

ADELAIDE

GOVERNMENT BUILDING SERVICES UPGRADE

A benchmark for low risk and high return energy efficiency and greenhouse abatement projects



CASE STUDY

DEPARTMENT FOR TRANSPORT, ENERGY & INFRASTRUCTURE SOUTH AUSTRALIA

Energy Conservation Systems (ECS), a leading Australian energy services company, has achieved a number of 'firsts' in completing a complex services upgrade of the South Australian Department for Transport, Energy and Infrastructure, head office building in Walkerville.

The project represents what is expected to be an Adelaide first with worlds best practice in relation to energy, greenhouse gas emissions and water efficiency also the first existing office building retrofit to be completed while the building remained fully operational.

It is the first energy and water efficiency upgrade in South Australia to be delivered through an Energy Performance Contract (EPC), in which the contractor guarantees a specific and verifiable level of savings over the period of the contract.

The project was conducted in two stages, first involving a substantial refit of all lighting, followed by a comprehensive upgrade of the heating, ventilation air-conditioning systems and the implementation of significant water saving initiatives.



KEY OUTCOMES

ENERGY SAVINGS
\$390,000 PER ANNUM

GREENHOUSE SAVINGS
2,400 TONES PER ANNUM

WATER SAVINGS
2,000 KILOLITRES PER ANNUM

KEY SOLUTIONS

- T5 LIGHTING RETROFIT
- INTELLIGENT OCCUPANCY BASED LIGHTING CONTROL SYSTEM
- CO-GENERATION AND ABSORPTION CHILLER
- DIGITAL BUILDING MANAGEMENT SYSTEM
- WATER FLOW CONTROL
- MONITORING AND VERIFICATION



Lessons & Outcomes

“It is important to note that this is by no means a one-off exercise. To ensure these savings, ECS has an ongoing commitment to monitor and review the efficient operation of the new energy saving measures.”

*David Low State Manager - SA & NT
Energy Conservation Systems*

Front Image | Department for Transport,
Energy and Infrastructure, South Australia,
Southern Tower Block.
1 | Using ECS MLS lighting control system on level 3
2 | 470 kW Natural Gas Driven Co-Generation Engine



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Efficient Lighting & Controls

The first stage of the project involved an overhaul of the lighting that delivered major savings on electricity bills while also reducing greenhouse emissions at the same time improving lighting levels and the visual environment.

All of the existing fluorescent light fittings were removed from the building and new high efficiency T5 fluorescent fittings were installed, complete with electronic dimmable ballasts.

In addition to the light fittings an intelligent lighting control system was installed incorporating automatic dimming and integrated occupancy detector control.

Heating, Cooling and Ventilation (HVAC)

The system was completely replaced. Rather than generating conditioned air in the plant room, eight fan/coil units were installed on each level (four per wing), accompanied by dual speed fans that run mostly at low speed.

Hot and chilled water is pumped to each fan coil unit incorporating its own heating and cooling coil.

Co Generation

A co-generation unit is one of the key features of the new system. It is basically a natural gas-fired internal combustion engine that produces electricity and heat from the same primary energy source.

Cooling Towers

The rooftop cooling towers have been replaced with new energy efficient units with variable speed fans and a new, first in South Australia, computerised chemical dosing system.

“The services upgrade was completed in just over 12 months without moving any of the 800 staff in this 18,000 square metre building”

Water

The Water component of the new national rating scheme NABERS that covers a range of environmental improvement measures, was utilised to measure reductions in water consumption.

At this stage those changes include installation of flow controls on all showers and taps are projected to reduce water consumption by at least 2,000 kilolitres per annum.