

INVESTING IN ENERGY

India Delivers Smart Power

THE CITY OF DELHI is full of vibrant colors, beautiful sights and unforgettable sounds. But with a population of over 18 million people, the bustle of India's capital places a heavy burden on its electric grid. To address these challenges, one utility company, Tata Power Delhi Distribution Ltd. (TPDDL), has implemented innovative technologies, processes and approaches to deliver consistent power to its customers.



TPDDL is responsible for providing reliable electricity to 7 million people in the northern and northwestern parts of Delhi, where peak demand has exceeded 1,700 megawatts and where consistent power is a requirement for the growing economy and for quality of life. In the 1990s, the Delhi Government responded to the challenge of unreliable power by restructuring its distribution system and privatizing its utilities. TPDDL helped lead the charge, although it did not come without its challenges.

One major issue facing power distribution companies throughout India was electricity theft. TPDDL took an unconventional approach to address it: The company went into the parts of Delhi where distribution losses were highest and established various programs designed to address its customers' most pressing needs. They built medical facilities, sponsored vocational training and set up women's literacy centers. These services have improved the quality of life for 1 million people.

TPDDL has taken additional steps to better serve its customers. Through support provided by USTDA, the company has completed several projects focused on modernizing its electric grid, reducing and managing outages, and utilizing renewable energy. USTDA has connected TPDDL with cutting-edge, scalable U.S. technologies that have helped the utility identify and quickly respond to problems that occur throughout the grid and, in the event of an outage, inform consumers how long it will likely take to resolve the issue. Inside TPDDL's distribution centers today, employees utilize U.S. solutions such as geographical information systems and outage management systems to ensure their customers are receiving consistent power.

USTDA also supported Honeywell Building Solutions (Golden Valley, MN) in launching India's first-ever automated demand response system. The utility is now able to empower customers to manage their electricity consumption and costs, which in turn helps the company manage demand efficiently across the grid. With support from USTDA, TPDDL has also developed a renewable energy roadmap that includes plans to install 400 MW of rooftop solar power by 2025.

TPDDL has emerged as one of India's leading electricity distribution utilities, incorporating a number of technologies to enhance the effectiveness of Delhi's electrical grid. The utility is sharing its best practices in India and around the world, including during the 2015 International Istanbul Smart Grid Congress.

Originally starting out with 800,000 consumers, TPDDL now manages 1.5 million connections that cover a population of 7 million. Managing that kind of growth, according to CEO and Managing Director Praveer Sinha, "required imagination, skill and drive." TPDDL's progress presents a strong example of how a company can do good and do well.



 TO LEARN MORE ABOUT THIS STORY, SEE USTDA'S VIDEO:
Implementing Smart Power in India
<https://www.youtube.com/watch?v=7bMBUBDq7FU>

ELECTRIFYING GROWTH

USTDA helps its partner countries mitigate the effects of global climate change by developing their renewable energy resources, investing in cleaner forms of traditional energy like natural gas and modernizing their electric grids to increase efficiency, reliability and sustainability.

USTDA's renewable investments primarily focus on solar, wind, hydropower and geothermal — areas that have yielded the most success for the Agency's overseas and U.S. partners. USTDA will continue to identify the best opportunities for innovative U.S.-sourced technologies to support both large and small projects in these subsectors. The Agency has also prioritized gas-fired power, as it is cleaner, more efficient and can provide a complementary source to intermittent renewable power generation.

Due to resource constraints and the high cost of new power generation, several USTDA partners have prioritized grid modernization as a cost-effective and environmentally responsible way to improve power quality, reliability and access. The Agency continues to pioneer new programs in electricity transmission and distribution, notably with smart grid technologies, an area in which U.S. companies are highly competitive.

The Agency will continue to support its' partners efforts to deploy U.S. energy storage solutions that can stabilize and support modern grids, while increasing the effectiveness of renewable energy sources.

IMPACT OF USTDA'S RENEWABLE ENERGY PORTFOLIO IN 2015



WIND
1,235 MW



SOLAR
692.5 MW



HYBRID
400 MW



HYDRO
58.6 MW



BIOMASS
16.7 MW



GEOHERMAL
13.2 MW

In FY 2015, USTDA committed over half of its energy investments to developing renewable power. These project planning activities have the potential to develop over 2,400 megawatts of new renewable energy and to unlock over \$4.3 billion in financing. This would reduce the reliance on traditional power generation in the emerging markets USTDA serves, thus curbing CO₂ equivalent emissions by an estimated 12 million metric tons per year.



\$4.3B
IN CAPITAL

USTDA's critical project planning has the potential to unlock \$4.3 billion in capital.



2,400
MEGAWATTS

These projects aim to support the development of over 2,400 MW of new renewable power generation.



12M
METRIC TONS OF CO₂ EMISSIONS

An estimated 12 million metric tons of CO₂ equivalent could be reduced or avoided per year, if implemented.



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