



India's Electricity Act, 2003 Implications for Regional Electricity Trade

Volume I

September 2004

Prepared by



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Prepared for

USAID SARI/Energy Program

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Acronyms

Act	Electricity Act, 2003
ABT	Availability Based Tariff
AG&SP	Accelerated Generation & Supply Programme
ATIL	Amalgamated Transpower Ltd.
CAS	Crisil Advisory Services
CEA	Central Electricity Authority
CERC	Central Electricity Regulatory Commission.
CTU	Central Transmission Utility
DISCOM	Distribution Company
ERC	Electricity Regulatory Commission Act, 1998
ESA-1948	Electricity (Supply) Act, 1948
GENCO	Generating Company
IEGC	Indian Electricity Grid Code
IE-1910	Indian Electricity Act, 1910
IPO	Initial Public Offering
IPP	Independent Power Producer
HVDC	High Voltage Direct Current
Hz	Hertz
UI	unscheduled interchange
kWh	Kilowatt hours
MW	Mega Watt
NHPC	National Hydro-Electric Power Corporation
LDC	National Load Dispatch Center
NTPC	National Thermal Power Corporation
PGCIL	Power Grid Corporation of India Ltd.
PLF	Plant load Factor
PPA	Power Purchase Agreement
PTC	Power Trading Corporation of India Ltd.
RBI	Reserve Bank of India
REB	Regional Electricity Board
RETPL	Reliance Energy Trading Private Ltd.
RLDCs	Regional Load Dispatch Center
ROCE	Return on Equity Employed
ROE	Return on Equity
SEBs	State Electricity Boards
SERCs	State Electricity Regulatory Commission
STUs	State Transmission Utilities
TA	Target Availability
UI	Unscheduled Interchange

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Executive Summary

With the enactment of the Electricity Act, 2003 in June 2003, India initiated a much-needed statutory overhaul of its power sector. In doing so, the Act provides all countries in South Asia with an example of the type of reforms necessary for establishing an open, competitive market for power trading. The Act is directed at institutional and regulatory reforms for inter-state and intra-state power trading within India. In addition, the fundamentals of power trading – such as licensing electricity traders and ensuring open, non-discriminatory access to transmission services – have been put into place that allow for expanding opportunities in all markets, including cross-border trading between India and neighboring countries. As energy trading becomes widespread in India, it is only a matter of time before licensed power traders (especially companies with affiliated offshore oil and gas resources) will utilize market forces to expand the opportunities for trading and exchanging power utilizing hydropower and natural gas resources located in Nepal, Bhutan, Bangladesh, and Sri Lanka.

By consolidating and replacing legislation on electricity that has been heavily amended on a piecemeal basis over the past 50 years, the Act has introduced significant changes in industry structure by moving from a single-buyer market to a multiple-buyer and multiple-seller system. The regulatory regime has been made more flexible, with a multi-year approach and without requiring the regulatory commissions to follow rate-of-return regulations. The Act brings some needed clarity to the roles of different organizations, provides for better financial management of the regulatory commissions, and puts in place some time-bounded targets for licensees and for the restructuring of India's electricity industry.

This report summarizes the salient features and provides an assessment of the Act prepared by the Center for Energy, Petroleum and Minerals. It also relates how the Act has been interpreted and implemented in its first year as a result of major Orders issued by India's Central Electricity Regulatory Commission. Recommendations by the Task Force on Power Sector Investments and Reforms directed at ensuring the development of an open and competitive market for generating, transmitting, distributing, and trading electricity within India are also included. The reforms that have been proposed for designing a power market supported by open transmission access allow for electricity trading to be implemented to provide new energy resources, including cross-border power trading.

Although India embarked on widespread reform of its energy sector in 1991, most of the progress had been on a piecemeal basis implemented through Ministry of Power guidelines, policies, and decisions. By 2001, it was clear that the 1910 Indian Electricity Act, the 1948 Electricity (Supply) Act, and their numerous amendments, which provided the legal basis for regulating and implementing the energy sector, required a re-codification or wholesale revision. A statutory overhaul of the power sector was needed for the Government of India, through the Ministry of Power and regulators at the central and state levels, to be able to effectively simplify procedures, curtail delays, reduce transaction costs, check the multiplicity of government agencies, and provide oversight. Resistance to legal and regulatory reform was strong it was necessary to overcome the vested interests of government-owned entities in the power sector. Thus, it took some three years of debate before the draft Electricity Bill 2000 was enacted as the Electricity Act, 2003 (36 of 2003, effective June 10, 2003).

The Act provides for establishing energy trading in an open, competitive market. By ensuring open transmission access and licensing qualified electricity traders, it provides the legal basis for expanding opportunities for cross-border energy trade in the region. The following sections are key for the South Asia Regional Initiative/ Energy (SARI/Energy):

- *Authority for Electricity Trading: Clause 14* – On application, under Section 15, Central Electricity Regulatory Commission (CERC) or a State Electricity Regulatory Commission (SERC) may grant a license valid for 25 years (unless revoked) to any person “to undertake trading in electricity as an electricity trader”; and
 - *Section 52*: CERC to specify technical requirements, capital adequacy requirements and credit worthiness for being an electricity trader; and
 - *Section 79*: CERC to fix the trading margin for inter-state trading of electricity, if considered necessary.

Within the first several months of enactment of the Act, CERC approved or considered several licenses to undertake power trading, including:

- Power Trading Corporation of India Ltd. (PTC) – Petition No. 29/2003, Hearing Date: July 17, 2003; Order issued July 22, 2003;
- Amalgamated Transpower (I) Ltd. (ATIL) – Petition No. 30/2003, Hearing Date: July 17, 2003; Order issued August 28, 2003; and
- Reliance Energy Trading Private Limited (RETPL) – Petition No. 39/2003, Hearing Date: September 15, 2003; Order issued September 17, 2003.

The Act distinguishes trading according to geographical activity: inter-state trading license and intra-state trading license. Trading involves both the purchase and resale of electricity by the same person. The sale or purchase of electricity alone does not qualify as trading. Parties excluded from electricity trading include the National Load Dispatch Center (NLDC), Regional Load Dispatch Centers (RLDCs), State Load Dispatch Centers (SLDCs), the Central Transmission Utility (CTU), and State Transmission Utilities (STUs).

The Act does not specifically distinguish cross-border trade from inter-state and intra-state trading. Regional trade has been historically limited to small amounts of power exchange between India and Nepal (although in 2005 the Tala Project in Bhutan will provide a significant, albeit subsidized, cross-border power project). However, it is likely that energy traders will challenge the agency authority that was granted to PTC prior to the Act's date of effectiveness. As energy trading becomes widespread in India, it should be expected that licensed power traders (especially companies with affiliated offshore oil and gas resources) will utilize market forces to expand the opportunities for trading the hydropower and natural gas resources in Nepal, Bhutan, Bangladesh, and Sri Lanka.

This report brings together the tariff, open access, and market development issues spawned by the Act that most affect whether and how cross-border power trade and exchange can be increased among India and its neighboring SARI/Energy countries. Selected CERC concept papers and Orders since June 2003 are abstracted to provide an overview of the present status of regulating energy trading under the Act. The report also describes implementation of the Act under recommendations of the Task Force on Power Sector Investment and Reforms, which assessed the Act in a report issued in February 2004.

1.1 Pre-2003 – Legislative Framework

Prior to the Act, the power sector in India was governed by three important laws: the Indian Electricity Act, 1910; the Electricity (Supply) Act, 1948; and the Electricity Regulatory Commission (ERC) Act, 1998. The key features of each are as follows¹:

The Indian Electricity Act, 1910 provided the basic framework for electric supply industry in India:

- Growth through private licensees with license provided by state government;
- Provision for license for supply of electricity in a specified area; legal framework for laying down of wires, and other works; and
- Provision for laying down relationship between licensee and consumer.

The Electricity (Supply) Act, 1948 mandated creation of SEBs:

- Need for the state to step in (through SEBs) to extend electrification (so far limited to cities) all across the country.

The Electricity Regulatory Commission Act, 1998 set up CERC/SERC with powers to determine tariffs:

- Constituted SERC option for states; and
- Distanced government from tariff setting process.

1.2 Rationale for Change in Legislative Framework

The key reasons for devising new legislation governing the power sector are to harmonize and rationalize provisions in the existing laws to:

- Create a competitive environment that would result in enhancing quality and reliability of supply to consumers;
- Distance regulatory responsibilities of the government;
- Obviate the need for individual states to enact their own reform laws;

¹ This background and tables of salient features were abstracted from "Report of the Task Force on Power Sector Investment Reforms", Volume 1, Ministry of Power (February 2004) at 75-83.

- Introduce newer concepts, such like power trading, open access, and an appellate tribunal; and
- Provide special provisions for rural areas.

1.3 Key Objectives of the Electricity Act 2003

The objectives of the Act are to:

- Consolidate the laws relating to generation, transmission, distribution, trading, and use of electricity and establish measures conducive to development of the entire electricity industry;
- Promote competition in the industry;
- Protect the interest of consumers, including rationalization of the electricity tariff; and supply of electricity to all areas,
- Ensure transparent policies regarding subsidies;
- Promote efficient and environmentally benign policies; and
- Constitute a Central Electricity Authority (CEA), regulatory commissions, and establish an appellate tribunal.

1.3 Salient Features Of The Electricity Act 2003

The salient features of the Act are described in the following sections.

1.3.1 Role of Government

Section Number	Salient Features
Section 3	Central government to prepare the National Electricity Policy and tariff policy.
Section 4	Central government to develop the National Policy for rural areas in consultation with states.
Section 5	Central government to formulate National Policy in consultation with states for the bulk purchase of power and management of local distribution through user associations, etc.
Sections 107, 108	Central/state governments to guide appropriate commission in matters of policy involving public interest.

1.3.2 Licensing

Section Number	Salient Features
Section 12	License for transmission, distribution, and trading is mandatory.
Section 14	Appropriate commission to grant license; Appropriate commission may grant distribution license to two or more persons within the same area; No license required for generation and distribution of electricity in rural area notified by state government.

1.3.3 Generation

Section Number	Salient Features
Section 7	Free from licensing; and Requirement of techno-economic clearance for thermal generation removed.
Section 8	Concurrence of CEA required for hydro projects with capital expenditure exceeding limit fixed by central government. Necessary due to concern of dam safety and inter-state issues.
Section 9	Captive generation set up by any person for his own use or by any co-operative society of association of persons for use of its members free from controls; Open access to captive generation subject to availability of transmission facility; and Surcharge not applicable for captive generation.
Section 86 (1)(e)	Generation from non-conventional sources / co-generation to be promoted; and Minimum percentage of purchase of power from renewable sources to be prescribed by regulatory commissions.

1.3.4 Transmission

Section Number	Salient Features
Sections 12, 15 (5) (b)	License required to transmit electricity; and Private transmission companies to be licensed by the appropriate commission after considering the views of the transmission utility.
Sections 26, 27, 31 38, 39	Load dispatch to be managed by a government company /organization; and Flexibility regarding keeping transmission utility and load dispatch together or separating them.
Sections 38-40	Open access to transmission lines to be provided to distribution licensees and generation companies; Provision of surcharge to recover current level of cross subsidies; Surcharge transitional till the cross subsidies are eliminated; and Transmission utility at center and state to manage and develop transmission system.
Sections 27, 31, 38, 39, 41	Load dispatch center/transmission utility/transmission licensee not to trade in power.

1.3.5 Distribution

Section Number	Salient Features
Sections 12, 14	License required for distribution; Distribution licensee free to take up generation; and Appropriate commission may grant license to two or more persons for distribution of electricity through their own distribution system.
Section 42	Open access in distribution to be allowed by SERC in phases; State commission shall, not later than 5 years, provide open access to all consumers where the maximum power consumed exceeds 1 MW; In addition to wheeling charges provision for surcharge to cover current level of cross subsidy; and Surcharge transitional till the cross subsidies are eliminated.
Section 62	Retail tariff to be determined by regulatory commission.
Section 55	No supply of electricity after two years from the appointed date except through appropriate meters.

1.3.6 Trading

Section Number	Salient Features
Section 12	Trading recognized as a distinct activity; and License required for trading.
Section 66	Regulatory commission to promote development of market including trading.
Sections 79(1) (j), 86 (1)(j)	Regulatory commission may fix ceiling on trading margin.

1.3.7 Regulatory Commissions

Section Number	Salient Features
Sections 38(d)(2), 39(d)(2)	Specify open access at distribution; and Specify the surcharge for meeting the current level of cross subsidy that is to be reduced gradually.
Section 42(2)	Introduce open access in phases and with conditions to be specified in a year from the appointed date.
Section 82	SERC mandatory; Constitution of SERC within 6 months from the appointed date; SERC to have not more than three members; and Chairman and members of the SERC to be appointed by the state government on the recommendations of the selection committee.
Section 83	

Section 86	<p>The key functions of the SERCs include:</p> <p>Determine the tariff for generation, supply, transmission, and wheeling of electricity (wholesale, bulk, or retail);</p> <p>If open access has been permitted to a category of consumers, SERC to determine only the wheeling charges and surcharge thereon;</p> <p>Regulate electricity purchase and procurement process of distribution licensees including the price of power procured through agreements for purchase of power;</p> <p>Facilitate intra-state transmission and wheeling of electricity;</p> <p>Issue licenses to persons seeking to act as transmission licensees, distribution licensees, and electricity traders with respect to their operations within the state;</p> <p>Promote cogeneration and generation of electricity from renewable sources of energy;</p> <p>Adjudicate upon the disputes between the licensees and generating companies and to refer any dispute for arbitration;</p> <p>Levy fee for the purposes of the Electricity Act, 2003;</p> <p>Specify State Grid Code consistent with the Grid Code;</p> <p>Specify or enforce standards with respect to quality, continuity and reliability of service by licensees;</p> <p>Fix the trading margin in the intra-state trading of electricity, if considered, necessary; and</p> <p>Discharge such other functions as may be assigned to it under the Electricity Act, 2003.</p>
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1.3.8 Tariff Issues

Section Number	Salient Features
Section 61	<p>Consumer tariff to progressively reduce cross subsidy and move towards the actual cost of supply; and</p> <p>Regulatory commissions to undertake regulation including determination of multi-year tariff principles.</p>
Section 62	<p>Regulatory commission to determine tariffs for:</p> <ul style="list-style-type: none"> ▪ Supply of electricity by generating company to distribution licensee; ▪ Transmission of electricity; ▪ Wheeling of electricity; and ▪ Retail sale of electricity. <p>Regulatory commission to determine tariff for supply of electricity by generating company on long / medium term contracts;</p> <p>No tariff fixation if tariff determined through competitive bidding or where consumers, on being allowed open access enter into agreement with generators / traders; and</p> <p>Regulatory Commission to consider cost of generation, transmission and distribution separately.</p>
Section 65	<p>State government to provide subsidy in advance through the budget for specified target groups, if tariff is required to be lower than that determined by regulatory commission.</p>

1.3.9 Dispute Resolution

Section Number	Salient Features
Section 11	Appellate tribunal to hear appeals against the orders of CERC/SERC.
Section 121	Appellate tribunal may issue orders to any appropriate commission for performance of its statutory functions.
Section 125	Appeals against the order of the appellate tribunal to be placed before the Supreme Court.
Section 143	Appropriate commission may appoint any of its members to be an adjudicating officer for holding an inquiry; and Adjudicating officer has the power to summon and enforce the attendance of any person.
Section 158	In case of any dispute directed under the Electricity Act, 2003 to be determined by arbitration, it would be determined by such persons nominated by the appropriate commission; and In all other respects, arbitration shall be subject to the Arbitration and Conciliation Act, 1996.

1.3.9.1 Other Issues

1.3.9.2 Role of Central Electricity Authority (CEA)

Section Number	Salient Features
Section 70	To continue as the main technical advisor of Government of India/state government with the responsibility of overall planning.
Section 72	To specify safety standards.
Section 73	Technical advisor to CERC as well as SERCs; and Specify technical standards for electrical plants and electrical lines.

1.3.9.3 Restructuring of State Electricity Boards (SEBs)

Section Number	Salient Features
Section 131	Provision for transfer scheme to create one or more companies from SEB.
Section 167	State government may continue with SEB as state transmission utility and generation company and distribution company.

1.3.9.4 Consumer Protection

Section Number	Salient Features
Section 57	Appropriate commission to specify standards of performance of licensees; and In case of non-compliance by licensees, in addition to the penalty/prosecution, licensee to pay compensation as determined by the appropriate commission.

1.3.9.5 Anti-Theft Provisions

Section Number	Salient Features
Section 135	Theft of electricity/electricity lines and materials punishable with imprisonment for a term that may extend to three years or with fine or both; and Any officer authorized in this behalf by the state government may enter, inspect any place in which he has a reason to believe that electricity has been or is being used without authority.

1.4 Implications for Regional Energy Trade

With its provisions for energy trading and open access, the Electricity Act, 2003 provides the underpinning for increasing regional energy trade in South Asia. Although the Act does not directly address cross-border electricity trade (which has been insignificant in the past), it serves as the statutory framework to rationalize the power sector of India, the major buyer and seller of cross-border power in the region. Only limited exchanges currently take place: 50-150 MW has been exchanged between Nepal and India since 1991, and two hydroelectric power projects in Bhutan are selling power under bilateral contracts executed with Power Trading Corporation of India Ltd. (PTC). For regional energy trade to expand, there must be effective electricity market regulation developed throughout South Asia. For India, the basis of such market regulation, including cross-border electricity trading, is provided by the Act.

Similar legislation is needed in the neighboring countries of Nepal, Bhutan, Bangladesh, and Sri Lanka that is compatible with relevant provisions of the Act and consistent with the principles of an effective regional electricity market, including:²

- There should be a fully independent and properly resourced regulator of the system, whose duties are:
 - Reducing costs and prices;
 - Reducing emissions of pollutants (including greenhouse gases);
 - Minimizing the risk of system disruption;
 - Avoiding 'boom and bust' cycles in the electricity market; and
 - Developing and promoting innovative energy technologies.
- Electricity system pricing should be fully cost reflective with no cross-subsidies from one part of the system to another.
- Power generation and supply companies should have no ownership or management interest in the transmission and distribution network.
- All generators of electricity should have fair and non-discriminatory access to the grid.
 - Use of transmission and distribution networks should be priced according to the services they provide:
 - Any benefits that generators provide to the system (e.g., voltage and frequency support, grid reliability and stability, reduction in transmission and distribution losses, and

² The generalized principles adapted in this Section are representative of the lessons learned in other regions and were developed by the World Alliance for Decentralized Energy (Scotland UK) as the "Seven Guiding Principles for Effective Electricity Market Regulation" (June 2003).

reduced requirements for 'spinning reserve') should be fully and fairly reflected in system pricing;

- Equally, generators should not be excessively charged for their system impacts; charges should fairly and transparently reflect system impact and no more.
- Utilities should be required to engage in cost benefit analysis that can enable decentralized energy (cogeneration and renewables) to be developed in areas where its local benefits outweigh the costs of constructing or upgrading new distribution facilities.
- The electricity system should be subject to market based instruments, for example, emissions trading, energy taxation, and out-put based standards that fully reflect energy conversion efficiencies and internalize environmental costs of energy conversion.

1.5 Impact On Cross-Border Electricity Trade by PTC with Nepal and Bhutan

Presently, only limited cross-border electricity trading by India takes place with Nepal and Bhutan through PTC. In its Initial Public Offering (IPO) statement issued in March 2004, PTC acknowledged that its operating position is strengthened by being designated through letters issued by Ministry of External Affairs and Ministry of Power as the nodal agency for dealing with inter-country transactions between India and Nepal and Bhutan.

As stated in PTC's Public Offering Prospectus (March 2004):

- "Exchange of power with neighboring countries is another distinct activity with high potential for development, as India is the biggest market in the region, while Nepal and Bhutan are blessed with ample water resources, and Bangladesh with gas reserves. Regional co-operation is already underway to a limited extent, with purchase of surplus power from 336 MW Chukha Project and 60 MW Kurichhu Power Project in Bhutan by us for sale to utilities in the Eastern Region.
- PTC has entered into an agreement with Kurichhu Hydroelectric Power Project, Bhutan, for purchase of 60 MW power from them till March 31, 2027 (for a period of about 25 years). Back to back, PTC has entered into sale of this power to West Bengal SEB, DVC and Eastern Regional Electricity Board. The sale agreement for the same has been entered into for a period of 15 years. Similarly, in the case of Chukha Hydroelectric Project, PTC has entered into purchase agreement for 336 MW of power, which is valid till March 31, 2017 (for about 15 years). The sale agreement for the same has been entered into with Bihar SEB, Jharkhand SEB, West Bengal SEB, Grid Corporation of Orissa Ltd., Power Department of Sikkim and Eastern Regional Electricity Board for 5 years.
- As per the terms of the agreement, all the above agreements are extendable beyond the initial duration of the agreement as the parties may mutually agree. Since the purchase tariff from both these hydro projects are competitive, PTC has deliberately entered into a shorter period sale agreements with the off-takers to minimize the risk so that in case of delay/default in payment, PTC may advise Member Secretary, Eastern Region Electricity Board (EREB) to reallocate the share of the defaulting state to some other state, which will be willing to avail of these cheap sources of power.
- The 1020 MW Tala project in Bhutan, due to be commissioned by the middle of the year 2005, will provide India an opportunity for purchase of the entire power generation. Similarly, in the case Nepal, presently exchanges take place at 21 points on the Indo-Nepal

border. The 144 MW Kaligandaki project has been partly commissioned and that would make Nepal a surplus State.”

The contribution of cross-border trade to sales during the period ending 31 December 2003 was about **2.52%** in terms of value, as shown in Table 1.

Table 1-1: PTC's Regional Trading Volumes (Rs. in Lacs) 2001-1003

Regions	Till 31 Dec 2003	2002-2003	2001-2002	2000-2001
Purchase	166143	88246	34902	1139
North	36209	39265	4813	1100
South	7905	2530	-----	-----
East	82599	24178	14614	-----
West	9045	15850	15475	39
North East	5467	-----	----	-----
<i>Cross-Border</i>	24918	6422	-----	-----
Sales	169986	90038	35403	1139
North	47961	47362	19965	-----
South	9577	6379	9498	39
East	21384	6626	-----	-----
West	81515	29660	5940	1100
North East	5259	-----	-----	-----
<i>Cross-Border</i> 4289	11	-----	-----	-----

* Reimport, subsidy from MINISTRY OF EXTERNAL AFFAIRS
Source: PTC Red Herring Prospectus

Governmental Letter Approvals

The Electricity (Supply) Act, 1948, which was repealed by the 2003 Act, did not require any license to undertake trading in electricity. Under the 2003 Act, any person who undertakes trading in electricity requires a license to trade power. Since PTC was created to conduct the business of trading in electricity, it applied for a license to CERC under the terms of the Act. In response to PTC's application, CERC, by an Order dated July 22, 2003, permitted PTC to continue its trading activity in the manner undertaken by PTC prior to the enactment of the Act. However, this permission was granted only until December 31, 2003 as at the time of PTC's initial application the rules and forms for the license were in the process of being framed. Before the expiration of the December 31, 2003 permit, PTC applied to the CERC for an extension to enable it to continue with its trading activity. However, CERC, in an Order dated December 29, 2003, noted that the draft regulations stating the terms and conditions for the grant of the license in inter-state trading had already been drafted and were in the process of being finalized. PTC was directed by the CERC to file another application for grant of the license by January 31, 2004 in accordance with the regulations to be notified by the CERC. In the meantime, CERC stated in its Order dated December 29, 2003 that PTC may, if so advised, continue to undertake its trading activity in electricity for a period up to March 31, 2004, at its own risk.

The final regulations for the grant of license were posted by CERC on January 30, 2004, and PTC submitted a re-application for grant of a license under the Act. In the meantime, PTC continued with its trading activity under the December 29, 2003 CERC Order. Except for the above, PTC maintains in its prospectus, there are no other major approvals from any government

authority or Reserve Bank of India (RBI) that are required to undertake and continue its trading activities.

Besides its license application to CERC, PTC supported its authority to undertake cross-border transactions by the three letter permissions described below:

Table 1-2

Description	Issuing Authority	Date/Validity	Contents and Remarks
Letter dated July 4, 2001	Ministry of External Affairs, New Delhi	Effective from July 2, 2001	Vide this letter, the Government of India appointed PTC as the nodal agency to deal with matters relating to the exchange of power between India and Nepal.
Letter dated February 11, 2002	Ministry of Power	Effective from March 1, 2002	Vide this letter, the Ministry has transferred operations with respect to the sale and purchase of the Chukhah and Kurichu power to PTC from Power Grid.
Letter dated May 26, 2003	Ministry of External Affairs, New Delhi	Effective from May 26, 2003	Vide this letter, the Ministry has transferred the financial transactions on the Chukha Project to PTC from Power Grid and has designated PTC as the nodal agency for dealing with inter-country transactions, which are namely Nepal and Bhutan.

Source: PTC's IPO (March 2004)

PTC as the Nodal Agency for Cross-Border Trading

Under the Allocation of Business Rules, 1961 and accompanying schedules (see relevant subsections numbered below that define specific responsibilities), the Government of India's business is transacted through specified departments that are coordinated through the cabinet secretariat and allocated among the various ministries. For the purposes of cross-border power trading, these include:

- *Ministry of External Affairs* – Responsible for (1) external affairs and, among others, (2) relations with foreign states, (16) relations with states in special treaty relations with India such as Bhutan, (29) foreign jurisdiction, and (37) all matters relating to loans and credits to Nepal, Bhutan, and Bangladesh, and
- *Ministry of Power* – Responsible for, among others, (1) general policy in the electric power sector and issues relating to energy policy and coordination thereof, (4) administration of the Indian Electricity Act, 2003), (5) all matters relating to Central Electricity Authority, Central Electricity Board, and Central Electricity Regulatory Commission, and (7)(n) matters relating to the Power Trading Corporation of India Limited.

As noted above, PTC has based its designation as the nodal agency for power trade with Nepal and Bhutan on the three letters issued by Ministry of External Affairs and Ministry of Power. The meaning and relevance of being the designated nodal agency for power trade with Nepal and Bhutan is unclear. There have been many nodal agency designations made by the Ministries. The definition and exclusivity of this designation varies from a central coordination function to full responsibility for implementation of an activity. It is unknown what definitive duties were allocated to PTC in the Ministry of External Affairs and Ministry of Power letters issued prior to the Act (if different than as summarized by PTC in the table above). Although the Act defines electricity licensing in geographical areas terms that are either inter-state or intra-

state, cross-border trading presumably falls within the Act (or could, by amendment, regulation, or otherwise). If so, since CERC has authority to issue licenses to more than one trader for a given geographical area, and in the spirit the Act to promote electricity trading in an open, competitive market, the continued strength and exclusivity previously granted to PTC prior to the Act is questionable³. It must be assumed that this is reason that in PTC's re-application to CERC for grant of a license for inter-state trading (February 20, 2004), as part of its proposed approach and methodology, PTC indicated that its plans to continue development of markets in trading of short-term surplus power, future trading from projects under development, and trade with neighboring countries:

“The Company is already trading in power from Chukha (336 MW) and Kurichhu (60 MW) hydro-electric projects located in Bhutan under long-term contracts (15 years and 25 years duration, respectively). In addition, the Company has been designated by the GOI [Government of India] as the nodal agency for power exchanges with Nepal. Both Bhutan and Nepal have significant untapped hydro potential and limited domestic demand. India being the biggest market in the region, projects can be developed in these countries for serving the Indian market. To this end, the 1020 MW Tala HEP [Hydro-Electric Project] in Bhutan, due to be commissioned by mid-2005 will also provide power under a long-term arrangement with PPA [Power Purchase Agreement]. Similarly, the 750 MW West Seti project in Nepal will provide significant peaking power capacity to Northern Region states in India. PTC has already initialed the PPA with the developers of the West Seti PPA.”

As additional support regarding the role of cross-bordering electricity trading under the Act, PTC's Director of Operations presented “Cross-Border Trade in Power” – downloadable from the PTC website (www.ptcindia.com) – in October 2003 at a conference co-sponsored by PTC – The Power Market Post Electricity Act 2003: Entities, Business Models and Implications. As additional support for challenging the role of PTC as the sole entity responsible for cross-border trading as the Act is used to open up power markets, it is notable that Reliance Energy has recently filed an application that questions Power Grid Corporation of India Ltd.'s (PGCIL's) monopoly over rights in transmission in view of the open, competitive power sector now established in India. In its application, Reliance Energy supported its application to build, own, and operate four transmission lines in Maharashtra by asking “Why should Power Grid decide who should enter transmission?”⁴

³ Another reason why other prospective energy traders might challenge any exclusive licensing to PTC under the Act, by virtue of its nodal agency designation, relates to the increasing private shareholder stake in PTC. PTC's original shareholders were government-owned entities (PGCIL, NTPC, PFC, and NHPC). As a private company, PTC subsequently added as shareholders Tata Power Company, Damodar Valley Corporation, Industrial Development Bank of India, Infrastructure Development Finance Company, Life Insurance Corporation of India, IFCI, GIC and, in March 2004, IPO shares for 5.84 crore shares.

⁴ “Reliance Energy Takes on PGCIL”, Business Standard (August 18, 2004).

Section 2 of this report presents a review of the Act prepared by Dr. Subhes C. Bhattacharyya of the Center for Energy, Petroleum and Mineral Law and Policy (CEPMLP), Dundee University, Scotland, UK (November 2003).

The Electricity Act 2003, which has come to force in India since mid-June 2003, consolidates and replaces a number of older legislations on electricity. The Act has introduced significant changes in industry structure by moving from a single-buyer market to a multi-buyer multi-seller system. The regulatory regime has been made flexible, with a multi-year approach and without requiring the regulatory commissions to follow rate-of-return regulations. The Act brings clarity to the roles of different organizations and provides for better financial management of the regulatory commissions. The penal provisions for dishonest use of electricity have been tightened and special courts are created to provide speedy justice. The Act puts in place some time bound targets for licensees and for the restructuring of the electricity industry. This is a review of the changes brought about by the new Act and an analysis of their economic rationale.

2.1 Introduction

With effect from 2nd June, 2003 India has adopted a new legislation called the Electricity Act 2003⁵ to replace some age-old existing legislation on electricity operating in the country. The new Act consolidates the position of the existing laws and aims to provide for measures conducive to development of the electricity industry in the country. The Act has attempted to address certain issues that have prevented or slowed down the reform process in the country and consequently, has generated new hope in the electricity industry. This review of the Act is intended to highlight how the new features are different from the existing legal provisions and whether these measures have economic rationale.

The organization of the paper is as follows: section 2.2 discusses the existing industry structure and the structure envisaged in the new Act. Section 2.3 discusses the roles of different organizations involved in the electricity sector, while section 2.4 discusses the tariff-related provisions of the Act. Section 2.5 covers a number of other areas such as licensing, consumer protection and finally the last section contains some concluding remarks.

2.2 Industry Structure

2.2.1 Early Developments

The development of electricity industry in India was fashioned by two legislations, namely the Indian Electricity Act, 1910 (IE-1910) and the Electricity (Supply) Act, 1948 (ESA-1948). The IE-1910 introduced the licensing system in the electricity industry while ES-1948 was responsible for greater state involvement in the industry. IE-1910 was introduced at a time when the electricity supply industry was fragmented and mostly concentrated in urban areas. The industry at this phase was highly competitive and the Act attempted to instill some cohesion in the industry by introducing licensing mechanism and promoting safety standards.

⁵ Annex 1 is a copy of the Act.

The ESA-1948 promoted a state-owned, vertically integrated structure of electricity industry through the creation of the State Electricity Boards (SEB). The industry passed through a phase of nationalization of licensee businesses. SEBs were responsible for generation, transmission and distribution of electricity within the geographical limits of a state. Where SEBs were not set up, a government department was responsible for the electricity supply. It is worthwhile to mention that electricity comes under the concurrent list of responsibilities in the Indian Constitution and both the state and central governments can exercise legislative powers in this area.

While the electricity supply industry made significant progresses under the SEB regime, a number of problems appeared due to poor financial health of SEBs. These problems were addressed through amendments to the ESA-1948 and IE-1910, thereby bringing incremental changes to the system. In the 1970s, the ESA-1948 was amended to allow participation of the central government in the power generation through large-scale projects that serve more than one states. These big projects were mostly outside the financial capability of individual state governments and the central participation led to the creation of successful generating companies like National Thermal Power Corporation (NTPC) and National Hydro-Electric Power Corporation (NHPC).⁶ This helped in reducing the gap between supply and demand to some extent. The industry structure remained vertically integrated, with some part of generation coming from central-sector projects. Captive power generation was allowed as well under certain circumstances with a view to reduce supply-demand gaps.

In the early 1990s, private participation in the generation was allowed, again through amendments to the IE-1910 and ESA-1948. The Independent Power Producers (IPPs) were allowed attractive terms to set up power stations but they had to work with the vertically integrated SEBs. IPPs entered into power purchasing agreements with the SEBs but as there were few bankable SEBs, IPPs tended to flock to the better performing SEBs. The credible commitments of the SEBs were limited by their earning capacity and soon it was noticed that SEBs are entering into a trap, where they would not be able to keep their commitments.

In the mid-1990s, some states took the initiative to restructure their electricity supply industry through promulgation of reform acts. These reform acts chartered restructuring of the state's electricity industry by de-integrating the SEBs into separate generation, transmission and distribution companies. Generation segment was considered as potentially competitive and kept outside the purview of the regulatory supervision. Transmission and distribution are considered as monopolistic activities within the geographic area and regulated businesses. Licensing was chosen as the form of regulatory control and rate of return regulation was introduced. All the reform acts introduced a single buyer model, where the transmission and bulk supply licensee acts as the buyer of all electricity produced by the generators and sell electricity to the distribution and retain supply licensees for further supply and distribution. Transmission and bulk supply was controlled by a single company while a number of distribution companies were introduced having monopoly supply rights in their area of supply. A regulatory commission was set up in each state to oversee and regulate the electricity supply industry in these states.

This was followed by a central act called the Electricity Regulatory Commission Act, 1998 (ERC-1998). Although this is a new piece of legislation, its scope was limited to install an independent regulatory set up at the central level and state level, without each state requiring its own legislation and without any prior restructuring of the electricity supply industry.

⁶ NTPC stands for National Thermal Power Corporation and NHPC stands for National Hydro Power Corporation.

But there was a growing realization that these incremental changes are not helpful in managing, regulating and co-coordinating the developments of the electricity industry in India. In 2000, a first attempt was made to consolidate the existing acts and to prepare a new legislative framework to stimulate further growth. The debate over the draft continued for quite sometime and a new draft was prepared by the Ministry of Power. After much debate and discussion, the draft got parliamentary approval. The Act received President's ascent on May 26, 2003 and was published in the Official Gazette on June 2nd, from which date it became effective.

2.3 Industry Structure As Envisaged In The Electricity Act, 2003

The Act has made an attempt to create a multi-buyer, multi-seller system of some sort without introducing a balancing system and provided for some retail competition by allowing them choice of supply to certain consumers. This is somewhat different from the previous structure followed in India.

2.3.1 Generation

Electricity generation has been made a non-licensed activity⁷ and the techno-economic clearance from the Central Electricity Authority (CEA) has been done away with for any power plant, except hydroelectric power stations above a certain amount of capital investment.⁸ The generators can sell electricity to any licensees⁹ or where allowed by the state regulatory commissions, to consumers directly. The provision of direct sale of electricity by the generators, when and where allowed, would promote more IPP participation in the power generation, as these consumers are more creditworthy and bankable compared to many SEBs. However, the Act provides for imposition of a surcharge by the regulatory body to compensate for some loss in cross-subsidy revenue to the SEBs due to this direct sale of electricity by generators to the consumers.

In addition, no restriction is placed on setting up of captive power plant by any consumer or group of consumers for their own consumption.¹⁰ Earlier, captive power generation required approval from the SEB (exercising regulatory power) or the regulatory commission. The ESA-1948 required the decisions on captive power to be based on two considerations: whether the SEB could supply the power at a cheaper rate than it costs to the consumer to produce and whether the SEB could ensure the supply of required volume at the desired time. Removal of restriction on captive generation acts as a real threat to maintaining cross-subsidies, as many such creamy customers would find it cheaper to set up their own captive stations. In the states where reform was initiated earlier, the commissions have allowed captive power to come up relatively freely. This Act frees big consumers in other areas as well from the monopoly supply of the boards or licensees. The Act protects the captive generation from paying any surcharge on wheeling of power, which provides financial incentive to large consumers to set up their own captive generation and exit the grid. Even relatively small consumers who are subjected to cross-subsidy may find it beneficial to set up co-operatives or associations for the purpose of setting captive power plants as allowed in the Act. However, sale of excess power to third parties would require approval of the appropriate commission.¹¹

While removal of entry barriers to captive generation is likely to erode the cross-subsidy base of the electric utilities and thereby exert pressure to reduce the level of cross-subsidies in tariffs,

⁷ See Section 7 of the Act.

⁸ Section 8 deals with this. The Act does not specify the limit but leaves it to the central government to specify it by notification.

⁹ Section 10(2) allows this but under Sections 38(1), 39(1) and 41, transmission licensees are not allowed to trade electricity, implying purchase of electricity for reselling.

¹⁰ See Section 9.

¹¹ See Section 9.

promotion of captive power is likely to result in sub-optimal use of resources and systems. This generally results due to reliability concerns of the entire system, economy of scale and scope of operation and inappropriate technology selection for captive power plant, etc. Proliferation of grid-connected captive power plants could also lead to system instability, difficulties in grid management and energy accounting and increase in related disputes.

Although entry barriers to the generation segment have been removed, the regulatory commissions would determine the tariff for sale of generated electricity to any distribution licensee.¹² The Central Commission has the jurisdiction over generating stations in the central sector and those stations catering to more than one state. The state commissions have jurisdiction over generating stations within the state boundaries, except those under the central commission's jurisdiction. These provisions are quite similar to those existed under the ERC-1998 and take care of the diverse nature of generating companies operating in the country. The projects selected through competitive bidding have been protected through a provision that requires the commissions to adopt tariffs as determined through the bidding process. For others, the commission would determine the tariff following national electricity policy and tariff policy and on the basis of guiding criteria specified in the Act.

Regulation of generation tariff is not compatible with the idea of creating a competitive electricity generation market. The prevalent system is bureaucratic in nature and the new Act would maintain the same. Moreover, the existing system of differential treatment of central sector, state sector and private sector generation is not logical and creates market distortion. While the tariff policy would elaborate on the tariff determination method, there is no promise that the new system would be much different from the present, which has provided wrong signals to generators.

2.3.2 Transmission

Transmission, both at the inter-state and intra-state levels, is a regulated activity requiring a license.¹³ The Act prohibits a transmission utility to undertake generation¹⁴ or trading.¹⁵ This provision is quite contrary to the state reform acts, where the state transmission utility performs both the functions of transmitter and bulk supplier. This condition helps avoiding conflict of interest in transmission and supply activities but as this condition is in contradiction with the state reform acts, the state transmission utilities of those states where the reform Act is in operation would have to undertake necessary changes to rectify the contradiction.

In line with the provisions of the earlier acts, the Act requires the central government to designate one government company as the Central Transmission Utility (CTU), which would be deemed as a transmission licensee. Similarly, each state government would designate one government company as state transmission utility (STU), which would also be deemed as a transmission licensee. Each transmission licensee would normally enjoy monopoly over a geographical service area but the Act allows for licensing more than one utility in the same service area subject to the condition that the central government can specify additional requirements before granting a license.¹⁶ Allowing more than one license could result in duplication of assets that may be underutilized, resulting in an inefficient use of resources and producing a desirable outcome.

¹² See Section 62(1)(a).

¹³ See Section 12(a).

¹⁴ This restriction applies only to central transmission utility, as per Section 38(1).

¹⁵ Trading is restricted for all transmission licensees or deemed transmission licensees such as central transmission utility and state transmission utilities. See Sections 38(1), 39(1), and 41.

¹⁶ Proviso to Section 14 of the Act.

The CTU and STU shall be responsible for transmission of electricity, planning and co-ordination of transmission system, provision of non-discriminatory open-access to any users and development of a co-ordinated, efficient and integrated inters-state and intra-state transmission system respectively. This provision allows the state to play a significant role in the planning and development of the transmission system. State-ownership of at least part of the transmission business leaves room for government control and interference in the electricity business.

While the Act requires the licensee to provide open access to the grid by any other licensee or generators¹⁷, the Act does not address the issue of ensuring fair and efficient use of transmission capacity by different users. However, an appropriate commission may direct any transmission licensee to allow use of any excess capacity by another licensee on payment of fees and charges either mutually agreed or set by the commission.

A transmission licensee can engage in other businesses by intimating the Commission. A part of the revenues from such other businesses may be required to reduce the transmission charges but the transmission business shall not be required to subsidize the other business. Separate accounts have to be maintained for each business.

2.3.3 Trading

The Act specifies trading as a licensed activity¹⁸ but provides little detail about traders' functions. Trading has been defined as purchase of electricity for resale. This could involve wholesale supply (i.e. purchasing power from generators and selling to the distribution licensees) or retail supply (i.e. purchasing from generators or distribution licensees for sale to end consumers). As the Act does not make distinction between distribution and retail supply, it is not clear whether a licensed trader would require a distribution license for retail supply.

Trading was not recognized as a separate activity in the previous acts and its separation at least from the functions of a transmission licensee is a step in the right direction.

2.3.4 Distribution and Retail Supply

The Act does not make any distinction between distribution and retail supply of electricity. It appears that distribution has been considered to imply both distribution and supply activities. Distribution is a licensed activity and distribution licensees are allowed to undertake trading without any separate license. Thus a distribution licensee can undertake three activities: trading, distribution and supply through one license. The reason for combining these three activities in a license is not clear. A distribution licensee is also allowed to carry out distribution activity in its area of supply through an agent, who does not require a license. The licensee is responsible for the functioning of the agent. This new provision is somewhat awkward, as it leaves room for misuse.

The Act provides for progressive introduction of retail competition in electricity supply but leaves the timing and degree of such competition to the discretion of the state commissions.¹⁹ This new provision coupled with fairly easy entry to captive power would imply that the commissions would have little option but to allow choice to large consumers, at least. This is expected to set in competition among generators to search for consumers, by-passing the unhealthy distribution licensees. Generators could sale electricity to consumers at a mutually agreed rate, which lies outside the scope of tariff regulation by the commission.

¹⁷ See Sections 38(2)(d), 39(2)(d), and 40(c).

¹⁸ Section 12(c).

¹⁹ Section 42(2).

2.3.5 Unregulated Rural Markets

The licensing requirement does not apply for generation and distribution of power in notified rural areas²⁰ but the supplier has to comply with the requirements specified by the CEA. It is understood that this exclusion aims at promoting rural electrification. This provision makes certain rural markets outside the purview of the regulatory regime and would create regulated and unregulated electricity markets in the country. The Act does not specify any market structure for such rural areas and it does not appear to prohibit vertically integrated monopolies to operate in such areas. It is not clear who will monitor the supplier in the unregulated rural market and how the consumers would be protected.²¹

2.4 Roles Of Key Organizations And Players

The Act retains the existing organizations created under the previous acts and streamlines some of their functions to bring more effective operation of the electric power system. In addition, the Act has created a few new organizations such as an appellate tribunal and special courts. It also clarifies the role of governments (central and state) in the functioning of the power sector. This section examines the clarity of roles of different players as outlined in the Act.

2.4.1 Central and State Governments

The Act reserves a significant involvement of the central government in the functioning of the power sector. It has been assigned a number of duties, including plan and policy formulation and approval, rule making, appointing/establishing designating/authority, prescribing duties and other tasks, funding, and issuing directions.

On the policy front, the central government is responsible for preparing, publishing and revising the following in consultation with the state government:²²

- National electricity policy and tariff policy;
- National policy for stand-alone systems for rural areas based on renewable and non-conventional energy sources;
- National policy for rural electrification and local distribution in rural areas.

²⁰ Provison to Section 14.

²¹ It is likely that the rural electrification policy paper would deal with these issues.

²² See Sections 2, 4, and 5 of the Act.

It is also responsible for approving the national electricity plan prepared by the CEA every five years. The central government can issue written policy directions to the CEA and CERC on matters of public interest.²³ It is also empowered to issue directions in case of joint commissions where the participants ask it to issue such directions or the participants fail to reach an agreement among themselves about such directions.²⁴ The tariff policy is an area that led to a lot of litigation and confusion under the earlier regime. The Act now places the responsibility of formulating the tariff policy on the central government²⁵, and the commissions have to take the guidelines into consideration for fixing the tariff.²⁶

The central government appoints the chairperson and members of the Central Electricity Regulatory Commission (CERC), the CEA, and the Appellate Tribunal.²⁷ It also decides on their salary and allowances. It approves the appointment of the secretary of the CEA, and provides the requisite staff and employees to the appellate tribunal. The central government is also responsible for suspending a member of the CERC and appellate tribunal on grounds of misbehavior. The members of the appellate tribunal, including the chairperson can submit their resignation to the central government. The central government designates a CTU and establishes the National Load Dispatch Center (NLDC), Regional Load Dispatch Centers (RLDC), the Appellate Tribunal, the Coordination Forum, and the Regulators' Forum.²⁸ It has the power to vest the property of a CTU in a company or companies and decides on the jurisdiction of benches of the appellate tribunal. It prescribes the duties and functions of the CEA, NLDC and RLDC, and can make rules on a wide range of areas and has the power to remove difficulties through issue of orders within two years of commencement of the Act.²⁹ It also has the power to amend the schedule of states where reform acts continue to be applicable, except where they are inconsistent with this Act.

The central government provides loans and grants to the central commission and decides on other sources of funds for the commission. It decides how the commission should spend all its revenues and specifies the manner the accounts should be maintained. The central commission is required to send its audited accounts to the central government.

It is responsible for inter alia: a) specifying additional requirements for granting more than one distribution licensee;³⁰ b) providing no-objection certificates for granting license if the service area includes central government installations such as cantonment, aerodrome, defense area, etc.;³¹ c) demarcating the country into transmission regions for the purpose of inter-state transmission; d) issuing guidelines for transparent bidding process; e) approving the salary and benefits of the employees of the CEA, CERC and appellate tribunal;³² f) referring cases to the tribunal for removal of members on the ground of misbehavior; and g) prescribing the procedures for inquiry into misbehavior by members.

The state government has relatively less statutory role. It exercises appointing/designating powers, provides funds and makes rules/ notifications, etc. It appoints the members of the state

²³ See Section 107 of the Act.

²⁴ See Section 109(b) of the Act.

²⁵ See Section 3(2).

²⁶ See Section 61(j).

²⁷ Refer to Sections 76(6), 70(4), and 113(2) and 113(3).

²⁸ See Section 38(1) for cm, 26(1) for NLDC, Section 27(1) for RLDC, Section 110 for Appellate Tribunal, Sections 166(2) and 166(4) for regulators forum and coordination forum.

²⁹ See Section 176.

³⁰ See Sections 14 and 176(2)(b).

³¹ Section 12.

³² Sections 70, 89, 115, and 119.

regulatory commission including the chairman, approves the terms and conditions of appointment of the secretary to the commission and other staff, and can remove or suspend a member.³³ It is also responsible for constituting the selection committee for appointing members of the state commission.

It establishes the SLDC, notifies the STU, vests property of STU in companies, draws up reorganization of the SEB through acquiring its assets and re-vests it through a transfer scheme.³⁴ It can also transfer employees through a transfer scheme. It is empowered to constitute special courts, and state coordination forum.

The state government creates the state ERC fund and can provide loan or grants for running the ERC. It decides how the ERC should utilize the fund and how it should maintain accounts. The state government can also provide subsidy to consumers, but the Act requires it to compensate the licensee in advance by the amount of loss expected to be suffered by the licensee in implementing the subsidy.

The state government notifies rural areas where exemption of license conditions would apply, resolves disputes over public place (assembling more than 100 persons) and issues directions to the commission on public interest issues. It can decide not to apply the provisions of this Act for a certain period.

Learning from the past experience, the Act has provided more clarity in defining certain roles of the government and removing difficulties faced with earlier acts. For example, under the earlier acts, funding of electricity commissions became a serious issue. Certain SERCs saw their activities severely affected due to inadequate funding either due to poor financial health of the state government or due to political vindictiveness of the government. All fees collected by the commissions went to the government and payments from the government were often less than the fees received. Creation of an ERC fund³⁵ where all the contributions of the government and all other income are collected and from where all expenses are made should prove beneficial to the ERCs.

Another novelty of the Act is the requirement of advance payment of subsidy compensation by the state governments willing to provide some subsidy to any class of consumers.³⁶ The earlier acts required a promise of compensation from the state government, which proved to be inadequate as many state governments did not keep their promises. The new requirement is likely to discourage state governments to provide large subsidies.

A particular problem with the previous acts was with the interpretation of policy directives. Governments have the power to issue policy directives to the commissions or the CEA and at times there were differences in opinion as to whether they are really policy directives or not. The Act now makes it clear that the government would be the authority to decide on this issue and such directives should not be inconsistent with the intent of the Act. However, governments may misuse this authority to impose their unjust wishes on the commission.

2.4.2 Central Electricity Authority (CEA)

The Central Electricity Authority (CEA) was an agency created under the ESA-1948 and the present Act retains the agency by relegating it mostly to a consultative role. There was some

³³ Sections 82(5), 89, and 90.

³⁴ See Sections 31 for SLDC, 39(1) for STU, 131 for transfer scheme related to reorganization of the SEB.

³⁵ See Sections 99 and 103 of the Act.

³⁶ Section 65.

overlap of duties and power between the central commission and the CEA in the earlier period, which the Act has now removed. The technical clearance required for power projects by the ESA-1948, which made CEA a powerful agency and created a technocratic system, has been eliminated, except for hydro projects above a certain capital investment. It will now be responsible for formulating short-term and perspective plans, co-coordinating activities of planning agencies, and specifying technical standards for safe and sound operation of the power system. It would advise the central government on plan and policy issues and the commissions and others on technical issues. The CEA is responsible for preparing a national electricity plan every 5 years and shall seek central government's approval on the plan.

Partly because of its powerful legacy and partly because of its expertise in the Indian power system, CEA was perhaps retained in the new Act. There was a lot of debate over the issue and ultimately CEA managed to bargain for a statutory position, with an elaborate set-up, quite similar to the one existed under ESA-1948. But the justification for such a set-up with reduced duties is not quite clear.

Regional Electricity Boards created under the ESA-1948 have been abolished. Instead the Act refers to Regional Power Committees but does not elaborate on their constitution, duties and functions.

2.4.3 Commissions

The Act retains the two-level regulatory system for the power sector. The Central Electricity Regulatory Commission (CERC) would be responsible for regulating tariff of generating stations owned by the central government, or those involved in generating or supplying in more than one states, and regulating inter-state transmission of electricity. The state commissions, on the other hand, regulate intra-state transmission and supply of electricity within the jurisdiction of each state. The commissions would have quasi-judicial powers as before and the Act provides protection to members against any arbitrary removal.

As mentioned earlier, the funding arrangement for the commissions has been modified, thereby improving the prospects for better financial independence of the commissions. Moreover, the condition attached to grant of subsidy to consumers would help improve independence of the commissions in respect of tariff determination. However, the commissions would have to respect policy directives of the governments and the possibility of conflicts arising from politically motivated directions cannot be ruled out. Similarly, the selection process may not prevent politically motivated appointments to the commissioner's position, as the Act does not require any check on this account. This has been reported to be a problem in some cases under the earlier acts.

2.4.4 Appellate Tribunal

This is a new organization created by the present Act to deal with appeals against the orders of the commissions or adjudicating officers set up by the commissions in settling disputes.³⁷ Earlier the High Court was the appellate authority and they have dealt with most of the cases quite logically. The Appellate Tribunal would help reduce the burden on the High Courts and should settle the disputes more expeditiously.³⁸ The tribunal would possess certain amount sector specific expertise, which should help in discharging its duties better than a High Court. The orders of the tribunal can be challenged in the Supreme Court by the aggrieved party. The Act however does not specify any funding mechanism for the Appellate Tribunal.

³⁷ See Sections 110 and 111.

³⁸ The Act specifies a time limit of 180 days for the Tribunal to dispose of the appeal.

2.4.5 Load Dispatch Centers

The Act has created a three-tier load dispatching system, namely a National Load Dispatch Center (NLDC), Regional Load Dispatch Centers (RLDC) and State Load Dispatch Centers (SLDC). RLDC and SLDC were already existed under the earlier Act but there was some confusion about their power and organizational hierarchy. The present Act has attempted to resolve the problem. The load dispatch centers are now separate government companies and they should not participate in trading or generation of electricity. The functional separation of the transmission and system operation activities would instill confidence among all participants. The RLDCs and SLDCs would be responsible for ensuring integrated system operation, monitoring of grid operations, maintaining of accounts of electricity transmission, and collection of charges and fees at the regional and state levels, respectively. They shall follow the guidelines and procedures set up by the appropriate commission but will have powers to issue directions to any participants to the grid for ensuring efficient and safe operation of the grid. They are also empowered to impose fines on the violators of its directions.

2.4.6 Special Courts

To try offences like theft of electricity or electrical lines and equipment, the Act empowers the state governments to establish special courts with single judges for certain area or areas.³⁹ Such courts shall have jurisdiction over the specified area and all cases relating to offences under this Act shall be tried by the special court only. Other courts of that area shall transfer the cases to the special court. The special court shall try the offence in a summary way but if in the course of the examination it considers that it is undesirable to try in a summary way, the court can call for witnesses and re-hear them. The special court can order a sentence up to a five-year term.

The special court shall determine the civil liability against a consumer or a person in terms of monetary value of theft of energy and this shall not be less than two times the tariff rate applicable for 12 month period prior to the detection of the theft or the actual period of theft whichever is less. If the consumer or person has already paid a sum in excess of the civil liability, the excess sum shall be returned within a fortnight together with an interest at the rate of RBI prime lending rate for the period of deposit so held. The special court can review its case on grounds of a mistaken fact, error apparent on the face of the judgment or ignorance of any material.

These courts are expected to ensure speedy trial of cases booked under the Act and may Act as a deterrent.

2.4.7 Ombudsman for Grievance Redress

This is another new entity under the new Act. The distribution licensee shall set up a grievance redress system following the guidelines of the commission. Any consumer aggrieved by non-redressing of grievances can refer the case to an Ombudsman to be set up by the state commission.⁴⁰ The Ombudsman shall settle the grievance in accordance with the procedures established by the Commission. Earlier, the commissions could take up grievances if they were not attended to by the licensee, although most commissions avoided doing so. The new entity would reduce the commission's involvement in this potentially messy affair.

³⁹ Section 153.

⁴⁰ See Section 42(2)(6).

2.4.8 Tariff-Related Provisions

2.4.8.1 Tariff Policy

As mentioned earlier, the Act empowers the central government to formulate the national tariff policy in consultation with the state governments and the CEA. Earlier, there was no national tariff policy as such for retail tariffs, although the 'common minimum programs' provided some guidance. There was also a policy guideline for determination of generation tariff. The national tariff policy is expected to provide a general perspective on the government's vision about generation, transmission and retail supply tariffs to shape up and how it wants to achieve this goal.⁴¹ The commissions would be guided by the tariff policy in discharging their duties.

2.4.8.2 Tariff Principles

The Act has introduced significant changes in terms of tariff principles. Earlier, the rate of return regulation as prescribed in the Sixth Schedule of the ESA-1948 was the basis of tariff determination. Even in the case of state reform acts, this Sixth Schedule was retained as the basis. The present Act has done away with that provision. In fact, it does not prescribe the method of tariff regulation and leaves it to the commissions to decide.

The commissions however should be guided by the principles set out by the central commission regarding tariffs of generating companies and transmission licensees, multi-year tariff principles, and national tariff policy formulated by the central government.⁴² The tariff principles should encourage efficiency, competition, economic use of resources, good performance and optimum investments, and should allow companies to run their businesses on commercial principles. The tariffs should gradually be cross-reflective and thereby reduce cross and eliminate cross-subsidies. The commissions are also advised to promote cogeneration and renewable energies through tariffs.

Given the flexibility of the tariff determination given in the Act, commissions are free to use a range of approaches for tariff determination. The time period for which the tariff has to be set is left open and the multi-year tariff principle would suggest a less frequent tariff revision proceedings. The Act does not even make annual reporting of revenue reports mandatory, although the commissions can specify the frequency of such reporting. However, if the draft tariff policy provides any guide, the tariff determination process may not change significantly, and commissions may still follow a rate of return type of arrangement and inappropriate/inadequate incentive systems.

2.5 Subsidy and Cross-Subsidy Issues

Compared to the state reform acts or ERC-1998, the provisions relating to subsidies and cross-subsidies are well spelt out. The commissions should attempt to reduce and eliminate cross-subsidies. As mentioned earlier, to ensure that cross-subsidies are removed at least from big consumers, the restriction on captive power generation has been removed and no surcharge is payable for wheeling such power. The commissions are empowered to levy a surcharge for allowing open access but the surcharge shall be reduced over time.

The loss of cross-subsidies would result in a move towards cost-reflective tariff for all categories of consumers, unless the government through policy directive intends to provide subsidy to any consumer categories. However, governments have to pay an adequate compensation in advance.

⁴¹ Unfortunately, the draft tariff policy issued by the Ministry of Power provides guidance on the principles of tariff determination rather than providing guidance on policy issues related to tariff setting.

⁴² See Section 61.

Moreover, as the subsidy is gradually removed, consumers would surely ask for fair tariff, thereby declining to pay for the inefficiency of the licensee or the government in improving the performance.

2.6 Other Aspects

2.6.1 Licensing

The Act generally retained the licensing procedure of the earlier acts, with a few exceptions. The Act ensures non-refusal of grant of licenses to all acceptable applicants⁴³, even if it implies duplication of licensees for a particular area of supply. The Act imposes a time limit on commissions for taking a decision on license applications, which would restrict the cases of prolonged inaction on the part of the commissions on such applications. The notice period for receiving objections has been reduced to 30 days, whereas earlier acts allowed for 60 to 90 days of notice period. The license period has been fixed at 25 years, which is somewhat strange for traders, given the potentially competitive nature of the business and low asset specificity. Long license could promote long-term contracts even in the case of traders, which would make the market less flexible.

2.6.2 Supply Through Meters

The Act makes it mandatory to supply electricity through correct meters within two years of the date of commencement of the Act.⁴⁴ However, this requirement can be relaxed by the state commission for a class or classes of consumers or for specific areas. The licensee is allowed to charge security for hiring and installing a meter. The CEA may direct to install meters at appropriate stages and levels of generation, transmission, trading and distribution. This is an important provision of this Act, as many consumers at present receive supply without meters and many more have incorrect meters. Metering or lack was a major problem in setting correct prices and undertaking improvement of the system. Implementation of this requirement would clear ways for quick improvement of the system.

2.6.3 Time limit for Release of New Connections

The distribution licensee has to supply electricity to a premise within one month of receipt of application from the owner or occupier of the premise in normal circumstances (implying absence of natural calamities).⁴⁵ Where system extension is required, the supply shall be given on completion of the necessary work or within the time as specified by the Commission. In case of non-electrified villages or hamlets, the Commission may specify a time limit for achieving rural electrification. Failure to supply electricity within the specified time shall attract a penalty of 1000 rupees per day for each day of default.

2.6.4 Default in Payment

In case of default of payment of charges and dues to the licensee or the generating company (in case of supply, transmission, distribution or wheeling), the licensee or the generating company can cut off the supply by giving a clear 15-days notice in writing to the party concerned and can discontinue supply till the time the charges along with additional cost involved in cutting off and reconnecting the supply are cleared. However, in case of dispute of bills where the consumer has paid the bill under protest, the supply cannot be cut-off. Moreover, if the arrear is due for more than two years, it cannot be collected unless it has been shown continuously as recoverable.

⁴³ This means those applicants who meet all requirements.

⁴⁴ See Section 55(1).

⁴⁵ See Section 43(1).

2.7 Consumer Protection: Standards Of Performance

The appropriate commission can set standards of performance of each licensee or a class of licensees after consulting the licensees and the affected parties. A licensee failing to meet the performance standards may have to pay compensation or may be prosecuted as determined by the commission. The penalty is payable within 90 days of the decision. The standards of performance can be different for different licensees. The licensees are required to submit information about their performance to the Commission and the Commission shall arrange to publish them at least once a year.

2.8 Electricity Theft and Penalty

The Act has made strict provisions to deal with electricity theft by consumers and reduce employee-consumer nexus in this regard. The Act empowers the licensee to impose punitive tariffs on consumers upon detection of theft of power and the offence could attract imprisonment and/or penalty. No civil court would have power to give injunctions to such cases. The Act similarly provides for stringent penal measures for offending employees of the utility.

The penal provisions are much stricter than the earlier laws on electricity. This should Act as a deterrent for theft by common consumers. However, the Act does not provide any protection against misuse of these powers by licensees or utilities. The onus now lies on the consumers to prove that they are not stealing power. This presumption can prove to be dangerous and potentially a source of much consumer dissatisfaction.

The Act has introduced a distinction between unauthorized use⁴⁶ and dishonest use of electricity⁴⁷. Any unauthorized use is liable to a penalty as assessed by the assessing officer and the consumer can appeal against such assessment to an appellate authority constituted by the central government. This provision appears somewhat bizarre as most of the cases would be taking place at the local level and the aggrieved consumer would find it difficult to seek justice if the appellate authority is centrally located in Delhi or in state even in capitals. The transaction cost would be too high for the consumer to seek justice. The state government or the state commission should have been given the power to establish such local appellate authorities.

The dishonest use of electricity is a criminal offence under the Act. As the penalty for such an offence is much strict than the previous case, the utility would prefer to book any case as dishonest use of electricity. The thin line of distinction is not quite clear and would create a lot of discomfort to the consumers.

2.9 Conclusions

The recently introduced Electricity Act 2003 of India has consolidated a number of legislations on electricity operating in India. The new Act has attempted to move away from the single buyer model being followed so far and has allowed relatively free entry to generation and captive power generation. Removal of restriction on captive power and broadening the scope of captive generation by including association of consumers would help promote proliferation of captive power, which in turn would reduce the creamy consumers providing cross-subsidy to the distribution companies. Loss of creamy consumers would allow introduction of open-access to certain class of consumers and perhaps entry of IPPs in generation. The above phenomenon is expected to allow removal of cross-subsidies and promotion of cost-reflective tariff regime in the

⁴⁶ The following are defined in clause 126(6)(b) to constitute unauthorized use of electricity: usage of electricity by a) an artificial means, or b) by a means not authorized by the concerned person or authority or the licensee, or c) through a tampered meter, or d) for the purpose other than for which the usage of electricity was authorized.

⁴⁷ Clause 135 defines occurrences that constitute dishonest use of electricity.

distribution business. In absence of such tariffs, the distribution business is expected to suffer and thereby affecting the entire supply chain. However, the acceptability of such tariff to consumers would remain an issue.

The Act has introduced a few new entities and has clarified the roles of different players. It has introduced a better arrangement for funding of commissions and strict provisions for subsidy provision by governments. The tariff determination has been made flexible and commissions are now empowered to move to a multi-year tariff regime and decide the tariff principles. The provisions related to power theft, collusion of employees are also strong and should help check the menace.

A close examination of the meaning and implications of the Act requires a review of certain excerpts of the Act, the tariff policy, discussion and concept papers, and Orders issued since June 2003 by the Central Electricity Regulatory Commission (CERC). In the future, state energy regulatory commissions will also heavily involved in implementing the Act (**Annex 2** is a table prepared by CEA that summarizes the role of states in implementing the Act).⁴⁸

CERC was established in July 1998 under the Electricity Regulatory Commissions Act, 1998. The ERC Act, which deleted Section 43(A)(2) of the Electricity (Supply) Act, 1948, vested the central government's powers and responsibilities for tariff regulation in the CERC effective 15 May 1999. Accordingly, CERC assumed the jurisdiction for regulation of tariffs of generating companies owned or controlled by the central government, tariffs of other companies with a composite scheme of generation and sale in more than one state, and inter-state transmission of energy including tariff of the transmission utilities. CERC also assumed the responsibility of notifying the terms and conditions of tariff under the provisions of Section 28 of the ERC Act, 1998. The existing terms and conditions of the bulk electricity tariff were laid down in the CERC Order dated 21 December 2000. Broadly, the approach was that the norms of tariff up to 31 March 2001 would be regulated under the Government of India notifications, while the new CERC norms would be applicable for the period from January 4, 2001 to March 31, 2004.

With the enactment of the Electricity Act, 2003, tariff norms determined by CERC under the earlier enactments are to apply for a period of one year, or until the terms and conditions are specified by CERC under the new law, whichever is earlier. In June 2003, CERC initiated action for establishing the terms and conditions for the period commencing April 1, 2004 (as required under the Act of 2003) by issuing a discussion paper to be used as a basis for consultation on tariff issues. The Commission is presently engaged in revising the tariff norms for the next tariff period commencing April 1, 2004. To enable the Commission to discharge this responsibility, the Commission sought suggestions from stakeholders in its letter on the existing notifications (No.L-7/25(1)/2003-CERC, January 17, 2003), and interested parties furnished their comments by April 15, 2003.

3.1 CERC Under the Electricity Act, 2003

The Electricity Act of 2003 became effective June 10, 2003; Section 72(2) provides that CERC (which had been established under Section 3 of the ERC Act, 1998) remain the Central Commission under the Act. Section 79 of the Act specifies the functions of the Central Commission:

- "79. (1) The Central Commission shall discharge the following functions, namely:*
- (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*

⁴⁸ A recent example of the importance of SERCs in implementing the Act is provided by Tata Power's proposal in May 2004 to the Maharashtra Electricity Regulatory Commission (MERC). Tata proposed a "franchise model" for its distribution area in Mumbai under which it would sell power to high-tension consumers (large-scale customers), that in turn would sell the power to retail customers, while Tata would control the tariff paid by the final consumer.

by the Central Government specified in clause (a), 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 electricity;*
- (d) to determine tariff for inter-State transmission of electricity;*
- (e) to issue licenses to persons to function as transmission licensee and electricity trader with respect to their inter-State operation;*
- (f) to adjudicate upon disputes involving generating companies or transmission licensee in regard to matters connected with clauses (a) to (d) above and to refer any dispute for arbitration;*
- (g) to levy fees for the purpose of this Act;*
- (h) to specify Grid Code having regard to Grid Standards;*
- (i) to specify and enforce the standards with respect to quality, continuity and reliability of service by licensees;*
- (j) to fix the trading margin in the inter-State trading of electricity, if considered necessary;*
- (k) to discharge such other functions as may be assigned under this Act*
- (2) The Central Commission shall advise the Central Government on all or any of the following matters, namely:*
 - (i) formulation of National Electricity Policy and tariff policy;*
 - (ii) promotion of competition, efficiency and economy in activities of the electricity industry;*
 - (iii) promotion of investment in electricity industry;*
 - (iv) any other matter referred to the Central Commission by the Government.*
- (3) The Central Commission shall ensure transparency while exercising its powers and discharging its functions.*
- (4) In discharge of its functions, the Central Commission shall be guided by the National Electricity policy, National Electricity Plan and tariff policy published under sub-section (2) of the Section 3.*

The important features of the Act in liberalizing the framework of electricity industry include:

- De-licensing of generation;
- Doing away with the requirement of techno-economic clearance for thermal generation;
- Freeing captive generation from controls and recognition of electricity trading as a distinct activity;
- Provision of open access in transmission immediately, and open access in distribution in a phased manner to be decided by the state commissions;
- Specific provisions for supply in the rural areas; and
- Stringent provisions for violation of grid discipline and theft of power, including setting up of an appellate tribunal.

Freeing captive generation, providing open access, determining tariff through competitive process, and providing more than one licensee in the same area of supply are the key provisions that will foster competition in near future, while the evolution of a wholesale power-market will unleash competition in the sector in the long run.

Important provisions governing tariff determination under the Act are contained in Sections 61, 62, and 63:

"61. The Appropriate Commission shall, subject to the provisions of the Act; specify the terms and conditions for the determination of tariff; and in doing so, shall be guided by the

following, namely:

- (a) *the principles and methodologies specified by the Central Commission for determination of the tariff applicable to generating companies and transmission licensees;*
- (b) *the generation, transmission, distribution. and supply of electricity are conducted on commercial principles;*
- (c) *the factors which would encourage competition, efficiency, economical use of the resources, good performance and optimum investments;*
- (d) *safeguarding of consumers' interest and at the same time, recovery of the cost of electricity in a reasonable manner;*
- (e) *the principles rewarding efficiency in performance;*
- (f) *multiyear tariff principles;*
- (g) *that the tariff progressively reflects the cost of supply of electricity, and also reduces and eliminates cross-subsidies within the period to be specified by the Appropriate Commission;*
- (h) *The promotion of co-generation and generation of electricity from renewable sources of energy;*
- (i) *The National Electricity Policy and tariff policy.*

Provided that the terms and conditions for determination of tariff under the Electricity (Supply) Act; 1948, the Electricity Regulatory Commissions Act; 1998 and the enactments specified in the Schedule as they stood immediately before the appointed date, shall continue to apply for a period of one year or until the terms and conditions for tariff are specified under this section, whichever is earlier".

"62. (1) The Appropriate Commission shall determine the tariff in accordance with the provisions of the Act for:

- (a) *supply of electricity by a generating company to a distribution licensee;*
Provided that the Appropriate Commission may, in case of shortage of supply of electricity, fix the minimum and maximum ceiling of tariff for sale or purchase of electricity in pursuance of an agreement, entered into between a generating company and a licensee or between licensees, for a period not exceeding one year to ensure reasonable prices of electricity;
- (b) *transmission of electricity;*
- (c) *wheeling of electricity;*
- (d) *retail sale of electricity;*
Provided that in case of distribution of electricity in the same area by two or more distribution licensees, the Appropriate Commission may, for promoting competition among distribution licensees, fix only maximum ceiling of tariff for retail sale of electricity.
- (2) *The Appropriate Commission may require a licensee or a generating company to furnish separate details, as may be specified in respect of generation, transmission and distribution for determination of tariff.*
- (3) *The Appropriate Commission shall not, while determining the tariff under this Act, show undue preference to any consumer of electricity but may differentiate according to the consumer's load factor, power factor, voltage, total consumption of electricity during any specified period or the time at which the supply is required or the geographical position of any area, the nature of supply and the purpose for which the supply is required.*
- (4) *No tariff or part of any tariff may ordinarily be amended, more frequently than once in any financial year, except in respect of any changes expressly permitted under the terms of any fuel surcharge formula as may be specified.*

- (5) *The Commission may require a licensee or a generating company to comply with such procedure as may be specified for calculating the expected revenues from the tariff and charges which he or it is permitted to recover.*
- (6) *If any licensee or a generating company recovers a price or charge exceeding the tariff determined under this section, the excess amount shall be recoverable by the person who has paid such price or charge along with interest equivalent to the bank rate without prejudice to any other liability incurred by the licensee”.*

“63. Notwithstanding anything contained in section 62, the Appropriate Commission shall adopt the tariff if such tariff has been determined through transparent process of bidding in accordance with guidelines issued by the Central Government.”

The Commission was mandated to issue regulations governing the terms and conditions of tariff within one year of the appointed date under Section 61 of the Act. The current tariff period of three years was due to expire on 31 March 2004. It was, therefore, considered by CERC appropriate that the new set of regulations governing terms and conditions of tariff be in place well before the onset of next tariff period. CERC announced new tariffs for a five-year period – April 1, 2004 to March 31, 2009 – stating the return on equity should be **14%** after-tax across the board, uniformly applicable to the state-owned firms and private developers. CERC’s intention of lowering the return on equity from **16%** to **14%** was to make tariffs for consumers more affordable so that they will pay, and thereby the financial health of state electricity boards would be improved. CERC contends that this rate will allow the SEBs to start buying more power from generators. The new five-year tariff formula disappointed many Indian developers, who maintain their earnings will be adversely affected by the revisions.

The new tariff formula also imposed changes in the treatment of depreciation charges, interest on loan and working capital, and operation and maintenance expenses in the computation of the tariffs. These changes mainly affect plants owned by central government enterprises, such as NTPC and NHPC. In total, central government-owned power generators control just under a third of India's 110,000 MW of grid-connected capacity, while the Power Grid Corp. of India (PGCIL) is the country's only regional and inter-state power transmission firm. However, since many states will follow the tariff formula set by the central regulatory authority, power generation and transmission projects controlled by state government-owned utilities and private investors will also be affected. A preliminary estimate by NTPC, which owns almost **20%** of the nation's capacity, is that it will lose over \$272.7 million because of the changes in the tariff structure. As a result, the NTPC Chairman said the company would file a petition with CERC seeking a review of the new tariffs.

Several private developers also contested CERC’s actions under the Act. The Independent Power Producers Association of India argued that lowering the return on equity to **14%** was simply too low to attract large scale private investment, especially foreign promoters. The consensus was that only a handful of strong Indian companies like the Tata Group and Reliance Power would be able to afford a low return because their own costs of raising funds are lower. Moreover, private developers and investors stressed that related reforms in the energy sector must be addressed simultaneously, especially regarding fuel pricing policy.

Responding to the criticism, the Government of India established a Task Force on Power Sector Investments and Reforms with the objective of encouraging new investments through implementation of power sector reforms consistent with the Act. Section 3.9 of this report reviews the actions of CERC as it relates to the relevant discussions and recommendations of the Task Force as outlined in its report (Vol. I - February 2004).

To demonstrate the involvement of private companies in the development of regulations being adopted under the Act, CERC invited Reliance Energy to present its assessment of suggested bidding guidelines for procuring power on May 7, 2004. This assessment was made available on CERC's website for comment and is provided as **Annex 3** of this report. The issue of competitive procurement of energy is derived from Section 13 of the Act, which assigns CERC with functions related to tariff regulations, inter-state transmission and “*to promote competition, efficiency and economy in the activities of electricity industry*” [Section 13 (d)], a principal rationale of electricity trading and open access. Competitive bidding was the subject of guidelines issued by the Ministry of Power in January 1995 and related tariff norms in guidelines issued in May-June 1997. A detailed discussion of issues is presented in CERC Petition No. 54/2001 (Suo moto) “Regulations for Procurement of Electricity and Electricity Transmission Service through Competitive Bidding”.

3.2 Discussion Paper On Terms And Conditions Of Tariff

CERC had initiated its tariff policy review in its paper on the “Bulk Electricity Tariff” in September 1999. An extensive process of engaging stakeholders and interested parties led to the issuance of four notifications of tariff regulations and subsequent amendments.⁴⁹ In June 2003, CERC published its “Discussion Paper on Terms and Conditions of Tariff” for the period commencing April 1, 2004 to meet its obligation under the Act to begin a thorough review of existing tariff norms. This paper was based on a “Preliminary Discussion Paper on Tariff Policy” that was prepared with the assistance of Crisil Advisory Services (CAS), which restated and rationalized underlying tariff principles related to power generation, transmission, and distribution. Subsequent papers and Orders have amended or superceded the issues and principles outlined in the June 2003 discussion paper; however, the primary issues considered are abstracted in the following paragraphs:

- **Competition, Trading, and Market Development:** The Act promotes competition of India's electricity supply business by unbundling State Electricity Boards (Section 131); allowing non-discriminatory open access to transmission and distribution for use by generating companies, trading/distribution licenses while phasing in open access by consumers (Sections 38, 39, 40, 42); provision of multiple licensees in the same area of supply (Section 14); market-determined tariff, with maximum/minimum thresholds (Section 62); and determination of tariff through competitive bidding (Section 63);
- **Trading:**
 - As power trading involves purchasing power for resale using the transmission/distribution network of an existing licensee, power traders are not required to own generating/transmission/distribution assets. Power traders best facilitate power sales when they improve matching up production with demand that reflect daily and seasonal variations.
 - Where previously power trading was not provided for as a separate activity, the Act provides for power trading as a distinct licensed activity (although licensed generating companies and distribution companies do not need a separate license for trading). To maintain the neutrality of transmission carriers, the Act prohibits trading by the NLDC, RLDCs, SLDCs, the CTU, the STU and transmission licensees (see Section 3.3, CERC's concept paper on power license requirements).

⁴⁹ These notifications contain the Terms and Conditions of Tariff for the three-year period effective April 1, 2001– March 31, 2004; there are downloadable from the CERC website (<http://www.cerc.org>) and include the CERC Notifications dated March 26, 2001, September 21, 2002, July 8, 2002 and May 1, 2003.

- Under the Availability Based Tariff (ABT) regime, there is presently limited power available for trading and where bilateral trading has existed it has been previously trading by Power Trading Corporation of India Ltd. (See Section 3.4 of this report regarding PTC's license under the Act.) Hence, what is needed to provide for additional power traders are “conducive infrastructure and ground rules for the power market to develop further”.
- **Market Development:**

The Act mandates a liberalized market structure that provides a customer with a number of choices to get power, including allowing generators to compete among themselves for distribution companies/customers through the provision of non-discriminatory open access to transmission. However, a fully competitive power sector will be developed through intermediate phases given current shortages, cross-subsidies, long-terms PPAs and the present system of power allocations by the central to the state governments. While several complex issues need to be addressed the most relevant involve transmission and wheeling of electricity, including:

- Open access will increase demand for wheeling of power through the existing transmission networks and additional wheeling of power that is imported from other regions. CERC regulates transmission and wheeling charges for all inter-state and inter-regional power flows, which presently charge wheeling at the same rate as transmission charges for a particular region (subject to subsequent Orders summarized in the following sections of this report).
- Inter-state power exchanges are discouraged by high charges that require reduction of wheeling charges since, under existing rules, an importing utility must pay wheeling charges in the exporting region, *plus* transmission charges for inter-regional lines *plus* wheeling charges for intervening SEBs *plus* transmission charges in the importing region.
- Further clarity is needed to provide for sharing of transmission charges for inter-regional lines, including sharing by two contiguous regions on a 50/50 basis with further sharing among the beneficiaries within the region but without pooling of transmission charges for inter-regional lines with other transmission assets in the region.

- **Tariff Setting:** Until a fully competitive market in power is developed, tariffs will be based on a cost of service approach (“cost plus tariff”) consisting of a variable component for fuel cost (except for hydro and transmission) and a fixed component comprised of loan interest, depreciation (and advance against depreciation), operations and maintenance expenses, return on equity, interest on working capital, and income tax expenses (as accrued). To improve grid operation, CERC introduced the Availability Based Tariff (ABT) that includes unscheduled interchange (UI) charges to the fixed and variable charges. CERC discusses changes to the norms established for these cost components, including:
 - *Rate of Return:* In determining the cost of raising capital, in year 2000, CERC adopted the approach of calculating the cost of the rate of return based on Return on Equity (ROE) instead of Return on Capital Employed (ROCE) “until interest rates are stabilized and benchmarking of debt/equity is perfected”. As interest rates came down and payment risk was reduced by settlement of SEB dues, CERC established that ROE could be switched to ROCE if concerns are met regarding the fairness to investors, fairness to consumers, the need to attract capital and administrative simplicity. This involves considering allowing different returns on equity and debt portions, whether the ROCE should be fixed for the tariff period (depending on the duration of the term), whether to determine the rate base at commencement of a project by referring to the balance sheet of the project company (on either an “Aggregated Rate Base” or “Disaggregated Rate Base”) or classifying rate base in terms of “Initial Capital Expenditures” and “Additional Capital Expenditures,” and whether to valuing assets based on the asset side approach (using the Net Fixed Asset Model) or continue to use the liability side approach.
 - *Interest on Working Capital:* Elements of working capital have been specified in existing CERC notifications separately for thermal power stations, hydro power stations, and transmission systems. Various comments have questioned whether interest on working capital should be treated as a separate cost entity or by a miscellaneous provision that increases the ROCE to cover additional cash flows that may be necessary for the actual operation of a project.
 - *Operation and Maintenance Cost:* CERC norms presently are derived from obtaining full details of operations and maintenance expenses and applying a test of prudence to arrive at permissible items of operations and maintenance cost. Because of the problems encountered in applying this test, it has been suggested that the norms be based on a “normative” versus an “actual” system. This could be done by establishing norms as a percentage of capital costs (with different percentages for thermal plants, hydro stations, and transmission systems) or as a benchmark cost per MW/Bay/Km for a typical installation.
 - *Depreciation:* Depreciation includes amortization of assets whose useful life is predetermined, allocated so as to charge a fair proportion of the depreciable amount in each accounting period. The present method used is the Straight Line Method, which applies a fixed rate over the fair life of the asset, because it best allows for repayment of the capital in installments. However, various comments have details as to how this method is applied and basic issues such as whether or not a more “liberal” depreciation should be allowed based on the economic value (replacement cost) of an asset.
 - *Operational Norms:* Existing norms for thermal and hydro generation as notified on March 30, 1992 have been continued except where existing projects were subject to different norms or if the norms were specified in a Power Purchase Agreement (PPA). Operational norms regarding gas turbines of less than 50 MW and norms regarding plant load factor (PLF) and target availability (TA) were established separately. For thermal

plants, changes to norms include consideration of issues that have been raised regarding station heat rate, specific secondary fuel oil consumption, and auxiliary energy consumption. Operational norms for hydro generation were revised for the tariff period ending March 31, 2004 by which CERC introduced the concept of Capacity Index in place of availability to minimize water spillage and make the peak capacity of each plant available when the system requires it most. Additional issues under discussion include the method used for dividing fixed charges, equating the secondary energy rate to the primary energy rate, and the pricing of secondary energy.

- *Incentives:* Separate methods of establishing incentives for thermal generation, hydro generation, and transmission systems have been established. For thermal generation, under the ABT Order, CERC introduced **80%** TA for determining the level of fixed charge recovery and retaining **85%** norm for availability. Increasing the norms for TA and PLF are under consideration for incentive purposes but different views have been advanced to continue to link the incentive rate to the fixed cost of a project or de-linking incentive from fixed cost and basing incentive on a target PLF at a attractive and fair flat rate. Similarly, changes for calculating the incentive formula for hydro generation has been suggested such that incentive is not related to capital cost, it also relates actual peak time generation, increasing incentive for storage rather than run-of-river schemes to encouraging peaking plants and not decreasing the incentive of older plants. As for transmission systems, changes have been recommended to reduce the TA of **98%** to **95%** that is used as the basis to provide a incentive of **1%** of equity for every **0.5%** rise in availability
- *Development Surcharge:* To assist in mobilizing of resources, CERC allowed central public sector companies to include a surcharge for capacity expansion (**5%** for NTPC, NLC, and NHPC and **10%** for PGCIL) that would be used to generate income from investments in recognized infrastructure bonds. CERC is considering whether to continue the development surcharge if liberal depreciation was provided or at least to ensure that funds collected are utilized for development purposes.
- *Other Issues:* The CERC discussion paper raises the prospect and need for additional changes related to issues involving the tariff period (changing the current 3-year period to 5 years, or otherwise only making changes as required), regional tariff (like transmission, setting the generation tariff for the region as a whole), peak and off-peak tariffs (whether and how to introduce peak and off-peak tariffs in bulk generation), declared capacity (changing the definition to remove the restriction caused by not exceeding installed capacity), and auxiliary energy consumption (whether to retain the definition to exclude construction power and consumption in residential houses).

3.3 Concept Paper On Eligibility Conditions For Grant Of Power Trading License

In September 2003, CERC issued a concept paper outlining the underlying principles it would utilize to carry out its two functions under the Act that are directly related to electricity trading:

- *Issuing licenses for electricity traders with respect to inter-state operations* (specifying technical, capital adequacy, and credit worthiness requirements), and
- *Fixing the trading margin in the inter-state trading of electricity.* The Act distinguishes power trading according to whether the activity is inter-state (regulated primarily by CERC) or intra-state (regulated by SERCs).

More specifically, the three sections of the Act that establish the authority for electricity trading are:

Clause 1451 – On application, under Section 15, CERC or a SERC⁵² may grant a license⁵³ valid for 25 years (unless revoked) to any person⁵⁴ “to undertake trading in electricity as an electricity trader”.

Section 52 – This section empowers CERC to specify technical requirements, capital adequacy requirements, and credit worthiness for being an electricity trader.

Section 79 – This section requires CERC to fix the trading margin for inter-state trading of electricity, if considered necessary.

Trading involves two activities: both the purchase and resale of electricity by the same person. The single activity of sale or the mere purchase of electricity by a person does not qualify as trading: “trading implies the trader buys electricity from one party and sells it to another party for some consideration”. As previously stated, players expressly excluded from power trading include the NLDC, RLDC, SLDCs, the CTU (PGCIL), STUs, and transmission licensees. Among the excluded players, PGCIL deserves particular review. Although the principal purpose of the Act is to create a multi-buyer and seller system for retail competition to increase consumer power choice, to avoid supply and transmission conflicts of interest, PGCIL is expressly excluded from power trading, as the CTU and NLDC. As the CTU, PGCIL is subject to licensing regulation requirements (Section 12 (a))⁵⁵ and energy trading is restricted for all transmission licensees (sections 38 (1), 39 (1) and 41)⁵⁶.

⁵⁰ Clause 14 includes granting a license to any person to “transmit electricity as a Transmission Licensee”, to distribute electricity as a Distribution licensee or undertake trading in electricity as an Electricity trader; Section 2.71 defines trading as (the) purchase of electricity for resale;

⁵¹ Clause 14 includes granting a license to any person to “transmit electricity as a Transmission Licensee”, to distribute electricity as a Distribution licensee or undertake trading in electricity as an Electricity trader; Section 2.71 defines trading as (the) purchase of electricity for resale.

⁵² Each is an “Appropriate Commission” as defined in the ACT: CERC (Section 70) and SERCs (Section 82), including a Joint Commission (Section 83).

⁵³ “Electricity Trader” means a person who has been granted a license to undertake trading in electricity under Section 12; the license is granted under Section 14, unless exempt under Section 13.

⁵⁴ “Person” shall include any company or body corporate or association or body of individuals, whether incorporated or not, or artificial juridical person; an Appropriate Government (Central and State) includes the Central Transmission Utility (PGCIL) or State Transmission Utilities and the Damodar Valley Corporation that transmits or distributes or undertakes trading in electricity shall be deemed a licensee but shall not be required to obtain a license under the Act .

⁵⁵ “No person shall transmit electricity; or distribute electricity; or undertake trading in electricity, unless he is authorized to do so by a license issued under Section 14, or is exempt under Section 13 (applicable only to “any local authority, Pinhead Institution, users’ association, co-operative societies, non-governmental organizations, or franchises.”

⁵⁶ Section 38 (1) states “The Central Government may notify any Government company as the Central Transmission Utility; provided that the Central Transmission Utility shall not engage in the business of generation or trading in electricity, provided further that, the Central Government may transfer, and vest any property, interest in property, rights and liabilities connected with, and personnel involved in transmission of electricity of such Central Transmission Utility, to a company or companies to be incorporated under the Companies Act, 1956 to function as a transmission licensee, through a transfer scheme to be effected under Part XIII and such company or companies shall be deemed to be transmission licensees under this Act”; Section 39 (1) refers to a restriction that a State Transmission Utility “shall not engage in the business of electricity”; Section 41 refers to other business of a Transmission Licensee: A transmission licensee may, with prior intimation to the Appropriate Commission, engage in any business for optimum utilization of its assets: Provided that a proportion of the revenues derived from such business shall, as may be specified by the Appropriate Commission, be utilized for reducing its charges for transmission and wheeling; provided further that the transmission licensee shall maintain separate accounts for such business undertaking in any way such business undertaking nor encumbers its transmission assets in any way to support such business; *provided also that no transmission licensee shall enter into any contract or otherwise engage in the business to in trading electricity.*

For this reason, PTC's description of the impact of the Act's impact on power trading states: "CTU/STU barred from trading in power will vest the contracts with discoms [distribution companies] or traders, increasing the depth of the market".

Further, referring to "power exchange" does not obviate the meaning of power trade. Under the Act's definition, "electricity trader means a person who has been granted a license to undertake trading in electricity under section 12." (Part 1, Section 2, (26)) There is no definition for electricity exchange. The only related definition is (76) "wheeling", or "the operation whereby the distribution system and associated facilities of a transmission licensee or distribution licensee, as the case may be, are used by another person for the conveyance of electricity on payment of charges to be determined under section 62".

Instead, the Act mandates PGCIL as the CTU to provide non-discriminatory open access to its transmission system for use by any licensee or generating company (upon payments of transmission charges) and any consumer when such access is provided by the Appropriate Commission (Section 42, subsection 2). Otherwise, among central entities, CEA is also notable in that the Act specifically provides that it advises the central government on improving trading of electricity (Section 73h); collects and records data on trading; and carries out studies relating to cost, efficiency, and competitiveness (Section 73i) besides promoting research in matters affecting electricity trading (Section 73k).

The Act includes several transitional provisions to clarify itself from the repealed statutes, including: (i) licenses under repealed laws continue for not more than one year from appointed date; and (ii) state governments may notify and declare that Act inapplicable for period not exceeding 6 months from the appointed date.

The Act also establishes the conditions for revoking a trading license, namely, when the: (i) licensee makes willful and prolonged default by not doing anything required to fulfill its obligations; (ii) licensee breaches terms or conditions of license which are expressly grounds for revocation; (iii) licensee fails to show able to discharge duties and obligations or deposit/furnish security, fees or other charges or its financial position prevents fully effectively discharging duties. Instead of revoking a license, CERC may make it subject to further terms and conditions it thinks fit (Section 19.4).

Existing Power Trading Market

Prior to the Act, power trading was modestly carried out by a single player, Power Trading Corporation of India Ltd., initially to support the Ministry of Power's Mega Project Policy and, subsequently, short-term contracts involving inter-state trading between SEBs and limited cross-border trading involving Nepal and Bhutan. PTC has acted mostly as a match maker between buyers and sellers while charging 5 paise per unit extra to the buyer as a trading margin. Although PTC is gearing up to become a more active trader under the Act and by its successful public offering, whereby it has indicated an interest in participating as a small (10%) owner of generation projects (the present condition of PTC is discussed in Section 1.6 of this report), the existing trading market could be characterized as a "light-handed regulation option", as depicted below:

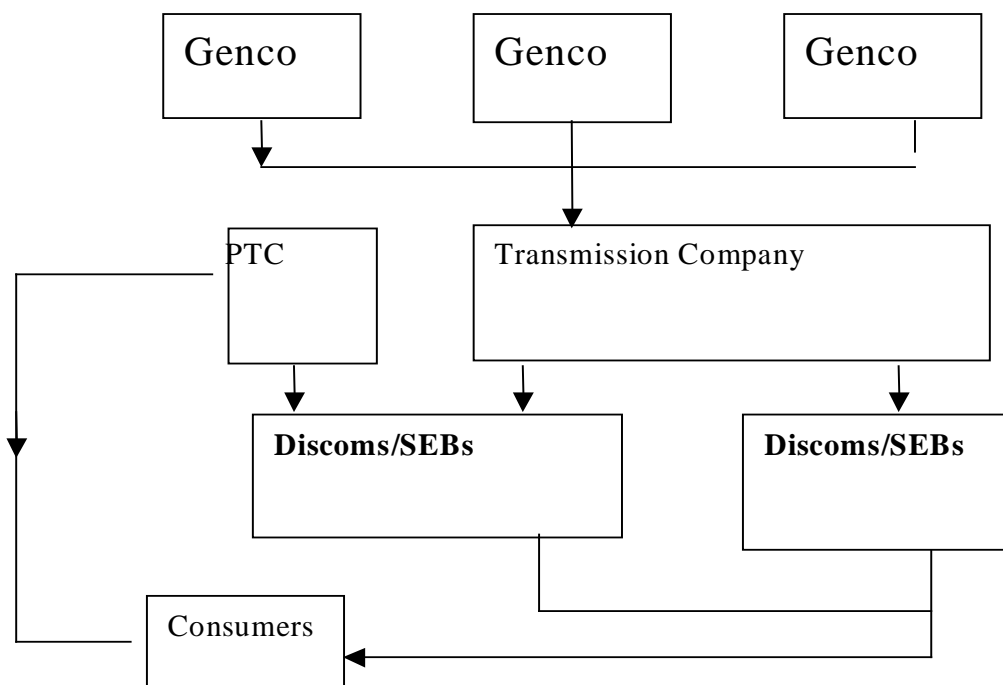


Figure 3.1: Future Power Trading Markets

Future market scenarios will be dictated by the players in trading and the level of trading that will encompass a variety of commercial arrangements. In the new scenario where the CTU and STU are excluded from the trading business, they will act as an entity that holds the wire business and facilitates the flow of power between generators and consumers. This way a trader will act as a bridging link between the two.

The main players in the market will be generators, transmitters, distribution companies, system operators, and traders. Traders may purchase electricity from generating companies or from another trader and will sell it to its customers, through the network of transmitters or distributors, which may be a distribution company, another trader, or consumer (bulk or captive).

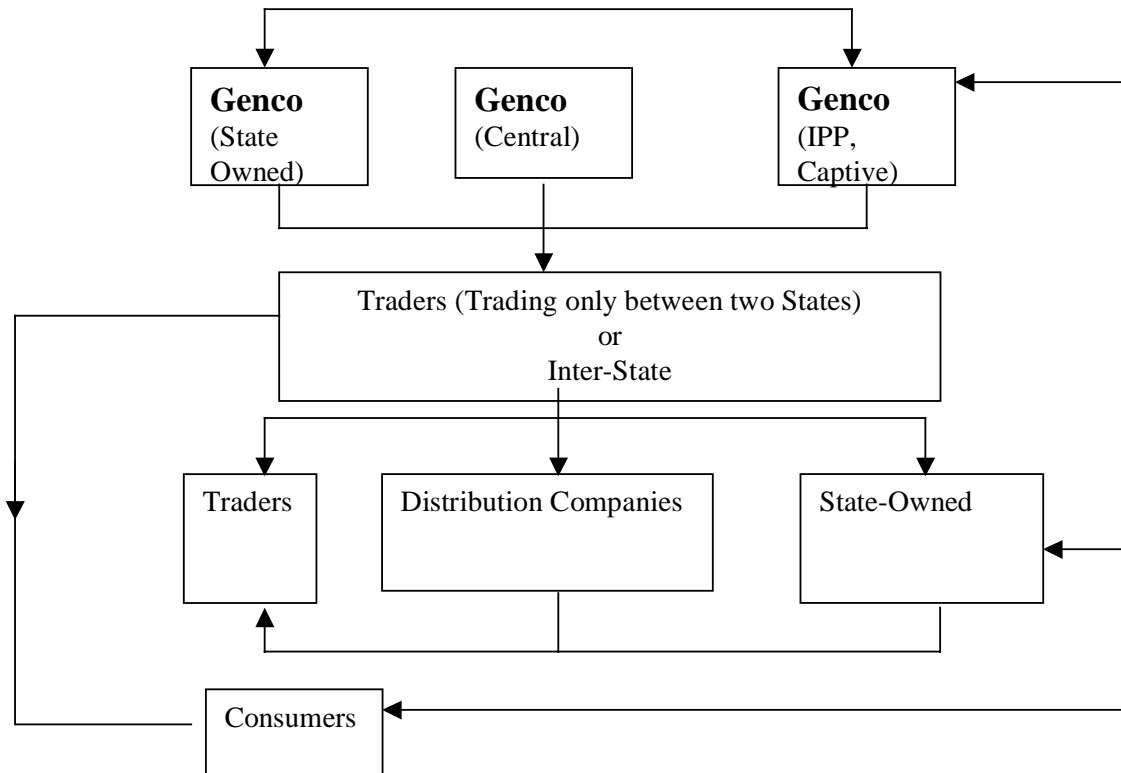


Figure 3.2: Competition in Purchase of Power

As shown above, generating companies can purchase electricity from another generating company, distribution companies, or traders. The regulator will fix the generation tariff only for distribution companies, not for traders. This will create competition among traders to purchase the maximum amount of electricity from a generator who is supplying power at a lesser price. This will also create the competition among generators to capture the maximum market for its electricity. It is possible that a hierarchal system depending on the area of service may develop, similar to the stock market. In any case, a trader (inter-state) can sell power directly to any consumer of a state.

In developing market scenarios, a number of issues must account for inclusion of power traders, including energy accounting and wheeling charges and trading mechanism, which are described below.

- **Energy Accounting and Wheeling Charges**

- *Active Energy:* All inter-state transactions are scheduled by the RLDC on the basis of availability declared by the Inter-State Generating Stations, the drawl requirements submitted by states, bilateral exchanges and inter-state power trading schedules. This is done on a day-ahead basis for each block of 15 minutes, per the Indian Electricity Grid Code (IEGC). The drawl scheduled are topped by the estimated losses to arrive at the generation schedules of the generation stations. The power trader has to ensure that his transaction matching generation/injection and drawl schedules are given to the concerned RLDC. The scheduled energy charges are settled directly between the buyers and sellers or through the power traders, as the case may be. Any deviation from the drawl or generation schedule is monitored by the RLDC as per the IEGC and priced per frequency dependent unscheduled interchange (UI) rate approved by CERC. Presently, the UI pool

account is managed by the RLDC on behalf of the Regional Electricity Board (REB) and the power trader is not involved in the UI transactions.

- *Reactive Energy:* The drawing entity follows rules regarding reactive energy that are applicable at the point of drawl. Presently, reactive energy is not being traded.
- *Energy Losses:* Presently, energy losses are adjusted by topping the generation schedules based on the weekly average losses of the previous week in a region. When a power trader is involved, the trader must account for losses in its billings.
- *Transmission/Wheeling Charges:* The transmission capacity for a trader must be purchased by a generator, a distribution licensee, a trader or any other person.
- **Trading Mechanisms:** The following trading arrangements may emerge based on international experience, although it is anticipated that in India a short-term forward trading market may emerge initially and, in the medium- to long-term, well-developed spot markets in electricity trading may emerge in India; ultimately, power exchanges may develop.
 - *Long-term Bilateral Contract Market:* In this market, customers, traders, generators, and other market participants enter into long-term contracts involving commitments of fixed volumes of power over a specified period of time between buyers and sellers. Alternatives exist primary to cover additional demands, shortages, and to provide for risk management.
 - *Short-Term Forward Trading Market:* In this market, buyers and sellers trade in advance under the terms of a forward contract to buy power from another party at a specified time in the future at a specified price, with payment made at the future delivery date. Such contracts manage future price risk and to avoid transactions where prices are volatile, such as a spot market or a balancing mechanism.
 - Spot Trading Market: In this market, supply and demand of electricity is balanced at any point in time, with the possibility of the market shifting to pool arrangements and bilateral contracts.
 - Balancing Mechanism: In any trading market, a competent player such as a system operator must play the role of being an information provider to relate power availability and deficits.

To regulate these trading mechanisms CERC should develop guidelines for the operation of a power exchange in India (compared to trading by matching demand and supply requirements for a margin, such as carried out by PTC before the Act). Meanwhile, to mitigate risks associated with price volatility of short-term forward contracts that would require high margins and affect liquidity of traders, CERC must impose license requirements to ensure an efficient electricity market.

The nature of the business of an electricity trader involves the following activities:

- Contractual agreements between buyers and sellers;
- Communication with buyers, sellers, commissions, dispatch centers, etc.;
- Matching the requirements of buyers and sellers;
- Understanding present and future markets and future business plan;
- Understanding system operation; and

- Activities involving billing, collection, accounting and other managerial decisions.

Consequently, a power trader should have the ability to:

- Understand the market and system operations;
- Conduct commercial transactions; and
- Communicate with business partners, commissions, and system operators.

Technical Criteria for Electricity Trader

Technical requirements involve assessing the experience of key staff as to whether they understand technical issues related to power system operations, such as generation availability, PLF, extra capacity, demand flow of power, and power scheduling. A trader must also demonstrate having facilities (e.g., phone, fax, computer with internet) and staff for communicating with the CTU, STU, SLDC, and RLDC and conducting accounting, metering, billing, and collection activities involved carrying out commercial transactions.

Financial Criteria for Electricity Trader

Efficient functioning of energy trading is dependent on market players having sufficient capitalization so as to ensure confidence in each other's stability and ability to transact business by managing credit risk. Although in India, non-power exchange transactions will be conducted initially through bilateral contracts, to be an eligible electricity trader, at a minimum, a trader should:

- Demonstrate seriousness in conducting its business;
- Have sufficient capital to cover credit and default risks related to its current liability and fixed liability related to the maximum trade envisaged by the trader based on the formula:

*Capital employed = Trading limit * Average generation tariff in India*

- For example, a trader should have a minimum capital of Rs. 10 crore; if a trader contemplates a maximum trade in one month of 50-100 million units, the minimum capital requirement might be Rs. 15 Crore; if greater than 1000 million units per month, the requirement would be calculated based on applying the formula related above.
- Trade within proposed trading limits that are approved by CERC, which shall not be increased without showing of equivalent additional equity;
 - For example, if a trader exceeds its trading limit, the trader should immediately report it to CERC and raise a bank guarantee in favor of CERC equivalent to the additional trade multiplied by the average generation tariff and, within a year or some other certain period, the trader should raise equivalent capital. In non-reporting cases, a trader would pay a penalty and be subject to license revocation.
- Pay fees to cover regulatory expenses involved in assessing and monitoring information and compliance with license conditions (e.g., an application fee of Rs. 5 Lakh and an annual fee of Rs. 25 Lakhs).

Annex 2 of the CERC concept paper summarizes international experience with power exchanges and trading (e.g., United Kingdom, Australia, Nord Pool, Canada, and United States) and Annex 3 outlines the typical information application requirements of an electricity trading license.

3.4 Petition No. 29/2003: Approval of Grant of Trading License to Power Trading Corporation of India Ltd.

In Petition No. 29/2003, CERC issued on July 22, 2003 a conditional license to Power Trading Corporation of India Ltd. (PTC). CERC acknowledged that PTC has been trading in all forms of electricity under Section 43(2) of the Electricity (Supply) Act, 1948 since April, 1999 (FY ending March 31, 2003 traded 4,178 MUs in all five electricity regions and with Bhutan)⁵⁸. Moreover, PTC earlier had filed a petition (No. 17/1999) under the Electricity Regulatory Commission Act, 1998 for tariff approval for power sale to Jindal Vijaynagar Steel Limited. The CERC Order of November 11, 1999 stated that previous laws “act as a barrier to the development of (competitive) markets and the expansion of trading activities”, but it did not authorize separate approval under the Act for lack of formal rules. Accordingly, PTC was allowed to trade up to December 31, 2003, when it filed a fresh application for license under the Act.

Section 1.6 of this report includes a more detailed discussion of PTC’s trading license, including its authority for cross-border power trade.

3.5 Concept Paper: Open Access in Inter-State Transmission

As the Act mandates open access in transmission starting June 2003, CERC released a concept paper for comment in August 2003 on providing non-discriminatory open access in inter-state transmission for use by any power distribution or trading licensee or generating company, upon payment of transmission charges. By ensuring open access, a competitive environment was created allowing generators and traders to choose their customers, and vice versa⁵⁹, to facilitate transactions such that:

- Distribution companies can access power from any source (e.g., a generator, a captive generator, a trader, or another distribution company) with payment of transmission wheeling charges (but without payment of an additional surcharge);
- A captive generating plant can carry power from its generating facility to the destination of its use without payment of an additional surcharge; and
- Any consumer can access a trader, generator, or distribution licensee other than his own on payment of wheeling charges and a surcharge to cover the current level of subsidy (or the additional surcharge allowed under Section 42 (4)).

Existing transmission agreements are to be honored until modified. Open access would extend to spare transmission capacity and future transmission lines not being built based on long-term firm transmission agreements to avoid compensation issues related to stranded costs.

⁵⁸ Section 172 (b) all authorizations under repealed laws shall continue for one year.

⁵⁹ Under the definitions Section 1(47), “open access” means the non-discriminatory provision use of transmission line or distribution system or associated facilities with such line or system by any licensee or consumer or a person engaged in generation. In Section 1(36) “inter-state transmission” includes (i) any system for conveyance of electricity by means of main transmission line from the territory of one State to another State; (ii) the conveyance of electricity across the territory of an intervening State as well as conveyance within the State which is incidental to such inter-state transmission of electricity; and (iii) the transmission of electricity within a State on a system built, owned, operated maintained or controlled by CTU.”

Open access requires a simple and practical redesign of the transmission tariff that promotes efficient operation of bulk power markets (including trading) using economic signals that encourage efficiency regarding the use of transmission resources and location of new generation and loads, while encouraging investment and compensating the transmission system owner. While the two regulatory options are to either continue with a cost-of-service approach or introduce a fully competitive market-based pricing, the simplest and most common type of transmission pricing is “postage stamp” pricing. A postage stamp rate is a fixed charge per unit of energy transmitted within a particular zone, regardless of the distance that the energy travels. Postage stamp rates are based on average system costs and may consist of energy and/or capacity charges that vary for peak and non-peak periods, by the season, by weekday or weekend/holiday, and whether the transmission service is firm or non-firm (subject to curtailment or interruption). Presently, the original beneficiaries (SEBs) are charged on the postage stamp rate basis, derived by pooling the Transmission Service Charges for the entire CTU network in the region.

Traditionally, pricing is based on a routing scheme known as “*contract path*” (a fictional path to minimize costs and avoid accumulated charges from transmitting across several systems, or “pancaking”). However, pricing trends involve reforms that move to a regional transmission tariff using (i) “*flow-based pricing*” to reflect the cost of transmission in terms of the megawatts of power flow and distance (i.e., the cost of transmission per megawatt-mile is the total cost averaged over megawatt miles of usage), and (ii) “*congestion pricing*”, which sets rates that allocate limited transmission to customers that most value the ability to transfer power over constrained interfaces.

Accordingly, the two alternatives for an open access transmission tariff are:

- *Alternative I – Contracted Path Method:* determining the shortest route formed by a series of transmission lines that can carry the contracted power between the point of drawl and the point of injection; or
- *Alternative II – Incremental Postage Stamp Method:* adapting the existing postage stamp that is assigned in a region in a manner that avoids pan-caking of inter-regional transactions and provides sensitivity to the distance of transmission.

Under either scheme, open access wheeling would be levied on a capacity reservation basis by giving a ceiling price based on the all-India average cost of inter-state transmission and, for Alternative I, pricing is measured as Rs./MW/km/duration of contracted path while, for Alternative II, pricing is in Rs./MW/Zone/duration.

The additional elements of implementing an open access transmission pricing include:

- Transmission service providers (CTU, STU, or transmission licensee) are to declare in advance and by line the total transmission capacity, existing allocations of transmission capacity and available transmission capacity for eligible open access customers using an updated information system that would be updated on an hourly basis and accessible through the internet in order to be conducive to power trading and a spot market.
- Transmission service would be provided for firm service (one week or more) and non-firm service (one hour to one month) at declared rates within the ceiling price set by CERC. Firm service and longer duration service have higher priority than non-firm and shorter duration service.

- Revenue from open access customers to the CTU is to reduce transmission service charges payable by the SEBs, as original beneficiaries. Open access customers also pay scheduling and system operation charges to RLDCs and SLDCs (Rs. 200/MW/week, irrespective of distance) and service charges (Rs. 50/MW/week, irrespective of distance) to the CTU, STU, or transmission licensee.
- Open access customers will install special energy meters. They will be directly connected to the CTU network and treated at par with existing entities; for open access customers embedded in the state, the SLDC forwards its drawl schedule and the injection/injection schedule on a day-ahead basis for presentment to the state (SEB/TRANSCO). (The CERC concept paper discusses details for energy accounting for active energy and reactive energy. Two annexes also provide, by region, examples for calculating transmission pricing using the two alternative methods and calculations of scheduling and system operation charges per MW/year.)

3.6 Petition No. 48/2003: Open Access in Inter-State Transmission

- On November 14, 2003, following hearings in September involving 45 organizations that considered the issues raised in the CERC concept paper summarized in Section 3.5 above, CERC ordered that the existing regional postage stamp method of transmission pricing be retained for providing open access for inter-state transmission in following a specified methodology and procedure for seeking open access in inter-state transmission. The salient features of the CERC Order include:
 - Open access customers shall have the option, like existing beneficiaries, to enter into long-term bulk power transmission agreement for use of inter-state transmission system; in such case, the transmission service charge will be determined according to the tariff norms as notified by the Commission. In other words, discoms, traders, IPPs, and captive generating plants can immediately avail themselves of inter-state open access.
 - Open access customers are divided into two broad categories: (i) *Short-Term Customers*, who intend to avail of transmission service up to one year, and (ii) *Long-Term Customers*, who intend to avail of the transmission access for 5 years or more. Per the concept paper, allotment priority of long-term open access customers is higher than the short-term customers. The original beneficiaries who are at present connected to regional grid and the new long-term customers are treated at par. In the event of transmission constraint, all short-term customers will be curtailed first, followed by long-term customers. The nodal agency for long-term access is the CTU, which presently is PGCIL. A minimum 5 years commitment is required for becoming long-term customer. Long-term customers are to be treated at par with original beneficiaries of the CTU network.
 - The nodal agency for short-term access is the RLDC of the region in which the point of drawl is located. Application processing fees of Rs. 1.0 lakh will be charged to long-term customers. Requests for transmission access are to be processed by PGCIL and RLDCs in a time-bound manner as per the timetable given by CERC. The maximum processing time period for availing long-term service shall be 90 days and up to one month shall be 7 days for short-term access. Current open access customers will have the first right of refusal to capacity being used by them; they will be given preference in allotment if they are willing to match duration of service being sought by potential customers. CERC also fixed scheduling and system operation charges at Rs.3000/day and Rs.2000/per schedule revision, based on recommendations of PGCIL. Captive generating plants do not have to pay a surcharge for

transmitting power to its destination but are subject to availability. Licensees and other generating companies will pay a surcharge to meet the requirement of current cross-subsidies, but these will be phased out as the subsidies are eliminated.

- All open access customers must abide by the Indian Electricity Grid Code (IEGC). Mismatches in the energy draws by the open access customers to be billed as per the existing frequency linked unscheduled interchange charges under the Availability Based Tariff (ABT). CERC recommended adoption of ABT at the state level as Section 61(1) (a) of the Act stipulates that state commissions are to be guided by the procedures and methodologies specified by CERC for the determination of tariff applicable to generating companies and transmission licensees. The ABT has been implemented by CERC in all the five regions of the country, which has built-in mechanism for energy accounting in respect of any deviations from the declared schedules. Accordingly, CERC recommended that same methodology and procedure for energy accounting should also be implemented at the state level.
- Any open access customer directly connected to the CTU transmission network is treated in the identical manner as the existing entities and is liable to pay unscheduled energy interchange (UI) charges as per the ABT tariff to the RLDC pool for any deviations in energy schedule from the day-ahead schedule given by him. As regards open access customers embedded in the state transmission network, the concerned SLDC will forward its own schedule and the schedule of embedded customers separately to the RLDC on day-ahead basis. For any deviations from the schedules, the RLDC will present a composite UI bill to the state, as is being done now. Further, apportioning/recovery of UI charges from various discoms and embedded customers in the state would normally be the responsibility of the state/SLDC.
- All open access inter-state transmission customers provide special energy meters with requisite communication facility as per the requirements of the RLDC or CTU, which must be tested and maintained in good condition.
- The principal finding is that, with regard to open access pricing, the existing tariff notification (March 26, 2001) be followed such that a utility importing power from another region is required to pay wheeling charges applicable to the exporting region, the transmission charges for inter-regional assets, wheeling charges for the intervening state utility (if any), and the transmission charges applicable to the importing region. CERC noted that the debate will continue regarding the “zonal postage stamp metric method” and other alternatives.

3.7 Regulations for the Procedure, Terms, And Conditions For Grant of Trading License and Other Related Matters, 2004

CERC further addressed the issues raised by stakeholders in response to the concept paper distributed in June 2003, the subsequent hearings in September, and the above petition. On January 30, 2004, it issued Petition No. 56/2003 *Suo moto* and Petition 48/2003 *Suo moto*⁶⁰,

⁶⁰ Under the Delhi Right to Information Act, 2002, Rule 7 provides in Section 7, *Suo moto* publication of information by public authorities of information that, among other facts and communications, the norms set by the public authority for the discharge of its functions. Accordingly, in Petitions 56/2003 and Petition 48/2003 CERC addressed comments on proposed draft regulations on inter-state trading in electricity and open access in inter-state transmission. While the detailed discussion of issues provided in these petitions are not abstracted here, they provide the rationale and basis for the CERC regulation summarized in this Section 3.7.

which were codified in CERC's Regulation No. L-7/25 (6)/2004 as the Procedure, Terms, and Conditions for Grant of Trading License and Other Related Matters.

The trading license regulation includes procedures for granting a license, the requirements for being an electricity trader, and the terms and conditions of trading licenses, which are summarized in the following subsections.

Procedure for Granting a License

Form I: Attached to the regulations is Form I, a four-page license application for inter-state electricity trading that requires information regarding the *applicant's identity* (incorporation and tax registration documents), *financial data* (net worth for past 5 years, copies of annual reports, annual turnover, whether self-financing on own balance sheet, other equity sources, letters of support detailing debt proposed for trading), information demonstrating *managerial capabilities* (proposed organizational structure, resumes of executives, and proposed office/communication facilities), and a description of the *approach and methodology for the proposed trading arrangements*.

Applications, which are to be posted on its website, require a fee of Rs. 1.00 lakh. Seven days after an application is submitted, the applicant is required to publish a notice in two national English newspapers and two local newspapers providing its name and statement of application and supporting information, including: shareholding patterns, financial/technical and management profile, proposed trading volume during first year and first 5 years, past experience in trading or similar management activity, geographical areas of proposed trading, contact information and availability of application for inspection (including website), and a statement that objections to the application are to be filed with CERC within 30 days of notice publication (the applicant must file with CERC its comments on notice responses within 45 days of publication).

Form II: CERC may consider the application with or without a hearing and, if the applicant is determined to be qualified, CERC will publish a notice of the proposed issuance of a license conforming to attached Form II, which states: the license is not transferable, and can not be assigned or sold, the licensee is restricted to acquire or merge with the utility of any other licensee, the license is not exclusive (CERC may license others as electricity traders within the same area for trading), the license is effective for 25 years from issuance (unless revoked earlier), and the license may engage in any business to optimize its assets except for engaging in electricity transmission.

Requirements for Being an Electricity Trader

To meet technical requirements, before undertaking trading, a license applicant must furnish information that demonstrates having supporting staff and at least one full-time professional experienced in power systems operation and commercial aspects of power trading and finance, commerce, and accounts. The license applicant must also demonstrate capital adequacy and creditworthiness in terms of its net worth related to the category of license and volume of electricity to be traded as of March 31st of each year:

Table: 3-1

SI. No.	Category of the Trading License	Volume of Electricity proposed to be traded (KWh)	Net Worth (Rs. in crore)
1	A	Up to 100 million	1.50
2	B	100 – 200 million	3.00
3	C	200 – 500 million	7.50
4	D	500 – 700 million	10.00
5	E	700 – 1,000 million	15.00
6	F	Above 1,000 million	20.00

Terms and Conditions of Trading License

Obligation of Licensee:

- Compliance with the Act, Rules and Regulations, Indian Grid Code and orders of CERC and SERCs;
- Increase of net worth if trading volume exceeds limit for its license category;
- Subject to trading margins for inter-state trading as fixed by CERC;
- Upgrade technical and capital adequacy requirements, including staff when trading volume increases;
- Coordinate all trading-related activities with REBs, RLDCs, SLDCs, CTU, and STUs;
- Trading to be carried out through bilateral contracts with appropriate safeguards with payments to be supported by letters of credit or superior credit instruments;
- Timely payment of annual license fees;
- Trading activities shall not be omitted or neglected for four consecutive quarters;
- No agreements to be executed that adversely affect competition in the electricity industry; and
- Maintain and update all customer records and records of transactions with other parties.

Prohibited Activities:

- Without prior CERC approval, a licensee shall neither acquire by purchase, take-over, merger with the utility of another licensee or assign nor assign or transfer its license to another by sale, lease, exchange or otherwise; and
- A licensee shall not engage in the business of transmission of electricity.

License Fees:

An annual licensee fee shall be paid to CERC within one month of issuance and by April 15 based on the following schedule, subject to conditions for pro-rata payments, late payment surcharge and revocation for non-payment:

Table: 3-2

SI. No.	Category of the Trading License	Annual Volume of Electricity proposed to be traded (KWh)	License Fee (Rs. in lakh)
1	A	Up to 100 million	1.00
2	B	100 – 200 million	2.00
3	C	200 – 500 million	5.00
4	D	500 – 700 million	7.00
5	E	700 – 1,000 million	10.00
6	F	Above 1,000 million	15.00

Accounts to be Maintained by Licensee:

- Separate information and statement of accounts for inter-state trading covered by the license;
- Statement of accounts in accordance with Companies Act, 1956, as amended, and CERC; and
- Accounting records for each financial year (profit and loss account, balance sheet, sources and uses of funds and, separately with explanation, indicate any amounts of revenue, cost, asset, liability, reserve that was charged from or to any other business, including allocations made between various business activities.

The CERC regulations for inter-state licenses also provide miscellaneous provisions regarding information submittals and reporting regarding occurrence of any significant change of licensee's circumstances that affect its license obligations, any material breach of laws and regulations and any major change in licensee's management or ownership. The regulations include a pro forma schedule of information to be provided on a quarterly basis and a pro forma schedule of performance standards (e.g., whether net worth or annual license fee increased due to category change, whether license conditions were violated and the payment track record for the energy purchased for trading).

License Revocation:

A license may be revoked by CERC upon willful and prolonged default of license obligations, breach of express terms and conditions, failure to fully and efficiently discharge duties and obligations (including for reasons due to financial condition) and failure or neglect to undertake trading for four consecutive quarters.

3.8 Terms And Conditions of Tariff Regulations, 2004

On March 26, 2004, CERC issued its Terms and Conditions of Tariff Regulations (No. L-/25 5)/2003-CERC) effective as of March 1, 2004 for a period of 5 years, or until March 29, 2009.⁶¹

The new tariff norms include:

- The capital cost of all projects will be determined by CERC.
- The normative Debt/Equity ratio is 70:30.
- The return on equity is **14%** post-tax across the board, uniformly applicable to the CPSUs and the IPPs.

⁶¹ The CERC website provides downloadable copies of detailed presentations made in November 2003 by stakeholders, including NTPC and PGCIL, which were considered in the development of the final regulations.

- Depreciation is allowed over the fair life of the assets at the rate notified by CERC. In addition, advance against depreciation is allowed to meet debt service obligations by considering the repayment period of loan as 10 years. While determining the advance against depreciation, cumulative depreciation recovered is compared with the cumulative repayment made.
- Working capital is allowed on normative basis, and rate of interest applicable shall be the short-term prime lending rate of State Bank of India.
- Income tax on the core activity of the utility is reimbursable by the beneficiaries and shall be adjusted subsequently based on the income tax assessment by the IT Authority under the Income Tax Act, 1961.
- Development surcharge is discontinued.
- Performance benchmark of availability in terms of capacity index is raised from **85%** to **90%** for purely run-of-the-river hydro power stations (existing as well as new).
- Incentive benchmark for thermal generating stations is raised from a plant load factor of **77%** to **80%**. Rate of incentive is increased to 25 paise per unit from the existing 21.5 paise per unit.
- Target availability and incentive benchmarks for existing lignite-based power stations of NLC are increased from **72%** to **75%**.
- Efficiency benchmark for coal-based thermal generating units of 500 MW is revised to 2450 kcal/kWh from 2500 kcal/kWh.
- A separate higher efficiency benchmark of 1850 kcal/kWh is specified for advance class gas turbine stations, whereas for other new gas turbine based generating stations the efficiency benchmark is revised to 1950 kcal/kWh from 2000 kcal/kWh. However, the norms for small gas turbine stations are not changed.
- Specific oil consumption norm is revised to 2 ml/kWh from 3.5 ml/kWh for coal based stations, and for lignite based stations, the norm is revised to 3 ml/kWh from 3.5 ml/kWh.
- For generating stations using coal or lignite as fuel, the norms for auxiliary energy consumption within the power station are reduced by **0.5 %** point across the board.
- Normative benchmark is set at **0.3%** and **0.8%** for transit and handling losses of coal in respect of pithead and non-pithead coal-based power stations, respectively.
- Normative benchmarks are set for operation and maintenance expenses to be payable to thermal generating stations and transmission licensees.
 - Target availability for AC transmission system and High Voltage Direct Current (HVDC) transmission system are separately specified as **98%** and **95%**, respectively, instead of **98%** on an overall basis.
 - The maximum rate to be charged for unscheduled deviations (UI charges) from the generation or energy drawal schedules is revised upwards from Rs.4.20 to Rs.6.00 at 49 hertz with a view to further improving grid discipline.

The ABT mechanism, which was adopted by the CERC during the last tariff period, was determined by CERC to have been successfully implemented across the whole country at the regional/inter-state level. Since ABT provides incentives for grid discipline and reliability of supply through frequency linked pricing mechanism, CERC ordered that ABT be continued during the new tariff period. Further, CERC indicated that it believed the ABT mechanism would be taken to its logical conclusion and the state regulators would extend it to intra-state level in the near future.

Certain provisions of the regulation concerning issues raised by central and state utilities discussed in Petition No. 67/2003 (Suo moto) were amended by CERC on July 15, 2004. These amendments led to keeping the debt/equity ratio of 70/30 for existing projects and for projects likely to be commissioned in the new 5 year tariff period (through March 31, 2009), unless there

are proven compelling reasons in the public interest to increase equity above **30%**. In addition, UI charges were revised to lower the grid frequency to bring it closer to 50.0 Hz. Additional changes involved levying the late payment surcharge where payment delays were beyond 60 days, correcting the definition of “cut-off date” for hydro power generating stations as the date of the first financial year closing after one year of commercial operation and revising the formula for computing incentives paid to transmission licensees for achieving annual availability of interstate transmission and dispensing with the upper limit of target availability.

3.9 Task Force On Power Sector Investments And Reforms

With the enactment of the Electricity Act, 2003, the Government of India established a Task Force on Power Sector Investments and Reforms, chaired by a member of the Planning Commission and consisting of the Secretary (Power), the Economic Advisor to the Prime Minister, the Revenue Secretary, and Chairman of CEA (four other members were subsequently added). The Task Force was formed to recommend additional measures to promote private investment in the power industry to provide “Power for all by 2012” through reform initiatives such as the Accelerated Power Development Reform Program (APDRP), the Accelerated Generation and Supply Program, the Accelerated Rural Electrification Program, the 50,000 MW Hydroelectric Initiative, and the creation of a national grid. In the context of the Act, the Task Force was further charged with reducing the cost of delivered power by recommending measures for the more effective functioning of SEBs as well as recommending a National Electricity Policy and Electricity Tariff Policy to guide the implementation of the Act, including proposing various amendments to promote investment in the power sector.

The report prepared by the Task Force was completed in February 2004. In April 2004 the Ministry of Power requested statutory advice from CERC regarding the Task Force’s recommendations on the Electricity Tariff Policy.⁶² **Annex 4** provides CERC’s response to the recommendations in the Task Force Report, especially the proposed tariff policy provided in its Appendix 1. CERC advised that the tariff policy should be developed that will enable India to have a balanced mix of energy resources based on a policy documents that is a “Vision Paper” that recognizes the roles of state governments and the regulatory framework provided in the Act. CERC underscored the exclusive jurisdiction of the national and state electricity regulators (CERC and SERCs) by specifically citing that no provision in the Act restores back to the central and state governments the authority to specify tariff terms and conditions (formerly granted under the Electricity (Supply) Act of 1948)⁶³. Additional observations that were made by CERC include:

- There was no single representative of any state government in the Task Force. In the spirit of Section 3 of the Act, “it is necessary that the States are involved in the process from the beginning”;
- The tariff policy developed by the Task Force is inconsistent with the Act as it is “an attempt to restore to the Central Government” the authority previously provided under the “erstwhile” Electricity (Supply) Act of 1948 and seeks to hand over some of the functions of the Regulatory Commissions to the CEA, which is contrary to the provisions of the law”;

⁶² Section 3 (1) of the Act mandates that the Central Government prepare a tariff policy in consultation with the State Governments based on optimal utilization of energy resources. Section 79(2)(i) states that CERC shall advise the Central Government on “formulation of National Electricity Policy and tariff policy”.

⁶³ CERC took exception to the make-up and process undertaken by the Task Force. CERC also noted that the Task Force did not fully consider previous efforts to develop a tariff policy, specifically questioning why Ministry of Power “discarded” an earlier Draft of the Tariff Policy developed in June 2002.

- The Task Force’s rational for a centralized tariff policy documents does not consider “the dynamics of the power sector and the differing ground realities” and fails to recognize the provisions of the Act that “prescribes not only the Central Regulator but also Regulators in every State who would have flexibility to deal with States specific issues.”

Beyond its views of a new tariff policy, the Task Force Report recommended a number of actions in support of electricity trading under the Act that are referenced in Section 3.9 and selective excerpts are provided in **Annex 5**. The excerpts relate the discussion and recommendations of the Task Force Report regarding the principal issues related to power trading under the Act:

- **Transmission Charges: How Should Transmission and Wheeling Charges be distinguished?**
- **Market Development: Should a Common Power Market Design be Adopted? What should be the Definition of Market?**
- **Implementing Open Access: Providing for Consumer Choice.**
- **Should there be a Power Exchange?**
- **When should Transmission and System Operations Functions be Separated?**

Summary of Task Force Recommendations

The views and recommendations of the Task Force that address these basic questions are summarized in the remainder of this section.

“Transmission”

A robust transmission network is essential for power market operations. Experts have opined that market reforms should commence with transmission. However, with the enactment of the Electricity Act, 2003 and with power markets potentially opening up, the adequacy of transmission facilities may become critical for market efficiency. Transmission system issues would need to be accorded high priority in the market development initiatives and sector policies proposed.

Non-Discriminatory Rights

Provision of non-discriminatory open access in transmission is a fundamental requirement of the Electricity Act, 2003. The regulations developed by the Appropriate Commission governing non-discriminatory open access is essential to the smooth implementation of the market driven framework envisaged. The Task Force is of the opinion that the principles governing the definition of non-discrimination and consequent development of regulations by the Appropriate Commission may be defined in the policy itself to avoid divergent interpretations. In this context, the Task Force, after review of the various issues involved, has arrived at the following basic conclusions:

- All current users of the transmission system inherently have rights of access-end usage .of the transmission system. This would include all licensees and consumers who are currently availing transmission and wheeling facilities from the grid pursuant to agreements. However, Appropriate Commission should endeavour to ensure that sufficient capacity is available for open access and trading; and
- In future, a hierarchy among users in the backbone networks can be created on the basis of price paid for the facility. The price differentiation may occur in the form of firm usage rights that are to be charged higher than non-firm rights, of (when conditions permit), through Firm

Transmission Rights that can be procured by intending generators, licensees, consumers or traders.”

The above conclusions are reflected in the following recommendations of the Task Force, which are based on the review of international practices and their applicability to the Indian environment:

- The rights on the transmission system may be graded into two basic categories:
 - Network access rights relating to rights that allow the generator or the load access to the backbone system; and
 - Network usage rights relating to use of the transmission system featuring loop flow of electricity.
- Almost by definition all current users of the systems would have network access rights. However for clarity the access capacity may be defined and documented in terms of their current contracts or as per their actual utilization patterns. This exercise may be completed within a period of six months by CTU/STU as the case may be.
- Access rights may be defined for both generators who inject and users who take delivery of energy for distribution or self use.
- Newer entities wishing to access networks will be allowed access as per the availability of network capacity to handle the additional requirements. In case the network capacity is deemed inadequate, additional capacity shall be constructed in reasonable time following the due planning processes.
- Access rights may need to be priced on a case-by-case basis on account of asset specificity and different period of creation (resulting in varying depreciation). If generating company or distribution licensee or consumer creates or has created the access infrastructure, the access charges would have to be reduced to that extent Typically access charges would be computed ex-ante on capacity basis.
- Network usage should be priced uniformly based on the zonal stamp pricing approach discussed subsequently. Within this zonal stamp approach, with a view to manage congestion of networks, the Appropriate Commission may introduce time of day tariffs to send price signals to users, if the network characteristics dictate so. Usage charges would ordinarily be computed ex-post facto and would be related to actual network use.
- With a view to manage congestion, Appropriate Commission may introduce time of use tariffs to send price signals to users on optimal use of capacity, if the network characteristics dictate so.
- Differentiation among users of the backbone networks may be made by defining firm and interruptible rights and pricing the rights differently, with a premium payable for firm rights and discount applicable for interruptible rights. A mechanism envisaging Firm Transmission Rights may also be evolved that will allow the holders of FTRs priority over use of the backbone network. The CERC may evaluate all issues relating to this matter in consultation with CEA and develop appropriate methodologies and guidelines.
- At a later date when the initial issues are sorted out, the Appropriate Commission shall evaluate the possibility of trading of transmission rights. This would allow for greater efficiency signals to the generators and loads since such trading would allow more efficient but underused generation capacity to come on stream if such rights can be purchased and also allow critical loads to access the grid at shorter notice if some other user is willing to surrender or reduce interchangeable access rights for a consideration.
- Even in the above framework, the CTU/STU would be allowed to interrupt all users if system security requires so. However the CTU/STU should not distinguish between

users on the duration (long-term and short-term) and should only make distinction based on the firm and interruptible nature of the contract.

Market Power in Transmission

While the Electricity Act, 2003 includes structural attributes to prevent misuse of market power by transmission utilities, however, in most cases all the functions (at least in the short run) would continue to be under common government ownership. This could result in a serious conflict of interest, particularly since the revenues of the incumbent utilities could potentially be affected by the open access regime. Recognizing this possibility, the Task Force has analyzed the related issues and the recommendations are as follows:

- The practices and procedures in transmission and system operations may be exhaustively laid out to prevent ambiguity. Such procedures may be codified in the Grid Code (including its subsidiary codes on scheduling, dispatch, metering);
- Accounting separation between distribution and supply should be commenced by utilities immediately and completed within a period of six months; and
- Wherever necessary the chart of accounts of utilities should be modified appropriately. Government of India should frame new accounting rules within a period of four months.

Market Development

Development of competitive power markets is essential to ensure that the benefits of open access and competition are truly realized. Structured development of power markets including progressive extension of open access, trading mechanism and power exchanges is necessary to ensure that the benefits of the centralized operations can now be obtained through the market mechanisms. It can easily be demonstrated theoretically - and this has also been the experience of several jurisdictions - that unless the markets evolve and gain depth, the costs of the changes could easily outweigh the benefits.

The recommendations of the Task Force on some of the key issues are articulated below:

- *Common power market design* – To usher harmonious operation of power markets it is essential to develop a common market design that would be adopted in all jurisdictions. However, the Task Force recognizes that matters related to market design and development of the market are extremely complex and hence the recommendations of the Task Force have to be detailed out in the form of an implementable market design. While this would require further consultation to be conducted before concrete measures can be initiated on these matters, the preliminary views of the Task Force have been outlined as follows:
 - An overall power market design guidelines, including the creation of suitable Power Exchange, would need to be developed by the Government of India within one year in consultation with all concerned after taking into account relevant experience;
 - All other policy measures recommended should be implemented as appropriate simultaneously with the development of the common market design and the common market design may consider these policy objectives;
 - The policies and applicable rules and regulations should be appended and / or refined by the Appropriate Government and the Appropriate Commission once the common market design is finalized and notified.

- *Providing for consumer choice: Implementation of open access* – The Task Force recognizes that there are several financial, operational, commercial and regulatory issues in addition to infrastructure constraints that need to be addressed before choice can be contemplated for retail consumers. Accordingly, on the issue related to open access to consumers, the recommendations of the Task Force are as follows:
 - While the stipulation of the Electricity Act, 2003, is to introduce open access for all consumers with load of 1 MW or above within five years, it is preferable that the implementation of open access is initiated earlier with a higher threshold before the legal stipulation if necessary;
 - The SERC may conduct appropriate studies to expedite the implementation of open access; and
 - The regulations should clearly outline the approach proposed to be adopted by the SERC for computation of open access surcharges.
- *Area specificity of trading license*: The Task Force believes that the very nature of trading business would require traders to hold diversified portfolio of capacities and consumers. It is the function of the Central Electricity Regulatory Commission to issue license for inter-state trading which would include authorization for trading throughout the country. SERCs would issue licenses for trading within the state;
- *Sale of power through short-term commitments*: The Task Force recognizes that a small market size may not stimulate and sustain investor interest and it may be necessary to create, initially, a significantly large market for trading. Accordingly, the Task Force recommends that a significant portion (which could be up to **50%** of the new capacity) should be committed to trading or other forms of competitive power markets. This could be attained over a period of time, keeping in view the transition requirements.
- *Timing of separation of transmission and system operation functions*: The recommendations of the Task Force are as follows:
 - Functional separation of system operations from the transmission function should be carried out as early as possible, but within a period of four months;
 - Appropriate accounting separation and separation of basic business processes between the transmission and system operations should also be carried out within four months; and
 - Organizational separation of transmission and system operation may be undertaken by the Appropriate Government at a time of their choice after addressing the various issues involved. It is preferable that the common market design should emerge first before the separation of transmission and system operation is undertaken.”

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