PEER

BANGALORE INTERNATIONAL AIRPORT LIMITED

(Platinum Certified under PEER v2)

CASE STUDY

September 2021

"We are proud to receive this recognition from GBCI for our relentless efforts in the energy conservation and energy resilience domain. As the operator of a world-class airport, BIAL has undertaken a variety of steps to deploy onsite renewable energy generation systems and offsite renewable power procurement, to meet our long-term goal of becoming Net Energy Neutral in 2020-21. Certified with PEER Platinum Rating will only motivate us to keep fast tracking our sustainability journey, even as we keep enhancing our infrastructure to meet the ever-increasing air transportation needs of passengers."

-   Hari Marar, MD & CEO, Bangalore International Airport Limited

Kempegowda International Airport, Bengaluru (BLR Airport), operated by Bangalore International Airport Limited (BIAL) is one of the fastest-growing airports in the world and the third-busiest in India. Having served 10 million passengers in 2008, BLR Airport witnessed phenomenal growth during the subsequent years, becoming the fastest growing airports by handling about 33.65 million passengers in FY 2019-2020.

Since its inception in 2008, BLR Airport has played a key role in driving the economy of the region – offering a wide air-route network. In its 13-year journey, BLR Airport has welcomed 229 million passengers, served 2 million air traffic movements, and processed 3.5 million tonnes of cargo. Connecting Bengaluru (the Silicon Valley of India) to the world, BLR Airport is

Highlights of Bangalore International Airport Limited

Energy Savings of 14.7 million kWh per annum

Cost Savings of 84 million INR (1.2 million USD) per annum

46 Kilo Tons of CO_2 Emissions Mitigated Every Year

Figure 1: Highlights of Bangalore International Airport Limited

taking all steps to ensure that its growth is sensitive to the environmental and economic needs of the surrounding communities.
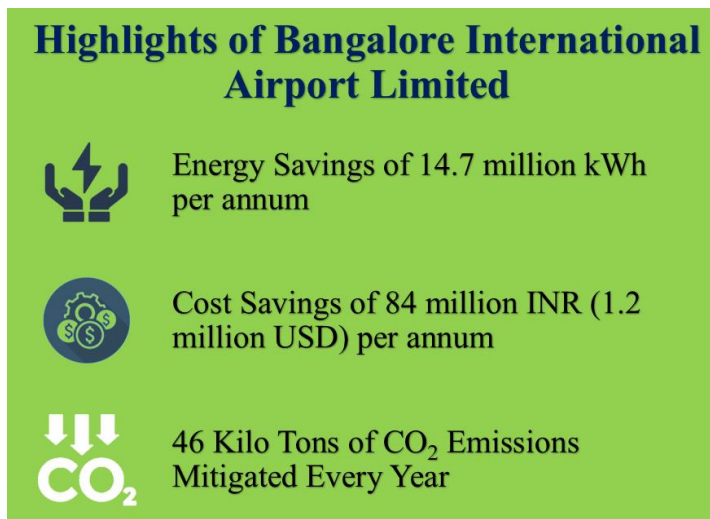
Powered with cutting-edge technology, including contactless passenger processing, self-baggage drops, biometric-based self-boarding solution, and a well-established route network, BLR Airport connects to 74 domestic destinations and key international markets across the world. Over the past decade, the airport has been recognized in many ways as an industry leader in sustainability. It has been rated as the *Most Sustainable Airport* at the International Airport Review Awards (2019), *Best Greenfield Airport* at India Cargo Awards (2020), *FICCI Smart Urban Innovation Award* for Solar & Renewable Energy (2021), *Environmental Best Practices 2021 Award under the Climate Change Impact Mitigation and Adaption category*, etc., through which BIAL demonstrates its commitment to sustainability.

As part of its sustainability goals, BIAL had set the target to become **Net Energy Neutral by 2020-21**. Further, to make their power system continuously support their sustainability development, BIAL pursued **PEER certification** to evaluate and enhance their power system performance and achieved '**Platinum Rating**' after undergoing a rigorous certification and review process.

GREEN & EFFICIENT POWER SYSTEM

BIAL has undertaken various measures such as the implementation of renewable energy generation systems, offsite renewable power procurement, energy conservation measures, etc., to achieve its ambitious goal of **Net Energy Neutral by 2020-21**. PEER through its rating system always emphasizes renewable energy uptake and energy efficiency enhancement for campuses, to reduce their environmental impact and optimize energy consumption associated with their operations.

Onsite & Offsite Renewable Energy Share in BIAL's Energy Mix

Utility Power 35%
Onsite Solar 12%
Offsite Solar 49%
Offsite Wind 4%
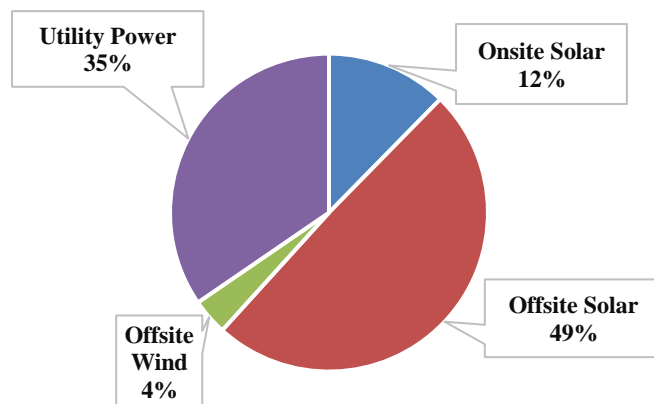
Through the onsite solar PV installations (both rooftop and ground-mounted) with a total capacity of 6.8MW, and Power Purchase Agreements (PPA) with solar (40 million units) and wind energy (3 million units) developers, BIAL was able to meet almost *65% of its energy requirement met through renewable energy based on their 2019-20 energy data (Recent reports from BIAL states that 90% of their energy requirements were met from renewables).*

Onsite solar power generation has made BIAL **save about 10 million units (or kWh) of energy** and **achieve cost savings of about 42 million INR** in the year 2019-20.

The whole renewable energy procurement (both onsite and PPA) made BIAL **mitigate about 42 kilotons of CO_2 emissions annually**.

And, to achieve permanent reductions in their energy demand and consumption, BIAL has implemented energy conservation programs such as replacement of all CFL (compact fluorescent lamp)/ Halogen lights with LED fixtures, PLC (Programmable

Figure 2: BIAL - Onsite rooftop solar PV system

Logic Controller) based Terminal Light Automation System (TLA) to monitor and minimize the energy consumption of terminal lights, and Chiller Plant Optimizer (CPO) solution for monitoring the operation and optimizing the chiller plant performance under various load conditions. All these energy conservation measures made BIAL achieve **energy savings of 4.7 million units (or kWh), cost savings of 42 million INR, and mitigate about 4 kilotons of CO_2 emissions annually**.

Figure 3: BIAL - Onsite ground-mounted solar PV system

RELIABLE & RESILIENT ENERGY INFRASTRUCTURE WITH ZERO DOWNTIME

BIAL has developed a reliable energy infrastructure with:

- 98% distribution redundant power network, implemented with auto-restoration technologies,
- 100% undergrounded power cables,
- Alternative power supply with seamless transfer for 100% of the project loads through the secondary feeder, central battery storage, diesel generators, and onsite renewable energy systems,
- SCADA (Supervisory Control and Data Acquisition) based master controller and advanced meters at all buildings to monitor interruptions and power quality events.

Apart from these implementations, BIAL has hardened its power system against various external threats such as tree or animal contact, vehicle or human interference, fire hazards, and has in place infrastructure to prevent damage to their electrical equipments from flooding, thus strengthening their resilience. And, to enhance the energy infrastructure performance and to ensure reliable operation, BIAL has implemented several best practices including:

- HIRA (Hazard Identification and Risk Assessment) for critical power system assets,
- Emergency response plans to address short-term and extended power interruptions,
- Safety Risk Analysis through Online Safety Management System,
- Preventive and Predictive maintenance procedures, etc.

With all these measures in place, BIAL has achieved **zero SAIDI** (System Average Interruption Duration Index) **and SAIFI** (System Average Interruption Frequency Index) in the last 3 years, thus demonstrating their energy infrastructure's reliability and resiliency.

PEER CERTIFICATION

PEER is a certification program that measures and improves power system performance and electricity delivery systems. The rating system evaluates the campus performance across six categories that include:

- ▸ Reliability and Resiliency (RR)

- Energy Efficiency and Environment (EE)
- Operations, Management and Safety (OP)
- Grid Services (GS)
- Regional Priority (RP) &
- Innovation (IN)

Out of a possible 110 points, **Bangalore International Airport Limited earned 92 points** and achieved **PEER v2 Platinum certification.** As part of the process, the project identified opportunities for continuous improvements such as:

- Hardening their power system against natural disasters such as storms and earthquakes to strengthen energy infrastructure resilience.

- Improving energy conservation behavior of their customers by providing near-real-time energy consumption data through online platform.

PEER Certification for Campus Projects

Certified 03 September 2021

Total Points Achieved	**92**
Reliability and Resiliency	27
Energy Efficiency & Environment	23
Operations, Management & Safety	23
Grid Services	11
Innovations & Regional Priority	08
Total Possible Points	**110**

About PEER

Performance Excellence in Electricity Renewal (PEER) is a rating system and certification for defining, assessing and verifying the overall sustainable performance of electricity delivery system design & operations. PEER is designed to deliver sustainable, resilient, and reliable energy around the globe. Learn more: peer.gbci.org

PEER | PERFORMANCE EXCELLENCE IN ELECTRICITY RENEWAL