



Introducing retail electricity supply business in India – Lesson learned from UK

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Abstract

Retail Electricity Supply Business in India would be a major turning factor that can completely change the present scenario of Distribution sector in India which in turn can enhance the efficiency and reliability of the system. Due to the absence of segregation of wire and supply of Discoms a fair competitive environment in distribution sector is not yet achieved. On the same note many countries have already implemented this concept whereas India still needs to address it. This research paper shows, how UK came up with the concept of Retail Supply Business and based on the respective measures how India can look forward and what could be a possible way of implementing such concept.

Keywords: electricity act 2003, electricity (amendment) bill 2014, carriage, content, parallel licensing

1. Introduction

Electricity acts as a prime mover in the growth and development of any nation. Indian society is primarily dependent on its regular resources and electricity ^[1]. Development of various regulations in Indian power sector had helped the nation to tackle challenges in the field of generation, transmission and distribution of electricity crosswise over nation in order to achieve a better planning, planning and implementation of new ideas and concept in Indian power sector.

The Electricity Act, 2003 had helped a great deal in establishing independent regulatory bodies, bringing up of competition in generation sector, protecting the interest of consumer etc. with a promise for a quality power for all.

Generation, Transmission and Distribution frames a backbone of a nation yet distribution business is attaining the high level of aggregate technical and commercial losses ^[2], financial losses, power theft, operational inefficiency with infrastructure aging etc.

In order to mitigate the risk of non-functioning of distribution sector at state government level, it is clear that, there is a need of rolling out of competition in electricity distribution sector. The concept of 'carriage and content' must be introduced so that, the present stated problems can be minimized. This hole has led the Indian Government to consider amending the Electricity Act 2003 through Electricity (Amendment) Bill 2014 and introduce competition in distribution by separating the wire and electricity supply business.

The competitive retail supply model has been implemented in an undeniable manner in the United Kingdom (UK), New Zealand, Norway, Finland, Spain, certain States of Australia and United States of America while in Philippines it is under various stages of implementation. Here, international experience of UK is chosen as it is widely regarded as relevant

models of implementation where introducing competition in retail electricity supply involved segregating distribution and supply functions as required in Indian context and resulted in lowering electricity prices for low end consumers.

Presented paper will concentrate on the problems and challenges in introducing retail electricity supply business keeping regulatory and policy framework, tariff structure, establishment of intermediary company, phase wise introduction and financial burden as a main challenges.

2. International Experience: UK

The UK is hailed as the one of the most successfully implemented models of competition in the retail electricity sector. The reforms process in UK started from late 1980s, and saw several transformations before retail competition was finally made available to end consumers at the household level. The structure of the UK electricity sector prior to reforms was simple – there was a vertically integrated (Generation and Transmission) state-owned Central Electricity Generating Board (CEGB) to take care of generation and transmission of power, and regional area board to distribute and supply power to various geographical areas. The Electricity Act, 1989 paved the route for restructuring and privatization of the electricity industry in Great Britain. The Act had provisions for privatization, introduction of competitive markets, and a system of independent regulation. Some of the real changes in the sector were:

All oil and coal-fired generating plants in England and Wales that had previously been under the control of the state-owned CEGB were allocated ('vested') to two new companies, National Power and Powergen ^[3]. The nuclear generating stations were allocated to Nuclear Electric. Accordingly, vertically integrated CEGB was split into 3 generating companies (National Power, Powergen and Nuclear Electric)

and one transmission company (National Grid Company i.e. NGC).

Regional area boards were replaced with 12 Regional Electricity Companies (RECs) and the nearby distribution systems were transferred to the RECs. In due course of time, the government additionally sold off each of the 12 RECs.

Established the electricity pool as a wholesale market mechanism through which electricity was traded in England and Wales ^[4]. The Pool was set up to facilitate a competitive bidding process where generators named bid prices for electricity for each half hour of the day. The bids were ranked by price and the last unit required to meet demand set the clearing price for the system.

Therefore, the Pool acted as a clearinghouse between generators and wholesale consumers of electricity (primarily the RECs) ^[5]. The NGC operated the Pool and administered the Pools settlement system on behalf of Pool members. The Pool was often subjected to regulatory interventions aimed at controlling monopolistic behavior and preventing re-integration in the electricity industry.

Abolished the Electricity Council and created a system of independent regulation, headed by the director general of electricity supply, covering England, Wales and Scotland, and supported by a regulatory office, the Office of Electricity Regulation, to regulate the newly privatized electricity industry.

The supply market was opened up to competition in three phases, starting from April, 1990 and culminating in May, 1999.

The Utilities Act, 2000 mandated ownership separation of distribution (wire) and retail supply businesses. The retail side of the market was divided into "franchise" and "non-franchise" customers. Non franchise customers were given the option of choosing their supplier from any of the 12 RECs or from the pool or from retailers.

With this legislation, a distribution network operator could never again sell electricity as a retail supplier. This stemmed from the rationale that allowing distribution companies to remain in retail sale may adversely affect market competition because these distribution companies may discriminate between their own particular consumers and those taking supply from competitors when it came to network-related service, or they may subsidize their own retail customers by using the wire tariff to cross-subsidize them. Therefore, the 2000 Act separated the competitive activity i.e. retail supply from the inherently monopolistic distribution business, thereby eliminating conflict of interest.

Functional separation of distribution companies

- Electricity Act, 1989 had provisions for privatization, introduction of competitive markets, and a system of independent regulation.
- Vertically integrated generating boards were split into different generating companies and in Transmission Company.
- Replacement of regional area boards with Regional Electricity Companies (RECs).
- Transfer of local distribution systems to RECs.
- Sold of RECs by the government.
- Establishment of electricity pool as the wholesale market

mechanism through which electricity was traded ^[6].

- Abolishment of Electricity Council.
- Creation of system of independent regulation and support by a regulatory office, to regulate the newly privatized electricity industry.
- RECs were privatized by public floatation on stock market.
- RECs ran regional distribution networks as well as supplied electricity directly to consumers.
- Due to regional monopolies on distribution, the Utilities Act, 2000 abolished the existing distribution/retail licences, and introduced a Great Britain-wide licence, allowing all suppliers to supply customers nationwide ^[7].
- Act made provision for the separation of supply and distribution activities.

New Structure

- Supply market opened up to competition in phases.
- Division of Retail side of the market into "franchise" (load with 100 kW or less) and "non-franchise" (>100 kW) customers.
- Formation of two types of suppliers First Tier Suppliers (each of the REC in its respective supply area) and Second Tier Suppliers (RECs operating outside their designated supply areas, generators and new independent energy companies).
- First tier suppliers - exclusive right to supply electricity to franchise consumers.
- Non-franchise customers were given the option of choosing their supplier from among the first or second tier suppliers.

Power procurement mechanism & wholesale market

- Establishment of wholesale electricity trading arrangements (Pool).
- Working of pool on the basis of bids from the generating companies setting the price at which they would sell electricity in 48 half-hourly blocks over a 24-hour period.
- Establishment of New Electricity Trading Arrangements (NETA) for operating like other commodity markets whilst making provision for the electricity system to be kept in physical balance at all times to maintain security and quality of supplies ^[8].
- **Self-dispatch:** Each generator responsible for determining the level of output from each of its units.
- **Paid as bid:** All trades valued at the bid price for that trade.
- **Firmness of markets:** Any difference between physical consumption or production and contracted positions at 3.5 hours is cashed out through the balancing mechanism at a penal rate.
- **Ex-post price:** Cash-out price determined after the event.
- **Trading closer to the event:** Trading continues up to 3.5 hours ahead of real time ^[9], allowing market participants' greater opportunity to tailor their contracted position to match their physical position.

Up gradation of Infrastructure & Metering

- As independent Meter Operators entered the market, the original metering businesses were separated from their

corporate companies^[10].

- Metering - responsibility of the supplier.
- Metering activity subdivided into 3rd party activities Meter Asset Provider (MAP) for procurement, asset management and tracking, fault triage, warranty claim management and Meter Operator (MOP) for Installation and maintenance of meters.
- Appointment of MAP & MOP by Retail Supply Company.
- Handling of MAP and MOP by same agency as well.
- Introduction of agent competition, allowing suppliers to choose who provides them with metering services.

Issue of metering in case of consumer switching

1. **Introduction:** of Meter Point Administration Number (MPAN) to uniquely identify electricity supply points in order to provide an easily as well as simplify administration.
2. **Feature:** Supply receiving power from the network operator (DNO) has an Import MPAN, while generation and micro-generation projects feeding back into the DNO network are given Export MPANs.

Framework for consumer interface

- Distribution and the retail supply business have separate Consumer Interface to deal with consumer complaints or queries or requests.
- Consumer should contact company (supplier or network operator) directly in the first instance.
- If customer is dissatisfied from the solution to complaint, then consumer can go to Ombudsmen.
- Mentioning of contact number on the consumer bills by suppliers which guides consumer regarding where to call in case of power cuts.
- Still, if consumer calls the Supply Company for network related issue, the consumer will be directed to right interface based on their postal code.

Grievance Mechanism

- **Ombudsman Services:** Scheme set up to investigate complaints from domestic and micro business consumers that the energy company cannot resolve (after eight weeks or deadlock)^[11].
- **Powers of Ombudsman:** To correct the problem, apologies, explain what happened, and make a financial award.
- **Funding of Ombudsman:** Case fee is charged to company - Payment not dependent on outcome - Service is free for consumers.
- **Independence of Ombudsman:** Services is governed by a board of directors.

Tariff setting mechanism

- The price controls applied only to the Public Electricity Supplier.
- Second tier suppliers were not subject to any price restraint.
- The controls covered domestic and small non-domestic customers and took the form of maximum price restraints rather than the cost pass.

- Price controls on the Ex-PES suppliers took the form of a restriction on the weighted average unit price they could charge to standard domestic customers and the weighted average unit price they could charge to domestic economy customers within their supply service areas^[12].
- Replacement of price controls by Office of gas and electricity markets (Ofgem) with the use of powers of investigation and enforcement under competition law.
- Removal of the remaining prescribed standards of performance in electricity supply, and the lifting of the requirement on Ex-PES suppliers to submit regulatory accounts to Ofgem.
- Launch of the 'Energy Supply Probe' investigation into the electricity and gas supply markets for households and small businesses.
- Development of package of measures, divided into parts, to improve the functioning of the market.
- Required any difference in the terms and conditions offered by suppliers in respect of different payment methods to be cost reflective.
- Prohibited undue discrimination in any terms and conditions offered to consumers.

Universal Service Obligation (USO)

- To improve the information supplier provide to customers on bills and in an annual statement.
- To help vulnerable and indebted customers who are currently blocked from changing suppliers due to outstanding debts^[13].
- To improve the conduct of sales and marketing activities.
- To help small business customers by providing them with better information regarding the terms and conditions of their contracts.
- To improve the transparency of supply and generation activities.

Phasing of retail supply competition

Phase 1

- Customers with peak loads of > 1 MW (about 45% of the non-domestic market and 26% of total sales) were allowed to choose their supplier.
- Separation between distribution and retail services was not mandatory.
- Local monopoly Distribution Company needed a first-tier supply license for selling retail services in its area. Other companies, generating companies, brokers, or distribution companies from other locations needed a second-tier supply license.

Phase 2

- Open market was extended with a 100 kW and above annual demand.
- With time, more and more consumers opted for competitive supply.

Phase 3

- Opening up of the domestic market (below 100 kW) to competition.
- Switching of domestic electricity customers from one or more times from supplier to supplier.

- Increase in the numbers of licensed electricity suppliers operating in the electricity supply market with an increase in merger and acquisition activity.

3. Proposed Retail Supply Business Model For India

Majorly the proposed retail supply business model will be introduced in India through separation under three heads, namely Distribution, Retail Supply and an Intermediary Company (Temporary-Power purchase reallocation)

Distribution

Distribution Market Operation (DMO)

Under this operation, the department will be responsible for the accounting for the energy scheduled, dispatched to retail supply companies, balancing and settlement and calculation of distribution loss.

Distribution Network Operation (DNO)

Under this operation, the department will be responsible for providing neutral access to its network, expansion and strengthening of network, O&M of the network such as network reinforcement and replacement, improved overhead line repair, 24x7 network availability, reduction in Technical losses, co-ordination with retail supply companies for new connection release, change in consumer load and disconnection, fault restoration etc.

Distribution Planning Operation (DPO)

Under this operation, the department will be responsible for Co-ordination with transmission utility for network planning.

Distribution System Operation (DSO)

Under this operation, the department will be responsible for monitoring of the distribution network operations, supervision and control, real time operation for distribution network control and despatch.

Tariff

State Electricity Regulatory Commission will determine unbundled tariffs individually for Distribution Business, Retail Supply Business and Intermediary Company. Three stages for tariff setting mechanism for individual entities are:

- **Network Capital Expenditure:** Depreciation, return on capital employed
- **O&M Expenditure:** Employee expenses, administration and general expenses, repair and maintenance expenses, interest on working capital etc.
- **Losses**

Consumer Interference

Single window and separate interface

Distribution Company could become single window for all types of consumer complaints/queries/requests. Distribution Company would then resolve the consumer complaints/queries/requests regarding Supply or metering by representing consumer to Supply Company or Metering Company respectively or can be separate.

Retail Supply

Tariff

The SERCs would determine a regulated tariff, based on the

filling made by Supply Company. The tariff would allow for recovery of following costs –

- **Capital Assets:** Depreciation, return on capital employed
- **Power Purchase Cost**
- **O&M:** Employee expenses, administration and general expenses, repair and maintenance expenses, interest on working capital etc.
- **Losses**

Metering

Advance Meter

Each new Retail Supply Company entering in the market would be asked to install Advance Metering (TOD) meter systems for new consumers that they acquire with can read the data in 15 minutes of time block.

Financial Loss

Financial losses can be classified into recognized regulatory assets and other unrecognized losses. Regulatory assets are the revenue gap of utilities which are recognized by the state electricity regulatory commissions but which could not be passed onto consumers in the form of a tariff hike and are therefore to be amortized in due course of time.

Unrecognized financial losses are the revenue gap created because of dis-allowance of certain costs of the utilities by the regulatory commissions due to reasons like failure to meet performance targets by the utilities and imprudent expenditures.

Regulatory asset loss: Regulatory Assets can be transferred to Intermediary Company and amortised through one of the following approaches.

- **Collection of Universal Charges:** A universal charge could be collected from all consumers to amortize the regulatory assets gradually.
- **Support from State Government:** State Governments could give a one-time financial relief for liquidating the regulatory assets or gradually amortizing them.
- **Hybrid Approach:** State Governments could fund a part of Regulatory Assets, the rest being collected through a Universal Charge. Alternatively, the State Government could fund the Universal Charge to be levied on economically weaker consumer categories.

Un-Recognized Loss

Unrecognized financial losses on the balance sheet of existing Discoms are due to factors like costs disallowed by the regulators or failure to meet loss reduction performance targets. These unrecognized financial losses too would have to be cleaned from the balance sheets of Discoms before the introduction of retail supply competition in order to ensure the incumbent retail supply companies remain competitive in an open market.

Consumer Database

The data related to following categories can be collected:

- Data related to consumer such as address, meter details, consumer category etc.
- Entities serving consumer such as appointed Distribution Company, metering company (if any), retail supplier.
- Data related to energy usage such as consumption pattern, connected load, load profile.

Intermediary Company

Tariff

▪ **Cost Incurred towards Power Purchase Agreement (PPA)**

For instance financial loss due to inability to recover all power purchase cost for all PPAs.

▪ **Operation Expenses**

Employee expenses, Administration, General expenses

State Wise

It means single intermediary company for the entire state.

Discom Wise

It means one intermediary company for each of the current Discom.

Transfer of power purchase agreement

As per The Electricity (Amendment) Bill 2014, the IC would succeed the existing PPAs of incumbent Discoms.[14] These PPAs would then be allocated by the Intermediary Company among the retail supply companies.

▪ **All PPA**

Transfer of all PPA of current Discom to Intermediary Company.

▪ **Selected PPA**

Transfer of selected PPA of current Discoms to Intermediary Company.

▪ **Partial PPA**

Transfer of Partial PPA of current Discoms to Intermediary Company i.e. a certain percentage of power from all PPAs could be transferred to the Intermediary Company while the rest of the power to be sold in wholesale market.

The PPA allocation to retail supply company can be done in various ways such as:

- Long Term PPA
 - ✓ With Cost plus Tariff
 - ✓ With Tariff Competitive Bidding
- Medium Term PPA
- Own Generating Station
- Energy Trader
- Energy Exchange

4. Conclusion

In accordance of Electricity (Amendment) Bill 2014, India has prepared a model rollout plan for introduction of competition in retail sale of electricity and recommended a framework on key issues involved in implementation like segregation / reorganisation of distribution companies and its new structure, roles and duties, power procurement mechanism, reduction of cross subsidies, allocation of losses amongst wire and retail supply companies. The suggested framework in respect of power procurement mechanism is in variance with the UK framework which has a strong competitive wholesale market at national level and provides a competitive price of bulk power to retail companies. Whereas the framework suggested in India has recommended an Intermediary Company at every State Discom, which will be inheritors/repository of existing

power purchase agreements (PPAs) between Distribution Licensees and Generators, allocate power to retail companies based on average price of PPAs. The international experience tells us that the creation of highly competitive wholesale electricity market was the centrepiece of reforms and success for extending competition at retail end consumers is largely dependent on this component. It is also worth noting that UK went for substantial wholesale market reforms before setting upon the course of retail competition. International experience also suggests that levy of Universal Charge (UC) on all electricity users in order to phase out cross subsidies remaining in the system is a concept that can be considered by India where tremendous cross subsidies still prevail in retail tariffs set by regulators. The UK experience suggests that the retail competition introduced in phases, where in each phase, the new retail supply companies would be allowed to supply electricity to a certain section of consumers which results into contestable (unregulated) and non-contestable (regulated) retail market. This phasing is important because it allows new players, time to ramp up their resources gradually, protect low end consumers and acclimatise down to new regulations and industry structure. In India large agriculture consumers are provided electricity connection without meter and with fixed tariff structure. Before making them as a contestable consumer it is necessary that the metering arrangement is required to be in place. The framework suggested in India has proposed that incumbent retail supply licensee would install the meter for unmetered consumers. This framework has not suggested any remedy to the contestability of such consumers. The UK experience suggests a non-conflicting mechanism for separation of distribution business from contents of supply. For this, highly competitive wholesale market, strong mechanism for information promulgation and active consumer participation in retail market are the prerequisites. It envisages further a reduction in retail electricity prices after passing benefits of wholesale market price discovery. It expects a separate distribution network company which owns and operates the distribution network assets and this company is not allowed to own the non-regulated generation and/or retail activities. The UK experience needs to be factored into a detailed rollout framework for introducing competition in retail supply of electricity. There are certain specific key issues which are Indian specific, like allocation of financial losses, allocation of technical and commercial losses between new companies and balance sheet segregation of Discoms, on which international learnings are non-documented and needs to be framed as per the State conditions.

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