

DISCUSSION PAPER

ON

**DISTRIBUTED GENERATION BASED
FRANCHISEE FOR ELECTRICITY DISTRIBUTION**

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Prepared by



ABPS Infrastructure Advisory



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1 Background and Context

The country has been witnessing serious shortage of energy resources with many parts reeling under long and severe power shortages. The gradual widening of gap between demand and supply has become a major challenge for the Central and State Governments. Realizing the necessity and importance of reform in the electricity sector, the Government has enacted the Electricity Act, 2003 and notified the National Electricity Policy and Tariff Policy.

This Approach Paper discusses the concept of 'Distributed Generation Based Franchisee for Electricity Distribution', as one of the possible solutions to mitigate the problem. It explores how this concept can be instrumental in overcoming the deepening power crisis and how much the private-public participation can make the concept an effective workable solution.

Maharashtra has the largest installed capacity in the country for electricity generation (around 12,000 MW), transmission and distribution. However, over the years, the State has not been able to meet the growing demand for electricity. The demand supply gap in the State has been widening over the last 5 years as can be seen in the following table:

Table 1: Demand Supply Scenario in MW during last five years in MSEDCL License

Area

	FY 2001-02	FY 2002-03	FY 2003-04	FY 2004-05	FY 2005-06
Demand	10,119	11,425	11,357	12,749	13,602
Availability	9,103	9,004	9,315	9,704	9,390
Shortfall	1,016	2,421	2,042	3,045	4,212

Source: MSEDCL data

The above table shows that the peak electricity shortage has increased from about 1,000 MW in 2001-02 to about 4,200 MW in 2005-06. This has resulted in load shedding ranging from 12 hours in agricultural dominated regions to around 3 hours in urban and industrial agglomerations in the MSEDCL license area.



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So what are the major challenges confronting the energy sector in the State? Perhaps the biggest problem faced by the Maharashtra State Electricity Distribution Company Limited (MSEDCL) is high distribution losses, which have been assessed by the Commission as 35% for 2006-07. The Commission, in the past, has directed MSEDCL to reduce distribution losses, though no significant progress has been achieved by MSEDCL. The other problems being faced by the electricity sector in the State include:

- a. Increasing dependence on costly supply sources;
- b. Lower generation of electricity within the State of Maharashtra.

The traditional approach to tide over would be to augment the generation capacity. The State has initiated capacity addition programme for generation of additional 4,500 MW over the next 4 to 5 years (about 500 to 1,500 MW per year). However, uncertainties of fuel linkages and rising fuel prices have impaired the State's ability to meet the impending electricity shortages in the near term.

1.1 Available Options

MSEDCL, in the present situation, needs to adopt a multi-pronged strategy wherein all the following options could be utilised for improve power supply scenario in the State:

- Additional short-term power purchase from other States and traders to tide over the immediate supply shortage;
- Improving the distribution efficiency by reducing distribution losses; and
- Installation of short-gestation distributed generation facility.

The Commission has separately discussed the first option in respect to a petition filed by MSEDCL as well as in the Tariff Order issued on the ARR and Tariff Petition filed by MSEDCL for FY 2006-07. As regards second option, though MSEDCL has undertaken 'Internal Reforms Programmes', for improving the distribution efficiency ; the results do not appear to be encouraging, as no tangible improvement has been noticed. Further, 'reforms' is a necessary but long drawn process. Therefore, it is imperative that MSEDCL identifies certain short term approaches to improve power supply scenario in the State.

The third option indicated above envisages installation of short-gestation generation capacity either in the form of conventional sources of generation such as liquid fuel or non-conventional sources such as small hydro, wind, biomass,etc., to make more



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generation available as well as reduce technical losses by making generation available at consumer end. Further, if generator takes responsibility for distribution in the area as a franchisee of the licensee, this integrated distribution franchisee could be instrumental in bringing much needed reforms in the sector.

In this context, this model could also be useful in bringing in competition for private sector participation. In several States, distribution reforms have been initiated and implemented by adopting *privatization* and/or *Franchisee* models. Privatization with sale of equity of more than 51%, transfers the control of the organization to the majority equity holder. Franchisee option, on the other hand, retains the ownership of the system with the Distribution Licensee, while allowing the private sector to function with relative independence. Further, it is possible to implement 'franchisee' structure with wide variety of other legal structures such as co-operative societies, industrial estates, panchayati raj institutions etc.

It is important to note that in Maharashtra, it is essential to increase electricity generation locally without overloading the existing transmission system. Therefore, it is essential to identify an appropriate model, which would allow local (distributed) generation and distribution of power with the involvement of co-operatives, private sector, etc. . Considering that distributed generation is likely to be more expensive than average power purchase cost of the utilities, cost reflective tariffs for such supply are bound to be higher than the average tariffs of the utilities. Therefore, such an arrangement would primarily suit urban and semi-urban areas, as well as dedicated industrial feeders, where 'ability to pay higher tariffs' exists. Public-private partnership can play an important role in provision of these services. In the light of these issues, "***Distributed Generation based Franchisee for Electricity Distribution***" option is explored in this Approach Paper.

Rural areas need not be left out as electricity is acknowledged as a basic necessity for improving the standard of living. Increasingly, agriculture and cottage industry are dependent on electricity as source of energy. Rural electrification is also a major thrust area identified by the Central Government. The concept of distributed generation based electricity distribution Franchisee can also be suitably adopted for rural areas, if beneficiaries demonstrate willingness to pay appropriate 'cost reflective tariffs' or the



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State Government provides the necessary subsidy concession. Though, this Discussion Paper is focussed towards introduction of this Model in urban and industrial areas, it should be noted that benefits of this approach would be profound if it could be implemented in rural areas as this approach will obviate investment in network as well as technical losses over long drawn networks.

This Approach Paper is an attempt to analyse and discuss the framework for the Franchisee arrangement and the roles of the Licensee and Franchisee as also the issues related to distribution management and generation. The purpose of the Paper is to invite comments and suggestions from utilities, consumer groups and other stakeholders with a view to developing a workable and effective framework.

1.2 Advice to the State Government

The Electricity Act 2003 (EA 2003), provides for the State Commission to advice the State Government, under Section 86 (2), which stipulates:

“(2) The State Commission shall advise the State Government on all or any of the following matters, namely:-

- i. promotion of competition, efficiency and economy in activities of the electricity industry;*
- ii. promotion of investment in electricity industry;*
- iii. reorganization and restructuring of electricity industry in the State;*
- iv. Matters concerning generation, transmission, distribution and trading of electricity or any other matter referred to the State Commission by that Government.”*

The Commission is of the opinion that the State Government’s policies could be suitably evolved to promote distributed generation based franchisees for electricity distribution. This would result in better service to consumers prepared to pay ‘cost reflective tariffs’ and competition in the sector. It is the intention of the Commission to apprise the Government on the subject matter, on the basis of this Approach Paper and comments received thereon during the public process.



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2 Regulatory Framework

2.1 Provisions under Electricity Act 2003

The Electricity Act 2003 (EA 2003) has created pathways to reform the electricity sector. The different provisions under the EA 2003 are expected to result in improving efficiency and reliability of electricity supply to all parts of the country.

It is essential to review the regulatory framework in the context of the proposed concept of 'Distributed Generation based Electricity Distribution Franchisee'. The proposed Franchisee will have to play a dual role as a 'generating company' that generates electricity (exclusively for distribution in the area of supply of distribution Licensee allocated to the Franchisee) and as a 'Distribution Franchisee' that distributes electricity.

'Franchisee' has been defined in EA 2003 as follows:

"Franchisee means a person authorised by a distribution Licensee to distribute electricity on its behalf in a particular area within his area of supply".

The Franchisee arrangement will, primarily, be governed by the Franchisee Agreement between the distribution Licensee and the Franchisee. It follows that the Franchisee will be required to supply electricity as per the tariff approved by the Commission. At the same time, the generating company, a part of the proposed Franchisee, will sell electricity to the distribution division, by way of transfer pricing. Principles of efficiency and competition will be adopted by the distribution Licensee (MSEDCL in this case), and all organizations bidding for the proposed Franchisee arrangement will compete with each other. MSEDCL, will purchase electricity from the selected Franchisee to meet a shortfall in the area of Franchisee.

Distributed Generation (DG) system envisaged under the proposed approach is neither a stand alone system as referred in Section 4 of EA 2003 nor a Captive Generating Station. The proposed DG facility shall be a grid connected generating station and will feed the electricity generated into the distribution system under its allocated area of supply.



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Relevant provisions of the EA 2003 applicable to the proposed Franchisee (also playing the role as a generating company) have been discussed below:

- Section 7 of EA 2003 which permits setting up of generating stations, reads as follows:
“Any generating company may establish, operate and maintain a generating station without obtaining a licence under this Act if it complies with the technical standards relating to connectivity with the grid referred to in clause (b) of section 73.”
- Section 10 of EA 2003 defines duties of generating companies. It may be noted that a generating company can supply electricity to any consumer under the Open Access regime. However, under the proposed Franchisee arrangement, electricity shall be supplied to the distribution Licensee for supply to consumers located only within the area assigned to the Franchisee.
- Seventh proviso under Section 14 of EA 2003 provides the framework for electricity distribution through another person as follows:
“Provided also that in a case where a distribution Licensee proposes to undertake distribution of electricity for a specified area within his area of supply through another person, that person shall not be required to obtain any separate licence from the concerned State Commission and such distribution Licensee shall be responsible for distribution of electricity in his area of supply”
- Section 23 of EA 2003 empowers the Commission to take action in order to maintain efficient supply of electricity.
- Section 24 of EA 2003 stipulates conditions under which the Commission may suspend the license of distribution Licensee. These conditions need to be suitably reflected in the Franchisee Agreement.
- Part VI of EA 2003 comprises provisions with respect to distribution licensees. The distribution Licensee will be required to incorporate relevant provisions suitably in the Franchisee Agreement.
- Part VII of EA 2003 has provisions related to tariff, which will be determined by the Commission. Tariff determined by the Commission for the distribution Licensee will also be applicable to the consumers of the Franchisee. Sub-sections a, b, c and e of Section 61 as well as sub-section 1(a), 1(d), 2, 3, 4, 5 and 6 of Section 62 particularly have direct relevance to the proposed Franchisee arrangement. Similarly, Section 65 will be relevant in case of provision of subsidy by the State Government. However,



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Franchisee-specific 'reliability surcharge' may have to be determined for each Franchisee.

- The proposed Franchisee (being also a generating company) will be required to furnish to CEA all the required information as provided under Section 74 of EA 2003 as under:

"It shall be the duty of every Licensee, generating company or person generating electricity for its or his own use to furnish to the Authority such statistics, returns or other information relating to generation, transmission, distribution, trading and use of electricity as it may require and at such times and in such form and manner as may be specified by the Authority".

- Section 86 of EA 2003 outlines the functions of the State Commission, inter-alia:

" (a) determine the tariff for generation, supply, transmission and wheeling of electricity, wholesale, bulk or retail, as the case may be, within the State:

Provided that where open access has been permitted to a category of consumers under section 42, the State Commission shall determine only the wheeling charges and surcharge thereon, if any, for the said category of consumers;

(b) regulate electricity purchase and procurement process of distribution licensees including the price at which electricity shall be procured from the generating companies or licensees or from other sources through agreements for purchase of power for distribution and supply within the State;

...

(e) promote cogeneration and generation of electricity from renewable sources of energy by providing suitable measures for connectivity with the grid and sale of electricity to any person, and also specify, for purchase of electricity from such sources, a percentage of the total consumption of electricity in the area of a distribution licensee;

Section 86 (1)(e) would be relevant to the proposed Franchisee arrangement if the Franchisee generates electricity using cogeneration and/or renewable sources.

2.2 National Electricity Policy 2005

The National Electricity Policy 2005 (NEP 2005) has given the following directions to improve electricity distribution:



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- a. Proper restructuring of distribution utilities essential for achieving efficiency gains.
- b. Adequate financing support to utilities. Such support could be provided with conditions to achieve pre-determined efficiency gains and for reducing cash losses.
- c. Appropriate governance structure to be in place to insulate these organizations from extraneous interference as also to ensure transparency and accountability.
- d. Private sector participation in distribution to reduce transmission and distribution losses and for improving services to customers.

Section 5.4.6 of NEP 2005 stipulates:

“A time-bound programme should be drawn up by the State Electricity Regulatory Commissions (SERC) for segregation of technical and commercial losses through energy audits.”

The proposed Franchisee concept will aid in achieving the objectives outlined by the NEP.

The NEP 2005 has also provided policy directive in respect of metering as follows:

“5.4.9 The Act requires all consumers to be metered within two years. The SERCs may obtain from the Distribution Licensees their metering plans, approve these, and monitor the same. The SERCs should encourage use of pre-paid meters. In the first instance, TOD meters for large consumers with a minimum load of one MVA are also to be encouraged.....”

Under the Franchisee Agreement, the Licensee can also ask the Franchisee to implement a systematic metering programme. Such a programme will not only help the Franchisee to improve its billing efficiency, but also help the Licensee undertake effective energy accounting.

2.3 MERC Regulations

The Commission has notified various Regulations, inter-alia:

- MERC (Terms and Conditions of Tariff) Regulations, 2005
- MERC (Standard of Performance) Regulations, 2005
- MERC (Electric Supply Code and Conditions of Supply) Regulations, 2005, etc.



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The provisions of these Regulations will have to be incorporated in the Franchisee Agreement.



3 Distributed Generation

EA 2003 has provisions to encourage cogeneration and generation of electricity from renewable sources. Also, Section 4 of the EA 2003 stipulates that the Central Government shall prepare and notify a National Policy permitting stand alone systems (including those based on renewable and other non-conventional sources of energy) for rural areas. While EA 2003 refers to stand alone distributed generation in the context of rural electrification, there are no restraints on use of Distributed Generation (DG).

Distributed Generation includes small, modular technologies for electricity generation, located close to the load. DG technologies are used both in stand alone mode as well as in grid parallel mode. Conventional electricity generating stations are typically located close to the fuel source and away from the loads, and electricity generated is conveyed through the transmission system to the load centre, which often requires large investment. Transmission and distribution costs account for about 30 per cent of the cost of delivered electricity. DG technologies obviate the need for an expensive transmission system and minimise transmission and distribution losses. The typical timeframe for getting a new DG station on stream varies from 1 year to 3 years depending on the technology.

Some of the technologies used for DG include co-generation (both from sugar plants and industrial plants), small hydroelectric plants and producer gas based generation. According to MEDA, potential assessment of various renewable energy sources is as under:

Sr. No.	Types of RE Sources	Potential as per MNES (MW)	Plausible Potential as per MEDA (MW)	Achievement as in Jul 2006 (MW)
1	Wind	4138	6500	1001
2	Small Hydel	599	599	206
3	Co-generation	1250	1250	74
4	Biomass	781	781	14
5	MSW & Liquid Waste	287	400	0



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Sr. No.	Types of RE Sources	Potential as per MNES (MW)	Plausible Potential as per MEDA (MW)	Achievement as in Jul 2006 (MW)
6	Industrial Waste	350	500	6
	TOTAL	7405	10,030	1301

Source: MEDA

DG based systems often can be located with relative ease as the space requirement is lower. These technologies often tend to be more manageable and more environmentally friendly. Considering the overall features of the DG, such technologies can be used for localised generation to meet a part of the electricity deficit in urban, semi-urban areas as well as for industrial feeders. Sludge gas (methane) or landfill gas and municipal solid waste can be explored as alternative fuels for DG.

DG based systems using liquid fuel (Fuel Oil, LSHS, etc.) are quite common, especially in captive generation facility created by industrial units. However, the cost of generation of DG systems using liquid fuel will be quite high and viability would depend on the ability to pay of the consumers in the identified area. Recently, CII Pune, with the support of MSEDCL, submitted a proposal wherein the surplus captive generation capacity of around 90 to 100 MW available with the top 30 industries in Pune was utilised to mitigate the supply shortfall in Pune Urban circles. The cost of generation using liquid fuel was reimbursed to the captive units through levy of a Reliability Surcharge of 42 paise per kWh to all consumers in Pune urban circles (except residential consumers consuming below 300 units per month), in return for the assurance of zero load shedding, as against average load shedding of around 2.5 to 3 hours daily.

Distributed generation technologies vary widely as regards to their impact on environment. While some technologies such as biomass, waste to energy, wind, small hydro may have positive impact on environment, some technologies such as small coal based generation would have adverse environmental impact. Further, it is possible to develop environmentally neutral options for distributed generation. It is essential to compare impact on environmental of these distributed generation stations to that of centralised generating stations involving long distance transmission of power.



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4 Franchisee Concept

The role of Franchisee is a well-established concept in the consumer goods and services sectors. A Franchisee provides products or services on behalf of a Franchisor and, in return, is paid fees/charges for the service provided. The Franchisee, under the arrangement, follows standards of services (or product specifications) while delivering the services (or products) such as maintaining the quality standards of the Franchisor, which helps to strengthen the latter's image in the market. On the other hand, the Franchisee offers products/services as per the prices decided by the Franchisor. In turn the Franchisee pays to Franchisor an amount on the basis of sales (fixed percentage of sales achieved per month) as per the terms of the Franchisee Agreement.

The Franchisee concept applied to electricity distribution will function as follows: Distribution Licensee and Franchisee would enter into a Franchisee arrangement under which the Franchisee will manage the electricity distribution function in the designated area within the license area of the distribution licensee. The main elements of such an arrangement would include:

- a. Distribution Licensee will supply electricity to the Franchisee at a pre-determined price as per the Franchisee Agreement.
- b. The Franchisee will supply electricity to consumers of the Licensee in the allocated area (a part of the total area of supply of licensee) as per the tariff (including reliability surcharge) approved by the Commission.
- c. The Franchisee will manage the electricity distribution system of the Licensee in the allocated area. The Franchisee will not only undertake maintenance of the distribution system, but also upgrade and strengthen the distribution system as per the requirements of the Licensee, with its approval.
- d. The Franchisee will manage metering, billing and collection with the help of the existing staff of the licensee (in addition, Franchisee will be required to add its own staff to manage any increase in business).



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- e. Franchisee will remit a pre-determined share of the revenue collection at regular intervals to the Licensee, as per the Franchisee Agreement. The Franchisee will retain a portion of the revenue collection from consumers after deducting amount payable/paid to the licensee.
- f. Franchisee will operate under the overall guidance of the Licensee.
- g. The Franchisee will also generate electricity locally to meet any shortfall (i.e. demand supply gap) in its designated area, under the proposed scheme of 'Distributed Generation (DG) based Electricity Distribution Franchisee'.

4.1 Franchisee Options

The electricity distribution Franchisee can function on varying levels of responsibilities under the following options:

- a. Metering, Billing and Collection (MBC): Metering, billing and collection are basic functions in electricity distribution and can be outsourced to another agency. In addition to metering, the Franchisee can also undertake energy audit of energy supplied. The Franchisee will be required to maintain the database of consumers in its allocated area of supply. The Franchisee will be required to generate periodic bills and deliver the same to consumers. The collection efficiency is expected to improve with the involvement of the private sector agency. In addition to regular fees, suitable incentives could be worked out for the Franchisee for improvement in collection efficiency. Such a Franchisee model is suitable for both rural/agricultural areas and urban/semi-urban/industrial area. At an advanced level of outsourcing, all the three functions can even be given to three independent organisations in order to increase efficiency and reduce the chances of any malpractice.
- b. Total Management of Electricity Distribution Function: Under this arrangement, the Franchisee is responsible for maintaining the electricity distribution system (comprising HT/LT lines, meters, distribution transformers, breakers, and associated safety equipment), in addition to MBC function. The Franchisee undertakes the upgradation of the distribution system, as required, by investing its own funds. The Franchisee is paid a management fee for providing these



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services. Under the Franchisee Agreement, the Franchisee purchases electricity from the Licensee and distributes to consumers as per the tariff set by the Commission.

- c. Distributed Generation (DG) based Electricity Distribution Franchisee: This proposed arrangement has been discussed in detail, in this Approach Paper. In addition to the functions mentioned above, the Franchisee undertakes to generate electricity locally to meet the electricity deficit (or peak demand deficit) and distribute the same to the consumers. The advantage of distributed electricity generation is that it reduces T&D losses prevalent in the conventional electricity system, where generating station is usually located away from load centres. This contractual arrangement is similar to that of in Option (b) above, except that electricity generation function is added to the contract. The Franchisee is required to manage the generation and distribution costs in such a way that it is able to supply to consumers as per the tariff of the Licensee, approved by the Commission. Even the existing Franchisee/s under (b) above can qualify under (c) by installing DG facilities.

4.2 What can the Franchisee Offer?

The Franchisee will be required to offer (and commit) the following benefits:

- Improved reliability (lower number of outages) and quality (lower voltage and frequency fluctuations, etc.) of electricity supply. With distributed generation, availability is expected to improve, thereby reducing incidence of load shedding.
- Improved electricity distribution function will lead to:
 - Lower T&D losses: Locally generated electricity will obviate the need for transmission over long distances. Extent of unaccounted electricity will reduce due to improved metering and better practices.
 - Better and reliable metering, accurate billing and improved collection
 - Better overall maintenance of distribution system (by adopting good management practices)
- Upgradation and expansion of distribution system: The Franchisee will modernise and upgrade key components of the distribution system. The Franchisee will also strengthen the existing distribution system to accommodate



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any increase in business (in terms of number of consumers as well as in terms of energy supplied).

- Improved customer relations (reduction in number of complaints and grievances). Better and trained staff of Franchisee along with the existing staff of the Licensee suitably retrained and oriented towards consumers will help in improving customer relations.

4.3 Scheme of Operation

The proposed scheme of Franchisee operation is based on the principles of 'Public Private Partnership'. The distribution Licensee will permit the private sector organization to utilise the distribution assets of the Licensee located in a designated area (which is electrically demarcated). Existing staff of the Licensee in that designated area can be deputed to the Franchisee to support the electricity distribution operations. The Franchisee will organize balance staff required for electricity generation activity as well as for the distribution function (complementary staff). The principal elements of the operating scheme include:

- Power purchase from Licensee
- Electricity generation by a division of the Franchisee
- Compliance with standards relating to connectivity and reporting requirements of Franchisee (being a generating company)
- Transfer pricing to its electricity distribution division
- Distribution of electricity to consumers
- Metering, billing and collection
- Tariff of the Licensee as regulated by the Commission

The proposed concept of DG based electricity distribution Franchisee will primarily be governed by the Franchisee Agreement between the Licensee and the Franchisee. The Franchisee Agreement will include terms for electricity supply to the Franchisee by the licensee, as well as the Standards of Performance to be maintained by the Franchisee. As the generation of electricity using DG technology option will be the responsibility of the Franchisee, Licensee may not be required to have separate power purchase agreement with the Franchisee. The Licensee will be required to submit diverse



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information to the Commission under the present Regulations, whilst the Commission will have no direct interaction with the Franchisee.

The Franchisee will be responsible for generating electricity as per the terms of the Franchisee Agreement to meet electricity deficit in the designated area of supply. The Franchisee will enter into all the arrangements with respect to fuel supply, Engineering, Procurement & Construction (EPC) and financing of generation project. The generation division of the Franchisee will oversee day to day operations of the generating station which will be synchronized with the grid of Licensee. The generation, by and large, is expected to be connected at 33/22/11 kV level.

The Franchisee will maintain all the records with respect to the transfer price for electricity generated and supplied to consumers via the distribution system of the Licensee under its operational control. These records will be required by the Licensee for its periodically tariff related and other filings before the Commission. This information will be required by the Regulator to determine the distribution tariff, reliability surcharge and other charges stipulated by the Licensee to consumers.

The Franchisee will supply electricity to existing consumers of the Licensee under the proposed arrangement. The Franchisee will be required to follow Standards of Performance as stipulated by the Licensee. In turn, the Licensee will be required to follow Standards of Performance Regulations stipulated by the Commission. At the same time, the Licensee can ask the Franchisee to form a Consumer Grievance Redressal Unit/ Forum at the office of the Franchisee to address consumer grievances. The Franchisee will also manage the metering at the consumer end, the details of which are elaborated in subsequent sections.

As mentioned earlier, the Licensee will be required to comply with all the applicable Regulations of the Commission.



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5 Role of Distribution Licensee

5.1 Role prior to signing of Franchisee Agreement

Two major steps that a Licensee needs to initiate prior to signing of Franchisee Agreement include (a) selection of areas to offer to Franchisee organisations; and (b) bid document preparation and bid process management.

The Licensee will have to initiate the exercise of gathering data related to each distribution circle or each of the feeders, prior to inviting bids from interested organisations. This data will assist the Licensee in deciding (a) key performance indicators, such as distribution loss and collection efficiency, for success of the Franchisee arrangement; as well as (b) parameters to be monitored by the Licensee in the proposed Franchisee arrangement. Such an exercise will also facilitate the process of selection of the Franchisee. The Licensee will have to identify and select appropriate feeders for the franchising arrangement. Criteria for selecting candidate feeders include:

- Electrical separation of designated area of supply under consideration: Normally, every feeder emerging out of a HV substation is electrically isolated. Under such circumstances it may be convenient to award a feeder to a Franchisee. However, area covered by feeder may not be geographically well defined, which could pose problems in administration of electricity distribution. At present, MSEDCL has 34 distribution circles within its area of supply. Most of the data at MSEDCL is organised as per distribution circles. A distribution circle is often fed by more than one feeder. However, experts believe that through adequate metering and isolators, a distribution circle can be electrically isolated. The area under consideration needs to be clearly electrically separable so that there is no dispute over a feeder serving the circle.
- Ease of establishing baseline: Licensee should establish and identify assets in the identified area, history (age) of equipment installed, maintenance records and failure rates. Other information/data related to load composition, load profile and distribution losses in respect of each of the identified areas would be required to establish the baseline. While billing and payment records of each consumer may be made available to the Franchisee after signing of Franchisee Agreement, broad parameters would be required to decide on performance.



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- Composition of load and consumers: In line with the discussions above, the main consumer categories in the identified area will include industrial, commercial and residential segments, which in turn decide the nature of load and load profile in the designated area. Each identified area should ideally have one or more of these categories as dominant groups, which will aid in implementing demand side management programmes. A dedicated industrial feeder supplying electricity only to industrial category consumers forms a better candidate feeder.
- Nature, composition and quality of assets: The Franchisee will be required to maintain and operate the distribution system. All the assets of the Licensee under the designated area of supply need to be classified into various categories and shared with the Franchisee at the commencement of Franchisee operations so as to achieve better results.

5.2 Bid Documents Preparation and Bid Process Management

The Licensee would invite bids for the Franchisee operations on the basis of bid documents. The Bid Document related to designated area of supply will provide all the information in respect to the area, inter-alia:

- Geographical area;
- Description of the existing electricity distribution system (length of HT/LT lines in circuit kilometres, number of distribution transformers, number of poles, substations, etc.), schematic diagram and other related drawings;
- Load data, load profile, load duration curve, annual energy input (in MU), consumer categories and classification;
- Metering status, billing history, distribution loss, and collection efficiency.

The Bid Document will also indicate the processes to be followed for bid invitation and bid evaluation, and other requirements. Bid Documents will enumerate all the information desired from bidder Franchisee organisations. The Bid Process management is a fairly standard process being followed by Licensees for various activities and the same is not discussed in detail here.



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6 Role of Distribution Franchisee

The principal responsibility of the proposed distributed generation based electricity distribution Franchisee (the Franchisee) is to receive electricity from the Licensee, generate the balance required, and supply aggregated energy to existing and new consumers of Licensee in the designated area of supply. The Franchisee will also be responsible for collection of revenue for the electricity supplied to consumers as per the tariff approved by the Commission. Franchisee will also periodically pay to the Licensee, the amount agreed to under the Franchisee Agreement. Responsibilities of Franchisee are elaborated in following paragraphs.

Performance

- a. Supply electricity to consumers of the Licensee: The Franchisee will supply electricity to consumers of the Licensee as per the terms agreed with the latter. Franchisee will receive electricity from the Licensee as per the schedule agreed and on the basis of the protocol agreed in the Franchisee Agreement. Franchisee has to utilise the existing distribution infrastructure of the Licensee as well as add new equipment/replace old equipment to ensure reliable electricity supply. The Franchisee will also submit periodic reports to the Licensee on the parameters agreed. The Franchisee will also follow the Commission's Supply Code and Standards of Performance as stipulated in the Franchisee Agreement. The supply of electricity will be managed by the staff hired by the Franchisee and staff on deputation from Licensee.
- b. Operation and maintenance of assets of the Licensee: As all existing assets in the Franchisee area will be owned by the Licensee, the Franchisee has to use and maintain these equipments for providing electricity and handover all assets to the Licensee at the end of the Franchisee arrangement. The Franchisee will follow good management practices to undertake operation and maintenance. The Franchisee will also replace defective meters and will ensure accurate and correct metering. Metering will be the sole responsibility of the Franchisee.



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- c. Set up a generating station using DG technology option: The Franchisee will undertake to set up and operate a generating station preferably with a short gestation period. Such a station will help in meeting a part of the electricity deficit and hence facilitate reduction in incidence of load shedding.
- d. Undertake projects to upgrade distribution infrastructure: Franchisee will also undertake projects for expansion and modernization of distribution system in the designated area of supply, as per the investment plan agreed with the Licensee, which would in turn form part of the Licensees' investment plan approved by the Commission. The Franchisee will follow procurement process in line with good management practices.

Revenue collection

Based on the meter reading data, the Franchisee shall generate periodic bills, which will be sent to all consumers in the area on behalf of Licensee as per the billing cycle followed earlier by the Licensee and as per the Regulations. Franchisee will be responsible for collecting revenue on behalf of Licensee. After retaining agreed percent of the revenue as per the Franchisee Agreement, the balance amount would be credited to the Licensee periodically. The Franchisee will submit periodically to Licensee, all the financial information duly certified by approved auditor as agreed in the Franchisee Agreement. The Franchisee will be provided with certain powers to disconnect electricity supply of defaulting consumers. The Franchisee will take all efforts to reduce and prevent incidence of electricity theft. The Franchisee will undertake periodic testing of all meters to check the accuracy and reduce the incidence of slow/tampered meters.

Demand Side Management:

The Franchisee will undertake Demand Side Management (DSM) programme in a systematic manner. The Franchisee will establish a DSM cell within its organisational set up. Load research will be undertaken to begin with. Depending upon the major uses and findings of the load research, the Franchisee will design DSM programme covering appropriate conservation and efficiency improvement measures for different categories of consumers. Considerable literature and report on DSM are available in the public domain



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and are hence, not discussed in detail in this Approach Paper. The Franchisee will provide quarterly report on the progress of the DSM projects to the Licensee.

The Franchisee will also manage the metering aspect at the consumer end. These include:

- Replacing defective meters and also introduce static energy meters, as well as time of the day meters for specific categories of consumers.
- Manage metering, billing and collection functions in the designated area of supply in accordance with the appropriate billing cycle.
- Ensure billing accuracy in order to ensure revenue in proportion to electricity consumed.

The Franchisee can also introduce more collection centres as well as introduce alternative mode of payment taking advantage of the recent developments in the banking sector and internet payment modes.

Grid Discipline

The Franchisee will have to follow the Grid Code while drawing power from the Licensee. The Franchisee will have to demonstrate restraint, whenever there is sudden excess demand so as to avoid grid failure.

Staff

The Franchisee will employ its own staff and also utilize existing staff on deputation from the Licensee for managing operations in the designated area of supply. The Franchisee will have the right to accept or reject the staff opting for deputation from the Licensee and to take existing interested staff on deputation from licensee.

The Franchisee will hire new staff as appropriate to meet the Standards of Performance. The Franchisee Agreement will spell out the terms and conditions of deputation of the staff from Licensee. The Franchisee will also train its staff from time to time to keep them up to date with the latest techniques and developments in the sector.

6.1 Key Concerns

Data used for Baseline Estimation



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Accuracy of the baseline data is of crucial importance for ultimate success of the proposed scheme. The Licensee should make all efforts to establish correct and accurate baseline, on which it will evaluate the performance of the Franchisee. Errors and inaccuracies in data is a concern, and must be addressed appropriately.

Service to consumers

Often the service to consumers deteriorates when margins of a Franchisee come under pressure. The Franchisee starts cutting corners in order to save on certain costs which ultimately result in lower service standards. These facts have to be taken into consideration by the Licensee. The Licensee can institute an appropriate monitoring process to address these aspects.

Ability to generate adequate revenue to sustain operations

Under circumstances where Franchisee management has a short sighted approach, its operations suffer in the long run. Operations suddenly become unsustainable due to negative growth in business. Many a time, high incidence of interest costs and other financial commitments can have effect on the operations of Franchisee.



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7 Regulatory and Tariff Mechanism

7.1 *Reliability Surcharge*

The Franchisee will set up an electricity generating station as well as upgrade the existing distribution system under the proposed Franchisee arrangement. The Franchisee will have to meet these expenses (in the nature of capital expenditure) over and above operating expenses related to the electricity distribution system. Electricity from this new generating station will certainly be expensive as compared with the electricity purchase price from the distribution Licensee. This incremental cost will have to be compensated to the Franchisee, which will ensure reliable electricity supply. This incremental charge will be determined by the Commission based on the information submitted by the Licensee for each Franchisee area. The Commission may authorise the Licensee to allow its Franchisee to recover this incremental cost by way of a Reliability Surcharge from specific category of consumers and in a manner stipulated by the Commission.

This surcharge could be arrived at by identifying excess of transfer price per unit of electricity generated from the new generating station over purchase price per unit of electricity from distribution Licensee. The Commission will determine this Surcharge on a case to case basis. Distributed generation can use a variety of technology options such as natural gas turbine, aero-derivative turbine with multi-fuel capability, municipal solid waste based electricity generation, wind turbines, and other fuels such as biomass, landfill gas, wood waste, natural gas, etc. At the same time, the generating station will have specific load factor and such other parameters will determine the Reliability Surcharge.



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8 Franchisee Agreement

DG based Electricity Distribution Franchisee arrangement will be governed by the Franchisee Agreement. The Agreement will define the relationship between the Licensee and the Franchisee as well as their respective roles and responsibilities. The Agreement shall spell out the performance parameters and conditions under which the Licensee shall terminate the Franchisee arrangement. Some of the features of the Agreement have been elaborated in the following paragraphs:

- a. Performance delivery/Performance Parameters: The Franchisee Agreement shall spell out all the performance parameters and terms of supply of electricity to the Franchisee. The Agreement will also have specific mention of electricity Supply Code and Standards of Performance to be maintained by the Franchisee.
- b. Assets listing: Existing electricity distribution infrastructure/assets of Licensee in the designated area will be listed in the Agreement. Report of the approved valuation consultants will be provided in the appendix to the Agreement. The Licensee will adequately insure all the assets and a clause to that effect will be included.
- c. Ownership of Assets: The Agreement will also define the ownership of the assets (both existing and additional). The Agreement will also provide guidelines for maintenance of the assets and asset register. The Franchisee will also have to report to Licensee any loss or damage to the assets during the currency of the Agreement.
- d. Investment plan: The Agreement will include duly approved year-wise investment plan for addition of assets to cater to the estimated increase in consumer base and load growth.
- e. Wheeling charges: In the event of procurement of electricity from sources other than the Licensee, the Franchisee will have to pay wheeling charges to the Licensee for using its network.



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- f. Frequency and mode of payment: The Franchisee will pay charges to the Licensee periodically or, as per the billing cycles. The Agreement will define terms and mode of payment by the Franchisee to the Licensee, and conditions for delayed payment charges. The conditions for invoking the Bank Guarantee in the event of default will be spelt out.

- g. Default conditions: The Agreement will also define the conditions under which the Agreement could be terminated.



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9 Selection of Franchisee

Distribution Licensee will select a Franchisee from among the qualified Bidders. As mentioned earlier, the bid process management is not discussed in detail in this Approach Paper. However, the salient features of the selection criteria have been discussed below. The Licensee will have to follow a transparent process while ensuring competition on a level playing field. The Licensee will evaluate Bidders on technical and financial parameters. The Licensee will provide appropriate weights to parameters depending upon the level of significance.

9.1 Technical parameters:

Technical parameters comprise variables related to background, business performance and qualifications (including relevant experience):

Organizational Background can be evaluated by considering history of the company, business and operational performance (group sales turnover, existing asset base, financial performance of the group) for past three years, management team and major achievements in the existing business.

Relevant Experience can be determined by length and nature of experience in electricity distribution or in retail operations, team leader background, value of projects executed in the past, value of contracts executed (if vendor/manufacturer of electrical equipment) and quality of service.

9.2 Financial Parameters:

Financial parameters rely on following variables related to projected business operations of Franchisee:

- Growth in business targeted
- Investment planned for upgrading existing distribution system
- Transfer price of electricity generated
- Value Added in Distribution



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In addition to these parameters, one of the following parameters can be used for evaluation of the bid and can have maximum weight.

Lowest Price quoted for electricity purchase from distribution Licensee: Franchisee will purchase electricity from the Licensee. Rate at which the Franchisee can purchase and sell the same to consumers finally (as per the tariff applicable) will depend upon the efficiency of managing distribution function and cost of electricity generated.

Lowest cost of operation: Bidders can be asked to furnish the cost of operations of the distribution system. Lowest cost of operation can indicate the optimum efficiency of electricity distribution system operations as well as generation operations. At the same time, trajectory of cost of operations projected in the business plan will also indicate the level of efficiency of operations.

Revenue collection and collection efficiency: Bidders can be asked to bid for the quantum of revenue willing to be shared by the Franchisee with the Licensee as well as parameters like collection efficiency.



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10 Conclusions and Next Steps

Distributed generation based electricity distribution Franchisee is an optimum option to mitigate the acute problem of widening electricity demand supply gap as well as to improve the reliability and efficiency of electricity distribution. This approach provides flexibility to Franchisee to generate electricity and feed it in the distribution system at the lowest possible cost. It also reduces T&D losses as the Franchisee generates electricity locally near load. The proposed concept also promotes private participation. Participation from private sector organizations can bring about improved efficiency of distribution operations.

This Approach Paper is being presented for discussion and for receiving comments and suggestions on the concept and operating framework. After finalising the concept, the Commission will suitably advise the State Government.