

20% Club for Sustainable Cities

Case Study- City of Newcastle



City of Newcastle

Numerical Target:

The Council will reduce the annual carbon dioxide (CO₂) emissions from its activities by at least 5% of the 1990 levels (1040 tonnes of carbon dioxide by the year 2000).

Methods for achievement:

Project	Objective
Newcastle Airshed Management Plan	Prepare an Airshed Management Plan to identify sources, emission concentrations and options to improve air quality for the region.
NCC Energy Conservation Project	Reduce Council's energy consumption and CO ₂ emissions.
Green Energy Project	Promote and demonstrate renewable energy opportunities; develop an incentive and educational strategy to reduce energy consumption across the City of Newcastle in partnership with energy suppliers.
Energy Efficiency Guidelines	Prepare and implement guidelines for energy efficient design.
Newcastle Clean Air 2000	Reduce vehicle emissions in the Lower Hunter by focussing on increasing fuel energy efficiency of vehicle journeys.

The Newcastle Environmental Management Plan (NEMP) was adopted by the Newcastle City Council (NCC) in August 1995 as a framework with which Newcastle City can follow the right direction for the next 10 years and become a sustainable city. Various projects from a range of fields have been developed under the NEMP. The fields of energy conservation and air quality control have been playing particularly significant roles in the reduction of CO₂ emissions.

This case study report introduces several unique strategies, as follows, developed under the fields of energy conservation and air quality controls, which contribute to meet the target directly or indirectly.

The City of Newcastle, located in the southeastern part of Australia, has a population of 138,200 and a long history of being involved with the steel industry. Coal extraction, coal-based steel production, and coal-based transport have been the main enterprises of Newcastle's people for 200 years since its European settlement, but recently, as most of the steel making operations close down, the city is being transforming into a post-industrial city, building up its service and tourism sectors.

In accordance with this move, the city's environmental efforts towards the sustainable development have enhanced. In 1995, the City Council embraced a commitment to Local Agenda 21, in response to the development of the Newcastle Environment Management Plan, and it has also made a commitment to the United Nation's Habitat Agenda.

The city organized an international conference on global environmental issues at the local level, called "Pathways to Sustainability", which gathered about 1,000 participants from all over the world last year. Its resolution, "the Newcastle Declaration", is an epoch-making statement made by local government representatives in order to transform the developing and implementing process of Local Agenda 21 into a long term strategic framework for local sustainability.

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THE NEWCASTLE GREEN ENERGY PROJECT

There is much expectation that the Newcastle Green Energy Project will create job opportunities as well as bring environmental benefits to Newcastle City. Its industry is now going through a transitional period, from traditional heavy industry to cleaner industries. The Newcastle Green Energy Project aims to reduce greenhouse gas emissions caused mainly by energy supply and use. More importantly, it aims to make Newcastle City become the technological center of sustainable energy for South-East Asia.

The Council supports 24 strategies under the Newcastle Green Energy Project. These include a variety of strategies to deal with wind-, solar-, and landfill gas-energy, and energy conservation. In each strategy, all the interested parties are brought together to create a partnership. The main partners of those strategies are Energy Australia, the biggest energy retailer in Australia owned by the state government, the University of Newcastle, which is involved in the small wind turbine technology, and the state government. To find partners and financial sources more easily, a staff member of the NCC has prepared a table listing brief information on all of the strategies to show to interested parties.

The following section introduces strategies, which aim to further community awareness of energy use issues and to give people information about advanced technologies concerning renewable energy.

Strategy 1: Illumination Newcastle

At the local level, community participation is absolutely essential to reduce greenhouse gas emissions caused by coal based energy use. Illumination Newcastle is successfully demonstrating the importance of environment friendly energy use in a visible manner. Under the project, 30 of Newcastle's historic sites are illuminated by renewable energy, generated by sun, wind, and landfill gas, supplied by Energy Australia. Approximately 500 kWh of renewable energy per day is needed to illuminate the sites for 4 hours per night. A booklet entitled "Illumination Newcastle", which introduces all the illumination sites with a map, was published, and 10,000 copies were offered for sale in May 1997 to promote tourism as well.

One of the historical sites is illuminated by renewable energy generated by 5 kWh-wind turbine, which is equipped with the small turbine blade technology, developed by the University of Newcastle. It has been already transferred to China, and 15,000 turbine units will be exported there in the near future. This technology is expected to save 19,800 kWh per year and to reduce CO₂ emissions by 18t per year. By using such advanced technology, Illumination Newcastle has been successful in attracting members of community and thereby contributing to raise the community's awareness of environmental issues regarding energy use.

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Strategy 2: Wind Energy: Kooragang Wind Farm

After the community became aware of energy use, they were ready to put their awareness into actions. Australia's largest 600 kWh-wind turbine was constructed on Kooragang Island, which is located 4 km away from the center city, and this has been providing renewable energy to registered households. The Kooragang Wind Turbine (photo) was developed by Energy Australia and completed in October 1997. It generates 1,000,000 kWh of renewable energy, and it is predicted to reduce greenhouse gases by more than 900t per year. The NCC supports Energy Australia in facilitating land acquisition and accelerating the approval of wind turbine development.



Renewable energy generated from the Kooragang wind turbine is distributed to registered households under the Pure Energy Scheme, developed by Energy Australia. The Pure Energy Scheme was first put to a trial in Newcastle for six months, then expanded in March 1997 to all of Energy Australia's customer base, which includes Sydney, the Central Coast, Newcastle and Hunter region. The NCC encourages Energy Australia to develop the project and lets them carry out trials in Newcastle and Hunter region. To support the Scheme, renewable energy is also generated from sun, water and landfill gas, and the largest solar photovoltaic power station in Australia (200kW) has been constructed 80 km inland from the center of Newcastle.

The Pure Energy Scheme provides options to customers to choose from 25, 50, 75 and 100%-use of renewable energy. While the normal price (coal-based generation) is A¢ 10.30/kWh, it costs A ¢ 11.09/kWh for 25%-use of renewable energy, and A ¢ 13.95/kWh for 100%-use. Since the development of renewable energy technology is still at its early stage, renewable energy costs more than normally generated energy, and the premium is being invested to develop much more advanced technology.

At present, approximately 6,500 customers are registered with the Scheme, and the demand is increasing. To provide renewable energy to all the interested customers, the development of additional wind turbines is planned for the near future.

NEWCASTLE CLEAN AIR 2000

Air quality is another major issue to be solved in order to create a sustainable city. Efforts should be made to continually improve the air quality of the region, which used to be very poor because of the heavy steel industry, and CO₂ emissions, mainly produced by individual vehicle use, should be reduced.

The region called Greater Sydney Region consists of Newcastle, Sydney and Wollongong under the same airshed. Since the region is starting to experience severe pollution, mostly caused by vehicle emissions, a non governmental organization called the National Road Motorists Association (NRMA) established a program in 1995 entitled Clean Air 2000

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which aims to promote community awareness of issues regarding air quality and traffic congestion. The NRMA was looking for a partner to work with in the region. Eventually, the NCC and the NRMA jointly initiated the Newcastle Clean Air 2000 (NCA 2000) project in October 1995, and it was officially launched in May 1996.

In Newcastle, motor vehicles account for the majority of transportation, and 75% of all the trips made are by vehicle use. NCA 2000 aims to reduce vehicle emissions in the Lower Hunter region in order to improve air quality and to encourage people to reduce their vehicle use through various strategies.

To meet these aims, NCA 2000 is encouraging individuals to change their vehicle use and promoting the provision of alternative transportation options. A variety of strategies have been initiated under the NCA 2000 project, including the Carshare Program, and the Demand Response Transport Trial.

Two months before the launch of NCA 2000, the NCC interviewed people from the community in order to form a volunteer group called the Newcastle Management Group. A total of 10 members were chosen from the fields of government, business, arts, sport, media, environment, education, industry and the community. This volunteer group advocates and often participates in NCA 2000 strategies.

Strategy 1: Newcastle Carshare Program

The first strategy developed was a 12-month Carshare Trial, launched in May 1996, which aimed to encourage city workers to share rides on journeys to and from their workplaces. It also helps to ascertain what is required to run a successful Carshare Program in the future. Employees of the NCC, the Australian Taxation Office, the Roads and Traffic Authority, and the NRMA were involved in this trial. Interested employees filled out a registration form, which included information concerning the applicant's address, work schedule, and whether the applicant smokes. Applicants were then matched, by computer, with ideal partners. The trial was completed in May 97, and it showed significant results (c.f. Table 1, Graph 1 and 2).

After the trial, the idea of a Carshare Kit was developed in order to keep the Newcastle Carshare Program running. This Kit will be available to all employers and businesses who are interested in developing their own carsharing programs. It includes computer software, a summary of the program, copies of required forms, such as a registration form, hints, and step-by-step written instructions, such as "where to start a program" and "how to load the program into a computer" in order to set up a Carshare program. The completed Kit is to be launched in April 1998, and 20 companies/ institutions around the nation have already expressed their interest in obtaining the Kit to develop their own Carshare Program.

Strategy 2: Demand Response Transport Trial (On-Call Bus Service)- Joint Initiative of NCA2000 and Blue Ribbon Bus

To control community vehicle use, public transportation should be supported, and the development of an infrastructure provides job opportunities as well. Approximately 10 km west of the center of Newcastle, there is a developing residential area called Blue Gum Hills. The population of this area is expected to increase to around 12,000 - 15,000 in 5 years, compared to the current population of 6,000. When an area comes under

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development, new business opportunities are created, especially for transportation companies.

In Australia, the state government runs the public transportation service in the center of the city. The rest of the city is divided up into areas run by public companies. Under contract, a public bus service in the Blue Gum Hills has been operated by Blue Ribbon Bus, one of the oldest bus companies in New South Wales (NSW). In December 1997, the On-Call Bus Service, a joint initiative of NCA 2000 and Blue Ribbon Bus, was launched in the area, and it has been operating successfully.

The catch phrase of the service says "It is your bus". By placing one phone call to the bus company, residents are able to catch a bus anytime and anywhere on regular bus routes within the On-Call Bus Service Boundary, which is the area contracted with the state government. Since the Department of Transportation needs to keep a balance in bus and taxi services, it has been agreed that the service needs to stick to the regular bus routes. The bus fare is the same as that for a regular bus (A\$ 2.60 at most). At the moment, two drivers work in shifts to run one 29-seat bus for the On-Call Bus Service. Approximately 40 people use the service each day, and the numbers of permanent bookings are increasing. The growing demand has already recorded a 15% increase in public transportation use.

One of aims of the service is to encourage the community to leave their cars and chose public transportation, for the future benefit of the bus company. Blue Ribbon Bus has thus developed a unique service, and this helps them to maintain better relationships with their customers as well as to expand their shares of the contracted area.



The environment is also an important key for the operation of the service. When Blue Ribbon Bus decided to operate the On-Call Bus Service (photo), they suggested that the NCC join the project to promote a public transportation system for a better environment. Since NCA 2000 aims to encourage community awareness of air quality issues related to vehicle use and to promote the development of the public transportation system, NCA 2000 and Blue Ribbon have developed an excellent partnership for a successful system.

NCA 2000 staff developed various strategies to put the service on the ground, including designing promotion posters, and it assisted in developing connections between the media and Blue Ribbon Bus in order to help them develop good PR with the community. At the opening ceremony, a member of the Management Group made a speech encouraging community to support the project, and indicated that a realistic and user-friendly public transportation system leads to a sustainable environment.

CONCLUSION

By developing the Newcastle Environmental Management Plan, the NCC takes a comprehensive approach to integrating all projects, covering range of fields, in order to create a sustainable city. Its overall organization of each project, which we have just overviewed, clearly reveals this approach. Another good example of such an integrated

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approach can be seen in the NCC's ongoing project called the Airshed Management Plan, which aims to identify emission sources and concentrations in order to develop an effective and integrated action plan including a variety of strategies such as research, monitoring, and performance indicators.

To make such a comprehensive approach successful, the NCC tries hard to develop strong and flexible relationships with the community, business sectors and any other related organizations. Almost all the projects establish voluntary management groups or project teams consisting of members from the community, business sectors, and any other organizations related to each project. The NCC highly values opinions from outside the Council, and it becomes a flexible coordinator or advisor to help the community move forward and develop an ideal city by themselves and for themselves. It is no exaggeration to say that flexibility leads to sustainability.

Reference:

Newcastle City Council (1997). "Newcastle State of the Environment Report 1996/1997". Newcastle, Australia.

NCA2000 (1996). "Newcastle Clean Air 2000 Fact Sheet". Newcastle, Australia.

Newcastle Green Energy Project

Staff

Budget and Financing

(Many of projects are funded by external sources.)

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Newcastle Clean Air 2000

Staff

One permanent staff from the NCC

Budget and Financing

Annual Budget from the NCC --- A\$ 45,000.00 (A\$ 37,000 for personnel costs)

Founds in kind from the NRMA --- personal support, surveys, materials, computer support, merchandise (e.g. T-shirts and caps for campaigns), and printed materials. (an estimated A\$80,000)

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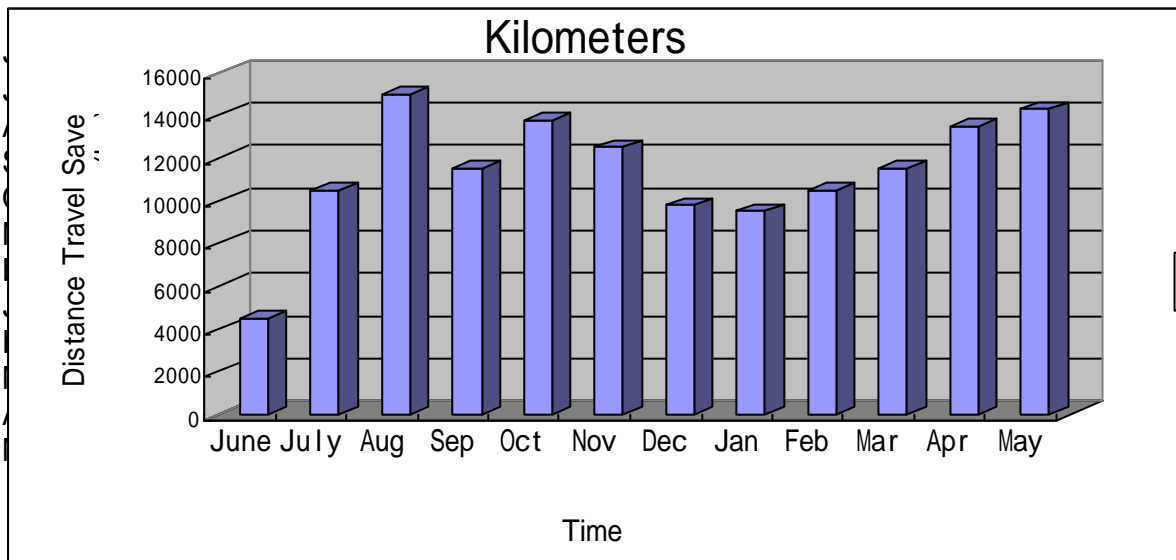
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Table 1: Summary of Newcastle Carshare Trial Results May 1996-97

Total number of kilometers saved	134,176	km
Total amount of CO ₂ saved	33.56	tons
Average kilometer savings per working day	514.08	km
Average CO ₂ savings per working day	0.13	tons
Number of registered carsharers	154	people
Number of registered carshare groups	34	groups
Number of Green Travellers (bus, train, bicycle, walk) - estimated	>100	
Total number of participants - estimated	>200	

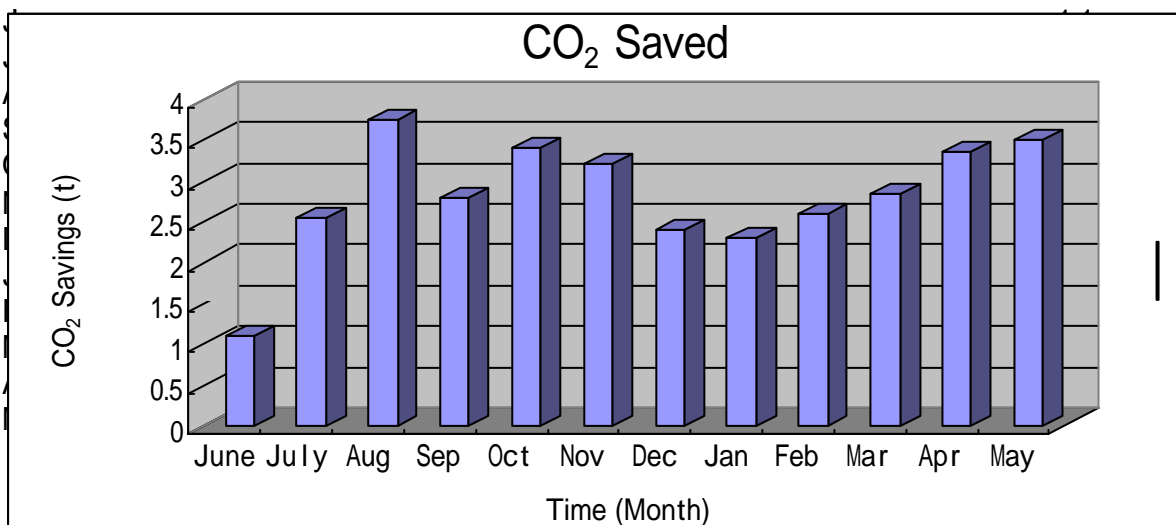
Source: Newcastle City Council

Graph 1: "Kilometers Saved" through carsharing during Newcastle Carshare Trial



Source: Newcastle City Council

Graph 2: "CO₂ emissions saved" during Newcastle Carshare Trial



Source: Newcastle City Council