Feasibility Studies with the Aim of Developing a
Joint Crediting Mechanism in FY2017

Demand Response Using High-Efficiency Air Conditioning in Cooperation with the Power Sector in Vietnam

New Energy and Industrial Technology Development Organization (NEDO)

THE Power Grid Solution Ltd. and Daikin Industries, Ltd.

Country: Vietnam Sector: Energy Conservation

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Conducted by: THE Power Grid Solution Ltd. and Daikin Industries, Ltd.

Study Outline

Summary

This study investigated various aspects of the Vietnamese electric power system, including demand response (DR) incentives for power supply and demand management and the possibility of sustainable collaboration between Japanese and Vietnamese partners.

Issues addressed in study

1) Power rate system and infrastructure
2) Building and energy management companies
3) Current operation of the power distribution system
4) Survey of candidate buildings and air conditioning systems
5) Development of Joint Crediting Mechanism methodology

Technical issues

1) Complying with Vietnamese DR-related regulations
2) Ensuring customer benefits under low rate conditions
3) Aligning the organization of Vietnam Electricity with the proposed DR system
4) Developing an estimation method for power reduction capacity
5) Developing a quantification method for power reductions under the DR system

Study findings

1) Circular 23 has been issued as the implementation procedure for the DR program, but concrete measures are still in the preliminary study stage.
2) Facility managers are strongly motivated to pursue energy saving. Energy service companies have the capability to conduct energy audits, but they have no experience as aggregators.
3) Five power companies work as distribution operators for each region and will therefore participate in the demonstration project.
4) There are many candidate sites with variable refrigerant volume-type and/or chiller-type air conditioning systems, and additional equipment needed for the project can be easily installed.
5) A conceptual approach has been formulated with regard to calculating the amount of equivalent emissions reduction by using building energy management system (BEMS) and DR systems.

Prospects for estimating reduction of greenhouse gas emissions

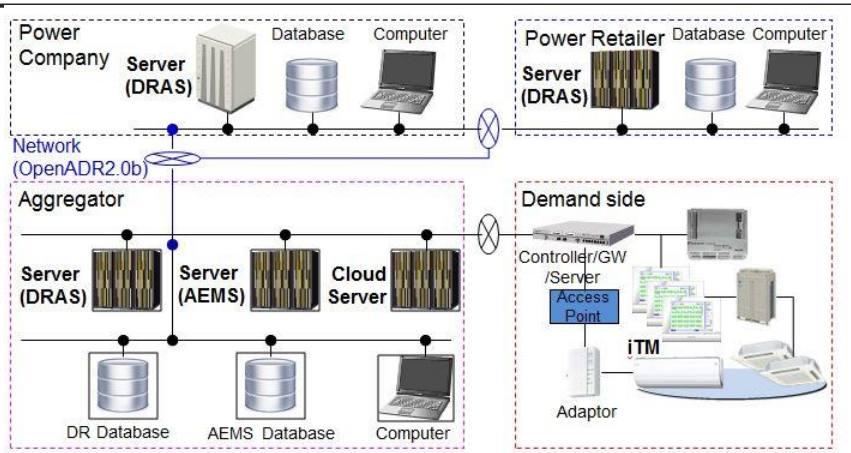
BEMS: The Vietnamese Ministry of Construction's specific energy consumption database can be used as a benchmark.
DR: The calculation method of the baseline used in Circular 23 can be applied.
→ By including the BEMS and DR systems in eligibility requirements, the scope of application can be expanded.

Technology and Demonstration Project Outline

Automated demand response (ADR) system

OpenADR2.0b-compliant system includes:

- Demand response automation server for management of supply and demand
- Area energy management system for dispatching target customers of DR program
- Air conditioner control system for monitoring and demand controls



Proposal of Demonstration Project

Under the demonstration project scheduled to begin between the second half of 2018 and 2020 with the goal of practical implementation by 2025:

- Implement system in accord with Circular 23
- Support peak reduction controls for negawatt market (ancillary markets will be considered in future project scope)
- Support automated aggregation

Targets:

- Three to five project locations representing various types of buildings, e.g., office buildings, shopping malls, universities
- Up to 400 to 600 kW peak reduction for two hours