




The 66th Meeting of the APEC Expert Group on Energy
Efficiency and Conservation (EGEEC 66)

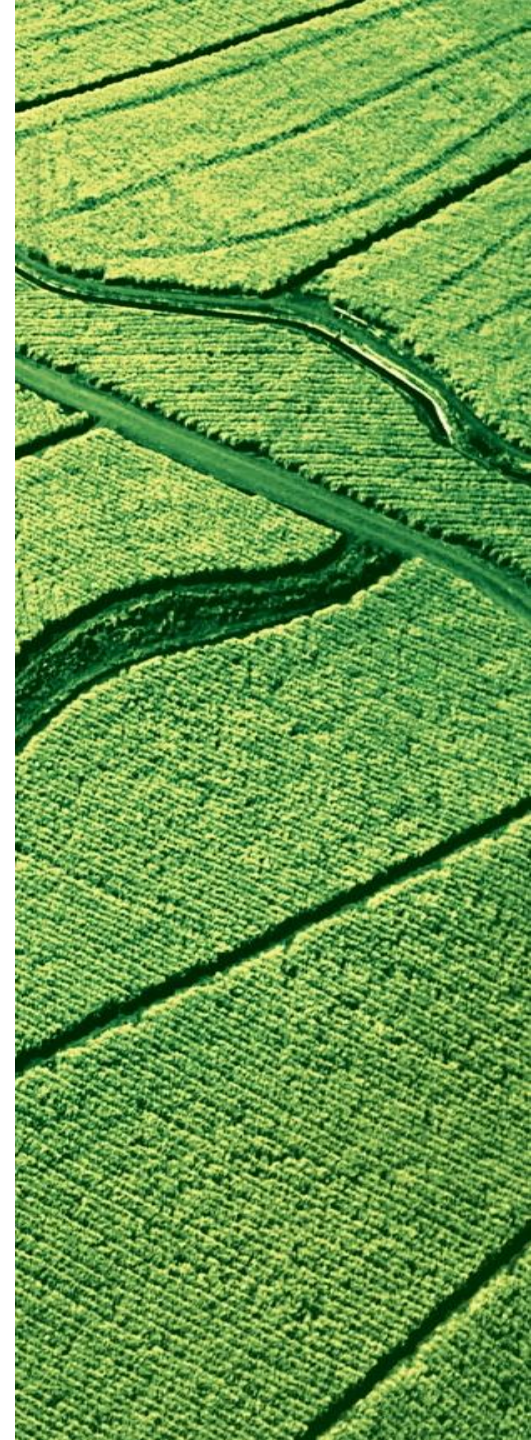
Economy Update in Chinese Taipei

(Transforming the energy landscape: accelerating
Bio Circular Economy with clean energy and AI-
driven energy efficiency)

30 March - 02 April 2026

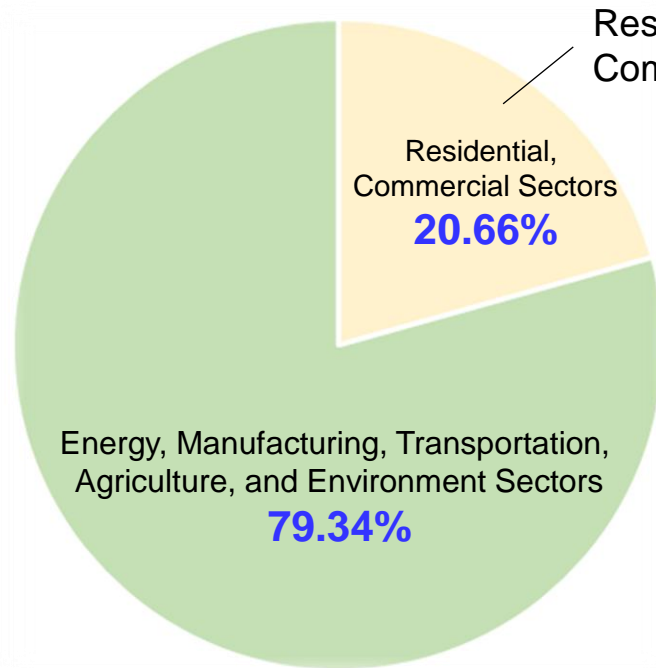
Directed:  經濟部能源署
Energy Administration,
Ministry of Economic Affairs

Administrated:  ITRI
Industrial Technology
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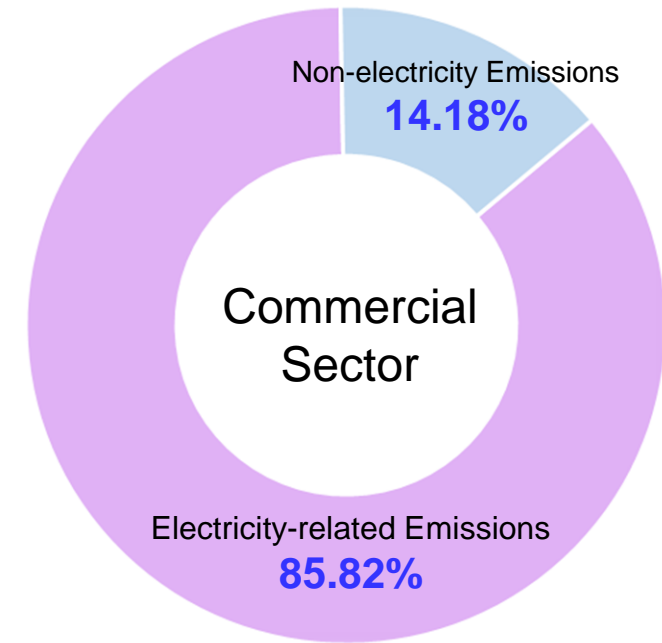


The Core of Commercial Decarbonization

- Under the global trend toward Net Zero Emissions by 2050, **energy conservation** is the primary goal for achieving net zero and energy transition.
- Chinese Taipei introduced a 2026 flagship carbon reduction plan^[1] focusing on **energy management**, aiming for a 0.465 MtCO₂e reduction by 2030.



Greenhouse Gas Emissions Share by Sector in Chinese Taipei, 2023^[2]



Greenhouse Gas Emission Structure of the Commercial Sector in Chinese Taipei, 2023^[2]

Resource : [1] Residential and Commercial Sector Carbon Reduction Action Plan (2025), CT Development Council
[2] NDC Phase III GHG Mitigation Action Plan for Residential & Commercial Sectors (2026), CT Development Council

A Strategic Necessity for Retail Stores

- With **14,236 convenience stores**^[1], Chinese Taipei has the **Top 3 highest** store density in the world.
- Freezers account for about **50%~70%**^[2] of a retail store's energy use, and frost buildup makes them inefficient.
- EMS (Energy Management System) preserves precious workforce by minimizing equipment maintenance and failure workloads.

EUI, Energy Use Intensity^[3] : kWh/(m².yr)

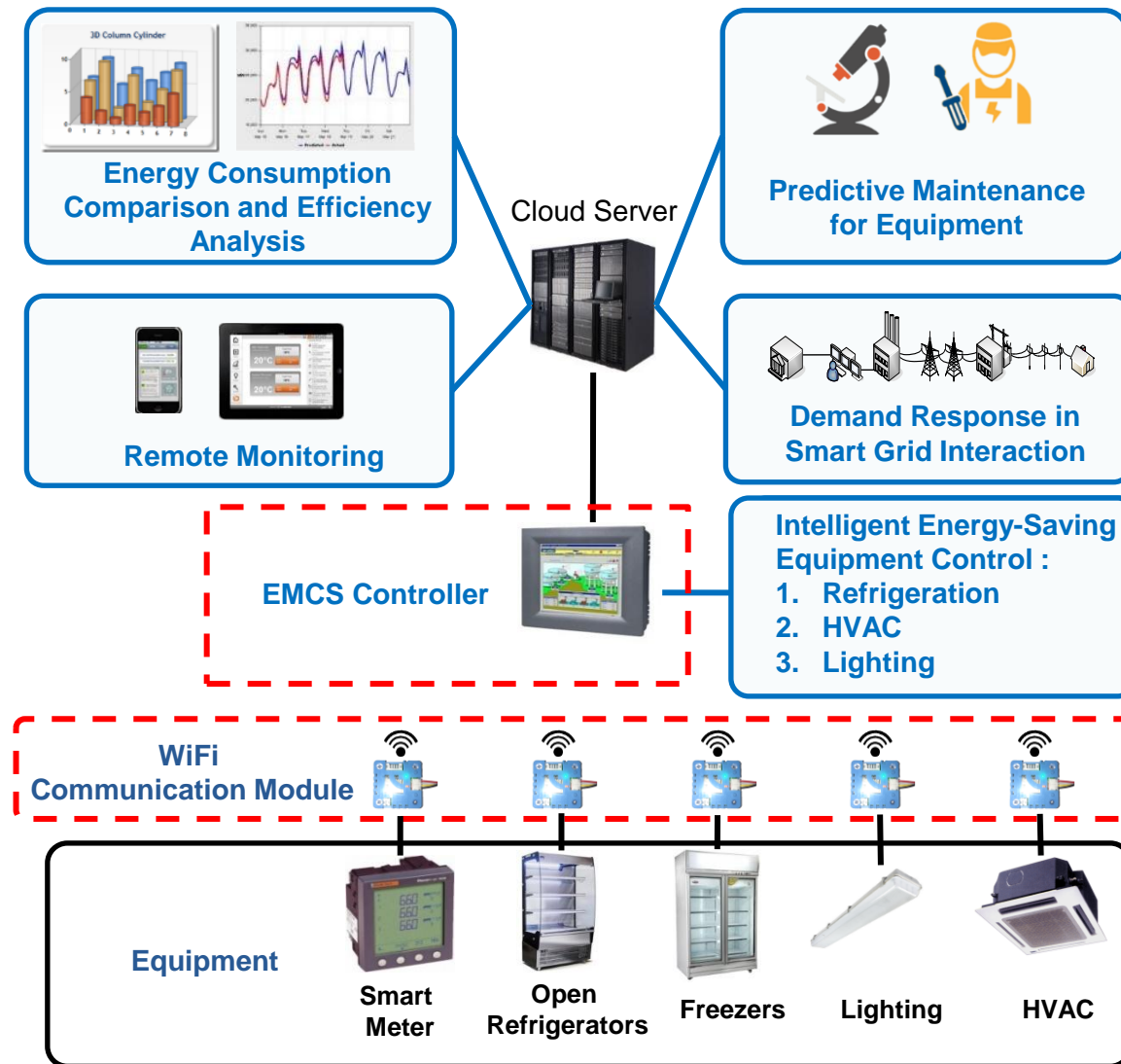


Resource : [1] Monthly Survey of Wholesale, Retail, and F&B Services (2025), MOEA

[2] Energy Saving Case Studies for Refrigeration and Cold Storage Systems in Small and Medium-sized Food Retailers (2020)

[3] Building Energy Efficiency Rating System (BERS) Manual (2024), ABRI

AIoT Energy Management System Structure



AI

IoT

- **~0 % Hardware cost**
 - Cloud service fee
- **>7 % Energy saving**
 - With dynamic analysis & control
- **<2 Years of Payback Period**
- **3 Extra benefits**
 - Remote Monitoring & Maintenance
 - Predictive Maintenance
 - Demand Response in Smart Grid Interaction

- **99 % Hardware cost**
 - Sensor, Communication Module, Controller
- **3 % Energy saving**
 - With manual setup on EMCS
- **~7 Years of Payback Period**
- **0 Extra benefit**
 - Without remote service

AIoT - EMS Field Applications

EMS Installation and Applications

- Developing an AIoT-EMS for Convenience stores, and being successfully deployed in more than **3,000** FamilyMart convenience stores in Chinese Taipei.
- an AIoT-EMS under proof of concept test in **5** supermarket brands.
- Installation in **25** Carrefour convenience stores.
- Continuously adopt AIoT-EMS to proof of concept test in Hypermarket .

Features and Benefits

- **Wireless** IoT architecture resolves construction difficulties.
- **Flexible** to build and expand, and can be replicated in large quantities.
- **AI** energy-saving machine learning and control strategy.
- for a typical store, **Energy saving >10%** and **Payback Period < 2 years**.

AIoT - EMS Installation in a Supermarket

◆ Energy Saving Control Algorithms

- ✓ **Freezers:** Smart defrost on demand
- ✓ **AC:** Dynamical operation settings

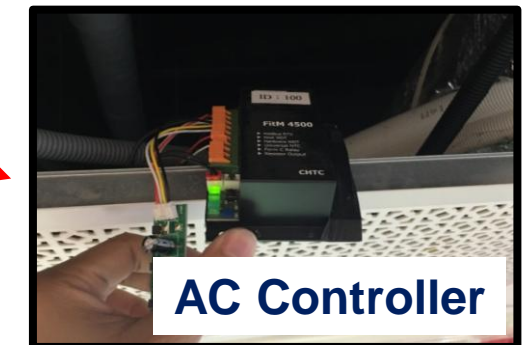
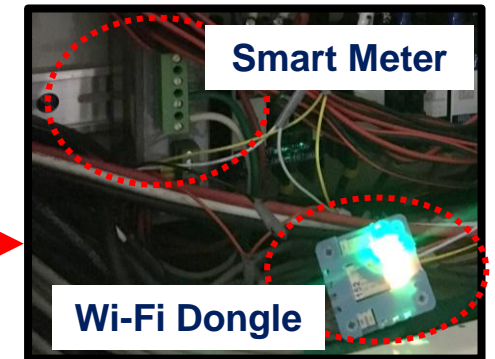
◆ Site: Small to Medium-Sized Supermarket

- ✓ Approximately 600 square meters

◆ Period: 15 October ~ 19 November

◆ Energy Saving :

- ✓ energy saving ↔ Non-energy saving
- ✓ Average Hourly Electricity Consumption During **Energy Saving** Period: **48.23** kWh
- ✓ Average Hourly Electricity Consumption During **Non-Energy Saving** Period: **53.61** kWh
- ✓ Total Store Energy Savings: ~**10.03%** ◦





Thank You for Your Attention!