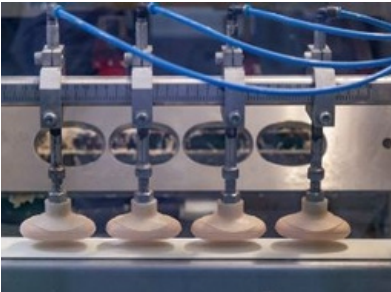




# ENERGY MANAGEMENT INITIATIVE

20  
23

**Long Term Target:** In 2032 reduce 15% of non-renewable energy per revenue from base year (2021)

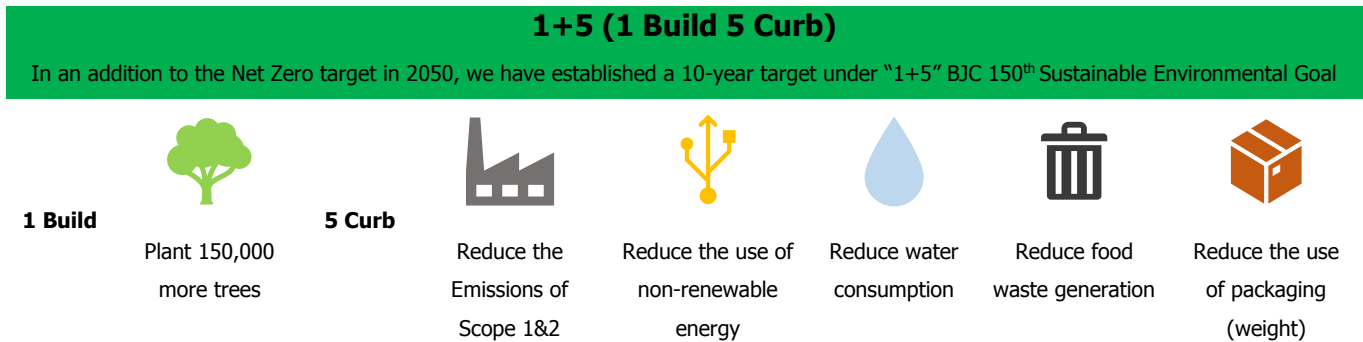


# Table of Contents

Introduction	2
Actions to reduce the amount of energy use	3
Increasing the proportion of green energy usage	5
Energy efficiency training	6

## Introduction

Energy management has always been on BJC focuses, with the target to be Net Zero by 2050, we have established a target under “1+5” sustainable environmental goal including the strategy to reduce 15% of the use of non-renewable energy and reduce the emission of scope 1&2 within 2032.



BJC has implemented various innovative strategies and technologies to reduce our carbon footprint and enhance sustainability. From investing in the use of clean or green energy like solar and improve energy intensive production processes to optimizing our energy usage through advanced technologies and smart systems, we are committed to making a positive impact on the environment.

Education and awareness are also key components of our strategy. We actively engage with our employees, customers, and the community to promote sustainable practices and encourage everyone to contribute to our collective goal. With these combined efforts, we are confident that we can achieve the target of carbon neutrality by 2030.

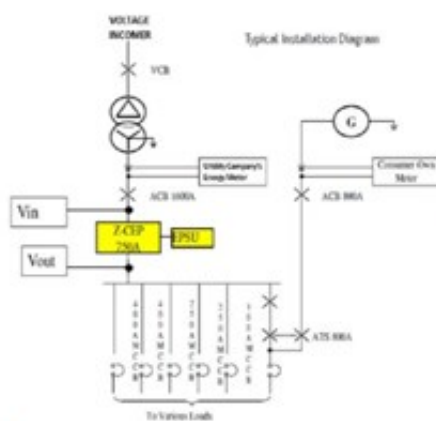
BJC is dedicated to an evaluation of progress in reducing energy consumption, regularly monitoring an energy audit to identify new opportunities for improving energy performance. Additionally, we are fostering partnerships with our suppliers, contractors, and franchisees to organized an energy efficiency training to raise awareness of energy consumption reduction that push the boundaries of what's possible in energy management.

In 2023, Big C has invested total ₱106.25 million in R&D and green technology innovation to decrease energy consumption and increase the use of clean or green energy.

## Actions to reduce the amount of energy use

Big C has operated under the 1+5 environmental strategy allowing Big C to continue being 'Your Trusted Partner for a Sustainable Better Living' This includes continuous efforts to improve energy efficiency and increase the proportion of green energy usage. As a result, Big C is able to reduce energy costs and greenhouse gas emissions from its operate store. In 2023, projects supporting the Big C green store strategy were implemented in 7 project cover more than 100 stores, as follows:

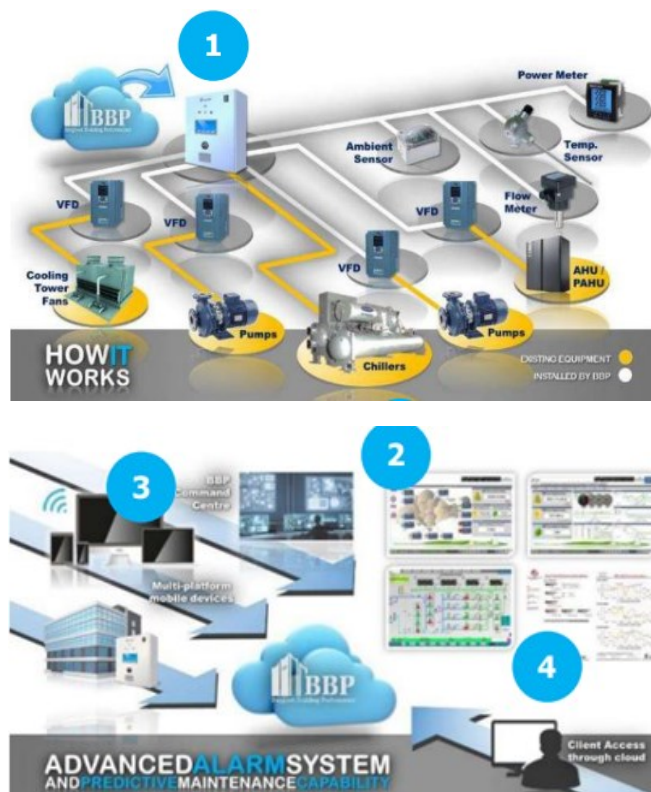
- Installed a dynamic voltage controller (DVC), power device used in electrical distribution system for power quality improvement in the store to conserve and improve energy efficiency on a total of 8 stores, 8 units with the investment of 10.43 million baht which quantified targets to address energy saving equivalent to 1,117,279.89 kWh per year



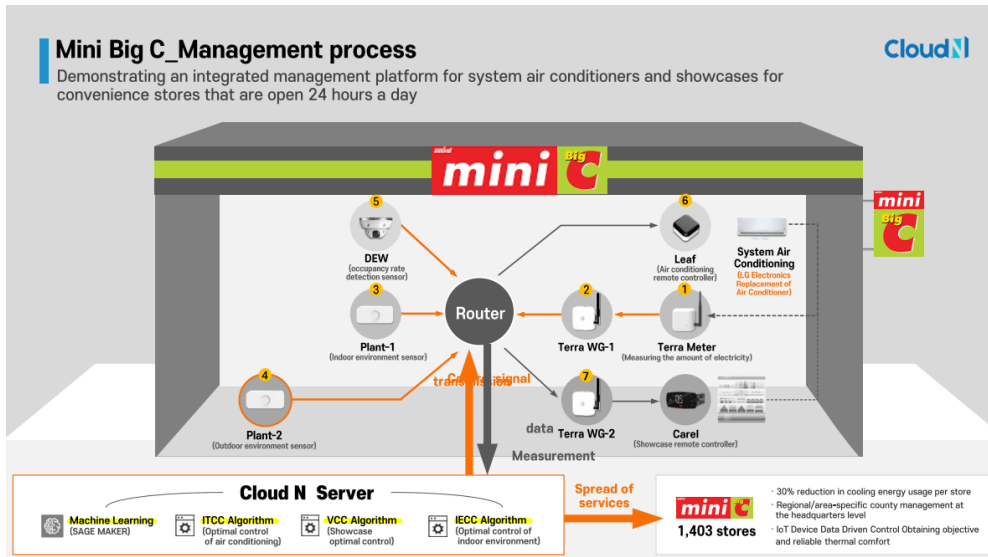
- Using high efficiency refrigeration system (Air curtain). This investment in innovative approach not only contributes to a decrease in energy consumption but also aligns with environmental goals by decreasing CO2 emissions. Big C has implemented this system in 44 stores across the country, which can reduce energy consumption 110,880 kWh per year



- Installed a high efficiency chiller, evaporative cooling system and high efficiency air conditioner system on 9 stores which is a system for managing real-time the on-and-off of the temperature control operation of the cooling tower fans, chilled water pumps and condenser water pumps based on the patented algorithm and control strategies to help maintain optimal temperatures inside the stores as well as enhance the shopping experience for customers incurs a cost of 75.6 MB and achieved a target of 20% energy saving. Additionally, Big C has utilized the BBP (Barghest Building Performance) service to audit data-driven operations and maintenance through cloud and IoT technologies. This service offers 15-35% electricity savings in chiller plants, aiding in long-term savings through advanced analytics.



- Implemented an AI smart platform named POREST N to monitor real-time energy consumption within the facility. This platform facilitates adjustments and management of ventilation fan control, water systems, and inverter control. The platform enables real-time metering of electricity, gas, and water usage, with an anticipated cost saving of 3.6 million Baht annually, equivalent to saving 720kWh of electricity. By the end of 2023, the installation in 3 Hyper Big C stores is projected to save 10.7 million Baht annually, while an expected saving of 9.8 million Baht annually is anticipated for 50 Mini Big C stores.



Moreover, Big C's investments in R&D is continuously exploring innovative solutions to decrease energy consumption, enhance in store energy efficiency while minimizing environmental impact. By upgrade the auto walk speed control and utilize the variable speed drive to monitoring energy usage with an investment of 21.69 million baht in 27 stores, this action reduces 3.3 MkwH energy use per year.

## Increasing the proportion of green energy usage

### Solar Rooftop

Longed before the pledge to increase the use of green energy was a global topic of discussion in the 2023 COP28 meeting, BJC has continuously been identifying operations where it can transition from traditional fuels sources, to the use of green energy. By Installing solar panels on building roof tops to generate electricity for onsite consumption.

In 2023, CPC has installed 981.72 kW of solar roof top to avoid 1,340,238 kW of electricity used, estimated energy cost avoidance of almost 5.4 million baht per year. The solar cells are used to improve its energy utilization throughout the production process with the target of 9% reducing in electricity cost and reduce the energy emission.

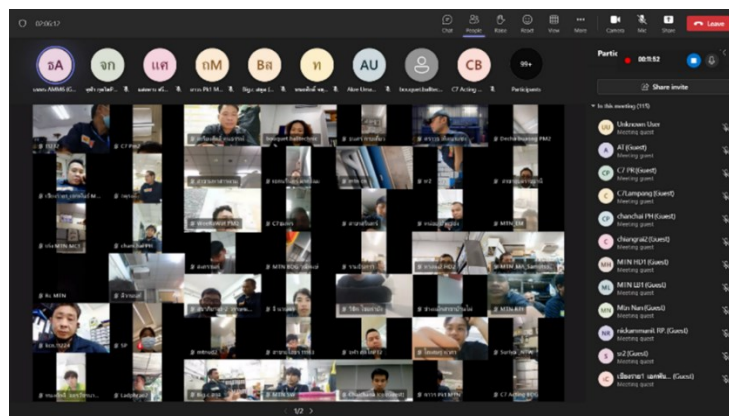
The Big C Solar Roof Power Purchase Agreement (PPA) Project remains to be a flagship project in BJC's transition towards its long-term net zero by 2050 target. Following the complete installation of phases 1-4 across 45 Big C branches, generating a total of 52,343 MWh per year, savings a total of 58.95 million baht per year, whilst reducing GHG by 31,333 tons per year. In 2023, the project finalized its phase 5, installing solar roof across 58 Big C branches, generating a total of 54,531,938 kWh per year, representing a saving total of 76,898,561 million baht.

Another example of this can be seen in Thai Malaya Glass Ltd. (TMG), where it installed solar rooftop at its every furnace roof top building, reducing energy consumption in 2023 by 2,284,527 kWh and helping the company to reduce green house gas emission 1,139.97 tons of CO<sub>2</sub>e

Throughout the year, BJC group has a collective utilization of solar energy through solar roofs of about 1,160,015.27 kW, a 18% increase from previous year.

## Energy efficiency training

BJC has conducted an energy training provided to employees to raise awareness of energy consumption reduction, focusing on evaluation of progress in reducing energy consumption and maximizing efficiencies to minimize negative effects on climate change, all business units are actively identified, develop, and implement new opportunities to enhance energy efficiency.



Within Thai Malaya Glass (TMG), each new employee undergoes training aimed at enhancing their understanding of energy conservation practices and the organization's sustainability initiatives. In addition to the formal training, TMG fosters a culture of continuous learning and improvement through an energy efficiency training to ensure that all employees are well understanding of corporate's mission of reducing its environmental footprint. Moreover, with a 1,200 of participants in refresh (Energy conservation awareness) learning course, has encourage employees to stay updated on the latest advancements in sustainability.

Similarly, Rubia Industries (RIL) has organized an internal energy efficiency training provided to 190 employees across all levels, operated by office of the energy regulatory commission. This course aims to raise awareness of energy consumption reduction, both in the workplace and in their personal lives. Topics covered will include sustainable practice, energy efficient technologies and the important of reducing carbon footprints.



Moreover, TBC has adhering to the ISO 50001 standard and energy audits, aims to identify opportunities for improving energy performance, and maintenance of an energy management system resulting in decreasing of energy consumption, lower green gas emission and cut operation cost. This proactive approach not only benefits the environment but also enhances TBC's reputation as a forward-thinking and responsible company. Clients and stakeholders can take pride in partnering with an organization that prioritizes sustainability and works diligently towards a greener future.

In conclusion, BJC group's commitment to environmental stewardship is evident through its comprehensive actions to reduce the amount of energy use. BJC achieved a 17.30% progress towards its 2023 target to reduce scope 1&2 emissions, reducing 30,005 metric tons of CO2 out of the 173,238 metric tons target. Additionally, BJC made 8% progress towards its goal of the reduction of non-renewable energy consumption, reducing 34,264 MWh out of the 427,636 MWh target. We are committed to making a positive impact on the environment by diligently working towards the target of reaching net zero emissions.

**Continue to implement and achieve diverse sustainability related milestones**

Sustainability target by 2032

