

# 用戶端再生能源智慧調度創新前瞻計畫

執行單位

財團法人資訊工業策進會

計畫主持人

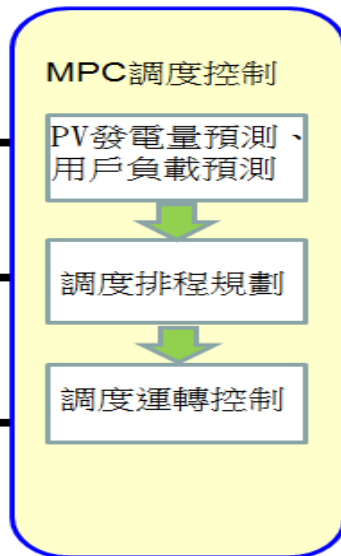
吳瑞明

- 發展用戶端再生能源智慧調度技術，依據電力公司電價費率，整合太陽光電、儲能設備、可控負載、以及用電監測，進行最佳化經濟調度應用，經由用戶所減少的電費回收投資報酬，帶動國內躉售之外多元化應用模式的發展。
- 申請專利：「適應性蓄電池削峰放電控制」(台灣已獲證，美國及中國實審中)。

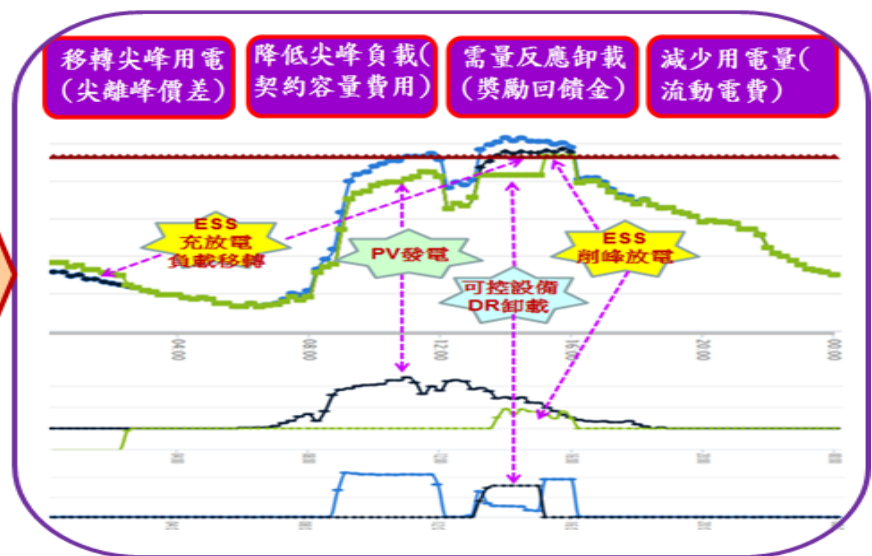
## 場域設備



## 用戶端調度系統



## 經濟調度效益



## ● 應用模式創新

- ◆ 將用戶端電表後(BTM)太陽光電所發的電導向自產自用，結合儲能設備進行經濟調度應用，透過用戶所減少的電費回收投資報酬，開創國內躉售之外創新應用模式。

## ● 技術突破

- ◆ 採用模型預測控制(MPC)方法，進行[PV發電量預測及用戶負載預測、最佳化調度排程、即時調度控制]等控制程序，提升調度控制的精準度。
- ◆ 研發「適應性(Adaptive)蓄電池削峰放電控制」專利技術，提升蓄電池放電削峰的效果，經場域實證可提升調度運轉效益19.24%。

## ● 經濟調度效益

- ◆ 本系統已實際運用於中山大學，可經由削減尖峰負載、尖離峰負載移轉、及需量反應降載等方式，減少電費支出及獲取回饋金額，粗估[太陽光電+儲能]設備投資年回收率約10%。

# Demand Side Smart Dispatching for Renewable Energy Resources

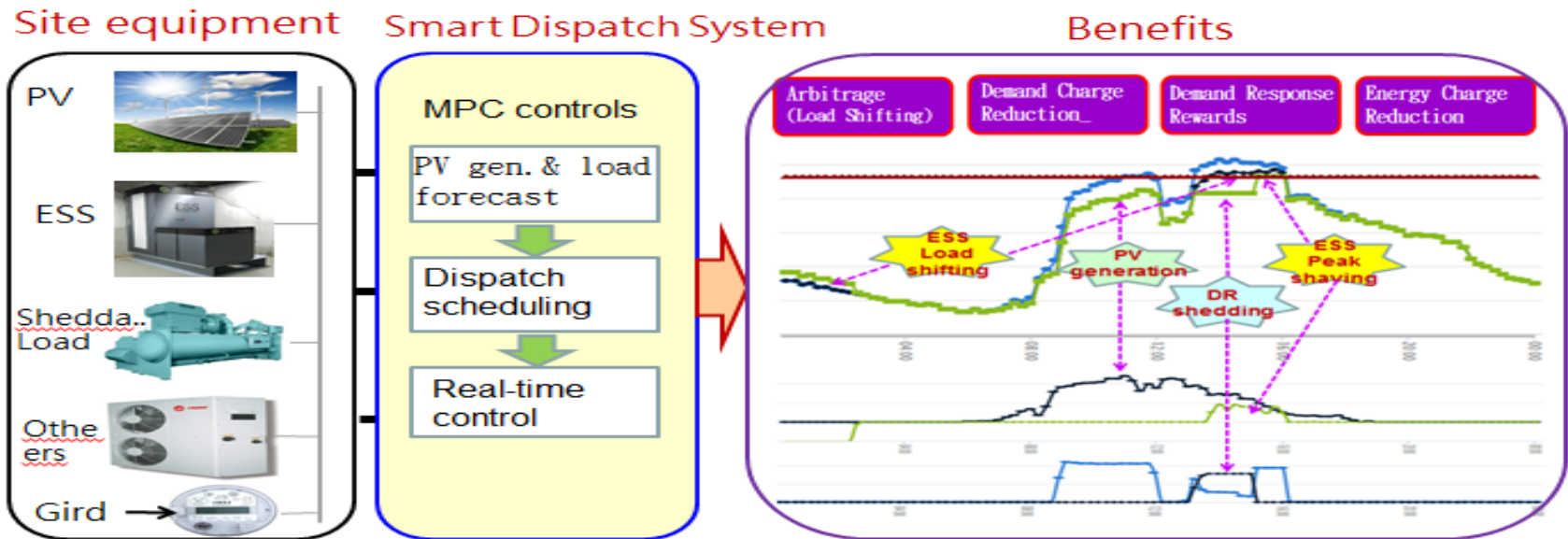
Execution Unit

Institute for Information Industry

Project Director

Raymond Wu

- The demand side smart dispatching technology provides optimal economic dispatch controls on the behind-the-meter solar photovoltaic, energy storage and controllable loads in accordance with utility tariffs, in which investor can get return from consumer's bill reductions. The smart dispatching heralds a new model other than FIT for Renewable Energy Resources applications in Taiwan.
- Patent invention: Adaptive control of battery discharge for peak load shaving (filed in USA and China, granted in Taiwan)



- **New Model of Application**

- ◆ In smart dispatching scenario, solar photovoltaic systems are operated along with energy storages in a self-consumption model rather than FIT, in which investor can get return from consumer's bill reductions.

- **Technology Breakthrough**

- ◆ Model Predictive Control (MPC) is adopted to improve accuracy of the dispatch control processes, including PV generation and consumer load forecast , dispatching scheduling, and real-time controls.
- ◆ The invented and patented technology “Adaptive control of battery discharge for peak load shaving“ can improve effectiveness of peak shaving by battery discharge, resulting in raising 19.24% of overall system benefits according to field trials.

- **Benefits**

- ◆ The smart dispatching system has been actually running in National Sun Yat-Sen University(NSYSU) in Kaohsiung. It brings benefits of both energy charge and demand charge reduction as well as demand response rewards to the consumer.
- ◆ The investment return rate of PV plus battery is about 10% roughly estimated according to the field trials..