Annual Report 1998-99

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LETTER FROM THE CHAIRPERSON AND CHIEF EXECUTIVE

Demand is in excess of supply in the Indian electricity market. The market is dominated by Central and State Government owned undertakings. The wholesale market is distinguished by "take or pay" contracts between central and private generating stations and the buyers, mostly State Electricity Boards and their successor corporations. There is neither competition, nor the effects of competition. Competition stimulates production and distribution efficiencies with resultant benefits to the final consumers on availability, quality, and price. I visualize the primary function of the CERC at this time as being the simulation of the effects of competition by appropriate tariff regulation.

It is also a sector which has not benefited from inter-disciplinary work between engineers, economists, accountants, managers and lawyers. The Commission has missed the presence of experts in these different subjects. Except for engineers, there appear to be few other subject specialists working on electricity. They are urgently needed in this sector.

The Central Electricity Regulatory Commission is the second independent regulatory commission

in the infrastructure sector to be formed by a statute of Parliament. At the time of the current report, the Commission had been in existence for 8 months. At the outset, the Commission decided that it would follow the procedures of government, however frustrating they might be, as far as administration is concerned.

The Commission had set itself the following objectives for achievement in its first year:

- *Develop harmonious working relationships between Members*
- *Identify staff requirements and evolve organisation structure, prescribe job qualifications, salaries and other details for clearance by government*
- *Recruit, induct and train staff.*
- *Prepare and notify the Conduct of Business Regulations for the Commission.*
- *Draft papers on concepts in setting Bulk Power tariffs for whole-sale power.*
- *Issue directions to CTU for preparation of the Indian Electricity Grid Code.*

- *Institutionalise communications with State Regulatory Commissions.*

As will be seen from the Report, the Commission has succeeded in its self - imposed tasks (except on staff recruitment). It has been able to do so despite irritations caused by not being provided proper office space or staff, long delays in approval of recruitment rules for employees even on deputation, and government actions that make the Commission apparently subservient to the Ministry in the exercise of its financial powers.

The Commission would not have made the progress that it has but for its Members Mr. D.P. Sinha, freely shared his intimate knowledge of the inter-state transmission system. Mr. G.S. Rajamani with his wide experience in Government and of the commercial aspects of electricity; and Mr.A.R. Ramanathan with his expertise as a reputed cost accountant with vast experience of legal matters, Mr. Jiji Thomson, the Commission's part time Secretary concurrently continued his work at the Ministry of Power for the first 4 months, and the Commission expresses its gratitude to him. Mr. Sanjeev S. Ahluwalia joined as full time Secretary in December, '98 and

has put in substantial efforts to get the Commission functioning effectively. In its early months the Commission benefited from the attachment of task forces made available by the Government. The Minister of Power, Government of India and his senior officials have been very helpful. We are thankful to the Canadian International Development Agency who provided consultants and equipment at short notice. The State Commissions of Orissa and Haryana and CERC, agreed that we should form a National Forum of Regulators to provide a means for regular interaction in view of overlapping responsibilities and similarity of work spectrum.

The Commission enters the New Year with the determination to bring improvement in the inter-state transmission of power, announce its approach to tariff determination, and move the industry towards the effects of competition.

Yours sincerely

sd/-
(S.L. Rao)
Chairperson

THE COMMISSION IN BRIEF

The Commission was constituted under the Electricity Regulatory Commissions Act,1998 (No.14 of 1998) (The Act) which provides for the establishment of regulatory commissions at the centre as well as in the states, rationalisation of electricity tariff, formulation of transparent policies regarding subsidies, and promotion of efficient and environmentally benign policies. A full text of this Act is available on the website of the commission www.cercind.org

The Commission consists of a Chairperson, three other full-time Members and the Chairman of the Central Electricity Authority who is a Member, Ex.-Officio. In recognition of the need for a multi disciplinary approach while addressing issues related to independent regulation, the Act prescribes that the Chairperson and Members shall be persons having adequate knowledge and experience in engineering, law, economics, commerce, finance or management. It also prescribes a broad mix of disciplines to be represented in the Commission. The Chairperson and Members are appointed by the President of India on the recommendation of a Selection Committee constituted by the Central Government as prescribed under the Act. The Act also provides for the appointment of a Secretary, functioning under the control of the Chairperson, whose powers and duties are defined by the Commission.

The Chairperson and Members took the oath of office in early August, 1998 and commenced the initial work relating to the setting up of the Commission in temporary offices, initially at Janpath Hotel, shifting to the Institute for Cost and Works Accountants and finally to the SCOPE complex. A full time Secretary was appointed in December 1998.

The Commission has a sanctioned staff strength of 26 professionals in the areas of Economics, Engineering, Finance, Legal and Administration. The organisation chart is available at Schedule II. The Commission intends to utilise the human resources available within the government, industry and research institutions, to fill these vacancies so as to make available, within the Commission, a wide range of expertise and experience. Till the end of March 1999 the Commission was functioning with only a skeletal staff of 3 professionals. With the assistance of Task Force staff,

Power Grid Corporation of India Ltd., National Thermal Power Corporation Ltd., consultants and through intensive individual efforts of the Members and the Secretary, the Commission was able to initiate the process for finalisation of the service regulations, recruitment of staff, selection of suitable accommodation and the provision of basic office facilities. By the end of the year these initiatives had produced results and, despite the continuing shortage of staff, the Commission was well on its way towards dealing with substantive issues within its mandate.

The Commission has a very wide mandate under the Act. Its jurisdiction extends to the entire range of activities in the electric power sector, either directly through its powers to regulate inter-state transmission and the tariff of central generators, or indirectly, through its responsibility to formulate guidelines and to advise the Government of India in the formulation of policy. Under the provisions of the Amendment Act, 1998 through an amendment of the Indian Electricity Act, 1910 the Commission has been empowered to approve licence of the transmission utilities for inter-state transmission systems. Through an amendment of the Electricity (Supply) Act, 1948 the Commission will now specify the fees and charges to be paid to the Regional Load Despatch Centres. Independent regulation is still at an evolutionary stage in India. Consequently, the Commission

intends to supplement the skills and experience, available to it in-house, through the use of consultants. Towards this end, it would be framing appropriate regulations for the utilisation of consultants.

Financial autonomy is one of the prerequisites for independent regulation. The Commission is financed by budgetary allocations from the Government of India, which are charged to the Consolidated Fund of India. For the year 1998-99, a budgetary allocation of Rs.2.5 crores was available to the Commission. However, the entire work relating to sanction of expenditure, budgetary control and accounting was being done by the Ministry of Power during the year under review. Towards the end of the financial year, the Government issued the Delegation of Financial Powers authorising the Chairperson to exercise the powers of a Ministry/ Department of Government of India thereby instituting the basic framework for the financial independence of the Commission, though in the absence of an independent Pay and Accounts Officer who would also make cheques, severe constraints on the use of these powers continue to be experienced by the Commission.

PROFILES OF CHAIRPERSON AND MEMBERS OF THE COMMISSION

Prof. S.L. Rao

Chairperson and
Chief Executive

Prof. S.L. Rao is Chairperson of the Central Electricity Regulatory Commission since August 1998. He came to this position after many years of experience as a practicing professional Manager, Management Teacher and Writer, Business Economist and Researcher. His entire previous experience has been in the private sector.

He is an economist by training and a manager by experience. He has spent 28 years as a manager in the private sector, holding positions in marketing, exports and general management in three different companies.

He has taught Management in eminent institutions. After two years as a Management Consultant, he was appointed the first Executive Chairman of the National Management Programme. He was Director-General of the National Council of Applied Economic Research from 1990-96. He was a distinguished Visiting Fellow at the Tata Energy Research Institute, Visiting Fellow at the Indian Ocean Center in Perth, Australia and Director on the Boards of a number of organizations. His major writing has been on consumer demographics in India (which showed the world the size of Indian markets). He has published six books and many articles in the press and in learned journals. He has lectured extensively overseas and in India.

Shri D.P. Sinha

Member

Shri D.P. Sinha, born in 1940, is Member in the Central Electricity Regulatory Commission in the rank of Secretary to the Government of India. Before joining the Commission he has had a distinguished career spanning over three decades in the Central Electricity Authority of the Government of India where he held various important charges in the "Power System" and "Grid & Operation" areas. His last assignment before joining the Commission was Member (G&O) in the ex-officio status as Additional Secretary to the Government of India (1995-98). In that capacity, he was instrumental in regulating the Technical & Commercial issues in the development of inter-connection between power systems of various Regional Grids of India which laid the foundation of the emerging National Grid. His significant contribution was in the area of inter-Regional power exchange when the surplus power of the Eastern Region and Northern Region started flowing to the Southern Region (1997-98) leading to conceptualisation of the Indian Electricity Grid at the national level.

He holds a Degree in Engineering with specialisation in Electronics & Telecom from BIT Sindri under Ranchi University (1963). He joined the Central Power Engineering Service in 1964 as a UPSC recruit. He gathered vast experience in Planning, Engineering, Construction, Operation & Maintenance of Transmission Lines, Hydro Power Station, System Integration, SCADA, Tele Control and Computerisation. He investigated a number of Grid Disturbances and made

important recommendations, which were implemented by the Power Utilities.

He brings with him substantial international experience in the Power System and its operation. He was on deputation from the Government of India to Zambia Electricity Supply Corporation and visited Canada and Germany for training. He has also visited USA, Germany and UK as an expert/specialist in connection with the development of Regional Load Despatch Centres (RLDCs) country and for the preparation of "Master Telecom Plan" for the Indian Power Sector. It is this background and experience which is an asset to the Commission in the finalisation of the Indian Electricity Grid Code.

Shri G.S. Rajamani

Member

Shri G.S. Rajamani born in 1943, is Member of the Central Electricity Regulatory Commission in the rank of Secretary to the Government of India since August 1998. Before his selection as Member of CERC, Shri Rajamani was Member (Economic & Commercial) in the Central Electricity Authority dealing with financial and commercial appraisals of public and private sector power projects in the country, performance of State Electricity Boards, tariff fixation etc.

Shri Rajamani is a Post Graduate in Economics from Madras University. After appearing in the Civil Service Examination in 1964, he was inducted to the Indian Defence Accounts Service in 1965. He held various junior, middle and senior level positions in the Defence Accounts Department at different intervals of time. He was the Additional Controller General of Defence Accounts before coming to power sector. His experience gave him a firm grounding in Finance, internal audit and accounting procedures of the Government of India. He also acquired a Master's Diploma in Public Administration from the Indian Institute of Public Administration in 1977. Shri Rajamani also worked in various Ministries in the Government of India like Ministries of Communication, Environment, Electronics, Non-conventional Energy Sources , Welfare and Defence etc., occupying various positions starting from Under Secretary to Additional Secretary from time to time.

He has participated in various international conferences. He represented India as a delegate in the Universal Postal Union Congress (UPU) in Seoul (South Korea) in 1994. He visited London, and Switzerland in 1995 in connection with finalisation of UPU Budget as India was the Chairman, Finance Committee of the International Bureau , UPU. He was also the Indian delegate on Servicing, Innovative Financing of Sustainable Development sponsored by the World Bank and the Earth Council in Washington in October 1995. Shri Rajamani visited USA in 1996 on a study tour in Power Sector Restructuring and Regulatory Reforms under USAID Energy Training Programme.

Shri A.R. Ramanathan

Member

Shri A.R.Ramanathan, born in 1938, had his school and college education in the State of Tamilnadu. He graduated in Commerce from the prestigious Layola College, Chennai with distinction and continued his Post Graduation from the same college and obtained second rank in the University in 1960. He started his teaching career in the same year and moved over to Delhi in 1964 to join the Institute of Chartered Accountants of India in their coaching Directorate. There after he joined the faculty of Shri Ram College of Commerce, Delhi University in 1967 where he continued to teach both Graduate and Post-Graduate students in Accounting, Company Law and Management Accounting.

He qualified as a Member of the Institute of Cost and Works Accountants of India with an All India Rank in 1971. He also obtained the Membership of the Institute of Company Secretaries of India in 1972. Simultaneously, he obtained a Diploma in Company Law with a First Rank from the Indian Law Institute, New Delhi.

Shri Ramanathan commenced his practice as a Cost Accountant in 1971. For 20 years, he was serving the Industry as a Cost Advisor, Consultant and a Cost Auditor. He has carried out statutory Cost Audit of number of industrial companies in Textiles, Cement, Paper, Cycle, Sugar, Automobile, Engineering and Chemical Industries. He was associated as a Member of the Advisory Committee on Cost Audit Rules by the Government of India in view of his experience in the field of Cost Accountancy. The Central Government has also nominated him as a Member of the Central Council of the Institute of Cost

& Works Accountants of India, a statutory body.

Combining his practical and teaching experience, he jointly authored a book on Management Accounting alongwith Prof. T.S.Grewal and Dr. N.L.Hingorani which has now run for more than 5 editions. With his experience in the field of cost and management audit he authored a book on this subject published by M/s.Tata Mcgrawhill. He has also authored a number of articles published in economic dailies and other periodicals. He has submitted technical papers in number of Conferences and Seminars.

Shri Ramanathan was selected as a First Professional Member of the Company Law Board by the Government of India in 1991. He presided over the Northern Bench of the Board and also sat in the Principal Bench of the Board and was responsible for a number of leading decisions on corporate disputes.

Shri Ramanathan was selected as Member of the newly constituted Central Electricity Regulatory Commission in 1998 with the rank of Secretary to the Government of India. In this capacity he visited United States of America in January, 1999 where he attended a programme of Regulators at the University of Florida.

Shri R.N. Srivastava

Chairman, CEA and
Member Ex-Officio, CERC

Shri R.N. Srivastava, Chairman, Central Electricity Authority & Ex-Officio Secretary to the Government of India, obtained degree in B.Sc., B.Tech. (Hons), Electrical Engineering (Power) from IIT Kharagpur, and F.I.E. (India). He joined Central Electricity Authority in 1963 Group 'A' Service. He has put in 36 years of Group 'A' service. Shri R.N. Srivastava has a long professional experience in Power Supply Industry in General and Power Planning in particular, both in India and abroad. He was head of Planning, Ministry of Water and Electricity, Government of Abhudhabi, UAE for five years from 1975 to 1980. He was also abroad on other foreign assignments relating to Power Supply Industry to Canada (1983), Thailand (1984), USA (1985), U.K. (1990, U.K. (1995), U.K., USA and France (1997), USA (1998).

Before taking over as Chairman, CEA, Shri R.N. Srivastava worked in various capacities in the CEA dealing with long term power planning and optimisation. Shri Srivastava took over as Director General, National Power Training Institute from April, 1994 to June, 1995 responsible for the training and development of Human Resources engaged in the management of the country's power supply industry both in the public as well as the private sector.

He has authored a number of technical papers for international/national conferences and journals. He was also involved in various Committees/Working Groups such as various Five Year Plans, Working Group on Power, Site

Selection Committee for future Nuclear Power Stations in the country, group on capacity planning norms for VIII Plan, group for considering next higher size of thermal units (500 MW), study group on Planning Commission on mitigating peaking power shortages during VIII Plan and Energy Modeling Group of Planning Commission, etc. Shri Srivastava also headed numerous inter-departmental committees for power development in the country.

Apart from being Director on the Board of Directors of Nuclear Power Corporation, since the formation of Central Electricity Regulatory Commission (CERC), Shri R.N. Srivastava, Chairman, CEA also holds the status of Member (Ex-Officio), CERC, New Delhi.

THE MANDATE OF THE COMMISSION

The Commission has the responsibility to discharge the following functions :

(a) to regulate the tariff of generating companies owned or controlled by the Central Government;

(b) to regulate the tariff of generating companies, other than those owned or controlled by the Central Government if such generating companies enter into or otherwise have a composite scheme for generation and sale of electricity in more than one State;

(c) to regulate the inter-State transmission of energy including tariff of the transmission utilities;

(d) to promote competition, efficiency and economy in the activities of the electricity industry;

(e) to aid and advise the Central Government in the formulation of tariff policy which shall be–

i) fair to the consumers; and

ii) facilitate mobilisation of adequate resources for the power sector;

(f) to associate with the environmental regulatory agencies to develop appropriate policies and procedures for environmental regulation of the power sector;

(g) to frame guidelines in matters relating to electricity tariff;

(h) to arbitrate or adjudicate upon disputes involving generating companies or transmission utilities in regard to matters connected with (a) to (c) above;

(i) to aid and advise the Central Government on any other matter referred to the Central Commission by that Government.

(j) to license any person for the construction, maintenance and operation of an inter-state transmission system.

Given the range of activities within its mandate, the Commission recognises the need for prioritisation of objectives. Towards this end, the Commission has formulated a mission statement, which will guide it in formulating its work plan over the coming years.

MISSION STATEMENT

The Commission intends to promote competition, efficiency and economy in bulk power markets, improve the quality of supply, promote investments and advise government on the removal of institutional barriers to bridge the demand supply gap and thus foster the interests of consumers. In pursuit of these objectives the Commission will;

- Improve the operations and management of the regional transmission systems through the formulation of an Indian Electricity Grid Code and advise on restructuring of the institutional arrangements thereof.
- Formulate an efficient tariff setting mechanism, which ensures speedy and time bound disposal of tariff petitions, promotes competition, economy and efficiency in the pricing of bulk power and transmission services and ensures least cost investments.
- Improve access to information for all stakeholders
- Institute mechanisms to ensure that investment decisions for inter-state transmission are taken transparently, in a participative mode and are justifiable on the basis of least cost.
- Facilitate the technological and institutional changes required for the development of competitive markets in bulk power and transmission services.
- Advise on the removal of barriers to entry and exit for capital and management, within the limits of environmental, safety and security concerns and the existing legislative requirements, as the first step to the creation of competitive markets.
- Associate with environmental regulatory agencies for the application of economic principles to the formulation of environmental regulations.

The Year in Retrospect

ADMINISTRATION

Section 14 of The Act provides for the establishment of a Central Advisory Committee to represent the interest of Commerce, Industry, Transport, Agriculture, Labour, Consumers, Non-Governmental Organisations and Academic and Research bodies in the energy sector. The Chairperson and Members of the Central Commission are Chairperson and Members Ex-Officio of the Central Advisory Committee (CAC). The CAC is expected to advise the Central Commission on policy formulation, quality, continuity and extent of service provided by licensees, compliance by the licensees with the licence conditions and requirements, protection of consumer interest and energy supply and overall standards of performance by utilities.

The Commission notified formation of the CAC on December 18, 1998. The composition of the Committee is available in Schedule III.

First Meeting of the Central Advisory Committee

The first meeting of the Committee was held on December 21, 1998. Welcoming the members, Prof. S.L. Rao, Chairman, CERC said the process of independent regulation is in the formative stages. It would receive legitimacy only if it is supported by the best research effort and only if it can quickly introduce efficiency and economy in the functioning of the electric power sector. The primary challenge is to manage the transition, from the existing system of distorted price signals and inefficient allocation of resources, to a more rational system of prices and vastly superior quality of

supply. The evolution of an efficient transition mechanism would be possible only if the best talent available within the country along with international consultancy support is mobilised for this effort. Appropriate Government policies would also be needed to create a facilitating macro environment for reform. Members were invited to comment on the draft regulations and grid code and to chart out a road map for the Commission for the coming months.

Members congratulated the Commission on the steps taken by it in a very short while, since its inception in August 1998, to lay the basis for transparent regulation. In particular, the members were appreciative of the speed with which the Conduct of Business Regulations have been framed and circulated to the public for comments. Similarly, the ongoing effort for formulation of the Draft Grid Code through a process of consultation with the major constituents of grid also received appreciation.

Members urged the Central Electricity Regulatory Commission to be an independent umpire over the electric power system. Despite the extensive steps, taken by the Government since 1991, to increase the involvement of the private sector and create a level playing field for all players, this goal has not been achieved. The level and character of risks faced by private power producers were vastly greater than those faced by the government generators thereby increasing the costs of such projects. The Central Electricity Regulatory Commission was urged to look into such distortions which reduced the overall efficiency of the system.

The formulation of cost effective environmental regulations was another area of concern. Central Electricity Regulatory Commission was urged to lead the effort in quantifying the costs of environmental degradation from polluting generators and to evolve cost effective regulations.

Grid management was another area of inefficiency.

Without the correct set of financial incentives and disincentives some constituents of the regional grid would continue to "free ride" and impose additional burden on others. A comprehensive grid code, rigorously implemented, could prevent such situations from occurring and this should be a priority area for Central Electricity Regulatory Commission.

Increasing consumer awareness of rights and obligations and formulating easily accessible channels of grievance redressal was another area of priority. The rationalisation of energy prices must be done only at internationally acceptable norms of efficiency and must be accompanied by similar standards of supply. Cost plus regulation would only increase the burden on the consumers and Central Electricity Regulatory Commission was urged to adopt the performance based rate system.

The advice and suggestions received from members of the CAC proved invaluable in revising the draft Conduct of Business Regulations as well as in formulating the strategy for preparation of a Grid Code for the regional grids. Members have been extremely generous in making available to the Commission and its staff valuable time outside the meetings of the CAC also and have thereby assisted the Commission in ensuring that the work of the Commission is in line with the general expectations of stakeholders in the Indian Electricity system.

Formulation of Conduct of Business Regulations

As indicated earlier the Commission formulated the draft Conduct of Business Regulations, prescribing the procedures to be followed in functioning of the Commission. In keeping with the objective of transparent and participating functioning, the draft was put out for public comment, on December 7, 1998. More than 26 responses were received from a cross section of stakeholders which included professional associations, research institutions, civil society groups, utilities, foreign investors,

financial institutions and interested individuals. The Commission, after due consideration of the responses received as well as the suggestions given by members of the CAC, notified its Conduct of Business Regulations on April 26, 1999, subsequently amended on May 31, 1999. A full text of these regulations are available on the website of the commission www.cercind.org

Formulation of Service Regulations

Under the provisions of The Act the service regulations governing the terms and conditions of employees of the Commission have to be approved by the Government of India. Draft service regulations were formulated covering the eligibility and criteria for appointment to different posts, terms and conditions of service, leave rules, disciplinary rules etc. which were forwarded to the government for approval. These were subsequently amended and resubmitted as directed by the Ministry of Power in February 1999. Approval of these regulations is awaited.

Partnership Program with US Regulatory Agencies

The Commission is in discussion with the United States Energy Association (USEA) for the finalisation of partnership programmes with the Federal Energy Regulatory Commission, Washington DC and the Public Utilities Commission, Department of Telecommunication and Energy, Commonwealth of Massachusetts, Boston. The partnership programme will provide for the exchange of members and staff between the partner agencies as well as other mechanisms for the sharing of experiences on issues of common interest.

Development of Human Resources

Shri A.R. Ramanathan, Member, CERC was deputed to attend the Fifth International Training Programme on Utility Regulation and Strategy conducted by the Public Utility Research Center at the University of Florida under USAID sponsorship.

The Commission sponsored a National Conference on "Transition to a Liberalised Environment: Experiences and Issues in Regulation" in February, 1999 which was organised by Tata Energy Research Institute, New Delhi and was attended by a wide range of stakeholders including participants from Regulatory Agencies in the US, Israel and Australia.

Technical Assistance from CIDA

The Canadian International Development Agency, representing the Government of Canada, supported the Commission by responding to the immediate requirements of the Commission in the areas of tariff modeling, determination of tariff filing requirements, review of data requirements and establishment of data management systems. The technical assistance is proposed to be included under the ongoing Energy Infrastructure Services Project – I and will be funded by a grant of Canadian $ 4,15,000.

ANNUAL STATEMENT OF ACCOUNTS 1998-99

Expenditure

The Commission was allocated a budget of Rs 250 lakhs for the year 1998 - 99. Expenditure during the year was below the allocation principally in the case of salaries, because of non availability of staff and in office expenses due to the lead time for making available the basic minimum office facilities. The allocation for rents remained under utilised since the Commission could not find suitable accommodation. The expenditure on other charges mainly represents payments made directly by the Ministry of Power to the Ministry of Urban Affairs for the proposed building of the Commission.

Major Head : "2801" Power
Minor Head : 80.800 (other expenditure)

(Rs. lakhs)

	Budget Head	BE	Expenditure
01.01.01	Salaries	43	3.43
01.01.11	Domestic Travel Expenses	5	0.53
01.01.12	Foreign Travel Expenses	7	0.75
01.01.13	Office Expenses	75	9.36
01.01.14	Rent, Rates and Taxes	76	0
01.01.29	Professional Services	10	0.22
01.01.50	Other Charges	34	2.03
Total		250	16.32

Note: During the year the entire accounting work of the Commission was done by the Drawing and Disbursing Officer of the Ministry of Power. The estimates given above are unaudited estimates based on the internal records of the Commission, pending the finalisation of accounts by the DDO, MOP.

Income

The Act makes no provision for the Commission to finance itself. Under the existing scheme, formulated by the Central Government, the Commission is to be financed through budgetary allocations. For this purpose, appropriate regulations are being framed. Revenues on this account will vary depending on the nature and extent of regulation adopted by the Commission. Revenues accruing from fees and charges will be deposited in the Consolidated Fund of India.. The efficiencies brought about by effective regulation will be more than adequate to neutralise the relatively small expenditure on the Commission. The Commission functions in the public interest and regulated entities, accessing its services, must share in the cost of regulation. Hence the Commission feels it is appropriate that a fee or charge is levied for the various services provided by it to regulated entities.

Administration of Corpus Fund

In recognition of the need for independent financing arrangements, outside the budgetary allocations, the Central Government had made available to the Commission, an amount of Rs 200 lakhs as a Corpus Fund to be used for setting up the Commission and to defray the expenses associated with the start up of a new institution. This amount has been deposited as a one year time deposit with the State Bank of India, Lodhi Road, maturing on September 5, 1999, and earns interest at the rate of 10.75% per annum. Use of the funds in this account is overseen by the full Commission. Expenditure is sanctioned by the Chairperson of the Commission, with the concurrence of the Internal Financial Adviser of the Commission.

The Commission has been very selective in the utilisation of the interest accruing from these funds. The interest income has been used primarily to finance the salaries of a few staff, including an economist, who were taken on contract to meet the severe shortage of manpower faced by the Commission. Regular appointments against these posts is pending the approval of the Service Regulations by Central Government for contract employees or the joining of deputationists, which ever is earlier. The interest income has also been used to finance essential office expenses like maintenance services and security etc. The approval for such unavoidable expenses was getting delayed on account of the complicated approval process for meeting expenditure from the budget, in the absence of an independent DDO and PAO for the Commission.

During the year 1998-99 an amount of Rs16.32 lakhs was spent from the Corpus Fund. Efforts are being made to seek a one-time recoupment from the budgetary allocation for items of expenditure, which can be covered under the budgetary allocations. It may be noted that there are significant savings of Rs. 75 lakhs in the office expenses sub-Head under the budgetary allocations for

1998-99, against which the proposed recoupment can be set-off. However, the use of the Corpus Fund for meeting such expenses is only a temporary measure. It is expected that with the establishment of an independent DDO and PAO for the Commission and the joining of regular staff, the routine expenditure would be met from the budget. The use of the Corpus Fund would be restricted to areas, which relate to the long term development of independent regulation. Regulations to prescribe the criteria for the use, monitoring and management of the Corpus Funds are being framed.

BULK POWER TARIFF

Formulation of tariff regulation

Under the provisions of Section 28 of The Act, the Commission has to determine by regulations the terms and conditions for fixation of tariffs. However, section 51 of the Act provides that the Central Government may, by notification, omit sub section (2) of section 43A of the ES Act. Till this provision is omitted, the power to regulate tariffs for generating companies owned by the Central Government remains with the central Government. Though section 43 A (2) of the ES Act continued in force through the year the Central Government has indicated its intention to omit it subsequent to which the Commission would have full jurisdiction over these matters. In the meantime, the Commission has started some preparatory work towards this end. The list of utilities for whom bulk power tariff would be regulated by the Commission (subject to omission of section 43A (2) ES Act is available in Schedule V along with their brief profile. The Commission has initiated the task of formulation of filing requirements and tariff guidelines, which would enable utilities to submit petitions for tariff determination. The work

is continuing. The Commission has reviewed the existing procedures for tariff determination including the norms prescribed by the Government of India and is currently assessing the existing arrangements against the guiding principles of simplicity, efficiency and equity. It is being assisted in this task by consultants provided to the Commission by Canadian International Development Agency (CIDA) representing the Government of Canada, under the Energy Infrastructure Services Project-I.

Cost norms study

With the intention of reviewing the existing arrangements within utilities for the recording of costs incurred at different stages of the production process and to explore the potential for introduction of Activity Based Costing, two separate studies were commissioned. The report on the Vijayawada Plant of Andhra Pradesh State Electricity Board was prepared by Shri A.N. Raman, Director, Cost Technology (Asia) Pvt. Ltd., while the report on the Dadri Plant of National Thermal Power Corporation was prepared by the Cost Accounts Branch of the Department of Expenditure, Ministry of Finance. These studies proved useful for the Commission to understand the existing practices being followed, for the costing of different inputs, the relationship between existing cost norms and actual costs and to assess the potential for adopting alternative methods of cost allocation. No definitive conclusions were reached as a result of these studies except to re-inforce the perception that a review of the cost norms is essential from the view point of efficiency and that considerable effort would be needed within utilities for restructuring the accounting framework so as to enable the proper allocation of costs to activity centers.

REGULATION OF INTER-STATE TRANSMISSION

The regulation of inter-state transmission, including the transmission tariff of the utilities engaged in inter-state transfers of energy, is a primary role of the Commission under The Act. There are five Regional Grids operating in the South, West, North, East and North-East. Each of the regional grids is governed by a Regional Electricity Board, which came into being through the resolution of the Government of India in 1964 with the intention of promoting integrated operations of the power systems. While the Regional Electricity Boards(REBs) are advisory in function ,Regional Load Despatch Centers (RLDCs) established in each region by CEA in the 1970s are in operational control of the regional electricity grids. The REBs were given statutory status in 1991 through an amendment of The Electricity (Supply) Act, 1948. Over the period, January, 1994 to January, 1996 the RLDCs, which were originally part of the Central Electricity Authority (CEA), were transferred to POWERGRID Corporation of India. Through further amendments to the ES Act in 1998 the role of the RLDCs was clarified and they were designated as the apex body to ensure integrated operation of the power system in the concerned region. Simultaneously, the Regional Electricity Boards were able to facilitate the RLDC on matters concerning the smooth operation of the integrated grid and economy and efficiency in the operation of the power system through a unanimous decision of the REB. This amendment has further clarified the system of dispute resolution under which, subject to regulations made by the

Commission, all disputes relating to directions given by the RLDCs, are referred to the Central Electricity Authority for decision. The fees to be charged by the RLDCs is also to be specified by the CERC.

Over time, the procedures to be adopted for planning and operation of the regional grids have been specified by the Central Electricity Authority, decisions of the REBs and operational practices of the RLDCs. While the system has functioned well with diversification of the nature of utilities connected to the system subsequent to restructuring of the State Electricity Boards and the incentives given to the private investment, growth in the volume of inter-state energy sales, rapid increases in the demand for energy with significant regional variations there has been a felt need for a unified code laying down the rules, guidelines and standards to be followed by the various agencies and participants in the Indian Electricity Grid System.

In pursuance of this objective, the Commission set up a special working group under the Chairmanship of Shri D.P. Sinha, Member, CERC with the express purpose of discussing with all stakeholders of the regional grids the modalities to be adopted for formulation of an Indian Electricity Grid Code. The working group submitted its report in the first week of February 1999, which was subsequently forwarded to POWERGRID to assist them in formulating a draft Grid Code.

In March 1999 the Commission issued directives to POWERGRID for preparation of the Indian Electricity Grid Code and organisational arrangements for the Central Transmission Utility. A copy of these directives is available at Schedule IV.

THE AGENDA FOR 1999-2000

- Order on Indian Electricity Grid Code and organisational arrangements for the Central Transmission Utility.
- Order on licensing arrangements for the construction, maintenance and operation on inter-state transmission lines by persons other than the Central Transmission Utility.
- Consultative paper on bulk power and transmission tariffs.
- Order on performance standards for generation utilities.
- Order on norms for the determination of the rate base.
- Regulations for the determination of bulk power and transmission tariff including the procedure for tariff filings.
- Regulations for the appointment of Consultants.
- Finalisation of the regulations on conditions of service of employees of the Commission.
- Tariff orders for selected generating stations and transmission lines.
- Consultative paper on environmental regulations for the power sector.

Provision of training facilities for staff in the areas of regulatory administration and process, performance-based rate making and incentive regulation, use of information technology in monitoring of performance standards and price regulation.

SCHEDULE - I

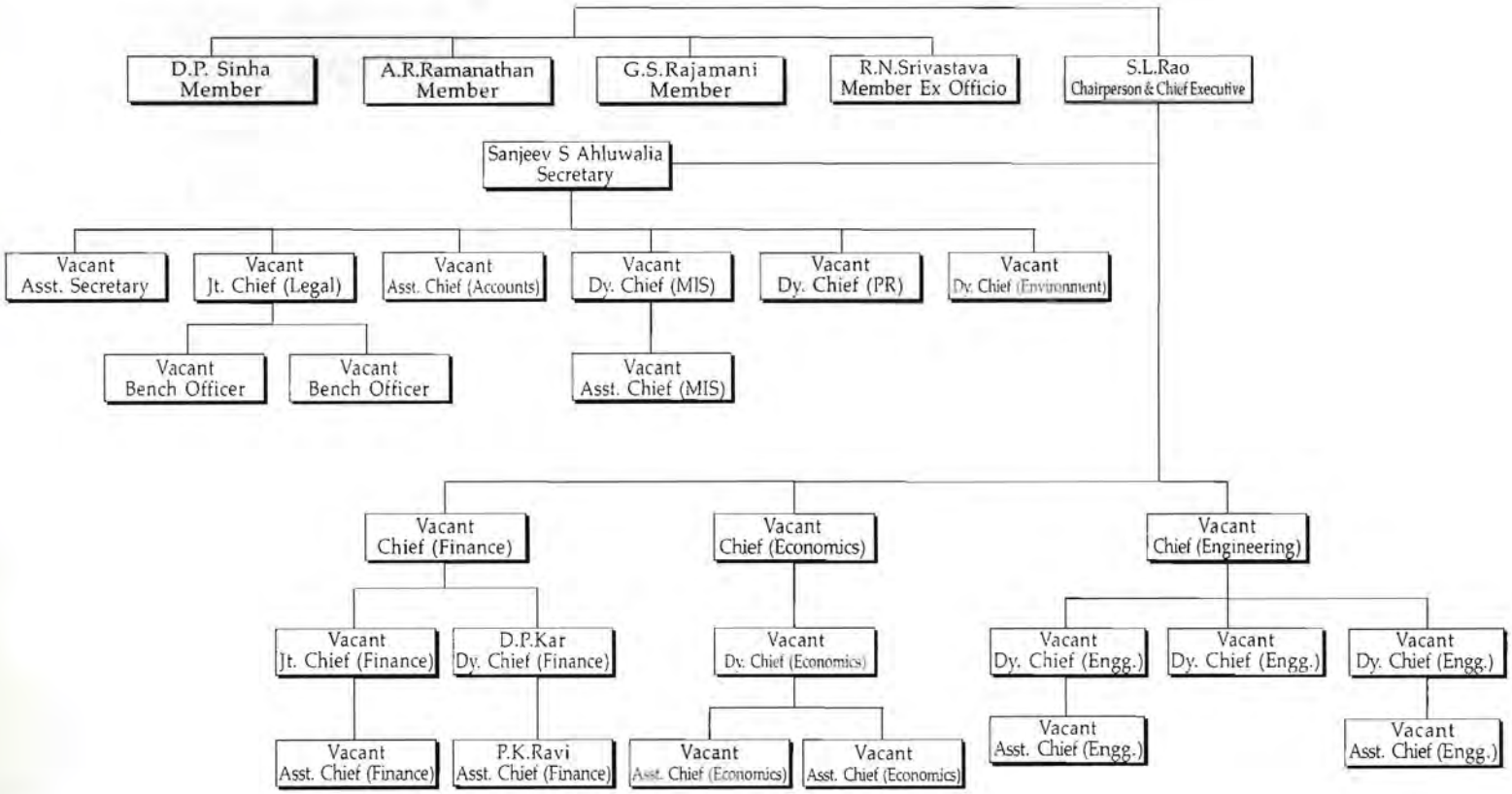
Central Electricity Regulatory Commission
Core-3, 5th Floor, Scope Complex, Lodi Road, New Delhi – 110 003
Telephone No. 91-11-4361145 FAX No. 91-11-4360010

LIST OF MEMBERS AND KEY STAFF OF THE COMMISSION

Designation	Name	Date of joining	Phone No.	Email
Chairperson & Chief Executive	S. L. Rao	Aug. 6, 1998	91-11-4360004	raosl@hotmail.com
Member	D. P. Sinha	Aug. 6, 1998	91-11-4361259	dps42@hotmail.com
Member	G. S. Rajamani	Aug. 6, 1998	91-11-4361235	gsr23@hotmail.com
Member	A. R. Ramanathan	Aug. 7, 1998	91-11-4361280	arr18@hotmail.com
Member Ex Officio	R. N. Srivastava	Aug. 6, 1998	91-11-6109212	
Secretary	Sanjeev S Ahluwalia	Dec. 1, 1998	91-11-4361051	ahluss@hotmail.com
Chief (Engineering)	Vacant			
Chief (Finance)	Vacant			
Chief (Economics)	Vacant			
Joint Chief (Legal)	Vacant			
Joint Chief (Finance)	Vacant			
Deputy Chief (Engineering)	Vacant			
Deputy Chief (Engineering)	Vacant			
Deputy Chief (Engineering)	Vacant			
Deputy Chief (Finance)	D. P. Kar	Mar. 31, 1999	91-4364895	
Deputy Chief (Economics)	Vacant			
Deputy Chief (MIS)	Vacant			
Deputy Chief (Environment)	Vacant			
Deputy Chief (PR)	Vacant			

Central Electricity Regulatory Commission

Organisation chart (Professional Staff as on March 31, 1999)



SCHEDULE - III

LIST OF MEMBERS OF THE CENTRAL ADVISORY COMMITTEE

18th December, 1998

No.3/10/98-CERC-Section 14(1) of the Electricity Regulatory Commission's Act, 1998 provides that the CERC may establish a Committee to be known as the Central Advisory Committee (CAC) to advise the Central Electricity Regulatory Commission on –

i) major questions of policy;

ii) matters relating to quality, continuity and extent of service provided by the licensees;

iii) compliance by the licensees with the conditions and requirement of their licence;

iv) protection of consumer interest; and

v) energy supply and overall standards of performance by utilities.

2. It has accordingly been decided to nominate the following persons to the CAC for a period of one year with effect from the date of issue:-

1 Shri E. Balanandan, Member of Parliament, New Delhi.

2. Shri N.M. Balasubrahmanyam, Executive Director, Institute of Rail Transport, New Delhi.

3. Shri S.J. Coelho, Ex-Chairman, GEB, Bangalore

4. Dr. Ashok Gulati, Institute of Economic Growth, Delhi.

5. Dr. Kamal Gupta, Ex-Director, ICAI, New Delhi.

6. Dr. D. Jagannathan, Director Technical, Institute of Cost and Works Accountants of India, New Delhi.

7. Shri Sudhir Jalan, President, FICCI, New Delhi.

8. Shri D.V. Kapur, Chairman, Reliance Power ltd., New Delhi.

9. Shri V.K. Misra, Executive Director, Society for

Promotion of Wasteland Development, New Delhi.

10. Shri Subrata Mookerjee, Member Legislative Assembly, Calcutta.
11. Dr. R.K. Pachauri, Director, Tata Energy Research Institute, New Delhi.
12. Shri Deepak Parekh, Chairman, IDFC, Mumbai.
13. Dr. (Mrs.) Jyoti K. Parikh, Senior Professor, Indira Gandhi Institute of Development Research, Mumbai.
14. Shri J. Parthasarthy, Chairman, A.P. State Electricity Board, Hyderabad.
15. Shri Yogendra Prasad, Chairman & Managing Director, NHPC Ltd., Faridabad.
16. Prof. Amulya K.N. Reddy, President, International Energy Initiative, Bangalore.
17. Shri G.V. Krishna Reddy, GVK Industries, Hyderabad.
18. Shri T.L. Sankar, Principal, Administrative Staff College of India, Hyderabad.
19. Shri Girish Sant, President, Prayas, Pune.
20. Prof. Manubhai Shah, Managing Trustee, Consumer Education & Research Centre, Ahmedabad.
21. Shri R.V. Shahi, Chairman, Core Group on Transmission and Distribution, CII
22. Shri R.P. Singh, Chairman & Managing Director, Power Grid Corporation of India Ltd., New Delhi.
23. Shri Rajendra Singh, Chairman & Managing Director, NTPC, New Delhi.
24. Shri Virendra Singh, Chairman, Delhi Vidyut Board.
25. Shri C.V.J. Varma, Secretary General, Power Utilities, New Delhi.

26. Prof. (Mrs.) S.K. Verma,
Director, Indian Law
Institute, New Delhi.

3. In terms of the provisions of Section 14(3) the Chair person and Members of the Central Electricity Regulatory Commission shall be the Ex-Officio Chair person and Ex-Officio Member of the CAC.

4. The TA.DA of officials belonging to Central Government Ministries/ Departments and PSUs will be borne by the respective offices. Non-Official members will be entitled to TA/DA as permissible to Group 'A' officers of the Government of India and the expenditure will be borne by Central Electricity Regulatory Commission.

5. This issues with the approval of Chairman, CERC.

sd/-
Sanjeev S. Ahluwalia
Secretary

SCHEDULE - IV

DIRECTIVES ISSUED TO POWERGRID

by CERC

Directives for preparation of the Indian Electricity Grid Code and organisational arrangements for the Central Transmission Utility

1. The Central Electricity Regulatory Commission (CERC) has been entrusted with the task of regulating the inter-State transmission of energy in terms of Section 13 (C) of Electricity Regulatory Commission's Act, 1998 (ERC Act). The Indian Electricity Act, 1910 (as amended), hereafter referred to as the Electricity Act, also provides Section 27 (A), that the Central Government shall, by a notification in the Official Gazette, specify any Government Company as the Central Transmission Utility (CTU). In terms of these provisions, the Central Government has notified the Power Grid Corporation of India Limited as the CTU. The functions of the CTU have been mentioned in section 27 (A)(2) of the Amendment Act. The major functions of the CTU, apart from the inter state transmission of energy, are to plan, coordinate, supervise and control the Inter-State Transmission System (ISTS). In terms of Section 55, Sub-section (1) of the Electricity (Supply) Act, 1948, CTU shall operate the RLDC until otherwise specified by the Central Government. It is, therefore, necessary to set out in greater detail the powers and duties of the CTU so as to enable it to perform the function in this regard.
2. CTU shall submit the draft Indian Electricity Grid Code not later than April 7, 1999 to the CERC for approval. The CERC may hold such proceedings as it deems necessary on the draft IEGC and may solicit and consider objections of interested parties. Before any proposed revisions to IEGC, as it relates to ISTS, are submitted to the CERC for approval, CTU shall consult all utilities liable to be affected, to the extent practicable. Any objections by a utility brought to the notice of the CTU, to the initial, or any subsequent revisions, shall be communicated to the CERC, at the time of seeking approval. IEGC will be an evolutionary code, subject to change, either suo-moto by CERC, or on the basis of proposals for revisions submitted by the

CTU or by any other interested person.

3. The IEGC shall include but not be limited to :-
   i. The ISTS Planning procedures and information exchange system, necessary to identify and promote the requirements for reinforcement or extension of the ISTS.
   ii. The connectivity conditions, specifying the minimum technical design and operational criteria, which must be complied with by each utility connected to or seeking connection to the ISTS.
   iii. The procedures for requesting proposals, technical and economic evaluation of bids and selection of developers for application and approval of a Transmission License for construction, maintenance n and operation of any ISTS.
   iv. The procedure for submission of an application and approval of a transmission license to any person which will authorise the licensee to construct, maintain and operate of any ISTS under the direction, control and supervision of the CTU.
   v. Operating Codes specifying the policy and procedures under which the CTU will direct, control and supervise the ISTS and under which utilities will operate their plant as necessary to protect the security and quality of supply and safe operation of the ISTS under both normal and abnormal operating conditions.
   vi. Scheduling (and despatch) Codes to specify the procedures, information flows, instructions and actions necessary to operate the Regional Grids to facilitate economy, efficiency and competitiveness in the supply of electricity in the prevailing conditions and improve the procedures relating to the management of the Indian Electricity Grid.
   vii. All technical aspects relating to connections to and operation of the ISTS.
   viii. Provisions to permit the development, maintenance and operation of an efficient, coordinated and economical transmission of energy through the ISTS.
   ix. Provision to facilitate competition, efficiency and

economy in the activities of the electricity industry; and

x. Provision to promote the security and efficiency of the electricity generation, transmission and distribution systems of India.

4. The CTU shall, in consultation with all utilities, prepare, implement, periodically review and revise and comply with the Indian Electricity Grid Code (IEGC).

5. To facilitate the operation of the power system, CTU will also take into consideration the provisions of State Electricity Grid Code(SEGC), if any, in operation in the State (s). Discrepancies if any between the provisions of the IEGC and the SEGC will be brought to the notice of the CERC for the purpose of establishing the procedure to be adopted in such Cases.

6. CTU shall have the duty to exercise supervision and control over the ISTS so as to ensure that the beneficiaries are able to meet their responsibilities for:-

i. Scheduling and despatching their own generating units including the generating units of their captive licensees.

ii. Regulating the demand of their customers.

iii. Scheduling the drawal from Central Generating Stations within their share of the respective plants expected capability.

iv. Facilitating any bilateral interchanges; and

v. Regulating the net drawal from the ISTS

7. i. The CTU shall be responsible for the dynamic planning of the inter-State Transmission System (ISTS).

ii. The CTU shall plan, facilitate the development, direct control and supervision of the ISTS in accordance with the transmission planning criteria of the CEA and norms prescribed by the Central Electricity Regulatory Commission, if any, and the operating standards set out in the IEGC.

8. Except with the prior approval of CERC, the CTU shall not ordinarily purchase, sell or trade in electricity.

9. CTU, which is responsible for the operation of the RCDC's shall ensure the maintenance and operation of the energy

accounting system as a separate activity for the calculation of any payments arising out of Inter-State Operation.

10. In implementing the IEGC, CTU has a role which is not commercial in character. In view of this, it would be necessary that the CTU portion of the PGCIL should be insulated within from other activities of PGCIL and kept as a separate accounting and administrative unit. Where the PGCIL also functions as one of the transmission utilities, it should also be subject to the discipline of the CTU.

    POWERGRID would establish functional, administrative and financial autonomy and organic separation of the following areas of its activities with the approval of CERC:-

    i. Systems operations (planning, coordination, supervision and operation of the ISTS).

    ii. Transmission business.

    iii. Any other business.

11. CTU shall submit a periodical report of its activities with details (including financial statements) as may be specified by the Commission from time to time. CTU would provide an annual report to the CERC each year as prescribed by the Central Electricity Regulatory Commission including but not limited to details of how the security standards and quality of service have been met or not as the case may be. For this purpose, the CTU may propose a suitable format of the report to the CERC for approval.

12. The CTU shall be under the regulatory control of Central Electricity Regulatory Commission and shall be subject to any directions which CERC may issue in the interest of neutrality among the constituents and efficient operation of the ISTS.

13. The CTU will formulate draft Transmission Licenses, for the approval of the Central Electricity Regulatory Commission, to regulate the functioning of the transmission business. The terms and conditions governing any licensee shall also apply to the transmission business of the CTU.

By Order of the Commission

sd/-
(Sanjeev S. Ahluwalia)
Secretary

Dated : 31st March, 1999.

PROFILE OF SELECTED REGULATED ENTITIES

NATIONAL THERMAL POWER CORPORATION

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station	Location		Installed Capacity (No of unitsXMW)	Date of commissioning	Fuel	Fuel Linkage	Performance during the Year 1998-99			
		Region	State/ District					Energy Generated (Mus)	Energy sent out (Mus)	PLF%	Availability%
1	Singrauli STPS	Northern	UP/ Sonebhadra	Unit - I 200 MW Unit - II 200 MW Unit - III 200 MW Unit - IV 200 MW Unit - V 200 MW Unit - VI 500 MW Unit - VII 500 MW Station -2000 MW	13.02.82 25.11.82 28.03.83 02.11.83 26.02.84 23.12.86 24.11.87	Coal	Jayant/ Dudhichua mine, (NCL)	15797.8	14758.6	90.17	91.28
2	Rihand STPS	Northern	UP/ Sonebhadra	Unit - I 500 MW Unit - II 500 MW Station -1000 MW	31.03.88 05.07.89	Coal	Amlohri/Dudhi-chua mine, (NCL)	6817.7	6267.6	77.83	80.05
3	Dadri(coal) (NCTPP)	Northern	UP/ Gautam Budh Nagar	Unit - I 210 MW Unit - II 210 MW Unit - III 210 MW Unit - IV 210 MW Station - 840 MW	21.12.91 18.12.92 23.03.93 24.03.94	Coal	Pipariwar mine (CCL)	6727.5	6219.3	91.43	94.83
4	Unchahar STPS	Northern	UP/Rai-Bareily	Unit - I 210 MW Unit - II 210 MW Station - 420 MW	21.11.88 22.03.89	Coal	North Karanpura (CCL)&BCCL	3023.1	2753.9	82.17	90.49

***Note**: The data as furnished by ntpc has been reproduced. The commission has not verified it.*

NATIONAL THERMAL POWER CORPORATION

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station	Location		Installed Capacity (No of unitsXMW)	Date of commissioning	Fuel	Fuel Linkage	Performance during the Year 1998-99			
		Region	State/ District					Energy Generated (Mus)	Energy sent out (Mus)	PLF%	Availability%
5	Anta GPP	Northern	Rajasthan/ Baran	Gt-I 88 MW	20.01.89	Gas	HBJ				
				Gt-II 88 MW	04.03.89						
				Gt-III 88 MW	04.05.89						
				St-i 149 MW	05.03.90						
				Station-419 MW				2931.1	2874.6	79.79	93.08
6	Auraiya GPP	Northern	UP/Auraiya	Gt-I 110 MW	29.03.89	Gas	HBJ				
				Gt-II 110 MW	21.07.89						
				St-1 106 MW	29.12.89						
				Gt-III 110 MW	09.08.89						
				Gt-IV 110 MW	29.09.89						
				St-II 106 MW	12.06.90						
				Station-652 MW				4146.2	4078.5	71.35	86.93
7	Dadri (Gas)	Northern	UP/ Gautam Budh Nagar	Gt-I 131 MW	21.02.92	Gas	HBJ				
				Gt-II 131 MW	26.03.92						
				Gt-III 131 MW	16.06.92						
				Gt-IV 131 MW	14.10.92						
				St-I 146.5 MW	26.02.94						
				St-II 146.5 MW	27.03.94						
				Station-817 MW				5099.2	5006.3	70.15	92.15
8	Korba STPS	Western	MP/ Jamnipali	Unit-I 200 MW	01.03.83	Coal	Gevra+ Dipika/ Koorba coalfield				
				Unit-II 200 MW	31.10.83						
				Unit-III 200 MW	17.03.84						
				Unit-IV 500 MW	31.05.87						
				Unit-V 500 MW	25.03.88						
				Unit-VI 500 MW	23.03.89						
				Station-2100 MW				16046.6	14997.0	87.23	90.96

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station	Location		Installed Capacity (No of unitsXMW)	Date of commissioning	Fuel	Fuel Linkage	Performance during the Year 1998-99			
		Region	State/ District					Energy Generated (Mus)	Energy sent out (Mus)	PLF%	Availability%
9	Vindhyachal STPS	Western	MP/Sidhi	Unit-I 210 MW Unit-II 210 MW Unit-III 210 MW Unit-IV 210 MW Unit-V 210 MW Unit-VI 210 MW	10.10.87 23.07.88 03.02.89 26.12.89 31.03.90 01.02.91	Coal	Nigahi/ Dudhichua mine (NCL)				
				Station-1260 MW				9934.2	9041.2	90.0	91.08
10	Kawas GPP	Western	Gujarat/ Surat	Gt-I 106 MW Gt-II 106 MW Gt-III 106 MW Gt-IV 106 MW St-I 110.5 MW St-II 110.5 MW	22.03.92 24.05.92 30.06.92 27.08.92 23.02.93 19.03.93	Gas	HBJ				
				Station-645 MW				4411.9	4335.2	76.75	90.57
11	Jhanor-Gandhar GPP	Western	Gujarat/ Bharuch	Gt-I 131 MW Gt-II 131 MW Gt-III 131 k St-I 255 MW	17.03.94 31.03.94 20.05.94 30.03.95	Gas	S.Gujarat				
				Station-648 MW				2162.2	2086.7	37.5	75.93
12	Ramagundam STPS	Southern	AP/ Karimnagar	Unit - I 200 MW Unit - II 200 MW Unit - III 200 MW Unit - IV 500 MW Unit - V 500 MW Unit - VI 500 MW	26.11.83 29.05.84 13.12.84 26.06.88 26.03.89 16.10.89	Coal	Ramagundam Area of Singareni Collieries Co.Ltd. & WCL				
				Station-2100 MW				15859.2	14725.0	86.21	89.36
13	Kayamkulam GPP	Southern	Kerala/ Alleppey	Gt - I 115 MW Gt-II 115 MW	05.11.98 28.02.99	Gas	BPCL/Indian Sources				
				Station-230 MW				177.8	176.86	71.46	83.26

NATIONAL THERMAL POWER CORPORATION

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station	Location		Installed Capacity (No of unitsXMW)	Date of commissioning	Fuel	Fuel Linkage	Performance during the Year 1998-99			
		Region	State/ District					Energy Generated (Mus)	Energy sent out (Mus)	PLF%	Availability%
14	Farakka STPS	Eastern	West Bengal Murshidabad	Unit - I 200 MW Unit - II 200 MW Unit - III 200 MW Unit - IV 500 MW Unit - V 500 MW	01.01.86 24.12.86 06.08.87 25.09.92 16.02.94	Coal	Rajmahal Mine (ECL)				
				Station-1600 MW				5475.6	4865.1	39.07	81.51
15	Kahalgaon STPS	Eastern	Bihar/ Bhagalpur	Unit - I 210 MW Unit - II 210 MW Unit - III 210 MW Unit - IV 210 MW	31.03.92 17.03.94 24.03.95 18.03.96	Coal	Rajmahal Mine (ECL)				
				Station-840 MW				3988.7	3565.8	54.21	91.24
16	Talcher STPS	Eastern	Orissa/angul	Unit - I 500 MW Unit - II 500 MW	19.02.95 27.03.96	Coal	Lingraj mine (MCL)				
				Station-1000 MW				4592.5	4217.4	52.43	95.28
17	Talcher TPS(OLD)	Eastern	Orissa/Angul	Unit-I 60 MW Unit-II 60 MW Unit-III 60 MW Unit-IV 60 MW Unit-V 110 MW Unit-VI 110 MW	17.12.67 28.03.68 11.07.68 11.04.69 24.03.82 24.03.83	Coal	Jagannath mine (MCL)				
				Station-460 MW				2248.5	1953.0	55.80	83.1

1. *Energy generated(mus) - energy generated at generator terminals (gross energy)*
2. *Energy sent out(mus) - energy injected into the grid (energy generated - aux. Consumption)*
3. *Plant load factor(plf)% - the ratio of actual energy generated during the period and max. Energy generated (at rated installed capacity) during the period.*
4. *Availability % - the ratio of capability of generating station in mw during the period and the installed capacity of the generating station.*

NATIONAL THERMAL POWER CORPORATION

DETAILS OF GENERATING STATIONS UNDER CONSTRUCTION

Sl. NO	Name of Station	Location		Installed Capacity (No of unitsXMW)	Fuel	Target date of Commissioning
		Region	State/District			
1	Vindhyachal Stage-II	Western	MP/Sidhi	2 x 500	Coal	Unit-VII- May'00 Unit-VIII-May'01
2	Unchahar Stage-II	Northern	UP/Rai Bareilly	2 x 210	Coal	Unit-III - Apr'00 Unit-IV-Oct'00
3	Faridabad, CCPP	Northern	Haryana/ Faridabad,	Gt 2 x 143 + 1 x 144 st	Gas	Gt-I - Aug'99 Gt-II - Mar'00 St - Jan'01
4	Kayamkulam CCPP	Southern	Kerala/ Alleppey,	Gt 2x115 + 1x 120 st	Naptha	Gt-1 } commissioned Gt-2 } St - Mar'00
5	Simhadri, TPP	Southern	AP/Vishakhapatnam	2 x 500	Coal	Unit-I - June'02 Unit-II - Mar'03

NATIONAL HYDROELECTRIC POWER CORPORATION

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station & Type of scheme	Location		Installed Capacity (No of units×MW)	Date of Commissioning	Performance during the Year 1998-99			
		Region	State/District/ River			Energy generated (Mus)	Energy sent out (Mus)	Design Energy	Availability
1	Baira siul hep Run of river	Northern	HP/Chamba/ Ravi	Unit - I 60 MW Unit - II 60 MW Unit - III 60 MW Station- 180 MW	18.05.80 19.05.80 13.09.81	330.19 256.27 163.81	733.54	250 250 250	74.53%
2	Chamera hep Run of river	Northern	HP/Chamba Ravi	Unit - I 180 MW Unit - II 180 MW Unit - III 180 MW Station- 540 MW	28.04.94 25.04.94 22.04.94	686.6 768.31 912.37	2352.36	554.67 554.67 554.67	82.09%
3	Tanak pur hep Run of river	Northern	UP/Udhamsingh Nagar/Sharda	Unit - I 31.4 MW Unit - II 31.4 MW Unit - III 31.4 MW Station- 94 MW	31.03.92 04.04.92 04.04.92	182.5 130.88 155.95	465.77	153.30 153.30 153.3	87.70%
4	Salal hep Run of river	Northern	J&K/Udhampur Chenab	Unit - I 115 MW Unit - II 115 MW Unit - III 115 MW Unit - IV 115 MW Unit - V 115 MW Unit - VI 115 MW Station- 690 MW	09.11.87 14.11.87 20.11.87 31.03.93 29.05.94 23.02.95	472.24 551.98 477.24 543.79 642.67 534.75	3189.25	679.33 679.33 679.33 354.20 354.20 354.20	91.19%
5	Uri hep Run of river	Northern	J&K/Baramulla Jhelum	Unit - I 120 MW Unit - II 120 MW Unit - III 120 MW Unit - IV 120 MW Station- 480 MW	10.04.97 03.03.97 27.01.97 13.03.97	664.69 696.92 617.4 596.00	2550.12	665.85 665.85 665.85 665.85	96.21%
6	Loktak hep Natural Storage	NER	Manipur/Bishanpur &Churachandpur/ Loktak lake	Unit - I 35 MW Unit - II 35 MW Unit - III 35 MW Station- 105 MW	29.05.83 30.04.83 13.05.83	211.18 190.79 130.45	529.15	150.00 150.00 150.00	93.48%

Note: *The Data as furnished by NHPC has been reproduced. The Commission has not verified it.*

NATIONAL HYDROELECTRIC POWER CORPORATION

DETAILS OF GENERATING STATIONS UNDER CONSTRUCTION

Sl. No.	Name of Station & Type of Scheme	Location		Installed Capacity (No of unitsXMW)	Target date of Commissioning
		Region	State/District		
1	Rangit Run of river	NER	Sikkim / South Sikkim/ Rangit	3 x 20 = 60	Nov-99
2	Dulhasti Run of river	Northern	J&K / Doda / Chenab	3 x 130 = 390	Mar-01
3	Dhauliganga-I Run of river	Northern	UP / Pitthoragarh/ Dhauliganga	4 x 70 = 280	Sep-04
4	Chamera - II Run of river	Northern	HP/ Chamba/ Ravi	3 x 100 = 300	May-04

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station	Location		Installed Capacity (No. of units×MW)	Date of Commissioning*	Fuel	Performance during the Year 1998-99			
		Region	State/ District				Energy Generated (Mus)	Energy sent out (Mus)	PLF%	Availability%
1	Narora Atomic Power Station	Northern	Up/narora (Bulandshaher)	Unit - 1 1x220 Unit - 2 1x220	29.07.1989 05.01.1992	Uranium Uranium	1316 } 2480 1492 }	68.3 77.4	75.0 80.5	
2	Rajasthan Atomic power station	Northern	Rajasthan Rawatbhata (Chittorgarh)	Unit - 1 1x100 1x150@ Unit - 2 1x200	30.11.1972 01.11.1980 06.06.1998@@	Uranium Uranium	767 967	} } 1431 }	58.4 67.4	67.4 81.4
3	Tarapur Atomic power station	Western	Maharashtra (Tarapur/Thane	Unit-1 1x160 Unit-2 1x160	01.04.1969 08.05.1969	Uranium Uranium	1298 } 2077 996	92.6 }	94.8 71.1	74.7
4	Kakrapar Atomic power station	Western	Kakrapar (Gujarat/Surat)	Unit-1 1x220 Unit-2 1x220	24.11.1992 04.03.1995	Uranium Uranium	1388 } 2557 1506 }	72.0 78.2	76.3 80.5	
5	Madras Atomic Power station	Southern	Kalpakkam (IN/ Chengalpattu)	Unit - 1 1x170 Unit - 2 1x170	23.07.1983 20.09.1985	Uranium Uranium	1123 } 1845 1065 }	74.5 71.5	77.2 71.7	

* *Date of First Synchronisation*

@ Unit is permitted to operate at 150 Mwe since July 97. PLF is calculated on 150 Mwe basis.

@@ Unit came on line on 6.6.98 after capital maintenance outage. PLF and Availability factors calculated w.e.f. 6.6.98

1. Energy generated(MUS) - Energy generated at generator terminals (gross energy)

2. Energy sent out(MUS) - Energy injected into the grid (energy generated - Aux. Consumption)

3. Plant load factor(PLF)% - The ratio of actual energy generated during the period and Max. energy generated (at rated installed capacity) during the period.

4. Availability % - The ratio of capability of generating station in MW during the period and the installed capacity of the generating station.

NUCLEAR POWER CORPORATION

DETAILS OF GENERATING STATIONS UNDER CONSTRUCTION

Sl. NO	Name of Station	Location		Installed Capacity (No of unitsXMW)	Fuel	Target date of Commissioning
		Region	State/District			
1	Kaiga Generating Station	Southern	Karnataka(Kaiga/ Uttar Kannada)	Unit-1 1x220 MW Unit-2 1x220 MW	Uranium Uranium	Sept.2000 Nov., 1999
2	Rajasthan Atomic Power Station	Northern	Rajasthan (Rawatbhata/ Chittorgarh)	Unit-3 1x220 MW Unit-4 1x220 MW	Uranium Uranium	Feb., 2000 Oct., 2000

Note: *The Data as furnished by NPC has been reproduced. The Commission has not verified it.*

NEYVELI LIGNITE CORPORATION

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station	Location		Installed Capacity (No of unitsXMW)	Date of commiss-ioning	Fuel	Fuel Linkage	Performance during the Year 1998-99			
		Region	State/ District					Energy Generated	Energy sent out	PLF%	Availa-bility%
1	Thermal Power Station-I	Southern	Tamilnadu/ Neyveli Cuddalore	Unit - I 50 MW Unit - II 50 MW Unit - III 50 MW Unit - IV 50 MW Unit - V 50 MW Unit - VI 50 MW Unit - VII 100 MW Unit - VIII 100 MW Unit - IX 100 MW	23.05.62 29.01.63 11.06.63 27.06.63 29.04.64 24.08.65 28.03.67 12.12.69 21.02.70	Lignite	Neyveli Lignite Mines				
				Station - 600 MW				3772.23	2845.33	71.77%	76.75%
2	Thermal Power-II	Southern	Tamilnadu/ Neyveli Cuddalore (TN)	Unit - I 210 MW Unit - II 210 MW Unit - III 210 MW Unit - IV 210 MW Unit - V 210 MW Unit -VI 210 MW Unit - VII 210 MW	17.01.88 06.02.87 29.03.86 30.03.91 30.12.91 30.10.92 19.06.93	Lignite	Neyveli Lignite Mines				
				Station -1470 MW				9568.14	8199.80	74.3%	84.44%

Details of Generating Stations Under Construction

Sl. No.	Name of Station	Location		Installed Capacity (No of unitsXMW)	Fuel	Target date of Commissioning
		Region	State/District			
1	TPS-I Extension	Southern	Tamilnadu/ Cuddalore	Unit - 1 210 MW Unit - 2 210 MW	Lignite	Nov-01 May-02

Note: *The data as furnished by nlc has been reproduced. The commission has not verified it.*

1. *Energy generated(mus) - energy generated at generator terminals (gross energy)*
2. *Energy sent out(mus) - energy injected into the grid (energy generated - aux. Consumption)*
3. *Plant load factor(plf)% - the ratio of actual energy generated during the period and max. Energy generated (at rated installed capacity) during the period.*
4. *Availability % - the ratio of capability of generating station in mw during the period and the installed capacity of the generating station.*

NORTH EASTERN ELECTRIC POWER CORPORATION

DETAILS OF EXISTING GENERATING STATIONS & THEIR PERFORMANCE

Sl. No.	Name of Station	Location		Installed Capacity (No of units XMW)	Date of commiss-ioning	Fuel	Fuel Linkage	Performance during the Year 1998-99			
		Region	State/ District					Energy Generated	Energy sent out	PLF%	Availa-bility%
1	Assam Gas Based Power Project	North Eastern	Assam/ Bokuloni	Gtu - I 33.5 MW Gtu - II 33.5 MW Gtu - III 33.5 MW Gtu - IV 33.5 MW Gtu - V 33.5 MW Gtu - VI 33.5 MW Stu - I 30 MW Stu-II 30 MW Stu - III 30 MW Station- 291 MW	Mar-95 Mar-95 Jun-95 Jul-95 Mar-96 Oct-96 Mar-98 Mar-98 Jul-98	Natural Gas	Oil india Limited	743.35	743.35	43.8%	N.A.
2	Agartala Gas Turbine Project	North Eastern	Tripura Ramchan-dranagar	Gtu - I 21 MW Gtu - II 21 MW Gtu - III 21 MW Gtu - IV 21 MW Station - 84 MW	Feb-98 Feb-98 Mar-98 Mar-98	Natural Gas	GAIL	197.205	197.205	39.5%	N.A

Hydro Product

Sl. No.	Name of Station & Type of scheme	Location		Installed Capacity (No of units XMW)	Date of Commiss-ioning	Performance during the Year 1998-99			
		Region	State/District/ River			Energy generated (Mus)	Energy sent out (Mus)	Design Energy	Availa-bility
1)	Kopili HE Proj.	North	Assam/Hills/Kopili						
(a)	Khandong Power house Storage type	Eastern		Unit 1- 25 MW Unit 2- 25 MW	Mar-88 Mar-88				
(a)	Khandong Power house Storage type	Eastern		Unit 1- 25 MW Unit 2- 25 MW	Mar-88 Mar-88				
(b)	Kopili power House Storage type			Unit 1- 50 MW Unit 2- 50 MW	Mar-98 Mar-98				
				Station - 150 MW		556.45	556.45	N.A.	N.A.
2)	Khep stage-1 Extn Kopili power House Storage type	North Eastern	Assam/Hills/Kopili	Unit - 3 50 MW Unit - 4 50 MW	Mar-97 Jun-97				
				Station - 150 MW		438.72	438.72	N.A.	N.A.

Note: *The data as furnished by neepco has been reproduced. The commission has not verified it.*

NORTH EASTERN ELECTRIC POWER CORPORATION

DETAILS OF GENERATING STATIONS UNDER CONSTRUCTION

Sl. No.	Name of Station & Type of Scheme	Location		Installed Capacity (No of unitsXMW)	Target date of Commissioning
		Region	State/District		
1	Doynag HE Project Storage Type	North Eastern	Nagaland/Wokha	Unit - 1 25 MW Unit - 2 25 MW Unit - 3 25 MW	Mar-00 Mar-00 Mar-00
2	Ranganadi HE Project Run-of-the River	North Eastern	Arunachal Pradesh	Unit - 1 135 MW Unit - 2 135 MW Unit - 3 135 MW	Mar-01 Aug-01 Sep-01
3	Tuirial HE Project Storage Type	North Eastern	Mizoram	Unit - 1 30 MW Unit - 2 30 MW	Jun-06 Jun-06
4	Kopili HE Proj. 2nd Stage Storage Type	North Eastern	Assam	Unit - 1 25 MW	Jul-03

POWERGRID

DETAILS OF EXISTING LINES AND SUB-STATIONS OF POWERGRID

S. No.	Region	Transmission Lines (Ckt.Kms.)				Sub-stations (MVA)
		HVDC	400KV	220KV	132KV	
1	**Northern Region**					
	J&K	-	300	687	-	1260
	HP	-	572	192	-	-
	Delhi	-	397	-	-	1575
	Haryana	-	1789	66	-	2025
	Punjab	-	1170	401	-	1130
	Rajasthan	-	791	1032	-	-
	UP	817	2933	870	-	630
	Total NR	**817**	**7952**	**3248**	**0**	**6620**
2	**Western Region**					
	MP	-	5791	-	-	945
	Maharashtra	-	1127	-	-	NIL
	Gujarat	-	1195	852	-	630
	Total WR	**-**	**8113**	**852**	**0**	**1575**
3	**Southern Region**					
	AP	-	2762	-	-	3150
	Karnataka	-	965	-	-	NIL
	Kerala	-	260	156	-	630
	Tamil Nadu	-	1647	64	-	1575
	Total SR	**-**	**5634**	**220**	**0**	**5355**
4	**Eastern Region**					
	Bihar	-	1057	82	-	1860
	Orissa	-	1034	-	-	2520
	West Bengal	-	1287	870	333	2025
	DVC	-	344	-	-	630
	Total ER	**-**	**3722**	**952**	**333**	**7035**
5	**N.E. Region**					
	Assam	-	1978	171	79	1015
	Meghalaya	-	-	-	67	-
	Nagaland	-	-	320	189	100
	Manipur	-	-	-	443	6.3
	Mizoram	-	-	-	178	-
	Tripura	-	-	-	147	5
	Arunachal Prad.	-	333	-	42	-
	Total NER	**-**	**2311**	**491**	**1145**	**1126**
	Total All India	**817**	**27732**	**5763**	**1478**	**21711**

Note: *The Data as furnished by POWERGRID has been reproduced. The Commission has not verified it.*

TRANSMISSION LINES AND SUB-STATIONS OF POWERGRID UNDER CONSTRUCTION

S. No.	Region	Transmission Lines (Ckt.Kms.)				Sub-stations (MVA)
		HVDC	400KV	220KV	132KV	
1	Northern Region	920	1607	975	-	2520
2	North Eastern	-	333	18	658	-
3	Western Region	-	222	-	-	630
4	Southern Region	-	-	147	-	-
5	Eastern Region	-	-	-	95	-
	Total	**920**	**2162**	**1140**	**753**	**3150**

DETAILS OF INTER REGIONAL LINKS OF POWERGRID

EXISTING LINKS

S. No.	Connected Region &States	Name of Link	Type of link	Max.power transfer Capacity (MW)	Date of commissioning
1	North(UP) & West(MP)	Vindhyachal Back To Back	HVDC	500	22-4-89
2	West(Mah.) & South(AP)	Chandrapur Back To Back	HVDC	1000	Pole I 1-10-97 Pole II 1-3-98
3	East(Orissa) & South(AP)	Gazuwaka Back To Back	HVDC	500	1-9-99
4	West(MP)& East(Orissa)	220 kv Korba- Budhipara 3rd ckt	AC	150	1-9-99
5	East(Bihar) & North(UP)	220 kv Dehri - Karmnasa 2nd ckt	AC	150	1-6-99

UNDER CONSTRUCTION LINKS

S. No.	Connected Region &States	Name of Link	Type of link	Max.power transfer Capacity (MW)
1	North(UP)& East (Bihar)	Sasaram Back To Back	HVDC	500