



Accomplishing Energy Targets Through PEER

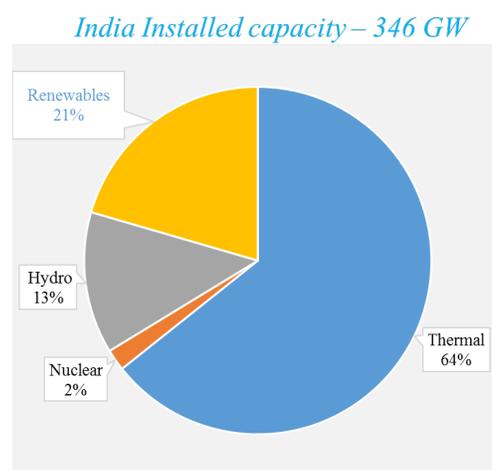
A BRIEF ON INDIA'S ENERGY POLICIES

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SUMMARY

CURRENT ENERGY SCENARIO

India is witnessing a rapid economic & industrial growth with a projected GDP of 7.8 % in 2019 by IMF. To achieve this growth, it is important to ensure power security for the nation and the power generation has grown at a CAGR of 7% since 2010. Ministry of Power reports the current **installed power capacity as 346 GW** with 64% thermal and **21% renewable generation**. Further, Central Electricity Authority (CEA) projects a coal capacity addition of 41 GW by 2027 that leads to a CO₂ emission of 1173 million tonnes, which may cause an adverse impact on the environment.



CHALLENGES TO THE INDIAN POWER SECTOR

Outlined below are the major challenges to the Indian power sector:

- ▶ **Transmission & Distribution (T&D) Inefficiencies** - Though the generation is progressing, CEA reported that the peak power deficit was 2.1% while the overall electricity deficit was 0.7% across the country in 2017-18. One of the major reasons for this power deficit may be attributed to the high T&D losses in the power network, which is currently around 22%. Additionally, Aggregated Technical & Commercial (AT&C) losses are also around 21%, leading to huge financial and operational stress on the DISCOMs.
- ▶ **Grid Resilience** - Natural disasters have taken a toll on the power network leading to blackouts and brownouts across India. The country faced its worst blackout in July 2012 when the entire northern grid across eight states failed due to demand mismatch between the northern and western grids. It has now become more common for coastal cities and states to suffer blackouts during cyclones due to damaged grid infrastructure.

During Vardah cyclone, in 2016, the state utility Tamilnadu Generation and Distribution Corporation (TANGEDCO) lost 10,000 electric poles and 800 transformers were damaged causing a loss of more than 1,000 crores.

In order to overcome the above challenges, the government of India has

announced programs to improve energy efficiency, reduce emissions and develop grid infrastructure. Initiatives that have been introduced, including Unnat Jeevan by Affordable LEDs and Appliances for All (UJALA), Renewable Energy - 175 GW target by 2020, 24*7 Power for all, Remote village electrification programme, ensure the nation's progress toward achieving a cleaner and more equitable power supply for all.

With ambitious energy policies and programs on one side and challenges to the grid infrastructure on the other, GBCI's PEER could bridge this gap, ensuring reliable, quality, resilient and safe power to consumers, thereby improving the nation's living standard and economy. PEER has the potential to accelerate the transformation of the power and energy market to meet these goals. It establishes global best practices, supports programs working toward national goals and creates a common language between the electricity consumer, power distribution companies and energy professionals. This policy brief details how PEER can complement the Indian government's work to achieve their targets and holistically support grid modernization in India.

PEER is a certification that recognizes leadership and measures electricity infrastructure and power system performance. PEER encourages the adoption of reliable, resilient and sustainable practices.

OBJECTIVES

This policy brief outlines how PEER can jumpstart a sustainable transformation in the power market and help support national energy policies and achieve targets.

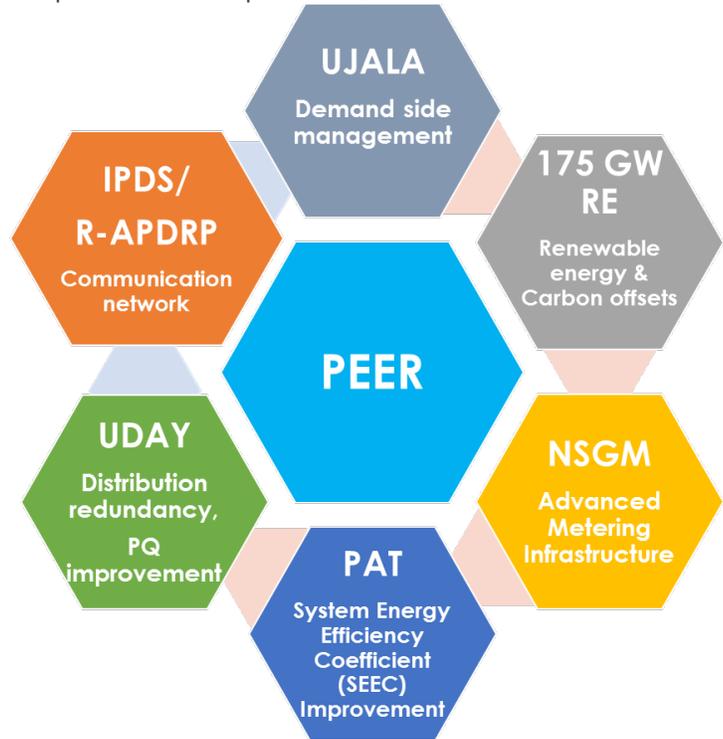
INDIA'S ENERGY POLICIES

OVERVIEW

The Indian government has several major energy initiatives:

- ▶ **UJALA** - 32 crore LED's distributed leading to 42,000 million units energy savings.
- ▶ **Renewable Energy Target** - 175 GW target by 2022 and the country have already installed 40% of the target (72 GW)..
- ▶ **National Smart Grid Mission (NSGM)** - an institutional mechanism governing the implementation of smart grid policies and programs with 11 pilots and 5 projects in progress.

- ▶ **Performance, Achieve & Trade (PAT) Scheme** - to reduce the specific energy consumption of energy intensive industries. In the third phase of implementation, PAT aims for an overall energy consumption reduction of 1.06 MTOE.
- ▶ **UDAY Scheme** - emphasizes the operational improvement of DISCOMs through deployment of energy efficiency measures. Achieved nearly 100% urban and rural Distribution Transformer metering, 68% feeder segregation till date.
- ▶ **Integrated Power Development Scheme (IPDS)/Restructured Accelerated Power Development and Reforms Programme (R-APDRP)** - focuses on IT enablement of the distribution sector. As of May20, 2017, 493 projects with an aggregate cost of Rs 258.98 billion have been sanctioned and IT-enablement was taken up by 1,405 R-APDRP towns.



A glimpse of the PEER credits associated with the national energy programs and how it drives them toward achieving the target is highlighted above. A detailed mapping of how PEER strengthens the PAT and UDAY schemes, their convergence and beyond is discussed beneath.

PAT SCHEME

India's intended nationally determined contributions aims to reduce greenhouse gas emissions intensity by 20-25% by 2020 and to increase the share of renewables in installed capacity to up to 40% by the same year.

To achieve this, Bureau of Energy Efficiency launched the PAT scheme - a regulatory instrument to reduce specific energy consumption in energy intensive industries (Designated Consumers - DC).

PEER not only quantifies the energy performance outcomes of the DCs, but also emphasizes that operational policies be in place to prevent failures, improve efficiencies, increase profits, stand resilient against natural calamities and reduce overall energy consumption.

PEER COMPLEMENTING PAT THROUGH STRUCTURED FRAMEWORK

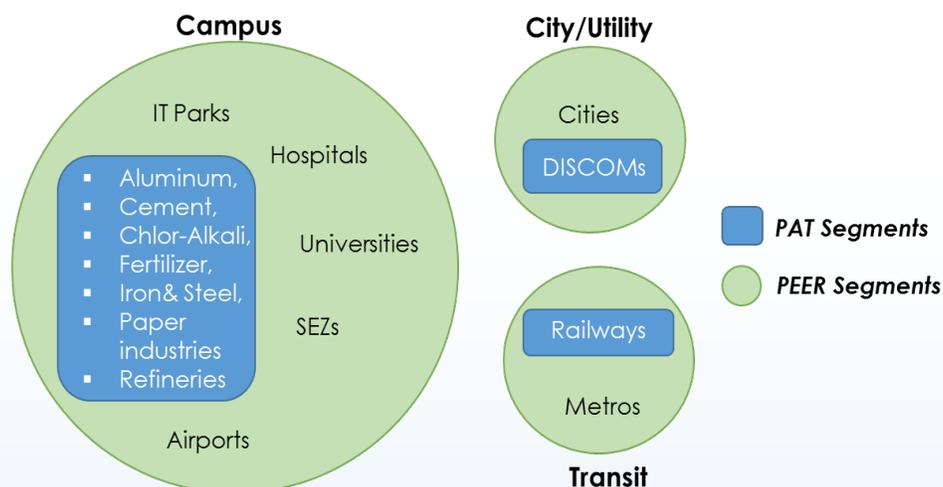
PEER can holistically support the identified DC's of PAT (DISCOMs, aluminium, cement, chlor-alkali, fertilizer, iron & steel, paper industries etc.) in achieving their energy reduction targets through its **structured framework**. It helps to:

- ▶ Effectively track their energy usage;
- ▶ Track emission performance;
- ▶ Emphasizing an integrated framework of operational policies to be in place (Risk assessment, preventive and predictive approaches, load management); and
- ▶ Quantifying the economic, environmental and social benefits.

PEER directly complements PAT through its **34 proven credits**, which supports energy intensive industries in achieving their designated targets and helps in improving power system performance.

PEER ADDRESSING ENERGY SECTORS BEYOND PAT

PEER is a comprehensive program developed to address sustainability, reliability and resiliency of energy infrastructure across cities and utilities (DISCOMs), campuses (airports, hospitals, IT parks, universities, SEZ etc.) and transit systems (railways and metros) thereby addressing various energy sectors going ahead of PAT. Here is a segmentation snapshot of PAT and PEER:



UDAY Scheme

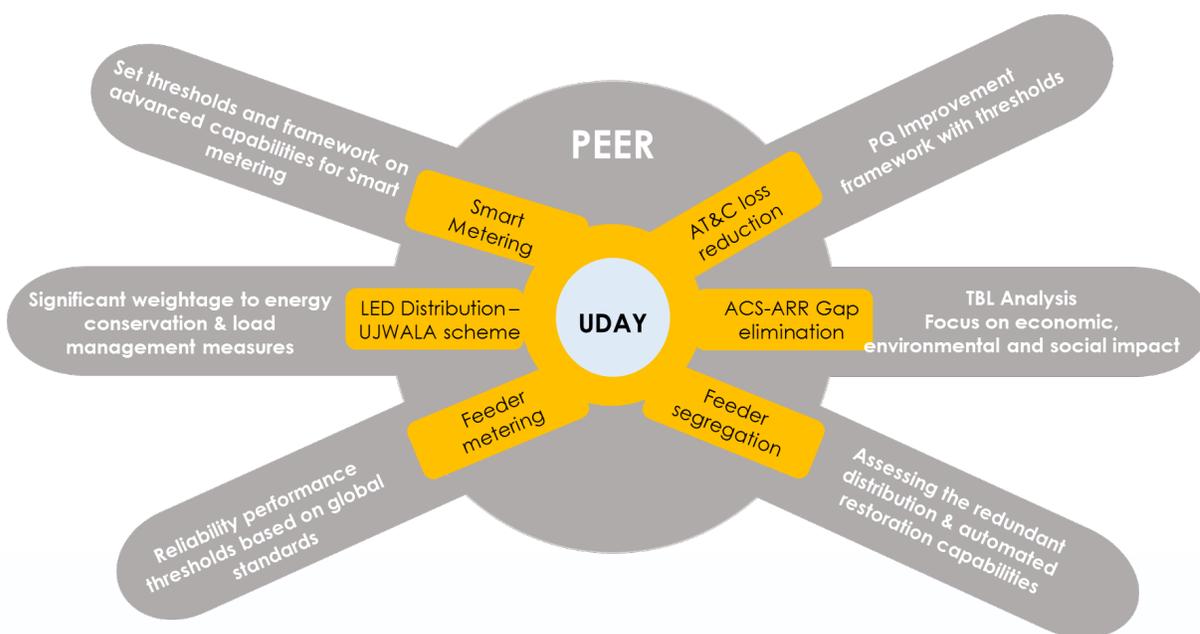
The UDAY scheme was launched to improve the financial and operational efficiencies of the weaker state DISCOMs.

The UDAY scheme could be referred as a debt-restructuring plan for the financially weak DISCOMs emphasizing operational improvements through mandating feeder segregation, transformer up-gradation, compulsory smart meter installation, AT&C loss reduction and deployment of energy efficiency measures.

PEER COMPLEMENTING UDAY THROUGH PROVEN PROGRAMS & PROCESSES

PEER with its integrated approach could drive DISCOMs towards UDAY targets and further through its proven programs & processes. The performance outcomes could also help Indian DISCOMs in benchmarking against regional and global peers.

The PEER framework as an approach towards UDAY is mapped here:



PEER SETTING BENCHMARKS BEYOND UDAY & EMPHASIZING TRACKING OF RELIABILITY AND ENVIRONMENTAL PERFORMANCE

Though UDAY has broader visions on uplifting financially weaker DISCOMs through mandating energy efficiency measures and feeder metering, reliability, resiliency and environmental performance have greater impacts on efficiency improvement and economic stability, though is not currently valued or measured under UDAY.

A study by Wartsila India in August 2009 indicates that India suffers a staggering loss of INR 100,000 crore due to nationwide power.

PEER presents a forward-looking tool that emphasizes tracking the reliability and environmental performance of DISCOMs through Key Performance Indicators (KPI):

- ▶ **SAIDI and SAIFI** - set thresholds on reliability indices (as per IEEE 1366) to measure and benchmark DISCOMs reliability performance;
- ▶ **EE Index and SEEC Coefficient** - a rationally devised KPI that quantifies and benchmarks the environmental performance and efficiency of electricity generation across global standards;
- ▶ **Sets 5% threshold** - for advanced meter installation with featured capabilities; and
- ▶ **Measuring** - customer connectivity of utilities.

The above PEER parameters could help DISCOMs in evaluating their current performance and sets thresholds for future improvements.

BENEFITS OF PEER

PEER helps electricity leaders, professionals, operators and energy stakeholders:

- ▶ Bring transparency and create a common language between consumer, utilities, operators and energy stakeholders;
- ▶ Define key performance metrics, benchmark against industry standards, and verify measureable outcomes;
- ▶ Demonstrate competitive advantage and comparative differentiation; and
- ▶ Build a comprehensive continuous improvement process based on industry best practices to maximize returns and minimize risks thereby increasing trust, credibility and customer satisfaction.

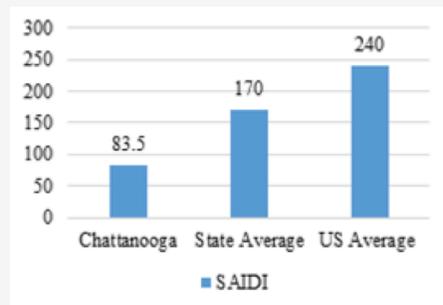
PEER Case Study: EPB Chattanooga, Tennessee

In 2015, the Electric Power Board (EPB) of Chattanooga became the first PEER certified municipal utility in the world.

The EPB system was put to the test in 2012, when two major storms knocked out power throughout most of Chattanooga. With electricity infrastructure improvements, power was restored to most of the system within hours instead of days. As part of the PEER process, the city identified opportunities for sustained improvement through:

- Undergrounding
- Improving the generation mix
- Encouraging ongoing customer engagement.

These strategies have helped EPB provide further value to customers, raise awareness of their accomplishments to date and support additional investments.



Based on 2013 data, EPB's was able to compare its SAIDI of 83.5 outage minutes per year favorably to the state of Tennessee's average SAIDI of 170 and the national average of 240 minutes projecting its reliability performance.

CONCLUSIONS

PEER is administered by Green Business Certification Inc. (GBCI), the premier organization independently recognizing excellence in green business industry performance and practice globally. Through PEER, GBCI puts forth a scientific method of power supply performance assessment and works to transform cities, utilities, campuses and transit systems through its 34 global parameters.

PEER provides direction and identifies new opportunities for improvement of coastal DISCOMs, which are prone to storm, flood and other natural disasters. PEER helps reduce vulnerabilities & damage to grid infrastructure as a result of extreme events.

With India witnessing a transformational change in the energy sector through mandated policies, **PEER could drive the above programs at community level & utility scale through its integrated framework and data-driven approach.**

PEER Case Study: Tata Power Delhi Distribution Limited

In 2018, Tata Power Delhi Distribution Limited (Tata Power-DDL) became the first PEER Gold utility to certify in India.

Through PEER, Tata Power-DDL realized the following benefits:

- Helped quantify the reliability and environmental performance of their power infrastructure spanning across 510 sq kms with registered customer base of 1.64 million;
- Helped structure data-management across 14 departments;
- Assessed customer engagement programs;
- Evaluated operational policies and programs compared at a global scale; and
- Encouraged meaningful decisions for future long-term power contracts selected based on PEER EE index.

Tata Power-DDL uniquely benchmarked across four PEER categories - Reliability & Resiliency; Energy Efficiency & Environment; Operations, Management & Safety;_and Grid Services - and helped quantify their performance. **They reported energy savings of 26 million units, cost savings of INR 177 million and 450 kilotons carbon emission reduction per annum.**