

Introduction to Electricity Market in India



Energy Market Development Program

Kathmandu: August 7, 2008

Colombo : August 22, 2008

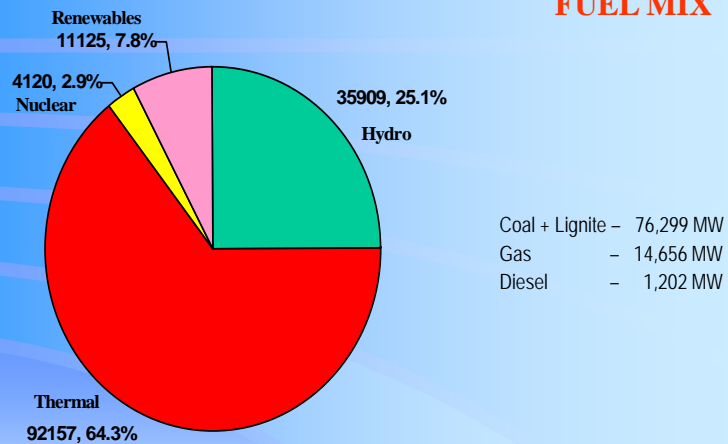
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Power Infrastructure in India (end Apr.'08)

GENERATING CAPACITY

1,43,311 MW

FUEL MIX



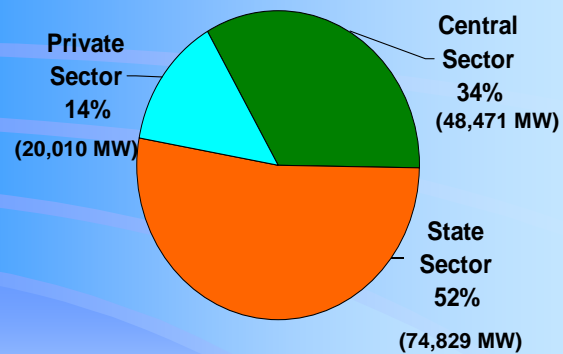
In addition, captive generating capacity (above 1 MW) of approximately 22,335 MW
(as on 31.03.07)

Source: CEA

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Power Infrastructure in India (end Apr'08)

GENERATING CAPACITY 1,43,311 MW



Source: CEA

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Legal Framework – EA 2003

- Consolidates laws of electricity relating to generation, transmission, distribution and trading of electricity.
- Creates environment conducive for development of electricity industry
- Introduction of competition
- Constitution of Central and State Regulatory Commissions to rationalize electricity tariffs;

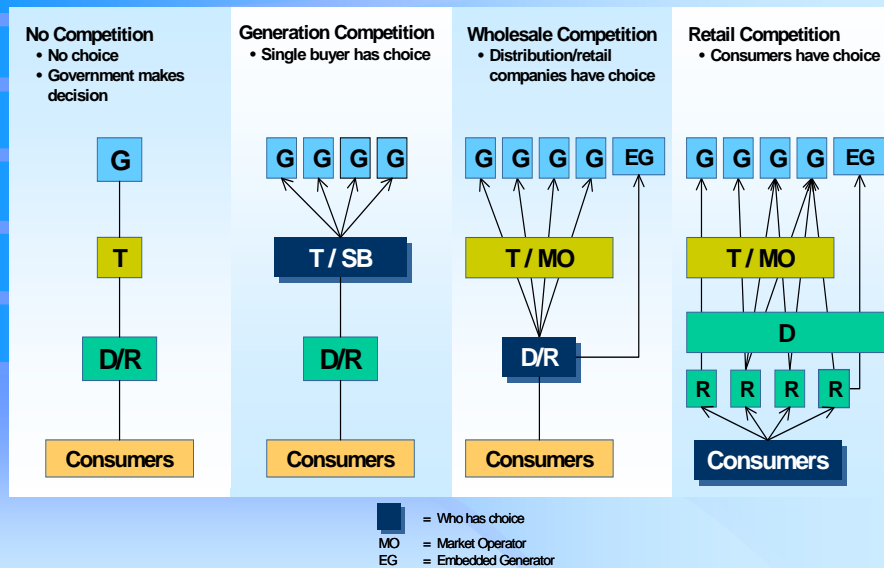
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EA 2003 -Key Features

- Open Access to Transmission /Distribution Systems
- De-licensing of power generation
- Trading in electricity permitted
- Liberal provisions for captive power generation
- Rural generation and distribution freed from licensing
- Expanded role for the Regulatory Commissions

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Evolving Industry Structure



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The Market Structure

- Long-terms Contracts: Allocations from generating Stations of Central Government Companies (ISGS), generation at the State Government owned companies -About 95-96%
- UI : About 2-3%
- Short-term bilateral Contracts: About 2-3%
- Power Exchange : Just Started

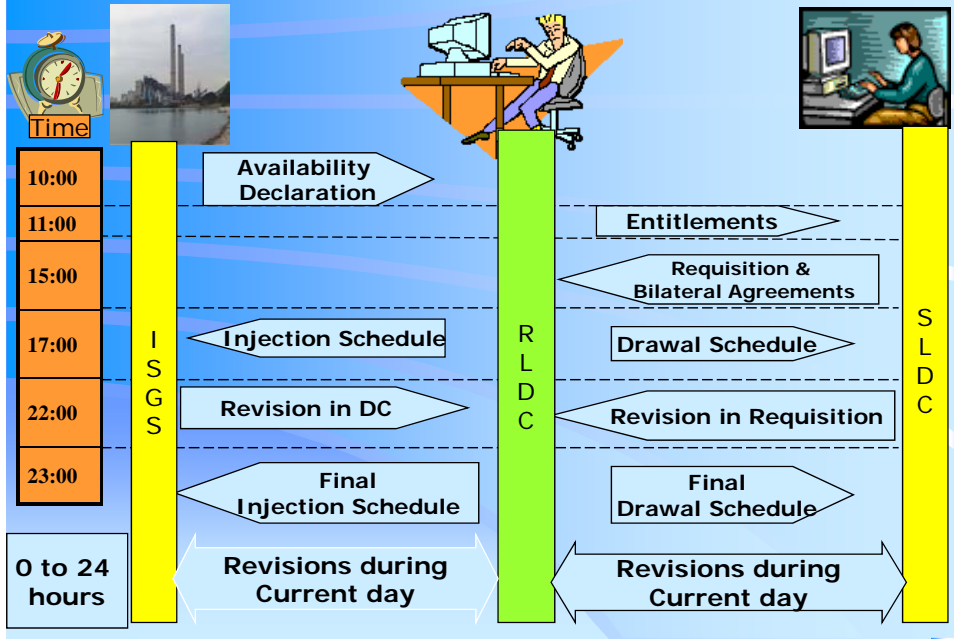
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Building Blocks for Developing Liberalized Electricity Market

- **Grid Code**
- **Experienced System operators**
- **Day ahead scheduling and dispatch procedures**
- **Reliable Energy Accounting systems**
- **Real time price and settlement mechanisms (UI Mechanisms)**
- **Electricity traders dealing in short term and long term contracts**
- **Open Access regulations**
- **Adequate transmission capacity**
- **Bilateral trading through physical forward contracts**
- **The coming up of merchant power plants**

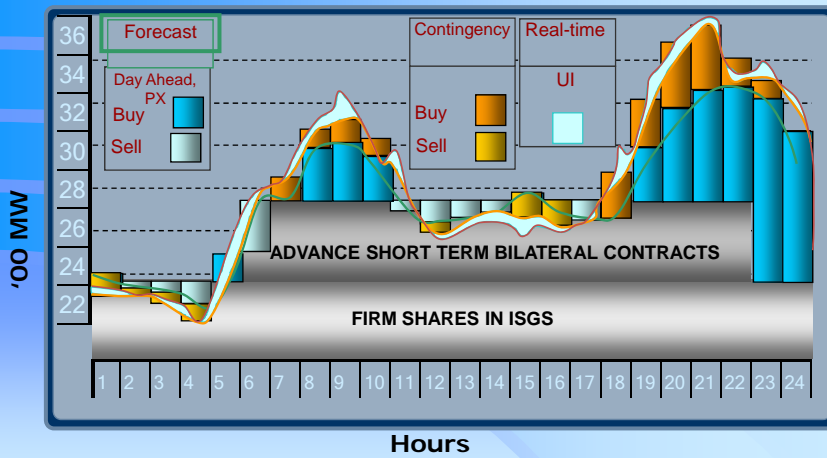
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Decentralised Scheduling

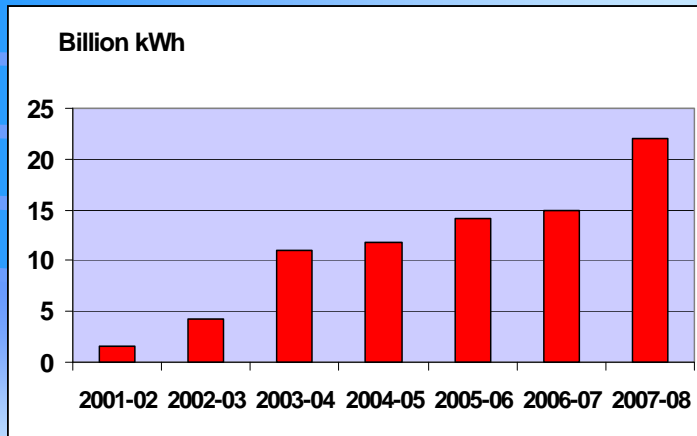


A Typical Dispatch

Surpluses/Deficits - Balance supply and demand



Short-term bilateral Trading



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Entry to the Market

- No Licence required for generation
- Private sector investment mainly through tariff based competitive bidding
- Promotion of Captive and Merchant Power Plants
- License for trading by CERC and SERCs
- Short-term bilateral contracts facilitated through open access
- 2 Power Exchanges have been given permission by CERC – One has started operation

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Applicable Regulations to the Market Participants

CERC/SERCs

- **Indian Electricity Grid Code / State Grid Codes**
- **Trading Licence Regulations**
- **Open Access Regulations**
- **Guidelines for setting up Power Exchange**

Central Electricity Authority

- **Technical standards for construction of electrical plants, electric lines and connectivity to the grid**
- **Grid Standards for operation and maintenance of transmission lines**
- **conditions for installation of meters for transmission and supply of electricity**

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Investment Requirements during XI Plan (2007-2012) in Power Sector

- “Working Group on Power for XI Plan” has assessed funding requirement for the sector to be USD 224Bn+
- USD 94 bn for Thermal and Hydro Generation
- USD 20 bn for Captive & Renewable Generation
- Merchant Power Plants – USD 13.5 bn
- USD 93 bn for Transmission, Distribution and Rural Electrification

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Improving Investment Climate

- Public sector investments have been stepped up; will need to be supplemented through private investments.
- Presently 60,000 MW capacity for projects under execution.
- 100 % FDI in all segments of Power Sector has been allowed. Recently Power trading also covered for 100% FDI.
- Level playing field for both domestic and International Investors.

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Development of National Grid

- Inter - Regional connectivity planned with hybrid systems, consisting of HVDC, Ultra - High Voltage AC (765 kV) & Extra High Voltage AC (400 kV) lines.
- Present Inter- Regional transfer capacity of 17,000 MW to be enhanced to more than 37,000 MW by 2012.

YEAR	:	1993	2002	2007	2008	2012
Capacity (MW):		2,420	5,000	14,100	17,000	37,000

(132 kv lines also included)

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Competitive Bidding Guidelines

- Government has issued the guidelines for competitive bidding for determination of tariff for procurement of power by distribution licensees
- This aims at moving away from cost plus approach for tariff determination and is expected to bring greater gain to consumers through competition.
- Main objectives of the guidelines :-
 - Promoting competitive procurement
 - Facilitating transparency and fairness
 - Providing electricity at competitive price
 - Reduction of cost and time for completion
 - Providing flexibility to Developers

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Ultra Mega Power Projects

- Large coal based Ultra Mega projects of 4000MW each are being developed through private sector participation.
- Tariff based International Competitive Bidding for selection of project developer.
- Mix of coastal projects with imported coal and pit head integrated coal mining-cum-power projects
- Use of more efficient super critical technology
- Three projects have been awarded – one pit head based and two coastal
- One more project expected to be awarded in 2008

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Renewable Energy

- Electricity Act provides for preferential tariff and Renewable Power Purchase Obligations.
- Huge interest shown by private sector.
- REN based capacity almost doubled to 12000 MW in last five years.
- RPOs vary from 1% to 10% in different states.

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Thank You

Website: <http://www.cercind.gov.in>

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