

## Energy Efficiencies Kooweerup Regional Health Service, Australia

### GGHH Agenda Goals

- Energy

### Hospital Goals

- Reduce energy costs
- Reduce carbon dioxide emissions

### Progress Achieved

- Installation of solar panels for hot water
- Installation of ozone technology in laundry to reduce need for hot water washing
- Solar tunnels across organization
- Light Sensors in all clinical storage areas
- Review of lighting across the organization undertaken 2014- 2015
- Application of reflective paint to reduce heat load
- Establishment of Environment committee
- Staff awareness and education within induction,
- Switch off campaign (SEHCP) stickers on pcs to remind staff to shutdown computers, switch of lights
- Partnerships with health, education, local government and community agencies to support climate change/environmental sustainability initiatives such as Enliven – primary care partnership, Deakin university, Cardinia council, Kooweerup Mens Shed.
- Community workshop held - Sustainable homes program –focused on Energy
- Financial benefits – The Killara unit savings of USD \$1922 (AUD \$2500) per annum with a return on investment of 4 years. Maintenance cost savings TBA.
- Environmental benefit – saving 28,500 kWh, 100 gigajoules of energy, 38 tons of carbon emissions (tCO<sup>2</sup>-e)

### The Issue

Health Services use a lot of energy to deliver services to their communities. By conserving this resource through infrastructure, engineering, education and behavior change, KRHS aims to conserve their resources. Implementation of renewable energy sources can only be delivered within the restraints Health Services have through Government conditions re energy contracts and investments in infrastructure.

Lighting throughout the health care complex consists of T8 fluorescent tubing, compact fluorescent tube (CFL) bulbs, halogen downlights and outside spot lights. This is still energy intensive lighting and is used 24/7 and has its carbon intensity costs. Shorter lifecycle of CFL lighting creates higher maintenance costs. Disposal of end of life of CFL lighting creates mercury contamination issues. The lighting use is not optimized for best cost/benefit efficiency or making use of solar daylighting. Fig 1 solar

There is a lack of awareness or understanding of conserving energy within some staff. Environmental sustainability is seen as an optional extra and not core business of the health service which results in some staff not fully engaged with energy efficiency making behavior change therefore implementation can be difficult and consequently reduce any savings.

### **Sustainability Strategy**

The solution is to engineer out the problem, this is through a multi-pronged approach

- Use of renewable energy from solar panels
- Converting laundry to ozone technology which reduces need for hot water and strong chemicals
- Sensors in clinical store areas, communal areas such as bathrooms, staff rooms with view to install sensors gradually across the organization.
- Application of reflective paint to reduce heat load in summer reducing energy costs for air conditioning
- By implementation of an LED lighting upgrade pilot program, leading the way to a full implementation of the whole facility. This pilot was done on the resident's wing (Killara Unit) on the complex where lighting is used around the clock. This pilot makes it easier to measure outcomes for further implementation.
- Staff awareness of our overarching environmental sustainability goals embedded within induction process and staff communications such as agenda items at meetings, newsletters, website, community environmental initiatives for example Energy workshops for sustainable homes

### **Implementation process**

In 2007- Hospital board and senior management developed strategic plan to include health promotion and environmental sustainability which included paradigm shift from clinical model of care to a more holistic model, major investment in infrastructure including the installation of Solar panels for hot water. Construction of new section of Health service – sensor lighting, solar tunnels to corridors completed in 2008.

Laundry staff education and installation of ozone washing machines in 2009

Establishment of Environment Committee 2010 – EMS 2011

Staff education and switch off campaign – 2010- 2011. Staff awareness and education embedded into new staff orientation and induction program 2011. Twice yearly staff education on Climate Change and health commenced 2012.

Lighting audit pilot program was implemented in 2014 by a sustainability practitioner to ascertain lighting types, consumption, time of use, manual operation policies, its operating costs, and maintenance and lifecycle costs. Energy billing and maintenance department verified lifecycle of lighting. This was to ascertain the viability of such a project. The quoted cost of the pilot LED upgrade gave an indication of expected life cycle of the new lighting system, and the potential return on investment (ROI).

Undertaking a carbon inventory report on the lighting highlights the carbon intensity before and the expected carbon intensity reduction post installation.

The implementation was initiated by the CEO and Health Promotion management, Evaluation and monitoring each stage is undertaken, ongoing data collection and review

### **Tracking Progress**

Staff awareness – staff survey to be undertaken. Environment standing item on Head of Department meeting to ensure key staff are aware of initiatives and progress.

Follow up spot check sample lighting audits measuring timing of lighting controls in different areas to compare against initial baseline records.

Staff education sessions have not been embedded as yet into Education program and were the first to be taken off the agenda due to competing priorities and lack of staff capacity. However this will be remedied with new Education program.

### Challenges and lessons learned

Energy efficiency projects get a harder time of proving a business case when the energy suppliers lower the variable cost of energy and raise the fixed costs of energy.

Also bulk energy pricing contracts keeping pricing low does save energy costs, but not energy consumption and the corresponding carbon emissions intensity. In effect the energy saving measures is reduced by half and the corresponding ROI is doubled. A small pilot project first is very important to sorting out possible technological unintended consequences. It is worth getting as much lighting audit data as possible beforehand to calculate consumption and savings, as LED lighting suppliers are not good at giving accurate ROIs as they are too far removed from the process. Undertaking a carbon inventory report of the whole organization is a great benchmark to start with.

Ensuring leadership and good governance to include environmental sustainability as key to the Health Services' strategic plan can be challenging but essential to integrate it to core business. Enabling dedicated resources, time and staff (includes upskilling of staff) to support the work in climate change is important. Creating awareness and capacity building of staff in environmental sustainability is challenging, particularly to enable staff to see their contribution is important and a core part of their work, this remains a challenge with competing priorities across the organization.

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### Next Steps

The implementation of the LED lighting upgrade throughout the whole Health Service. Lighting control systems pilot implementation to ascertain potential further savings. As behavior change is more difficult to implement, manage and maintain, engineering out these in-efficiencies are considered to be most effective. This will be done in conjunction pilot projects using targeted sky lighting upgrades, repurpose/recycle some existing skylights to more appropriate locations.

Increasing staff awareness of environmental achievements through visual boards and information through the "Green champions", health service newsletters website and meeting agenda items.

### Demographic Information

Kooweerup Regional Health Service (KRHS) is a 72 bed, small rural health service, covers the Outer South Eastern Melbourne and adjacent rural areas i.e. the residents of three LGAs [Casey, Cardinia and Bass Coast]. It is the only hospital within the shire of Cardinia.

As a Multi Service agency, KRHS provides a range of Hospital and Community based Services which include Acute Services (general medical, rehabilitation, palliative care, emergency respite). Early Parenting Unit, antenatal care and Family focused programs including psychology. Extended care (Nursing home and Hostel beds (including a 14 bed secure dementia unit). Respite care short day stay and extended including dementia care, General Practice medical clinic



Cleaning of the roof at Killara prior to reflective paint application

Outpatient care (Specialist Consultants- Cardiology, Podiatry, Social Work, Physiotherapy, Occupational Therapy, Dietician, diabetes clinic, Contenance advice and Wound management

Community Services (Health Promotion, District Nursing, Diabetes Management)

Kooweerup Regional Health Service is a Health Promoting Hospital which has reoriented its services to become increasingly responsive to the needs of the Community and providing support for Community engagement through projects such as the Community Garden and Men's Shed.

**Links** [www.kooweeruphospital.com.au](http://www.kooweeruphospital.com.au)

**Quotes:**

Ms Terrona Ramsay

Ms Aileen Thoms

Mr David Rasmus

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