



Demand Response in Smart Grids

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**CEER Advice on the take-off of a
demand response electricity market with smart meters
Brussels, 11 February 2011**

Directorate-General
for Energy



Smart Grids

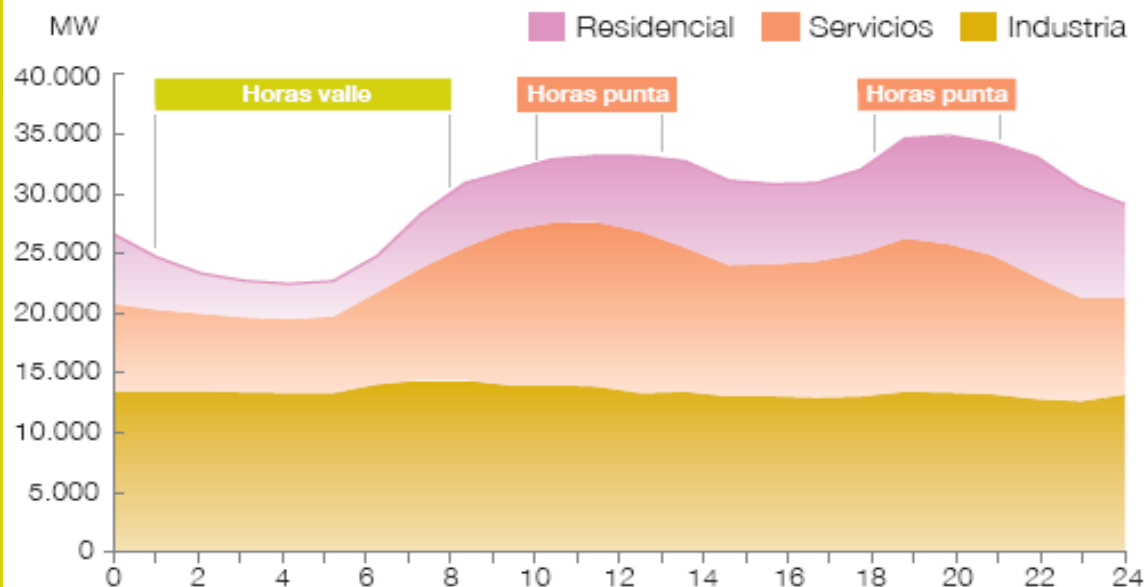
A Smart Grid is an electricity network that can cost efficiently integrate the behaviour and actions of **all users** connected to it - generators, consumers and those that do both – in order to ensure efficient, sustainable power system with low losses and high levels of quality and security of supply and safety.



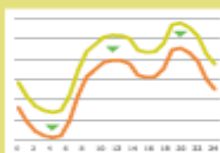
Demand Side Response



Consumo horario en un día de invierno

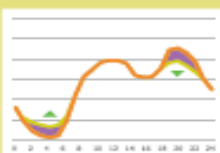


1 Reducción del consumo



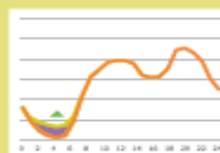
- Mejora en la eficiencia de equipos y procesos.
- Concienciación sobre el ahorro energético.

2 Desplazamiento del consumo de la punta al valle



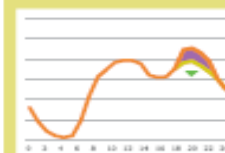
- Discriminación horaria.
- Respuesta a los precios del mercado.

3 Llenado de valles



- Centrales de bombeo.
- Tecnologías de almacenamiento.
- Recarga de vehículos eléctricos.

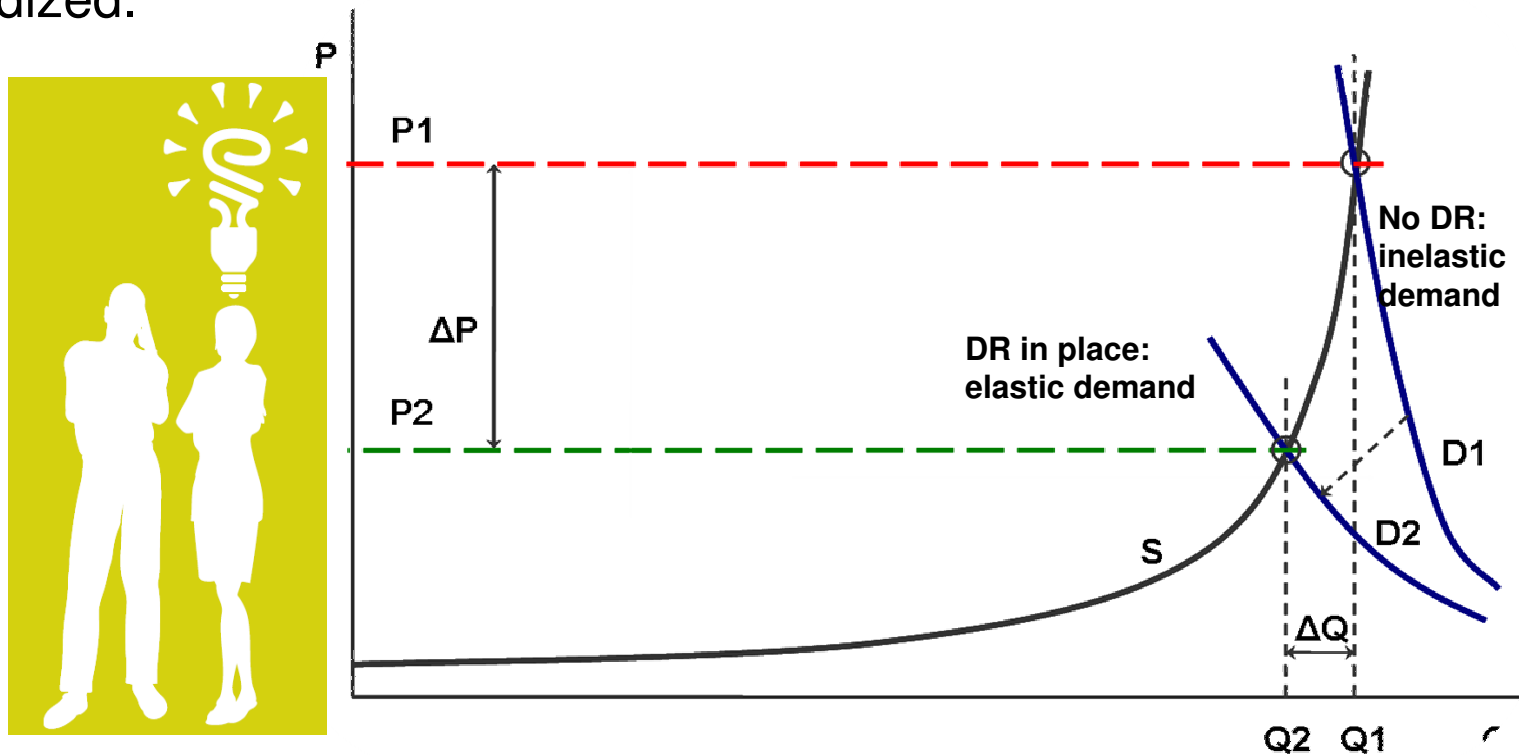
4 Reducción del consumo en las horas punta del Sistema



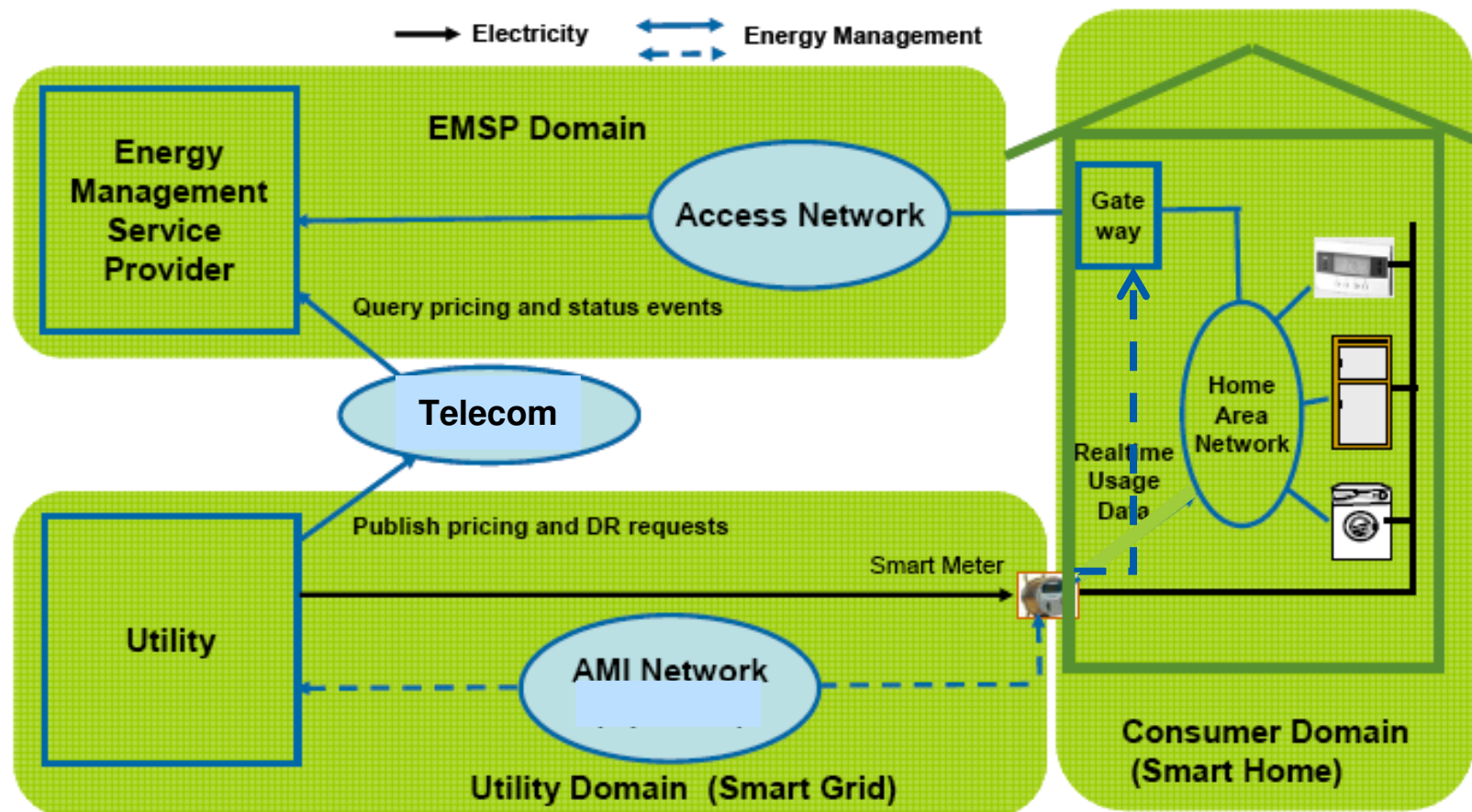
- Servicio de interrupibilidad.
- Gestión automática de cargas.

● Demand Side Response

Changes in electric usage by end-use customers from their normal consumption patterns in response to changes in the price of electricity over time, or to incentive payments designed to induce lower electricity use at times of high wholesale market prices or when system reliability is jeopardized.



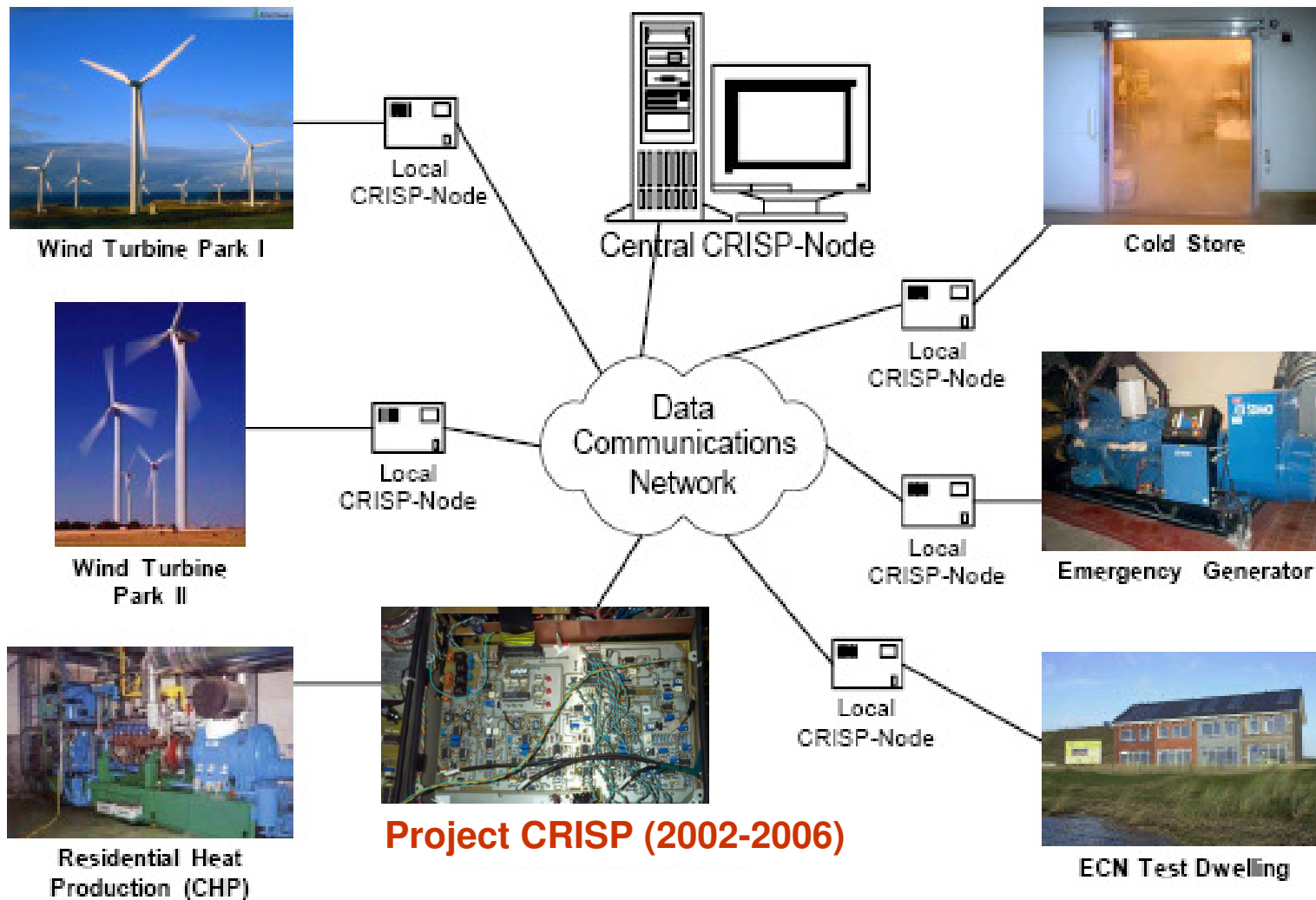
● “Smart Grids” and HAN in open energy management architecture



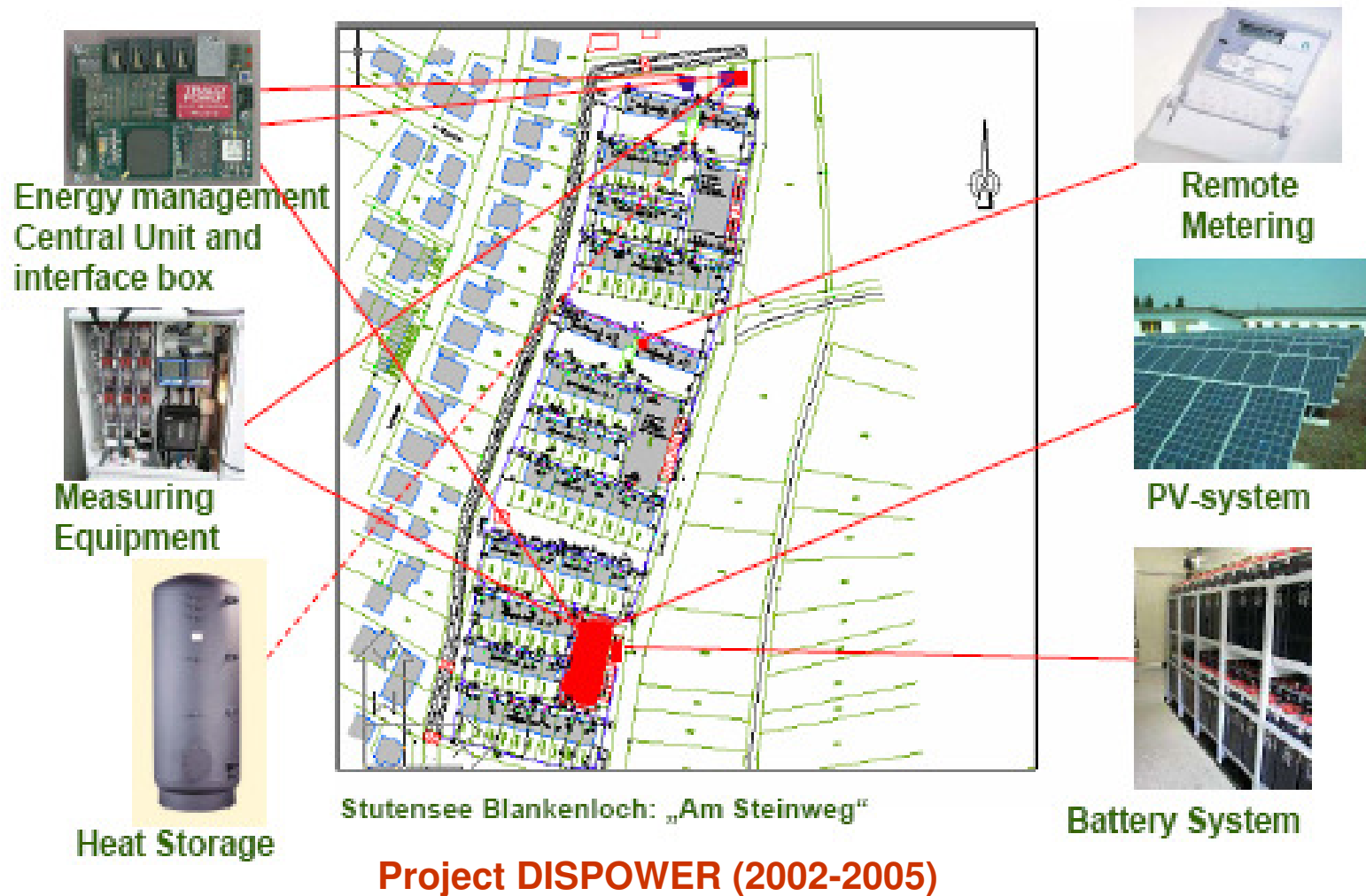
● Smart Grid Vision



● First experiences in Europe



● First experiences in Europe



Demand Side Response

Key topics to achieve Demand Response

1. Information

- Knowledge of the consumption path
- Dissemination of good practices

2. Prices

- Dynamic prices (ToU)
- Information on actual costs

3. Automation and innovation

- Implementation of automatic Demand Response measures (e.g. intelligent agents, intelligent control systems, etc)

4. Regulation

- Regulatory framework to enhance energy efficiency, integration of DER and create a win-win situation



Source: Red Eléctrica de España



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http://ec.europa.eu/energy/gas_electricity/smartgrids/taskforce_en.htm