

### **Subtask 5- Spanish Technology Case Study**

#### **SP TECH CASE #3: INDEL PROJECT (SPANISH ELECTRIC DEMAND ATLAS)**

##### **A. Brief Overview**

It was initiated in 1988 with the finality to expanding the knowledge of Spanish behaviour in electric demand. In the investigation group participated all electric market actors and the government partially financed the project cost.

The general objectives were:

- Understand the evolution of the electric use in Spain.
- Energy uses identification.
- Create reliable statistically information.
- Determine the needs and technical solution to produce demand data.

Two instrumental outcomes developed were:

- Explain the demand by econometrics model in order to enable the prediction of the different scenarios.
- Create information of the demand on the greater segments of consumption, measuring directly on voluntary consumers representatives of the population and consulting directly to the consumers.

##### **B. Description of the DR Technology**

The investigation itself follows these steps:

- Initiate explanatory models with only available data (bus demand of generator plant).
- Initiate direct measure in the commercial and residential sector through surveys and power meters reading.
- Place new power meters.
- Develop explanatory and predictive models of the electric demand with the new data obtained by the power meters.
- Investigate the demand of the tourist services in Balearic Islands by controlled samples.
- Investigate the industrial and services sectors.

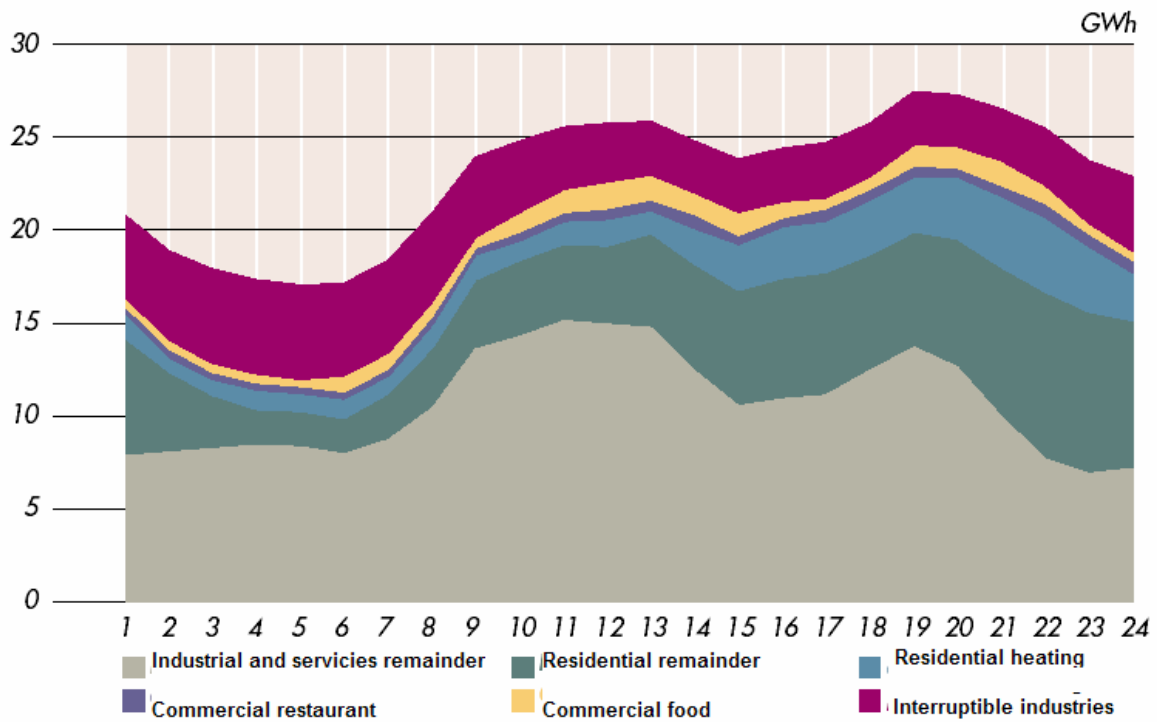
### C. Results

The variable measures by the project are:

- Monthly Energy.
- Hourly Power.
- Equipment.
- Hourly use.
- Attitudes and environmental behaviours and energy efficiency.(environmental temperature, working days and economic activity effects).

Currently is possible to estimate the system demand in any hour by the consumption of 8 large segments of consumers. They represent the 51% of maximum power system demanded.

The 40% of the maximum demand is explained by the consumption of all its greater electric uses and registered its forms of use.



*Electric power demand of system peak (16/12/1997).*

Uses/Segments	Maximum Weight		Weight (%) of System Peak
	%	Hour	
Great Interruptible Industry and Hourly Rate	30	5	10.3
Commercial restaurant	6	22	2.1
Commercial food	6	12	4.1
Industrial and services remainder	59	11	49.3
Residential sector	52	23	34.2
Heating	16	22	11.2

Lighting	19	1	8.9
Television	9	22	4.1
Hot water	4	8	2
Refrigerator	4	5	2.5
Others	8	14	5.5
<b>TOTAL</b>	-	-	<b>100</b>

*Composition of maximum hourly power of system peak (16/12/1997).*

#### **D. Further Information**

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