

McDonald's Riccarton

An ECOsystems Case Study

How this restaurant reduced energy consumption by more than 20%



SAVING ENERGY AND THE ENVIRONMENT

ECOsystems was established in 1995 to save energy and the environment. Since then, we have won five National awards for our energy efficiency projects, including an award for our projects with McDonald's.

Our vision is to enable our business partners to control their energy efficient building services from wherever they choose, to minimise energy use, save the environment and maximise comfort and security.

- Reduce Energy Costs
- Simply control your lighting, heating, cooling, appliances and hot water from a web browser
- Reduce harmful greenhouse gases

ECOsystems Limited
59—61 Marsden Street
P O Box 44 121
Lower Hutt
New Zealand
Phone +64 4 566 3666
Fax +64 4 566 0666
Email info@eco.co.nz

www.eco.co.nz



In December 2004, McDonald's Riccarton commissioned ECOsystems to install an energy efficiency upgrade in order to reduce energy consumption at the site.

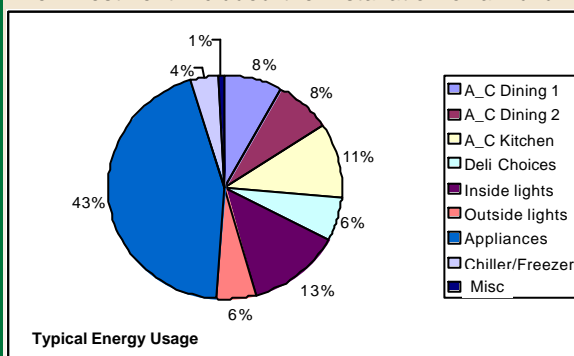
The project began with an energy audit which identified where the energy was being used and recommended what measures could be implemented to reduce costs. It identified the total capital costs and the likely payback.

The investment included the installation of a Building Management System, integrated with a C-Bus lighting control system which we collectively term our Energy Automation System or EAS.

Even when McDonald's new *Deli Choices* was added, after three months running under EAS control, savings have continued to surpass expectations.

The chart to the left shows the energy usage breakdown in each area, for a typical McDonald's Restaurant.

Savings are achievable in all of these sectors.



Indoor Lighting Control A C-Bus Lighting Control System is now controlling all lighting in the restaurant.

Control is provided from a touch screen.

The dining lights are controlled via a time schedule allowing them to run during store hours only.

An override button in the touch screen is available if an extension is required to store hours.

The kitchen lights are turned on one hour before trading by the EAS and are turned off with the 'Exit Store' button on the touch screen.

The McCafe lights are controlled automatically by a schedule.

The playland lights are turned on and off through their schedule and based on light levels.

The lights in the toilets, utility area, storage and scullery are controlled by an occupancy sensor and will switch off after a specified time if no-one is present.

The change room lights and crew room are on timer switches. These allow the lights to be turned on and off like a normal switch, but will time out after a selected period.



The ECO Power LED specially developed by ECOsystems, was installed in the restaurant.

It was designed for minimal energy consumption, using only 3W compared to a traditional halogen using 50W while it also has an increased lamp life of up to 100,000 hours compared to 3,000 hours for a traditional halogen.





EAS benefits include -

- Simplification for crew
- Increased staff safety
- Lower Maintenance costs
- Free cooling
- Reduced energy costs
- Increased merchandising
- Improved food safety

Outside Lighting Control The EAS controls all outside lighting through the C-Bus Lighting Control System.

Signage lighting switches on at the correct times for increased merchandising.

The lights controlled by the ambient light level and the trading hours time schedule, are staged on in four different groups at different light levels.

Outside lighting operates in the car-park until staff are safely in their cars at night.

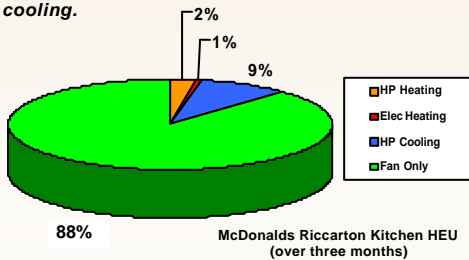


Air-conditioning The Energy Automation System controls the kitchen, the two dining and play-land air conditioning units.

The units have adjustable dead-bands which take into account the outside air temperature and any load-shedding required to reduce line charges.



The graph below shows that 88% of the time, the kitchen was cooled using free cooling from outside air. Significant savings are achieved by using free cooling.



Appliances The EAS controls the appliances to ensure that they can only start up when they are scheduled to and are automatically turned off when not required.

No more manually turning all appliances on before the scheduled warm up time! Result: energy savings, increased staff safety and lower peak demand.

If you would like further information on how ECOsystems can improve the energy efficiency of your site please contact us on +64 4 566 3666 or view our website www.eco.co.nz



Freezer and Cool-Room Control The system monitors the temperature of the freezer and cool-room, the status of the doors and controls the compressor and evaporator fan.

To protect food safety and prevent unnecessary cooling, the system will alarm if the freezer or cool-room door is left open for more than 15 minutes outside of delivery periods.

The EAS will check the demand is not above pre-determined levels before de-icing to minimise expensive line / demand charges.

Alarms The system can send an alarm to mobile phones when certain conditions occur.

An alarm can be activated for any instance such as if the freezer temperature stays above a specified set point for more than a given time, or if the ceiling hatch is left open which can result in energy wastage into the roof space.

Maintenance ECOsystems provides full ongoing maintenance contracts. These can be tailored to your requirements and include free phone support.

We recommend a maintenance contract to ensure the savings are maximised.

Where we identify opportunities to further refine the program for additional savings these are implemented as part of the maintenance.

Any new technologies or products that are found to further reduce energy consumption will also be put forward.

Load Shedding Electricity is charged for in two parts, the actual energy consumption in the restaurant and a line charge.

The line charge is a measure of the rate at which the energy is being used. This is measured every half hour.

The Energy Automation System monitors the pulse from the meter and predicts what the load will be for that half hour period.

The system then adjusts operating levels of equipment to reduce the load during high line charge periods.



Customer Feedback

"...McDonald's is a very busy and dynamic working environment.

Our managers have a difficult and stressful job to do and they can be resistant to change and interruptions to their busy schedule.

Throughout the entire ECO project Cameron (Hawkins) [ECOsystems Project Manager for the Riccarton project] has been professional and courteous.

He has communicated effectively and followed through with his promises.

I have appreciated his positive and polite attitude towards my people and myself.

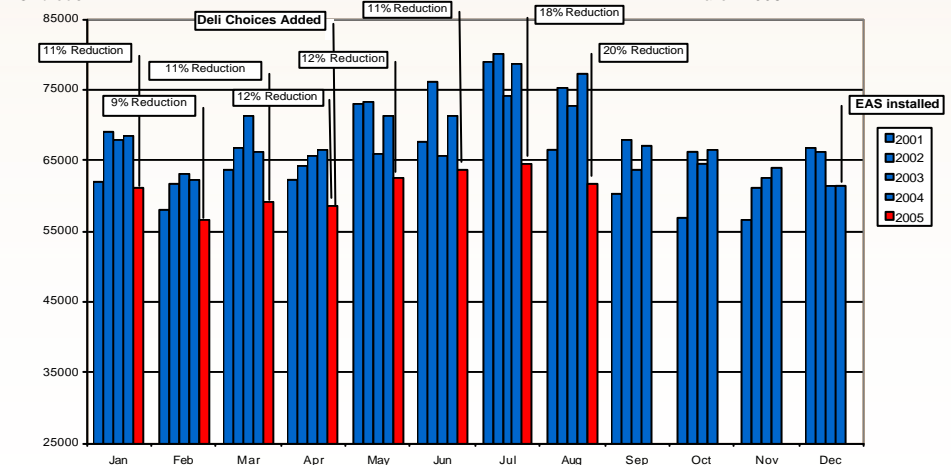
I'm sure he had his challenges but he was cool under pressure and put the interests and operations of the restaurant first.

Thank you."

Murray Traill, Owner / Operator McDonald's Riccarton

Note: Energy reductions were on top of the increased energy usage caused by Deli Choices.

McDonald's Riccarton Monthly kWh used - Electricity



The project was started in December 2004, and install was completed by the 1st of March 2005.