

# IEA DSM TASK XIII

## Demand Response Resources



### Background

Demand Response Resources (DRR) can be compared to the Strategic Petroleum Reserve (SPR) as both serve as a "shock absorber" for their industry. DRR provide the long-term risk management insurance that is needed if competitive electricity markets are to work. The ability to call upon thousands of megawatts contractually, on short notice and in specific locations provides a virtual storage asset that can be used for short duration demand peaks, facilitate power restoration, and provide a means of transition to, or possibly prevent, new power system upgrades. Recognizing the urgent need for demand side participation in electricity markets to ensure energy security and mitigate price volatility in liberalized electricity markets, the DSM Programme initiated Task XIII, *Demand Response Resources*

### Main Activities

The objective of this work was to develop a variety of tools to facilitate the inclusion of demand response into liberalized markets.

The *Task XIII Project Guidebook* can be used to create a regional, national or local DR strategy or as a training guide to educate energy industry professionals on demand response.

Each tool described in the *Guidebook* can be used as a stand alone tool. For example, the DR Market Potential Calculator can provide an inexpensive, but reasonable estimate of DR market potential in a given market within a few hours while normal market potential studies could take several months.

### Subtasks

The Task was divided into eight subtasks with each subsequent subtask built upon the knowledge gained from the previous ones.

#### SUBTASK 1: Finalize Global and Country Specific Objectives

This subtask created in-country stakeholder groups and in-country work plans.

#### SUBTASK 2: Define the DR Resource Base and

### Market Characterization

This subtask created a market characterization of demand response products, services and enabling technologies.

#### SUBTASK 3: Market Potential of DRR

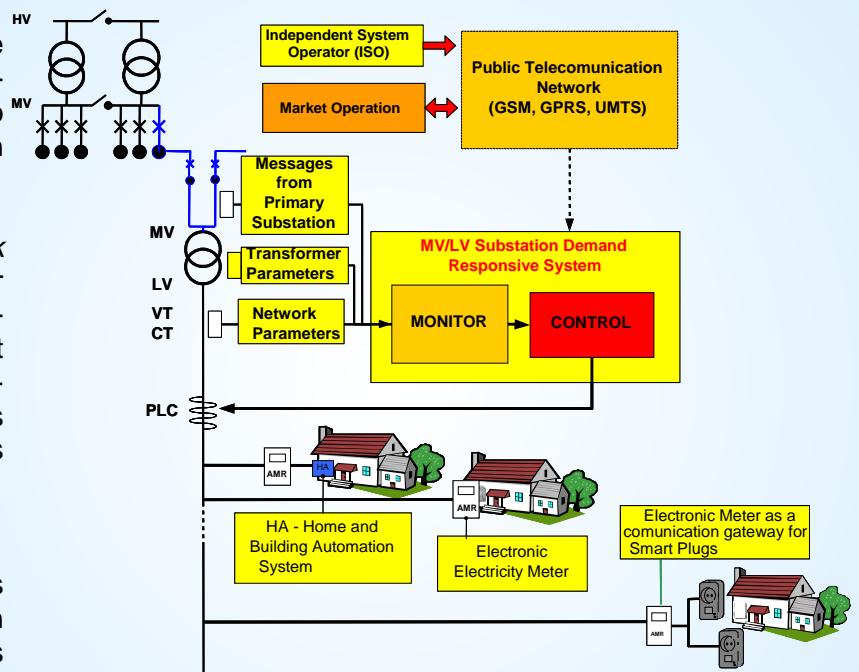
In this subtask, ways to estimate market potential for demand response were developed that included benchmarking, surveys, and statistical analysis.

#### SUBTASK 4: Demand Response Valuation

This subtask developed methods and procedures to establish a regional market value for DR. A framework was created that can be applied in each country.

#### SUBTASK 5: Enabling Technologies

This subtask developed a catalogue describing the technologies and systems that are available for use in DR programs both from the perspective of the system operator and the participating customer.



Automation architecture for Demand Response in a low voltage network.

#### SUBTASK 6: DR Business Issues

This subtask collected information on DR product design, DR market barriers, and DR business models in the participating countries.

**SUBTASK 7: Develop DRR Network of Methods, Tools and Applications**

This subtask created a web portal that is a virtual center of excellence for DRR methods, technologies, and applications.

**SUBTASK 8: Deliver Products and IP to IEA DSM Programme and Project Participants**

This subtask focused disseminating the intellectual property created in the Task.

The table below illustrates the benefits of the Task XIII DR Valuation Methodology. The methodology can be used to test a variety of “what if” scenarios. Questions such as:

- What is the optimum amount of DR for the market?
- What types of DR products should be used in the market?
- What is the optimal amount of DR for each product?
- Which market variables have the greatest impact on DR value?
- How frequently would DR be needed?

**Participants**

- Australia
- Canada
- Denmark
- Finland
- Italy
- Japan
- Korea
- Netherlands
- Norway
- Spain
- Sweden
- United States

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**Task XIII Website(s)**

<http://dsm.iea.org/ViewTask.aspx?ID=17&Task=13&Sort=1>  
[www.demandresponseresources.com](http://www.demandresponseresources.com)

**SAMPLE MARKET SAVINGS BY DR PRODUCT PORTFOLIO**

System Costs Savings (\$M)	
	Average NPV over 20 years
Callable DRR Only	48
Callable DRR with Critical Peak Pricing (peak hour load reduction only)	574
Callable DRR with Standard RTP (reduction in demand in all high price hours)	1,984

**Results**

- Task XIII DRR Tool Box
- *Task XIII Project Guidebook*
- Task XIII Project Portal
- Market Characterization Guide
- Country Marketplace Overview Surveys
- Country Comparison – Final Report
- DR Reference Library
- Communication Toolkit
- Final DR Market Potential Report and Appendices
- Online DR Market Potential Calculator
- DR Valuation Market Analysis Volume 1
- DR Valuation Market Analysis Volume 2
- DR Technology Database