

Tavern energy review

QMDC completed an energy audit on a tavern located in the Southern Downs region. The tavern consists of a bar and restaurant area and four motel rooms in an adjacent building.

Background

The owners of the tavern requested an energy audit to determine existing energy consumption and to establish ways in which energy savings could be achieved.

During the year ending November 2014, the tavern consumed **134,476 kWh** of electricity, emitting 97 tonnes of carbon and costing the owners **\$31,410**. An energy audit identified potential energy efficiency cost savings worth an estimated **\$9,243** per annum with an average payback period of 3.6 years. These savings represent nearly 30% of the current energy costs at the tavern.

Analysis of the tavern's energy usage established that the major loads for electricity consumption were refrigeration, air conditioning and lighting.

The main users of gas were hot water systems in the motel rooms and cooking equipment in the kitchen. No significant opportunities were identified to reduce gas usage, therefore the audit focused on opportunities to reduce electricity usage.

Refrigeration

The current refrigeration system consists of a number of separate cold rooms, fridges and freezers. The bar area contains several separate display fridges as well as a cold room that stores bottled beers and soft drinks. Another cold room contained the beer kegs. A third cold room was utilised in the restaurant area to store food, while an upright freezer and a chest freezer were also used to store frozen food. Another tall display fridge was used as additional storage for soft drinks in a back room area.

It is more efficient to run one full fridge or freezer than two half-filled fridges. Therefore it was recommended that refrigerated storage be restructured and consolidated in order to achieve energy savings. The soft drink display fridge being used as storage could be removed altogether and

the cold room reorganised to improve efficiency. It was further recommended that the two freezers be replaced by one larger and more efficient unit.

Lighting

It was recommended that lighting be changed to LED globes and tubes wherever possible. The implementation of LED lights can achieve a substantial saving of up to 60% of the current consumption of the existing lights. Additionally, it was recommended that some of the lights in the display fridges could be removed altogether if they were not considered to be beneficial to either staff or patrons.

It was further recommended to install motion sensors in toilets, storage areas and cold rooms to prevent lights being left on unnecessarily.

Air conditioning

The air conditioning units were relatively new and efficient, therefore replacement was not considered to be financially worthwhile, however it was recommended that in the event of failure of the existing units, it would be more efficient to install a multi-head unit with one outdoor condenser connected to several indoor units.

Other recommendations

- Implement a maintenance schedule to ensure that seals and condenser coils are kept clean and thermostats and control are calibrated correctly
- Avoid stacking cartons around refrigeration units that would impede airflow
- When purchasing new appliances, look for equipment with a high energy star rating that will save money on running costs over the long term
- Defrost freezers when ice is more than 4mm thick

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