

# 2 Energy Conservation

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Council recognizes that planned, conservative use of electricity and other energy sources leads to a healthier environment, lower costs of supply, and extended access to non-renewable resources for future generations.

## The Issues:

The unsustainable rate of consumption of non-renewable resources and the release of pollutants formed as by-products of energy use and production are major global problems, particularly in the Northern Hemisphere. We in sunny, spacious Queensland remain largely unaware of the exorbitant costs and environmental contamination incurred in those parts. The need to travel relatively considerable distances or to use air-conditioners, for example, tends to insulate us from the wider problem.

Australia is the third highest energy-consuming nation per capita in the world (LGTCQ, 1989). The nation is only 60% self-sufficient in oil and becoming less so as demand increases, while supplies decrease and become more expensive to produce and distribute. Most electricity is produced by coal-burning power stations, which contribute significant amounts of greenhouse gases and other pollutants. Hydroelectric stations, in contrast, supply much smaller amounts of electricity, and while cleaner, will always be needed in addition to rather than instead of the coal fired stations. Additionally, hydroelectric power generation has led to flooding of forests, interruption of wildlife corridors and disruption to stream biota and flow regimes.

There is insufficient promotion of strategies for energy conservation or demand management, yet such measures could lead to significant energy savings. It is estimated that for every \$5 spent on energy conservation, \$15 is saved by reducing the need for new supplies (Qld Conservation Strategy, 1989). A recent 'energy audit' of the (23 yr old) Darwin Civic Centre and (10 yr old) Casuarinas library identified measures which, without causing any disruption to comfort or productivity, would save over \$75,000 on annual energy bills, ultimately paid by the community. The savings would recover the cost of implementing these measures within two years (GHD News, 1992). Other opportunities for reduced demand on existing energy resources are available through energy-efficient building design, including the use of solar energy, for which Townsville is ideally situated. Recently, the Queensland Energy Supply Industry published its

Energy Conservation Strategy. While this is a start and should be encouraged, there is still a long way to go before energy conservation is systematically and routinely pursued by many people and institutions.

Recent initiatives undertaken by Council include the sponsorship of energy audit seminars for residents (including industry), and placing fuel efficiency as a major consideration when considering vehicle replacements. It is currently pursuing avenues by which it may assist the Townsville Energy Action Group's (TEAG) "Lightsaver" scheme, which seeks to promote the use of the highly efficient compact fluorescent globes. Provision of, and commitment to improve, the substantial bike-path network, and commencing an extensive review of the City's public transport system are further attempts to make Townsville more environmentally responsible.

The objectives for Energy Conservation in Townsville are to:

- Become more efficient users of energy; and,
- Promote, where practicable, the use of renewable sources of energy.

## Areas for Council Action:

In an effort to become more environmentally responsible with respect to energy conservation, Council should consider the following:

- Encourage compact urban development and close association of transport services, housing and work place. (PD)
- Establishment of an integrated, user-friendly and energy-efficient public transport system. (OA: PD: ENG)
- Increased provision and upgrading of pedestrian paths and bikeways, especially for commuters. (PD: ENG: ENV)
- Promote energy-efficient building design. (PD:OA)
- Promote suitable landscape design to facilitate natural cooling. (ENV: PD)
- Choose smaller, more fuel-efficient vehicles where possible. (COR)
- Conduct an energy audit of council buildings and facilities. (ENG: COR: PD)
- Install solar technology whenever the option arises and ensure there are no restrictions on the community to do likewise. (ENG: COR)

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Encourage solar powered hot water systems when people replace their electric hot water systems. This will result in a drop of 30% of household electricity consumption. (ENV: PD)

Lobby state government to introduce subsidies for alternative power and technology use and development. (ENV)

Promote the use of low energy rated appliances. (ENV:OA)

Encourage natural gas usage where possible. (ENV:OA)

In conjunction with NORQEB, promote and implement energy conservation practices in industrial, domestic and commercial situations using booklets and mobile displays in shopping centers etc. (ENV)

### **Areas for Community Action:**

Replace the bulbs in the most used lights with an energy-efficient compact fluorescent bulb.

*Shadier houses are cooler houses.*



When replacing or buying white goods, choose the most energy efficient option available - the more stars the better. Contact NORQEB for advice.

Use a bicycle for short trips or walk to the shop instead of driving whenever possible.

Install a solar-powered hot water system.

Conduct a household energy audit to identify actions and savings on energy conservation. For information on how to do this contact the Councilor TEAG.

### **Areas for Research:**

Increasing the efficiency and practicality of alternative, renewable energy supplies, particularly through solar technology.

Energy efficient building design that is financially and aesthetically acceptable.

# 3 Accelerated Climate Change

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Council recognizes the impact to the City if climate change predictions are accurate and will take steps to prepare Townsville for such consequences. Council supports measures to reduce the emission of greenhouse gases, which pollute the atmosphere.

## The Issues:

The Enhanced Greenhouse Effect refers to the warming of the atmosphere caused by an increase in the accumulation of certain gases, mainly carbon dioxide, methane, CFC's and nitrous oxide. These gases allow sunlight to reach the earth, but trap the heat in the atmosphere, causing a warming effect. The build up of greenhouse gases is principally due to the burning of fossil fuels and the destruction of vegetation, which absorbs carbon dioxide. Although these gases are increasing in the atmosphere, there is still uncertainty about the long-term effects and whether the predictions of global warming and subsequent effects on sea level are correct.

One prediction is that by the year 2030 at the present rate of greenhouse gas increase, there will be a global temperature rise of 1.5-4.5 degrees Celsius, which will affect a sea level rise of 20-50cm (Clark, 1991). Along with that, the climate is predicted to become more extreme with a change in rainfall pattern and cyclone frequency. If climate change occurs, soil moisture levels and runoff rates may increase. Overall, Townsville may face increased risks of storm-surge and rainfall flooding in the low-lying areas, an increase in summer rain and decrease in winter rainfall, and increased cyclonic activity. However, as Townsville is built on a flat flood plain, much of our City's infrastructure cannot be easily changed.

Council personnel continue to monitor the scientific literature concerning accelerated climate change and stand ready to act upon the best available advice. The on-going urban forestry program has practical benefits in the form of improved air quality as well as aesthetic benefits. The comprehensive waste-disposal programs being developed by Council should negate the need for backyard incinerators, which will also help improve air quality. In conjunction with the City of Thuringowa, a Counter Disaster Plan has been developed in order to cope with problems caused by cyclones and storm-surges. Increased energy efficiency will become a work-place priority.

The objectives for addressing Accelerated Climate Change are to:

- Reduce the amount of greenhouse gases emitted from Townsville;
- Apply planning controls over development that may be at risk from climate change; and,
- Increase vegetative cover to improve air quality and soil stability.

## Areas for Council Action:

To address the above issues, Council should consider the following actions:

- Monitor the scientific debate relating to the Greenhouse effect and periodically review the minimum floor level datum as necessary. (ENG: PD)
- Review flood analysis maps indicating probable flood damage in the event of sea level rises from 20cm to 50cm. (ENG: PD)
- Encourage the preservation of vegetation cover by adopting vegetation clearance controls. (ENV: PD)
- Reduce the reliance on fossil fuels (see Energy Conservation section) by promoting alternative energy sources, energy efficient building and subdivision design, and a more convenient public transport system. (ENV: PD: COR)
- Assist Greening Australia and other groups with re-vegetation programs. (ENV)
- Review measures to restrict the use of private incinerators. (ENV: PD)

## Areas for Community Action:

- Use energy derived from fossil fuels (including electricity) sparingly and more efficiently (see Energy Conservation). Get involved in tree-planting programs. Avoid the use of incinerators. Implement actions given in other chapters. Be informed about Accelerated Climate Change and Stay abreast of developments in this issue.

## Areas for Research:

Townville's geography places it at risk should sea level rise or cyclonic activity increase in frequency or Intensity. State of the art computer modeling of such scenarios needs to be married with land-use information to determine the nature and extent of impacts and planning requirements.



*Planning for the city's future recognizes potential problems climate change may bring such as high tides and storm surges in low-lying areas.*

### ***What is the difference between the greenhouse effect and ozone depletion?***

*The greenhouse effect (or accelerated climate change) and ozone depletion are separate problems, but both are caused by atmospheric pollution. The greenhouse effect is caused by an accumulation of gases such as carbon dioxide, providing a layer of "insulation" and trapping the sun's heat in the lower atmosphere. This is a natural process, and supplies plants with carbon for growth. Due to this effect the planet retains enough of the sun's heat for life to exist; without it there would be vast extremes of temperature. However, scientists are worried by what they call the enhanced greenhouse effect. This is postulated to occur due to too much greenhouse gas (carbon dioxide, methane etc.) building up in the lower atmosphere at a rate surpassing the uptake by plants.*

*The impacts can only be predicted as yet (until they are evident), but most researchers in this field agree that there will be an increase in average temperatures, resulting in altered climatic patterns and a rise in sea level.*

*Depletion of the ozone layer occurs high up in the stratosphere. The ozone layer protects the earth from harmful ultraviolet radiation. Without this UV filter, life as we know it would cease to exist. Pollutant chemicals, such as CFC's, can destroy the ozone molecules and reduce the effectiveness of the filter against ultraviolet radiation.*

*Ozone can also occur in the lower atmosphere as part of smog. In this situation it is a serious respiratory irritant, is not broken down by CFC's and other chemicals and does not contribute to the ozone layer in the upper atmosphere. Instead it contributes to the greenhouse effect as a lower atmosphere pollutant.*