

Unbundling of Power Industry: Case of NEA

Country Profile

- Area : 141,000 sq Km
- Population : 23 Million
- Huge hydro potential, negligible exploitation

Nepal Electricity Authority

- State owned vertically integrated utility (Responsible for generation, transmission and distribution of electricity in the country)
- Maximum power demand: 470 MW
- Energy : 2,261 Gwh
- Customers: 970,611

Generation

- Installed capacity, Hydro: 545 MW
- Installed capacity, Thermal: 57 MW
- 90% hydro, rest diesel
- Grid extends from east to west

Transmission and Distribution

- GSS Capacity: 902 MVA
- 132 kV line length: 1566 Km
- 66 kV line length: 418 Km
- 33 kV line length: 2362 Km
- Number of Consumers: 970,611

NEA Grid

- Integrated grid started in late 1970 through 66 kV
- Grid interconnection conceived during KL I HEP in 1980s
- Major power plants connected with Integrated Nepalese Power System, INPS by 1980s
- INPS is connected through 132 kV

NEA Grid (Contd.)

- Grid extends from east of Nepal to west of Nepal
- Interconnection to India through 132 kV
- 220 kV to be in place in near future
- Load Dispatching Center with telemetering facilities controls the grid operation

Government Policy on Power Sector

- Electricity Act 1992 promulgated to promote private participation in hydro power development
- IPPs came into the scenario: Khimti 60 MW, Jhimruk 14 MW, Andhi Khola MW and Bhote Koshi 36 MW
- More hydro power projects by IPPs in the pipe line
- About 20 PPAs signed by NEA

Government Policy on Power Sector (Contd.)

- Water resource development policy 2001 promulgated with the following objectives:
 - Development of hydro power resource at optimum cost
 - To harmonize electrification with economic activities
 - To develop hydro power for export

Government Policy on Power Sector (Contd.)

Features:

- development of mega projects
 - regional cooperation for promotion of power trade
- promotion export based hydro power
- promotion of private sector participation
- introduction of regulatory body
- unbundling of NEA

Unbundling: Present Status

- NEA restructured to formulate the internal unbundling
- Restructured into 3 segments:
 - Generation
 - Transmission and Substation
 - Distribution and Consumer Services

Unbundling: Present Status (Contd.)

- Profit centers concept introduced
- 20 distribution branches under DCS turned into profit centers
- More branches to be turned into Profit centers
- Profit centers shall be part of NEA but act like independent bodies

Unbundling: Present Status (contd.)

- Community electrification concept introduced and regulation passed for rural electrification
- Community shall be responsible for distribution and sales of electric energy

What's in the Future?

- separate generation and transmission organizations/ segmentation of power system
- Need independent open access grid operator/ transmission system operator
- Rules and regulations for interconnection
- Rules and regulations for power transmission

What's in the Future? (Contd.)

- Committee formed to prepare the draft of Grid Code
- Data on safety procedures and system operation collected
- Working draft prepared and discussed internally

Contents of the Draft

- Definitions
- Grid planning procedures
 - Demand forecast
 - Generation expansion plan
 - Grid operational plan
 - Long term transmission development plan

Contents of the Draft (Contd.)

- Performance standards
 - Reliability standards
 - System loss
 - Safety standards

Contents of the Draft (Contd.)

- Connection requirements
 - Technical, design and operational criteria
 - Procedure for connection, modification
 - Requirements for large generators
 - Requirements for distributors and other grid users

Connection requirements (contd.)

- Requirements for protection
- Requirements for communication and SCADA
- Requirements for electrical diagram
- Data registration
- Equipment identification

Contents of the Draft (contd.)

- Grid operations procedures including
 - Maintenance Scheduling
 - Frequency management
 - Voltage management
 - Emergency procedure
 - Safety implementation

Contents of the Draft (contd.)

- Scheduling and dispatching procedures
 - Generator scheduling procedures
 - Dispatching procedures+
- System testing procedures
- Metering procedures

Thank you

Data sharing and coordinating

- Operating norms to be uniform for generating companies: state owned, IPPs
- System operator and grid owner to act as the data provider to grid users
- System operator to provide dispatch orders