

Electrical Power Grey's Hospital

GGHH Agenda Goals

- Energy

Hospital Goal

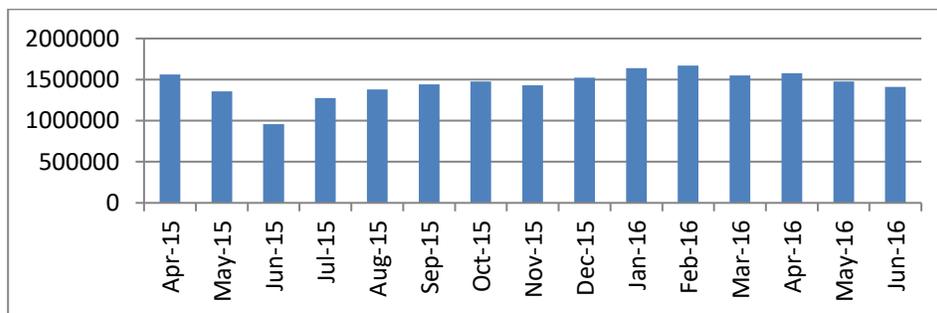
- Reduce energy costs
- Improve monitoring of energy consumption
- Create awareness
- Reduce CO² emissions

Progress Achieved

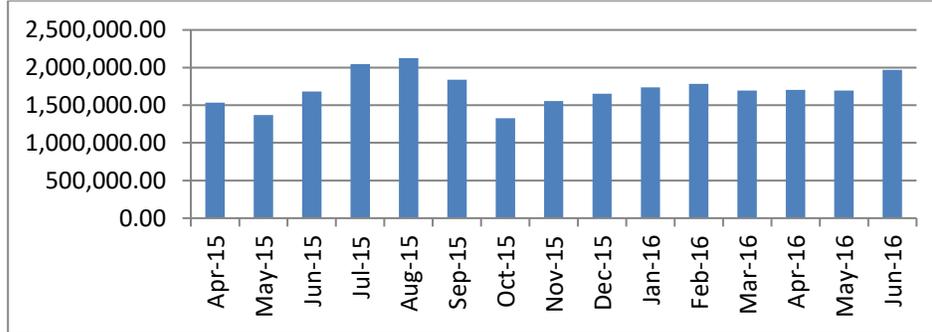
- Financial benefits: residents of the Doctors Quarters are to be billed on a monthly basis which will add to the hospital's revenue. Furthermore, reduction of the hospital's maximum energy demand realized a saving of over USD \$20,000 (R270,000) per annum.
- Environmental benefits: owing to the reduction of the maximum energy demand, there is a reduction in CO² emissions.
- Other quantitative benefits: the installation of a "Check meter" on the 11 000 Volt system acts as a control measure to verify the municipality's electricity bill.
- Greater awareness and control of electricity usage is created in the Doctor's Quarters and in the hospital as a whole. Grey's Hospital's electrical consumption (kWh) has decreased significantly over the months.

Accompanying graphs denote:

1) Electrical consumption (kWh units) over the months: April 2015 to June 2016



2) Cost of electricity (in South African Rand) over the months: April 2016 to June 2016



NB: The total electricity bill for 2016 had increased, although the units consumed had decreased. This is expected due to the increased tariffs charged during the peak demand periods (June, July & August – Winter months).

The Issue

From the inception date of Grey's Hospital in 1984, the residents of the Doctors Quarters were not billed for electricity consumption. The electricity consumption cost was adding to the overall municipal bill. As a solution, individual kWh meters were installed to record the consumption of each unit. Payment for electricity usage will thus ignite awareness so that electricity is utilized sparingly.

Grey's Hospital was billed for a notified maximum energy demand of 4617 kVA prior to November 2015. Subsequent to the installation of the meter it was discovered that a maximum demand of 3500kVA will suffice for the hospital. The local municipality was requested to base their access charges on a notified maximum demand of 3500kVA.

Sustainability Strategy Implemented

The Electricity section of the Maintenance Department of Grey's Hospital investigated the distribution boards that fed each living unit at the Doctors Quarters. Circuits were separated so that each kWh meter will record consumption of a specified unit. Owing to space restrictions in the distribution boards, the single phase digital clip-on kWh meters were ordered and installed. A total number of 42 meters were installed by the electricians of my hospital, thereby assisting in cost containment. The staff of the electrical department bought into this project and displayed ownership qualities. The meters are read at the end of each month. Bills will be drawn up by the Finance Department of the hospital and forwarded to the residents for payment at the end of each month.

The municipal electricity bills were monitored over a period of two years. Discrepancies were discovered and this prompted Mr. M.S. Naicker (Chief Engineer) to install a check meter as a control measure. It is a usual practice in the Electrical Industry to install a check meter when bulk consumption is metered. In Grey's Hospital, metering is done on the 11 000 volt system. The installation of medium voltage metering is outsourced to a contractor in the municipality. An order was initiated to the same contractor as the one that the municipality utilized. An identical meter to that of the municipality was installed and programmed. This exercise prevented any disparities in the installation techniques between Grey's and the municipality. The municipality provided a dedicated SIM card which enabled the hospital and the municipal official to read the meter remotely. The hospital's Electrical Supervisor oversaw this installation and showed a great deal of

enthusiasm upon completion. The kWh and kVA readings are recorded at the end of each month and compared to that on the municipal bill to detect any discrepancies.

Implementation process

The total kWh consumed by the residents of the Doctors Quarters for the month of July 2016 equated to 19 042 units. The monetary value of 19 042kWh amounts to USD \$1,600 (R21 708.00). An additional revenue of ± USD \$1,600 (R21 708) per month is to be received by Grey's Hospital. The reduction of the hospital's Notified Maximum Demand from 4617kVA to 3 500kVA realized a saving of USD \$1,700 (R22 668.44) per month on the utility bill due to analyzing the check meter readings.

Challenges and lessons learned

Executive Management "buy-in" was vital as it allowed for management to fore-see long term benefits and the necessary funds to procure the required items and services needed. Budgeting and finances are the cornerstones of any successful project which in this case was found to be a challenge. However the sustainability team proved to be innovative and creative by working within the limited resources available to them. There was utilization of in-house skills, reduced costs and promoted technological development of staff. The initiative required the involvement of staff to be part of the solution and not the problem.

Next Steps

- Individual metering of wards and departments.
- Installation of energy saving lights within the hospital and parking areas.
- Improvement of the Power Factor on the electrical network to reduce consumption.

Demographic information

Grey's is a Tertiary Academic Hospital, located in Pietermaritzburg, Kwa Zulu Natal, South Africa. Grey's Hospital is linked to the University of Kwa Zulu Natal. The usable floor area of the buildings is 102 161m². The hospital is located on a 17 hectare piece of land. The hospital caters for 505 in-patient beds. The institution is providing services to five districts with an estimated population of over 3.5 million.

Quotes:

- Lead, inspire and stay focused.
- Challenge and question whatever comes your way.

Submission Date: December 2016