

“Gurgaon’s Power Distribution Sector Assessment”

Executive Summary & Recommendations for

“Revamping Gurgaon’s Electricity sector”

Gurgaon’s total area is about. 1215 sq.km. It has a total population of 1.51million which is 5.97% of Haryana’s population. Gurgaon’s population comprises 68.82% urban population and 31.18% rural population. After the restructuring of the Haryana State Electricity Board in1998, Gurgaon gets its electricity supply from Dakshin Haryana Bijli Vitaran Nigam Limited (DHBVN) which supplies to the entire South Haryana comprising of Sirsa, Fatehabad, Hisar, Bhiwani, Mahendragarh, Rewari, Gurgaon, Mewat, Palwal and Faridabad districits. The Gurgaon circle comprises of five major distribution areas City Gurgaon, Sub-urban Gurgaon, Manesar, Nuh and Sohna.

Key Findings:

- Peak electricity demand of Gurgaon circle is 1000-1100 MW
- Gurgaon circle’s average electricity demand is 800MW
- Average power cut in Gurgaon is 03hrs/day, in peak seasons it even reaches 07hrs/day
- Installed captive generation in Gurgaon circle is 2000MW to battle power cuts.
- Power demand in Gurgaon is increasing at 15 % p.a.
- Gurgaon circle contributes 40.4% to the DHBVN’s total revenue.
- Contribution of Industrial & Commercial consumers to Gurgaon Circle’s revenue is 77%
- Revenue realization for DHBVN from Gurgaon Circle is 100%
- Gurgaon circle has AT&C losses of 12.8 %, while Line losses stand at 15.88%
- 100% metering at consumer level but DT level metering stands at 8.67%
- 3.28MW is the total installed solar capacity in Gurgaon

Summary of the Report is as follows:

- **Gurgaon's Power Demand:** The total electricity demand of Gurgaon circle during peak time is around 1000-1100 MW. Average demand and supply of electricity for Gurgaon stands at 800 MW-900 MW and 650MW -750MW. Each year Gurgaon's power demand is growing at the rate 15 percent to 20 percent thereby increasing the peak demand as well as the power deficit. It is estimated that the peak demand deficit is in the order of 30 percent and the average power deficit will be around 15 per cent. Gurgaon is facing an average power cut of 2-3 hrs/day with a peak cut of 7-8hrs/day during peak seasons.
- **Gurgaon's load Profile:** Gurgaon circle contributes one third of the total load of Dakshin Haryana Bijli Vitaran Nigam (DHBVN).The notable aspect is 72 percent of commercial load under DHBVN comes from Gurgaon circle alone. Gurgaon's peak load consumption stands at 18 million units and off peak load consumption stands at 15-16 million units. The load profile of Gurgaon circle is as follows, 31.6 percent of load coming from domestic segment, 32.9 percent from commercial segment, and 30.9 percent comes from industrial segment and 3.9 percent from the agriculture segment and 0.7 percent from others.
- **Gurgaon's revenue profile:** Gurgaon circle contributes 40.4 per cent of DHBVN's total revenues. The revenue profile of Gurgaon circle is as follows -- 20.9 per cent of revenue comes from domestic segment, 32.4 per cent from commercial segment, 44.9 per cent comes from industrial segment and 0.4 per cent from the agriculture segment and 1.4 per cent from others. Revenue realization of entire Gurgaon circle stands at 100 percent which indicates that DHBVN able to realise whatever revenue it assessed.
- **Gurgaon's electricity loss profile:** Gurgaon circle as a whole has the AT&C losses of 12.8 per cent, while Line losses stand at 15.88 per cent. In contrast DHBVN's average AT&C and Line loss are 22.85 per cent and 23.47 percent respectively. AT&C losses for Gurgaon circle as a whole looks very impressive figure but one of the division within the circle faces AT&C losses as high as 83 per cent.

- **Metering Standards:** In terms of metering, Gurgaon circle has 100 per cent coverage at the feeder level as well as domestic and industrial consumers. For agricultural consumers, with 17079 meters installed, the coverage is 60 per cent. However, the metering for distribution transformers is poor at 8.67 per cent. Out of the total meters installed the proportion of electronic meters stands at 84.4 percent and electromechanical meters stands at 9.85 percent
- **Power Theft:** Theft in Gurgaon circle is a major concern, out of 7517 connections checked during the month of April-August 2012, theft was detected in 1920 cases. That means in 26 percent of cases theft was detected. Penalty of Rs 780 lakhs was imposed and Rs 334.30 lakhs was recovered. The percentage penalty recovery stands at 42.85 percent
- **DG Sets Capacity in Gurgaon :** There is around 2000 MW of DG capacity is installed in Gurgaon circle, almost 20% of the total capacity installed is in the residential group housing sector whereas commercial & industrial comprises of 80% of the total DG capacity installed.
- **Solar Capacity in Gurgaon:** Till 2012, the total installed solar power capacity in Gurgaon is around 3.28 MW in which 3 MW is grid connected and 0.28 MW is off- grid. As per solar experts, the city's potential for roof top solar installations will be 200 MW. Much attention has to be paid to improve the utilization of solar power in Gurgaon.

Key Issues:

- **Escalating power deficit** is one of the major issues facing Gurgaon. Even during off peak seasons power shortage of minimum 150 MW is prevalent. So urgent steps should be taken to improve supply levels.
- One fourth of the connections which are checked on doubt of **power theft**, have stolen power. Gurgaon being a power deficit city can't afford this kind of situation and power theft needs to be addressed seriously.
- **Poor metering** of distribution transformers is the next issues plaguing Gurgaon's power sector. This leads to severe handicap in eradicating power thefts; it's like

searching a black cat in a dark living room. Insufficient DT metering also paves way to inefficient energy auditing resulting inefficient planning and services.

- The **age old distribution infrastructure** is causing frequent and serious unplanned outage issues. T&D systems need to be improved in the right earnest.
- Most of the large customers are forced to have their own **diesel generators** or inverters in order to cope up with power cuts. Situation is so alarming the installed generators capacity in Gurgaon circle itself reached 2000MW, leaving customers to spend approximately Rs.12/unit which is a huge burden and unsustainable.
- The lack of seriousness in putting new infrastructure by **realtors** is also a challenge. There is a policy of 75:25 costs sharing between realtors and DHBVN to develop distribution infrastructure in the realtor areas of Gurgaon. However, all realtors have not met their obligations under the arrangement infusing severe capacity additions problems in distribution infrastructure.
- Most malls and office buildings typically have a large amount of glass in their building structures. They building trap a lot of heat and are becoming power guzzlers. **Inefficient energy usage** practices of these building are increasing day by day and they lack any energy auditing.
- Despite Gurgaon being a solar city, little action has happened on the **solar** front. The major problems with solar are poor accessibility, availability and affordability of solar power equipments. Consumer awareness is also another problem fragmenting this sector.

Key Recommendations:

- a) Making organisational Changes at DHBVNL:** If Gurgaon cannot be given under franchisee system yet, its organisational effectiveness must improve. The current systems and operating management style are quite old and need improvement. The staff motivational levels also have to be improved to improve performance and reduce theft.
- b) Adopting Right Technologies:** DHBVN shall deploy technologies like Distribution management systems in “Gurgaon-City division” and “Gurgaon-Sub urban division” to improve the quality and reliability of the power supply. Besides, **Demand side**

management (DSM) will help in reducing the peak demand, enhancing the quality of the power supply and improves consumer satisfaction. Some of the initiatives like SMS based fault management system, Outage management systems, Unmanned grid substations & Geographic information systems(GIS), Automatic meter reading (AMR) for high revenue consumers shall be implemented in Gurgaon-City division and Gurgaon-Sub urban division in order to improve reliability and customer satisfaction. Implementation of High voltage distribution systems (HVDS) and LT ABC (Aerial bunched conductor) will help in theft reduction

- c) **Controlling theft and other losses:** These problems can be reduced by improving HT:LT mix, by improving metering, strengthening infrastructure and by reducing billing errors. To reduce losses and theft, DHBVN can think about franchising some of the divisions or some of the division's operations to private players.
- d) **Augmenting power supply:** DHBVNL has to tap more sources of power into its supply. Besides, captive power generators in factories and apartment complexes can be asked to sell additional power to the grid supply power during peak demand. In order to facilitate this, new policy framework need to be crafted and Distribution infrastructure need to be strengthened.
- e) **Encouraging Solar:** Gurgaon's public offices (MCG, HUDA etc) get an additional subsidy of 40 per cent on top of a 30 per cent subsidy from MNRE for putting solar projects. They should put up some "show case" projects to promote solar. There must be policies that mandate new commercial buildings and residential complexes in Gurgaon to mandatorily have some part of their electricity needs met by solar. Energy auditing has to be made mandatory for these buildings, so that efficient usage of electricity will be made as a practice. Lastly, the state government can introduce net metering scheme for grid connected rooftop projects. This will enable the captive power consumers to feed excess energy (if any) into the grid and help distribution utilities in reducing their demand-supply deficit and benefit customers through reduction in energy bills.

About Gurgaon Renewal Mission:

Gurgaon Renewal Mission (GRM) is a movement by Civil Society, Corporate and Government to spur action to resuscitate Gurgaon as a World-class City by addressing the gaps in infrastructure development, environmental sustainability and social Inclusion. The

vision is to turn Gurgaon in to a 'world-class city' with sustainable urban infrastructure, effective city administration, modern amenities, and socially responsible businesses & citizens.

About Gurgaon First:

Gurgaon First (www.gurgaonfirst.org) is an initiative to bring institutional and infrastructural improvement in Gurgaon, encourage adoption of sustainable solutions and promote inclusive growth so that the city can become truly world-class. It aims to bring this positive change through its events, website and research reports. It holds event of strategic nature to Gurgaon and involve all key stakeholders of the city (RWAs, corporate, NGOs, task forces, authorities and media) to deliberate and discuss related topics. The tangible outcome from the workshops is brought out as “White Papers” which are circulated, put on our website and given to the authorities to act upon.

We have already concluded two high-impact workshops (one on “Gurgaon as a Smart City” and the other on “Finding Traffic Solutions”) for the city.

About Great Lakes IEMR:

Great Lakes Institute of Energy Management and Research, a constituent institution of Great Lakes, is India’s unique Center of Excellence focused comprehensively on nurturing managerial and leadership talent for the rapidly growing energy sector.

The Institute’s activities include full-time Post Graduate Management programs, Corporate Training Programs, Consulting Services and Independent Research to enhance the intellectual capital and knowledge base in the sector.

Research sponsored by: Gurgaon Renewal Mission

Research Conducted by Gurgaon First

&

Report Prepared by

G. Amara Raja and Ranjith. Vaidooriam
Great Lakes Institute of Energy Management and Research,
Udyog Vihar, Gurgaon