

IEA DSM TASK XI

Time of Use Pricing and Energy Use for Demand Side Management Delivery



Background

Energy plays a central role in everyday lives of residential and small business customers but its use impacts our environment and can contribute to global warming.

In competitive energy markets, flexible, responsive and low cost demand side participation is very attractive for reducing energy use and supplier imbalance risk, improving supply security and saving CO₂.

Energy End Use Monitoring and Feedback (EUMF), Time of Use (TOU) pricing and Demand Side Bidding (DSB) are mechanisms which enable and encourage customers to participate in the demand side of markets and deliver the above benefits.

Main Activities

Task X1 has analyzed EUMF, TOU pricing and DSB involving smaller customers to quantify their responses to energy saving motivators and identify cost effective implementation mechanisms. Individual end use demands and micro generation have been evaluated for their potential to be remotely switched and demands inhibited for infrequent, short periods. The Task has quantified the impacts on smaller customers of disaggregated demand feed back, Time of Use pricing and Demand Side Bidding in response to price signals and payments. The study has also estimated the financial viability of implementing different EUMF, TOU pricing and DSB regimes by equating reliable and flexible demand shift and micro generation, with scheduled generation, transmission and distribution network construction costs. The value of energy and supply capacity savings delivered using these methodologies for continuously motivating customers have been quantified, together with conclusions and recommendations.

Subtasks

Results of studies and field trial data have been collected, analyzed, collated and deductions made by country Experts on End Use Monitoring and feed back, Time of Use Pricing and Demand Side Bidding.

Subtask 1

This subtask quantified methodologies, benefits and costs of creating and providing disaggregated energy use feed back to smaller customers to motivate energy savings. Available report:

- *Smaller Customer Energy Saving by End Use Monitoring and Feedback*

Subtask 2

This subtask quantified Time of Use Pricing for smaller customers to motivate demand profile shape change. Available report:

- *Time of Use Pricing for Demand Management Delivery*

Subtask 3

This subtask quantified the issues and potential viability of bidding aggregated smaller customer demand and micro generation into scheduled generation markets. Available report:

- *Demand Side Bidding for Smaller Customers*

Subtask 4

This subtask studied the constraints of profile settlements. Available report:

- *Potential for existing Profile Settlements to deal with Dynamic Demand Changes resulting from bidding smaller customer demands into markets*

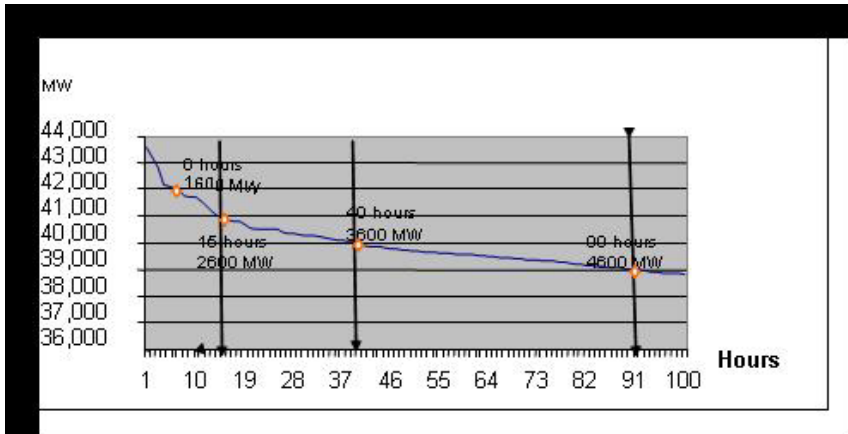
Subtask 5

This subtask analyzed the demand validation on dynamic demand management for smaller customers. Available report:

- *Demand "available" and "turndown" Validation Mechanisms for Market Bidding of Smaller Customer Demand*

Results

- Results show that EUMF, TOU pricing and DSB can all deliver valuable demand profile change benefits and achieve financial benefits. Relatively small amounts of demand flexibility can have large benefits in reducing peak capacity requirements (see Figure).
- EUMF results show that face to face interviews with smaller customers and estimated disaggregation of demand are the preferred methodologies for delivering energy savings.



Number of hours per year blocks of generation capacity typically required.

- The study has shown that there is a role for Energy Service and Demand Aggregator Companies to bid the demand of smaller customers and assist system operation, improve supply security and reduce supply costs.
- Profile and Demand Validation will not unduly constrain the development of Demand Response processes for smaller customers.

- TOU pricing together with remotely switched demand and limited customer override are the most cost effective methodologies for delivering reliable profile change.

New Work

A new Subtask has been proposed to evaluate smaller customers and Energy Services provision by Demand Aggregator businesses.

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TASK XI Website

<http://dsm.iea.org/ViewTask.aspx?ID=16&Task=11&Sort=0>