

*Green there done
that!*

Eco Efficiency Program

Presented by

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Establishment of the Carbon Management Unit

The primary focus of the Unit is:

- To administer the Government Energy Management Strategy
- Rollout across Queensland Energy and water reduction initiatives (Eco Efficiency Program)
- Ensure a consistent co-ordinated approach to energy and water management
- Form part of a broader environmental governance
- Provide annual reporting

The Queensland Health Eco Efficiency Program Scope

- The main scope of the program is to introduce Energy Conservation Measures to reduce demand on:
 - Electricity and Gas usage
 - Water usage
 - Greenhouse gas emissions
- Introduce renewable and/or green energy technologies
- Upgrade and improve Building Management Systems

Methodology - *Energy Performance Contracting*

Carbon Management Unit has adopted *Energy Performance Contracting* as the preferred methodology to rollout of the statewide program.

The Carbon Management Unit, have created a Panel of Energy Service Companies (ESCOs) to manage EPCs and are required to demonstrate:

- previous experience
- the financial capabilities to sustain a financial guarantee.

BENEFITS

- **Internal Rate of Return (IRR) of 12%+ on investment**
- **Total Project Cost (TPC) provided as a post budget adjustment repaid by the energy and water savings under a guarantee**
- **All savings achieved are retained by the participating facility**

A Case Study of Logan Hospital



Evaluation Team

- It is important to have the right level of approval and support before proceeding with any project – EPC is no exception.
- The evaluation team consisted of the following members:
 - District Manager
 - District Engineer
 - Carbon Management Unit
 - Invited representatives

Total Project Cost & Savings

Total Project Cost - **\$1,381,080**

Total Project Savings - **\$220,020**

- Capital Cost = \$1,353,580
- DFS & EPC Costs = \$27,500
- M & V Costs x 5yrs = \$25,000
- IRR = 18.68%
- Payback period = 6 years

PROJECT OVERVIEW

Total Project Cost & Savings

Utility Savings:

	Electricity	Water	Gas
	kWh	KL	GJ
Total savings	2,125,482	32,248	2400
Total usage	11,339,198	85,649	4289
Percentage saved	18.7%	37.6%	55.9%

Types of Energy Conservation Measures

- **LIGHTING** – retrofit and replacement of entire fluorescent lighting system with long life Triphosphor lamps (approx 2,500)
- **HVAC** – upgrade to entire system that will incorporate the installation of VSD's to cold and hot water pumps, condensers, air handling units; install heat pump central hot water generation system and high efficiency motors
- **BMS** – upgrade existing system to include more advanced control features to optimise the existing equipment for maximum energy efficiency

Types of Energy Conservation Measures

- **WATER MANAGEMENT** – Harvesting, recycling
- **RENEWABLE ENERGY** – installation of a grid connected solar photovoltaic (PV) system to produce electricity for the consumption of the main hospital.

The 10 kW PV system will be installed on the roof of the main hospital building.

A Case Study Of Hervey Bay Hospital



PROJECT OVERVIEW

Total Project Cost & Savings

Total Project Cost - **\$955,030**

Total Project Savings - **\$123,718**

- Capital Cost = \$933,030
- DFS & EPC Costs = \$22,000
- M & V Costs x 5yrs = \$12,500
- IRR = 12.51%
- Payback period = 6 years

PROJECT OVERVIEW

Total Project Cost & Savings

Utility Savings:

	Electricity	Gas
	kWh	GJ
Total savings	1,534,119	1721
Total usage	6,473,103	3385
Percentage saved	23.7%	50.8%

Types of Energy Conservation Measures

- **BMS** – upgrade existing system to include more advanced control functions including energy management and load shedding, air conditioning, medical gases, water heating and steam production. The system is also accessible to staff through remote access 24 hours a day, 7 days a week.



Energy Conservation Measures

LIGHTING – retrofit and replacement of entire fluorescent lighting system with long life Triphosphor lamps (approx). Install movement sensors and PE cells at loading dock.

WATER MANAGEMENT – water is being recycled more efficiently for air conditioning and irrigation purposes. Water use has been lowered through the installation of more efficient fittings such as flow restriction devices.

Guaranteed Annual savings and energy efficiency

Facility	CO ² tonnes	Electricity (kwh)	Gas (Gj)	Water (Kls)
Bundaberg Hospital	1,045	1,029,974	417	18,330
Cairns Hospital	1,251	2,365,658	871	62,780
Gladstone Hospital	857	809,444	2,914	4,974
Hervey Bay Hospital	1,625	1,534,119	1,721	n/a
Ipswich Hospital	4,154	4,103,055	n/a	23,400
Logan Hospital	2,253	2,125,482	2,400	32,248
Mackay Hospital	1,605	1,439,926	2,892	12,787
Nambour Hospital	3,206	4,242,777	n/a	23,500
Redcliffe Hospital	2,657	2,492,777	n/a	18,000
Caboolture Hospital	2,309	2,444,722	n/a	8,840
Rockhampton Hospital	1,442	1,363,579	1,492	23,406
RB&W Hospital	555	524,520	n/a	n/a
Royal Children's Hospital	2,429	844,300	21,143	n/a
Herston Campus Water	507	1,236,000	n/a	186,200
Scientific Services Complex	2,623	2,408,000	n/a	13,680
Prince Charles	11,404	15,740,051	65,844	10,676
Eventide/Jacana/Ashworth	1,133	1,251,111	n/a	9,370
RBH Block 7	2,121	2,027,000	n/a	n/a
Total	43,176	47,982,495	99,694	448,191

Interesting facts ...

Approx. 48,000,000 kwh guaranteed reduction from the efficiencies of the participating sites



Interesting facts ...



Over 9,800 motor vehicles off Queensland roads annually as a result of the guaranteed CO2 emission reduction at participating Hospitals.