IEA DSM REPORT - EXECUTIVE SUMMARY

TASK XI SUBTASK 4

QUANTIFY THE POTENTIAL FOR EXISTING PROFILE SETTLEMENT SYSTEMS TO DEAL WITH DYNAMIC DEMAND CHANGES RESULTING FROM BIDDING SMALLER CUSTOMER DEMANDS INTO MARKETS

Background

Many countries are concerned that adequate generation capacity may not be developed in liberalised markets. Greater participation of the demand side in the form of Demand Response is vital to address this issue and improve market efficiency.

The domestic, smaller customer sector consumes between 20-40% of electricity in developed countries, and is an obvious and attractive candidate for demand side participation.

The EU Directive on energy end-use efficiency and energy services (ESD) considers the use of "smart metering" to be a driver of Demand Response for smaller customers. It may also be able to contribute to solving some of the issues surrounding profile settlements.

IEA, DSM, Task XI Subtask 2 identified that, other than direct space and water heating, demand shift among smaller customers could also be delivered by reducing thermostat settings on air conditioning and possibly fridges, reducing lighting and inhibiting some domestic appliances. Customer small scale micro generation could also have an important role to play in generating outside normal heat led times and made responsive to Time of Use (TOU) energy pricing.

Profile settlement systems have been developed to enable smaller customers to participate in supply markets without TOU metering. Profile settlements converts smaller customer, total quarterly or annual consumption into a TOU consumption. This enables Suppliers to settle their accounts with generators based on TOU consumption.

This study considers the impact on profile settlements of smaller customers participating in Demand Response and proposes solutions to identified problems.

Objectives

To quantify the potential for existing profile settlement systems to deal with demand profile changes resulting from smaller customers participating in Demand Response

Approach

Profile Settlement systems developed in Netherlands, Spain and UK have been analysed for their potential to accommodate smaller customer, demand profile changes resulting from Demand Response. Factors considered are the numbers of profiles in use, the way they are updated, variables used to modify profile shape to account for seasonal changes and the introduction of embedded micro generation.

Different solutions to accommodating Demand Response in profile settlement systems can influence different actors to motivate customers to participate.

Results

The possibilities available to enable smaller customers to participate in Demand Response within profile settlements have been investigated with the preferred options being to:-

- accept the additional error between measured and calculated demands at Supplier/Generator metering points;
- develop new dynamic profiles for Dynamic Demand Response customers;
- mandate that TOU metering is required for Dynamic Demand Response customers.

The solution recommended by the study is for the additional error introduced into profile settlements to be accepted initially by Suppliers while participating customer numbers increase. In order to accommodate large numbers of customers participating in Demand Response, it is likely that some form of dynamic profiles will be required.

TOU metering has a role to play in motivating Demand Response but is unlikely to replace existing profile settlements systems.

Implications

Detailed studies are needed to determine the take up by customers of Dynamic Demand Response options based on different drivers, demand packages and remote switching override options. An assessment is needed of the impact on profile settlements of different levels of take up and over what time scales. Studies should also be carried out to quantify the potential for developing dynamic profiles to include the remote switching signals sent to different groups of end uses being fed into profile settlements systems. The business model for applying Dynamic TOU Pricing and its extension to Demand Side Bidding for smaller customers needs to be more rigorously evaluated.

International Energy Agency Demand-Side Management Programme
Task XI: Time of Use Pricing and Energy Use for Demand Management Delivery

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