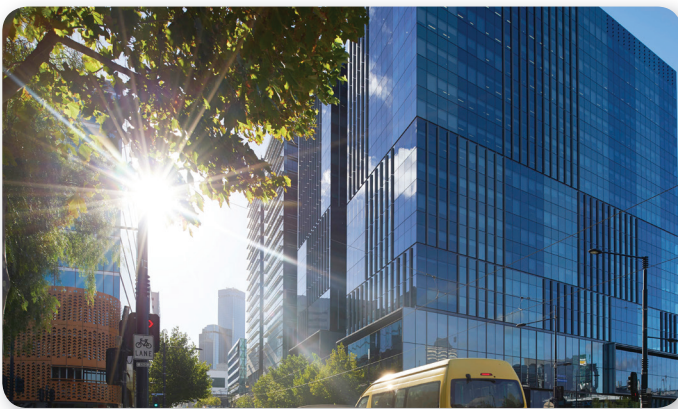


CASE STUDY – MONITORING & TUNING

747 Collins Street

BACKGROUND

As of September 2016, this is only the second multi-storey office building with a 6.0 star NABERS energy rating in Victoria (excluding GreenPower), and only the third in all of Australia.



747 Collins Street is a 17 storey office building, located in the Collins Square precinct. It is currently fully occupied by a single tenant with a long term lease. The building was developed by Walker Corporation. It is now owned by a trust managed by CIMB TrustCapital and managed by Collins Square Management, with both parties committed to providing an ongoing improvement of the building's operational performance and efficiency.

The building was first occupied in 2012, and features a range of modern technologies and equipment enabling fine tuning of the building's performance. The plant includes a pressure independent variable air volume (VAV) air distribution system, a trigeneration system, high performance chillers and lifts with regenerative braking.

The building was originally designed to achieve a 5 star NABERS Energy Rating for the base building, and first rated at 5.5 stars in June 2014. More recently CIMB TrustCapital and Collins Square Management have been aspiring towards a 6.0 star base building NABERS energy rating. ~~As of June 2016, there were no multi-storey 6.0 star office buildings of comparable scale (without GreenPower) in Victoria, and only one other in all of Australia.~~

OPPORTUNITY

CIMB TrustCapital and Collins Square Management originally engaged Energy Action for tuning and monitoring of the 747 Collins Street site over a 3 year period. In February 2015 when Energy Action was first engaged, the site's decimal NABERS performance was 5.68 stars.

Energy Action's key responsibilities included:

- undertaking a Building Management System (BMS) operational review (annually)
- developing a monitoring plan
- setting subsystem targets (annually)
- facilitating tuning with the site's Building Management System (BMS) contractor, Automated Logic.

Tuning measures in the process of implementation include:

- air handler pressure reset controls
- minimum VAV air flow reduction
- increased VAV dead band
- supply air temperature controls
- condenser water temperature controls
- lift motor room AC controls
- heat recovery loop optimisation
- economy cycle optimisation.
- maintenance items (heat recovery, low load chiller, VAVs)
- lift controls tuning.

In 2016 Energy Action was engaged by the owning Trust and Collins Square Management to install a solar PV system of approximately 100 kW on the roof of the building. This additional energy generation capacity is estimated to be worth a further 0.13 stars to the building's NABERS performance, providing increased confidence that a comfortable 6.0 star NABERS energy rating can be maintained in future.

Buildings rated at over 5.5 stars have been shown to generate increased rental returns, by 10.6%* over the national average. The benefits of being one of the few commercial office buildings in the country with a 6.0 star NABERS rating are improved marketability and increased value of the site to prospective tenants.

OUTCOME

Through the input of all the major parties, namely CIMB TrustCapital, Collins Square Management, Energy Action and the site's incumbent controls contractor, Automated Logic, 747 Collins Street has seen significant results in energy savings and NABERS improvement. The site's incumbent Electrical (Programmed Electrical), Mechanical (A G Coombs) and Cogeneration (Optimal) contractors have also provided assistance with the improvements on site.

Energy savings

In the 12 months to end of September 2016 there have been electricity savings of 303,000 kWh/annum (35%), and natural gas savings of 703,000 MJ/annum (5.5%), compared to the 12 month period prior to engagement.

The total energy cost savings to date are estimated at \$42,000/annum (ex-GST) and growing.

The natural gas consumption has increased slightly in 2016 due to increased operation of the cogeneration engines. The net result is an improvement in the site's NABERS performance through a reduction in greenhouse gas emissions.

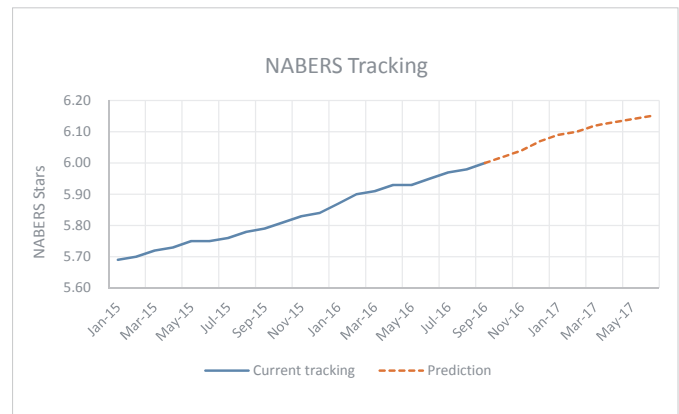
NABERS improvement

An accredited NABERS base building energy rating of 6.0 stars (without GreenPower) was first achieved for the 12 months to September 2016.

Further improvement is expected to be seen resulting from previous tuning and the installation of an award-winning (Clean Energy Council Awards 2016) 100 kW solar PV system, commissioned on July 2016.

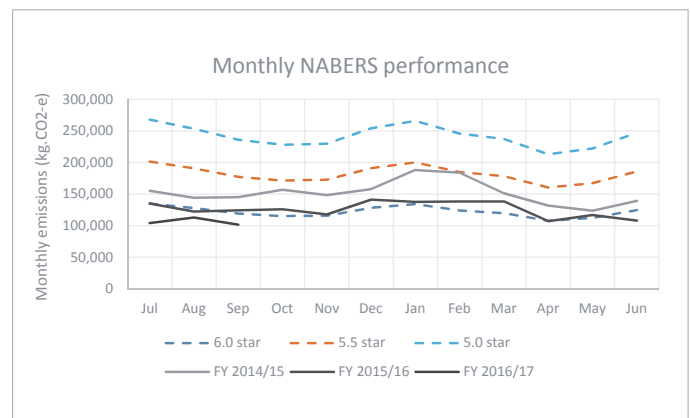
The current performance projection is a decimal performance of 6.16 stars by June 2017, which excludes any further tuning that is undertaken.

The current and predicted rolling NABERS energy tracking is shown in the chart below.



NABERS performance tracking at 747 Collins St, showing current and predicted performance scenarios

The historical monthly emissions tracking is shown in the chart below.



Monthly emissions tracking with respect to NABERS star benchmarks, comparing FY2016, FY2015 and FY2014

Nick Jones

Commercial Property Segment Manager said,

“Building tuning strategies are necessary for assured long-term building performance and reduced carbon emissions. Key to the success at the site has been the positive engagement between Energy Action, the Collins Square Management team, CIMB TrustCapital and the incumbent contractors Automated Logic (BMS controls), AG Coombs (mechanical services) and Programmed (lighting). Congratulations on some stellar results to all involved for achieving these exceptional energy savings, and in particular for attaining a 6 star NABERS base building energy rating without GreenPower.”