1 CONCEPTUAL FRAMEWORK OF REFORM

1.1 Introduction: what is reform?

The word "Reform" has far reaching connotations encompassing a large complement of meanings to include: improvement, restructuring, modification, transformation, alteration, change, amendment, modernize, upgradation, restoration, rearrangement, and remodeling. It connotes continuous improvement and change. The reform process gives impetus to change the way business is done, think and undertake activities suiting to the situation. Reform sets the alternate approaches to doing things differently.

The evolution of mankind is a reform process in itself, so does the process of modernization. There is no sector in the world that does not change with time. The supply of Electricity has become the lifeline for the growth and development of countries. The electricity sector in the world at large initially remained in the hands of Government to ensure reaching power to the remotest corner. However, gradually many changes took place in the sector to make it viable, vibrant and responsive to consumer needs.

1.2 Rationale of Reforms:

Electric utilities in many countries have generally performed poorly. With few exceptions, power sectors in these countries have been unable to satisfy the market demand for electricity, provide a reliable supply, or supply at least cost. These failures occurred because electric utilities faced no effective competition and lacked incentives to improve efficiency. In some cases, their

operational and financial viability was guaranteed by the State through subsidies, equity injections, and debt forgiveness. Thus, they were under little pressure to cut costs and maintain efficiency. Electricity tariffs were also not adjusted adequately or in a timely manner to keep pace with changing costs, leading to poor financial performance and to accumulation of large financial deficits. Large transfers to utilities from Government budgets to cover these deficits put heavy burden on Government finances and contributed to the more general financial crisis that was experienced in the early 1980s and the late 1990s, with an increasing social impact as the drain on limited resources reduced the capacity for social investment. Thus, reform of the Power Sector was needed to solve a more general problem. These reforms took place within a wider reform and restructuring effort to move away from State ownership and centralized organization of industry to more corporate governance, private ownership, market orientation, and better regulation.

1.3 History of Power Sector in India

Electricity Generation in India began under British Rule with a demonstration of electric lighting in Calcutta on July 24, 1879. In 1897 the Government of Bengal granted an exclusive 21 year license for electricity to illuminate and power the area of Calcutta (today, Kolkata) to the Calcutta Electric Supply Corporation (CESC) Limited, which was registered in London. CESC commissioned the first power station in 1899 and sold power at one rupee per kWh—the tariff set at parity with electricity in London at that time. Electricity was quickly adopted for lighting, fans and some commercial purposes. Bombay (now Mumbai) was the second city to

electrify, and soon a number of private companies built urban power supply systems across India under franchises that allowed for reasonable rates of return and included Regulatory oversight.

After independence, the Indian economy followed a socialist path, with the State assuming an ever-larger role in economic activity. In the power sector, the Central Government created State Electricity Boards (SEBs) under The Electricity Supply Act 1948, which gradually assumed responsibility for nearly all power activities in the country. The Central Government created new State-owned corporations named National Thermal Power Corporation Ltd. for power Generation and Power Grid Corporation of India Ltd. for Transmission to supplement the capacities created by the SEBs and also to create a national grid. Over the last two decades the likes of NTPC, NHPC and PGCIL have grown to supply more than one-quarter of the Generation in the country and one-third of Transmission. The SEBs remained the primary institutions for delivering power to final consumers within the State.

India's Power Sector has grown tremendously since Independence in 1947, with installed capacity rising 8% annually to more than 143771.79 MW (CEA review of growth of Indian Electricity Sector) as on 31 Mar 2006. Despite this eighty-fold increase, per capita consumption of electricity is only 631.5 kWh per annum much lower than the world average of over 3,000 kWh/per annum.

However, the Electricity Board could not generate adequate resources to sustain the development and growth in the Power Sector owing to inadequate

tariffs, political compulsions and socialistic concerns for certain categories of consumers such as agriculture, water works, etc.

In 1991, the first phase of reforms focused on increasing investment in power Generation as there was a huge gap between demand and supply of electricity. The result was a focus on creating rules to encourage Independent Power Producers (IPPs) with attractive guaranteed rates of return. The IPPs supplied only a tiny fraction of the new Generation requirements, and the reforms left untouched the underlying fundamental weaknesses of the SEBs.

The 1991 reforms emanated from the Central Government, but the mindset of reform created the political space that allowed several States to begin structural reforms of their SEBs. The front-runner for structural reform was Orissa, one of India's poorer States. Orissa unbundled the SEB starting in 1996, and by 1998 it had created two-Generation companies, one Transmission enterprise, and four Distribution companies. By the late 1990s several other States (Haryana, Andhra Pradesh, and Rajasthan among them) began their own reforms but none has gone so far as privatising their Distribution companies; rather, they intended to reorient the existing enterprises toward commercial goals, with the eventual intent of privatising them. The wariness of privatisation was animated in part by the early disappointing results from Orissa, where financial losses as well as theft and technical losses of electricity continued to swell even after the reforms. The reform process also faced political opposition from farmers, who had come to rely on enormous quantities of low-cost electricity for pumping water, and labour unions that represented electricity workers who feared losing their jobs if the SEBs were privatised.

This second phase of reforms also included the establishment of Independent Electricity Regulatory Commissions (ERCs). Several States created ERCs from 1998 onwards under ERC Act adopted by the Central Government legislation. A primary motivation for creating independent Regulators was to introduce competition and rationalise tariffs. Due to the socialist bent of the SEBs, the tariffs for domestic and agricultural users were highly subsidised, which forced the SEBs to try to offset their losses by raising tariffs on industrial and commercial users. One of the responses has been for these large industrial users to reduce their grid purchases and build their own captive power-triggering a vicious cycle that further deteriorated SEB finances. The ERCs would vest independent technocrats with the power to set tariffs-leading to a more rational tariff structure and an industry that was financially self-sufficient and an attractive venue for private investors.

A third phase of reforms emerged at the end of the 1990s, as the Central Government attempted to coordinate a reform strategy for India as a whole. In addition to institutionalizing reform process that was underway in several States, this third phase of reform sought to improve the Distribution of electricity. This new phase of reforms aims to break this vicious circle with special central funding mechanisms such as the APDRP/APDP schemes that offset the cost of improvements that are pre-requisites for long-term viability with the Electricity Act 2003 providing the required policy and Regulatory framework for national level co-ordination of reforms.

The Central Government sought to augment their role by establishing a number of publicly owned companies that generated and transmitted power to more than one State. After suitable amendments to the Electricity (Supply)

Act of 1948, the Central Government established the National Hydroelectric Power Corp. (NHPC) in 1975 to build large hydropower projects. Because of the failure of several successive monsoons (and delays in several SEB-led projects to build generators), the Central Government was keen to exploit India's coal reserves in large plants, that could supply power to more than one State. National Thermal Power Corporation (NTPC) was incorporated in 1975 and has grown into the world's sixth largest power producer with a capacity of 26,404 MW. Fully owned by the Indian Government, NTPC is considered professional and efficient by world standards, and earns an 11.9% return on capital, which exceeds that of many world utilities. NTPC's success with its original mission has led to aggressive expansion plans for hydropower, power trading, consultancy and other operations. It is also considering entering the Distribution business.

By the 1960s, the Indian power system was set up with 5 regional synchronous grids, with their own Regional Electricity Boards and Dispatch centers. Central Utilities like NTPC built their own Transmission lines to feed Power into the SEB systems. To facilitate Transmission of power from such non-SEB generators, and with the aim of eventually creating an Integrated National Grid, in the late 1980s the Government created Power Grid Corp. of India Limited (PGCIL).

PGCIL took over NTPC's Transmission assets and assumed responsibility for all inter State power transfers. Reported to be one of the largest Transmission company in the world, with 40,000 km of Transmission lines that link one-third of the nation's generating capacity to load, it carries some 40% of the country's power.

1.4 The First Phase of Reforms

By the late 1980s the problems of the Power Sector were already overdue for remedy. The reforms launched under Prime Minister Rao in 1991 were animated by a fiscal crisis. The remedies sought were immediate. These reformers concentrated on the immediate problem of meeting the shortfall in generating capacity. The Government also hoped that private investors would flood into the market and provide an efficient and inexpensive alternative to the SEBs.

The Electricity Laws (Amendment) Act of 1991 changed the 1948 Electricity (Supply) Act to allow private generators to operate on a costs-plus model with their tariffs regulated by the CEA. The Central Government set tariff rules that would be particularly attractive to investors, with a guaranteed 16% return on equity (after tax) and full repatriation of profits in dollars.

To jump-start the process the Government awarded "fast track" status to eight projects (many with foreign participation), promising rapid clearances and Central Government repayment guarantees that would help assuage investors who feared dealing with SEBs (the customers for most bulk power). Most of these project both those on fast track and the normal projects included a cost plus Power Purchase Agreement (PPA) between the operator and one SEB.

Ironically, although this first wave of reforms focused on private Generation, during the second half the 1990s when the fruits of this reform should have ripened, growth in public sector capacity was actually more than twice that of

privately owned generators. In addition to limited success to attract new capacity, this first wave of reforms yielded electricity from private plants that was expensive than that from the incumbents' plants and even more expensive than power from new plants built by State-owned enterprises.

1.5 The Second Phase – Initiatives from States

As the Central Government focused on attracting private generators through the IPP mechanism, several States in parallel sought to remedy the crux of the problem: the SEBs. Their goal was to make SEBs more efficient (ideally self-sustaining) entities. The Central Government did not have a strategy for addressing the problems with the SEBs, and no single idea emerged to dominate the State-level reform efforts.

1.6 Independent Regulation

Although much of the attention to the State-level restructuring has focused on unbundling and the controversies surrounding privatization, a key innovation was the creation and empowerment of independent Regulators. Aware of the need for independent regulation and the plethora of potentially inconsistent State led efforts; in 1996 the Ministry of Power convened a conference of Chief Ministers to reach a consensus on a national reform strategy. This led to the Electricity Regulatory Commissions Act (1998), which provided a legal basis for Regulatory Commissions, and allowed States that hadn't already independently created legislation for Regulatory authorities to establish their own ERCs. The State led efforts and then the Central response culminated in the creation of a new class of Governmental

entities that have aspired to meet several key attributes, such as, Independence, Jurisdiction Powers, Constitutions & Qualification.

1.7 New Role for the Centre – Beginning of the Third Phase

Many States that engaged in reforms followed a myriad of different paths. Virtually all States that have pursued reform have started with creation of a Regulatory Commission and unbundling of the functions of the SEB into Generation, Transmission and Distribution. While the State level reforms always had a focus towards improving the operations of the SEBs, recent reforms have focused in particular on improving the function of Distribution.

Although the focus on Distribution emerged from the States, the Centre rapidly assumed a dominant role.

Through its control over financing, the Central Government has considerable leeway over the States. Throughout the 1990s the Central Government did not ignore the needed reforms at the State level in particular in Distribution but its efforts proved ineffective. It, often through the Regulatory Commissions, set broad, sweeping mandates such as universal metering and universal service, and offered no strategy for achieving the goals. Starting in 2000, shortly after the Central Electricity Regulatory Commission commenced operations, the Central Government focused its goals on a series of measurable outcomes, and it backed the effort with a new funding mechanism in 2000-01 the Accelerated Power Development and Reform Program (APDRP) that rewards the States with the best performance.

The prime mover behind APDRP was financial. Funding associated with APDRP is extremely high about Rs. 1000 Crores as on October'04, half in grants and half in loans. APDRP transformed the economy of reforms, lifting short-term obstacles of financing and offering visible incentives to the States who sought reform.

As of middle 2003, the Central Government had signed Memoranda of Understanding (MoUs) with 22 of India's 28 States in each, the State pledges a commitment to creation of a Regulatory Commission, full metering of electricity supplied to final Distribution rings, timely payment of subsidies and other key actions. In return, the Central Government supplies increased output from central power stations, financing, upgrades to inter-state Transmission lines and sundry other benefits. The Central Government has promised to match (with funds) any savings that the States realized through reducing theft. In addition to this, the States face the ERCs, who will set tariffs such that if the utilities do not improve performance, they will face operating losses, and the likelihood of not being bailed out as in the past.

A keystone to APDRP is measurement and ranking of performance on a series of indicators related to improvements in Transmission and Distribution, installation of meters, and institutional reform, apart from emphasis on financial results. Simple and transparent measures are intended to make it easier to allocate resources according to true performance, thus creating a competition between States and incentives for innovation.

The style of this newer phase of reforms is markedly different from the Central Government's earlier attempts at reform. There are pervasive efforts

to engage a wide range of stakeholders through public hearings, web posting of information, and media outreach campaigns, although the legislation for these reforms do not actually require such aggressive public participation. Despite the Central Government's enthusiastic embrace of reform, it proved difficult to achieve the central goal i.e. to supplant the incremental and scattered reforms with a comprehensive Electricity Reform Act. The Central Government initiated such efforts in 2001 when a proposed comprehensive Electricity Bill; all though initially stalled in Parliament, the bill finally passed in 2003 (the "Electricity Act 2003").

The Indian Power System has undergone widespread reform since 1991. Initial attempts at increasing capacity without reforming the underlying SEB structure proved to be insufficient, necessitating reforms to disassemble the SEBs and empower Independent Regulators. The States were given free rein to choose their modes of reform with some choosing to privatize Distribution, some simply unbundling the SEBs, There has been a large variation in the performance of the States and reforms alone do not indicate success in terms of loss reduction or efficiency. The main factor in explaining outcomes is the ability of the State Governments to implement reform (or operational improvement) plans and the strength of their institutions.

Throughout the reforms the role of the State did not diminish significantly; rather, the main change in the State's role was in separating key functions (e.g., setting tariffs) from the SEBs/State Government and handing them to Regulators. All though the role of the private sector remains quite limited; in general, performance in the sector has improved (in some States and

segments of the Power System the improvement is dramatic), but most of the improvements stem from transparency and rationalization of charges and incentives.

In recent years, Regulators have resisted large increases for commercial and industrial users, and the new Electricity Act (2003) makes it easier for them to "exit" the system through greater use of captive power hence, provides the SEBs to operate efficiently. Central and State Regulators operate with a clear mandate to reduce cross subsidies, introduce competition, operational efficiency and discipline in their respective domains of jurisdiction.

Electricity sector, being on the concurrent list, is subject to State level policies. The provisions of the Electricity Act 2003 also require initiatives from State level bodies, the SEBs and the State Governments, to be able to achieve any kind of success as promised by the Act.

1.8 The Electricity Act 2003 – A Step in Right Direction

The Indian Government passed the Electricity Act 2003 in June-2003. The Act, long in making, aims to change fundamentally the Power System through greater competitive participation. Driven by the Central Government, it supplants many of the earlier laws.

The Act does not directly establish a power market; rather, it encourages Regulators to come up with markets for power trading (Section 66). It also doesn't give details on how this is to be achieved (e.g., roles for Independent System Operators).

Regulatory Commissions would be allowed to license Transmission, Distribution and electricity trading for periods up to 25 years in an attempt to empower Regulators to create the conditions for a market. The bill seeks to limit monopoly powers, in part by requiring advance approval for sales, mergers, and takeovers of entities within the same jurisdiction (State) and in part by stating that no licenses would be exclusive within a region. The Regulatory bodies remain in charge of tariff decisions (bulk and retail) and have a firm mandate to reduce the required subsidies and cross-subsidies and various special surcharges that are pervasive in the power system today. However, the Act recognizes that these cannot be removed overnight, and empowers the ERCs to make decisions on appropriate surcharges and fees for wheeling and captive power Transmission.

To promote private sector participation and induce competition, Generation is being de-licensed and captive Generation is being freely permitted. Also group of consumers are allowed to exercise choice to purchase power directly from a generating company or such intermediaries as trader or Distribution companies. To facilitate the same, the Act provides for Open Access to Transmission/Distribution systems of the incumbent licensees. This proposal to provide a direct contact between the generator and the consumers should provide a strong incentive for the SEBs to improve efficiencies so as to retain their customers. Further, to augment the availability of power, Captive Power Plants (CPPs) have been freely allowed. The provisions of the act also allow the CPPs to make third party sale of power through Open Access. It may also be possible for industrial units to cluster up and set up a CPP. This will act towards limiting the tariff that can be levied for supply to such customers.

To reduce subsidies and cross-subsidies, the Act provides that if the Government wants to explicitly subsidize a class of consumers, it would have to pay the licensee, in advance. To streamline and ease review of Regulatory decisions, the Act seeks to create an Appellate Tribunal to hear appeals against orders of adjudicating officers or the respective Regulatory Commission. This is similar to what was done for the telecom industry, and clarifies how Commission orders should be challenged without channeling all these cases to the Supreme or High Court.

In all, the Act provides to introduce competition in all segments of the power sector. Introduction of competition will put pressure on the State power utilities to reform and improve efficiencies. This will induce the reorganization of the sector on commercial terms. However, the Act does not recommend any specific model and provides the flexibility to choose the best-suited model.

The salient features of the Electricity Act-2003 are as under:

1.9 Impact of Existing Framework

- IE Act, ES Act and ERC Act would stand repealed (Sec 185(1))
- EB 03 supercedes existing State Acts to the extent inconsistent (Sec 185(3))
- Suitable provision to factor for existing arrangements – licenses / Commissions etc. to be protected for defined period (Sec 14)
- State Governments had a 6 month window from "appointed date" for which period they can avoid the provisions of this Act (Section 172(d));

1.10 Policy Initiatives

- GoI has outlined a National Electricity Policy including a tariff policy to ensure maximum utilization of natural resources like coal and natural gas (Sec 3)
- CEA would prepare a National Electricity Plan every 5 years, which would be a key element for Regulatory Commissions in Generation & tariff plan (Sec 3)
- GoI outlines policy for (Sec 3,5):
  - Stand-alone systems for rural areas
  - Rural Electrification including local management thereof
  - Promoting co-Generation & renewable energy sources

1.11 Provisions Related to Generation

- Thermal Generation de-licensed subject to meeting technical standards (Sec 7)
- Hydel Generation with capital investment in excess of specified limits would require CEA clearance (Sec 8)
- Captive Generation now permitted without approval (Sec 9)
- Joint ownership by various consumers through co-op societies qualified as captives (Sec 9)
- Captives allowed open access subject to Transmission constraint determined by CTU/STU, with Commission as adjudicator (Sec 9)
- Generating companies can supply electricity to any licensee subject to availability of Transmission (Sec 42)

- Generating companies can supply electricity to any consumer subject to wheeling charges and surcharge for cross subsidy (Sec 42)
- Appropriate Government can direct Genco to operate as per its directions under "extraordinary circumstances", and the appropriate commission can offset any adverse financial impact arising there from (Sec 11)
- Electricity Act Ss 61, 62 empowers Commission to regulate tariff for direct sale to licensees
- Tariff obtained through the bidding process shall not be reviewed by the commission (S-63)
- Consumers who are permitted open access can enter into an agreement for supply or purchase of electricity under mutually agreed terms (S-49)

1.12 Provisions related to T & D

- Licenses required for Transmission, Distribution or trading (Sec 12)
- Provision for exemption from license for local bodies (Sec 13)
- Deemed licenses for (Sec 14):
  - Existing licensees till end of license period
  - Government Departments
  - DVC
  - CTU/STU
  - Government Companies
- Old License conditions of existing licensees valid for max of 1 year, after which new license conditions would apply (Sec 14)

- Acquisition of the utility of another licensee requires permission from Commission, if within same State (Sec 17(1))
- Assignment of license only with approval of Commission (Sec 17(3))
- Provisions for suspension, modification or revoking of licenses (Sec 19)
- On revocation, Commission may direct a sale of utility free from encumbrances (!) at bid-out value. (Sec 20 & 21)
- No exclusivity in Distribution area; provision of multiple Distribution licenses for same area (Sec 14)
- Distribution license to a new applicant seeking to duplicate network cannot be rejected except for reasons of inability to comply with Capital Adequacy, credit-worthiness or code of conduct (Sec 14)
- Distribution license permits trading as well (Sec 14)
  - Trading margin is regulated (Sec 86)
- For Generation & Distribution in rural area notified by State Government no license required (Sec 14)
- Licenses for a period of 25 years (Sec 15)
- Intervening Transmission lines to be permitted open access to other licensees subject to capacity availability, at rates mutually agreed or as specified by Commission (Sec 35,36)
- Open access of Transmission lines of CTU/STU/Transmission licensee to (Sec 38,39):
  - Any licensee or generating company on payment of Transmission charges

  - Any consumer when State Commission provides open access on payment of Transmission charges & a surcharge (towards meeting cross-subsidy requirements)
  - Any Captive Generation Plants on payment of Transmission charges without any surcharge for cross subsidy.
- State Commission to specify manner, period for reduction & elimination of cross subsidy & surcharge (Sec 38)
- No surcharge to be levied on captive Generation (Sec 38)
- Other business allowed for optimum asset utilization subject to prior intimation to the Commission (Sec 41);
  - No encumbrance of asset is permitted.
- Transmission Licensee cannot enter into business of trading electricity. (Sec 41)
- State Commission to specify, within one year of appointed date, the extent & phasing of open access, wheeling charges including surcharges for cross-subsidies (Sec 42)
- Open Access allowed before elimination of cross subsidy on payment of surcharge in addition to wheeling charges. (Sec 42)
- No surcharge for usage of open access by captive Generation units. (Sec 42)
- Consumers may be allowed to choose supply as per policy by Commission, subject to surcharge towards fixed cost of licensee whose assets are being used (Sec 42)

1.13 Distribution Licensing

- Mandatory supply of power / provision of electrical lines within 1 month of application (Sec 43)
- Grievance redressal mechanism in Company with an appeal to an Ombudsman to be designated by Commission (Sec 42)
- Security Deposit to attract Bank rate or higher (Sec 47)
- Provision similar to Transmission for other business
- Compulsory metering by licensee within 2 years of notified date (Sec 55)
- No License required for Franchisee under Distribution license (S-14(7))

1.14 Regulatory

- Tariff to be based on (Sec 61)
  - National Electricity policy & tariff policy
  - Multi-year tariff
  - Efficiency promotion through incentives
  - Progressive reduction of cross-subsidies
  - Promotion of co-Generation and non-renewable usages
- Tariff obtained through bid process not to be reviewed by Commission (Sec 63)
- Subsidy payment in advance by State Government for concession to come into effect (Sec 65)

1.15 The provision for pricing of Electricity include:

- Generation cost;
- Cost of Transmission from generating stations to the grid
- Transmission costs
  - Net work charges including losses in energy at relevant voltage level
- Distribution Costs
  - Net work charges including losses in energy at relevant voltage level
- Supply costs
- Cross subsidy element - Wheeling surcharge S. 42(2)
- Additional Charge – fixed charges. S. 42(4)
- Charges incurred specifically for a person
- Distribution Licensee:
  - Retail Tariff includes all components
- Direct Sale by Generating Company & Trading Company
  - Purchase Price to be settled with Consumer- purchaser;
  - Retail sale subject to Commission's tariff regulations;
  - Wheeling Charges, Wheeling Surcharge and Additional Surcharge (to meet the fixed cost) to be paid (Section 42). Special Expenses also to be paid.
- Captive Generation and Use
  - Wheeling Charges & Additional Charges. No surcharge.
- Existing CERC /SERC personnel may continue till end of term (Sec 82)

- Provision for Advisory Committee at State / Centre by Commissions for policy advice (Sec 87)
- Provision of independence in financing from Government by creating an ERC Fund, to which grants, fees etc. would flow (Sec 79,86)
- Provision of Appellate Tribunal similar to a civil court for hearing appeals against Commission's orders, after which appeal only to Supreme Court (Sec 111,120,125)
- Special Courts for speedy trial of payment offences can be set up by State Governments (Sec 153)
- Penalty recovery as if it were arrears in land revenue (Sec 170)
- Coordination Forum for Commission and regulated bodies (Sec 166(1))
- Forum of Regulators of Chairpersons of Central and State Commissions (Sec 166(2))

Thus in nutshell the Electricity Act – 2003 provides for the following:

- The Act 2003 envisages unbundling of the entities
- It requires separation of trading and Transmission
- The Act brings following challenges:
  - Open access for Transmission (1 year)
  - Open access for Distribution (5 years)
  - Generating company - NO CEA approval
  - Provision for multiple licenses for Transmission and Distribution
  - Tariff reflects cost of supply

- Power trading - A distinct activity
- Concept of Distribution franchisees

Electricity Industry has thus become focal point for Reforms and Restructuring mandated through Government legislations.