RED ELÉCTRICA DE ESPAÑA

# How to use smart metering to improve the efficiency of electric system operation

**International workshop smart metering**
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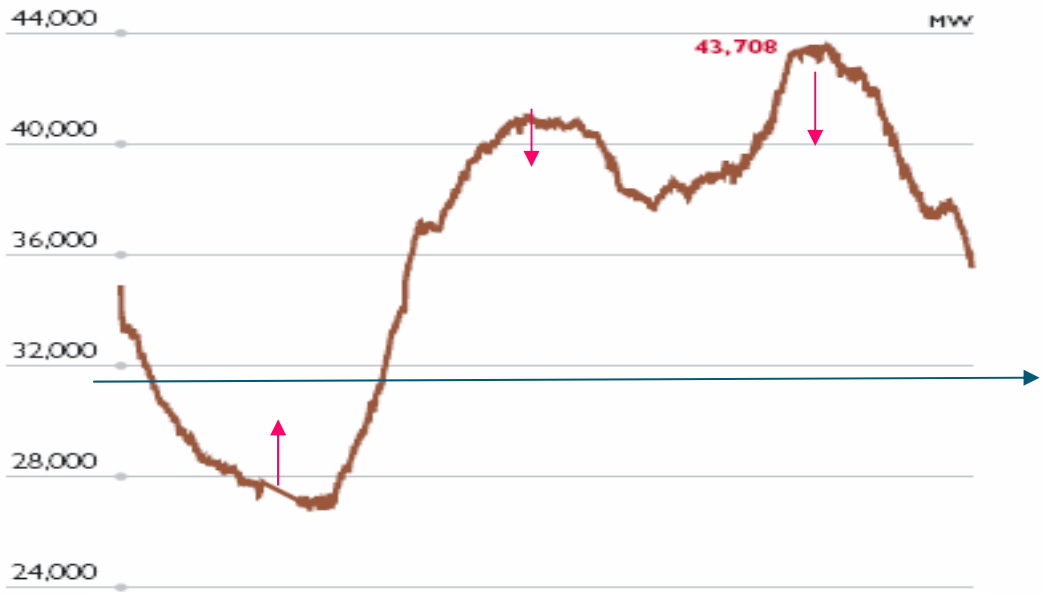
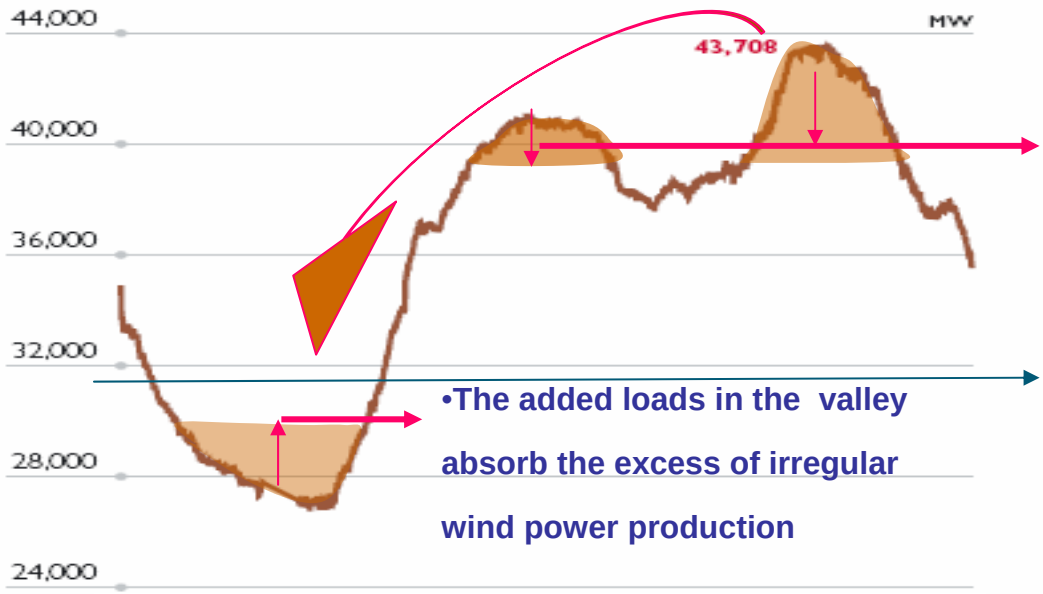
# The value of load control for the electric system efficiency




**Maximum demand day, hourly load curve**

Source: Red Eléctrica de España. The Spanish Electricity System 2005

# The value of load control for the electric system efficiency




Maximum demand day, hourly load curve

**Translating consumption from System peak periods to valleys implies:**

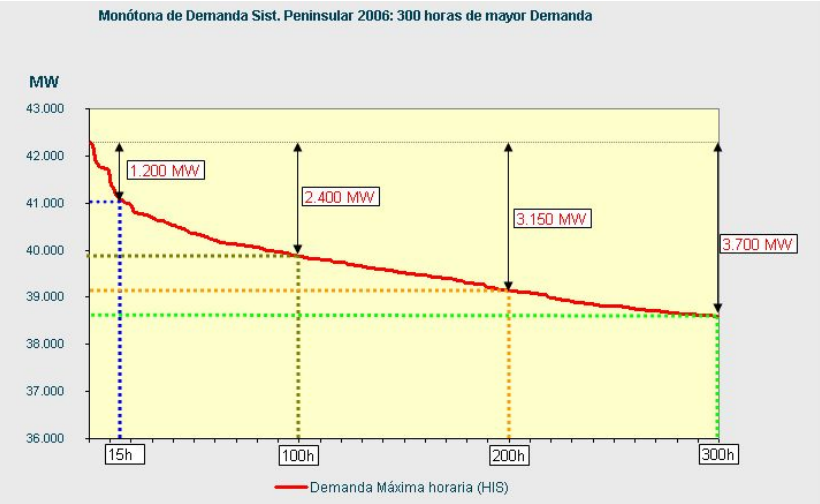
- Less $CO_2$ emissions from the peak generation mix
- Less grid energy losses
- Less need for new generation and grid investments
- More security of supply

Source: Red Eléctrica de España. The Spanish Electricity System 2005

# Size of peak load and wind power main triggers

**Hourly energy demand in the 300 hours of higher consumption.**

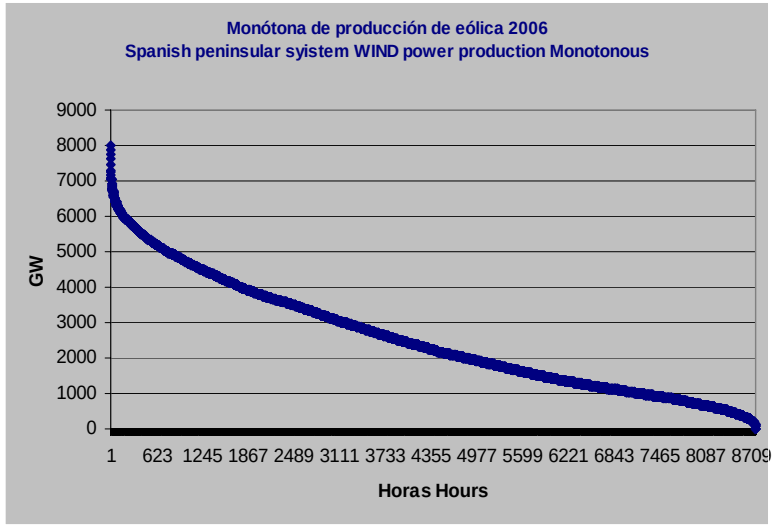
**Spanish system monotonous power curve**




**For these 300 hours alone the system needed up to 3.000 MW of additional capacity of generation and grid adequacy in 2006**

**Monotonous wind power production in Spanish the system**

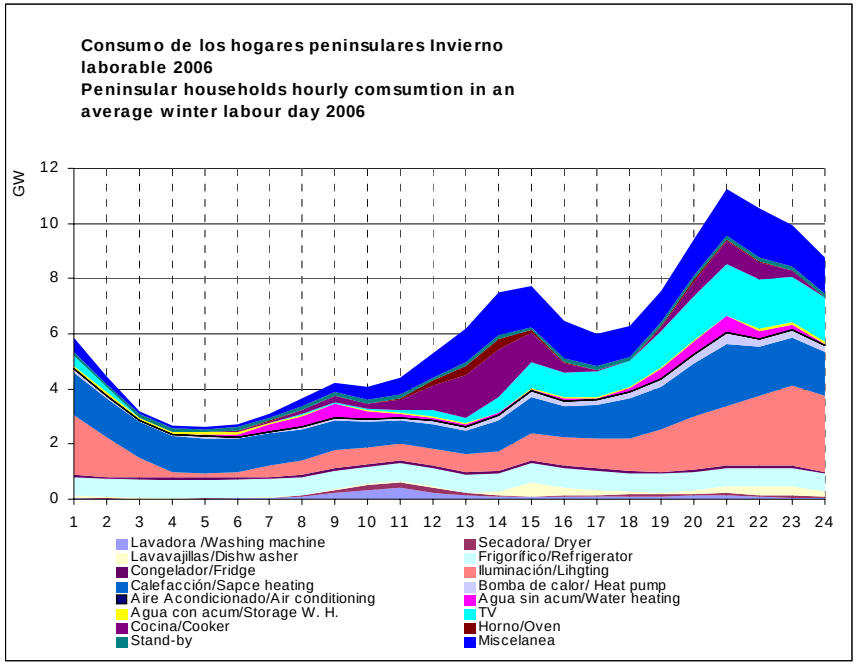
**Wind power output peaked to its highest value only for a short period of time.**

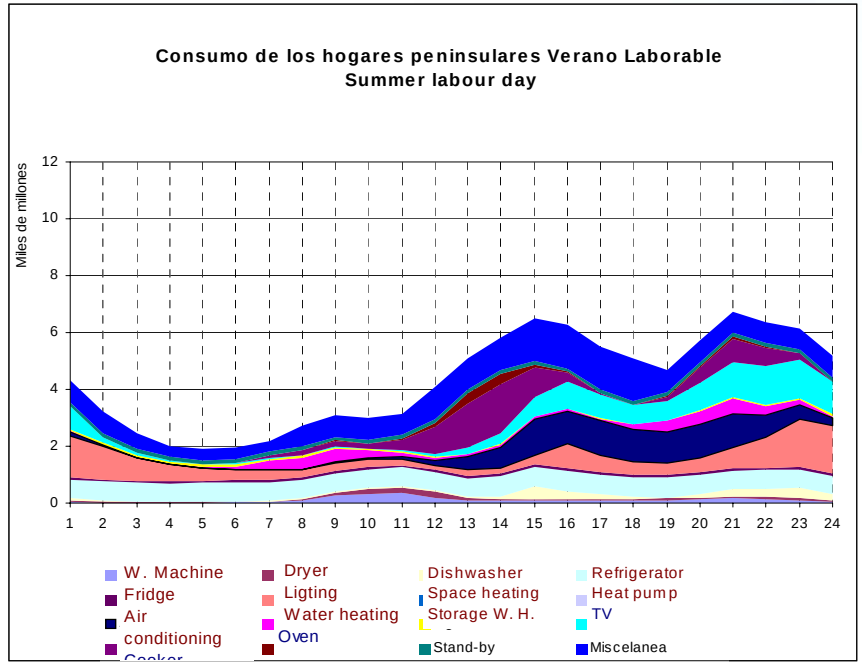



**100 times a year, the variation during two consecutive hours of power delivery reached 2% of system demand.**

Source: Red Eléctrica de España 2006

# Households operable capacity




Source: Red Eléctrica de España EMERGIE Project 2006

- Considered all the loads as interruptible with the exception of the cooker, oven, lighting, TV and miscellanea.
- The top of load management in the residential sector reaches 4.000 MW in the winter average peak.

# The attitudes towards participating in new DSM programs?


Source: Red Eléctrica de España
EMERGIE Project 2006

**Red Eléctrica EMERGÍE project 2006 survey found wide favourable attitudes**

**The questions and answers were:**

- **Remote load control half an hour, several pieces of equipment, paid as a service provided, 100E a year, PLC and intelligent plugs as infrastructure;**
  - **55% declared in favour.**
- **Remote load control half an hour, override permitted, several pieces of equipment, paid as a service provided, less (not defined how much less) than 100E a year, PLC and intelligent plugs as infrastructure;**
  - **57% declared on favour.**
- **A domotic system would sift consumptions from expensive periods to cheaper ones, that option would reduce the electricity bill. (Not defined which quantity of reduction);**
  - **62% declared in favour.**