinate courses for any batch of students from the CEA.

   Under the programme, a number of topics for research have been forwarded to IIT, Delhi along with names of CEA officer(s) for each of the topics to carry out R&D work in association with the faculty of IIT, Delhi. Methodology for carrying out research work is being formulated.

   A number of officers of CEA and NPTI are pursuing M.Tech and PhD courses at IIT, Delhi under the programme, which will give long-term benefits to the Power Sector.

   As regards probable anticipated work up to March 2005, applications for M.Tech and PhD for the academic year 2005-06 would be invited during February-March, 2005.

3. Preparation of Data Base
   The data information regarding R&D work in power sector being carried out by various agencies/organisations in Private and Government Sectors was obtained and compiled in the form of a Directory and is available on the CEA Website. The Directory has been updated based on the revised information obtained from the Research Organisations.

   As regards probable anticipated work up to March 2005, being a continuous process, the updating of Directory will be continued by obtaining revised information from all concerned.

Ministry of Power Annual Report 2004-05
Badarpur Thermal Power Station (BTPS) was established by the Government of India in the year 1967 to ensure power availability for meeting growing demand of power in the Northern Region. The installed capacity of BTPS is 720 MW consisting of 3x100 MW and 2x210 MW coal fired units. However, the 3 units of 100 MW each have been derated to 95 MW w.e.f. 11.1.1990 making the present capacity as 705 MW. The station is owned by Government of India and is being managed by NTPC since 1st April, 1978 on an agency basis.

BTPS is one of the major source of power supply to Delhi State and since April,1987, the entire energy generated at this station is supplied to the Delhi Vidyut Board now called Delhi Transco Limited (DTL).

The generation target for BTPS had been fixed at 5400 MUs at a PLF of 87.44% & Availability of 92.30% for the year 2004-05 as against the target of 5200 MUs at a PLF of 84.20% and availability of 89.91% during the year 2003-04. The power station has generated 3677.152 MUs at a PLF of 89.07% and an availability of 94.41% till November'2004.

For the first 6 months of the financial year 2004-05, BTPS’s PLF (92.30%) was the highest amongst all the NTPC Stations.

Station achieved the best ever monthly generation of 510.313 MUs in the month of July’04 which was the highest generation since inception. Besides this station achieved the best ever Plant Load Factor of 98.69% in the month of September’04 which is the best performance since inception.

Station achieved the lowest ever Financial Year DM make up water consumption of 1.0% of MCR since inception till October’2004.

BTPS has bagged the Greentech Gold Award for Excellence in Environment in thermal sector on 6 November’2004 for the year 2003-04.

BTPS has been awarded Gold Shield and Certificate for outstanding performance by CEA, for innovation in IT for the year 2004 by Institute of Directors (IOD) in August, 2004.

BTPS has been declared winner of Silver Award in Thermal Power Sector for outstanding achievement in Safety Management by Greentech Foundation in a Function held on 21st June’04 in Goa.

RENOVATION & MODERNISATION PHASE-I
BTPS is one of the Thermal Power Stations identified under the centrally sponsored scheme for Renovation and Modernization of thermal utilities. Under the Renovation & Modernization Scheme Phase-I, various schemes for 3x100 MW of BTPS for Rs.36.97 crore were approved. All of the works under these schemes have already been completed and an expenditure of Rs. 36.97 crore has been incurred up to March, 2002. With implementation of R&M Phase-I scheme for BTPS, the actual annual average PLF has improved from 45.30% to 65.00% over the envisaged improvement in PLF from 45.30% to 55%.

REPLACEMENT AND REPAIR WORKS
Pending sanction of R&M Phase-II funds, SFC schemes covering certain Urgent Works of Capital Nature were identified jointly with CEA for immediate implementation in the BTPS Units. Four schemes (Replacement and Repair works I, II, III & IV) have been approved for execution during the years 1999-2000, 2000-02, 2001-02 and 2003-04 at an estimated cost of Rs. 14.70 crore (SFC-I), Rs. 14.91 crore (SFC-II), Rs. 14.95 crore (SFC-III) & Rs. 7.95 crore (SFC-IV) respectively. All the above four schemes (SFC-I, II, III & IV) have been completed and expenditure incurred.

ASH UTILISATION
1,60,288 MT of ash was utilized during the financial year 2004-05 (upto 31st October’04). BTPS achieved a progress of 15.46 lakh bricks in the F.Y.2004-05 (upto 30th October’04). Bricks are being used in-house for civil constructions in a big way. Ash bricks from the station have been supplied in the past to IIT Delhi, US Embassy, CPCB, CPWD and CBRI, Roorkee for their construction works.

Dry ash bagging facility has been commissioned (capacity 50 MT/DAY). Till October 2004, 35,275 bags (containing 40 kgs ash per bag totaling 1411 MT of ash) have been issued to various agencies.
The Central Electricity Regulatory Commission (CERC), an independent statutory body with quasi-judicial powers, was constituted on 25th July 1998 under the Electricity Regulatory Commissions Act, 1998 and has been continued under Electricity Act, 2003. The Commission consists of a Chairperson and four other Members including the Chairman, CEA as the ex-officio member.

**Functions:**
- under the Electricity Act, 2003, the Commission discharges the following functions, namely:-
  - to regulate the tariff of generating companies owned or controlled by the Central Government;
  - to regulate the tariff of generating companies other than those owned or controlled by the Central Government specified in clause (a), if such generating companies enter into or otherwise have a composite system of interconnection and sale of electricity in more than one State;
  - to regulate the Inte-State transmission of electricity;
  - to determine the tariff for Inte-State transmission of electricity;
  - to issue licenses to persons to function as transmission licensee and electricity trader with respect to their Inte-State operations;
  - to adjudicate upon disputes involving generating companies or transmission licensee in regard to matters connected with clauses (a) to (d) above and to refer any dispute for arbitration;
  - to levy fees for the purposes of this Act;
  - to publish and publish the Grid Code having regard to Grid Standards;
  - to specify and enforce the standards with respect to quality, continuity and reliability of service by licensees;
  - to fix the trading margin in the Inte-State trading of electricity, if considered, necessary;
  - to discharge such other functions as may be assigned under this Act.

**Advisory Role:**
- The Electricity Act, 2003 further states that the Central Commission shall advise the Central Government on all or any of the following matters, namely:-
  - formulation of National Electricity Policy and Tariff Policy;
  - promotion of competition, efficiency and economy in activities of the electricity industry;
  - regulation of investment in electricity industry;
  - any other matter referred to the Central Commission by that Government.

**CERC Regulations:**
The Commission follows a transparent consultative procedure in the formulation of Discussion Paper and its issue of draft regulations. Before issuing any new regulation, Commission holds a public hearing. The CERC has issued the following regulations in the year 2004-05:

**Implementation of Open Access regulation**
The process of issuing regulations for Open Access in Inte-State Transmission which was started by the Commission in the year 2003-04 by issuing a concept paper followed by public hearing and publishing of regulations was completed. The final regulations on Open Access in Inte-State Transmission notified on 6th Feb. 2004 were fully operationalised on 6th May, 2004, thereby heralding a new chapter in the history of electricity supply industry when generating companies, distribution companies and captive plant owners are able to seek access to Inte-State transmission system across the country for wheeling electricity. This regulation has been further amended in Feb. 2005 by the Commission.

**New Terms and Conditions of Tariff**
- As the existing terms and conditions of tariff were coming to an end on 31st March, 2004, the Commission had taken advance action for preparation of new terms and conditions of tariff to be applied to all generating stations and transmission facilities under the jurisdiction of CERC. The new terms and conditions of tariff to be applicable for a 5-year period commencing from 1st April, 2004 were notified by the Commission on 26th March, 2004. The new regulation mark a trend away from cost plus approach of tariff regulation, towards a new regime of light handed regulations based on normative parameters. Some stakeholders had approached the Commission for amending the new regulations for removal of difficulties. The Commission undertook a suo-moto review and issued an amendment to the tariff regulations in September, 2004. Amendments were related to financial norms for servicing the capital and rates for unscheduled inter changes of energy.

**Inter-State Trading in Electricity**
- As required under the provision of the Electricity Act, 2003, the Central Commission issued on 30th January 2004, the regulations on procedure, terms & conditions for grant of licence for inter-State trading in electricity. The Commission issued licence for Inter-State trading to 12 applicants in the year 2004-05 and after going through the due procedure set out in the Electricity Act, 2003.

**Other Regulations:**
- In accordance with the requirement of the Electricity Act, 2003 the Commission has issued the following regulations related to procedure and application fee for filing of petitions.
  - Final regulations on procedure for making application for determination of tariff.
  - Final regulations on procedure for filing of petitions.

**Public Sector Undertakings**

### COAL BASED PROJECTS

<table>
<thead>
<tr>
<th>Project</th>
<th>State</th>
<th>Commissioned Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Singrauli</td>
<td>UP</td>
<td>2000</td>
</tr>
<tr>
<td>Korba</td>
<td>UP</td>
<td>2100</td>
</tr>
<tr>
<td>Ramagundam</td>
<td>AP</td>
<td>2600</td>
</tr>
<tr>
<td>Farakka</td>
<td>WB</td>
<td>1600</td>
</tr>
<tr>
<td>Vindhyachal</td>
<td>MP</td>
<td>2200</td>
</tr>
<tr>
<td>Rihand</td>
<td>UP</td>
<td>1000</td>
</tr>
<tr>
<td>Kahaalgaoon</td>
<td>Bihar</td>
<td>840</td>
</tr>
<tr>
<td>NCPTP</td>
<td>UP</td>
<td>840</td>
</tr>
<tr>
<td>Talcher STPP</td>
<td>Orissa</td>
<td>2500</td>
</tr>
<tr>
<td>Talcher TPS</td>
<td>Orissa</td>
<td>460</td>
</tr>
<tr>
<td>Unchahar</td>
<td>UP</td>
<td>840</td>
</tr>
<tr>
<td>Simhadi</td>
<td>AP</td>
<td>1000</td>
</tr>
<tr>
<td>Tanda TPS</td>
<td>UP</td>
<td>440</td>
</tr>
<tr>
<td>Total (Coal)</td>
<td></td>
<td>16840</td>
</tr>
</tbody>
</table>

### COMBINED CYCLE PROJECTS

<table>
<thead>
<tr>
<th>Project</th>
<th>State</th>
<th>Commissioned Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auraiya</td>
<td>UP</td>
<td>652</td>
</tr>
<tr>
<td>Arta</td>
<td>Raj</td>
<td>413</td>
</tr>
<tr>
<td>Kawsa</td>
<td>Gujrat</td>
<td>817</td>
</tr>
<tr>
<td>Dadi</td>
<td>Gujrat</td>
<td>817</td>
</tr>
<tr>
<td>Jhanjur-Gandhar</td>
<td>Gujrat</td>
<td>648</td>
</tr>
<tr>
<td>Kayamkulam</td>
<td>Kerala</td>
<td>350</td>
</tr>
<tr>
<td>Faridabad</td>
<td>Haryana</td>
<td>430</td>
</tr>
<tr>
<td>Total (Gas)</td>
<td></td>
<td>3955</td>
</tr>
<tr>
<td><strong>TOTAL (Coal + Gas)</strong></td>
<td>22435</td>
<td></td>
</tr>
</tbody>
</table>

### CAPTIVE POWER PLANTS

<table>
<thead>
<tr>
<th>Project</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>GRANDTOTAL</strong></td>
<td>22749</td>
</tr>
</tbody>
</table>
in the State of Uttaranchal. NOC was also obtained from Uttaranchal Environment Conservation and Pollution Control Board on 2 September 2004.

- Construction of Koldam Hydro Electric Power Project (4x200 MW) in Himachal Pradesh is progressing as per schedule and River Satluj has been diverted successfully on 30 October 2004 as per schedule.

- NTPC has issued Letter of Intent (LOI) on Reliance Industries Ltd. (RIL) for supply of gas for NTPC projects at Kawas and Gandhar in Gujarat. International Competitive Bidding (ICB) is in progress for sourcing of LNG/Natural Gas for expansion of Kayamkulam Project in Kerala (1950 MW).

- NTPC has been allotted Pakri-Barwadih coal mines in North Karanpura coal field of CCL by Ministry of Coal for development under Government dispensation route.

- NVVN transacted business with 20 state utilities trading in more than 1345 MU's in 2004-05 (upto 30 November 2004).

- NTPC is pursuing business opportunities in Saudi Arabia, Iran, Vietnam, Sri Lanka, Bahrain and Lebanon and has submitted offers in the following areas:
- Review Engg., Project Management & Construction management.
- O&M of power projects.
- Training services.

- In addition to this, NTPC is also exploring possibilities of setting up power projects in the country Sri Lanka, Vietnam & Iran etc.

- MoU signed with REC for setting up a joint venture to take up Decentralized Distribution Generation Scheme (DDG) for rural electrification through Non-Conventional energy sources.

- MoU signed with REC on 16 August 2004 for implementation of schemes under Accelerated Rural Electrification Programme (AREP) for electrification of one block each in the States of West Bengal and Jharkhand. NESCL (NTPC Electric Supply Company Ltd.) has been entrusted with implementation of this programme.

- NTPC ranked third best in “Hewitt CNBC Best Employers in India 2004” survey.

- National Award for welfare of persons with disabilities in the Best Employer Category was conferred upon NTPC by Hon’ble President of India.

- NTPC consultancy wing was awarded the CERTIFICATE OF MERIT for Excellence in Consultancy services for the Project “Pragati Combined Cycle Power Project (330 MW)” by Consultancy Development Centre (CDC) National Awards for Excellence in Consultancy services-2004. The award was given by the Hon’ble President of India, Dr. A.P.J. Abdul Kalam.

**GENERATION** (as on 30.11. 2004)

**NTPC Stations:**
As on 30.11.2004, a total capacity of 22,749 MW is under operation at various NTPC stations. This comprises 32 units of 200/210 MW at Singrauli, Korba,
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Ramagundam, Farakka, Vindhyachal, Dadri, Unchahar and Kalpahalgam, 22 units of 500 MW at Singrauli, Korba, Ramagundam, Farakka, Vindhyachal, Rihand, Talcher-Kanhiya and Simhadri, 6 units of 110 MW at Tanda and Talcher, 4 units of 60 MW at Talcher and 22 Gas Turbines and 10 Steam Turbines at Anra, Auraiya, Kawas, Dadri, Gandhar, Kayamkulam & Faridabad combined cycle power plants.

The generation performance of NTPC Stations has consistently been at high level. The gross generation from NTPC stations during the year 2004-05 (upto 30.11.2004) has been 10,020.063 MUs against 9,931.046 MUs generated during the same period last year. NTPC achieved a PLF of 84.77% which is highest for this period since inception with availability of 88.58%.

The generation performance of NTPC Stations has consistently been at high level. The gross generation from NTPC stations during the year 2004-05 (upto 30.11.2004) has been 10,020.063 MUs against 9,931.046 MUs generated during the same period last year. NTPC achieved a PLF of 84.77% which is highest for this period since inception with availability of 88.58%.

CONSECUTION OF BALANCE DUES

Outstanding dues of NTPC (F.Y. 2004-05

The outstanding dues as at 30.11.2004 were Rs. 953.10 crore has been securitised under the scheme. NTPC has securitised debt of Rs. 953.10 crore has been securitised under the scheme.

The energy billed for the financial year 2004-05 (upto Nov’04) were Rs. 14271.05 crore with realisation of Rs. 1442.29 crore.

The outstanding dues as at 30.11.2004 were Rs. 953.10 crore has been securitised under the scheme.

OUTSTANDING DUES OF NTPC (F.Y. 2004-2005 upto Nov’04)

The energy billed for the financial year 2004-05 (upto Nov’04) were Rs. 14271.05 crore with realisation of Rs. 1442.29 crore.

The outstanding dues as at 30.11.2004 were Rs. 953.10 crore has been securitised under the scheme.

These orders balance dues payable by Bihar, Jharkhand and Madhya Pradesh to NTPC as on 30.9.2001 to be securitised has been reconciled and are given below:

<table>
<thead>
<tr>
<th>SEB</th>
<th>Bond Amount (Rs. crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bihar</td>
<td>255.55</td>
</tr>
<tr>
<td>Jharkhand</td>
<td>510.04</td>
</tr>
<tr>
<td>Madhya Pradesh</td>
<td>247.61</td>
</tr>
<tr>
<td>Total</td>
<td>1013.20</td>
</tr>
</tbody>
</table>

Subsequent to the issuance of the bonds, NTPC has started paying cash incentive to various SEBs subject to compliance with the terms of the One Time Settlement scheme.

GROSS REVENUE AND PROFIT

NTPC recorded a Gross Revenue of Rs. 11650.50 crore and Net Profit after Tax is Rs. 2433.50 crore during the first six months of 2004-05 (i.e April-Sep 2004).

RAISING OF FUNDS FOR CAPACITY ADDITION PROGRAMME

DOMESTIC BORROWINGS:

NTPC has tied up loans from Domestic Banks and Financial Institutions aggregating Rs. 15269 crore as on 30th November 2004 for its Capacity addition programme.

DOMESTIC BONDS

The Company has issued XV, XVI, XVII and XIX series Bonds of Rs. 700 crore. On its maturity on 24th March 2004, the company has redeemed ten year Series XI Tax-free Secured Bonds aggregating Rs. 100 crore which carried a coupon rate of 10.5% p.a. payable semi-annually. The total amount of Domestic Bonds outstanding as on 30.11.2004 is Rs. 3027.70 crore.

In February 2004, the company has listed privately placed Bonds of series XII, XIII, XIV and XVII on the National Stock Exchange of India in compliance to listing requirement of SEBI.

PUBLIC DEPOSITS

The cumulative deposits received by the Company from the public from 7 October 2004 to 14 October 2004, the company has redeemed ten year Series XI Tax-free Secured Bonds aggregating Rs. 100 crore which carried a coupon rate of 10.5% p.a. payable semi-annually. The total amount of Domestic Bonds outstanding as on 30.11.2004 is Rs. 3027.70 crore.

In February 2004, the company has listed privately placed Bonds of series XII, XIII, XIV and XVII on the National Stock Exchange of India in compliance to listing requirement of SEBI.

A view of NTPC, Talcher Kanhiya power project

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Ministry of Power Annual Report 2004-05

Ministry of Power Annual Report 2004-05
the Govt. of India and has a consistent record of surpassing the set targets in MoU year after year. NTPC achieved the Excellent targets set under the Memorandum of Understanding (MoU) signed with GOI and achieved Excellent Rating for all the 17 years upto 2003-04 since inception of the MOU system.

CORPORATE PLAN
In tune with the transformation roadmap, the corporate plan of NTPC for the period 1997-2012 has been updated to 2002-2017 and the updated Corporate Plan has been approved by company’s Board of Directors. It envisages NTPC to be a 56,000 MW Plus Company by 2017 comprising 42,000 MW coal and gas based capacity, 11,000 MW hydel capacity, 1000 MW nuclear capacity and 1000 MW from non-conventional sources.

The ownership profile of the total capacity portfolio shall comprise 48,000 MW on Company’s own Balance Sheet, 6,000 MW through Joint Ventures, 1,000 MW through Domestic Subsidiaries and another 1,000 MW through Overseas Ventures. The plan also envisages NTPC’s presence in coal mining, washeries, LNG, power distribution and trading businesses. Further, new business opportunities are being continuously explored through environment scanning and new business plans are adopted through mid-course corrections.

Capacity Addition Programme
Notably, work on 7990 MW capacity addition for benefits in X and XI Plan is progressing concurrently. NTPC’s target for capacity addition in the X Plan is finalized at 9160 MW. Out of this, 2500 MW has already been commissioned. Construction work is going on in 7990 MW capacity, comprising 4710 MW due for benefits in X Plan and 3280 MW due for benefits in XI Plan. Balance 150 MW due for benefits in X Plan is under approval. During the year 2003-04, one unit of 500 MW at Talcher Project was commissioned ahead of schedule. Further, another 500 MW unit has been commissioned at Talcher in May, 2004 and 500 MW Unit-III of Ramagundam-III (1x500 MW) commissioned in August 2004. Thus, the total generating capacity of the company has increased from 20,935 MW to 21,935 MW. In addition to this, NTPC has formed 50:50 equity participation JVs with SAIL, which consist of CPPs at Dungapur, Rourkela and Bhilai aggregating 314 MW. Thus, the total installed capacity of NTPC is 22,749 MW.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Projects/State</th>
<th>Capacity addition</th>
<th>Fuel</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Talcher-II STPP, Orissa</td>
<td>Coal</td>
<td>2000*</td>
</tr>
<tr>
<td>2</td>
<td>Rihand-II STPP, U.P.</td>
<td>Coal</td>
<td>1000</td>
</tr>
<tr>
<td>3</td>
<td>Vindhyachal-III STPP, M.P.</td>
<td>Coal</td>
<td>1000</td>
</tr>
<tr>
<td>4</td>
<td>Kahalgaon-II TPP,Ph-I, Bihar</td>
<td>Coal</td>
<td>1000</td>
</tr>
<tr>
<td>5</td>
<td>Koldam HEPP, H.P.</td>
<td>Hydro</td>
<td>800</td>
</tr>
<tr>
<td>6</td>
<td>Unchahar-III TPP,UP</td>
<td>Coal</td>
<td>210</td>
</tr>
<tr>
<td>7</td>
<td>Kahalgaon-II TPP,Ph-II, Bihar</td>
<td>Coal</td>
<td>500</td>
</tr>
<tr>
<td>8</td>
<td>Sipat-II TPP,Chattisgarh</td>
<td>Coal</td>
<td>1000</td>
</tr>
<tr>
<td>9</td>
<td>Sipat-I TPP, Chattisgarh</td>
<td>Coal</td>
<td>1980</td>
</tr>
<tr>
<td></td>
<td>TOTAL</td>
<td></td>
<td>7990 MW</td>
</tr>
<tr>
<td>1</td>
<td>Barh TPP,Bihar</td>
<td>Coal</td>
<td>1980</td>
</tr>
<tr>
<td>2</td>
<td>North Karanpura TPP, Jharkhand</td>
<td>Coal</td>
<td>1980</td>
</tr>
<tr>
<td>3</td>
<td>Kawsa-II CCPP,Gujarat</td>
<td>LNG/ Natural Gas</td>
<td>1300</td>
</tr>
<tr>
<td>4</td>
<td>Gandhar-II CCPP,Gujarat</td>
<td>LNG/ Natural Gas</td>
<td>1300</td>
</tr>
<tr>
<td>5</td>
<td>Loharinag Pala HEPP,Jharkhand</td>
<td>Hydro</td>
<td>600</td>
</tr>
<tr>
<td>6</td>
<td>Tapoban Vindhugad HEPP,Uttaranchal</td>
<td>Hydro</td>
<td>520</td>
</tr>
<tr>
<td>7</td>
<td>Kayamkulam CCPP-II,Kerala</td>
<td>LNG/ Natural Gas</td>
<td>1950</td>
</tr>
<tr>
<td>8</td>
<td>Lata Tapovan HEPP, Uttaranchal #</td>
<td>Hydro</td>
<td>108</td>
</tr>
<tr>
<td>9</td>
<td>Nabinagar TPP, Bihar (Under JV)</td>
<td>Coal</td>
<td>1000</td>
</tr>
<tr>
<td>10</td>
<td>Bhilai CPP-II, Chattisgarh (Under JV)</td>
<td>Coal</td>
<td>500</td>
</tr>
<tr>
<td>11</td>
<td>Ennore TPP,Tamil Nadu (Under JV)</td>
<td>Coal</td>
<td>1000</td>
</tr>
<tr>
<td>12</td>
<td>Farakka-III, West Bengal</td>
<td>Coal</td>
<td>500</td>
</tr>
</tbody>
</table>

* 1500 MW already commissioned
Note : JV Joint Venture
# Thru NTPC Hydro Ltd. a wholly owned subsidiary of NTPC
A) ON-GOING PROJECTS — 7990 MW

**Talcher-II (Out of total capacity of 2000 MW, 1500 MW has already been commissioned)**, Rihand-II, Koldam HEPP, Vindhyachal-III, Kahalgaon-II, Sipat-II, Sipat-I and Unchahar-III are under construction.

- **Talcher-II (4x500 MW), Orissa**
  - **Commissioning Schedule**: Unit-VI (February’06)
  - **Present Status**: Unit-III, IV and V are under Commercial operation. For Unit-VI Boiler light up has been completed and steam blowing is in progress.

- **Ramagundam-III (1x500 MW), Andhra Pradesh**
  - **Present Status**: Civil.
  - **Commissioning Schedule**: Unit-III (August’04)

- **Kahalgaon Stage-II, Phase-I & II (2x500 MW), Bihar**
  - **Commissioning Schedule**: Unit-VI (November’06) Unit-VI (May’07)
  - **Present Status Phase-I**: Work is in progress in main plant and auxiliary areas. Unit-V boiler drum lifted in December 2004 and pressure parts erection is in progress. Civil and Structural activities at site are progressing as per schedule.
  - **Present Status Phase-II**: Unit-VII (Mar’07) Work is in progress in Unit-VII areas. Boiler erection started in November 2004.

- **Rahid-II (2x500 MW), Uttar Pradesh**
  - **Commissioning Schedule**: Unit-I-III (August 2005)
  - **Present Status** Unit-IV (May’06):
    - **Civil construction and erection work in both the units is in progress as per schedule.** Boiler light up of Unit-III has been completed. Steam blowing has been completed.

- **Koldam HEPP (4x200 MW), Himachal Pradesh**
  - **Commissioning Schedule**: Unit-I (November 2008) Unit-II (January 2009) Unit-III (March 2009) Unit-IV (December 2009)
  - **Present Status** Most of packages including main dam, powerhouse, electro - mechanical and hydro packages have been awarded. The work is in progress. Diversion tunnel works completed and river diverted successfully on 30th October 2004.

- **Vindhyachal-III (2x500 MW), Madhya Pradesh**
  - **Commissioning Schedule**: Unit-IX (February 2007) Unit-X (August 2007).
  - **Present Status**: Efforts are on to construction both the units in the Tenth plan. Work in main plant and auxiliaries is in progress. Unit-IX boiler drum has been lifted and pressure parts erection is under progress. Unit-IX boiler erection has started. Civil work in chimney, coal handling and ash handling etc. is in progress as per schedule.

B) NEW PROJECTS:

**Brief status of the new projects is given below in the following table:**

<table>
<thead>
<tr>
<th>Sl.</th>
<th>Project</th>
<th>State</th>
<th>Capacity (MW)</th>
</tr>
</thead>
</table>
| I.  | Projects for which Main Plant bidding is in process:
| 1   | Barh STPP | Bihar  | 1980 (3x660) |
| 2   | Kawas CCPP II* | Gujarat | 1300 MW nominal |
| 3   | Jhanor-Gandhar II* | Gujarat | 1300 MW nominal |
| II. | Projects for which FR is ready and bidding is in process for Fuel:
| 1   | Kayamkulam CCPP II | Kerala | 1950 |
| 3   | Tapoban-Vishnugad | Uttarakhand | 600 (4x150) |
| 4   | Tapoban-Vishnugad | Uttarakhand | 520 (4x130) |
| V. Projects under Joint Venture (JV): | |
| 1   | Nabinagar TPP – JV with Railways# | Bihar | 1000 (2x500) |
| 2   | Bhilai Power Expansion – JV with SAIL## | Chhattisgarh | 500 (2x250) |
| 3   | Ennore – JV with TNEB## | Tamil Nadu | 1000 (2x500) |

**LOI for gas supply placed to RIL on 16.6.2004.**

# FR prepared
## FR prepared and main plant bidding in process
### FR yet to be prepared

NTPC is also exploring the possibility of setting up thermal & hydro projects in various states of the country.
LNG Procurement: NTPC has successfully completed the bidding process under ICB (International Competitive Bidding) route for sourcing of LNG/Natural Gas for expansion of gas projects in Western Region namely at Kavas and Jharno-Gandhar (Both in the state of Gujarat) by 1500 MW at each location. M/s Reliance Industries Limited (RIL) has been the successful bidder and will be supplying Natural Gas. For fuel requirement at Kayakulum (in the state of Kerala) for existing 350 MW capacity and expansion by 1950 MW, NTPC is in the process of sourcing of LNG/Natural Gas through bidding process under ICB (International Competitive Bidding) route. In this regard, bids have been received and are under evaluation.

Coal Mining and Coal Washeries

Coal Mining: For capacity addition Programme of NTPC during 10th & 11th Plan, long term coal linkages have been accorded by standing linkage committee (long term) and NTPC is pursuing at various levels for expeditious development of linked mines. For future fuel security as well as to meet the coal shortages from the linked sources, NTPC is undertaking captive mining and has accordingly approached Ministry of Power/Ministry of Coal for allotment of following coal blocks under Government dispensation/Captive mining route:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Block Name</th>
<th>Command Area</th>
<th>End Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UTKAL A</td>
<td>Talcher, MCL</td>
<td>To meet short fall/ Additional Requirement of Farakka, Kahaagaon &amp; Simhadri STPS</td>
</tr>
<tr>
<td>2</td>
<td>UTKAL B1</td>
<td>Talcher, MCL</td>
<td>Already allotted to others</td>
</tr>
<tr>
<td>3</td>
<td>Pakri Barwadih*</td>
<td>NK Area, CCL</td>
<td>Basket mine to meet short fall in northern region plants of NTPC</td>
</tr>
<tr>
<td>4</td>
<td>Karenthari AB/C</td>
<td>NK Area, CCL</td>
<td>To meet short fall/ Additional Requirement of Fgp/TPP, NCPGP and BTPS</td>
</tr>
<tr>
<td>5</td>
<td>Chatti Baratia</td>
<td>NK Area, CCL</td>
<td>To meet short fall of Farakka and Kahaagaon STPS</td>
</tr>
<tr>
<td>6</td>
<td>Brahmin</td>
<td>Rajmahal Area, ECL</td>
<td>To meet short fall of Singrauli, Rihand &amp; Vindhyachal STPS</td>
</tr>
<tr>
<td>7</td>
<td>Amelina</td>
<td>Singrauli CF, NCL</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Amelina North</td>
<td>Singrauli CF, NCL</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Chhastral.</td>
<td>Singrauli CF, NCL</td>
<td></td>
</tr>
</tbody>
</table>

Pakri Barwadih Coal Block in North Karanpura Coalfields has been allotted to NTPC under Govt. dispensation mode by Ministry of Coal. Based on the allotment letter action for procurement of Geological Report(Gr) for Pakri Barwadih Block has been initiated. Various agencies have been approached for undertaking EIA/EMP studies. Action for procuring remote sensing plan showing land use and land cover details for coal mining projects has also been initiated.

Coal Washeries: CMPDI, Ranchi has been entrusted to prepare ‘Feasibility Report’ for setting up coal washery at Talcher Area. CMPDI has collected coal samples from the identified sources and studies related to washability characteristics of the coal is under progress. It is learnt that land identified for locatig the washery under the control of MCL has fallen into litigations. MCL has been requested for identification of alternate land.

Joint Ventures

A. Existing Joint Ventures

UTILITY POWERTECH LTD. (UPL) (a Joint Venture Company of NTPC & BSES), which was formed to take up assignments of construction, erection and supervision in power sector and other sectors in India and abroad, is progressing satisfactorily. The turnover of the Company for the year 2003-04 was Rs. 85.90 crore and profit after tax was Rs. 3.41 crore.

NTPC ALSTOM POWER SERVICES PVT. LIMITED (NAPSL) has been formed with an Authorized Capital of Rs.750 crore and paid up capital of Rs.150 crore. NAPSL is a Joint Venture Company with ALSTOM POWER GENERATION AG, (formerly ABB KRAFTWERKE AG), under the name of ‘NTPC ALSTOM POWER SERVICES PVT. LIMITED’ (NAPSL) for taking up Renovation & Pertenisation assignments of power plants, both in India and abroad. NAPSL has achieved a turnover of Rs. 106.4 crore and profit (after tax) of Rs. 2.30 crore during the year 2003-04. POWER TRADING CORPORATION OF INDIA LTD. (PTC) has been formed with an Authorized Capital of Rs. 750 crore and paid up capital of Rs. 150 crore, NTPC, NHPC, PGCIL and PFC have contributed Rs. 12 crore each. Tata Power has contributed a total of Rs.1.5 crore and DVC has contributed Rs.10 crore. Fins have contributed Rs. 18.5 crore. PTC is purchasing power from Power Station/SEB’s having surplus power and selling it to the SEB’s needing power. The Gross Revenue for the year 2003-04 was Rs. 237.80 crore and net profit after tax Rs. 32.50 crore.

NTPC-SAIL Power Company Limited (NSPCL) is a joint venture formed by NTPC and SAIL with 50% equity from both the organizations, in March’02 to takeover the Captive Power Plant (CPP)-II located at Durgapur & Rourkela Steel Plant having installed capacity of 120 MW (2x60 MW) each for supplying power to the respective steel plant on captive basis. The turnover of NSPCL during 2003-04 was Rs. 301 cr (after tax) of the company for the year 2003-04 was Rs.23.99 crore.

Bhilai Electric Supply Company Private Limited (BESCL) is another joint venture formed by NTPC & SAIL with 50% equity from both the organizations, in March’02 to takeover the Captive Power Plant (CPP)-II located at Bhilai Steel Plant having installed capacity of 74 MW (2x30+1x14 MW) for supplying power to the Bhilai Steel Plant on captive basis. The Turnover of BESCL during 2003-04 was Rs. 154.4 cr. Profit (after tax) of the company for the year 2003-04 was Rs. 6.60 cr.

NTPC and TNEB have formed a Joint Venture Company under the name of ‘NTPC-Tamilnadu Energy Company Ltd.’ The Company was incorporated on 23rd May 2003 to set up a coal based power station of 1000 MW capacity, at Ennore, using Ennore port infrastructure facilities. Site specific & other studies are presently under progress to establish the feasibility of setting up the project.

B. Activities for New Joint Ventures

i) Joint Venture with Railways

NTPC has signed an MOU with Ministry of Railways on 19.02.2002 for setting up power plant(s) up to 2000 MW capacity to meet the traction and non-traction power requirement of Railways. After studying various sites in India, it has been decided to set up a 1000 MW (4x250 MW) power plant at Nabarangpur, Bihar. FR for this project has been prepared.

ii) Joint Venture with BHEL

MoU has been signed between NTPC and BHEL on 19th June 2003 to take up EPC jobs, running maintenance and peripheral activities in India & abroad.

iii) Joint Venture with REC

NTPC is exploring the possibility of taking up Decentralized Distributed Generation (DDG) for rural electrification through Non-Conventional energy resources such as Biomass, Solar etc. REC has shown keen interest in joining with NTPC for implementation of such projects. MoU has been signed with REC on 23.03.2004.
iv) NTPC has signed another MoU with REC on 16th August 2004 for implementation of schemes under Accelerated Energy Efficiency Programme (AREP) for electrification of one block each in the states of West Bengal and Jharkhand. Based on the scheme, it be furnished by the respective state electricity boards, four party agreements between REC, SEB, State Government and NTPC is being finalized. It has been decided that the work under this MoU will be undertaken by consultancy wing covers Engineering Consultancy, Operation & Maintenance Services, Procurement Services and HR related consultancy.

ASH UTILISATION

During the year 2004-2005 (up to November 2004), about 67 lakh tons of ash has been produced from the productive purposes, which is approximately 30% of the total ash generation against MoU excellent target of 25%. The major ash utilization was in the areas of issue to Cement and Asbestos Industry, Ash Dyke Raising and Land Development & Road Embankment.

REHABILITATION & RESETTLEMENT

NTPC is committed to help the populace displaced for execution of its projects and has been making efforts to improve the Socio-economic status of Project Affected Persons (PAPs). In line with its social objective, the company has focused on effective resettlement and rehabilitation (R&R) of PAPs and also community development works in the areas affected by the projects.

During the year, implementation of approved Rehabilitation Action Plans (RAPs) for Antli-II, Auraiya-II, Koldam, Simhadri and Sipat is in progress. Socio-economic Survey (SES) for Talcher-Thermal (ash dyke) was completed in September 2004 and SES of Unchahar Stage-II is under progress and is likely to be completed in this financial year.

NTPC Resettlement and Rehabilitation Policy has been reviewed in line with GOI National Policy on Resettlement and Rehabilitation for Project Affected Families-2003 (NPRR-2003) and NTPC’s past practices introduced and experiences gained during the implementation of R&R activities at projects.

ISO CERTIFICATION

NTPC's pursuit for excellence with good system orientation has resulted in Engineering Division, Operation Services Division, Contracts & Materials Division, Consultancy Wing, Corporate Commercial, Corporate HR, EMG & Ash Utilisation, Noida Services Group and the Power Management Institute (PMI) achieving ISO-9001 certification. All Stations of NTPC have been accredited with ISO-9002 certification and All Stations of NTPC (including Badarpur) have implemented ISO-14001 certified Environment Management Systems (EMS). The Corporate Environment and Ash Utilisation division has also achieved ISO-45001 Certification.

ENERGY CONSERVATION

NTPC has always had a well-organised approach to energy conservation even before the enforcement of Energy Conservation Act-2001 in India. NTPC carries out 200 energy audits in its power stations every year whereby efficiency of equipment and plants is enhanced through implementation of recommendations emerging out of energy audit report. During the year 2003-04, 194 energy audits were carried out in NTPC, as well as in other organisations, covering a total of 1360 MUs. NTPC has also undertaken energy audit of external power stations through its consultancy wing. During the year 2004-05, NTPC has been awarded to carry out energy audit of ‘Auxiliary Power Consumption of Rayalseema Power Station” of APGENCO. Taking of field observations at Rayalseema have already been started by NTPC and the audit is likely to be completed by January 2005.

NTPC has also installed non-conventional energy gadgets like solar water heaters, solar water pumps, solar PV lights, bio-gas and bio-mass plants and adopted energy saving technologies like vapour absorption machines for air conditioning, variable frequency drives, soft starters, energy efficient lighting lamps and gadgets etc. On account of such efforts towards energy conservation, an energy savings of around Rs. 13 crore have been achieved during the period April-November 2004 and another savings of around Rs.13 crore are likely to be achieved during the remaining period of the year. An energy savings amounting to the tune of Rs. 26.72 crore were achieved during the year 2003-04.

RESEARCH & DEVELOPMENT

The applied research work being presently undertaken is proposed to be enhanced. Further, studies are also being made to examine the viability of upgrading various laboratories with state-of-the-art equipment/facilities. This will help in proper health assessment of various critical equipment/components and proper failure analysis, which will increase the availability and reliability of the stations. Apart from significantly up-grading the applied research activities, basic research will also be introduced. As such it has been decided to set up a Centre to be known as “Energy Technologies”. The blue print for the “Energy Technologies” is under finalization. The Centre proposes to target development of technologies for reduction in the O&M cost of old plants. Carbon/energy conflict, nano-technologies, fuel cell, high efficiency Integrated Coal Gasification, etc.

TECHNOLOGY INITIATIVES

Power generation technology has been an area of close attention as coal is the mainstay of power generation. NTPC, in its role as a responsible utility, has always encouraged adoption of environmental friendly technologies. Coal gasification based power generation has of late emerged as environmentally attractive generation alternative. Accordingly, NTPC has tracked and studied the developments in the field of Integrated Gasification Combined Cycle (IGCC). This technology offers the twin benefits of preserving the natural resource of the country i.e. coal by reducing its consumption and results in substantial reduction in the CO2 emission per unit of electricity generated. The challenge lies in induction of the technology to suit the high ash Indian coal. A study is being undertaken to compare IGCC with contemporary coal generation technologies from a techno-economic standpoint, examine the potential gasification technologies to be used in India.
Chapter 21.2

NATIONAL HYDROELECTRIC POWER CORPORATION LTD.

National Hydroelectric Power Corporation Ltd. (NHPC) is a Schedule “A” Enterprise of the Government of India and is a 100% Central Government owned public sector undertaking. NHPC is engaged in development of hydroelectric, wind, tidal, geothermal, solar, biomass and gas power in all aspects, and transmission, distribution and sale of power generated at power stations. NHPC has been a recipient of numerous awards since 1986. Latest in the category being Prime Minister’s Shram Shringar 2004 awarded by Dr. A.P.J. Abdul Kalam, Hon’ble President of India on 22 November 2004. NHPC was adjudged winner for "Best HR Practices" in August 2004 by Dr. A.P.J. Abdul Kalam, Hon’ble President of India.

<table>
<thead>
<tr>
<th>Name of Power Station</th>
<th>Generation upto November 2004</th>
<th>Likely to be generated in balance period i.e. Dec.04 to March 05</th>
<th>Total expected generation during 2004-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAIRASIAL</td>
<td>456.23</td>
<td>136.00</td>
<td>592.23</td>
</tr>
<tr>
<td>LOKTAK</td>
<td>463.85</td>
<td>121.00</td>
<td>584.85</td>
</tr>
<tr>
<td>SALAL</td>
<td>2721.20</td>
<td>338.00</td>
<td>3059.20</td>
</tr>
<tr>
<td>TANAKPUR</td>
<td>393.49</td>
<td>80.00</td>
<td>473.49</td>
</tr>
<tr>
<td>CHAMERA-I</td>
<td>1610.17</td>
<td>187.00</td>
<td>1797.17</td>
</tr>
<tr>
<td>URI</td>
<td>1626.64</td>
<td>550.00</td>
<td>2176.64</td>
</tr>
<tr>
<td>RANGIT</td>
<td>299.96</td>
<td>54.00</td>
<td>353.96</td>
</tr>
<tr>
<td>CHAMERA-II</td>
<td>1118.91</td>
<td>254.00</td>
<td>1372.91</td>
</tr>
</tbody>
</table>

TOTAL 8690.45 1720.00 10410.45

CAPACITY INDEX OF NHPC POWER STATIONS

<table>
<thead>
<tr>
<th>Name of Power Station</th>
<th>Generation upto November 2004</th>
<th>Likely to be generated in balance period i.e. Dec.04 to March 05</th>
<th>Total expected generation during 2004-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>BAIRASIAL</td>
<td>93.72</td>
<td>94.86</td>
<td>94.29</td>
</tr>
<tr>
<td>LOKTAK</td>
<td>98.14</td>
<td>86.02</td>
<td>92.08</td>
</tr>
<tr>
<td>SALAL</td>
<td>100.00</td>
<td>99.31</td>
<td>99.61</td>
</tr>
<tr>
<td>TANAKPUR</td>
<td>100.00</td>
<td>98.88</td>
<td>98.66</td>
</tr>
<tr>
<td>CHAMERA-I</td>
<td>99.32</td>
<td>75.45</td>
<td>87.39</td>
</tr>
<tr>
<td>URI</td>
<td>98.66</td>
<td>98.12</td>
<td>98.39</td>
</tr>
<tr>
<td>RANGIT</td>
<td>98.17</td>
<td>76.08</td>
<td>87.13</td>
</tr>
<tr>
<td>CHAMERA-II</td>
<td>88.86</td>
<td>88.12</td>
<td>88.48</td>
</tr>
</tbody>
</table>

TOTAL 97.84 89.61 93.63

A. Operating Power stations:

The Corporation has so far completed 13 hydroelectric projects, as under:

1. Brahmaputra Basin
   - CHAMERA-I
   - CHAMERA-II
   - LOKTAK
   - BAIRASIAL

2. Tibet Basin
   - URI
   - RANGIT

3. Bhakra Basin
   - TANAKPUR

4. Other Projects
   - CHASAR
   - SAJAR
   - KURICHU

NHPC has generated 8690.45 MUs upto 30.11.2004 and is likely to generate 1720 MUs during the remaining period of financial year 2004-05 (i.e. Dec. 04 to March 05) against the annual target of 10800 MUs. The Capacity Index upto Nov. 04 was 97.64 % against the annual target of 94.5 % as indicated below.

NHPC has been recipient of numerous awards since 1986. Latest in the category being Prime Minister’s Shram Shringar 2004 awarded by Dr. A.P.J. Abdul Kalam, Hon’ble President of India on 22 November 2004. NHPC was adjudged winner for "Best HR Practices" in August 2004 by Dr. A.P.J. Abdul Kalam, Hon’ble President of India.

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The status of on-going projects ending November 2004

B. ON-GOING PROJECTS

The Corporation is presently engaged in the construction of the following hydro projects:-

1. Uri-II (240 MW), J&K
2. Chamera-III (231 MW), Himachal Pradesh
3. Parbati-III (100 MW), J&K
4. Teesta Low Dam Project (Stage-II (132 MW), West Bengal.
5. Teesta Low Dam Project (132 MW) was entrusted to NHPC on 15th Nov. 2000. Govt. accorded CCEA clearance on 30/10/2003 with completion schedule of Project by March 2007. Major Civil and E&M works have been awarded in Oct’03 & July’04 respectively. Major civil works are progressing well and the project is likely to be commissioned by March 2007.
6. Indira Sagar HE Project (8x125 MW), Madhya Pradesh.

The project is under execution by NHDC, a Joint Venture Company of NHPC & Govt. of Madhya Pradesh incorporated in Aug. 2000 to take up execution of Indira Sagar HE Project (1000 MW) and Omkareshwar Project (520 MW). The Government accorded sanction for the cost estimates of Indira Sagar project in March 2002. 6 Units (125MW each) of the project have already been commissioned ahead of schedule and project has generated 1209 MU’s of energy since inception. 7th Unit has been commissioned on 29.12.2004. The remaining one unit is likely to be commissioned by March, 05. However, HM works along with balance works of the project are expected to be completed as per schedule by Feb. 07.

V. Subansiri (Lower) HE Project (2000 MW) Ar. Pradesh.

Subansiri Lower HE Project (2000 MW) was entrusted to NHPC on 1st May 2000. Govt. accorded CCEA clearance on 9th Sept. 2003 with completion period of Project in 7 years. Major civil works have been awarded. Final forest clearance was accorded by Ministry of Environment & Forest (MOEF) on 12.10.2004. Mobilisation for major works is under active progress. The project is expected to be commissioned by Sept. 2010.

Sewa HE Project Stage-II (1x120 MW), J & K

CCEA clearance was accorded by Govt. of India on 09.09.03. River has been diverted on 27.11.2004. 94.58m HRT excavation has been completed through add-III & IV. Excavation of add-III & IV is under progress. Excavation of Power House has been completed. Other works are in progress. As per CCEA sanction, the project is to be commissioned by September, 2007.

Teesta Low Dam Project, Stage-III (132 MW), West Bengal.

Teesta Low Dam Project-III (132 MW) was entrusted to NHPC on 15th Nov. 2000. Govt. accorded CCEA clearance on 30/10/2003 with completion schedule of Project by March 2007. Major Civil and E&M works have been awarded in Oct’03 & July’04 respectively. Major civil works are progressing well and the project is likely to be commissioned by March 2007.

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Parbati HE Project, Stage-II (1x200 MW), H.P.

River diversion of the Project have been achieved in November,2003. About 9 Km long HRT out of 31.5 Km has been completed. Construction activities are going on in full swing and about 40 % of Dam excavation and 48 % of Power House excavation has been completed. As per CCEA approval, the project is to be commissioned by September 2009.

VII. Teesta Low Dam Project, Stage-III (132 MW), West Bengal.

Teesta Low Dam Project-III (132 MW) was entrusted to NHPC on 15th Nov. 2000. Govt. accorded CCEA clearance on 30/10/2003 with completion schedule of Project by March 2007. Major Civil and E&M works have been awarded in Oct’03 & July’04 respectively. Major civil works are progressing well and the project is likely to be commissioned by March 2007.

VI. Sewa – II J&K 120

1. Uri-II (240 MW), J&K
2. Chamera-III (231 MW), Himachal Pradesh
3. Parbati-III (100 MW), J&K
4. Teesta Low Dam Project (Stage-II (132 MW), West Bengal.
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River diversion of the Project have been achieved in November,2003. About 9 Km long HRT out of 31.5 Km has been completed. Construction activities are going on in full swing and about 40 % of Dam excavation and 48 % of Power House excavation has been completed. As per CCEA approval, the project is to be commissioned by September 2009.
land is under formulation by J&K Forest Department. Execution of Diversion Tunnel has already been initiated.

VI. Nimoo-Bazgo (45 MW), Laddakh (J&K)
CEA has accorded Techno Economic Appraisal. ‘In-principle’ approval from Planning Commission is awaited. No forest land is involved. EIA/EMP report has been finalized and submitted to J&K State Pollution Control Board for conducting Public hearing. Ministry of Defence has accorded defence clearance. Presently, infrastructure development works are in progress.

VII. Chutak (44 MW), J&K
CEA has accorded Techno Economic Appraisal. ‘In-principle’ approval from Planning Commission is awaited. No forest land is involved. Ministry of Defence has accorded defence clearance. Presently, infrastructure development works are in progress.

VIII. Siyom (1000 MW), Arunachal Pradesh
Detailed Project Report has been submitted to CEA on 16.09.03 for Techno Economic Clearance. Being a multipurpose scheme involving flood moderation it requires clearance by Technical Appraisal Committee which is awaited. Thereafter TEC will be accorded by CEA. Environment clearance by MOEF is awaited. Presently, infrastructure development works are in progress. Purulia Pumped Storage Scheme (4x225 MW), West Bengal
Revised PIB was circulated on 15.12.03. PIB meeting held on 24.03.2004. Action to resolve the issues raised in the meeting has been taken up with West Bengal Govt.

2. PROJECTS UNDER PREPARATION OF DETAILED PROJECT REPORT

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Project</th>
<th>State</th>
<th>Installed Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Lakhwar Vyasai</td>
<td>Uttrakhand</td>
<td>420</td>
</tr>
<tr>
<td>II</td>
<td>Dibang</td>
<td>Arunachal</td>
<td>3000</td>
</tr>
<tr>
<td>III</td>
<td>Pakal Dul</td>
<td>J&amp;K</td>
<td>1000</td>
</tr>
<tr>
<td>IV</td>
<td>Bursar</td>
<td>J&amp;K</td>
<td>1020</td>
</tr>
<tr>
<td>V</td>
<td>Siang</td>
<td>Arunachal</td>
<td>1600</td>
</tr>
<tr>
<td>VI</td>
<td>Subansiri</td>
<td>Arunachal</td>
<td>1600</td>
</tr>
<tr>
<td>VII</td>
<td>Middle</td>
<td>Pradesh</td>
<td>2000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TOTAL 10640</td>
</tr>
</tbody>
</table>

Survey & Investigation in respect of above schemes is being carried out for collecting necessary data for preparing DPR.

 Apart from the above, the Corporation has undertaken following small Hydroelectric Projects for execution.

I. Kambang Small HE Project (4 MW), Arunachal Pradesh: The Project is under execution by NHPC on deposit basis from Arunachal Pradesh State Government and construction works are going on in full swing. Commissioning of the project is expected shortly.

II. Sippi Small HE Project (4 MW), Arunachal Pradesh: The Project is under execution by NHPC on deposit basis from Arunachal Pradesh State Government and construction works are going on in full swing. Commissioning of the project is expected shortly.

DEVELOPMENT OF GEOTHERMAL POWER
NHPC has been the appointed Nodal Agency for exploitation of Geothermal Energy in the country by Ministry of Non Conventional Energy Sources (MNES). NHPC have got the ranking studies of geothermal fields in India done through an International Consultant viz., M/s Geothermex, USA. NHPC is exploring feasibility of installation of Geo-thermal project at quite a few places in the country.

3. PROJECTS UNDER PREPARATION OF FEASIBILITY REPORT

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Project</th>
<th>State</th>
<th>Installed Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>I</td>
<td>Kohli Bhel St. I (A)</td>
<td>Uttrakhand</td>
<td>815</td>
</tr>
<tr>
<td>II</td>
<td>Siang Upper/Intermediate</td>
<td>Arunachal Pradesh</td>
<td>11000</td>
</tr>
<tr>
<td>III</td>
<td>Devade</td>
<td>Maharashtra</td>
<td>6</td>
</tr>
</tbody>
</table>

Total 11821

Apart from the above, the Corporation has undertaken following small Hydroelectric Projects for execution.

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COMMERCIAL PERFORMANCE OF THE CORPORATION
During the financial year 2004-05 (up to Nov.04), a realisation of 99.30% has been achieved (Rs. 1397.98 crore realised against billing of Rs. 1397.98 crore). Thrust is being given to reducing the current dues which were of the order of Rs. 158.24 crore as of 30.11.2004 (which is only about 1.08 months of average billing).

There is no default in getting payment of interest on bonds and long term advances and an amount of interest of Rs. 669.35 crore has been earned upto Nov. 2004.

PERFORMANCE AGAINST MEMORANDUM OF UNDERSTANDING (MoU)
Memorandum of Understanding was signed for the year 2004-05 between NHPC and Ministry of Power in March 2004 setting targets for different performance parameters as per MoU guidelines issued by Department of Public Enterprises and as approved by ATP/DEPE during discussions.

The targets can be broadly classified into static financial parameters covering financial performance indicators, financial indicators and financial returns-labour productivity and total factor productivity, dynamic parameters like Quality, HRD (% of work force trained), VRS, R&D, R&M, IT & Communication, project implementation parameters, survey and investigations and consultancy assignments. Some specific parameters covering parameters like generation, capacity index and recovery of current dues are major parts of performance indicators on a five point scale.

NHPC has been rated as “Excellent” for the ninth consecutive year up to the year 2002-03.
R & D ACTIVITIES

I. Elongation of service life of underwater turbine components

- The National R&D Project for development of hard coatings for the elongation of service life of underwater turbine components for which NHPC is the lead agency and BHEL is the executing partner, has been approved by the Standing Committee of Govt. of India on R&D in its 8th meeting held on 15.9.2004. The project is aimed at evolving suitable solutions by way of developing appropriate hard coatings to combat erosion due to silt and cavitation. The project cost is Rs. 14.0 crore and envisages a time frame of 44 months for the same.

- The experiments carried out by the NHPC over last six years by using different coating materials and techniques have shown that coating of WC-Co-Cr by HPI/HVOF application process promises a viable solution.

- NHPC is also working out arrangements with ARCI (International Advance Research Centre) in Hyderabad to develop suitable coating materials for its Salal & Baira Siul Power Stations.

II. Adoption of Solar energy

A pilot project for adoption of Solar Energy at Chutak, Arunachal Pradesh, has been undertaken to promote green power.

ConsulTancy services

NHPC is providing consultancy services in the various fields of hydro power viz. design and engineering, geophysical studies, geotechnical studies, hydraulic transients studies, hydrological studies, contract management, construction management, under ground construction etc. to the leading organisations of the country like A&N administration, ASEB, BHPC, BBMB, BRO, CEA, CSEB, ICICI, IFICL, DVC, ED Govt. of Arunachal Pradesh, JKPC, KPA, KSEB, MEA, Northern Railways, NEEPCO, NHDC, NTPC, Punjab Irrigation, SJVN, (formerly NJPC) , TNEB, THDC, UPPCB, UJW, WRD, Govt. of Goa, WBPDCL and other private organizations.

NHPC is also registered with WORLD BANK, ASIAN DEVELOPMENT BANK, AFRICAN DEVELOPMENT BANK AND KUWAIT FUND FOR ARAB ECONOMIC DEVELOPMENT AS A CONSULTANT. NHPC is also registered with Central Water Commission, India and Center for Development of Consultancy as a Corporate Member.

NHPC has been appointed “Lender’s Independent Engineers” for Shree Maheshwar HE Project (400 MW) in the state of Madhya Pradesh and Baspai - II HE Project (300 MW) in the state of Himachal Pradesh both in private sector and financed by Industrial Finance Corporation of India (IFCI Ltd.) and Industrial Credit and Investment Corporation of India (ICICI Ltd.) respectively.

NHPC has also signed an MoU with the Central Power Research Institute (CPRI), for undertaking the consultancy assignments jointly in the area of hydro power development in India and abroad. NHPC has also entered into a MoU with domestic and international consultancy firms for executing various consultancy assignments jointly and appointment of NHPC as Lenders Engineers for hydro Projects financed by these institutions.

A view of Dehan Power House

Chapter - 21.3

POWER GRID CORPORATION OF INDIA LTD.

Power Grid Corporation of India Limited (Power Grid) was incorporated on October 23, 1989 with an authorized share capital of Rs. 5,000 crore 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 to this, it also took over the operation of existing Regional Load Despatch Centers from various States and Union Territories, which has been/are being upgraded with state-of-the-art Unified Load Despatch and Communication (ULDCC) 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 in sound commercial principles.

Based on its performance, POWERGRID was recognised as a Mini-ratna company by the Government of India in October, 1998. POWERGRID as the Central Transmission Utility of the country, as per the provisions of the Electricity Act, 2003, is playing a major role in Indian Power Sector and is providing Open Access to its inter-State transmission system.

Achievements of POWERGRID

Based on the annual performance during FY 2003-04, POWERGRID is once again poised to achieve the highest rating i.e. “Excellent” under the MoU signed with Ministry of Power.

POWERGRID continued to implement its projects with economy and within stipulated time frame to derive maximum economic benefits. Its advanced and cost effective Integrated Project Management and Control System (IPMCS) for total project review and perpetual monitoring, has contributed significantly. Upto the month of September in financial year 2004-05, POWERGRID commissioned 1,446 circuit km of transmission lines and established one new sub-station of 220/1132 kV EHV AC in the year, besides extension of existing substations and added transformation capacity of 830 MVA. Major projects commissioned include, Bihar Grid Strengthening Schemes, comprising 220 KV D/C Sasaram Araah Khagul and 2 LILO lines along with associated 514 and substation 220/1132 kV and 2nd D/C Viharsharif D/C line within approved project cost; Series Compensation at Raurpi Rourkela line six month ahead of schedule; 400KV D/C Ramgundam Hyderabad line, ten month ahead of schedule to meet the evacuation requirement of generation projects.

In addition to above, 11 new projects worth about Rs. 4200 crore, with cost over Rs. 1000 crore are either on schedule or ahead of schedule. Further, 13 transmission projects (12,620 Ckt Kms) costing about Rs. 1043 crore are in various stages of investment approval.

The outstanding dues of CPSUs in power sector were secured by signing the Tripartite Agreements (TPAs) / Bi-partite Agreement (BPA). Under securitization scheme, out of a total of 29 States, the Tripartite Agreement (TPA) has been signed by 28 States and issued bonds worth Rs. 1803 crore (bonds issued by 26 States only) against outstanding dues of POWERGRID excluding conversion of old bonds of Rs. 813 crore. State of Orissa is also likely to sign the TPA shortly. This has helped in liquidation of past dues and also timely payment of current dues.

Business Development

POWERGRID, an ISO 9001 certified company, has acquired in-house expertise at par with global standards in the field of Planning, Engineering, Load Dispatch and Communication, Telecommunication, Contracting, Financial and Project Management. It is executing various consultancy assignments in these areas as a part of its Business Development Activity. During 2004-05 so far, it has secured 22 new consultancy assignments with a consultancy fee of more than Rs. 21 crore, corresponding to project cost of more than Rs. 140 crore. During the year 2004-05 (up to November), it has realised consultancy fee of Rs. 400 crore from all the ongoing consultancy projects.

Unified Load Despatch & Communication Facilities

The unified approach for planning, engineering, procuring, and implementing the Load Despatch and dedicated Communication system is paying rich dividends in the form of timely completion of projects and enhancing in-house capability of handling these
complex and gigantic schemes. After commissioning of Northern Region and Southern Region ULDC schemes in early 2002, POWERGRID commissioned North-Eastern Region ULDC scheme in May 03. These complex projects involving the modern state-of-the-art technology has resulted in real time monitoring and control of the grid to enhance safety, security, reliability and stability in all the regions of the country. These facilities minimize grid disturbance/ failure and facilitate quick grid restoration, in case of failure.

Two ULDC schemes in respect of Eastern and Western Regions are progressing well and expected to be commissioned by 2005.

RESEARCH & DEVELOPMENT
Towards technological advancement, POWERGRID established fully automated remote controlled 400 kV substation at Bhivandi in Rajasthan; the first in Indian Power Sector. It is introducing TIVAR (power controllers), which can maintain high temperature upto 230ºC against the normal 85ºC. This would wheel more conductors, which can sustain high temperature up to 230ºC and thereby facilitates fast transmission over long distance.

Power Sector. It is introducing 'INV AR' power technologies for construction, monitoring and maintenance of transmission system serving Indian conditions.

E-GOVERNANCE
POWERGRID is systematically developing competency to deploy Information Technology for efficient and effective discharge of its functions. Some of the salient achievements are Web based Enterprise wide Information Portal as a step towards E-Governance, State-of-the-Art Multi Locational Video Conferencing System, Inspection Management System on internet based B2B platform. Engineering Project management system developed in-house, Enterprise wide Converged IT and Communication System, Establishment of state-of-the-art 1200 node IT network infrastructure at its Gurgaon office complex with innovative features like Wi-Fi. POWERGRID has also initiated action for implementation of ERP.

POWERGRID implemented Video conferencing facility with eminent experts from power utilities, research and academic institutions and consultants from India as well as from Canada, USA, and Brazil to facilitate adoption of latest technologies for construction, monitoring and maintenance of transmission system serving Indian conditions.

POWERGRID envisages to establish a 'Centre for Power Transmission Research and Application' which shall supplement the facilities of existing Research Institutions and provide opportunities for applied research in power transmission sector. It also constitutes an advisory body consisting of eminent expert from power utilities, research and academic institutions and consultants from India as well as from Canada, USA, and Brazil to facilitate adoption of latest technologies for construction, monitoring and maintenance of transmission system serving Indian conditions.

POWERGRID is executing APDRP-approved schemes, either fully or partly on behalf of state utilities, worth Rs. 830 crores, on deposit work basis under bilateral arrangement. The schemes in North Goa are nearing completion and others are in various stages of implementation.

In addition to APDRP works, POWERGRID is also executing Rural Electrification works for electrifying 2400 villages in Muzaffarpur & Vaishali districts in Bihar. The estimated cost of the project is about Rs. 192 crore. Of late, POWERGRID has assigned the job for execution of additional rural electrification for electrifying about 30,000 villages in 39 districts of Bihar, UP and West Bengal. Detailed Project Reports for these works are under preparation.

ENCOURAGING GRID DISCIPLINE
POWERGRID, in its efforts to ensure delivery of quality power and to maintain grid discipline, extended the implementation of Availability Based Tariff (ABT) in Eastern Region w.e.f. May 03. It is envisaged to examine the performance of the grid and to introduce suitable policy to improve Grid stability and partial blackouts have been drastically reduced, while it has been possible to save the grid from total blackouts.

Western, Eastern & North-Eastern Regions continue to operate successfully in synchronous mode. In fact, Raipur Rourkela 400 kV D/c line rescued Western Regional Grid in Sept.’03 by importing power from Eastern Region when there was a generation loss in western Region.

Efforts made by POWERGRID in modernizing the Regional Load Despatch Centers (RLDCs), implementation of Availability Based Tariff (ABT), power transfer through inter-regional 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. It is demonstrated by the fact that there were no major grid disturbances during the financial year 2003-04. The trappings per line were lowest ever & the system availability was as high as 99.28%.

With the development of vital 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 22,000 MUs of energy across the regions during the year 2003-04, an increase of about 70 % compared to previous year (i.e. 13,000 MUs during 2002-03), which is likely to be exceeded in current financial year. Thus, inter-regional power transfer of worth Rs. 4,400 crore was facilitated, most of which would have remained bottled up but for the facilities created by POWERGRID.

POWERGRID believes that its human resource consisting of about 7000 employees is the most important asset and accordingly, its policies are focused on development of human potential through skill upgradation, career enhancement and job rotation to achieve organizational objectives. An effective work culture has been established in the organization through empowerment, transparency, decentralization and innovative practice of participative management through 'Open House' interaction. POWERGRID's growing productivity through an average annual growth of about 40% in the asset base of the company is witnessed with a manpower growth of only about 1.6% per annum.

Human Resource Development (HRD) is considered as a strategic function in POWERGRID. During the year, the company has designed and executed business aligned management development, technical training and competency enhancement programmes on its own and also in collaboration with reputed management development institutes such as IIMs, XLRI, ASCI, MDI and technical training institutes that include IITs, NPTI, and Hotline Training Centre.

To motivate the employees further, a committee of eminent experts is envisaged to be set up to examine
POWERGRID formulated its Citizen’s Charter providing a visible front of its objectives, mission, commitments, terms of service and its obligation to the stakeholders. This is also intended to provide all information on schemes, plans and practices to users outside the organisation as well as information about accessing the services.

MANAGEMENT OF ENVIRONMENTAL AND SOCIAL ISSUES

Creating Sustainable Corporate Values

POWERGRID, being in the infrastructure sector, is in an enviable position to directly contribute to the society. Power, today drives all the economic activities in the society. POWERGRID, as the provider of inter-state transmission facilities and as operator of the countrywide electrical grids, has a pivotal role in society.

The sustainability of corporate values is proven by the fact that they are in consonance with the values cherished by the society. The objectives of the company are in alignment with the requirements of its stakeholders. End results of such value system are in line with the requirement for sustainable development.

ENVIRONMENT AND SOCIAL MANAGEMENT

POWERGRID is one of the largest electrical power transmission utilities in the world. It constructs, owns and operates Extra High Voltage (EHV) transmission network in India and carries out real time supervision and monitoring of power flow round the clock over the entire EHV network of the country in order to fulfill its goal of establishing a National Grid coupled with sustainable development. POWERGRID has achieved the distinction of being the first Indian Power company certified with Integrated Management System (IMS) comprising of ISO: 9001 for Quality Management, ISO: 14001 for Environment Management and 18001 for Occupational Health & Safety. Independent and internationally accredited external agency audits these systems regularly.

POWERGRID’s developmental activities have negligible environmental and social impact owing to very nature of its activities and proactive approach. In the year 2004, POWERGRID has upgraded its Environmental and Social Policy and Procedures (ESPP) evolved initially in the year 1998, through an open and transparent process of National Level Workshop in association with multi-lateral funding agencies, relevant Ministries of Govt. of India, NGOs and public consultation with wider section of people in the regions to ensure its activities has least impacts on environment and socio-economic fabric of the communities.

The ESPP defines POWERGRID’s approach and commitment to deal with environmental and social issues relating to its transmission projects, lays its management procedures and protocol to mitigate the same. The ESPP includes framework for identification, assessment, and management of environmental and social concerns at both organizational and project levels.

The ESPP outlines POWERGRID’s commitment to the goal of sustainable development through conservation of natural resources, continually improving its management system, accessing specialist knowledge of management of significant environmental and social issues and introducing new state of the art and internationally proven technologies while strictly following the basic principles of Avoidance, Minimization and Mitigation. Rehabilitation Action Plans (RAP) & Environmental Assessment Management Plan (EAMP) are prepared, implemented within first 12 months of construction period for all projects. Besides, implementation is monitored by the highest level of the hierarchy and feedback is obtained for continuous improvement.

POWERGRID maintains highest standards of corporate responsibility not only towards its employees but also to the consumers, societies and the entire environment in which it operates, shouldering community responsibility as part of social responsibility through various community development activities in areas around its establishments. It promotes socio-economic development and enriches the quality of life of the community through initiatives taken towards community empowerment by way of providing basic infrastructure facilities, relief and restoration work during natural calamities, in-house social clubs, social and cultural activities in the vicinity of its establishments by providing education to poor children, organizing health awareness/check-up camp, sponsoring local religious/sports activity etc. most importantly through people’s participation.

Emergency Restoration

POWERGRID, consciously endeavours to discharge its broader social responsibilities. It has taken many steps which include faster restoration of transmission system belonging to State Power Utilities, which are damaged during Natural calamities like flood, earthquake, cyclones, etc.

Transparency in operation

In POWERGRID, System & Procedure Manuals have been developed for most of the functional areas like Construction, O&M, Human Resource, Quality, etc. and well defined “Works & Procurement Policy and Procedure” (WPP) is in place.

POWERGRID is the first utility in Indian power sector to develop Environmental and Social Policy & Procedures (ESPP) with public consultation. Committees of eminent independent experts have been constituted to advice POWERGRID on various strategic issues related to Environmental and Social Safeguards, financial management, procurement and project execution. Similar Committee on HR strategies and Research & Development activities are under finalization.
CONVERGENCE WITH TELECOM

The synergic convergence between transmission and telecom technologies promises unique opportunities as has already been established worldwide in developed and developing countries. Opening up of the domestic long distance telecom sector in India offered an opportunity to POWERGRID in line with worldwide trend to exploit telecom market through convergence of power and telecom sector by making available a cost effective, high quality telecom infrastructure on its existing and planned transmission infrastructure and "to create value" for its business. Thus, to exploit the synergy of transmission business with advantages of inherent communication infrastructure, POWERGRID diversified into Telecom business.

POWERGRID is in unique advantageous position in the telecom industry as it is establishing its broadband optical network on its overhead transmission lines, which is sturdy, secure and free from any interference by pests or vandalism. This is obvious because the optical network would run along with EHV power transmission lines which would be impossible to interfere with. On the other hand, other telecom players are establishing underground networks, which could suffer from problems of interference, deliberate or otherwise. Added to this, POWERGRID has provided overhead links with self resilient rings to ensure this highest availability of the network.

Out of the total planned telecom network of 20,000 Kms, POWERGRID has already established a network of over 15,000 Kms and enroute has connected all the metros and major cities viz Delhi, Mumbai, Chennai, Kolkata, Bangalore, Hyderabad etc., rural and remote areas in the country. It is worth mentioning that POWERGRID connectivity covers remote areas and other cities in various regions, which will be of strategic interest to various telecom players viz:

- Northern: Agartala, Guwahati, Imphal, Ilanagar, Kohima, Shillong, Tezpur, etc.
- Northern: Jammu, Pathankot, Srinagar, Udhampur, Ambla, Chandigarh, Jallandhar, etc.
- Western: Bhopal, Indore, Nagpur, Jabalpur etc.
- Southern: Kochi, Trivandrum, Trich, Coimbatore etc.

The complete network is expected to be fully operational soon.

POWERGRID has deployed state-of-the-art Dense Wave Division Multiplexing (DWDM)/ Synchronous Digital Hierarchy (SDH) technology and is utilizing the latest G 652 fibres for its Optical Fiber Composite Overhead Ground Wire (OPGW) which is installed on Extra High Voltage (EHV) 400/220 KV transmission lines. The deployment of future-proof flexible network architecture of high capacity DWDM/ SDH is compatible with all the upper layer equipment including Infrastructure Provider (IP) routers, Asynchronous Transfer Mode (ATM) equipment etc. can be integrated with the system. The network is scalable from present capacity of 120 Gbps to 15 Terabit capacity and is capable of both Layer 1 - DWDM/ SDH and Layer 2 - switching using Ethernet over SDH. The network supports Ethernet over DWDM/ SDH on fast Ethernet and Gigabit Ethernet levels. The bandwidth capacity can be enhanced to terabit level and can be provided as and when required.

An Integrated Network Management System (NMS) with National level control center in Delhi along with Regional level control centers at Kolkata, Bangalore, Mumbai provides real time monitoring of the telecom network. NMS can monitor each and every customer trail and provide online information for quick remedial measures. The NMS is also capable of working with third party equipment through interface for third party Element Management System (EMS). The network management system provide real time monitoring of the network and the services are available round the clock in the event of any problem and for quick remedial measures.

POWERGRID has obtained Infrastructure Provider license-II (IP-II) license and had also obtained ISP category 'A' license to provide internet services in the country. POWERGRID is also exploring Joint Venture opportunities with potential telecom players for enhancing its business. POWERGRID's Broadband Telecom network can provide the "convergence" of various traffic viz. voice, fax, data and multimedia over a single multipurpose network. The telecom services that can be provisioned include:

- Leasing of bandwidth capacity
- Internet Access Lines
- Ethernet private leased line (Point to Point & Point to Multi-Point)
- Video-conferencing
- Virtual Private networks
- MPLS ( Multi Protocol Label Switching) based VPNs
- Voice over Internet Protocol (VOIP)

Based on the high availability and competitive prices, POWERGRID has leased out capacities to various customers which include NLDOs, ILDS, ISPs, Call Centers, Government Agencies, Corporates etc. who are extremely satisfied customers. POWERGRID is also exploring strategic alliances with various State Electricity Boards (SEBs), which shall enable it to reach rural, uneconomic and backward areas by utilizing their T&D system and fulfilling their E-governance needs. This will supplement Government of India's effort to accelerate the application of Information Technology and in bridging the digital divide gap and providing telecom services at most economic prices for the benefit of common man.

### EXISTING/PROPOSED INTER-REGIONAL TRANSMISSION CAPACITY (MW)

<table>
<thead>
<tr>
<th>Region</th>
<th>Existing</th>
<th>By 2011-12</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>EAST-NORTH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dehr-Sahupuri 220 KV S/c</td>
<td>150</td>
<td>150</td>
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<tr>
<td>Sasaram HVDC back-to-back</td>
<td>500</td>
<td>500</td>
<td></td>
</tr>
<tr>
<td>Muzaffarpur-Gorakhpur 400 KV D/c</td>
<td>2000</td>
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<td>Patna – Allahabad 400 KV D/c</td>
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<td>Barh – Allahabad 400 KV D/c</td>
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<td>2250</td>
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<td>132 KV inter-regional capacity-I//ahnd-Sanenagar 132 KV D/c</td>
<td>50</td>
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<td><strong>Sub-total</strong></td>
<td><strong>700</strong></td>
<td><strong>10250</strong></td>
<td><strong>10950</strong></td>
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<tr>
<td>EAST-SOUTH</td>
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<td>Rourkela-Raipur 400 KV D/c</td>
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<td>N’Karanpura – WR Pooling point 765KV S/c</td>
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<td><strong>5050</strong></td>
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<td>WEST- NORTH</td>
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<tr>
<td>Vindhyachal HVDC back-to-back</td>
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<td>Aurtla-Malapur 220 KV D/c</td>
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<td>Gwalior-Agra 765 KV S/c</td>
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<td>Zerda-Kankroli 400 KV D/c</td>
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<td>RAPP-Nagda 400 KV D/c</td>
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<td>Ujjain – Khajuraho 220 KV D/c</td>
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<td><strong>4000</strong></td>
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<td>Gazawaka HVDC back-to-back</td>
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<td>Talcher-Kolar HVDC bipole</td>
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<td><strong>3500</strong></td>
</tr>
<tr>
<td>WEST- SOUTH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chandrapur HVDC back-to-back</td>
<td>1000</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Kolhapur-Belgaum 220KV D/c</td>
<td>200</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Baras - Sileru 220KV HVDC Bipole</td>
<td>200</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td>Ponda - Nagdam 220KV D/c</td>
<td>200</td>
<td>200</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>1600</strong></td>
<td><strong>3000</strong></td>
<td><strong>3000</strong></td>
</tr>
<tr>
<td>EAST- NORTH EAST</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bongosgn-Siliguri 400 KV D/c</td>
<td>1000</td>
<td>1000</td>
<td></td>
</tr>
<tr>
<td>Birpara-Silakati 220KV D/c</td>
<td>300</td>
<td>300</td>
<td></td>
</tr>
<tr>
<td>Transmission lines for New Projects in NER</td>
<td>700</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td><strong>Sub-total</strong></td>
<td><strong>1300</strong></td>
<td><strong>700</strong></td>
<td><strong>2000</strong></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>9500</strong></td>
<td><strong>20500</strong></td>
<td><strong>30000</strong></td>
</tr>
</tbody>
</table>
Chapter - 21.4

POWER FINANCE CORPORATION LTD.

The Power Finance Corporation Limited (PFC) was incorporated in 1986 under the Companies Act, 1956. The Corporation was registered as a Non-Banking Financial Institution with the Reserve Bank of India in February 1997. The mission of PFC is to excel as a pivotal Development Financial Institution in power sector committed to the integrated development of the power and associated sectors by channelising the resources and providing financial, technological and managerial services for ensuring the development of economic, reliable and efficient systems and institutions in Power Sector. PFC envisons to be a dominant player in financing the development of a sustainable and globally competitive power sector. The borrower-portfolio of PFC comprises of State Electricity Boards (SEBs), State Transmission & Distribution Companies, Municipality-run power utilities and also central, private, joint sector and co-operative sector power utilities. PFC is a schedule ‘A’ organisation.

PERFORMANCE HIGHLIGHTS

As on 30.11.2004, PFC sanctioned loans of the order of Rs.12,804 crore (during 2004-05) for a wide range of power projects in various parts of the country and disbursements are to the tune of Rs.5,276 crore. The Authorised Capital and the Paid-up (equity) capital of the Corporation stood at Rs.2,000 crore and Rs.1,030 crore respectively. The Profit before tax for the year 2004-05 (provisional), (as on 30.09.2004) was about Rs.768 crore. PFC had paid a dividend of Rs.322 crore for the year 2003-04 and an interim dividend of Rs.150 crore for the year 2004-05 to the Govt. of India which owns its entire equity. Besides being a consistently profit-making Corporation, PFC was placed in the highest category of ‘Excellent’ for the eleventh consecutive year (2003-04), by the Govt. of India on the basis of its overall performance. PFC has figured in the top 10 PSU's list for the outstanding performance shown against Memorandum of Understanding (MoU) targets for which it has recently received 'MoU Award For Excellence in Performance' from the Hon'ble Prime Minister of India.

FINANCIAL PERFORMANCE AT A GLANCE

<table>
<thead>
<tr>
<th>Parameters</th>
<th>MoU Targets for 2004-05</th>
<th>Achievement as on 30/09/04 (Provisional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sanctions</td>
<td>14000</td>
<td>12347</td>
</tr>
<tr>
<td>Disbursements</td>
<td>7620</td>
<td>4701</td>
</tr>
<tr>
<td>Recovery Rate</td>
<td>90%</td>
<td>99%</td>
</tr>
<tr>
<td>Mobilisation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gross Margin</td>
<td>1540</td>
<td>772</td>
</tr>
<tr>
<td>Net Profit to Closing Net worth</td>
<td>17.06%</td>
<td>9.14%</td>
</tr>
</tbody>
</table>

A table showing at a glance year-wise financial performance of PFC, for the past 3 years, is as under:

FINANCIAL PERFORMANCE FOR POWER SECTOR UTILITIES

PFC has been adopting a pro-active and pragmatic approach to encourage improvement in the financial and operational efficiency of the state power sector. Keeping this in view, Operational & Financial Action Plans (OFAPs) consisting of series of time bound action plan for different functional areas of the utilities are formulated. The OFAPs are formulated with active participation of the concerned utility and approved by the respective Board of the Utilities as well as State Govt. The implementation of various activities included in OFAP are monitored quarterly and progress report on the same is sought from the utilities. As on 30th Nov, 2004, OFAPs are in place for 42 utilities including 9 SEBs, 16 SGCs, 11 T&D companies, 5 Department-run power utilities and 1 autonomous body. OFAPs have been instrumental in bringing about a perceptible change in quantitative and qualitative performance of State Power Utilities' functioning.

INSTITUTIONAL DEVELOPMENT OF POWER UTILITIES

PFC has so far supported 5383 MW of generation capacity by way of sanctioning financial assistance as on date.

EXTERNAL CREDIT UTILISATION

Asian Development Bank (ADB)

A second line of credit has been approved by ADB for an amount of US $150 Million for the projects in the reform oriented states, and the agreement has been signed recently.

INSTITUTIONAL DEVELOPMENT OF POWER UTILITIES

PFC has been having an active role in the institutional development of power utilities by providing grant, interest free and/or concessional loans for taking up important studies including renovation, modernisation, life extension and residual life assessment studies, institutional development studies, reform and restructuring studies, distribution management and power system studies etc. Major studies conducted during the year include pre-construction study of Kashangi-I HEP in HPSEB, RA/LE Studies of Obra, Chhattisgarh, Salawa, Bholara HE of UP/JVNL, study on development of fund flow pattern and accounting system in Tripura etc. Major studies completed during the year include R&M/LE of Nigirajgaon and Mathala HEP of UP/JVNL, RA/LE of Paras TPS and development of integrated MIS of HPSEB and preparation of good governance code for UPPL.

The loan amount of Rs. 42.50 crore have been sanctioned and Rs. 3.03 crore has been disbursed as loans for taking up studies during the current financial year as on 30.11.04. Apart from this, grants worth Rs. 4.05 crore have been sanctioned by PFC during current financial year (2004-05) upto 30.11.04 and an amount of Rs.2.55 crore has been disbursed.

RENEWAL, MODERNISATION & LIFE EXTENSION OF THERMAL & HYDROPLANTS

Renovation, Modernisation and Life Extension of old thermal and hydro plants is a priority area for PFC to finance. Since its inception, PFC has sanctioned loans worth Rs. 4884.37 crore towards R&M Thermal and Rs. 1204.73 crore towards R&M Hydro schemes of various power utilities till 31-12-2004. Out of above, an amount of Rs. 2591.68 crore and Rs. 581.90 crore has been disbursed respectively.

FINANCING OF PRIVATE SECTOR POWER PROJECTS

PFC has so far supported 4160 MW of generation capacity by way of sanctioning financial assistance of about Rs. 5250.28 crore to 42 power projects out of which, Rs. 2161.31 crore has been disbursed. Also, 3 guarantees worth Rs. 696.50 crore have been approved. Major projects include 4x100 MW Vishnuprayag HEP of M/s. Jaiprakash Power Ventures in Uttarakhand, 119.08 MW Gas based combined cycle plant at Karuppur in Tamil Nadu, 445 MW gas based plant in East Godavari, Andhra Pradesh of M/s. JS Bangurprop HEP of M/s. Jaspesh Power Ventures in Uttaranchal, 119.08 MW Gas based combined cycle plant at Karuppur in Tamil Nadu, 445 MW gas based plant in East Godavari, Andhra Pradesh of M/s. Konaseema EPS Dakkwell Power etc.
During the current financial year 2004-05 (upto 30.11.04), loans were sanctioned to 5 power projects amounting to Rs. 1510.99 crore and an amount of Rs. 702.26 crore has been disbursed. Major projects include 2x250 MW Raigarh TPS in Chhattisgarh by M/s. Jindal Power Ltd., 1095 MW LNG based Surat TPS in Gujarat of M/s. Torrent Power Generation Ltd. etc. During the year 18 MW Bio-Mass project of M/s. Raghu

During the current financial year 2004-05, loans were sanctioned to 5 power projects amounting to Rs. 1510.99 crore and an amount of Rs. 702.26 crore has been disbursed. Major projects include 2x250 MW Raigarh TPS in Chhattisgarh by M/s. Jindal Power Ltd., 1095 MW LNG based Surat TPS in Gujarat of M/s. Torrent Power Generation Ltd. etc. During the year 18 MW Bio-Mass project of M/s. Raghu

Rama Renewable Energy in Tamil Nadu has been commissioned. Cumulatively, 1118 MW generation capacity in private sector has so far been commissioned with PFC's support.

ACCELERATED POWER DEVELOPMENT AND REFORM PROGRAMME (APDRP)
During FY 2004-05 (upto November 30, 2004), PFC has sanctioned counterpart loans of Rs. 343 crore for implementation of APDRP schemes in the States of UP, Bihar and Haryana. The cumulative sanction of APDRP counterpart loans by PFC stands at Rs. 3395 crore. An amount of Rs. 32.24 crore has been disbursed during FY 2004-05 under APDRP counterpart funding and loan documents for 3 schemes amounting to Rs. 61 crore were executed during FY 2004-05 (upto November 2004). The APDRP counterpart funding provided by PFC covers distribution improvement schemes of major cities namely Delhi, Muzaffarnagar, Allahabad, Patna etc.

ACCELERATED GENERATION & SUPPLY PROGRAMME (AG&SP) DURING 10th PLAN.
The AG&SP scheme launched in the 9th Five Year Plan has been extended to 10th Plan with a budgetary provision of Rs. 1500 crore. The scheme for the 10th Plan envisages the following:

- The assistance under the AG&SP scheme shall be limited to State sector Renovation & Modernisation (R&M) of thermal and hydro power plants and Hydro Power Plants which are to be commissioned in 10th Plan;
- The State sector generation projects including those based on non-conventional energy sources are covered which are to be commissioned in the 10th Plan;
- Grants under AG&SP scheme will be provided to SEBs, State Generating Corporations (SGCs) and State Power Departments for carrying out the studies, which help to achieve policy objectives of the Government relating to power sector. These include power sector reform and restructuring studies, system studies, R&M studies; life extension studies, retainer consultancy for R&M and environment/social studies;
- Those States, which perform satisfactorily with respect to the agreed milestones of the reform MoUs entered into with the Ministry of Power, would be eligible for funding under AG&SP.
- Interest subsidy under the scheme is up to 3%. However, the subsidy for the projects in North-eastern Region would be up to 4%;
- During the financial year 2003-04, funds released under AG&SP scheme were to the tune of Rs. 191.89 crore.
- Rs. 250 crore has been released for 2004-05 under AG&SP scheme.

HUMAN RESOURCE MANAGEMENT
SOCIAL SECURITY & EMPLOYEES’ WELLBEING
A comprehensive package to ensure social securities is in place in PFC which inter-alia includes contributory provident fund, gratuity, range of insurance scheme etc. and employees economic rehabilitation scheme. PFC lays special emphasis on medical facilities and health care for its employees and their families.

CONSULTANCY SERVICES
In the year 2004-05, PFC has further strengthened its reputation as a premier Consultancy Organization by bagging new assignments in various new areas. PFC has successfully completed an assignment on framing of Regulations for Intra-State Trading of Power for RERC and is advising UPRVUNL on all commercial matters, including on issues emerging out of the Electricity Act, 2003, on a retainership basis. PFC is also undertaking a detailed study for the reform of Meghalaya State Power Sector. Also Damodar Valley Corporation has entrusted PFC for preparation and filing of its first Tariff Proposal. Besides assignments related regulatory matters like Tariff etc, PFC intends to give emphasis on:

- Assisting State Governments and ERGs in developing and framing policy guidelines and regulations and in assisting and advising State Utilities. Companies in the implementation of various policies/ provisions/ guidelines / regulations and other commercial aspects emanating from the Electricity Act 2003;
- Developing Financial Restructuring Plans, business models: Short-term and long-term, and reform implementation;
- Human Resource Development Plans to support/facilitate structural changes in states power sector including retraining/redeployment of utility personnel;
- Developing Accounting systems including computerization for the unbundled utilities.
Over the last five years, REC recorded substantial growth in its performance parameters. The highlight of the Eleventh Plans was an amount of Rs. 1177 crore against sanctioned projects.

REC is also the nodal agency to implement the ambitious programme of the Government of India for the year 2004-05. Besides attending to its core objectives in the setting up of rural power infrastructure, REC is now actively participating in the funding of large generation and T&D capacities. It would also play a pivotal role in providing funds to all the households to access electricity. 

Implementation of new Rural Electrification Programme: "Accelerated Electrification of One Lakh Villages and One Crore Households". To facilitate expeditious rural electrification, the Government of India approved a new scheme for "Accelerated Electrification of one lakh villages and one crore households". The scheme covers electrification of un-electrified villages as on 31.03.2004 (according to the "Project Monitoring and supervision of quality of projects, MNES are not covered by this scheme. It is intended to complete electrification under the scheme by the year 2009 subject to the States agreeing to participate in the programme and their taking commensurate action for implementation."

Action taken for implementation and progress made during the year 2004-05.

(i) With a view to augment the implementation capacities for the programme, REC has entered into MoUs with NTPC, POWERGRID, NHPC and DVC to make available CPSUs' project management expertise and capabilities to States wishing to use their services.

(ii) Apart from these MoUs with CPSUs, a comprehensive framework has been put in place in consultation with the concerned State Governments, Sate Power Utilities and the MNES.

Sanctions and Disbursements.

During the current year 2004-05, against the target for sanction of Rs. 1268 crore, REC has sanctioned 154 projects upto November 2004 involving a loan assistance of Rs.4076 crore which included Rs. 1268 crore by way of Capital Gains Bonds, Rs.585 crore by way of REC Taxable Priority Sector Bonds, Rs.234 crore by way of REC Taxable Non-Priority Sector Bonds and Rs.2000 crore from LIC Term Loan Fund. The balance amount of Rs. 4913 crore will be mobilized during the year 2004-05 against the borrowing programme of Rs. 9000 crore.

Pre-payment of high cost Loans/Bonds During the year 2004-05, REC has so far pre-paid Govt. of India loans to the extent of Rs. 977 crore and exercised call option of Rs. 1375 crore in respect of REC Bonds, as a part of the process of pre-paying higher cost of borrowing with cheaper funds raised from the market. During the remaining part of the year it is proposed to extend exemption on various debt instruments to the tune of Rs. 1149 crore besides normal redemption of Bonds.

Performance Highlights

Over the last five years, REC recorded substantial growth in its performance parameters. The highlights of performance of REC for the year 2003-04 along with the comparative figures for the preceding four years are given below:

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1999-2000</td>
<td>4678</td>
<td>6308</td>
<td>6764</td>
<td>12125</td>
<td>15978</td>
<td>3888</td>
<td>2004-05</td>
</tr>
<tr>
<td>2000-01</td>
<td>3051</td>
<td>4109</td>
<td>4722</td>
<td>6607</td>
<td>6017</td>
<td>3988</td>
<td>2001-02</td>
</tr>
<tr>
<td>2001-02</td>
<td>2716</td>
<td>3582</td>
<td>4064</td>
<td>6673</td>
<td>5003</td>
<td>2003-04</td>
<td>2002-03</td>
</tr>
<tr>
<td>2002-03</td>
<td>981</td>
<td>1611</td>
<td>3830</td>
<td>4213</td>
<td>3888</td>
<td>3888</td>
<td>2004-05</td>
</tr>
<tr>
<td>2003-04</td>
<td>426</td>
<td>453</td>
<td>503</td>
<td>788</td>
<td>803</td>
<td>803</td>
<td>2004-05</td>
</tr>
<tr>
<td>2004-05</td>
<td>314</td>
<td>373</td>
<td>388</td>
<td>578</td>
<td>512</td>
<td>512</td>
<td>2004-05</td>
</tr>
<tr>
<td>2005-06</td>
<td>1892</td>
<td>2148</td>
<td>2466</td>
<td>2862</td>
<td>3264</td>
<td>3264</td>
<td>2005-06</td>
</tr>
<tr>
<td>2006-07</td>
<td>50</td>
<td>67</td>
<td>120</td>
<td>174</td>
<td>183</td>
<td>183</td>
<td>2006-07</td>
</tr>
</tbody>
</table>

The amount mobilized by REC during the year 2004-05 (upto 30th November 2004) was Rs. 4076 crore which included Rs. 1268 crore by way of Capital Gains Bonds, Rs.585 crore by way of REC Taxable Priority Sector Bonds, Rs.234 crore by way of REC Taxable Non-Priority Sector Bonds and Rs.2000 crore from LIC Term Loan Fund. The balance amount of Rs. 4913 crore will be mobilized during the year 2004-05 against the borrowing programme of Rs. 9000 crore.

Ministry of Power Annual Report 2004-05

Ministry of Power Annual Report 2004-05
During the year 2004-05, CIRE has organized 8 training programmes up to 30.11.2004. A total of 156 executives participated in the above programmes from various power utilities such as PSEB, KPTCL, Discoms from AP, Rajasthan, Karnataka, Orissa, MP, WBSEB, Electricity Regulatory Commissions, GEB, KSEB, TNEB, MSEB, Meghalaya SEB, Jharkhand SEB, etc.

The following programmes are proposed to be conducted during the remaining period of the year:

1. Energy Audit and Demand Side Management.
2. Power Sector Reforms and APDRP Projects.
3. Power Sector Accounting with Reference to ESAAR & GAAP.
4. Legal Aspects for Power Sector.

Progress in North Eastern states

For the financial year 2004-05 (upto 30th November, 2004), REC has sanctioned Term Loan for two major generation projects in North-Eastern States envisaging a capacity addition of 730 MW with term loan amounting to Rs. 1230.50 crores. During this period, disbursement of Rs. 29.60 crores has been made against the on-going generation projects in the North-Eastern states. In addition, a provision of Rs. 113 crore has been made for the North Eastern States including Sikkim, for their Intensive Electrification and System Improvement Works as also for generation projects. Concessional rates of interest are applicable for North Eastern States/SEBs in respect of the schemes sponsored by them. No allocation has been made for KutirJyoti Programme during the year 2004-05 as the programme has become part of the GOI’s programme for “Accelerated Electrification of one lakh villages and one crore households”.
Chapter-21.6
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 authorised share capital of Rs. 3500.00 cr. and having an installed capacity of 1130MW (755 MW hydro & 375 MW thermal), which meets more than 60% of the energy requirements of the NE Region.

COPACITY ADDITION PROGRAMME FOR THE 10th PLAN:
During 9th Plan, NEEPCO added 754 MW (174 MW Thermal and 580 MW Hydro Power). The proposed capacity addition during the 10th Plan has been fixed as 155 MW (130 MW approx. Thermal and 25 MW Hydro). Out of this, Kopili H.E. Power Station Stage - II with one unit of 25MW has already been completed.

1. PROJECTS UNDER OPERATION
The following completed Projects are under operation:

<table>
<thead>
<tr>
<th>Sl No.</th>
<th>Name of the Project</th>
<th>State</th>
<th>Installed Capacity</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kopili Hydro Electric Power Plant</td>
<td>Assam</td>
<td>150 MW</td>
</tr>
<tr>
<td>2</td>
<td>Kopili H.E. Power Plant - 1st Stage Ext.</td>
<td>Assam</td>
<td>100 MW</td>
</tr>
<tr>
<td>3</td>
<td>Assam Gas Based Power Plant</td>
<td>Assam</td>
<td>291 MW</td>
</tr>
<tr>
<td>4</td>
<td>Agartala Gas Turbine Power Plant</td>
<td>Tripura</td>
<td>84 MW</td>
</tr>
<tr>
<td>5</td>
<td>Doyang Hydro Electric Power Plant</td>
<td>Nagaland</td>
<td>75 MW</td>
</tr>
<tr>
<td>6</td>
<td>Ranganadi Hydro Electric Power Plant</td>
<td>Arunachal Pradesh</td>
<td>405 MW</td>
</tr>
<tr>
<td>7</td>
<td>Kopili H.E Power Plant Stage - II</td>
<td>Assam</td>
<td>25 MW</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td></td>
<td>1130 MW</td>
</tr>
</tbody>
</table>

POWER GENERATION:
During the period from 1st April' 04 to 30th Nov' 04, NEEPCO generated 2861 MU from hydro stations against a target of 1730 MU and 1704 MU from thermal stations against a target of 1316 MU. The cumulative generation since inception till 30th Nov' 04 from NEEPCO Power Stations was 31549 MUs. Station wise target Vs achievement from 1st April' 04 to 30th Nov' 04 are given below.

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the Power Stations</th>
<th>Generation Target (01.04.04 to 30.11.04)</th>
<th>Actual Generation (01.04.04 to 30.11.04)</th>
</tr>
</thead>
<tbody>
<tr>
<td>A) HYDRO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>Kopili Hydro Electric Power Plant (150 MW), Assam.</td>
<td>754 MU</td>
<td>1037 MU</td>
</tr>
<tr>
<td>ii)</td>
<td>Doyang Hydro Electric Power Plant (75 MW), Nagaland</td>
<td>134 MU</td>
<td>285 MU</td>
</tr>
<tr>
<td>iii)</td>
<td>Ranganadi Hydro Electric Power Station (405 MW), Arunachal Pradesh</td>
<td>842MU</td>
<td>1539 MU</td>
</tr>
<tr>
<td>Sub – Total (A)</td>
<td></td>
<td>1730 MU</td>
<td>2861 MU</td>
</tr>
<tr>
<td>B) THERMAL</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>i)</td>
<td>Assam Gas Based Power Plant (291 MW), Assam.</td>
<td>995 MU</td>
<td>1279 MU</td>
</tr>
<tr>
<td>ii)</td>
<td>Agartala Gas Turbine Power Plant (84 MW), Tripura.</td>
<td>321MU</td>
<td>425 MU</td>
</tr>
<tr>
<td>Sub – Total (B)</td>
<td></td>
<td>1316 MU</td>
<td>1704 MU</td>
</tr>
<tr>
<td>TOTAL (A+B)</td>
<td></td>
<td>3046 MU</td>
<td>4565 MU</td>
</tr>
</tbody>
</table>

Note: Actual Generation includes Deemed Generation.

Kopili Hydro Electric Power Station Stage-II, Assam, (25 MW)
2. PROJECTS UNDER EXECUTION

TURIAL H.E.P (2x30 MW), MIZORAM:

Tuirial H.E. Project is situated in Aizwal district of Mizoram. The Project proposes to develop the lowest possible stage of the Turial river system in Mizoram. Turial is a tributary of the river Barak, which is one of the main river systems of the region flowing into the Bangladesh river system. The project was approved in July 1998 at an estimated cost of Rs. 368.72 cr. Project is scheduled to be commissioned in July 2006.

Tuirial H.E. Project is being financed by JBIC, Japan, M/s Electrowatt Engineering Ltd., of Zurich, Switzerland is the Review Consultant of NEEPCO for this project.

The brief status of the project is as follows:

- A total length of 885 RM (Heading) of tunnel boring, out of 1550 RM has been completed. 14968 cum. concreting has also been completed, out of 505000 cum.
- Excavation and filling of Saddle Dam has been completed. 0.72 Lakhs cum. excavation of main Dam has been completed, out of 4.40 Lakhs cum. Out of a total quantity of 19200 cum. of open excavation, 7500 cum. has been completed. Model Testing & Soil resistivity test of PH completed.
- All the Project activities came to a total halt with effect from 9th June, 2004, due to law and order problem and huge time and cost overrun.
- The revised cost estimate has been submitted to CEA for examination.

KAMENG H.E.PROJECT (4x150 = 600MW), ARUNACHAL PRADESH:

Kameng H.E. Project envisages installation of 4 (Four) units of 150 MW Francis Turbines in Kiri Power House on the left bank of the river Kameng in Arunachal Pradesh has been approved on 02.12.04 at an estimated cost of Rs. 2,496.90 cr. The Project is scheduled to be commissioned within 5 (Five) years.

Status:

Work order for Package-I, II & III have been awarded on 08/12/04. For Package IV & V, LOI have been issued on 03/12/04. Mobilisation at Project Site for start of the construction activities and infrastructure development under the 2ND stage clearance are continued.

TRIPURA GAS BASED POWER PROJECT (280MW) - TRIPURA:

Tripura Gas Turbine Project is located at Monachap in Tripura and its phased capacity will depend on availability of gas. Techno Economic clearance from CEA has been obtained on 25.04.03. All statutory and non-statutory clearance including MOEF clearances have been obtained. The consultancy works of the project have been awarded to CEA and MoU for the same signed on 08.10.03. PB in its meeting held on 07/05/04, has cleared the Project for investment. CCEA clearance is expected shortly.

80.29% of land required for the Project has been acquired. Other infrastructural works such as boundary fencing, some building work, boring of deep tube well is in progress.

Power Purchase Agreement / Memorandum of understandings:

- PPA with Haryana Vidyut Prasar Nigam (HVPN) has been signed on 9th July’04 for drawl of power of 100MW from TGBP.
- The PPA with Deptt. of Power, Govt. of Tripura has been signed on 14th July’04 for drawl of Power of 80MW from TGBP.
- MOU with Power Trading Corporation has been signed on 13/04/04 for sale of Power from TGBP.
- ASEP, Me. SEB, Department of Power, Nagaland and Department of Power, Manipur have also expressed their willingness to purchase Power from TGBP.

Status of Contract of the project:

- All Civil / Electrical / Mechanical works within the main Plant are in the scope of EPC contract.
- Fore bay, Intake, stilling basin, pipe line etc. for raw water intake under the scope of make up water system contract.

Tender for Consultancy Services for Design and Engineering Review:

Techno Commercial bid is under evaluation.

Financing Pattern:

As envisaged in the DPR the Project will be funded in the ratio of 70:30, 70% being loan to be borrowed by Corporation and 30% being equity of GOI.

Funding arrangement:

- MOU for availing financial assistance from PFC to meet the loan component of Tripura Gas Based Power Project has been signed between NEEPCO and PFC on 9th July, 04.

TRIPURA KOPILI TRANSMISSION SYSTEM:

The Transmission Schemes was envisaged to be constructed by POWER GRID for facilitating evacuation of Power from 280MW Tripura Gas Based Power Project to be executed by NEEPCO. However, now, it has been planned that the said Transmission system will be built, owned, operated and maintained by NEEPCO in order to match the commissioning schedule of the transmission system with that of the generation Project. The DPR of the Transmission Line Project and the Project cost estimate has been cleared by CEA at Rs. 486.07 cr.

3. NEW SCHEMES FOR EXECUTION:

The following new schemes have been identified for execution as Central Sector Projects by NEEPCO:

- TIAPAIMUKH H.E. PROJECT (1500MW) - MANIPUR:
  - This Project was initially investigated by CWC and thereafter by Brahmaputra Board. It has been handed over to NEEPCO in July’99 for execution. The revised DPR prepared by NEEPCO at a cost of Rs.5163.86 crore was Techno economically cleared by CEA on 02.07.03. Pre-PB meeting held on 13.08.03, when it was decided to take up Stage-III activities of the Project.
  - In order to bring down the power tariff of this Project to an economically viable level, it is necessary that cost towards security, flood moderation and diversion of National Highway are borne by the concerned State Government/Administrative Ministries of the Govt. of India.

RANGANADI H.E. PROJECT: STAGE-II (130 MW) - ARUNACHAL PRADESH:

This Project is located 10 KM upstream of the present Ranganadi Diversion Dam. The Project envisages construction of a 154m high concrete Dam with installed capacity of 130MW. The Project would increase the capacity of the existing Ranganadi Hydro Electric project Stage-I which is the ROR Scheme from 55MW to 100MW through regulated discharge. The commercial viability of the project has been established by CEA. Pre-construction activities and infrastructure development under the 2ND stage clearance are continued. The Stage-I & II site clearance from MOE & F has been received in Feb’02 & Aug’03 respectively. 2ND stage clearance of the Project has been accorded at an amount of Rs. 8.35 cr in Dec’04.

DIKRONG H.E. PROJECT (110 MW), ARUNACHAL PRADESH:

This is a run of the river scheme which envisages utilisation of discharge of Dikrong River together with additional tail water discharge of 160 Cumecs from RHEP Stage-I. The Project comprises of a Dam on river Dikrong 2.96Km long tunnel with Power House on the right bank of river Dikrong. Ministry of Power, Govt. of India, has accorded 2ND Stage clearance of the Project for an amount of Rs. 6.85 cr in Dec’04. Pre-construction activities and infrastructure development under the 2ND stage clearance are continued.

SURVEY & INVESTIGATION WORKS:

Under the Prime Minister Hydro Initiative, Govt. of India has embarked upon an ambitious programme of creating 50,000 MW of hydropower in the country for which Central Electricity Authority (CEA) identified 162 projects for preparation of Pre-Feasibility Reports (PFRs). NEEPCO was entrusted the work of preparation of 18 PFRs in Arunachal Pradesh and Nagaland, which was accomplished before the stipulated time and submitted to CEA. As a consequence, NEEPCO has been entrusted with the work of preparation of 7(seven) DPRs of hydro projects located in the Kameng Basin of Arunachal Pradesh.

Field activities towards Survey and Investigation of these projects are being carried out. The DPRs are scheduled to be submitted by March’2006 to CEA. The projects are:

<table>
<thead>
<tr>
<th>Sl. No.</th>
<th>Name of the project</th>
<th>Installed Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bharel H. E. Project</td>
<td>1120</td>
</tr>
<tr>
<td>2</td>
<td>Bharel - II H. E. Project</td>
<td>600</td>
</tr>
<tr>
<td>3</td>
<td>Kameng Dam H.E Project</td>
<td>600</td>
</tr>
<tr>
<td>4</td>
<td>Talong H.E. Project</td>
<td>300</td>
</tr>
<tr>
<td>5</td>
<td>Kapak Leyak H.E Project</td>
<td>160</td>
</tr>
<tr>
<td>6</td>
<td>Badao H. E. Project</td>
<td>120</td>
</tr>
<tr>
<td>7</td>
<td>Dibbi H. E. Project</td>
<td>100</td>
</tr>
</tbody>
</table>

Total 3000

In addition, survey and Investigation of 2(wo) more Projects in Arunachal Pradesh, namely Papum Pum H.E. Project (600MW) and Hirik H.E. Project (84MW) are being undertaken.
After the successful completion and commissioning of prestigious 1500 MW, Nathpa Jhakri Hydro-electric Power project in Himachal Pradesh, SJVN has started focusing its attention on taking up more projects in Himachal Pradesh and other States. The Implementation Agreement for the execution of Rampur Hydro-electric Power Project (434 MW) has already been signed on October 20, 2004 and efforts are on to take up more projects in the state of Uttarakhand & Sikkim.

Nathpa Jhakri Hydro-electric Power Project has already generated 6463.88 MUs since its inception up to end October 2004.

Satluj Jal Vidyut Nigam Limited, SJVNL (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) with an authorized share capital of Rs. 4500 crore. The debt equity ratio for the Nathpa Jhakri Hydro Electric Project (NJHEP) is 1:1 and the equity-sharing ratio of GOI and GOHP is 3:1 respectively.

The Revised Cost Estimate (RCE-II) of NJHEP at June, 1998 price level was sanctioned by the Government of India in May, 1999 at Rs. 7686.31 Crore with an indicative completion cost at Rs 8058.34 crore.

The Nathpa Jhakri Hydro Electric Project (NJHEP) (1500 MW) is the first project undertaken by SJVN for execution.

Commissioning Status

All the Units of NJHEP have since been commissioned as detailed below.

<table>
<thead>
<tr>
<th>Unit</th>
<th>Synchronization</th>
<th>Commercial Generation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unit – 6</td>
<td>23-Nov-03</td>
<td>2-Jan-04</td>
</tr>
<tr>
<td>Unit – 5</td>
<td>20-Sep-03</td>
<td>6-Oct-03</td>
</tr>
<tr>
<td>Unit – 4</td>
<td>22-Jan-04</td>
<td>30-Mar-04</td>
</tr>
<tr>
<td>Unit – 3</td>
<td>13-Feb-04</td>
<td>31-Mar-04</td>
</tr>
<tr>
<td>Unit – 2</td>
<td>09-Mar-04</td>
<td>6-May-04</td>
</tr>
<tr>
<td>Unit – 1</td>
<td>31-Mar-04</td>
<td>18-May-04</td>
</tr>
</tbody>
</table>

**Project Benefits**

Besides the social and economic upliftment of the people in its vicinity, the 1500 MW NJHEP is designed to generate 6950 MU of electrical energy in a 90% dependable year. It also provides 1500 MW of valuable peaking power to the Northern Grid.

Out of the total energy generated at the Bus Bar, 12 percent is supplied free of cost to the home state i.e. Himachal Pradesh. From the remaining 88% energy generation, 25% is supplied to HP at Bus Bar rates. Balance power allocated to different states/UTs of Northern Region by Ministry of Power.

Power Purchase Agreements (PPAs) have been signed with eight beneficiaries i.e. with Punjab, Chandigarh, Haryana, Rajasthan, Delhi, Jammu & Kashmir, Uttar Pradesh and Himachal Pradesh.

**Financial Performance**

In the very first year of partial operation (with two units in operation), the company earned a profit before depreciation to the extent of Rs.73.29 crore. The performance of the company as on 31.03.2004 is as under:

<table>
<thead>
<tr>
<th>(Rs. in crore)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales and other income</td>
</tr>
<tr>
<td>Less : Generation &amp; Admin. expenses</td>
</tr>
<tr>
<td>Less : Interest &amp; Finance charges</td>
</tr>
<tr>
<td>Profit before Depreciation</td>
</tr>
<tr>
<td>Less : Depreciation</td>
</tr>
<tr>
<td>Profit after Depreciation</td>
</tr>
<tr>
<td>Loans</td>
</tr>
</tbody>
</table>
| The World Bank had sanctioned a loan of US $ 437 million through Govt. of India for part financing the 1500 MW NJHEP. SJVN had utilized the World Bank loan component to the tune of equivalent to INR Rs. 1537.90 crores till the loan closing date (as on end March 2002). The loan carried a high interest rate ranging between 14.5% to 17% per annum. Taking advantage of favorable market conditions, SJVN raised loans at very low interest rates in the domestic market and the Company prepaid the World Bank loan and has thus reduced the cost of borrowings by more than 6% per annum. This would result in a saving of Rs. 90 crore in the borrowing costs in the very first year and approximately Rs. 500 crore over the entire loan period. This is a significant step on the part of the Corporation to reduce the interest burden and consequently lower the tariff, the benefit of which shall be enjoyed by the large number of consumers. **ENVIRONMENT, RESETTLEMENT AND REHABILITATION**

The SJVN based on its policy of generating reliable and eco-friendly power, launched an Environment Management Plan and Compensatory Afforestation Plan at a cost of Rs. 32.67 crore. This plan consists of catchment area treatment, sustenance and enhancement of fisheries, rehabilitation of muck disposal sites, environmental monitoring and afforestation. So far, a sum of Rs. 5.48 crore has been spent.

While the benefits under Rehabilitation & Resettlement as committed are being fulfilled, the company launched further welfare schemes for the people in Districts of Shimla, Kinnaur and Kulki. The schemes include merit scholarship, infrastructure and other aid to schools and apprenticeship scheme.

**Human Resource**

The manpower on 31st March, 2004 on the rolls of SJVN was 627. The strength of HPSEB/HP Govt. officials on deputation to SJVN on the above date was 1100. The strength of SC, ST and OBC employees as on the above date was 137, 26 and 61 respectively.

Enrichment of manpower skills through training is being given utmost importance. During the year, 695 employees of various disciplines were trained for 2446 man days through in-house training centres and external professional institutions.

**FUTURE PROJECTS**

SJVN has already signed Implementation Agreement with Government of Himachal Pradesh for the Rampur Hydel Power Project (439 MW). The other Projects expected to be executed by SJVN are Khab HE Project (450 MW) and Luhri HE Project (465 MW).
TEHRI HYDRO DEVELOPMENT CORPORATION LTD.

The Tehri Hydro Development Corporation Limited (THDC), a Joint Venture Corporation of the Govt. of India and Govt. of U.P., was incorporated as a Limited Company under the Companies Act, 1956, in July’88 to develop, operate and maintain the Tehri Hydro Power Complex and other Hydro Projects.

THDC is presently responsible for the implementation of the Tehri Hydro Power Complex (2400 MW), comprising the following components:

1. Tehri Dam & Hydro Power Plant (HPP) : 260.5 m high Earth & Rock Fill Dam (Stage-I of the Complex), with 1000 MW underground Hydro Power Plant having four conventional Turbine Generator sets of 250 MW each (Stage-I of the Complex).

2. Koteshwar Hydro Electric Project (HEP) : 97.5 m high Concrete Dam and 400 MW Hydro Power Plant at Koteshwar, 22 Km, downstream of Tehri. Koteshwar Project is a run-off-river scheme with minimum diurnal storage. The Koteshwar Project will regulate water releases from Tehri Reservoir for irrigation purposes.

3. Tehri Pump Storage Plant (PSP) : Tehri PSP scheme having four reversible units of 250 MW each has been envisaged to generate 1000 MW of peaking power for enhancing system reliability and also to provide balancing load to the thermal base generation during off peak hours. The reservoir created by the Tehri Dam would function as upstream reservoir for this Project, while the Koteshwar Dam reservoir shall be the lower reservoir.

The Corporation has an authorised share capital of Rs.3000 Cr. The cost of the Project is being shared in the ratio 75:25 (equity portion) by Govt. of India & Govt. of U.P. for Power Component, while the Irrigation Component (20% of Stage-I cost) is being entirely funded by the Govt. of U.P.

The Govt. in March, 1984 approved the implementation of Tehri Dam & HPP (1000 MW) as Stage-I of Tehri Power Complex; the other components were to be implemented subsequently as per the availability of resources. Stage-I is currently at an advanced stage of commissioning.

The 400 MW Koteshwar HEP, was approved by Govt. in April,2000 and the work is in progress.

The updated Detailed Project Report (DPR) for Tehri PSP(1000 MW) has been prepared by M/s EdF and M/s CoD, French Consultants under French Aid. Based on the updated DPR, the updated Cost Estimate prepared by THDC, has been cleared by CEA. The PIB approval is under process.

THDC and Government of Uttarakhand have signed MoU for implementation of 340 MW Vishnu Gad Pipalkot Project on Alaknanda river. Cost Estimate for Survey and Investigation required for preparation of feasibility report for the Project has been cleared by CEA and MOEF has accorded site clearance for undertaking Survey & Investigation & for collection of environmental data for preparation of Feasibility Report. Investigation works are in progress.

**BENEFITS**

The benefits from the Tehri Hydro Power Complex are as under:

- Addition to the installed generating capacity : 2400 MW in the Northern Region (1000 MW on completion of Tehri Stage-I)
- Annual energy availability (Peaking): 6200 MU (3568 MU on completion of Tehri Stage-I)
- Irrigation (additional): 2.70 Lac. hac.
- Stabilisation of existing irrigation : 8.04 Lac. hac.

(Besides above):

- 300 Cusecs (162 Million Gallons Per Day) of drinking water for Delhi which will meet the requirements of about 40 lakh people.
- In addition, 200 Cusecs (108 Million Gallons Per Day) of drinking water for towns and villages of U.P. which will meet the requirement of 30 lakh people.

Integrated development of Garhwal region, including construction of a new hill station town with provision of all civic facilities; improved communication, education, health, tourism, development of horticulture, fisheries, and afforestation of the region.

1. **TEHRI DAM & HPP, STAGE-I (1000 MW)**

   Tehri Dam Project is a multipurpose hydro Project under construction on the river Bhagirathi in Uttranchal State. Tehri Hydro Power Plant (Stage-I) includes the construction of the 260.5 m high rockfill Dam, spillway structures, power tunnels and an underground power cavern with an installed capacity of 1000 MW (4X250MW).

   The Revised Cost of Tehri Dam & HPP , Stage-I, (1000MW) including essential works of Tehri PSP is Rs.6821.32 cr. including IDC & FC of Rs.560.00 cr. approved in Nov.2004.

   **STATUS OF THE PROJECT WORKS**

   The work on Tehri Stage-I is in advance stage of completion. The present status of the Project is as under:

   i) **MAIN DAM**

      The 260.5 m, high Tehri Dam, which is the highest Earth & Rockfill Dam in Asia is nearing completion, the balance height to be achieved is only 1.2 m. A quantity of 262.78 lac. cum. of fill material has already been placed in Main Dam till November, 2004 against the total quantity of 275.82 lac. Cum. which includes a quantity of 27.50 Lac cum of rip-rap material. Out of the total quantity of rip-rap material, a quantity of 17.25 Lac. Cum has been placed till Nov. 04. The 1st stage Rip-rap has been raised to EL 837.60 m. and the second stage upto EL 798.5 m. & 747.3 m. on U/Ss & D/Ss respectively. A quantity of 11.31 Lac cum of rip rap material has been placed on U/Ss side and 5.94 Lac cum on D/Ss side. The Dam body consists of two Inspection Galleries. The first gallery is at an elevation of EL 725 m. having a length of 442.5 m. and the second gallery at an elevation of EL 725.4 m. in clay core of 308.64 m length, a unique structure of its nature. The second Gallery is at an elevation of EL 635.4 m. having a length of 308.64 m.

   The galleries are of unique design and are being executed for the first time in India. The galleries shall serve the purpose of monitoring the seismic behavior of dam body. The construction of Gallery (steel lined) at EL 725/730 m has already been completed. The construction of Top Inspection gallery at EL 835.4 m is in progress. Out of a total length of 616 m, Invert has been completed in a length of 477.5 m and side walls raised in a length of 442.5 m.

   ii) **SPILLWAYS**

      The works at various fronts viz., Chute Spillway, Right Bank Shaft Spillways and Left Bank Shaft Spillways is progressing well. The Open excavation for the entire spillways has been completed. The open excavation of the tune of 98.98 lac cum. has been executed in Chute Spillway, Right Bank Shaft Spillway & Left Bank Shaft Spillway. A quantity of 2.76 lac cum. of underground excavation has also been executed till date. The total concreting executed in Spillways is to the tune of 9.04 lac cum. In ILO, the Overt & Invert concrete lining has been completed upto Ch: 255 m. including Steel Liner Reach. Excavation between Ch: 255 m. to Ch. 266 m. has also been completed and concreting is in progress.

The concreting in Stilling Basin of T-3 circuit required for commissioning of first unit upto EL. 612 m. has been completed. A quantity of 3.85 lac. cum. of concreting has been executed in Stilling Basin against a total quantity of 4.42 lac. cum. The T-4 circuit works are also in progress.
The transition zone with HRT-4, is located in the complicated rockmass with collapsed rock strata. Grouting of the loose rockmass is being executed from MGS, thereby compacting the entire loose strata both in U/C & D/S of the transition. The stabilisation measures are being carried out with erection of very heavy steel sections of the steel ribs followed by backfill concreting before lining of the transition area.

**Butterfly Valve House**

Butterfly Valve Chamber 121 m. long, 10m. wide and 24 m. high has been constructed to house 4 numbers each 5 m. dia. Butterfly Valves before entry to the pressure shaft. Butterfly Valve Chamber involved underground excavation to the tune of 31 Th. cum. and concreting of 5.28 Th. cum. and the same stands completed.

**Penstock Assembly Chamber**

Penstock Assembly Chamber 317 m. long, 13 m. wide and 19 m. high has been completed. The Penstock Assembly Chamber involving underground excavation of 30 Th. cum. and concreting quantity of 5 Th. cum. has been completed.

**Power House Cavern**

The Power House Cavern, 197 m. long, 24 m. wide and 63 m. high, which includes Service Bay, Control Room, Auxiliary rooms, housing 4 units of 250 MW each with vertical shaft Francis Turbine completed to the Generators having rotational speed of around 214 rpm.

The heaviest single assembly of Generator Rotor having 707T weight has been erected by 2 numbers EOT cranes each of 375 T capacity working in tandem with a lifting beam.

**Transformer Hall / Interface Facility**

The Transformer Hall, 161 m. long, 18.5 m. wide and 29 m. high is common for both HPP & PSP. It houses 4 numbers of 3 phase 15.75/420 KV, 306 MVA transformers. Each 306 MVA Transformer weighing 200 T has been successfully transported by road in the hilly terrain for the first time in the country. All the 4 numbers of Transformers have been erected. The Transformer Hall also houses 420 KV Gas Insulated Switchgear (GIS) and Bus Duct. The GIS installed at EL 618 m. would be common for HPP & PSP due to its economy, operation reliability and well suited for starting PSP units in pumping mode. The SF6 Gas Insulated Bus Ducts will evacuate the power through the Bus Duct Tunnel of 614 m. long, 6.2 m. width and 8.7 m. height. The provision for installation of Bus ducts required for Tehri PSP has also been incorporated.

The equipments installed include isolator, circuit breaker, current and Potential transformers. The Power from the GIS shall be fed to transmission line through Interface facility. The Interface facility building houses the various facilities like 2X1 MV A DG sets for emergency supply, 11 KV distribution boards for supply to various 11/415 V sub stations in Power House. The Computerized Control System is based on the equipment was to the tune of 29,000 freight MT.

The equipment was dispached on FOB basis at the foreign port. Thereafter the total tonnage of the equipment was to the tune of 28,000 freight MT.

The Computerized Control System has been supplied from Alston, Germany supported by buyers credit from KFW, Germany. The Computerized Control System is based on the advance system. The supplies have since been erected.

**ELECROTHERMAL EQUIPMENT**

- **Generation**: 306 MVA Transformer weighing 200 T has been successfully transported by road in the hilly terrain for the first time in the country. All the 4 numbers of Transformers have been erected.
- **Transmission**: The GIS installed at EL 618 m. would be common for HPP & PSP due to its economy, operation reliability and well suited for starting PSP units in pumping mode. The SF6 Gas Insulated Bus Ducts will evacuate the power through the Bus Duct Tunnel of 614 m. long, 6.2 m. width and 8.7 m. height.
- **Interface Facility Building**: Houses various facilities like 2X1 MV A DG sets for emergency supply, 11 KV distribution boards for supply to various 11/415 V sub stations in Power House.
- **Computerized Control System**: The equipment was dispached on FOB basis at the foreign port. Thereafter the total tonnage of the equipment was to the tune of 28,000 freight MT.
- **Spherical Valve Assembly**: Completed.
- **Pre-Commissioning Tests**: Have been completed and unit is ready for spinning.
- **Transformer Hall Assembly**: Erection of Power House Generating Plant and Equipment is in progress.

**PROJECT COMMISSIONING**

- **Erection of Turbine Operating Mechanism**: Has been completed.
- **Boxing of unit is complete**.
- **Pre-Commissioning Tests**: Have been completed and unit is ready for spinning.

**UNIT-I**

- **Erection of Turbine Operating Mechanism**: Is complete.
- **Stator Core Building**: Winding and Testing has been completed.
- **Rotor Assembly in Service Bay**: Has been completed.
- **Rotor has been lowered**.
- **Unit alignment has been taken up**.

**UNIT-II**

- **Erection of Draft Tube Cone, Stay Ring and Spiral casing**: Has been completed.
- **Generator Barrel concreting**: Has been completed.
- **Erection of Turbine Operating Mechanism**: Is complete.
- **Stator Core Assembly in Service Bay**: Is in progress.
**REHABILITATION**

The rehabilitation work is being implemented pari-passu with the Engineering Works of the project as per approval and is being carried out in two phases. The first phase, covers those who were affected by the construction of the Coffee Dam at Tehri. The first phase includes all the urban families (5291) entitled as per current provisions till the cut-off date of 06.06.1986, and also 2062 rural fully affected families of 28 villages and is complete.

In the second phase, all the remaining families to be affected due to impoundment of Tehri Dam would be rehabilitated. The second phase rehabilitation is being carried out in two parts viz. linked with closure of diversion tunnels T-1 & T-2, which is also complete and filling of reservoir.

The status of rehabilitation is indicated below:

a) Urban Displaced Families

All the 5160 eligible families have been rehabilitated and old Tehri Town has been completely vacated in January, 2004.

b) Rural Displaced Families

<table>
<thead>
<tr>
<th>Activity</th>
<th>Affected Families</th>
<th>%age Affected alloted land/ Progress</th>
<th>Compensation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase I</td>
<td>2082</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Phase II</td>
<td>3347*</td>
<td>74.01</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>5429</td>
<td>83.97</td>
<td></td>
</tr>
</tbody>
</table>

* In addition to these fully affected families, 3310 families are partially affected who are not to be relocated but are to be paid cash compensation for their part-land coming under submergence. 2280 families have been paid compensation upto October, 2004.

Allotment of land/payment of compensation has been made to all the families residing upto EL 780 M and for balance families of Phase-II, i.e. above EL 780 M is under process. As per the decision taken by the Inter-Ministerial Review Committee the diversion Tunnels T-1 & T-2 are to be closed for impoundment of reservoir which will result in raising of water level upto EL 700 M i.e. at I/O level. Accordingly, plugging of Diversion Tunnel T-1 has been completed on 29.01.2004. The evacuation of affected families upto EL 710 M have already been completed. In the next stage, families residing upto 760 M are planned to be evacuated as with the closure of Diversion Tunnel the water level may rise upto EL 760 M during rainy season. The process of level-wise evacuation of families shall continue above 760 M and Rehabilitation above EL 780 M, pari-passu with the reservoir filling.

**ENVIRONMENT**

Environmental clearance was accorded by MOEF in July 1990. Various studies as per the Environmental clearance conditions have been completed and Action Plans drawn up wherever required. Action for the protection and upgradation of environment is being actively pursued.

THDC is carrying out Catchment Area Treatment in the high and very high erodibility classification. An area of 52,204 ha. was to be treated under the Catchment Area Treatment Program. An area of 46,369 ha. has been treated till Sept.34. In accordance with the conditions laid down by the MOEF, Forest Department, Govt. of Uttarakhand has granted forest clearance in June, 1987. The consultancy and implementation of the Action Plan for mitigating the possible impact on ‘Mahseer Fish’ due to construction of Tehri Dam has been taken up by the National Research Centre on Cold Water Fisheries, Bhimtal, Distt. Nainital.

The consultancy and implementation of the Action Plan for mitigating the possible impact on ‘Mahseer Fish’ due to construction of Tehri Dam has been taken up by the National Research Centre on Cold Water Fisheries, Bhimtal, Distt. Nainital. MOEF granted forest clearance in June, 1987 with stipulation that the project authorities will carry out compensatory afforestation in an area of 3815 ha. of non forest land. An area of 4516 ha. has already been planted in districts of Jhansi and Lalitpur in U.P. The plantation done on non-forest land is being converted into protected forest by State Forest Deptt.

**TUNNEL T-1**

Tunnel T-1 has been completed on 29.01.2004. The Tunnel Gate has been completed. The Earth Resistivity for Ground Mat for Power House has also been checked and steel bars for same supplied at site.

**SECOND STAGE**

Fixing of second stage Embankments for Diversion Tunnel Gate has been completed.

**TRANSPORTATION / ENGINEERING EQUIPMENT**

- For other packages of Hydro-Mechanical Equipment in under process.
- The Open Excavation for Dam, Spillways and Surface Power House is in progress. Out of total Open Excavation of 49.86 lakh cum., a quantity of 36 lakh cum. has been executed for Dam, Spillways and Power Intakes.
- The Electromechanical Equipment package, awarded to M/s BHEL, is in progress. Model Testing of Turbine has been completed. The Earth Resistivity for Ground Mat for Power House has also been checked and steel bars for same supplied at site.

**COMMISSIONING SCHEDULE**

The Project is likely to be commissioned in the year 2007-08.

**EXPENDITURE**

The expenditure incurred on Koteswar HEP (400 MW) up to Nov. ’04 is Rs. 245.30 crore.

**3. TEHRI PUMP STORAGE PLANT (PSP) - 1000 MW**

**BACKGROUND & STATUS**

The Tehri PSP is a part of the 2400 MW Tehri Hydro Power Complex. Certain essential works of PSP were taken up along with the execution of Stage-I works. Excavation of Head Race Tunnels for PSP has been completed. The Intakes for Head Race Tunnels for PSP have been constructed alongside the Stage-I works. The Transformer Hall constructed in Stage-I would also serve for PSP. The major Civil works to be taken up in PSP involve only the Machine Hall and Tail Race Tunnels and Penstocks.

The updated Cost Estimate for Rs. 1799.67 Cr. at March’02. Price Level prepared by THDC has been cleared by CEA. Pre-PIB meeting has already been held. Ministry of Power has desired that before the Govt. considers the proposal for PIB, firm commitments both for sale of Peaking Power and purchase of Pumping Power on the committed rates be obtained from beneficiary states. The beneficiary states viz. Delhi, Rajasthan and Himachal Pradesh has confirmed their agreement for supply of off Peak Power from their share purchase of Peak Power from the Project. The matter is being pursued with other states.

The Project is scheduled for commissioning in 4½ years after the investment approval from Govt. of India.

**VISHNUGAD PIPALKOTI (340 MW)**

THDC & Govt. of Uttarakhand have signed MoU for implementation of 340 MW Vishnugad Pipalkoti Project on Alaknanda river. The Cost Estimate for Survey & Investigation required for preparation of feasibility report for the project has been cleared by CEA and MOEF has accorded site clearance for undertaking Survey & Investigation and for collection of environmental data for preparation of feasibility report. Drilling and Drilling for Geological investigations are in progress. Topographical Survey through Survey of India has been completed. Investigation works are in progress. Feasibility Report for Stage-I activities has since been prepared and submitted to CEA.

A view of the Central structure of Chota Spillway & Tehri Dam
Damodar Valley Corporation (DVC) was constituted by an Act of the Central Legislature on 7th July 1948 to develop, maintain and operate the first Multi-purpose Integrated River Valley Project in independent India. At the time of its inception, the objectives were flood control, provision of water for irrigation and other uses, generation, transmission and distribution of electricity, eco-conservation and afforestation and socio-economic well being of the people residing in and around the DVC Projects.

With passage of time and shift in National priorities, power generation with associated transmission and bulk distribution activities gained priority in DVC in view of its locational advantage. Other objectives of DVC, however, received due attention and services as part of its overall responsibility.

**INFRASTRUCTURE AT A GLANCE**

**OVRALL OPERATING PARAMETERS OF DVC PLANTS**

Major overall operating parameters attained by DVC Generating Plants during 2004-05 (upto Dec’04) with respect to the corresponding parameters achieved during 2003-04 and the anticipated target to be achieved during the remaining part of 2004-05 are detailed in the following table:

<table>
<thead>
<tr>
<th>PARAMETERS</th>
<th>2003-04</th>
<th>2004-05 (upto Dec’04)</th>
<th>TARGET (Jan’05-Mar’05)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>THERMAL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Generation (MU)</td>
<td>6899.418</td>
<td>7493.621</td>
<td>3200.000</td>
</tr>
<tr>
<td>Plant Load Factor (%)</td>
<td>44.300</td>
<td>48.110</td>
<td>51.730</td>
</tr>
<tr>
<td>Sp. Oil consumption (ml/kwh)</td>
<td>8.270</td>
<td>4.855</td>
<td>3.000</td>
</tr>
<tr>
<td>Sp. Coal consumption (kg/kwh)</td>
<td>0.754</td>
<td>0.731</td>
<td>0.720</td>
</tr>
<tr>
<td>Aux. Power consumption (%)</td>
<td>11.990</td>
<td>11.360</td>
<td>10.600</td>
</tr>
<tr>
<td><strong>HYDEL</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Generation (MU)</td>
<td>260.845</td>
<td>223.917</td>
<td>39.000</td>
</tr>
<tr>
<td><strong>GAS TURBINE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Energy Generation (MU)</td>
<td>6.614</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td><strong>WATER MANAGEMENT INFRASTRUCTURE</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irrigation Command Area</td>
<td>5.69 lakh hectares</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Irrigation potential Created</td>
<td>3.64 lakh hectares</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Flood Reserve Capacity</td>
<td>1292 MCM</td>
<td></td>
</tr>
<tr>
<td>Canals*</td>
<td>2494 kms.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>* O&amp;M under Govt. of West Bengal</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ENVIRONMENTAL MANAGEMENT & POLLUTION CONTROL**

Bulk of DVC’s generation comes from coal based thermal units. Thermal Power Plants at Bokaro (BTPS ‘A’ & BTPS ‘B’), Durgapur (DTPS) and Chandrapura (CTPS) were constructed and commissioned before the stringent pollution control norms came into force and hence the plants were not equipped to meet the present norms. DVC, however, has taken steps in this regard and new ESPs in replacement of old ESPs in all six units of CTPS and unit # 3 of DTPS, Additional ESPs in unit # 4 of DTPS and unit # 3 of BTPS ‘B’ have been installed. Installation of additional ESPs in BTPS ‘B’ unit # 1 & 2 are expected to be completed by May, 2005 and February, 2005 respectively. Further, in order to reduce emission level through stacks, it has been planned to introduce Ammonia Flue Gas Conditioning System in all 210 MW units and 140 MW unit of DTPS. Trial ammonia injection in unit # 1 of MTPS has been completed successfully and the permanent system is expected to be installed in all the units of MTPS by Nov, 05. Trial ammonia injection in BTPS ‘B’ is expected to be completed by Jan, 05.

Beside stack emission, effluents from the plants are monitored and reported to the respective Pollution Control Boards on regular basis. With a view to reduce suspended solids in plant drains, construction of surge ponds at DTPS and CTPS are in progress.

As regards solid waste management, discharged ash from ash ponds at BTPS, CTPS and DTPS are evacuated to fill up voids in the assigned abandoned coal mines. For permanent Ash Pond at BTPS, revised application for acquisition of 65 hectares of forest land is under process at Jharkhand State level and is being pursed on regular basis. Parallel action for dry ash collection system at BTPS ‘B’ has also been taken up. For utilization of generated fly ash from MTPS, a MoU has been signed with M/s Lafarge India Ltd. for setting up of a fly ash based cement plant of 1 MTA capacity. Evacuation of ash from MTPS ash pond to abandoned coal mines will be started shortly.

Awareness workshops on fly ash utilization were organized at Kolkata on 06.10.04 and at Ranchi on 08.10.04. In addition, similar workshops at plant levels are also being organized with participation of the prospective users.

**RENOVATION & MODERNIZATION**

Under comprehensive Renovation & Modernization (R&M) programme of old generating units, RLA based R&M with Life Extension (LE) has been taken up by DVC for its ten thermal units of vintages ranging from 51 to 25 years at BTPS ‘A’, DTPS and CTPS and four hydel units of vintages ranging from 51 to 47 years at Maithon and Panchet Hydel Stations (MHS & PHS). NTPC has been engaged as consultant for R&M LE of thermal units where as NHPC has been engaged for R&M LE including capacity upgradation (RM&U) of hydel units.

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### Brief status of various R&M/LE projects of DVC as on November 2004

<table>
<thead>
<tr>
<th>SL NO</th>
<th>PROJECT</th>
<th>BRIEF STATUS &amp; TARGET</th>
</tr>
</thead>
</table>
| 1     | R&M/LE of BTPS 'A' | i) RLA Study of U # 3 has been completed.  
ii) Tender for ESP installation has been issued & the order is expected to be placed by Mar’05. Target date for completion of ESP installation is Feb’07.  
iii) Target for R&M/LE order placement: Feb’06. |
| 2     | R&M/LE of CTPS | i) RLA Study of U # 2 has been completed.  
ii) Placement of order by March, 2005 |
| 3     | R&M/LE of CTPS | i) RLA Study of U # 4 has been completed.  
ii) In view of generic problems in the boilers, offer for one CFBC boiler has been obtained from BHEL. The offer for modification of existing firing system in U # 4 boiler is, however, awaited from BHEL.  
iii) DVC will run U # 5/6 to carry out PET & assessment of exact requirement for R&M.  
iv) Final decision will be taken in consultation with CEA and the Consultant, NTPC. |
| 4     | R&M/LE of DTPS Unit # 3 | i) RLA Study has been completed.  
ii) Tender for R&M/LE works has been issued and the order is expected to be placed by Mar’05. |
| 5     | RM&U of MHS Unit # 2 | After RM&U work, the unit was test synchronized on 30.05.04 but the turbine thrust cum guide bearing failed on 01.06.04, while approaching full load. The bearing after refurbishment and testing at CMERI, Durgapur again failed on 18.09.04 during trial run. |
| 6     | RM&U of MHS Unit # 1 & 3 | Action for R&M/LE of MHS Units # I & III will be taken after observing the post RM&U performance of MHS unit # II. |
| 7     | RM&U of PHS Unit # 1 | Completion of RLA by June, 2005 and order for R&M by Jan, 2006 |

### CAPACITY ADDITION PROGRAMME

<table>
<thead>
<tr>
<th>SL NO</th>
<th>PROJECT</th>
<th>CAPACITY</th>
<th>BRIEF STATUS &amp; TARGET</th>
</tr>
</thead>
</table>
| 1     | Mejia TPS Extn. Unit # IV | 1x210 MW | EPC Contractor: M/s BHEL.  
Major activities completed: Test synchronization achieved with oil on 12.10.04 and with coal on 10.11.04. Full load achieved on 16.11.04.  
Activities in progress: Balance works of CHP, AHP, DMP etc. & trial run/unit stabilization are in progress.  
Expected DOC: April, 2005. |
| 2     | Mejia TPS Extn. Units # V & VI | 2x250 MW | EPC Contractor: M/s BHEL.  
Major activities completed: All clearances obtained. Survey and soil investigation works completed.  
Activities in progress: Excavation work in Power House/Boiler areas started on 08.11.04. Structural steel received partly.  
DOC: U # V – 12.01.07 & U # VI – 12.03.07. |
| 3     | Chandrapura TPS Extn. Units # VII & VIII | 2x250 MW | EPC Contractor: M/s BHEL.  
Major activities completed: All clearances obtained. Survey and soil investigation works completed.  
Activities in progress: Shifting/diversion of buildings, road & pipe lines from project site are in progress.  
DOC: U # VII – 27.01.07 & U # VIII – 27.03.07. |
**RURAL ELECTRIFICATION UNDER AREP**

As per Govt. of India formulated scheme for implementation of Accelerated Rural Electrification Programme (AREP), DVC has entered into MoU with Rural Electrification Corporation (REC) for execution of the projects in West Bengal and Jharkhand with support of the State Governments.

DVC has been assigned to execute the work of rural electrification in East Midnapur District comprising 808 Mouzas in West Bengal which has been planned to be executed in two phases with completion of Phase-I by March 2006 and Phase-II by March 2007. Quadruplicate agreement involving REC, DVC, Govt. of West Bengal and WBSIDC has been signed on 29.10.04. Detailed Project Report submitted to REC received in-principle clearance. Notice inviting expression of interest issued on 13.10.04 and the award of the contract is expected to be declared by 15.01.04.

As regards projects in Jharkhand, REC will assign the scope of work based on requisition/recognition of JSEB. The particulars/ information desired by DVC from JSEB for field survey and preparation of DPR are awaited. Quadruplicate Agreement amongst REC, DVC, Govt. of Jharkhand and JSEB is yet to be signed.

### WATER MANAGEMENT

**FLOOD CONTROL**

Out of originally planned eight storage reservoirs in the Damodar basin, construction of four multi-purpose Dams at Matlihon, Panchet, Titaiya and Konar have been completed in the first stage. But the designed storage levels could not be achieved due to constraints in acquiring the required land from the State Governments in respect of Matlihon and Panchet reservoirs. In the first stage, the flood reserve capacity planned was 1,771 million acre-ft. but due to non-acquisition of land flood reserve capacity that could be arranged was only 1,085 million acre-ft. However, even with the partial implementation of the scheme, DVC over the years has played a vital role in moderation of the floods in the lower valley to a great extent.

### IRRIGATION

Management and operation of irrigation infrastructure developed by DVC has been handed over to the Govt. of West Bengal in 1984 and DVC provides water from its reservoirs, as per agreement, for Rabri, Khafir as well as Boro cultivation in the lower valley.

Water withdrawal from DVC reservoirs for Khafir crops during 2004-05 (upto Nov’04) was 11.48 lakh acre-ft and the area irrigated was approximately 8.1 lakh acres. The allocation for Rabri and Boro crops have been fixed as 70 and 270 thousand acre-ft respectively, to be released during Dec’04 to Mar’05. It is estimated to irrigate around 50 thousand acres under Rabri and 270 thousand acres under Boro.

### DRAWAL OF INDUSTRIAL & DOMESTIC WATER

Many Industries have come up in the Damodar Valley in last few decades because of availability of power and water in the region. Up till now DVC provides water to around 131 industries from its reservoirs. In addition, water is drawn by municipalities from the system. From the inception till date the demand for water in the valley has grown up considerably. Present actual quantity of water drawn by different agencies is around 279.46 MGD.

### WATER INVESTIGATION & DEVELOPMENTAL INITIATIVES

As part of developmental activities in water resource management, DVC has submitted the revised feasibility report for Balpahari project in March, 2001. In addition, CWC has been entrusted with the work of investigation and comprehensive study for unified development of the Damodar river basin with particular objectives of flood control, irrigation and hydel power and also preparation of a comprehensive pre-feasibility report. This was felt essential for the reason that suitability of comprehensive study was carried out only in 1944, prior to establishment of DVC.

### ECO-CONSERVATION & AFROESTATION

DVC happens to be the first river valley authority to take up watershed management and related activities on a regular & sustained basis. Watershed management is mainly oriented to control soil erosion in the upper valley area through an integrated programme and at the same time for increasing the life of DVC reservoirs by reducing the flow of debris that lead to siltation in dams. The integrated programme includes afforestation, construction of soil erosion, and construction of check dams, land protection/reclamation and rehabilitation of denuded forests. DVC has so far conducted more than 15000 check dams and still detention structures creating a further irrigation potential of around 45,000 hectares in the State of Jharkhand.

The expenditure made in Soil Conservation schemes is Rs. 10.00 crore every year on an average at budget sharing ratio of 50:50 between DVC & JSEB.

### SOCIO-ECONOMIC DEVELOPMENT IN AND AROUND DVC PROJECTS

#### SOCIAL INTEGRATION PROGRAMME

Social Integration Programme (SIP), a commitment for the development of villagers/inhabitants in the areas covered by DVC happens to be the first river valley authority to take up watershed management and related activities on a regular & sustained basis. Watershed management is mainly oriented to control soil erosion in the upper valley area through an integrated programme and at the same time for increasing the life of DVC reservoirs by reducing the flow of debris that lead to siltation in dams. The integrated programme includes afforestation, construction of soil erosion, and construction of check dams, land protection/reclamation and rehabilitation of denuded forests. DVC has so far conducted more than 15000 check dams and still detention structures creating a further irrigation potential of around 45,000 hectares in the State of Jharkhand.

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### PROVISIONAL FINANCIAL RESULTS

#### A. PHYSICAL DATA

<table>
<thead>
<tr>
<th>PARTICULARS</th>
<th>2004-05</th>
<th>Apr. to Dec., 04</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Generation (MU)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(i) Thermal</td>
<td>7524*</td>
<td></td>
</tr>
<tr>
<td>(ii) Hydel</td>
<td>224</td>
<td></td>
</tr>
<tr>
<td>(ii) Gas Turbine</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>7748</td>
<td></td>
</tr>
<tr>
<td>2. Purchase of Power (MU)</td>
<td>1049</td>
<td></td>
</tr>
<tr>
<td>3. Total Stock (MU)</td>
<td>7772</td>
<td></td>
</tr>
<tr>
<td>4. Saleable Units (MU)</td>
<td>7594</td>
<td></td>
</tr>
<tr>
<td>5. Thermal PLF (%)</td>
<td>48.31</td>
<td></td>
</tr>
</tbody>
</table>

#### B. FINANCIAL DATA

(Rs. in crore)

<table>
<thead>
<tr>
<th></th>
<th>2004-05</th>
<th>2005-06</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Sale of Power</td>
<td>2080</td>
<td>3280</td>
</tr>
<tr>
<td>2. Profit before Tax – Power</td>
<td>442</td>
<td>572</td>
</tr>
<tr>
<td>3. Deficit on Irrigation &amp; Flood Control</td>
<td>48</td>
<td>56</td>
</tr>
<tr>
<td>4. Net Profit</td>
<td>394</td>
<td>524</td>
</tr>
<tr>
<td>5. Income Tax</td>
<td>144</td>
<td>212</td>
</tr>
<tr>
<td>6. Profit after Tax</td>
<td>250</td>
<td>312</td>
</tr>
</tbody>
</table>

*Inclusive of 30 MUs of MTPS # 4, which is yet to be declared for commercial operation.
Joint venture with any Central/State/Public Sector Power and Irrigation Projects and to carry on all kind of performing engineering and related technical & administrative Control of Ministry of Power or as a joint operation of Bhakra Nangal Project w.e.f. 1st October, 1967. The Beas Project Works, on completion, were transferred by the Government of India from Beas Construction Board (BCB) to BBMB as per Section 80 of the Act and Bhakra Management Board was renamed as Bhakra Beas Management Board (BBBM) w.e.f. 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 water 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 incharge 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 BBMB, the Government of India through a notification under Section 79 of the Punjab Re-Organisation Act, 1971. 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 MW. This project comprises a diversion dam at Pandoh, 13.1 km long Pandoh Baghi Tunnel, 11 km long Sundernagar Hydel Channel, Balancing Reservoir at Sundernagar, 12.35 km long, Sundernagar-Satluj Tunnel, 125 metres high Surge Shaft and Dehar Power Plant. The Beas Dam at Pong is earth-fill (earthen core, gravel shell) Dam 132.6 metres high with a gross storage capacity of 8570 million cubic metres. The Pong Power Plant (6x66 = 396 MW) is located in the stilling basin downstream of penstock tunnels.

The total installed generating capacity of the BBMB Power Houses is 2866.30 MW as detailed under -

<table>
<thead>
<tr>
<th>Power House</th>
<th>Installed Capacity</th>
<th>MW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bhakra (Right Bank)</td>
<td>5x157</td>
<td>785</td>
</tr>
<tr>
<td>Bhakra (Left Bank)</td>
<td>5x108</td>
<td>540</td>
</tr>
<tr>
<td>Ganguwal</td>
<td>1x29.25+2x24.20</td>
<td>77.65</td>
</tr>
<tr>
<td>Kotla</td>
<td>1x29.25+2x24.20</td>
<td>77.65</td>
</tr>
<tr>
<td>Dehar</td>
<td>6x165</td>
<td>990</td>
</tr>
<tr>
<td>Pong</td>
<td>6x60</td>
<td>396</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td></td>
<td>2866.3</td>
</tr>
</tbody>
</table>

The installed capacity of Unit II & III of Ganguwal & Kotla Power Houses has been increased to 24.2 MW each.

**GENERATION AND TRANSMISSION SYSTEM**

During the year 2004-05, the generation from the BBMB Power Houses has been 6515 MUs (upto 30.11.2004) against the target of 7504 MUs as laid down by CEA, Government of India. The shortfall in generation is due to poor inflows of water into Bhakra and Pong Reservoirs. The Plant Capability of BBMB Power Power Stations during 2004-05 (upto Oct., 2004) has been 96.71%. The Power generation at BBMB Power houses is being evacuated through BBMB Power evacuation system running into 3735 circuit km length of 400 KV, 220 KV, 132 KV and 66 KV transmission lines and 24 EHV Sub-stations. The BBMB Power evacuation system operates in an integrated manner in the

Northern Grid with its transmission network spreading over the States of Himachal Pradesh, Punjab, Haryana and Delhi. The system is interconnected with transmission system of POWERGRID and the States of Uttar Pradesh, Rajasthan and Delhi. The availability of transmission system during the year 2004-05 (upto Dec., 2004) has been 98.26%.

**IRRIGATION**

At the time of partition of India, about 80% of the irrigated area of India 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 North Western region of the Nation has turned into Granary of the Nation. The States of Punjab, Haryana and Rajasthan are being supplied on an average about 28 MAF of water per year which irrigates 1 crore 25 lac acres of land.

**RENOVATION, MODERNISATION AND UPGRADING (RM&U)**

All the five units of Bhakra Right Bank Power Houses, which were commissioned during the year 1966 to 1968, have been uprated from original capacity of 120MW to 157MW each.

The RM&U of two units each at Ganguwal and Kotla Power Houses has already been completed. RM&U of all the six units of 60 MW to 66 MW of Pong Power House has already been completed which has resulted in addition of 36 MW increasing the installed capacity from 360 MW to 396 MW.

BBBM plans to undertake the RM & U works of Bhakra Left Bank Power House machines (5x108 MW) which have been in operation for the last about 40 years. All the five units are proposed to be uprated from 108 MW to 126 MW each. The RM&U of Bhakra Left Bank Power House is expected to provide additional capacity of 90 MW to the system and is expected to generate additional 88 MUs annually due to improved efficiency. This work shall be carried out in X and XI plans. The capacity addition is expected to be 18 MW during X Plan and 72 MW during XI Plan.

One unit each of Ganguwal and Kotla Power Houses which were supplied by M/s Hitachi, Japan, have been planned for RM&U. With the proposed RM&U of one machine at Ganguwal and Kotla Power Houses, the derated capacity of the machines shall be uprated by 4.44 MW and will also result in additional annual generation of 36 MW. During renovation, replacement of major components like runner, governor, stator, unit transformer and other associated equipment is envisaged. The work on this scheme is proposed to be undertaken during X Plan and expected to be completed in the year 2006-07.
UPKEEP OF DAMS AND HYDEL CHANNELS

The upkeep of Dams and Hydel Channels by BBMB has been of high standards, which are considered the benchmarks for other hydro projects in the region. Monitoring of the health and behaviour of dams with the help of instruments installed in and around the body of the dams shows the normal behaviour. Underwater inspections of Dams also do not indicate any abnormality.

Nangal Hydel Channel is running continuously since its commissioning in 1954. This year BBMB celebrated its Golden Jubilee. Inspection, repair and maintenance of Nangal Hydel Channel are being carried out online without any closure. Sand grouting of lining is done regularly and underwater repairs are done with the help of divers. This has not only helped in maintaining an uninterrupted supply of water to the Partner States but has also helped in continuous operation of Gurugwal and Kollu powerhouses for the last 50 years.

ENVIRONMENT MANAGEMENT PLAN

Plantation Programme:

Under this programme, there is a proposal to plant 40,000 trees and shrubs on vacant land at all Project Stations during 2004-05. Out of this about 31,000 trees and shrubs have been planted during the monsoon months of year 2004. The remaining plantation will be done during January/February of 2005. At Talwara a Green land Project has been started on a 50 acre plot, in which different varieties of plants are being planted in a phased manner. The provisions of vermi compost and drip irrigation have been made for this project. The construction of ’Rock Garden’ on the pattern of Chandigarh Rock Garden from the waste material and used machinery from the Beas Project has also been started on this land.

EMP for Beas Satluj Link Project

Concerns have been expressed regarding the environmental impact of disposal of silt from Balancing Reservoir into Suketi Khad for onward transmission to river Beas. In order to carry out Environmental Impact Assessment for BSL Project, BBMB engaged the services of National Environmental Engineering Research Institute (NEERI) Nagpur. NEERI submitted its report recommending short-term and long-term measures after discussions with Stake holders, NGOs, HP/UP/U.PH/Dehradun and HP State Pollution Control Board, Shimla. BBMB in its 176th meeting held on 12.11.2001 approved the implementation of short-term measures at an estimated cost of Rs.182.80 lakh and decided to explore most techno-economic option for long-term measures.

The short-term measures, which were to be carried out exclusively by BBMB and did not involve other agencies, have already been implemented. The metallicity and Bagga-Sundernagar Hydel Channel for the benefit of neighbouring villages has already been completed at a cost of about Rs. 76 lakh. Twenty two steel foot-bridges across Suketi Khad for the benefit of people of that area have already been improved and installed. On the basis of the observations made at different locations in Suketi Khad and its tributaries received in September, 2003, first instalment of Rs. 36.00 lakh which is 50% of the total cost of the project was released to HP Fisheries Department during the first week of October, 2003. The Project is under implementation by the Fisheries Department of HP BBMB has procured and installed an additional Dredger at a cost of about Rs. 7 crore at Balancing Reservoir Sundernagar to restrict the dredging operation during the monsoon months when the inflows in Suketi Khad are adequate to flush the silt into river Beas, as per the recommendations of NEERI. The Dredger has been commissioned in July, 2004.

The second dredger was commissioned at BSL Project as recommended under the Environment Management Plan for the Project with a view to restrict the dredging operation into Beas during monsoon months only. As planned, the dredging operations into Suketi Khad were stopped w.e.f. 1st September, 2004.

The observations made at different locations in Suketi Khad and river Beas indicate that the silt dredged during the monsoon of 2004 has been flushed into river Beas and no silt has entered the fields around Suketi Khad. Flushing operations were also carried out at Pandoh Dam on 3rd and 4th August, 2004 after closing down Dewar Power House for the Environment Management Plan and 2467.81 acre ft of silt was flushed out from Pandoh reservoir.

Regarding long-term measures, BBMB has got prepared DPR from HPSEB for the most techno-economic and environmentally acceptable option for silt disposal from Balancing Reservoir, Sundernagar to river Satluj. The DPR received in Oct, 2004 has been submitted to the Expert Committee formed by Hon’ble H.P. High Court, Shimla, under the aegis of Central Pollution Control Board and Ministry of Environment & Forests, Government of India for perusal.

CONSULTANCY SERVICES

In an endeavour to synergise the existing potential of BBMB to boost the interests of its partner States, BBMB Consultancy Services were introduced.

The following works have been executed/are under execution by the Consultancy services during the year 2004-05:

- Thermovision scanning, hot line maintenance and recommendation for upgrading of 220 kV ring main of Delhi Trancos Limited for the erstwhile DVB.

- Under Phase-I the ISO 9001-2000 Certification for Bhakra Dam and Power Houses, 400 kV Switchyard of Dharu Power House and Transmission System has been granted. The ISO 14001:1996 Certification for Bhakra Complex and BSL Project Unit-I is likely to be granted by January, 2005. The remaining works will be taken in hand under Phase-II and shall be granted during the year 2005-06.

- Providing Hydrostatic Stretch testing services for Hydrogen Gas cylinders for PSEB.

- Turnkey execution of 66 kV Sub Station, Sector-47, Chandigarh under U.T. administration on “cost plus” basis. The MoU has been entered with U.T. Chandigarh Admin. and the work is near completion.

- Turnkey execution of providing additional bays at 66 kV Sub-Stations. Chandigarh on “cost plus” basis.

- Turnkey implementation of 66 kV Substation of Sector-56, Chandigarh under UT Chandigarh on “cost plus” basis. The execution is going on as per schedule.

- Providing Consultancy Engineering Services for Design, Procurement, Erection, Testing and Commissioning of Disturbance Recorders (DRs), Event Loggers (ELs) & Global Positioning Systems (GPS) for 220 kV Switchyard TDLPX, HPGLC, Panipat.

- Operation & Maintenance Training to Executive Trainees of National Thermal Power Corporation.

Organising a Competent Workforce:

BBMB’s Training Centre is being established at Nangal, where all courses related to hydro sector for engineers and workers would be conducted regularly to upgrade their skills and competency. The regional training committees have been formed at all the projects to organise in-house trainings, workshops and interactive sessions. Under this programme, a large number of training and interactive sessions on various topics like technical management, motivational, computers, health-care, etc. have been organised since Nov. 2002. Knowledge transfer from retiring veterans and experienced persons through on-the-job-training, classroom training, training offered by vendors, training in reputed organisations, etc. are the training modes adopted by BBMB. An overview of training imparted to personnel in BBMB during last year clearly indicates the impetus given to training by BBMB.

2003-2004
8182 including 4524 non-executives

2004-2005
3882 including 2261 non-executives

Quarterly-1 (up to 31.12.04)
Government of India has enacted the Energy Conservation Act, 2001 and for implementing the various provisions contained in the EC Act, Bureau of Energy Efficiency (BEE) was operationalised from 1st March, 2002. The Bureau was given the task of spearheading the improvement in the energy efficiency in various sectors of the economy through regulatory and promotional mechanisms. BEE co-ordinates with designated consumers, designated agencies and other organizations. It 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.

Mission of Bureau of Energy Efficiency (BEE)

The Mission of BEE is to develop policy and strategies with a thrust on self-regulation and market principles, within the overall framework of the 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.

Projects and Programmes

BEE has launched many voluntary and mandatory provisions of the Energy Conservation Act, which have been supported by all the stakeholders. In one of the voluntary initiatives, Bureau have established seven sector specific task forces for Aluminium, Cement, Chlor-Alkali, Fertilizer, Pulp & Paper, Petrochemical & Refinery and Textile Sectors. The formation of task forces is helping in information exchange on best practices on energy conservation among the task force members. In another voluntary initiative, Ministry of Power and Bureau of Energy Efficiency are coordinating the implementation of energy audit study in 9 Government Buildings including Rashtrapati Bhawan, Prime Minister’s Office, Rail Bhawan, Delhi Airport, Sanchar Bhawan, Shram Shakti Bhawan, Transport Bhawan, AIIMS etc. through Energy Service company (ESCO) route. Implementation of energy efficiency measures in Rashtrapati Bhawan, Shram Shakti Bhawan and Transport Bhawan is under progress. On the mandatory provisions front, Bureau has taken a pro-active role in establishing a proper energy management system in the country. In this connection, Bureau has conducted the first National certification examination for energy managers & energy auditors in May 2004 and prepared guidebooks for the energy professionals. The response to the program was very encouraging and 2491 energy professionals appeared in the certification examination. The capacity building of energy managers and energy auditors through this route will have a long term impact on the Indian economy.

It has also formulated energy labeling regulations to promote energy efficiency in the design stage itself for Refrigerator, Air conditioners, Motors, Distribution Transformer, Agricultural pump sets and Tube lights. Energy labeling for one appliance, namely, household refrigerator is planned to be launched in 2005 as a test case.

Results /achievements

The results achieved/expected after implementation of various promotional and mandatory provisions in support of the EC Act are as follows:

- To strengthen the energy management and energy auditing capabilities in the country, first National Certification examination for Energy Managers and Energy Auditors has been successfully conducted on 22-23 May, 2004 in 23 centers all over the country;
- About 800 Certified Energy Managers and Certified Energy Auditors are in place. Certified energy managers will be required to be appointed or designated by designated consumers whereas certified energy auditors will be considered for accreditation;
- 62 Accredited Energy Auditing firms screened for temporary accreditation;
- Indian Industry Program for Energy Conservation, a voluntary program initiated by BEE on sharing of best practices, undertaking of specific energy consumption targets has a full acceptance in Aluminium, cement, chlor-alkali, fertilizer, pulp & paper, petrochemicals, refinery and textile sectors. Best practices have been recorded and published through CDs;
- Energy audit studies in 9 Government buildings in Delhi completed so as to set up an example for private buildings to pursue similar efforts. Implementation of energy audit studies is being taken up on ESCO route;
- BEE launched Small Group Activity focused on energy conservation in 4 industrial units in textile and cement sector. Feed back received from the units indicates that about 5% saving through housekeeping and no cost measures is possible through this concept.
- Development of Norms for cement and pulp & paper industry is fairly in advanced stages;
- Two interactive Websites are in place;
- Capacity building of energy managers through familiarization programmes;
- 7 draft energy auditing codes for utility equipment have been prepared;
- Savings of 615 MW of electric power, as equivalent avoided capacity, achieved by the participating industrial units of National Energy Conservation Award Scheme during 1999-2004;
- Notification empowering manufacturers to affix energy labels to be issued during 2005 for one product (household refrigerator);

With the enactment of the Energy Conservation Act, 2001, a legal framework is now available for promoting energy efficiency in all sectors of the economy. Efficient use of energy and its conservation is succeeding as a program as all the stake holders, opinion leaders and captains of industry are taking lead in supporting the conservation programmes initiated by Bureau.
An autonomous registered society under the Ministry of Power, the Central Power Research Institute (CPRI) is in the service of the Nation, undertaking applied research in electric power engineering besides functioning as an independent testing and certification authority for electric equipments and components to ensure reliability and improve, innovate and develop new products.

Its laboratories located at Bangalore, Bhopal, Nagpur, Thrivananthapuram, Hyderabad and Ghaziabad are accredited as per latest ISO/IEC 17025 standards by National Accreditation Board for Testing & Calibration Laboratories (NABL). The facilities have, therefore, to be continuously augmented to be able to meet the challenges of the changing National & International standards. The following new test facilities have been created at the various laboratories of the Institute:

- H V D C Test System for HV Capacitors, 50 kV, 500mA
- Mobile facility for accuracy tests on CT and loss measurement in Transformers.
- Facility for testing RCCB as per revised standards.
- Augmentation of Energy Meter test facility.
- Partial discharge facility for HV capacitors using Acoustic emission technique.
- Facility for evaluation of Toxicity Index of Plastic columns.

CPRI as the premier third party testing organization offers a vast range of routine tests on power apparatus. Some of the important tests carried out during the year include the following:

- Short time current withstand and dynamic current withstand tests on 245 kV Isolators and Earth Switches as per IEC-62271-102.
- Testing of transmission line Towers 765 kV Short Circuit “C” and Delta Configuration towers and 400 kV DC towers.
- Design approval of 220 kV Quadruple circuit PC 30 & PC 60 type tower.
- Checking foundation designs of gantry structure columns.
- Extensive AC electric field measurements in vicinity of 110 kV transmission lines of KPTCL.
- Electromagnetic field measurements on HVAC and HVDC terminals at Talcher (Orissa) and Kolar (Karnataka).

During the X five-year Plan, 7 capital projects sanctioned up till Dec 2004 at a total outlay of Rs. 31.05 crore are in various stages of implementation.

- Technical audit on capability study on LV cable upto 132 kV for M/s Philips Dodge Thailand Limited, valued at US$ 10,000.
- Powerfactor correction studies for Tamilnadu Petro Products Ltd., Chennai.
- Upstream audit of Power Plants/system for M/s Greater Noida Petroleum Oil Co., Sudan resulting in a revenue of US$ 55,000.
- Partial Discharge Measurement on 600KV/0.4A/240 KVA cascaded transformer for M/s Siemens Ltd., Aurangabad.
- Estimation of Transmission System losses in AP Power Systems for APERC.

The Institute continued its strides in the area of Research. Six Research projects amounting to Rs.149.25 lakh were commenced during 2004-05 along with 30 ongoing projects commenced during previous years. The Institute in its endeavor to help Utilities and Industries, expects to take up many sponsored projects of relevance to the Power-Sector.

Some of the important projects taken up/completed during the year are:

- Piping system in nuclear power installation has taken up in collaboration with BARC, Mumbai.
- Development of bamboo technology as building material in the domestic sector as sustainable and renewable option.
- Formulation of composition for Non-Halogen Flame-retardant low smoke compound for cable application.
- Novel extraction apparatus for dissolved gasses in mineral oil and synthetic oil.
- Thermal Barrier coatings from naturally occurring Zircon sand.
- Large scale preparation method (upto 5000gms) of Polyaniline (primary Polyamine) conducting polymer.

One technology has been transferred to M/s Dakshin Laboratories, Bangalore relating to ‘Multiple Gas Extraction System for Dissolved Gas Analysis of Transformer oil’.

Funds are provided under RSP or Applied Research / Technology development to Academic Institutions/ R&D organizations/Institutes/Utilities etc. This programme is co-ordinated by CPRI. CPRI has advertised the scheme in several forum and also through the CPRI website so that Industry/ Institutes/Utilities can collaborate in various research activities in the area of power. 48 projects funded for investigation by 16 organizations include IISC, TNEB, ERDA, IIT -Bombay, IIT-Kanpur, IIT-Roorkee, RRL- Bhopal, NTPC etc. Among them, two research projects which were under investigation at CET, Hyderabad and KSEB are completed in the current year 2004-05.

Currently 44 projects with an outlay of Rs. 650 lakhs are under investigation by various organizations mentioned earlier.

Central Power Research Institute has been appointed as Advisor-cum-Consultant (AcC) for the purpose of capacity building in the State Electricity Boards (SEB)/Power Utilities of Karnataka, Kerala and Andhra Pradesh under the Accelerated Power Development & Reforms Project (APDPR) of Government of India.

The Institute has stepped up its marketing activities both within the country & abroad. Within the country, emphasis was laid on marketing of third party inspection services for power equipment procured by utilities and got repeat orders for third party inspection services from Utilities such as KPTCL, BESCOM, TNEB, J&K Electricity Board, UBEBN, DHEBN, HVPLNL, Delhi Vidyut Board, Apartransco., APEDCL etc. The Institute takes part in the exhibitions which were held at various places in India and abroad as a result of which several overseas clients have utilized CPRI testing facilities, resulting in revenue earning of US$ 235,000.

The Institute has been meeting its non-plan expenditure through revenue generated by testing and consultancy for the last sixteen years.

The Institute has been organising seminars, conferences, workshops and training programmes to disseminate knowledge & information gained by the Institute for the benefit of the Indian Power sector. Up till November 2004, 8 programmes have been organised during the year 2004-05.
Chapter-21.13

NATIONAL POWER TRAINING INSTITUTE

National Power Training Institute (NPTI), a registered Society set up under the Ministry of Power, is committed towards the development of Human Resources in Indian Power & Energy sectors. NPTI operates on a Pan India basis through its five Regional Institutes located in Neyveli, Dungapur, New Delhi, Nagpur, Guwahati with its Corporate Centre at Faridabad and specialized centers viz., Power Systems Training Institute (PSTI) & Hot Line Training Centre (HLTC) at Bangalore, a Centre for Advanced Management and Power Studies (CAMPS) at Faridabad and a Hydro Power Training Institute being set up at Nangal. All the Institutes are well equipped with world class Hi-Tech infrastructural facilities for conducting different courses on technical as well as management subjects catering to the needs of Thermal, Hydro, Nuclear Power Plants, Transmission & Distribution systems and Energy related fields. NPTI has over 39 years of Professional Expertise in the field of Education, Training and HRD. Since its inception, NPTI has shared its engineering and technology expertise with more than 93,000 Power Professionals besides over 1,00,000 persons in its mass awareness programs on Energy Conservation, Power Reforms, Electrical Safety, Energy-Environment interface, Water for Sustainable Power across the country. All the students (100%) of the first two batches of MBA in Energy Studies etc.

Closely on the heels of the positive result achieved in the previous three financial years, the performance in the period April-Dec-2004 has been remarkable in the key parameters. The number of trainee-weeks is at a new high at 52,723 compared to the same period last year. The revenue receipts have also touched a new high at Rs 815.75 lakhs.

Important activities undertaken by NPTI during the above period are:

I. A Brainstorming Workshop on Hydro Issues conducted on 24th April 2004, at NPTI Corporate Office, Faridabad, presided over by Secretary (Power), was attended by 63 Senior Officers of Ministry of Power and CPSUs etc.

II. Apart from the regular training programmes, some of the important tailor made programs for its valued clients conducted by NPTI were:

- Training for the Executives (9th Batch of Executive Trainees) of Power Grid (80 nos.) 26 weeks Training Programme for NTPC Hydro Engineer Executives.
- Training Programme on Power Distribution Management for NDPL IBSES Engineers.
- Training Programmes on Materials Management for officers of ASEB, MeSEB and NEEPCO.
- Training Programme for NTPC Hydro Engineer Executives.
- Training Programme for M/s. GMR Infrastructure Limited, Bangalore on ‘OM Practices for Thermal and CCGT areas’.
- Training Programme for THDC organized on ‘O & M of Power House’ for technicians.
- Training Programme for Executives of Power Links Transmission Ltd. on ‘Transmission Lines’.
- On-Site Training Programme for Engineers from Thermax on ‘Steam Turbine & related Aspects’.
- Specialized Programme for NALCO on ‘Regenerative Feed Heating System’.
- Specialized Programme for KPCL on Thermal Power Plant Operation.
- Specialized Programme for IRCON on ‘E.H.V. Substation’.
- Training Programme for Ms. GMR Infrastructure Limited, Bangalore on ‘OM Practices for Thermal and CCGT areas’.

III. TRANS-NATIONAL TRAINING

The 12 Week Training Programme on ‘Power Plant Management’ comprising 17 trainees from Sudan, Cambodia, Zambia, Iraq, Philippines, Myanmar, Bhutan, Mexico, Nigeria and other delegates from Gujarat Electricity Board and NEEPCO concluded on 8th April 2004. Encouraging feedback was received both from the National and International trainees.

- NPTI trained 5 Engineers from Royal Govt. of Bhutan on Cable Jointing from 26th July 2004.
- A 16-weeks training programme on ‘Gas Turbines Cycle’ started from 6-12-2004 for Omanis Nationals.

IV. PRESTIGIOUS PROGRAMMES ON ADVANCED MANAGEMENT

Under the auspices of CAMPS, NPTI conducted several programs on Advanced Management for the power sector organizations viz. CEA, Power Grid, MSBEB, IPGCL & PPL and Tata Power at their door-steps covering topics namely; Project Management by consciousness; Self-Management & Attitudinal Fine-tuning for Peak Performance; Innovation & Creativity-a way of life & a part of Corporate Culture and Power Reforms Management.

V. SEMINARS/WORKSHOPS (CORPORATE/NATIONAL)

NPTI Corporate Office and its institutes have successfully organized a number of Seminars/ Workshops from April till Dec’ 2004. Some of the workshops / seminars organized on emerging areas are as follows:

- Environmental Problems due to Thermal Power Plants & their Control
- Operation & Maintenance of Fluidized Bed Boilers
- ABT Ramifications
- Open Access in T&D
- Electricity Act 2003, Challenges and Way Forward
- ISO 9001
- SMILE (Self-Management, Innovation, Leadership & Elegance)

Broadly, the above Corporate/National forums covered Power Sector Vision & Policy Issues, Advanced Management, Frontier Technologies, Benchmarking etc.
PTC INDIA LIMITED
(Previously known as Power Trading Corporation of India Ltd.)

PTC India Ltd. (PTC) was set up in April 1999 with the main objective of catalyzing development of Mega Power Projects and other power projects by acting as a single entity to enter into Power Purchase Agreements (PPAs) with Independent Power Producers (IPPs) on the one side and Multisite PPAs with users/SEBs under long term arrangement on the other, thus insulating the IPPs from protracted negotiations with multiparty SEBs and receivable risks. PTC has also been mandated for power trading to optimally utilize the existing resources in the country as also promoting exchange of power with neighbouring countries. Government of India has designated PTC as a nodal agency to deal with matters relating to exchange of power between India and its neighbouring countries.

The capital structure of PTC has been restructured to raise the authorized capital to Rs. 750 Crores. The total paid-up capital of the company, after a successful IPO in March 2004, has been raised to Rs. 150 Crores. The four Central Power Sector companies namely NTPC, PGCIL and NHPC are the initial promoters with individual contribution of 8% each of the total paid up capital. The share holders in PTC include Tata Power, DVC, ITC, GIC, IFIC, IDFC, IDBI and the general public.

PTC has set the following statement of purpose for itself: “To be a Front Runner in Power Trading By Developing a Vibrant Power Market and Striving To Correct Market Distortions.”

PTC has also set the following mission for itself:
- Develop power market for optimal utilization of energy.
- Promote Power Trading to optimally utilize the existing resources.
- Catalyze development of Power Projects particularly environment friendly hydro projects.
- Promote exchange of power with neighbouring countries.
- Identification of probable sellers and buyers (for short term and long term), coordination with various agencies for dispatch, metering and billing, revenue realization, energy accounting, co-ordination with REBs, RLOCs, SLDCs etc. and finding alternative buyer(s) are among the major services offered by PTC.
- The major benefits associated with power interconnections and trading are improved reliability of supply and better economic efficiency. A constituent system rather than depending on its internal resources can increase system reliability through the import of energy from neighbouring constituent systems. The trend is moving towards free electricity transactions within regions and between countries. In the wake of this background, formation of PTC assumes importance.

Trading of Power
PTC has embarked upon trading by organizing purchase of power from surplus locations and selling to deficit States. Seasonal diversity in generation and demand of different power utilities provide ample opportunities for short term trading. PTC started trading with limited transactions during 1999-2000 (28.35 MUs) but trading on sustained basis commenced from June 2001 which has then grown from a figure of 1617.4 MUs for FY 2001-02 to 11028.96 MUs in FY 2003-04. PTC’s major trading partners include West Bengal, Orissa, MSEB, DVC, Haryana, MPSEB etc. PTC is also entering into deals with timeframes varying from as low as 1 day to 3 years. PTC was also the first to introduce ‘differential pricing’ concept for ‘round the clock’ and ‘off-peak power’ in the country. Due to this, customers can sell and buy power in the same time frame i.e. one can buy power in peaking period when it is power deficient and can sell power during off-peak hours when it is surplus in power and thus they are developing a dynamic power market is progressively taking shape.

PTC has approached regulatory authorities for creation of enabling environment for trading of power with captive power plants as well as embedded customers like distribution companies or HT consumers. PTC has already embarked on this by trading with CESC Ltd, a distribution company in Kolkata. PTC has also set its eye on the surplus power of captive power plants (CPPs) and also pooling power from distributed generation viz. wind and small hydro power plants. With enabling regulatory environment, it is expected that it would be easy for CPPs to trade their power freely and PTC hopes to get a major share of the surplus captive capacity for trading.

In addition to inter-state exchange of power within the country, there is scope for trade of electricity with neighbouring countries for which PTC has been identified as the nodal agency. PTC has successfully traded surplus power of 336 MW of Chukha and 60 MW of Kunirchhu Hydro Power Projects from Bhutan for over a year now and future trading opportunities include purchase of power from Tala Hydro Power Project (1020 MW) in Bhutan and some power projects in Nepal.

Development of Projects
PTC has shifted its focus from Mega Power Projects to small and medium sized projects which are being promoted by govt. Rs. As of November 2004, PTC has initiated PPAs with developers for around 1200 MW. MoUs with developers for around 11500 MW and talks are in advanced stages for another 950 MW.

PTC has also signed PPA for around 960 MW with a few State utilities. It has also been able to enter into innovative standby agreements with developers of renewable sources of generation. It is expected that power traded bilaterally over a long term would be the mainstay of business in a few years.

Towards facilitation of power projects, PTC has also drawn up plans to invest in equity participation in select power projects, which is expected to enable power projects to get over their financing issues.

PTC as Risk Mitigator
PTC manages risk and ensures timely payment to the power generators. The Payment Security Mechanism for large project power buyers like PTC has a stake in having a multi-layer structure, and is being extensively discussed with market participants.

Opportunities and Constraints
The present level of inter-State exchange is still quite small and the constraints for enhancing the same is inadequate transmission capacity, lack of proper market mechanism and delays in regulatory initiatives.

Implementation of the Availability Based Tariff (ABT) had increased the prospects and volume of trade greatly. The second major step in such enabling provisions was the enactment of the Electricity Act 2003, which has paved the way for creating a commercially viable vibrant power market in the country.

The Electricity Act 2003 has provided for establishment of a bulk electricity market, setting up of generating stations without equivalent primary access to the transmission system and gradual introduction of open access for the distribution system. Along with this, open access for inter-state trade of power from multiple suppliers has also been envisaged, as also the recognition of Power Trading as a distinct commercial activity.

However, it is essential that this enabling legislation is buttressed by regulatory initiatives at both the Central and State levels which would allow greater participation by buyers and sellers of electricity at all layers of the value chain.

Perspective
Sustaining industry leadership and competitive advantage requires a radically new way of doing business. PTC aspires to serve its customers better by reducing the search and transaction cost through it, enabling of the trading process and combining it with the pan India reach needed to tackle the challenges of power management. PTC’s technology initiatives over the long term are focused on providing on-line alternatives for trading by setting up of a power exchange, based on the simultaneous auction model and reach markets more efficiently with value-added products and services. The Power Exchange will also let participants trade bilaterally on a range of markets (OTC and exchange based) then fine tune their position on-the-day as uncertainty reduces. The Power Exchange will also provide strong value added data services.

After the successful design and operation of a credible power exchange, a Financial Market will be established that will have various financial products to trade for the Market Participants to hedge their risks.
GRIEVANCES REDRESSAL

Ministry of Power

The Grievance Cell in Ministry of Power deals with complaints relating to various grievances pertaining to Public Sector Undertakings, Autonomous bodies, Statutory bodies and attached office under the administrative control of the Ministry of Power. The status of redressal of grievances is being monitored on monthly basis.

NTPC

The Public Grievance Cell headed by a senior Officer of the rank of Jt. Secretary is functioning at the Hqrs. of the Corporation to attend and redress the grievances of the public. Grievance Cell for attending grievances of the employees is also functioning at various stations of the Corporation consisting of representatives of Management.

WELFARE OF SC/ST/OBCs

Ministry of Power

An SC/ST Cell has been functioning in the Ministry since the early nineties with administrative control of the Deputy Secretary (Administration) who is also the Liaison Officer to SC/ST. The Cell also assists the Liaison Officer for SC/ST. The Cell monitors the implementation of reservation policies of the Government of India in respect of Scheduled Castes, Scheduled Tribes, Other Backward Classes, Physically Handicapped and Ex-Servicemen in the Ministry as well as the Autonomous Bodies/CPSUs under the administrative control of Ministry of Power. Periodical reports/returns on the subject are obtained from the CPSUs/Organizations under the Ministry which are then consolidated and sent to the concerned Ministries/Departments.

With a view to ensuring proper implementation of reservation policy, annual inspections of reservation rosters maintained by the various organisations under its administrative control, were carried out by the Liaison Officer(SC/ST). During the inspections, LoCs(SC/ST) had taken projections with employers belonging to reserved category. These inspections helped the Cell to have clear understanding of reservation policy of the Government. And to have clear understanding of reservation policy of the Government.

NTPC

NTPC has a public grievance redressal mechanism in place for dealing with grievances of public at large. The Company Secretariat Department is the nodal point for redressal of public grievances and the Company Secretary has been designated as Director (Grievances) for the Corporation. Grievance Officers have also been appointed in all Projects/Regional Offices. Grievances received from the public are being processed as per guidelines issued by Department of Administrative Reforms. A monthly report is furnished regularly to the Department. Grievances from employees are being dealt as per standard grievance procedure framed in this regard.

NHPC

NHPC has its own internal Grievance Redressal machinery for expedited redressal of grievances of the public general as well as its own employees. The functioning of the machinery is monitored periodically to ensure efficacy of the system. The Grievance Redressal machinery is given extensive publicity among the employees and members of the public. All possible efforts are made to ensure expedited redressal of the grievances as and when received. A monthly and quarterly report / return on redressal of public grievances are being sent regularly to the Ministry of Power.

DVC

The Public Grievance Cell headed by a senior Officer of the rank of Jt. Secretary is functioning at the Hqrs. of the Corporation to attend and redress the grievances of the public. Grievance Cell for attending grievances of the employees is also functioning at various stations of the Corporation consisting of representatives of Management.

NEEPCO

The Corporation has implemented reservation for SC/ST/OBCs in all categories of Posts as per guidelines of GOI as issued from time to time. During the year 2004-05, out of 28 appointments, 2 SC and 3 ST candidates were appointed in Group A & B posts out of which 1 SC and 3 ST candidates finally joined the Corporation.

PFC

PFC has been paying adequate attention to its obligations towards economically and socially weaker communities such as SC/ST/OBC and Physically Handicapped etc. and has been taking adequate steps to ensure their representation as prescribed by the Government of India in various aspects of its activities. In order to provide adequate support and inputs and due attention given to their training and development.

REC

Out of the total number of 671 employees the corporate has employed 104 and 18 employees from SC/ST category respectively.

DVC

The projects of the Corporation have been constructed in remote area in the States of West Bengal and Jharkhand. The population of the people living in these areas and around the projects belongs to mainly SC, ST, BC and minority category. With a view to the socio-economic upliftment of the adjacent villages, the Corporation takes up special development programmes in villages located within a radius of 10 kms. of its projects viz. Sirkakori Thermal Power Station, Chandrapur Thermal Power Station, Durgapur Thermal Power Station, Meja Thermal Power Station, Mahan, Kanha, Ranchi and Tilaiya for welfare of the people of the area. The development programmes include village visiting periodically to the villages, such as construction of Roads, Culverts, Drinking water wells/pumps/tubewells, irrigation...
facilities like Ponds & Wells, construction of School Buildings, Immunisation Centre, Community building, Burning Ghats, Passenger Shelters, Micro irrigation schemes etc. Besides, DVC also provides financial assistance and training to the rural unemployed youth for setting up of their own firms like piggeries, goateries, Poultries, Sewing Centers, Knitting wool making, fisheries etc. through income generating schemes.

An amount upto 20% of the Corporation’s net profit is allocated every year for the aforesaid development activities. Out of 366 Villages covering a large number of population belonging to SC, ST, OBC & minority community the same are being covered under the said schemes.

Apart from above, villagers are also provided with medical facilities, such as supply of medicine, treatment by the DVC Doctors, family planning, immunization programmes and awareness programme for prevention of deadly diseases etc.

BBMB

BBMB discharges its functions as laid down in Section 7(1) of the Punjab Re-organisation Act, 1966 for which staff for the operation & maintenance of BBMB work is provided by partner State Govts./SEBs on transfer basis. However, in the event of inability of partner States/SEBs, BBMB resorts to direct recruitment & promotion in respect of Class III & IV employees only, as officers of Class I & II categories are being provided by partner States/SEBs. BBMB Class III & Class IV Employees (Recruitment & Conditions of Service) Regulations, 1994 were approved by the Central Govt. & published in Part-III Section 4 of the Gazette of India dated 11.10.1994. Under these Regulations, the members belonging to SC, ST, OBC, Ex-serviceemen, Physically handicapped persons and Caste/Community are being covered under the said schemes.

With the help of the Ministry of Power, BBMB has given representations to the members of the Scheduled Castes by nominating one SC member of the rank of Superintending Engineer/Senior Executive Engineer in all Selection Committees. In addition to above, BBMB has given representations to the members of the Scheduled Castes by nominating one SC member of the rank of Superintending Engineer/Senior Executive Engineer in all Selection Committees.

For providing general welfare measures for SC employees, the instructions have been issued to all field offices requesting them to provide the following facilities, if so demanded by the members of SC community on the occasion of Birthday of Dr.B.R. Ambedkar, Maharishi Baljik Ji and Sri Guru Ravidass Ji:-

i) Bus facilities for Shobha Yatra at token charges of Re.1 per km.

ii) Auditorium for function on above occasions, free of charge.

In addition to above, BBMB has given representations and suggestions to the partner SEBs/States/SEBs/States for the reservation of SC members in BBMB.

There is no reservation for ST category in Punjab Govt. Therefore, no reservation of posts is being given to the ST category in BBMB.

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i) Posts filled by direct recruitment - 25%

ii) Posts filled by promotion - 20%

There is no reservation for ST category in Punjab Govt. Therefore, no reservation of posts is being given to the ST category in BBMB.

The programmes and facilities applicable in respect of SC/ST and OBC are equally extended to the minority community as well residing in adjacent villages. The facilities for pursuing their cultural and literary interests are also provided to them. More so, the projects around which Minority Community people are in abundance, Urdu Mazlis are set up, aided and maintained by DVC and the same caters to the need of reading among the people of Minority Community.

The dependents of deceased employees in service shall have the reservation in service and all other concessions as prescribed by the Punjab Govt. from time to time. Accordingly, in view of provisions of Rule 6 of BBMB Rules, 1974 & Regulations 11 of BBMB Class III & Class IV Employees (Recruitment & Conditions of Service) Regulation, 1994, BBMB is following the reservation policy of Punjab Govt. issued from time to time in regard to implementation of provision of reservation in jobs for SC/ST. The prescribed percentage of reservation applicable in BBMB in favour of SC as per Punjab Govt. instructions is as under:-

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**Statement - II**

| Region Including Allocated Shares in Joint & Central Sector Utilities As On 31.12.2004 |
|-----------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|
| State Ownership                        | Sector Total | Hydro | Thermal | Total Thermal | Wind | Nuclear |
| Central                                | 2027.90 | 0.00   | 1339.00 | 391.90 | 0.00   | 305.90 | 0.00   | 0.00   |
| Central                                | 14.20  | 0.00   | 8.00    | 4.20   | 0.00   | 12.00  | 0.00   | 2.00   |
| Sub-Total                              | 2142.10 | 0.00   | 1417.00 | 406.10 | 0.00   | 318.20 | 0.00   | 2.00   |

**Note:** Based on derated capacity of 2 units each of 160 MW at Madras Atomic Power Station in Tamil Nadu.

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**Statement - III**

| Region Including Allocated Shares in Joint & Central Sector Utilities As On 31.12.2004 |
|-----------------------------------------|--------|--------|--------|--------|--------|--------|--------|
| State Ownership                        | Sector Total | Hydro | Thermal | Total Thermal | Wind | Nuclear |
| Central                                | 804.00  | 0.00   | 541.57  | 262.43  | 0.00   | 430.20 | 0.00   | 0.00   |
| Central                                | 16.20  | 0.00   | 13.00   | 3.20   | 0.00   | 16.00  | 0.00   | 1.00   |
| Sub-Total                              | 820.20 | 0.00   | 554.57  | 295.63  | 0.00   | 446.20 | 0.00   | 1.00   |

**Note:** Based on derated capacity of 2 units each of 170 MW at Madras Atomic Power Station in Tamil Nadu.

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**Ministry of Power Annual Report 2004-05**

**Ministry of Power Annual Report 2004-05**
Statement - IV

### INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2004

<table>
<thead>
<tr>
<th>State/UT</th>
<th>State Ownership</th>
<th>Total Hydro</th>
<th>Total Thermal</th>
<th>Wind</th>
<th>Nuclear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assam</td>
<td>State</td>
<td>597.19</td>
<td>330.00</td>
<td>244.50</td>
<td>20.69</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>24.50</td>
<td>0.00</td>
<td>24.50</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>522.60</td>
<td>344.80</td>
<td>179.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>1144.49</td>
<td>330.00</td>
<td>447.00</td>
<td>20.69</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>797.69</td>
<td>0.00</td>
<td>15.88</td>
<td>15.88</td>
</tr>
</tbody>
</table>

Note: * Total of shares allocated to DVC from Central Sector (NTPC's/Power Stations)

Statement - V

### INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTs LOCATED IN NORTH-EASTERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2004

<table>
<thead>
<tr>
<th>State/UT</th>
<th>State Ownership</th>
<th>Total Hydro</th>
<th>Total Thermal</th>
<th>Wind</th>
<th>Nuclear</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assam</td>
<td>State</td>
<td>597.19</td>
<td>330.00</td>
<td>244.50</td>
<td>20.69</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>24.50</td>
<td>0.00</td>
<td>24.50</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>522.60</td>
<td>344.80</td>
<td>179.00</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>1144.49</td>
<td>330.00</td>
<td>447.00</td>
<td>20.69</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>797.69</td>
<td>0.00</td>
<td>15.88</td>
<td>15.88</td>
</tr>
</tbody>
</table>

Note: * Total of shares allocated to DVC from Central Sector (NTPC's/Power Stations)

Under the column “Coal” which signifies Steam Turbine Gen. Sets in general, 2x30MW ST units at Chandrapur and 1x30 MW ST unit at Namrup are using Natural Gas fuel in their boilers.

Note: * Bio Mass Gassifire.
### Statement - VI

### INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE STATES/UTS LOCATED IN NORTHERN REGION INCLUDING ALLOCATED SHARES IN JOINT & CENTRAL SECTOR UTILITIES AS ON 31.12.2004

<table>
<thead>
<tr>
<th>State</th>
<th>Ownership</th>
<th>Modewise break-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sector</td>
<td>Hydro</td>
</tr>
<tr>
<td>Delhi</td>
<td>State</td>
<td>932.40</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>2391.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>3323.40</td>
</tr>
<tr>
<td>Haryana</td>
<td>State</td>
<td>2240.32</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>1137.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>3377.32</td>
</tr>
<tr>
<td>Himachal Pradesh</td>
<td>State</td>
<td>323.80</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>386.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>2055.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>2764.80</td>
</tr>
<tr>
<td>Jammu &amp; Kashmir</td>
<td>State</td>
<td>495.63</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>1472.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>5155.92</td>
</tr>
<tr>
<td>Punjab</td>
<td>State</td>
<td>4528.94</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>1127.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>5655.94</td>
</tr>
<tr>
<td>Rajasthan</td>
<td>State</td>
<td>3511.82</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>1472.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>5155.92</td>
</tr>
<tr>
<td>Total</td>
<td>State</td>
<td>17647.66</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>558.10</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>13142.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>31347.76</td>
</tr>
</tbody>
</table>

Note - Based on derated capacity of 2 units each of 220 MW of Narora Atomic Power Station in U.P & that of RAPP Unit No.1 as 100 MW, Unit 2 as 200 MW in Rajasthan.

### Statement - VII

### INSTALLED CAPACITY (IN MW) OF POWER UTILITIES IN THE ISLANDS AS ON 31.12.2004

<table>
<thead>
<tr>
<th>Island</th>
<th>Ownership</th>
<th>Modewise break-up</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sector</td>
<td>Hydro</td>
</tr>
<tr>
<td>Andaman &amp; Nicobar</td>
<td>State</td>
<td>39.30</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>59.30</td>
</tr>
<tr>
<td>Lakshadweep</td>
<td>State</td>
<td>9.97</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>9.97</td>
</tr>
<tr>
<td>Total</td>
<td>State</td>
<td>49.27</td>
</tr>
<tr>
<td></td>
<td>Private</td>
<td>20.00</td>
</tr>
<tr>
<td></td>
<td>Central</td>
<td>0.00</td>
</tr>
<tr>
<td></td>
<td>Sub-Total</td>
<td>69.27</td>
</tr>
</tbody>
</table>

Note - Based on derated capacity of 2 units each of 220 MW of Narora Atomic Power Station in U.P & that of RAPP Unit No.1 as 100 MW, Unit 2 as 200 MW in Rajasthan.
MINISTRY OF POWER

National Thermal Power Corporation Limited did not reassess requirement of water, despite allocation of reduced quantity of gas and approval to only one stage of project. This resulted in avoidable payment of fixed charges amounting to Rs.1.31 crore (February 1998/July 1999) on account of reserved quantity of water.

(Para 15.1.1 of Report No. 3 of 2004) Commercial

Power Finance Corporation Limited (PFC) disbursed loans amounting to Rs. 99.32 crore during the period from February 1999 to July 2000 to a private party without ensuring fulfillment of pre-disbursement conditions. As the work has been held up for more than two years, the Company faces risk of potential loss of Rs. 99.32 crore, besides loss of interest amounting to Rs. 39.54 crore.

(Para 15.2.1 of Report No. 3 of 2004) Commercial

PFC did not exercise call option for early redemption of the bonds during December 2001 to February 2002 despite the fact that there was downward trend in rate of interest. As a result, it incurred avoidable liability of extra interest amounting to Rs. 3.88 crore.

(Para 15.2.2 of Report No. 3 of 2004) Commercial

Power Grid Corporation of India Limited (PGCIL) incurred extra expenditure of Rs. 217.22 crore on construction of 800 kV Kishenpur-Moga Transmission System due to avoidable delay of 30 months attributable to inexperience of a foreign contractor.

(Para 15.3.1 of Report No. 3 of 2004) Commercial

PGCIL constructed Ranganadi-Balipara Transmission System much ahead of an associated generation project due to not assessing the anticipated schedule of completion of the generation project. This has resulted in idling of the transmission system involving blocking of funds amounting to Rs. 148.79 crore for more than four years. In addition, PGCIL had to incur extra expenditure of Rs. 17.05 crore towards interest on borrowed funds and operation & maintenance of the system during the period from September 1998 to November 2002.

(Para 15.3.2 of Report No. 3 of 2004) Commercial

PGCIL, effected irregular payment of ex-gratia/special incentive amounting to Rs. 17.44 crore during the last ten years ending 2000-01 to its employees whose salary exceeded the limit as stipulated under the Payment of Bonus Act.

(Para 15.3.3 of Report No. 3 of 2004) Commercial

Satluj Jal Vidyut Nigam Limited suffered losses of Rs. 3.03 crore (1992 to 2000) due to non-insurance of its infrastructure assets relating to 1500 MW hydroelectric power project.

(Para 15.4.1 of Report No. 3 of 2004) Commercial