

European local government:

The role of local actors in utility grids

Municipal energy management

An efficient and beneficial measure

In 1995 the city of Grenoble began implementing an energy management program, which is still ongoing today.

The resulting reduction in water and energy consumption in buildings under municipal management (e.g. schools, sports facilities, cultural facilities, and community organizations) sets an example that can be followed by a number of governmental organizations and state-run corporations.

Why an energy management program was needed

Oftentimes, the cheapest and most environmentally friendly type of energy is one we never use.

The primary reason for instituting the program was to reduce operating costs. In addition, a growing awareness of environmental issues such as solid waste and environmental pollution, the fact that a municipality's environmental practices can set a good example, and the 1992 Rio agreements and 1997 Kyoto protocol on the reduction of CO₂ emissions all constitute compelling reasons to reduce energy consumption.

The program has also improved conditions for the users of technical facilities (more vigilant maintenance, longer service lives, less downtime, less noise owing to the use of insulation etc.).

Grenoble's municipal utilities authority

Grenoble's 52-employee municipal utilities authority is composed of a thermal engineering department, a water management section, and a heating operations department. The unit's 2003 water management budget (for drinking water, electricity and heat) was €6.5 million.

A €300,000 annual energy and water management allocation was established in 1996 and has been maintained ever since, though at a somewhat lower level. These investments have paid off quickly thanks to the economies of scale engendered by them.

Water consumption

An audit of water consumption in public buildings revealed that water consumption could be cut back considerably. As a result, massive reductions were achieved through the use of throughput control devices (mainly at public swimming pools) as well as water detection sensors for toilet flushing systems.

Energy-saving traffic signals

Having long since installed efficient lighting in its municipal buildings, Grenoble next turned to its traffic signals, which were optimized using LEDs. This technology allows for fivefold to tenfold savings on electricity, particularly for pedestrian signals.

Heating

The city's original centralized heating management system (which dates from 1980) was rendered more cost effective through the integration of several buildings that previously had independent heating systems.

Cost savings

Water consumption in all 400 buildings managed by the city has declined considerably since 1997.

Between 1995 and 2003, heating energy consumption declined by 25% (18 GWh per year, corrected to 2500 unified degree days), water consumption decreased by 25% (500,000 m³ per year), while electricity consumption remained stable overall, but usage increased considerably in the implementation of computer technology in the city's various departments.

Outstanding results

The water consumption savings of €1.5 million per annum realized thus far clearly demonstrate that Grenoble's investments in energy-saving measures have earned an excellent rate of return.

However, achieving such positive results requires long-term perseverance. The city's commitment to these energy saving measures helped motivate the energy authority's staff to see this project through to a

successful conclusion. For the fact of the matter is that no measure in this domain can be implemented without the full backing of the relevant staff.

The city's energy management program has set its sights on other goals as well. Following the success of a housing rehabilitation program in a city neighborhood (OPAH program), the decision was made to launch another OPATB program (Optimization of heating and electrical facilities in residential buildings) with a view to providing building owners and operators with financial subsidies. The city of Grenoble is currently in the process of deciding on the level of subsidies that should be provided to property owners for purposes of upgrading their buildings (external insulation, window replacement).

Grenoble city councilman Vincent Fristot, October 2003

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Local energy agency

Established in 1998 by the urban agglomeration making up the Grenoble community commonly known as La Metro (Grenoble Alpes Métropole) under the auspices of an EU program, Agence Locale de l'Energie (ALE) promotes energy management and environmental protection in and around Grenoble.

ALE also acts as a forum and gathering place for its members (local government, energy producers and distributors, government housing projects, academic institutions, and energy, environmental and consumer organizations) and carries out a broad range of activities including informational and awareness-raising meetings, dissemination of technical information, sponsoring of feasibility studies, project management, and training programs. These activities are conducted with various partners.

ALE provides local governments with support in renovating and constructing buildings and conducting energy studies. The organization also carries out energy audits for smaller communities including an annual (and comparative) statistical report on energy consumption. ALE also helps formulate energy criteria for urban planning documentation. Other more specific projects include the following: an electricity consumption reduction campaign conducted via the town halls in the Grenoble urban agglomeration; participation in the housing improvement programs OPAH and OPATB; assisting La Metro in organizing the 4th Assises Nationales de l'Energie, an energy conference attended by delegates from throughout France.

ALE also plays a major role in the realm of housing by helping to implement the housing policies of *Communaute d'Agglomeration Grenobloise* (Grenoble association of regional governments) through the supervision of projects pertaining to low-income housing and "at-risk" housing co-ops, with a view to reducing utilities costs.

ALE provides government housing projects with technical assistance, proposes training programs and promotes energy-saving practices among tenants.

Private individuals can also contact ALE regarding energy issues in the realm of housing or transportation. ALE is in fact one of the energy information centers that was established jointly by the environmental and energy agency ADEME and by the Rhone-Alpes region under the auspices of France's national energy optimization initiative PNAEE with a view to raising the general public's awareness of energy issues.

ALE's other activities center around academic institutions, the building trades and so on.

ALE regularly conducts interdisciplinary information and awareness raising campaigns on new topics or initiatives such as the *Haute Qualité Environnementale* (High environmental quality) program, OPATB (Optimization of heating and electrical facilities in residential buildings), ATEnEE projects (environmental projects, many involving urban agglomerations), and environmental studies for urban development projects. These goals are accomplished through meetings, field trips, newsletters and other means.

With a view to bringing together all actors in the Grenoble region that are concerned with energy issues and in order to elaborate a regional energy policy, from 2001-2002, ALE piloted a regional energy audit whereby energy consumption and CO2 emissions were evaluated for each social sector and projections were devised extending until 2020. The main goals were to (a) determine how much potential there is in the Grenoble region for reducing energy consumption and (b) help reduce greenhouse gases. ALE is helping La Metro to develop a local climate plan that will allow for implementation of the environmental audit's recommendations.

An eight-person team is currently working on these various projects.

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Compagnie de Chauffage

Compagnie de Chauffage is a utility company that manages France's second largest urban heating network (after Paris). The city of Grenoble owns a 50 percent share in the company, while Grenoble Alpes Métropole owns five percent. The company provides 85,000 households spread across seven communities representing one-third of the population of the Grenoble agglomeration with heat and hot water via its 140 kilometer-long heated water network. Over the years, the company has become a modern and highly effective organization that promotes local development as well as energy conservation and environmental protection programs.

Our mission

As a regional utility company, *Compagnie de Chauffage's* mission is to manage energy resources for the benefit of the general public, to use local resources wisely, to protect the environment and to promote optimal economic conditions at the local level.

Our competencies

Our expertise and know-how are backed up by over four decades of experience in various fields, including the production and distribution of heat and cooling energy, electrical power, operation and maintenance of heating and air-conditioning facilities, and remote video surveillance of technical installations.

Our customers

All of Grenoble's economic sectors avail themselves of the region's urban heating services: homes (46%), industry (17%), education (15%), hospitals (8%), service businesses (7%), technical facilities (6%), and the defense industry (1%).

Key figures

Compagnie de Chauffage, which has 190 employees, uses six types of fuel in six power generation facilities whose total output is 610 MW. The company sells 742,000 MWh of heat annually and generated turnover of €45 million in accounting year 2003-2004.

Raw materials

Compagnie de Chauffage prioritizes dual energy modalities and the use of local fuels, and toward this end develops applications for renewable energy, waste combustion systems, and cogeneration heating. Our fuel sources broke down as follows for fiscal 2003-2004: coal (36.4%), household waste (30%), heating oil (11%), gas (12.6%), wood (6.2%), and animal feed (3.8%).

This strategy enables us to provide heat for the equivalent of 35,000 housing units per year using 160,000 tons of household waste and 18,000 tons of wood.

Compagnie de Chauffage generates 10% of Grenoble's electricity during the winter months using cogeneration heating (combined production of electricity and heat).

Our quality assurance system

Compagnie de Chauffage's quality assurance system is ISO 9001:2000 certified and its La Villeneuve and La Poterne power plants are ISO 14001 certified.

Our projects

Compagnie de Chauffage intends gradually to increase the proportion of wood it uses from the current level of 6% to 15%. We also plan to invert the energy mix at the La Villeneuve plant in such a way that instead of consuming 18,000 tons of coal and 3,000 tons of wood per annum as it does today, in the future the facility will use 7,000 tons of coal and 20,000 tons of wood.

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ACTIS's energy policy: constructing new facilities in an environmentally safe manner

Sustainable development is "a form of development that meets the needs of the present without compromising the ability of future generations to meet their own needs." (Brundtland Commission report, 1987).

Thus sustainable development strives to find an equilibrium between respect for the environment, economic progress and social justice.

The longevity and environmental impact of residential buildings make them a pivotal element in the challenge of achieving sustainable development.

In view of this challenge, as well as our past and present activities in the field of housing construction and rental housing, ACTIS (the Grenoble region's OPAC (Office of housing and public works)) initiated a series of housing construction and rehabilitation projects based on the principle of sustainable development. Before undertaking these projects, we decided to investigate the following questions:

What is the best way to construct a building to preserve the natural environment?

How can a residential building be constructed to reduce tenants' utility bills?

How can a residential building be constructed to make the housing units optimally comfortable?

In answering these questions, we employed a method known as High Environmental Quality.

This method led us to prioritize the use of renewable energy, propose solutions that reduce water and energy use, and use natural and recyclable construction materials such as wood.

We have now established the following sustainable energy benchmarks in the realm of building construction:

- The use of solar energy for electricity generation (330 m² of solar collectors)
- The use of solar energy for electricity to produce hot water for central heating (1514 m² of solar collectors)
- Optimization of thermal performance to reduce energy consumption (eight projects completed or in progress, 13 in the pipeline)
- Research and develop technical solutions that avoid the use of air conditioning in the summer (three projects completed or in progress, six in the pipeline)
- Prioritize the use of wood for housing construction
- Implement water management measures (water economizers on taps, roof rainwater recovery)

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Gaz Electricité de Grenoble

A century of experience

400 employees

€1.2 million profit on sales of €89.7 million in 2003

A STABLE AND DIVERSIFIED BODY OF SHAREHOLDERS

SAEML

Share capital €24,755,738.56

Gaz Electricité de Grenoble (GEG) shareholders:

City of Grenoble	50.00%
Tractebel-Elyo (Suez)	38.22%
SDS (EDF subsidiary)	4.31%
COGAC (Gaz de France subsidiary)	4.31%
Caisse des Depots et Consignations	1.17%
Schneider Electric	0.62%
Banque Rhone Alpes	0.15%
GEG employees	1.22%

ACTIVITIES

NATURAL GAS

Natural gas distribution in Grenoble

Sales: over 45,000 customers and 965,000,000 kWh sold in 2003

ELECTRICITY

Electrical power distribution in Grenoble and Montsapey

Sales: over 95,000 customers and 723,000,000 kWh sold in 2003

ELECTRICITY PRODUCTION

8 micro hydropower plants: 16 MW

Doron à Pralognan-La-Vanoise facility: 1.35 MW

Glière à Pralognan-La-Vanoise facility: 3.30 MW

Montsapey power plant in Savoie: 3.80 MW

Saint-Barthélémy-de-Séchilienne facility: 0.50 MW

Vaulnaveys facility: 1.05 MW

Ferrand à Mizoën facility: 4.50 MW

Bas-Laval facility: 0.50 MW

Brignoud facility: 0.95 MW

Isergie cogeneration plant: 30 MW

Mini and micro cogeneration (Clinique des Bains and Agence Vaucanson)

RELATED ACTIVITIES

Proprietary vehicles

Promotion and distribution of natural gas vehicles

GEG currently operates 450 lightweight natural gas in the Grenoble region

72 natural gas buses are in operation on Semitag (city bus) routes

Energy management

Grenoble's energy management program includes a complete energy audit, as well as diagnostics, analyses and consultation aimed at achieving optimal energy use and reducing energy costs

Public lighting

Operation and maintenance of a 19,000-unit network

Street lighting illumination of monuments and public buildings in Grenoble

Maintenance contracts and installation of lighting in other municipalities

OUR FUTURE GOALS

Become a benchmark local distribution company and a key regional player.

Promote regional economic development and contribute to social cohesion in the Grenoble and Alps region

OUR STRENGTHS

Proximity

Proximity means that we can be optimally responsive to our customers and always provide them with a personalized customer representative and technical support that will help them optimize their facilities.

Reliability

Our 100 years of experience and our extensive knowledge of the Grenoble and Alps region and all of its key players make us a company our customers can rely on.

Simplicity

For us, simplicity means offering our customers an energy mix consisting of gas and electricity and a standard contract irrespective of the number of sites involved and their geographic location.

Competitive prices

We are committed to providing our customers with the best possible prices and individualized advice about the most suitable rates for their energy needs.

Our strategy in a competitive market

Provide our business customers in Grenoble with comprehensive support for all of their locations in Grenoble and beyond.

Make our presence felt in the Grenoble and Alps regions, expand the scope of our activities, acquire new business customers in the Grenoble and Alps regions that henceforth have the option of choosing Gaz Electricite de Grenoble as their service provider.

Alliances

We have established alliances with 11 local distribution companies in the Alps region:

Energie Service de Belledonne (ESDB), which serves eight Belledonne catchment areas: Allemont, Allevard, La Ferrière, Le Moutaret, Pinsot, Saint-Pierre d'Allevard, Séchilienne and Villard-Bonnot.

Regie Municipale d'Energies de Saint-Marcellin

Saeml Energie Developpement Services du Brianconnais (EDSB)

Saeml Gaz Electricité de Grenoble

PARTNERSHIPS

Gaz naturel Vehicule (GNV Alpes Grenoble, 50% subsidiary of GEG and GNVert)

Joint hydro power project with EDF Hydro on the Isere river

4 barriers, 5-6 m each, for total installed power of 4 x 12 MW and total energy capability of 340 GWh (85 GWh per barrier)

Power trading with Soregies (Sem d'Energie from the Vienne region)

Cooperation in regard to energy portfolios and a project aimed at implementing a purchasing consortium that will allow eligible customers to be supplied with electricity.

Partnership with the Algerian power company Sonelgaz

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