Energy Management

Challenges

- Under international environmental requirements or regulations that require Thailand to establish energy policies, businesses must accelerate their readiness for the transition. This includes strengthening internal energy management by improving data collection, building infrastructure inspections, and identifying technologies and equipment with higher energy efficiency.
- Energy price volatility and reliance on imported energy, which lead to continuously rising energy costs beyond prior projections. This could significantly increase the prices of goods and services, particularly due to impacts on both production and transportation sectors.
- Encouraging supplier participation in energy management, including building understanding, creating collaboration, and supporting suppliers in collecting their own energy consumption data

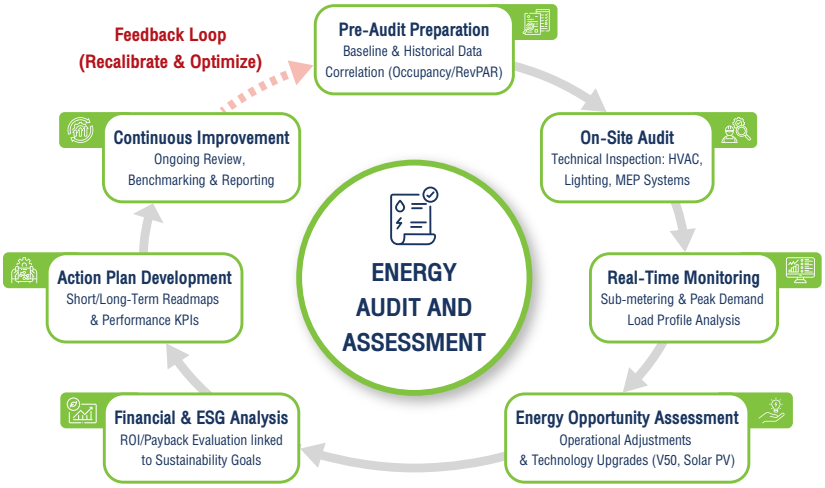
Opportunities

- Transitioning to renewable energy or adopting smart technologies in operational systems not only helps reduce long-term operating costs but also reduces reliance on fossil fuels, which are a factor of greenhouse gas emissions. This supports the Company in progressing toward its Net Zero target.
- Under Thailand's approval of the Nationally Determined Contribution (NDC), 2nd Revision or NDC 3.0, support and participation across all sectors are encouraged to adapt energy management practices. This also promotes investment in renewable energy, helping businesses achieve greater stability in energy costs.
- Effective energy management approach increases the Company's opportunities to access green financing and build confidence among ESG-focused investors, which is a key factor in supporting sustainable business expansion in the future.

Management Approach

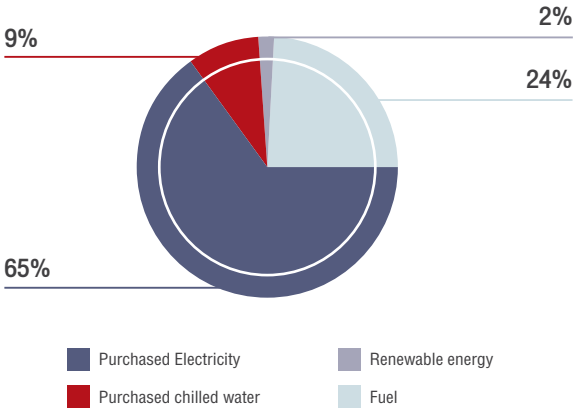
The Company recognizes that business expansion leads to increased energy demand. Therefore, reducing energy consumption has been established as one of the Company's key performance indicators and is also considered a business risk that must be continuously monitored and assessed. For the hotel business, the Operations team, particularly Engineering Department, conducts energy audits and assessments, including data collection, evaluation, and analysis of energy consumption at each operational point. The team also develops investment plans for installing energy-saving equipment, prepares energy management action plans, and reports energy performance results to the Company's management. At the same time, the Company strengthens energy security by increasing the proportion of renewable energy, particularly solar energy, and utilizing energy recovered from waste, such as using cool air released from heat pump systems in corridor areas, producing biogas from food waste, etc. These efforts are implemented alongside investments in energy-efficient technologies or equipment, such as the Building Management System (BMS), which helps monitor lighting systems and air-conditioning systems, enabling better control of electricity consumption. In addition, the Company provides training and communication to raise awareness and promote cooperation among all stakeholders, ensuring alignment with the Company's goals.

The Sustainability Cycle: Hotel Energy Management & Efficiency Improvement



The Company's total energy consumption from both the hotel and food businesses amounted to 390,070,529.14 kilowatt-hours. The majority of energy consumption came from purchased electricity, totaling 256,086,199.15 kilowatt-hours, followed by fuel consumption and the purchase of chilled water for air-conditioning systems, respectively. In addition, the Company utilizes alternative energy from solar panel installations, generating 6,820,608.20 kilowatt-hours of electricity, accounting for 3% of total electricity consumption. This contributes to reducing the organization's greenhouse gas emissions.

Total Energy Consumption 2025



Total energy consumption increased by

4.75%

Hotel Business

Total energy consumption

282,301,456.17 kWh

Currently, a total of

18 hotels have installed solar panels.

Food Business

Total energy consumption

107,769,072.97 kWh

Currently, a total of

22 locations have installed solar panels.

Hotel Business

Targets:

- Reduce energy consumption* per occupied room by 40% by 2029, compared to the 2019 baseline year.
- In 2025, energy consumption* per occupied room decreased by 4%.

Note: * Energy consumption targets are defined within the boundaries of hotel facilities (Facility only) in order to benchmark against other hotel businesses in accordance with the Cornell Hotel Sustainability Benchmark (CHSB) report.

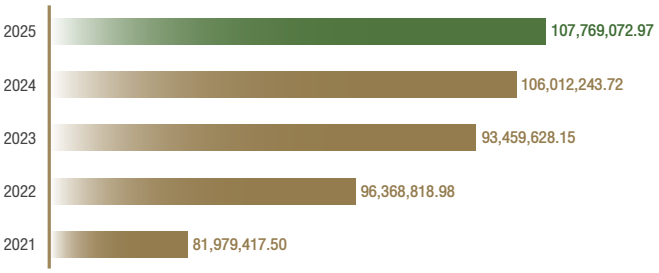
Performance Results

In 2025, the hotel business consumed energy (Facility only) at an average of 97.79 kilowatt-hours per occupied room (kWh/occupied room), representing an increase of 0.22% compared to the previous year. The majority of energy consumption came from purchased electricity, accounting for 55%, which is used for air-conditioning systems, lighting, and various activities across the hotel premises. The second-largest energy source was diesel fuel, accounting for 17%, which is used to operate electricity generators that produce electricity for hotels in Maldives, as well as serve as backup power in the event of outages at other hotels. Diesel is also used for vehicles owned by the hotels.

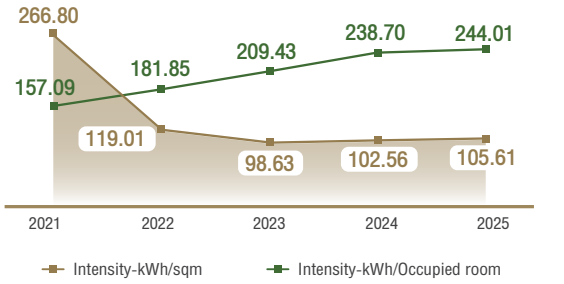
For alternative energy, most of it comes from solar panel installations that convert solar energy into electricity, helping to reduce greenhouse gas emissions. Currently, 18 hotels have installed solar panels, generating up to 5,792,267.24 kilowatt-hours of electricity.

In addition to establishing energy reduction targets at the organizational level, each hotel is assigned specific targets by Head Office to reduce electricity consumption per occupied room (kWh/Occupied room). This approach aims to create collaboration across all properties and ensure the achievement of the Company's overall energy reduction goals.

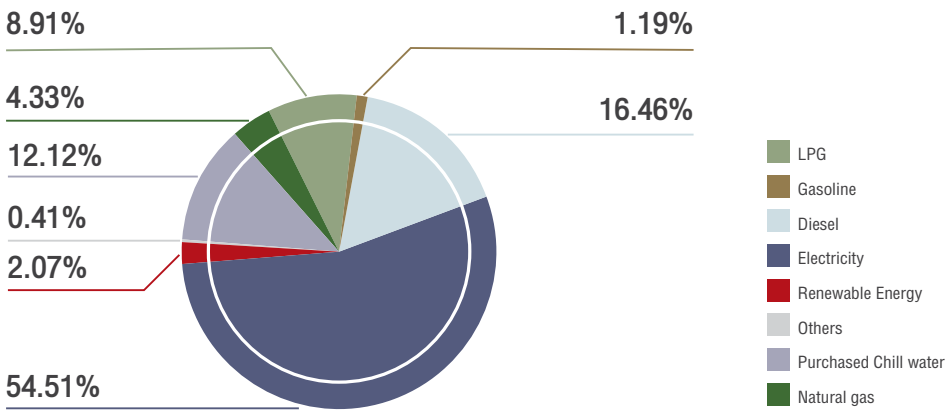
Total Energy Usage (kWh)



Energy (Facility, Vehicle, and Refrigerant) Intensity



Ratio of Energy Usage 2025



Energy Efficiency Projects

Waste Energy Recovery

Hotels have installed Economizer equipment to recover residual heat from the boiler hot water production process, which is used in the laundry and kitchen areas. The recovered heat is circulated back (Reheater) to preheat the water before it enters the boiler again. This process reduces the temperature difference between the water in the boiler and the newly supplied water (Preheat), allowing the boiler to reach boiling temperature more quickly. As a result, less fuel is required while producing the same amount of steam, and the boiler does not need to start heating from cold water. This approach helps improve energy efficiency.

In addition, hotels utilize a heat pump system for hot water production within the hotel. The system extracts heat from the surrounding air and transfers it to the system's heat source. At the same time, this process releases cool air that can be used as an alternative to air conditioning. To recover and reuse energy, hotels direct the released cool air for use in common areas or back-of-house areas within the hotel.

Variable Speed Drivers: VSD

To reduce increasing electricity consumption and save operational costs, Centara hotels & resorts have installed Variable Speed Drives (VSD) in the water supply systems for swimming pools and guest rooms. These devices help regulate the speed of electric motors according to the actual load conditions during operation. This prevents continuous energy loss and also helps extend the service life of the equipment.

Oil-Free Magnetic-Bearing Chiller Compressors

Cooling systems represent the largest source of energy consumption in hotel buildings. To improve energy efficiency, the hotel business has adopted Oil-Free Magnetic-Bearing Chiller technology, which uses magnetic fields instead of conventional bearings. This eliminates physical contact or friction from traditional bearings, thereby reducing energy loss from rotation. In addition, the technology eliminates the issue of oil contamination in the cooling system, improving heat transfer efficiency. As a result, electricity consumption can be reduced by more than 30%, while also lowering long-term maintenance requirements.

District Cooling System with Chiller Optimizer

The hotel business utilizes a centralized chilled water system, installed at a central location and operated together with an Optimizer system. This system monitors the building cooling load, chilled water temperature, and the operation of pumps and cooling towers. It then calculates and determines the appropriate number of chillers to operate, while adjusting the speed of pumps and fans to control temperature according to actual operating conditions. This approach helps prevent unnecessary energy consumption, extends the service life of equipment, and reduces maintenance burdens.

Guest Room Management System (GRMS)

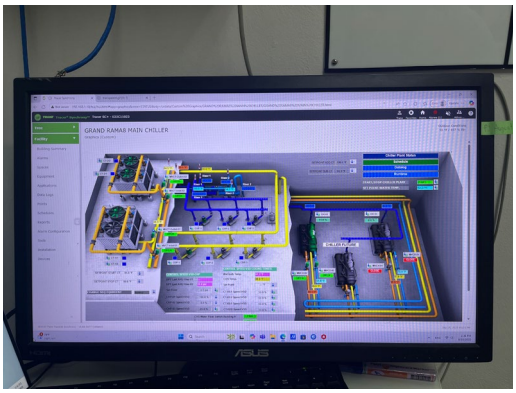
A Room Control Unit (RCU) is installed inside guest rooms to detect movement. The collected data is transmitted to the central system of Engineering Department and Front Office Department to regulate the air-conditioning system or room temperature, as well as the lighting system, ensuring appropriate conditions within the room. If a key card is left inserted while no guest is present in the room, the system automatically switches to energy-saving mode.

LED Lighting

Hotels install LED lighting integrated with motion sensor technology to automatically turn lights on and off within a 5-meter detection range. When no movement is detected, the lighting level is reduced to 30% brightness. These systems are installed in public areas of the hotel, corridors, public restrooms, and back-of-house areas to help control energy consumption.

Building Management System (BMS)

To gain a comprehensive overview of energy management within buildings, Centara hotels and resorts have installed a Building Management System (BMS) together with the HVAC system (Heating, Ventilation, and Air Conditioning). This system is used to control temperature, humidity, and air circulation. It can also be integrated with the fire alarm system and security systems, enabling immediate response to emergency situations from a single centralized control point.

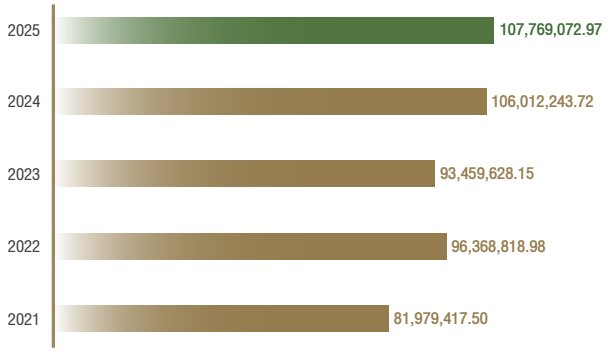


Food Business

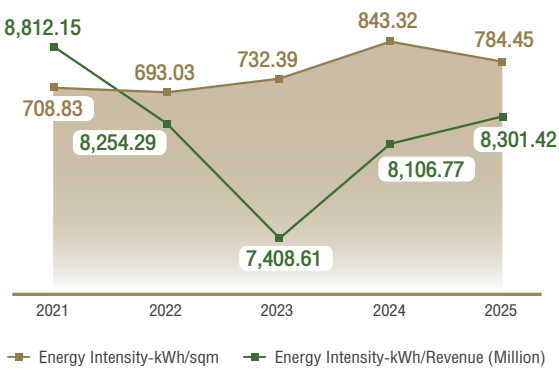
Targets:

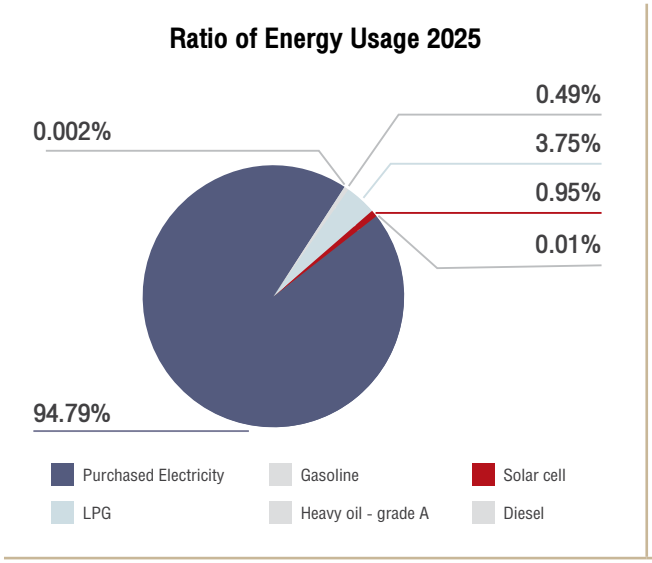
- Reduce total energy consumption per revenue by 20% by 2029, compared to the 2024 baseline year.
- In 2025, energy consumption per revenue decreased by 4% compared to the previous year.
- In 2025, electricity consumption decreased by 4% compared to the previous year.
- In 2025, electricity consumption per revenue decreased by 4% compared to the previous year.

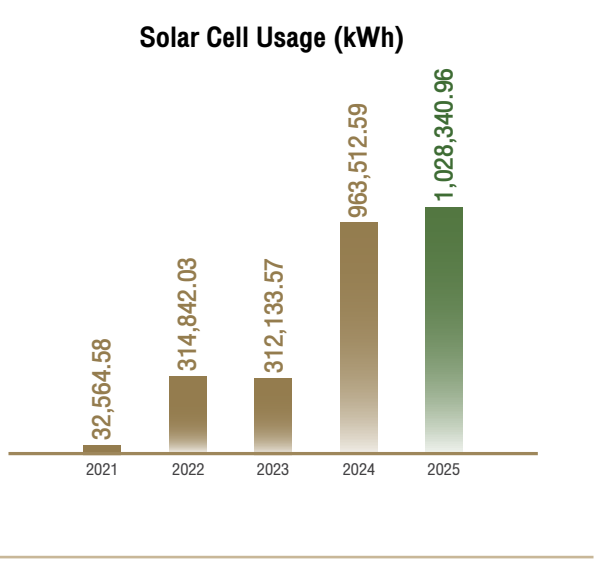
Total Energy Usage (kWh)

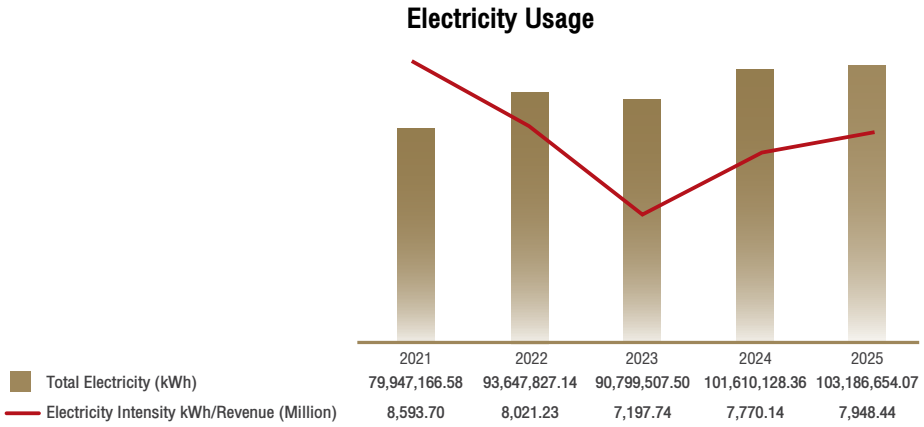


Energy Intensity









Energy Efficiency Projects

Lighting System

- Installation of motion sensor systems to automatically turn lights on and off based on actual usage, reducing energy consumption in unoccupied areas.
- Adjustment of lighting levels according to environmental conditions and time of day to reduce energy consumption without affecting operational efficiency.
- Centralized lighting control through an application, reducing management workload and improving convenience in monitoring.

Air Conditioning System

Installation of occupancy sensors to detect space utilization, enabling temperature adjustment according to the number of occupants in the area. This helps reduce unnecessary energy consumption. In addition, the air-conditioning system can be centrally controlled through an application.

Variable Speed Drive (VSD) Systems

To reduce unnecessary energy consumption, Variable Speed Drives (VSD) are installed to adjust motor speed in accordance with actual operational loads (Adaptive Speed Control). This system is applied to electric motors and machinery, enabling appropriate speed control based on usage conditions. As a result, it helps reduce wear and tear on motors and equipment, improves machine efficiency, extends equipment lifespan, and lowers maintenance costs.

Employee Training on Energy Efficiency

The food business provides training to raise employee awareness of energy consumption, covering all levels from management to operational staff. This aims to build knowledge and understanding of energy conservation practices across both factory operations and restaurant brands.