
Leicester, England

Comprehensive Municipal Energy Efficiency

Profile #76

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Executive Summary

Leicester is a post-industrial city about an hour and a half north of London by train which has the wonderful distinction of being Britain's first Environment City. This university town with a diverse ethnic mix has initiated perhaps the most comprehensive set of environmental programs ever witnessed by The Results Center. While its completed energy efficiency initiatives are primarily limited to its own municipal buildings, the strength of this profile is in Leicester's broad environmental platform and wealth of programs.

Leicester has taken an integrated approach to energy efficiency, identifying energy as only one of several resource areas which must be reformed for resource sustainability. As such Leicester, under the auspices of the Leicester Environment City Trust and citizen advisory groups, has catalyzed a rich variety of ecological projects. These include an extensive bike path network, wildlife protection, curbside recycling, and home energy rating systems. Leicester has also banned the use of tropical hardwoods, and peat for that matter, and has fielded Britain's first green soccer team! Leicester also hosts the annual Think Green environmental festival, has supported pilot district heating initiatives, and is the home of Britain's largest passively-cooled building. Not only does Leicester support sustainable farming with its own operating farm, but it is also in the process of planting community woodlands in addition to its urban forestry program. The City also gives citizens awards for environmental codes of practice, and is promoting carpooling through its "LeicesterSHARE" program.

In addition to winning the praise of England's beloved Prince Charles, Leicester was awarded at the Earth Summit in Rio de Janeiro for its ecological activities. The on-going project, called "Environment City," has brought together a partnership between local authorities, businesses, non-profit organizations, and individuals throughout the community. The program is coordinating activity in eight broad areas: energy, transportation, waste and pollution, food and agriculture, economy and work, the built environment, natural environment, and social environment.

Leicester has institutionalized community participation by forming eight Specialist Working Groups. These groups are currently working within the framework of a 30-year plan called Agenda 2020 to achieve realistic and practical solutions to the problems identified in a comprehensive audit of the City's environment. While the project's working groups are coordinated by the Leicester Environment City Trust, both the City and County government's strong participation will assure that proactive policy directives coming out of the process will be incorporated into action, and this structure has given credibility both at home and overseas to the Leicester model for sustainable development.

City of Leicester, England Comprehensive Municipal Energy Efficiency

Sector: Residential, commercial, industrial, agricultural

Measures: Transportation efficiency, district heating, renewables, and comprehensive energy efficiency initiatives

Mechanism: Environment City efficiency initiatives are driven by Leicester City Council and by Specialist Working Groups covering: built environment, social environment, food and agriculture, economy and work, energy, waste and pollution, transport, and natural environment

History: Leicester designated England's first Environment City in 1990. Leicester City Council and Leistershire County Council work in cooperation with Specialist Working Groups (administered by Leicester Environment City Trust) to design and implement more than 100 schemes for sustainable resource use

Conventions

For the entire 1993 profile series all dollar values have been adjusted to 1990 U.S. dollar levels unless otherwise specified. Inflation and exchange rates were derived from the U.S. Department of Labor's Consumer Price Index and the U.S. Federal Reserve's foreign exchange rates.

The Results Center uses three conventions for presenting program savings. **Annual savings** refer to the annualized value of increments of energy and capacity installed in a given year, or what might be best described as the first full-year effect of the measures installed in a given year. **Cumulative savings** represent the savings in a given year for all measures installed to date. **Lifecycle savings** are calculated by multiplying the annual savings by the assumed average measure lifetime. **Caution:** cumulative and lifecycle savings are theoretical values that usually represent only the technical measure lifetimes and are not adjusted for attrition unless specifically stated.

Country Overview: The United Kingdom

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The United Kingdom (consisting of England, Scotland, Northern Ireland, and Wales) covers an area of 244,820 square kilometers (152,124 miles) and has a population of more than 57,000,000. The capital is London and major cities include Birmingham, Glasgow, Leeds, and Sheffield. The currency is the pound sterling and the exchange rate used in this profile is \$1.76 1992 U.S. per pound, which is then discounted per The Results Center convention to reflect 1990 U.S. dollars. In 1991, the United Kingdom was responsible for approximately 2.6% of the world's energy production (equivalent to 14% of U.S. production) and 2.7% of the world's energy consumption (equivalent to 12% of U.S. consumption).[R#1]

England alone has an area of 81,297 square kilometers (50,516 square miles) and a population of 46 million. More than 90% of England's population lives in urban areas. This demographic feature, coupled with the fact that the energy efficiency of the United Kingdom housing stock is among the worst in Western Europe, makes sustainable urban development a pressing environmental issue. England's post-industrial economy is based on service industries which accounted for 66% of the country's 1989 gross domestic product. Major economic activities include transportation, commerce, and finance. The country's major manufacturing concerns are machinery, agricultural equipment, chemicals, and minerals. ☞

Country Overview: The United Kingdom (continued)

THE UNITED KINGDOM'S UTILITY SITUATION

In 1990, the electricity supply industry in Great Britain (England, Scotland, and Wales) underwent a major organizational change with the implementation of the government's privatization proposals under The Electricity Act of 1989. Under this legislation the power industry was privatized and split into generation companies (fondly called "gencos") and distribution companies, fondly called "discos."

In the initial privatization proposal, the government had wanted to form 6-7 gencos to foster competition and thus drive prices down. A problem arose early off: the publicly-owned Central Electricity Generating Board, or CEGB, had invested heavily in costly nuclear power. If the marketplace was to become truly competitive without government intervention, the massive nuclear debt would become stranded and thus in default. Therefore the government established four gencos, with one of the four remaining publicly owned and responsible for the nation's 37 nuclear plants (Nuclear Electric PLC). Like "the coal pfennig" in Germany (see Profiles #77,78), England's electricity ratepayers pay what is called "the non-fossil fuel obligation," an 11% surcharge on each kilowatt-hour sold that supports the nation's nuclear investments. The accrued revenues are supposed to be earmarked for nuclear plant decommissioning funds, but may be used for capital costs and operations and maintenance expenses to maintain relatively low nuclear rates.[R#1,12]

Two other gencos were formed out of the Central Electricity Generating Board, National Power PLC and PowerGen PLC. These companies operate the fossil-fired and hydroelectric stations previously owned by the CEGB. These two gencos provide power that is 70% coal-based but that is also generated using new natural gas-fired capacity and capacity provided by independent power producers. The fourth company formed from CEGB is the National Grid Co PLC which is responsible for operating the transmission system and coordinating the operation of power stations throughout the country for economic dispatch. The company also operates the pumped-storage peaking power stations at Dinorwig and Ffestiniog, the cross-channel transmission link with France (that supplies small quantities of baseload French nuclear power to the English grid), and the interconnection with the Scottish power system.[R#1,12]

Twelve new electricity distribution companies were

formed in England and Wales. Leicester, for example, is served by East Midlands Electricity. These companies are responsible for maintaining and operating their local distribution networks and were given monopoly power in their franchise service territories, similar to utilities in North America. But any customer with a power demand of greater than 1 MW was given the opportunity to shop around for power, what is called retail wheeling. Thus the average school can seek its lowest cost power option. By 1998 this retail wheeling opportunity is scheduled to be available to all customers.[R#1,12] (For another European example of retail wheeling see Profile #79 on Oslo, Norway.)

For the most part the electricity companies of England, Scotland, and Wales are interconnected, although some remote areas in northern Scotland remain isolated. England has a 400 kV grid extending about 150,000 km (93,205 miles), while southern Scotland operates a separate 400 kV grid totaling 500 km (310 miles). Together, England and Scotland have a distribution network that totals more than 880,000 kilometers (546,806 miles).[R#1]

In 1989, the United Kingdom had a total installed capacity of 98,000 MW and produced 362 billion kWh. In 1992, the United Kingdom produced 327 billion kWh. To fulfill growing demand, the CEGB estimated that 15,000 MW of new or replacement capacity would be needed by the year 2000 and suggested that one-third of this capacity would be nuclear and the remainder mostly coal. At the end of 1990, the U.K.'s nuclear "fleet" amounted to 37 units with a capacity of 12,620 MW.

The Office of Electricity Regulation is the national government agency responsible for regulating both gencos and discos. It is headed up by the Director General of Electricity Supply. This individual, a former professor of economics, has been labelled the "grandfather" of privatization. He felt strongly that splitting up the CEGB would increase competition and thus drive down costs while increasing reliability. Some of this analysis was correct, the gencos for instance have cut 50% of their staff and like many initiatives in North America with "rightsizing" staff levels, much of "the fat" has been cut out of the British electricity industry in the past few years.

Incidentally, the current Director General of Electricity is reportedly not keen on demand-side management and believes that energy efficiency upgrades ought to be completely market-driven without government intervention. That said, a notable DSM project underway

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in the U.K. is taking place at Hollyhead Island on the country's west coast. There, a community-wide retrofit program has been designed based on distribution avoided costs, a signal that the concept of integrated resource planning is being embodied somewhat in the English power market. Furthermore, England's commitment to stabilization of carbon dioxide emissions at 1990 levels by the year 2000 may also drive DSM and

complement market-based retrofit activities.[R#12]

A new trade association called The Electricity Association was created when the new British electricity companies were formed. It provides a forum for members to discuss matters of common interest, a collective voice for the industry when needed, and specialist research and professional services for member companies.[R#1] ■

City Overview: Leicester

Leicester is a post-industrial university town located approximately 160 km (100 miles) north of London. Much of the economy of yesteryear was based on the textile and clothing industries, including the heavily-polluting dyeworks.

Leicester currently buys its electric power from East Midlands Electricity which is one of the 12 distribution companies established as a result of the country's electric power industry privatization in 1990. As a result the City only has direct control over its own 100 buildings which include the City Hall and several recreation centers. The City also has a modicum of control over approximately 30,000 "council homes." These are subsidized housing units owned by the national government but under the control of the local jurisdiction.

CITY OF LEICESTER 1992 STATISTICS	
Electricity Consumption	
Residential	390 GWh
Commercial	130 GWh
Industrial	390 GWh
Gas Consumption (equivalent)	
Residential	2,200 GWh
Commercial	880 GWh
Industrial	810 GWh

In 1992, the City of Leicester under the jurisdiction of the Leicester City Council consumed approximately 3,890 GWh-equivalent of gas and 910 GWh of electricity. Gas is provided in Leicester by British Gas and consumption can be broken out as follows in electricity equivalents: residential sector 2,200 GWh, industrial sector 810 GWh, and commercial sector 880 GWh. Electricity purchases consisted of 390 GWh for the residential sector, 390 GWh in the industrial sector, and 130 GWh for the commercial sector. [R#2,3]

Typical E. Midlands Energy Prices	Gas (¢/kWh)	Daytime Electric (¢/kWh)	Nighttime Electric (¢/kWh)
Residential	2.416	11.99	4.42
Comm/Ind	1.659	9.08	3.87

In the East Midlands service area the energy prices in the commercial/industrial (C/I) sector vary greatly depending on the size of the demand and the supplier. For a medium-sized building in the C/I sector the average electric rates are 9.08 ¢/kWh during the daytime and 3.87 ¢/kWh at night, while the gas rate is 1.66 ¢/kWh. For an average-sized residential unit the rates are 11.99 ¢/kWh during the daytime and 4.42 ¢/kWh at night, and 2.42 ¢/kWh for gas. In addition to these rates there are basic service charges (called "standing charges") for all sectors as well as demand charges for the commercial and industrial sectors. The standing charges for residential customers are 16.5¢/day for gas and \$15.46/quarter for electricity. There are several different standing charges for the C/I sectors levied according to the applicable tariff structure. [R#2,3]

Leicester has long been committed to energy conservation. Following the oil crisis in the 1970s, an Energy Conservation Working Party was established by City Council, which included the appointment of a full-time Energy Manager. In June 1980 City Council agreed to a formal energy policy and in October 1985 a revised Energy Policy was published. In September 1989 "Protecting the Environment" was published with specific reference to global warming. These policy developments led to a reduction of energy use of 16% in municipal buildings during the 1980s. [R#7] ■

Leicester's Environmental Initiatives

ENVIRONMENT CITY

In June of 1990 Leicester was designated the first "Environment City" in the United Kingdom. This honor was bestowed upon Leicester by the Royal Society for Nature Conservation. In Leicester, the award recognized and has further catalyzed a comprehensive, on-going community project called Environment City. The project has brought together a partnership between local authorities, businesses, nonprofit organizations, and individuals throughout the community.

Environment City is unique in that it attempts to coordinate an unprecedented scale of positive environmental activity in eight broad areas: energy, transportation, waste and pollution, food and agriculture, economy and work, the built environment, the natural environment, and the social environment. What makes Leicester's effort so exemplary is the integrated nature of the project. As one of the City's employees told us, "I would say the main strength of Leicester's initiative is its integrated approach as often environmental goals are too compartmentalized." [R#4,17]

Environment City will work with statutory bodies, businesses, nonprofit organizations, and individuals to assist in the identification and implementation of practical and achievable projects that will move Leicester towards a model of sustainable urban development.

Environment City Trust's Mission Statement.

Specialist Working Groups (SWGs) with representatives from the public, private, and nonprofit sectors have been formed to guide and develop activities for each of the eight focus areas. These SWGs involve more than 120 senior decision and policy makers from the various sectors. These eight groups are currently working within the framework of a 30-year plan called Agenda 2020 and are

attempting to achieve realistic and practical solutions to the problems identified in a comprehensive audit of the City's environment. The launch event for Environment City was held on September 21, 1990 and attracted more than 10,000 people to the city center, a record for a city center event.[R#4]


AGENDA 2020

The strategic plan called Agenda 2020 is the plan which is currently being followed by the Specialist Working Groups to foster major changes in the structure of the City. General goals of Agenda 2020 include reducing dependence on the automobile and thereby reducing traffic; land use initiatives such as relocating people to the city center (what are called "in-fill" development policies in America); and energy conservation. So far, implemented projects include a curbside recycling program, a home energy rating survey, and an extensive bike path through the City.[R#4]

The Specialist Working Groups report their progress on a regular basis to the Executive and Members of Environment City. The Executive is based at Leicester Environment City Trust Ltd. and acts as a coordinator for the Specialist Working Groups.[R#4]

Leicester Environment City Trust on behalf of the Environment City partnership has secured funding from the public sector (Leicester City Council and Leicestershire County Council), the nonprofit sector (The Royal Society for Nature Conservation and the Worldwide Fund for Nature), and the private sector (national sponsorship from British Telecom), and considerable support from local companies. During 1992, the European Commission's LIFE fund awarded more than \$1.64 million to Environment City to be disbursed over three years beginning in 1992. The combined operations and promotions organizations currently have funding exceeding \$817,600 per year.[R#4]

THE PUBLIC SECTOR

Leicester City Council and Leicestershire County Council have organizational structures in place ensuring that appropriate and viable initiatives generated by the Specialist Working Groups are incorporated into Leicester's public sector policy. It is important to note that Leicester City Council is a key driver to many of the Environment City initiatives.[R#4] 

Leicester's Environmental Initiatives (continued)

THE BUSINESS SECTOR

Environment City is committed to effecting change in the private sector by encouraging the adoption of good environmental practice. Environment City tries to convey the message that good environmental practices are good business. Consumer tastes are changing and environmental legislation is being implemented. Businesses who adjust quickly to these changes will be the winners.[R#4]

The Environment City Business Sector Network is designed to provide companies with advice at the lowest possible cost. Environmental audits are provided at very low cost. Many Leicester businesses realize the importance of energy efficiency but lack the resources to employ full-time environmental advisers. The Environment City Business Sector Network attempts to fill this gap. Businesses that have undergone audits include a local brewery, a property company, a textile company, and several hotels. Perhaps the most publicized environmental audit was that of the Leicester City Football Club which is now calling itself Britain's "first green soccer team." Another Business Sector Network program targets small businesses in various ethnic communities providing free advice on environmental practices.[R#4]

NONPROFIT SECTOR

The Environment City Community Partnership was recently launched and was designed to help local community and nonprofit groups. (In England nonprofit groups are called "voluntary" groups.) This partnership provides green grants for voluntary group environmental initiatives. It also offers a path into City Council to ensure that the best ideas from within the community are considered for action. The Community Partnership is not designed to do the actual work for community groups, but is instead designed to help pioneer new projects and gain publicity for them.[R#4]

Certainly the key nonprofit driver for the Environment City program is the Leicester Ecology Trust. Its staff of 20 is supplemented by more than 100 volunteers who help to make the Leicester Ecology Trust Britain's largest environmental charity working in the urban environment. ■

Leicester's Energy Action Plan

Dr. Paul Fleming, Leicester City Council's Energy Manager and now a part-time consultant to the Organization for Economic Cooperation and Development (OECD), was hired by the Leicester City Council to save energy in municipal facilities. His efforts, which have dovetailed nicely with the far broader community-wide efforts related to all forms of natural resources and the Environment City project, have been expanded to encompass all facets of energy use in Leicester. Without mandate or clear legislative authority, he and others have been trying with a good deal of success to encourage an integrated environmental and even social strategy, best described as a means of improving the quality of life in Leicester.

The resulting environmental strategy in Leicester has been supported by the City's concern and commitment to reducing carbon dioxide levels. As part of the Environment City campaign in general and the Energy Action Plan in particular, Leicester City Council announced in November 1990 its commitment to reduce energy use and CO2 emissions in municipal uses by 50% from 1990 baselines by the year 2025. This has catalyzed dramatic action on City-controlled buildings, which in turn has had a spillover effect onto privately-held properties throughout Leicester. In a sense, the City has been the leader that the town's people can now follow. (The Energy Department at the Leicester City Council has a staff of 5 full-time professionals.)

The purpose of this section of the profile is to focus specifically on the City of Leicester's energy management beginning with municipal initiatives, then presenting several other important energy-related initiatives in Leicester, and concluding with the action strategies of Leicester's Specialist Working Group on Energy.

Note that there is a high degree of overlap regarding project jurisdictions. For instance, several Specialist Working Groups might have action steps on the same project. Furthermore, there has been a good deal of crossover in terms of projects, the motivating factors for the projects, and their sponsors. For instance, energy-efficient streetlighting has already been installed in Leicester and this initiative was conducted by Leicestershire County.

ENVIRONMENT CITY SPECIALIST WORKING GROUPS


Built Environment
Social Environment
Food and Agriculture
Economy and Work
Energy
Waste and Pollution
Transport
Natural Environment

1. MUNICIPAL INITIATIVES

The City of Leicester owns and therefore has direct control over approximately 100 buildings in addition to having a certain degree of control over more than 30,000 "council homes" which make up a significant portion of the City's total building stock of 100,000 buildings.

Municipal buildings in Leicester basically include office buildings and recreation centers. These buildings consume more than 160 GWh per year and as such are targets for the City's energy efficiency retrofits. Currently the City is spending \$164,106 (100,000 pounds annually) to promote and support wise energy use in its own buildings. [R#2]

Tracking municipal building energy use: One of the key means utilized by the Leicester City Council to reduce energy use in its own buildings, has been through careful monitoring. Municipal building energy use is monitored daily by the staff of the City's Energy Office. A computerized system compares daily energy use to data from the past 30 days checking both gas and electric consumption.

Typically, 14 or 15 sites are checked daily including nine leisure centers and four buildings. A clever software program sends off alarms if any of the facilities has experienced any unusual consumption patterns... a signal for the energy conservation staff to call the building's facility manager and to then troubleshoot if necessary on any unusual consumption pattern. [R#2,3] 

Leicester's Energy Action Plan (continued)

City Hall lighting retrofit: An innovative retrofit of City Hall's lighting systems has been performed and not only has demonstrated energy savings with a short payback period but has provided a vivid display for the City's political leaders of the efficacy and attractiveness of energy-efficient lighting. T8 lamps were installed with electronic ballasts, photosensors control perimeter zone lighting to take advantage of natural daylighting, and preprogrammed occupancy sensors sweep the building's lighting systems off at night. These can be overridden using pull chains which activate sections of the troffers. [R#2,3,11]

Cogeneration at the City's leisure centers: The City has installed cogeneration units at two of its leisure centers, or what North Americans might call recreation centers or public health clubs. Note that much of the dollar savings associated with the cogeneration have eroded as facility managers can now afford to increase and have increased the pools' temperatures. [R#2,3]

The Leicester Retail Market retrofit: At the heart of downtown Leicester is the largest covered market in all of England, and one of the largest in Europe. Here, farm produce is bought and sold, and here is where one can find the life of the City. The downtown produce market has not only kept downtown Leicester vital, but it has attracted tremendous retail activity to its urban core. A brand new downtown mall symbolizes the success of Leicester's "in-fill" zoning policy.

In 1991 the Leicester City Council decided to upgrade the roof and lighting systems in its old retail market. The old roof was leaking in places and its drab tin roofing material was the worse for wear! The City began to experiment with new systems and did so by mocking up one area of the large enclosed space. The mockup included translucent roofing and advanced lighting systems.

While not an energy-saving retrofit per se, the project was indeed exemplary. For instance, while keeping the overall lighting wattage constant (104 kW vs. 108 kW prior to the retrofit), the City was able to more than double illu-

mination levels (750 lux average compared to 300 lux prior to the conversion). Furthermore, the market became light and bright, cheerful, even on overcast days, boosting sales.

The lighting system was badly in need of an upgrade and 150 watt incandescent lamps were replaced with state-of-the-art, energy-efficient lighting that included T8 fluorescent lamps controlled by electronic ballasts coupled with photosensors. As such, when daylighting conditions warrant it, the artificial lighting system is automatically shut off. The entire retrofit cost the City \$2.8 million (1.7 million pounds) and has been so successful that the City is doing a similar lighting retrofit project at its concert hall. Our guide lamented with a twinkle in his eye that, "We're unfortunately stuck with the [inefficient] stage lighting" at the concert hall. [R#11]

Addressing council homes: The council homes, which are actually owned by the federal government and administered locally, are used for low income and subsidized housing. The government maintains a housing list for citizens wanting council housing and priority is based on need. Once a citizen is awarded council housing they have lifelong ownership.

While Leicester controls 30,000 council homes, only 12 new council homes were built last year and these 12 homes serve as demonstration and test facilities. In terms of energy efficiency they are rated 9.8 on a ten-point scale, while current building regulations call for a minimum of 7.5 to 8 on the same scale. These homes contain high efficiency, fully programmable, condensing boilers; heat recovery units for bathrooms and kitchens; and well-insulated walls, floors, and ceilings. A unique concession is that each home has a gas fireplace. While these fireplaces greatly reduce energy savings they are considered a focal point of family life and thus important ingredients in socially-supported housing.

Overall, in terms of City controlled buildings, from 1988-1993 there has been a reduction of normalized energy consumption in City-owned buildings of 3.8% and a

normalized reduction in CO₂ emissions of 13.9%. Thus the City Council is ahead of its target of reducing CO₂ emissions by 50% by the year 2025 but is slightly behind on its goal of reducing energy consumption by 50% for the same period. During 1991/1992 City Council buildings used 171.3 GWh and in 1992/1993 electric use dropped to 165.7 GWh.[R#2,3]

2. OTHER ENERGY INITIATIVES IN LEICESTER

Urban energy modelling package: In accord with the Environment City goal of considering the City as a whole, the Leicester City Council, in partnership with Barcelona, Spain, is developing an urban energy modelling package. This project sponsored by the European Commission will produce a model that can predict the future energy consumption within the City and determine the effectiveness of proposed energy-conservation measures. This project is scheduled for completion in early 1994.[R#5]

The City Challenge Area: The City of Leicester has also been awarded funding by the European Commission for what is called the City Challenge Area. This neighborhood is characterized by prewar housing made up of solid brick walls with no insulation. Homeowners have been given "improvement grants" for insulation, heating controls, and other efficiency retrofit measures. This urban redevelopment project is certainly not an energy efficiency project per se, but ties in with Environment City's broader notion of resource sustainability.[R#2]

Wind generation initiatives: The Leicester Ecology Trust has been working to develop and get approved a 250 kW wind machine planned in one of Leicester's great parks. So far the Ecology Trust has run into problems with noise (and regional zoning laws require wind turbines to be at least 300 meters from the nearest residence), television interference, and visual degradation. While this project is still in the works, the Eco House demonstration home has a small, demonstration wind generator which provides visitors with an understanding of the link between wind turbines and electricity consumption. The planned 250 kW machine will cost \$410,000 (250,000

pounds), or \$1,640/kW capacity (1,000 pounds/kW). Already a local business man has invested independently and has two 30 kW machines on his property.

Pilot district heating project: Currently district heating (or cogeneration) supplies heat and domestic hot water for 260 flats in two blocks of buildings. The system provides heat and electricity with electricity used for "landlord supply" (ie to illuminate common areas such as apartment stairwells, etc.) and the excess power is sold back to East Midlands, unfortunately at a lower rate than the disco's average selling price for each kilowatt-hour.

Combined heat and power scheme: Leicester has planned the first city-wide combined heat and power scheme in the U.K. but because cities are by law not allowed to own such facilities, Leicester has chartered a corporation called the Leicester Energy Limited to develop the program. Presently this plan is on hold due to the privatization of electricity generation in England and since the City has not been able to negotiate a power sales agreement with the local utility.

3. THE SPECIALIST WORKING GROUP ON ENERGY

The Specialist Working Group on Energy complements both City and County government initiatives with energy efficiency.

- Leicester Ecology Trust's Eco House is an environment friendly demonstration house filled with examples of energy efficiency measures. More than 1,000 visitors per month come to the Eco House. The Eco House has received funding from both the City and County Council. Eco House also provides community education and information services as well as publishing materials on energy efficiency. The Eco House Shop sells many types of environmentally-responsible products.[R#2,4,8]

- Leicester City Council's Energy Conservation Capital Program focuses on municipal buildings, and provides lighting retrofits, combined heat and power units, and heating controls among other measures. Program ☞

Leicester's Energy Action Plan (continued)

expenditures for 1992/93 total \$127,444 (£77,938), while program expenditures for 1989/90 through 1991/92 totaled \$476,040 (£276,215). Savings to date are estimated to total 22,670 gigajoules, worth \$249,971 (£152,868). [R#3]

Energy Conservation Capital Program	Installation Costs	Normalized Savings to Date (Gigajoules)	Normalized Savings to Date
1989/90	\$62,377	NA	NA
1990/91	\$174,124	NA	NA
1991/92	\$239,539	NA	NA
1992/93	\$127,444	NA	NA
Total	\$603,484	22,670	\$249,971

- Energy consumption in Leicester City Council's municipal buildings was reduced by 16% from 1982 through 1992 saving more than \$4.4 million worth of energy. [R#4]

- Leicester was the first local authority in Britain to sell compact fluorescent lamps to council tenants. Energy-efficient light bulbs are on sale to City Council house tenants and local authority staff at cost. This program began in 1990 and more than 915, 11 watt and 1,377, 20 watt lamps have been sold to tenants. Since 1992, the City Council has operated a similar program (through Leicester Ecology Trust) for Council employees. More than 513, 11 watt and 417, 20 watt bulbs have been purchased by employees. [R#3,4]

- The Eco Feedback pilot project began in February 1993 focusing on a specific geographic area. Within this area leaflets, or what are called "electricity meter cards" and "gas meter cards" were delivered to all houses encouraging customers to use the cards to record their weekly electricity and gas consumption. Customers are provided with their average weekly electric consumption from the previous year so that they can compare current consumption to their past consumption. Gas consumption is compared to a target amount published in the local paper and based on the weather. Thus people can quickly and easily see the effects of small lifestyle changes such as installing compact fluorescent lamps or turning down the thermostat. A full scale program based on the pilot and titled the Save Energy At Home Campaign was started in October 1993. [R#3]

- A Combined Heat and Power program led to the installation of cogeneration units in two city recreation centers [R#4]

- A study is underway to develop an Environment Theme Park in Leicester highlighting renewable energy as well as energy efficiency and other environmental concerns. [R#4]

- Leicester's Consumer Advice Center provides information to the public on energy efficiency.

- Leicestershire County Council's Energy Management Section has achieved savings of more than \$14.08 million from 1982 through 1992. [R#4]

- Of the City Council's 31,000 council houses, all have some loft insulation and almost all of the 13,000 cavity wall constructed houses have received cavity wall insulation. [R#3,4]

- Leicester, an EC Partner with Barcelona, is undertaking an Urban Energy Planning project with \$114,465 support from the European Commission.

- Energy from waste is being generated at a County Council refuse disposal site, providing energy for 2,000 homes and an equivalent output of 3 MW. ■

Environment City Initiatives

RESPONDING TO PUBLIC CONCERNS

The success of the Environment City project rests heavily upon the number of people in the City who are excited by the prospects for change and who have accepted a personal responsibility for their environment. To draw in the maximum number of supporters for the project, Environment City in cooperation with the Leicester City Council launched a major initiative promoting the benefits of Environment City to the people of Leicester.

The foundation for the general awareness campaign was a market research report designed to identify local attitudes towards the City's most pressing environmental issues. This research showed, somewhat to the chagrin of energy efficiency advocates, that the people of Leicester considered litter and traffic congestion their most pressing and important environmental issues.

As a result of this basic research finding, a two-tiered strategy was adopted for the promotion of Environment City to get the City's residents to "buy-in" to the project. An overall umbrella campaign was formed and beneath it a series of sub-campaigns targeting specific environmental issues. The umbrella campaign featured the City's overall environmental thrust. The first sub-campaign to be carried out followed directly on the finding of the market research study related to litter, and was titled "A Clean Environment." The basis for this sub-campaign was a systematic approach to alleviating the litter problem in the City. This strategy has been an important part of Leicester's success with energy efficiency and its broader environmental agenda. The City Council and the Leicester Environment City Trust have demonstrated their ability to listen to the people of Leicester and to work with their agenda items. Thus while litter was not seen as pressing as other resource areas, it was nevertheless the first campaign undertaken and one that was closely tracked by the City and its press.[R#2,4,17]

Michael Cook, Leicester's Director of Strategic Support and an ardent advocate of the Environment City project, commented that getting community buy-in to the Environment City project has been the key to Leicester's success. He has stressed to the business community the

notion of "inward investments," and that the project reflects a major push towards increasing the quality of life in Leicester, and in turn will provide for a strong and vibrant business climate.[R#9]

LEVERAGING INTERNATIONAL ACCLAIM

At the same time as Leicester has effectively garnered impressive levels of community, or grass roots, support, it has been highly effective in gaining international acclaim for its activities, and this has and will certainly continue to bolster efforts underway. At the Earth Summit held in Rio de Janeiro in June 1992, the Leicester Environment City Partnership represented Great Britain and was voted the top European energy-efficiency project. Leicester was one of just 12 cities worldwide to receive an award at the Earth Summit.

In addition to international acclaim, numerous British celebrities support the Environment City initiatives including Prince Charles who visited Leicester in November of 1991 to view first hand the progress of Environment City. Both international acclaim and national notoriety (putting Leicester on the map) have bolstered the local effort, in particular by providing for additional channels for funding such as continued support from the European Commission.[R#2,4]

ENVIRONMENT CITY PROJECTS AND OTHER SWG INITIATIVES:

In the last section of this profile we focused on energy-related activities in Leicester, covering municipally controlled projects and broader energy efforts instigated by the Energy Specialist Working Group. The purpose of this section is to provide a sense of the breadth and depth of other environmental initiatives in Leicester taken up as part of the Environment City project. ☞

Environment City Initiatives (continued)

Ironically, it seems as though Leicester can get too much of a good thing! It's agenda is jam-packed with good ideas and resulting action steps. According to City experts there is, unfortunately, still a high level of fragmentation between projects. There are more than 100 Environment City projects planned, being implemented, or complete, and many of these projects are run independently without being tied into other programs. Administrators of Environment City have a long term planning goal of making the roster of programs more cohesive, but as you will see by reading the following action steps, there is currently a degree of overlap between projects and their specialist working groups.[R#3]

In June of 1993 The Results Center had the opportunity to visit Leicester and to learn first-hand about its full plate of environmental initiatives. During this visit we sat in on a working session of the Specialist Working Group on the Built Environment. They were developing a low-cost award scheme for environmentally-conscious construction. A representative from East Midlands Electricity noted that his company has had tremendous success with this sort of recognition. He thus supported the use of awards, certificates, media attention, and the like as alternative incentives. Rather than paying rebates, commonly used in North America to spur responsible energy use, Leicester was exploring means of providing lower cost incentives that drew participants into a broader framework of social responsibility, and one that primarily rewarded participants through local media exposure.[R#13]

Another participant noted that the visual aspects of energy efficiency and environmentalism are also important. Efficient construction practices, just like retrofits, must be in line with prevailing architecture and must be aesthetically pleasing. Without this sort of sensitivity, energy efficiency initiatives put in place today could quickly erode tomorrow.

We were pleased to find that the specialist working group represented a healthy cross section of the City's population, ranging from advocates of efficiency to skeptics. Through this dynamic mix, Leicester was forging ahead on a hopeful but pragmatic path toward sustainable development.

More than 100 diverse projects are being implemented as a result of Environment City initiatives. Some of these projects are listed herein and are classified according to their specialist working groups. Note again that the energy projects are listed in the previous section:

BUILT ENVIRONMENT SWG

- Leicester's open air market was recently retrofitted for energy efficient lighting and its semi-permanent roof was reclad with a new translucent material improving the quality of the retail market. (See more detailed case study in the previous section.)[R#11]

- Since 1976, the Renewal Strategy has improved 12,000 private dwellings and included upgrading such as insulation to the highest standards. Homeowners are provided grants for energy saving measures, non-use of tropical hardwoods, etc.[R#4]

- A \$32,704 study titled "Advanced Housing Design and Layout" examined environmentally-friendly design, construction, servicing, and layout.

- Similarly, "Building for the Environment" is a new construction guide covering materials, site layout, design, and landscape.

- Leicester City and Leicestershire County Councils have banned use of tropical hardwoods for new public sector developments.[R#4]

- Leicester Polytechnic's new Engineering Building now under construction will be a state-of-the-art, energy-efficient building, and the largest passively ventilated building in Europe. The building, or what is locally called "the engineering block," features passive solar cooling that resulted in zero marginal cost.

SOCIAL ENVIRONMENT SWG

- Leicester hosts the nation's largest environmental festival called "Think Green" which attracts up to 5,500 visitors each year.

- An "Environmental Good Practice Guide for Voluntary Groups" was prepared which identifies how local community groups can develop green projects.

- Many school projects have been planned and implemented, including a program called "School Nature Areas in Leicestershire." With this program a media sponsor awards a prize for the school making the best curricula use of a school nature area. The City Council funds city school schemes which involve the County Education Authority, school representatives, the voluntary sector, and children with design, implementation and management of the nature areas.[R#4]

FOOD AND AGRICULTURE SWG

The goals of this program component are to minimize the environmental impact of food production and processing, to promote a system of food production that is sustainable, to promote a diet which is healthy and raise awareness of these issues in Leicester.[R#4]

- Leicester City Farm, a joint public sector/community sector project attracted more than 80,000 visitors during 1991.

- City Council banned the use of peat in 1989 as peat bogs are now considered sensitive natural habitats that have been threatened by peat extraction.

ECONOMY AND WORK SWG

This program component seeks to: assess and meet the needs of the green consumer; encourage labelling and the provision of environmental information; provide environmental grants and suggest projects to businesses; explore opportunities for sales through green marketing and promotion.[R#4]

- Currently businesses are represented on Environment City Specialist Working Groups and on the Executive Board.

- Many businesses have received environmental audits of their facilities.

- An environmental Code of Good Practice and an award program are in place.

- A total of \$380,900 has been provided to 89 industrial sites since 1981.

- The declaration of Industrial and Commercial Improvement Areas has enabled both environmental and service improvements to premises with expenditures totaling \$1.5 million for 167 projects since 1981.

- Leicester City's soccer team has become Britain's first green soccer team by having an audit performed on both their playing facility and their business offices. Following the audit, the club now collects rain water to water the field. Organic fertilizers are used on the field and a kestrel nesting box is mounted on a floodlight support. Other improvements include increased recycling 🗑️

Environment City Initiatives (continued)

as well as decreased use of lights and water. In addition, heating systems are being retrofitted and energy-efficient light bulbs have been installed.

WASTE AND POLLUTION SWG

- A pilot voluntary sector household recycling program currently involves 1,400 homes and is being used to assess participation levels and cost effectiveness.
- Leicester has a steadily growing network of more than 50 drop-off recycling sites.
- Leicester Ecology Trust runs an office paper recycling collection service for more than 100 local businesses and 50 schools.
- The City Council's Paper Action Plan has led to a new paper purchase policy requiring the purchase of 100% unbleached, recycled paper.
- The County Council pays a rebate of \$8.18 (£5) to the City Council, charities, and voluntary bodies for each tonne of recycled material.[R#4]

TRANSPORT SWG

- More than 38 km (24 miles) of bike routes have been constructed and or designated since 1974. This pedestrian/bicycle "Green Ringway" circumvents the city, linking parks and open spaces. The concept of the Greenway surrounding the City is somewhat symbolic but in practice has proven to be very popular.[R#3,9]
- Leicester has an extensive program promoting unleaded fuel, and Leicester Ecology Trust has launched LeicesterSHARE to promote and support city-wide

carpooling. The City has also promoted a "no-car" day to get motorists out of their cars and to take advantage of mass transit.

- Leicester City Council now has a diesel powered fleet with regular emission testing and diesel soot cleansing.[R#4]

NATURAL ENVIRONMENT SWG

The goal of this SWG is the creation and maintenance of a clean and attractive environment; the protection and enhancement of wildlife habitats; the provision and development of green spaces; and the provision of information regarding the natural environment.[R#4]

- The City Ecology Strategy has outlined a city-wide network of bike paths/walkways and natural habitats. Projects to protect, create, and enhance sites of ecological interest and green spaces began in 1986 with \$572,000 spent through 1992.
- The county's first statutory Local Nature Reserve was declared in 1988 in the City of Leicester. In addition, 50 ponds have been dug or restored since 1984.

- The Community Woodlands program seeks to double Leicester's woodland cover over 10 years by planting an additional 75 hectares (185 acres) of woodlands.
- An annual tree planting strategy coordinates the planting of 65,000 trees in streets and open spaces in Leicester.

- Leicester has many parks (including Riverside, Stokeswood, and the Great Central Way) which contain bike paths, foot paths, wildlife areas, as well as linking many parts of the City. Note that the City's canals have been cleaned up, revegetated, and paths along the once-polluted canals are now popular recreation sites. ■

Lessons Learned / Transferability

LESSONS LEARNED

The most important lesson that Leicester can provide to the energy efficiency “community,” is that energy efficiency need not be considered in a vacuum. While the other European municipal energy efficiency initiatives have been broader than most North American experiences (see Profiles #77,78,79,80), and have included foci on supply-side efficiencies, district heating initiatives, energy efficiency, renewable energy developments, and even water and transportation efficiency, Leicester steals the show in terms of breadth. This breadth of perspective, or the integrated resource management approach, provides an insight into the complexity and challenge in progressing beyond a resource extractive economy, to one that is truly sustainable. Leicester rightfully acknowledges that energy must be considered in parallel with food and agriculture, water, waste management, transportation, etc.

A second key lesson learned in Leicester is the importance of a two-pronged marketing approach. Leicester’s program has been driven by a bottom-up paradigm, whereby citizens’ voices have been and continue to be heard, and has been and continues to be supported by national, European, and even far-reaching international acclaim. By respecting its peoples – whose initial environmental concern was litter – and by garnering a prestigious award at the Earth Summit in 1992, Leicester has been able to maintain community interest and participation.

A third lesson learned in Leicester is that a city does not have to control its electric or gas utility to achieve its goals. While this control would likely be helpful in Leicester, the City has been clever and successful in its ability to garner the support of Leicester County, non-profit advocacy groups in the City and area, businesses, and foundations outside of Leicester. Furthermore, by attaining such a critical mass of important players and constituents, both the electric utility – East Midlands Electricity – and the gas utility – British Gas – and even British Coal have taken an interest and now have an active role in the Specialist Working Groups in place in Leicester. In short, the Environment City project has become so visible and credible that the utilities simply cannot afford to turn away from the project.

The fourth lesson learned in Leicester relates to the Specialist Working Groups. These groups have taken the overall goals of the project and have propelled the goals into specific and pragmatic action steps. The Results Center had the opportunity to sit in on one of these group’s working sessions and we were excited to be exposed to the group focused on the built environment. Not only were the strongest proponents of environmental reform in the room, but those that could only be considered adversarial prior to the process were happy to express their opinions and concerns, and remarkably – suggestions – for overcoming barriers to success!

Finally, environmental gains have been good business for Leicester. Innovation and progressive policies much in concert with broad international trends related to the environment, have translated into big business for Leicester. The European Commission has provided Leicester with several grants and this notoriety has only served to redevelop Leicester, building a strong economy and establishing a good deal of civic pride. Leicester has proven that with good ideas, commitment, and perseverance, a “backwater” of England’s industrial past can become a symbol of a greater reality.

TRANSFERABILITY

While it’s not easy to recreate a magic, especially a magic that seems so inextricably linked with extraordinary timing... any community with the drive and will can replicate Leicester’s success. Although Leicester does not have its own utilities and is not regarded as a bastion of progressive politics, it has been able to take a broad and comprehensive approach to environmental reform that seems highly transferable to communities that are so inclined.

What seems so apparent about Leicester is that it’s policies can be transferred, especially when one considers the recognition that Leicester has received, and that this recognition has translated into a basic reality for Leicester: taking care of the environment is good business for Leicester. ■

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