

## **CITY OF BARCELONA, SPAIN**

### **Municipal Profile**

*Population:* 1.5 million

*Budget:* US\$1.8 billion

*Land Area:* 101 square kilometers

*Economic Activities:* tourism, commercial, and service sectors

*Environmental Expertise:* water management, noise management, energy, Local Agenda 21

### **Issue Addressed**

Energy Efficiency

### **Key Management Concept**

To be most effective, an energy plan should address management strategies, supply and consumption options, communication methods, and economic and legal instruments.

### **Program Name**

Plan for Energy Improvement in Barcelona and Solar Thermal Ordinance

### **Program Goals**

The goals of Barcelona City Council's Plan for Energy Improvement in Barcelona (2002-2010) are to increase the use of renewable energy (especially solar energy), reduce the use of non-renewable energy sources, and lower the emissions produced by energy consumption in order to meet Barcelona City Council's international climate protection commitments.

Specifically, by 2010 Barcelona aims to:

- reduce carbon dioxide (CO<sub>2</sub>) emissions by 20% compared to 1999 levels;
- maximize the use of the city's renewable energy sources (up to 188,848,440 kilowatt hours/year of renewable energy, which represents 1.1% of the city's total energy consumption);
- emit less than 3.15 tonnes of equivalent CO<sub>2</sub> (eCO<sub>2</sub>) per capita.

### **Program Abstract**

Barcelona City Council has developed a Plan for Energy Improvement in Barcelona that includes an Action Plan to Conserve Energy along with projects and recommendations to reduce CO<sub>2</sub> emissions. This integrated plan includes a quantification of the energy used and emissions produced in the city and provides scope for municipal action to promote an

environmentally sustainable city, reducing air pollution and the consumption of fossil fuels in the process.

The energy improvement plan was approved in February 2002 and has been implemented by the Energy Agency of Barcelona since May 2002. The action plan consists of four areas as follows.

#### **Management strategies**

- Outline Barcelona Council's crucial leadership role
- Structure the Plan into manageable units
- Promote co-ordination and co-operation with other public bodies
- Promote partnership with business and professionals
- Develop energy information systems

#### **Supply and consumption strategies**

- Promote a sustainable energy consumption model for Barcelona
- Promote the use of green and/or renewable energy
- Improve the quality of energy products and services in Barcelona
- Improve electricity generation and distribution
- Foster the production of renewable energy
- Update the plan and creating measurement and control tools
- Reduce Barcelona City Council's energy consumption
- Commit to the use of renewable energy sources

#### **Social and communication strategies**

- Foster a new pattern of energy consumption
- Explain the need to change energy use and the benefits of doing so
- Create a high profile energy certification scheme
- Foster the application of new technology
- Stimulate measures in the educational field
- Seize the opportunity presented by large projects underway in Barcelona

#### **Economic and legal strategies**

- Maintain Barcelona's economic growth and development
- Foster competitiveness and quality in energy supply
- Help companies in the industry pursue their activities and set up at new sites in Barcelona
- Seek co-operation with third parties by sponsoring appropriate projects
- Study the general economic impact of measures
- Ensure measures reflect changes in the legal framework
- Change municipal standards and bylaws to meet the Plan's proposals

As part of its Plan for Energy Improvement, Barcelona City Council introduced a Solar Thermal Ordinance, which entered into force in August 2000. The aim of the ordinance is to regulate, through local legislation, the implementation of low-temperature systems for collecting and using active solar energy for the production of hot water for buildings.

New buildings and buildings undergoing major refurbishment are required to use solar energy to supply 60% of their running hot water requirements.

The Barcelona Energy Agency's evaluation program monitors and further promotes the effective implementation of the Solar Thermal Ordinance. Since its enforcement licenses for the installation of a total of 14,028 square meters of solar panels have been requested, compared to a total of 1,650 square meters of panels before the ordinance was in place. This increase in the installation of solar panels has resulted in annual energy savings of 11,222 Megawatt hours and a corresponding reduction in eCO<sub>2</sub> emissions of 1,973 tonnes per year.

In order to promote the ordinance and its acceptance, the City of Barcelona has implemented a broad communications program. The city has published an explanatory guide to the ordinance in several languages, held periodic round tables and meetings with stakeholders (contractors' associations, engineers, architects, environmental organizations, neighborhood associations, citizens), promoted the ordinance in neighboring cities, implemented demonstration projects (such as solar thermal installations at swimming pools), and organized a "Solar Day" in Barcelona.

The Barcelona Solar Thermal Ordinance has been a model for other municipalities. Since its approval, other municipalities in Catalonia have adopted similar (and sometimes even more stringent) local regulations.

### **Financing**

There was no specific project budget for the ordinance as it involved the approval of a legal text. The funds for Barcelona's Plan for Energy Improvement are negotiated each year. The plan is financed mainly from public administration funds.

### **Staff**

Seven people at the Barcelona Energy Agency are involved in the implementation of the Plan for Energy Improvement.

### **Lessons Learned**

A communications program was crucial in order to encourage adoption of the Solar Thermal Ordinance by contractors.

### **Key Publications**

Barcelona City Council. 1999. *Barcelona Solar Thermal Ordinance* (available in English, Spanish, French, and German).

Barcelona City Council. 2000. *Plan for Energy Improvement in Barcelona* (summary available in English).

## **Contacts**

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