

ANNEXURE-I

1. Details of Business Transaction

1.1 Planning for Power Development

As per the provisions of the Electricity Act, 2003, the National Electricity Policy was notified by Central Government in February, 2005. The Electricity Act, 2003 requires CEA to frame a National Electricity Plan once in five years for optimum and coordinated development of power sector in the country and to assess the generation and transmission capacity addition requirement during the five year plans. The National Electricity Plan (NEP) for 11th plan prepared by CEA and approved by Central Government was notified in the Gazette of India in August, 2007. Further CEA has embarked upon preparation of National Electricity Plan for the 12th Plan and perspective plan for 13th plan after completion of all related activities the same shall be notified.

To fulfill the obligations of sub-sections (i) & (j) of section 73 of the Electricity Act, 2003, CEA brings out an annual document titled as 'All India Electricity Statistics' giving all important parameters/statistics concerning generation, transmission, distribution and trading of electricity and the associated fields. This document is widely referred to internationally and within India.

The Electric Power Survey Committee is constituted periodically with an objective to forecast the electricity demand of the country on short and long term basis so as to incorporate the impacts of changes in the Government policies affecting electricity sector and trends of growth of consumption due to socio-economic and other requirements on electricity demand. The report of the Committee is widely referred to by the international and country's experts/scholars/agencies for various purposes. The Report of 18th EPS of India (Volume-I) containing forecast of electricity demand year wise, statewise, Region wise and All India for 12th plan period (2012-13 to 2016-17) & 13th plan period (2017-18 to 2021-22) and long term forecast for terminal year of 14th plan (2026-27) and 15th Plan (2031-32) has been prepared.

1.2 Power System Planning & Development

1.2.1 CEA carries out transmission planning exercises to identify all India and regional grid systems required for evacuation, transmission and disbursement of power to load centers and also to evolve perspective transmission system plan with various technology options. System planning studies are carried out with the ultimate objective of realizing integrated system operation for economic generation dispatch on all India basis and for optimal development of National grid in a phased manner. The exercise has identified the need for increasing the inter-regional transmission capacity from its present level of 27750 MW to 67750 MW by end of 12th Plan/earlier 13th Plan. During the planning process, various studies are undertaken to provide adequate margins in transmission system for secure and reliable operation of grid and also to support open access regime.

1.2.2 The Ministry of External Affairs (MEA) entrusted to CEA with the work for verification of the price escalation bills for 220 kV Pul-E-Khumri transmission line and 220/110/20kV S/S at Kabul in Afghanistan, which was awarded to PGCIL for implementation, CEA carried out the detailed examination and scrutiny of the work.

1.2.3 CEA has rendered assistance in the preparation of the Standard Bid Document brought out by MoP for selection of Transmission Service Provider on competitive tariff bidding route identifying the

requirement of specific technical data component viz. description of the scheme, scope of works, conductor specification of transmission lines, completion target etc. At present, following eight schemes are under implementation by the Transmission service Providers selected through the bidding process. The estimated cost of these schemes is Rs. 13,185 crores.

- Scheme for enabling import of NER/ER surplus by NR (Sterlite Technologies Ltd.)
- System Strengthening in NR for import of power from North Karanpura and other projects outside NR and System Strengthening in WR for import of power from North Karanpura and other projects outside Western Region and also for projects within Western Region (Reliance Power Transmission Company Ltd)
- Talcher-II Augmentation System.(Reliance Power Transmission Company Ltd)
- System strengthening common for WR and NR (Sterlite Transmission Projects Private Ltd.)
- Transmission System Associated with Krishnapattnam UMPP- Synchronous interconnection between SR and WR (Part-B) (Consortium of Patel-Simplex- BSTRanscomm).
- System Strengthening for WR (Sterlite Transmission Projects Private Ltd.)
- Transmission system associated with IPPs of Nagapattinam / Cuddalore Area – Package A (Power Grid Corporation of India Ltd.)
- Transmission System associated with IPPs of Vemagiri Area- Package A (Power Grid Corporation of India Ltd.)

1.2.4 CEA has evolved a master plan for power evacuation system for various river basin based hydro power projects from Satluj Basin, Beas Basin, Chenab Basin and Ravi Basin in Himachal Pradesh. The master plans of Satluj Basin and Chenab basin have been reviewed and modified. Also, a master plan for power evacuation from various river basin based hydro power projects from Sarada Basin, Alaknanda Basin, Bhagarathi Basin, Yamuna Basin in Uttarakhand in Northern region was evolved by CEA. CEA has evolved a master plan for power evacuation and utilization from various hydro power projects to be developed by IPPs in Teesta and Rangit river basins in Sikkim. CEA has also evolved the master plan for evacuation system for various river basin based hydro projects from Tawang Basin, Kameng Valley, Subansiri Basin, Siang Basin, Dibang Basin and Lohit Basin in Arunachal Pradesh.

1.2.5 Power exchange modalities between India and Nepal is determined and reviewed through power exchange committee meeting held periodically under the initiative of CEA/MoP/MEA. CEA renders assistance to MoP relating to formation of interconnecting grid between SAARC countries and related issues.

1.2.6 Cross Border Power exchange is taking place between India-Bhutan. Royal Government of Bhutan (RGoB) has embarked on to harness over 10,000MW hydro power potential in its country by 2020. Under the MoU signed between RGoB and CEA relating to the preparation of National Transmission Grid

Master Plan (NTGMP) for Bhutan, CEA as a consultant has prepared and submitted the final NTGMP report to RGoB in May, 2012. The NTGMP report covers the associated transmission system for various upcoming HEP's in Bhutan, system strengthening needs within Bhutan, transmission requirements to export surplus power of Bhutan to India , etc. corresponding to 2020 and 2030 time frame.

1.2.7 PSPM division monitors the construction of transmission lines and sub-stations of 220 kV level and above being implemented in Central sector, State sector and Private sector. Transmission system includes (a) evacuation of power from UMPP generating stations and IPPs (cluster of generating stations) and (b) strengthening of transmission system to wheel power to long distance intra-regional, inter regional and international system from power surplus areas to deficit areas.

XIIth five year plan envisages addition of about 1,00,000 CKM AC and 9,440 CKM HVDC Bipole transmission lines and about 2,70,000 MVA capacity of AC sub-station and 13,000 HVDC (MW) Bipole terminal capacity. The annual target length of transmission lines and transformer capacity is discussed in annual review meetings with respective utility and Result Framework Document (RFD) target is firmed-up for ensuing financial year.

Construction progress data are collected and monthly progress reports are issued. PSPM division facilitates timely completion by rendering assistance in getting expedited the forest clearance or other clearances pending with formation of Central Government. It keeps a record of Right of Way (RoW) issues and other problems faced by the utility while implementing the project. Contingency plans are also suggested wherever needed for start up power and evacuation.

Site visits are also made for on site assessment of problems and suggesting or taking suitable action for timely completion of the system.

1.3 Grid Operation & Distribution

CEA monitors the power supply position all over the country. It also monitors all aspects of Grid Operation and Management. In order to expedite the power development in the country, CEA is facilitating formation of National Power Grid through inter-connecting all the regional grids in the country with strong inter-regional and back-up Transmission system. All the Regions except Southern Region have already been inter-connected through AC lines and operating in synchronism. Southern Region exchanges power with the neighboring regions through HVDC systems and in radial mode on 220 KV AC lines. CEA in association with the Regional Power Committees (RPCs) and Regional Load Despatch Centers (RLDCs) carries out the coordination work for integration of the regional grids by taking up and sorting out the various issues involved in the same. CEA also recommends to MoP allocation of power from unallocated quota of Central Generating Stations to meet specific requirements of the States in contingencies. CEA prepares all India Monthly Power Supply Position Report giving details of requirement, availability and shortages of various States/ Regions in this respect. It also prepares operational planning programme for the next year in the form of Load Generation Balance Report.

CEA renders technical advice to Union Territories (UTs) viz. Andaman & Nicobar Islands, Lakshadweep Islands, Dadra & Nagar Haveli, Daman & Diu, Puducherry, Chandigarh & Delhi including NDMC for over all power development in UTs. It accords technical clearance of diesel Generated base Generation, Transmission & Distribution Schemes of UTs & render technical assistance

to the UTs in project formulation, vetting of NITs/acceptance of tenders, preparation of specification for procurement of equipment, advice to UT Administration/MOP on specific technical, organizational and staff matters as and when referred to etc.

CEA also renders technical advice to Ministry of Development of North Eastern Region (DONER) for technical examination of power development schemes for North Eastern States proposed to be funded under NLCPR. It is also assisting NCRPB for preparation of report for Study Group for preparation of functional Plan for Power – 2021 for NCR area.

CEA monitors the progress of state wise village electrification, pump set energization and outages number & duration at 11 KV feeders level as well as consumer level.

CEA also renders technical advice to various utilities on distribution planning & development, issues guidelines & regulations, prepare and reviews Technical Standards for construction of Distribution Systems, identifies best practices in Distribution for adoption by other utilities etc.

CEA provides assistance to India Smart Grid Task Force and India Smart Grid Forum.

CEA reviews the prevalent metering philosophy in the country so as to introduce new metering technologies in the country such as pre-paid metering, low cost smart metering etc.

CEA provides assistance to MoP on technical matters related to Distribution of power and implementation of R-APDRP and RGGVY in the country.

CEA provides technical assistance to Ministry of New & Renewable Energy in technical matters related to implementation of renewable energy sources and their connectivity to the Grid.

CEA coordinates and monitors the works to ensure un-interrupted power supply to VVIP areas of Delhi including parliament House etc. and other VVIP related matters as and when referred to.

CEA has taken the following R&D projects on distribution:

- National Effort to Develop Technology for Custom Power Devices (STATCOM)
- Development of High Temperature Superconducting (HTS) 630KVA Distribution Transformers for application in Distribution System
- To develop a prototype of 132kV Optical Current Transformer for use in 132kV system
- Development of DVR based voltage source stabilizers for process Industry
- A study on stability & Reliability of power system with large penetration of wind power.
- Design and Development of High Temperature Superconducting Fault Current Limiter (FCL)

Standard specifications for single phase and three phase outdoor oil filled Distribution Transformers have been prepared by the Central Electricity Authority to act as Guidelines for the utilities for selection and procurement of energy efficient Transformers

1.4 Hydro and Thermal Power Development

- i) CEA carried out assessment studies of hydro-electric potential in the country and had identified feasible hydro- electric schemes for various basins. In order to accelerate the pace of hydro development, CEA has provided assistance to various central/state agencies in the matter of survey & investigation and preparation of Detailed Project Reports (DPRs). It also works for cooperation with neighbouring countries for development of water resources in their countries.
- ii) CEA having carried out hydro-electric survey in the country developed the criteria for ranking of the balance hydro sites in all the river basins in the country. As per the criteria the schemes totaling about 400 in number and aggregating to an installed capacity of 1,07,000 MW have been graded in A,B & C categories.
- iii) 162 hydro-electric projects spread in 16 states considered attractive in the ranking study have been further taken up for the purpose of preparation of Preliminary Feasibility Reports (PFRs) under the 50,000 MW initiative in the year 2003-04 by CEA as nodal agency with CPSUs/ State agencies as Consultants. The PFRs were completed in September, 2004 for all these projects with capacity of 47,930 MW.

As a follow up of preparation of PFRs, it has been decided to take up for preparation of Detailed Project Reports (DPRs) of these schemes for execution in the near future. Out of 162 schemes (47930 MW) DPRs of 36 scheme (20337 MW/ Revised capacity 18271 MW) have already been prepared and 30 scheme (8947 MW) are under Survey & Investigation for preparation of DPRs. Further, the work of preparation of DPRs, of remaining 96 schemes (18646 MW) is held up due to proposed change in Agency / Allotment by the States Govt. issues related to Environment & Forest Clearance and local Agitation.

- iv) “As per Section 73 (f) of Electricity Act, 2003, Thermal Power Monitoring Division has been assigned to closely monitor the thermal power projects under construction in the country for timely commissioning. Various milestone norms have been formulated for pro-active monitoring of the thermal projects. Regular review meetings are held with project authorities and implementing agencies besides visit to power project sites, based on which monthly/quarterly review reports are being generated, which helps the project authorities in timely completion of the project, avoiding time and cost over runs. This also assists in lowering the gestation period and help in achieving the plan target for capacity addition.

As per section 73(f) of Electricity Act, 2003, Hydro Project Monitoring Division is closely monitoring the construction of Hydro Projects in the country and assisting in their timely commissioning. Regular review meetings are held with the project developers and other stake holders to resolve the pending issues. Officers of HPM Division regularly visit the project site to have an onsite stock of the situation. Remedial measures, if necessary are suggested to mitigate various bottlenecks in achieving the milestones and thereby assisting the project authorities in avoiding time and cost overrun and also lowering the gestation period and thereby achieving the plan targets for capacity addition”.

- v) CEA is carrying out on regular basis assessment and review of various advanced technologies related to thermal generation for possible adoption giving due consideration to economics, efficiency and environmental issues. Efforts for continuous technology development /

upgradation have been made to improve the efficiency and reliability of coal based power generation and make it more eco-friendly. Coal based units of higher size (660 and 800 MW) with supercritical technology have been introduced in the country. Already supercritical units aggregating to over 6700 MW capacity have been commissioned and large numbers of supercritical units are under construction. All Ultra Mega Power Projects being implemented are necessarily to adopt supercritical technology. In the 12th plan, supercritical units are likely to constitute about 50-60% of coal based capacity addition.

In view of large capacity addition programme through supercritical units, actions have been taken to promote indigenous manufacturing of supercritical units. BHEL have entered into technology collaboration with M/s. Alstom for supercritical boilers and M/s. Siemens for supercritical turbine generators and is also augmenting its manufacturing capacity to 20,000 MW/ year including capacity of 13,500 MW/ year for large power equipment. Apart from BHEL, some of major global equipment manufacturers have set up manufacturing facilities for manufacture of supercritical boilers and turbine generators in the country by forming Joint ventures with Indian companies. Planned manufacturing capacity envisaged by these ventures is of the order of 16,000 MW/ year for supercritical boilers and 15,000 MW/ year for supercritical turbine-generators. More Joint ventures are also understood to be coming up for manufacturing of supercritical boilers and turbine generators.

In order to encourage domestic manufacturers of supercritical equipments, bulk tendering of 11 nos. 660 MW supercritical units for NTPC and DVC projects and 9 nos. 800 MW supercritical units for NTPC projects have been undertaken. These bulk orders are with mandatory requirement of indigenization of manufacturing of supercritical units as per a pre- agreed Phased Manufacturing Programme (PMP). CEA has been actively associated in the whole process and the progress of PMP would be monitored by a Committee in CEA.

- vi) CEA has constituted a standing committee for selection of sites for large coastal/Pit head and other Thermal Power Stations. The teams of the Site Selection Committee are being deputed to new sites in different States as and when request is received from the State Govt/State Utilities for assessing the feasibility of the identified sites. CEA also awarded various studies to NRSA and CMPDI for identification of large pithead and coastal sites using satellite mapping through remote sensing. Based on the report of CMPDI, NRSA and site visits by the teams of the Site Selection Committee, a large shelf of potential sites has been created.
- vii) CEA is engaged in the activity of monitoring the fly ash generation and utilization by coal/lignite based thermal power plants.
- viii) CEA closely monitors the thermal generation with respect to annual targets and any slippages occurred and reasons thereof are discussed in Quarterly action plan meetings and corrective actions planned to achieve the targets set.
- ix) **Ultra mega Power Projects (UMPPs)** - The Government has taken up an initiative for facilitating the development of Ultra Mega Power Projects (UMPP) of 4000 MW capacity each under tariff based international competitive bidding route. Project specific Shell Companies as 100% subsidiaries of Power Finance Corporation Limited are created for carrying out developmental work consisting of tie up of inputs/clearances and the bidding process for selection of developers for the UMPPs. CEA is involved in selection of sites for these UMPPs

and providing technical support to the Shell Companies for the development of UMPPs. The power generation units to be set up at UMPPs will be of Super Critical Technology to derive maximum thermal efficiency resulting in saving of fuel and reduced emissions to the atmosphere. Large size projects would lead to production of power at cheaper rate and each UMPP will cater to the power needs of more than one state.

Four UMPPs have already been awarded to the developers selected through tariff based competitive bidding. The UMPPs already awarded are Mundra UMPP in Gujarat, Sasan UMPP in MP, Krishnapatnam UMPP in AP and Talaiya UMPP in Jharkhand. Joint Monitoring Committees under the chairmanship of CEA has been constituted to monitor the progress of the UMPPs.

The UMPPs in pipelines are Bedabahal (Orissa), Cheyyur (TN) and Sarguja (Chhattisgarh). Sites have been identified for four more UMPPs to be located in Andhra Pradesh, Orissa (2 nos.) & Jharkhand. Project related studies for these sites are to be taken up. Further, site(s) for some more UMPPs to be located in various states are under investigation.

- x) A committee has been set up under the Chairmanship of Member, CEA giving recommendations to Ministry of Power for allocation of coal linkages and coal blocks based on preparedness of developers.

CEA is monitoring the development of coal blocks allotted to power utilities for captive use. Regular meetings are organized in CEA to review the progress of these captive coal blocks

- xi) CEA is carrying out planning, formulation, and implementation and monitoring of Renovation and Modernization/Life Extension (R&M/LE) programmes for thermal power stations/ units, in the country. Further, CEA is facilitating generating companies to undertake renovation & modernization of thermal power stations with focus on overall plant performance optimization through identification of optimal R&M technology options to result in substantial improvement in the efficiency, capacity and reliability in a cost effective manner. The R&M scheme of Hydro Power Stations are also being monitored.
- (xii) CEA has brought out Standard Technical Specification for Main Plant Package for coal based sub-critical thermal power plant with units of 500 MW or higher rating with a view to reduce the time for pre-award activities, design & engineering and the manufacturing by equipment manufacturers.

CEA has brought out Standard Design Criteria / Guidelines for Balance of Plant for 2x 500 MW or higher unit size thermal power stations.

- (xiii) As per tariff policy, the Central Electricity Regulatory Commission is required to notify operating norms from time to time for generation and transmission in consultation with the Central Electricity Authority. Accordingly, CEA has furnished recommendations to CERC for operation norms of coal & gas based power plants to be applicable for the period commencing from April' 2009 onwards.
- (xiv) Preparation of document on Standard Technical Features for Supercritical units has been undertaken. A Committee comprising NTPC, BHEL, power utilities, power equipment

manufacturers and consultants has been set up for the preparation of the document. The document is under finalization.

1.5 Concurrence to Hydro-electric Schemes

For Hydro Electric Projects, CEA shall accord concurrence to a scheme estimated to involve a capital expenditure exceeding such sum, as may be fixed by Central Government, from time to time under Section 8 of the Act.

Central Government had issued a notification u/s 8 of the Electricity Act, 2003 specifying the capital expenditure of hydro project for accord of concurrence by CEA, vide notification dated 18.4.2006 which is reproduced below:

S.O.550 (E) – In exercise of the powers conferred by sub-section (1) of Section 8 of the Electricity Act, 2003 (hereinafter referred to as the Act), the Central Government hereby notifies that the schemes for setting up hydro generating stations by any generating company involving an estimated capital expenditure exceeding the following sum shall be submitted for concurrence of Central Electricity Authority (hereinafter referred to as the Authority), namely:-

1. Rupees two thousand five hundred crores, provided that –
 - (a) the scheme is included in the National Electricity Plan (NEP) as notified by the Authority under sub-section (4) of Section 3 of the Act and the scheme conforms to the capacity and type (run-of-river/storage) as mentioned in the NEP; and
 - (b) the site for setting up the hydro generating station has been allocated through the transparent process of bidding in accordance with the guidelines issues by the Central Government under Section 63 of the Act.
2. Rupees five hundred crores for any other scheme not covered by clauses (a) and (b) of para 1 above.

1.6 Design & Engineering Consultancy Services and R&M

- a. CEA renders consultancy services for detailed design & engineering for thermal, hydro, load despatch & telecommunication and power system projects under execution in Central/State System Sector. It has pioneered the indigenous design and engineering of thermal, hydro and power projects. Besides, CEA has been providing state-of-art design and engineering services for the projects in neighboring countries. It also provides technical assistance to power utilities in the areas of plant performance, R&M and life up-gradation, failure investigation, retrofitting, efficiency improvement and energy auditing.
- b. The Hydro Projects for which design and Engineering services are being rendered are Rampur HEP 6x68.66 MW Himachal Pradesh/SJVNL, New Umtru HEP (2x20MW), Meghalaya/MeECL Myntdu Leshka(2x42+1x42MW), Meghalaya/MeECL Ganol SHP (3x7.5MW), Meghalaya/MeECL Tapovan Vishnugad (4x130MW),Uttarakhand/NTPC, Punatsangchhu St.-I HEP(6x200MW). Bhutan/PHPA (Neighbouring Country). Punatsangchhu St.-II HEP (6x170MW), Bhutan/PHPA Salma Dam HEP (3x14MW), Afghanistan/WAPCOS.

Thermal Power projects for which review consultancy is being rendered are 2x 600 MW Rajiv Gandhi TPP, Hissar & 1x 660 MW supercritical unit at Yamunanagar of HPGCL and 2x 600 MW Raghunathpur TPP of DVC.

1.7 Economic & Commercial Aspects of Power Sector

CEA has been entrusted with the important functions of evaluation of financial performance of SEBs and undertaking studies concerning the economic and commercial aspects of power industry, including analyzing of tariff structure and publication of data relating to Power Sector.

The officers of FS&A division have been nominated to the following Committees:

- FS& A nomination as a member of the bid Evaluation committee for section of seller/ developer for procurement of 2000MW &3000MW power under case-I competitive binding guidelines for UPPCL in Utter Pradesh.
- FS& A nomination as a member of the bid Evaluation committee for section of developer case - 2 for 2x600MW Jawahar Thermal Power Project of UPPCL in Utter Pradesh.

1.8 Technical Standards, Rules and Regulations

As per the section 177 of the Electricity Act, 2003, CEA is to make regulations consistent with the Act and the rules generally to carry out the provisions of the Act. Such regulations are to be provided for all or any of the following matters, namely:

- (a) the Grid Standards under Section 34;
- (b) suitable measures relating to safety and electric supply under section 53;
- (c) the installation and operation of meters under section 55;
- (d) the rules of procedure for transaction of business under sub-section (9) of section 70;
- (e) the technical standards for construction of electrical plants and electric lines and connectivity to the grid under clause (b) of section 73;
- (f) the form and manner in which and the time at which the State Government and licensees shall furnish statistics, returns or other information under section 74;
- (g) any other matter which is to be, or may be, specified.

The under-mentioned regulations have been notified and published in official gazette of GOI and are also available on the web-site of CEA:-

- (i) Central Electricity Authority (Installation and Operation of Meters) Regulations, 2006 – Notified on 17.3.2006.

- (ii) Central Electricity Authority (Procedure for Transaction of Business) Regulations, 2006 – Notified on 18.8.2006.
- (iii) Central Electricity Authority (Technical Standards for Connectivity to the Grid) Regulations, 2007 – Notified on 21.2.2007.
- (iv) Central Electricity Authority (furnishing of Statistics, Returns and Information) Regulations, 2007 – Notified on 10.4.2007.
- (v) Central Electricity Authority (Grid Standards for Operation & Maintenance of Transmission lines) Regulations, 2010- notified on 26.06.2010.
- (vi) Central Electricity Authority (amendment to the regulations on “Installation & Operation of meters”) regulations, 2010- notified on 26.06.2010.
- (vii) Central Electricity Authority (Measures relating to safety & Electric Supply) Regulations, 2010- notified on 24-09-2010.
- (viii) Central Electricity Authority (Technical Standards for Construction of Electric Plants and Electric Lines) regulations, 2010-notified on 20-08-2010
- (ix) Central Electricity Authority (Safety Requirements for Construction, Operation and Maintenance of Electrical Plant and Electrical Lines) Regulations, 2011-notified on 14-02.2011.

Under- mentioned Amendment regulations are under the process of previous publication: :

- (i) Central Electricity Authority (Technical Standards for Construction of Electrical Plants and Electric Lines) – Regulations 2010.
- (ii) Central Electricity Authority (Technical Standards for connectivity to the Grid)(Amendment) Regulations, 2010.

Apart from above the amendment to Central Electricity Authority (Installation & Operation of Meters) – Regulations, 2006 has been finalized and submitted to Ministry of Power for approval.

2 Services provided to each Client:

- CEA provides Consultancy in the field of Supervisory Control and Data Acquisition (SCADA) System used for real time power system monitoring & control, information system and telecommunication schemes for power sector.
- CEA carries out the processing of Power & Telecommunication Coordination Committee (PTCC) cases for Transmission Lines of 220 kV & above and assists power utilities for cases of 132 kV for getting issued the route approval for the transmission lines.
- To carry out the Techno-economic appraisal of hydroelectric power projects and accord concurrence. Well defined guidelines and procedures have been framed for appraisal of hydro projects which are made available to all the utilities.

- To provide assistance to various Central/State agencies in the matter of survey & investigation and preparation of DPRs of hydro projects. The proposals received from States/SEBs for utilizing foreign assistance for Survey & Investigation activities are also examined.
- To carry out inspection of power training institutes of various Centre Power Utilities for ensuring the development of the training infrastructure for advancing skills of personnel in the Power
- To encourage thermal power stations to generate more by keeping in view the reduction of heat rate, Secondary Fuel oil consumption, Auxiliary Power consumption resulting in improvement of their overall performance, annual awards are given to power stations. Necessary norms and criteria are in existence in CEA for all these awards.
- To encourage Power Distribution companies to improve the efficiency of electricity distribution system in their area, annual awards are given to the distribution companies to promote, encourage and recognize their efforts. Necessary norms and criteria are in existence in CEA for all these awards.
- To create an environment that would spur industries in achieving excellence in efficient end use of energy, national recognition through annual awards is given to industrial units that have made special efforts to reduce the energy consumption while maintaining their production. An Energy Conservation Award Committee is set up under the Chairmanship of Secretary (Power) for deciding the award winners. CEA is one of the members of the award committee for providing necessary administrative and technical support in the finalization of the awards. CEA is also engaged in the activity of monitoring the environmental emission parameters at thermal power stations in the country. CEA has established the baseline for CO₂ emissions from power stations in the country for availing benefits of Certified Emission Reduction (CER) under Clean Development Mechanism (CDM) and is updating the same on yearly basis.
- CEA is Advisor-cum-Consultant for implementation of accelerated power development and reforms programme for the State of Jammu & Kashmir.
- Facilitates integrated operation of Regional power grids for economic, safe and secure operation of the grids. Since the organizations in the power sector are getting corporatised and there is a trend towards accountability subsequent to the enactment of the Electricity Act, 2003, the players, particularly in the grid operation, look towards CEA, a neutral body for solving their problems in an amicable way. Government of India has already established five Regional Power Committees (RPCs) with membership from State Power Utilities, Central PSUs, Distribution Companies/Traders/Independent Power Producers (IPPs) and Central Electricity Authority. This would enable all players in the power sector to participate in evolving consensus decisions on all issues relating to economy and efficiency in the operation of the power system. The Secretariat to the RPCs is provided by CEA.
- Preparation of Regional Energy Accounts – The Secretariat of Regional Power Committees, under CEA have been carrying out Regional Energy Accounting (REA) on monthly basis and Unscheduled Interchange (UI) Energy Exchange Account and Reactive Energy on weekly basis as per Availability Based Tariff (ABT) provisions. In the monthly REA, the capacity charge and energy charges payable by each beneficiary as per schedule are indicated, according to which the bills are raised by Central Power Sector Undertakings (CPSUs). REAs also indicate the energy

exchange for inter State/inter regional power transfers. The weekly UI bills indicate the amount payable/receivable by each constituent, based on the actual over-drawal / under-drawal against the schedule by each State during every 15 minute block and the frequency dependent UI tariff during that time block.

- Advise the Ministry of Power on allocation of power from unallocated quota of Central Generating Stations to meet specific requirement of the states in contingencies, and on various other issues relating to grid management.
- Advise Regulatory Commission on tariff and grid related issues to enable them to regulate the tariff of the generating companies and Inter-state Transmission of Electricity, including the Transmission tariff.
- Advice to any State Government, licensee or the generating companies on grid related matter which shall enable them to operate and maintain the electricity system under their ownership or control in an improved manner and where necessary, in co-ordination with any other Government, licensee or the generating company owning or having the control of another electricity system.
- Assist the Union Territories and states in formulating and implementation of their electricity development schemes to carry out distribution system improvement studies and set-up a path for distribution reforms in the country. CEA also monitors the rural electrification and reduction in transmission and distribution losses.
- Examination of technical aspects of power exchange with neighbouring countries for mutual benefits is also carried out. There is regular exchange of electric power between India and Bhutan/Nepal. Also, planning and coordination activities for some projects in Nepal, Bhutan and Myanmar are presently being carried out by CEA.
- For reducing the time and cost overruns, the Government has approved a 3- stage clearance procedure for hydel projects to be executed by CPSUs in consultation with Ministry of Finance and Ministry of Environment and Forests. The proposals received from CPSUs under this procedure are appraised in CEA and concurrence accorded.
- To bring out many important Reports viz. Daily Management Information Reports (MIR), Annual Performance Review of Thermal Power Stations, Monthly overview (18 col. Report on Energy Generation Programme & PLF), Monthly Performance Review of Thermal & Hydro power stations, Monthly Summary Report on power supply position, etc. These reports are regularly sent to MOP and other Govt. Departments.
- Chief Engineer (Electrical Inspectorate), CEA is the Electrical Inspector for electrical installations of Central Government Organizations and some of the designated Union Territories/States. The Electrical Inspector is assisted by five Regional Inspectorial Organizations located in New Delhi, Mumbai, Kolkata, Chennai and Shillong. The Electrical Inspectorate performs the main function of enforcement of safety rules related to electrical installations and equipments.