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Building a better working world

Mid-tier commercial office buildings in Australia

Research into improving energy productivity

CONTENTS

EXECUTIVE SUMMARY

The building sector in Australia accounts for approximately 19% of total energy consumption and 23% of overall GHG emissions[1]. Of this, commercial buildings account for roughly half of this amount at 10% of the nation's overall energy consumption, whilst commercial *office* buildings make up approximately 25% of this total[2].

Improving building performance is widely regarded as one of the most cost-effective opportunities to deliver energy and greenhouse gas emission reductions. In addition, energy efficiency upgrades provide a significant opportunity for building owners to reduce their costs, increase the value of the asset, and reduce the risk of obsolescence in the future.

Commercial office buildings have the highest energy savings potential compared to other commercial buildings, with an estimated total energy reduction potential of 5,142GWh by 2020[3] using technologies that are known and widely available today[4]. Whilst many premium and A-grade buildings have already undertaken energy efficient upgrades and either have, or are moving towards Green Star certification and high (4 star+) NABERS Energy ratings, the rest of the commercial office building sector – the B, C, and D-grade assets (generally referred to as the 'mid-tier') have not been as active in implementing energy retrofits.

Research has shown that on average, Green Star certified buildings produce 62% fewer greenhouse gas emissions than average Australian buildings and use 66% less electricity than average Australian buildings. In addition, they also use 50% less electricity than if they had been built to meet minimum industry requirements (Section J of the National Construction Code), so the opportunities for energy efficiency improvements in these buildings are significant[5].

This report sets out the basic facts surrounding the mid-tier office building sector in Australia and the opportunities for these buildings to improve their performance. It lays the foundation for a workshop to be held, and pathway to be developed, to move the mid-tier towards better economic and environmental outcomes.

According to the 2015 Property Council of Australia's (PCA's) Office Market report, mid-tier office buildings make up approximately half of Australia's overall commercial office building stock, indicating that there remains significant opportunities for cost-effective energy savings. Mid-tier buildings are found all across Australia; in the capital city CBD's and fringe areas, suburban centres and regional towns. Beyond these, however, additional opportunities for energy efficiency can be found in office buildings in areas which are not captured by the PCA Office Market Report – namely small, low-rise office buildings located in the many suburban and regional areas. These assets are more likely to have outdated heating, ventilation and air-conditioning (HVAC) equipment, less efficient lighting systems, and weaker thermal performance, offering additional potential for improved energy productivity across the country.

Mid-tier property owners are a disparate group with varying levels of engagement, attitudes toward, strategies for and levels of knowledge on energy efficiency opportunities. Environmental performance is generally not integrated in the business of mid-tier owners, nor is it well understood. In addition, there is minimal awareness of programs, tools, and resources currently available that could support them in accessing the opportunities available.

[1] ASBEC The Second Plank Report: Building a Low Carbon Economy with Energy Efficiency Buildings, 2008
[2] Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia, 2012
[3] Australian Carbon Trust Report: Commercial buildings emissions reduction opportunities, ClimateWorks Australia, 2010
[4] The pathway to energy efficiency: Unlocking trapped energy efficiency in the buildings sector, The Allen Consulting Group, 2012
[5] Green Building Council of Australia The Value of Green Star - A Decade of Environmental Benefits, 2013

Often there are barriers that prevent building upgrades from occurring. Lack of mid-tier building retrofits can be attributed to a number of factors such as:

- Lack of access to capital
- Lack of knowledge and awareness around energy efficiency
- Perception that the energy efficiency investment won't yield a return
- Split incentives between tenants and building owners
- Lack of motivation
- Lack of tenant demand
- Disruption to existing tenants
- Short-term thinking from owners

There is no one solution that will solve the dilemma of improving the energy productivity in the mid-tier commercial office sector. Because of the disparate nature of building owners and property types, each with their own set of drivers and strategies, solutions to improve the uptake of existing commercial building retrofits from the mid-tier office market will need to involve a multifaceted approach. Whilst some of the sustainability drivers for large commercial buildings will be of interest to the mid-tier sector, there will need to be adequate consideration given to new financial and non-financial incentives and ideas which really engage the mid-tier sector.

1. Introduction

The building sector in Australia accounts for approximately 19% of total energy consumption and 23% of overall GHG emissions[6]. Of this, commercial buildings account for roughly half of this amount at 10% of the nation's overall energy consumption, whilst commercial *office* buildings make up approximately 25% of this total[7]. Most of this consumption comes from the combustion of fossil fuels to provide electricity for services and systems in the building, including HVAC (heating, ventilation and air-conditioning), vertical transport, electrical equipment and lighting to the tenants.

Improving building performance is widely regarded as one of the most cost effective opportunities to deliver energy and greenhouse gas emissions reductions. In addition, energy efficiency upgrades provide a significant opportunity for building owners to reduce their costs, increase the value of the asset, and reduce the risk of obsolescence in the future.

Whilst many premium and A-grade buildings have already undertaken energy efficient upgrades and either have, or are moving towards Green Star certification and high (4 star+) NABERS Energy ratings, the rest of the commercial office building sector – the B, C, and D-grade assets (generally referred to as the 'mid-tier') have not been as active in implementing energy retrofits.

Mid-tier buildings are found in the capital city CBD's and fringe areas, suburban centres and some regional towns. According to the 2015 PCA Office Market Report, which looks at 25 particular centres around Australia, commercial office stock equates to nearly 25 million square meters and has an average age of around 27 years, with more than 80% being over 10 years old[8]. Approximately 50% of this area could be classified as mid-tier. Investment to upgrade these buildings to lower their energy consumption and improve their sustainability would yield significant energy productivity gains and financial benefit.

Beyond these figures, however, there are additional opportunities for energy efficiency in office buildings within areas not included in the PCA Office Market Report – small, low-rise office buildings that are located in many suburban and regional areas. BIS Shrapnel indicates this could be as much as nearly 64 million square metres[9]. With much of this stock not having undergone energy retrofits, and having original HVAC and, in some cases, lighting systems, the mid-tier sector has a vast potential for improved energy productivity in the country.

Projects to improve building efficiency can also deliver a range of additional benefits such as cost savings for building owners and occupiers, higher returns, improved health, wellbeing and productivity for tenants, assets which are future-proofed against increases in the price of electricity and extremes of climate, improved economic productivity, and the creation of more liveable, sustainable spaces in our cities.

Whilst there have been a number of recent state or council-based research projects on the mid-tier, there hasn't been a report to date which ascertains the *national* potential of this market for improving energy productivity.

This report contains information derived from a mix of quantitative and qualitative data from desktop research and interviews with various stakeholders who work with the mid-tier property owners.

Data has been taken from a mix of sources as there is no one single repository of data that covers the whole country. Whilst the Property Council of Australia's 2015 Office Market Report is most widely used, it only covers 25 CBD and suburban centres. To give a more accurate understanding of the potential of Australia's office building stock, additional data has been used (sourced from various reports) from the Australian Bureau of Statistics, the Valuer General in each state, BIS Shrapnel and the Real Estate Institute of Australia (REIA).

The results of this report and following workshop to be held after Green Cities 2015 on 19th March 2015 will be a structured pathway of improvement for mid-tier commercial office assets across the country.

[6] ASBEC The Second Plank Report: Building a Low Carbon Economy with Energy Efficiency Buildings, 2008
[7] Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia, 2012
[8] Clean Energy Finance Corporation Fact Sheet
[9] Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia, 2012

2. What are the best definitions for this sector?

According to research and stakeholders interviewed, the most common definition of the mid-tier commercial building sector are those buildings that fall outside of the PCA premium and A-Grade categories. This includes B, C, and D-grade assets, as defined by the Property Council of Australia's (PCA) Guide to Office Building Quality. Whilst a voluntary tool, the Guide is widely recognised by the property sector as the most appropriate method of rating the 'quality' of commercial office buildings.

Mid-tier office buildings generally have the following characteristics:

- Smaller buildings, generally under 10,000 square metres;
- A diverse ownership profile (secondary mid-tier, private, family-owned, strata titled, government, foreign);
- A lower level of energy efficiency than premium or A-Grade buildings;
- Generally older, built before 2000;
- Older HVAC plant and lighting. HVAC is likely to be the original system (25+ years old) with zero or minimal controls and lighting tends to be T8 magnetic ballast fluorescent tubes;
- Where there is HVAC, it is often either a mix of central plant or individual package/split system units;
- Some have natural ventilation (operable windows) so the base building can be energy efficient by default;
- A small proportion have NABERS ratings, mostly triggered by Commercial Building Disclosure;
- Typically higher vacancy rates than premium and A-grade assets;
- A mixture of smaller offices, with mainly SME tenants;
- Shorter lease terms than premium and A-grade assets;
- Less rent per square metre;
- Generally no on-site dedicated team for property/facilities management;
- Other terms commonly used to describe this class of buildings includes 'secondary' or 'sub-prime'.

3. What is the current situation?

3.1. How many buildings are there in this sector across Australia? Where are they located?

As noted in the 2012 'Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia' COAG Report, there is no one single or authoritative Australia-wide source that can be referenced in order to answer key questions such as:

- How many commercial buildings are there in Australia?
- How many square metres of commercial buildings are there?
- What is the break-down by size, age, location, ownership, PCA-grade, energy intensity or other key parameters

For example, the PCA's Office Market Report includes approximately 4,500 buildings (totaling nearly 25 million square metres of NLA) located in the 8 capital cities and 17 major towns across the country. Of this, about half, or 12.3 million square metres is mid-tier B, C and D-grade stock. However we know that there is additional, mostly mid-tier office stock located in many other suburban and regional towns, not included in these figures. In addition, the PCA's Office Market Report does not capture buildings if they are sub-1000 square metres in the CBD's, and sub-500 square metres in the 17 major towns. This means that there is additional 'unknown' potential for energy productivity from these buildings.

The Australian Bureau of Statistics (ABS), as well as BIS Shrapnel have additional commercial office data sets to the PCA Office Market Report which significantly expands the scope. If we look at the data from the 2014 net lettable area forward estimation from the 2012 COAG report, there is approximately 64 million square metres of commercial office net lettable area around the country. This is an additional 2.5 times the amount of floor space as is captured in the PCA Office Market Report. If we assume that the top-tier buildings are all captured in the PCA Office market report, this means that out of this 64 million square metres, nearly 52 million square metres could be classified as mid-tier and have potential for cost effective energy retrofits.

Mid-tier office buildings are found in all major towns and cities around the country. They have a significant presence within all the capital city central business districts as well as on the outskirts or CBD 'fringe', and in suburban/metropolitan locations as well as regional towns. In the CBD, they are often known for being located in 'corridor' areas – parts of the city that are considered 'secondary' zones to the main thoroughfare. They are often in the older parts of a CBD with many being some of the first high-rise offices built. In Sydney for example, this would include Chinatown, and the 'western corridor' – Clarence and York Streets.

The State of Victoria has some good data from the 2013 Davis Langdon report titled "The Next Wave: Retrofitting Victoria's office buildings" which was commissioned by Sustainability Victoria. The report found that there were an estimated 20,000 mid-tier buildings located outside of the City of Melbourne. This includes very small office buildings under 500 square metres located in many suburban and regional towns. If we extrapolate these findings across the country, we could estimate that there could be up to 80,000 mid-tier buildings across the country. This report is discussed in more detail in Appendix A.

A national summary (using data from the 2015 PCA Office Market Report) is presented below, however individual state-based findings can be found in Appendix A.

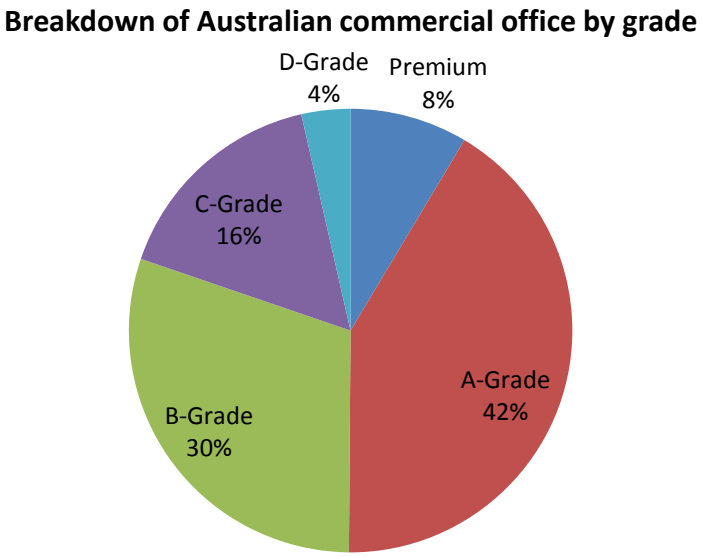


Figure 1: Breakdown of Australian commercial office by PCA grade, 2015 PCA Office Market Report

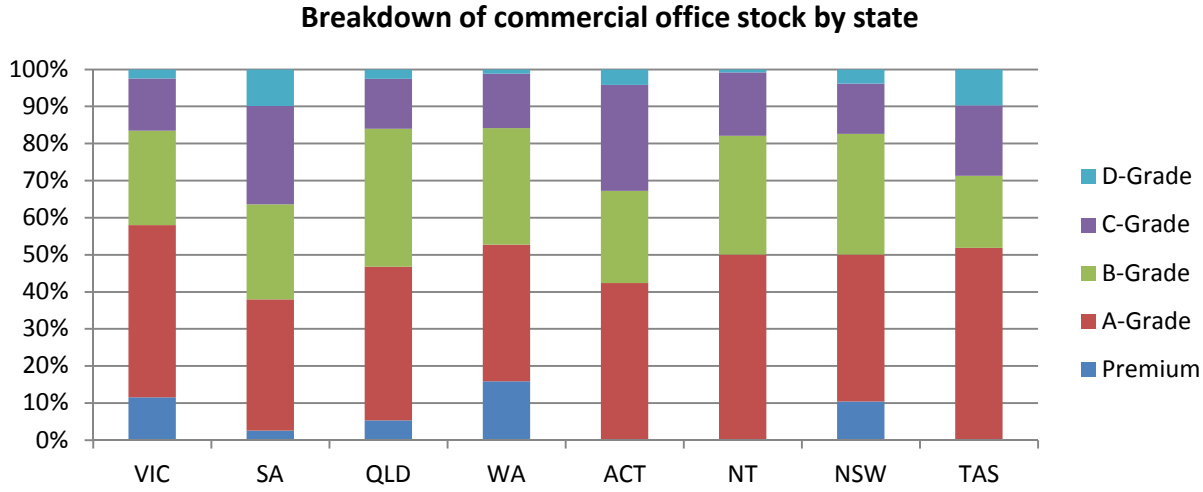


Figure 2: Breakdown of Australian commercial office stock by state, 2015 PCA Office Market Report

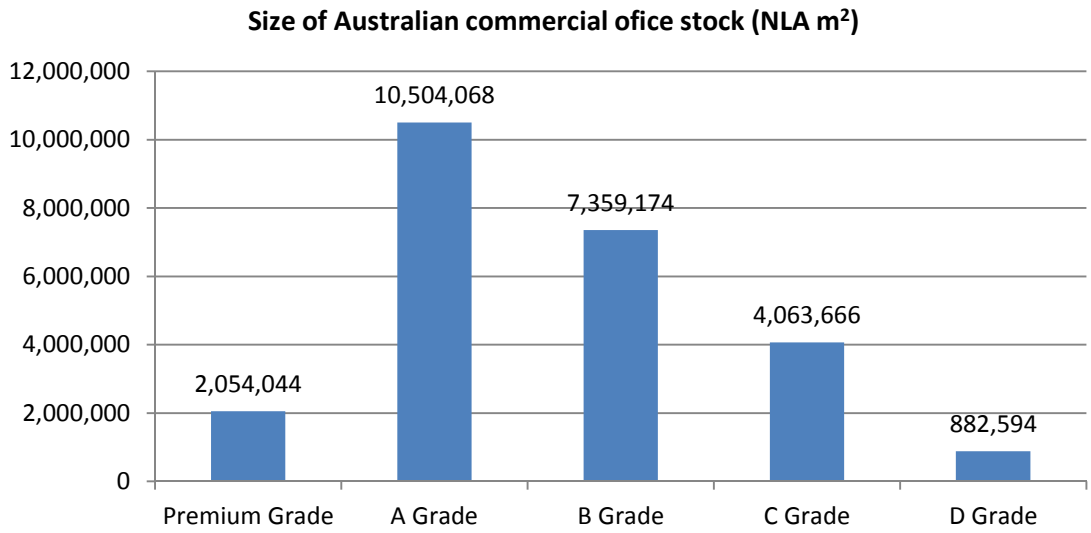


Figure 3: Size of Australian commercial office by PCA grade, 2015 PCA Office Market Report

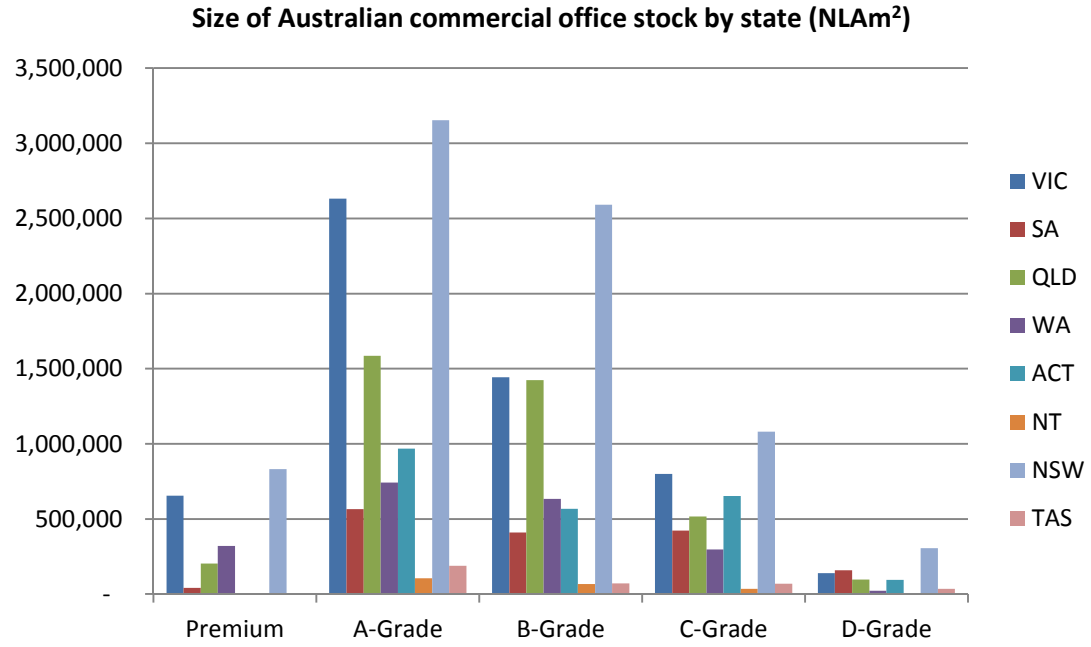


Figure 4: Size of Australian commercial office stock by state, 2015 PCA Office Market Report

3.2. What is the ownership profile?

The ownership profile of mid-tier office buildings is extremely diverse, with a wide range of investment strategies, portfolio size, and awareness around energy efficiency. Some of the larger owners manage a portfolio of buildings whilst some of the family-owned investments have a single building, which may not necessarily be part of their core business. This confirms how disparate a group mid-tier commercial building owners can be and that the business case is highly dependent on the circumstances of different building owners as well as tenants. A multifaceted approach is critical, as well as a variety of communication channels, styles, incentives and programs in order to engage with them on energy efficiency.

At a broad level, owners of mid-tier buildings can be classified into two distinct categories – corporate and non-corporates, with non-corporates broken down into 5 sub-categories.

1. **Corporate:** Mostly second tier asset management organisations, many of which target a mix of institutional and non-institutional investors. Much smaller market capitalisation than the top tier A-REITS and institutional investors. These groups often own a mix of larger premium and A-Grade property as well as smaller B and C-Grade property – usually earmarked for upgrade or redevelopment. They tend to be more engaged around sustainability and energy efficiency and have a longer term outlook than other building owners in this sector. They will sometimes have a dedicated sustainability person or team and consider sustainability an important part of their overall brand. More likely to understand the linkage between the sustainability of the building and future income as well as brand and reputation. Eg Abacus, Cromwell, Arena, Fortius, Cbus Property. Some are listed on the ASX. (Note: some of the larger A-REITS also own a number of mid-tier buildings eg Stockland, Charter Hall, Mirvac)
2. **Non-corporate:** Wealthy private investors or property syndicates who may own a portfolio of assets across a number of different property classifications (eg office, retail, industrial, residential). Can be similar to the second-tier corporates but have a much lower profile. The focus here is on yield and rental return rather than long term investment in energy efficiency. They tend to own smaller buildings, often less than 5,000 square metres. Generally no full time dedicated sustainability person. Examples include Fawkner Property, Altis, and The Juilliard Group.
3. **Non-corporate:** Second and third generation family members who have inherited the asset. No organisational structure or brand. More likely to own only a handful of properties and the building is not their core business. The building/s may have been purchased years ago so has a low cost base. The owner can take on obsolescence risk and still make money. NABERS Energy ratings only undertaken when required by the CBD program. Buildings upgraded only through equipment failure or big risk of vacancy. As above, the focus here is on yield and rental return rather than long term investment in energy efficiency. Less likely to sacrifice income for future cash flow.
4. **Non-corporate:** Foreign owners – Communication is via locally based property manager. Buildings upgraded only through equipment failure or big risk of vacancy. NABERS Energy ratings only undertaken when required by the CBD program. Property management fees are often very constrained giving the property manager only limited time to spend on the building doing the bare minimum.
5. **Non-corporate:** Owners Corporations (Strata titled properties) – generally smaller, individually owned tenancies. Motivations for upgrading can be dependent upon how much money they have in their sinking fund. In addition, due to the diverse ownership profile, getting consensus on how to spend the money can be difficult.
6. **Non-corporate:** Government or government related organisations in each state would own at least 20% of mid-tier stock.

Other owners of mid-tier property include professional industry organisations, universities and other educational bodies, and not for profits including charities and religious organisations.

3.3. What is the tenant profile?

Mid-tier office buildings tend to attract smaller organisations (mostly small to medium organisations (SME's)), often with no corporate sustainability agenda or limited knowledge of energy efficiency. Tenancy NLA can be as small as 20 square metres and as large as a few thousand square metres, potentially taking up an entire building.

The cost of rent per square metre is usually the most important concern when leasing a new space – base building outgoings and operational energy costs from the tenancy are often not factored into the equation. Being located close to their client base, or close to transport, comes a close second.
Mid-tier tenants also often have much shorter lease terms. Sometimes it is unclear how long the business may be viable or wish to stay in one particular location so longer term leases are not appropriate.

Mid-tier tenants are often time-poor. There might be one person wearing a multitude of hats – sustainability, WHS, office administration, accounts payable, procurement etc. They are interested in energy efficiency – but only if it doesn't cost money or take much time or risk to implement.

Small organisations also often lack the upfront capital to implement energy efficiency in their own tenancy. They might implement some of the zero cost 'operational' improvements (eg switching off) but will baulk at anything more significant such as a lighting or equipment upgrade.

Whilst many tenants will not engage specifically around energy efficiency when looking to lease a new space, turning off the lights and computers at the end of each day is reasonably common place. This is often driven by a message from the top down to reduce energy bills – despite not realising that the lighting in their fitout may be terribly outdated with no zoning or controls. Outgoings for electricity are considered part and parcel of the price of renting and tenants often do not believe that they have any influence or visibility over these costs. Many just consider them to be simply 'part of the deal' as opposed to speaking with the owner about ideas to improve base building efficiency and hence drive costs down.

There is often a disconnect amongst these tenants when comparing cheap rent and high energy outgoings. They will complain after they have signed the lease and by then it can be too late to do anything about it (such as a jointly funded lighting upgrade, or an office with better energy efficiency). Some tenants don't even know what they 'could' be paying in a more efficient building. Facility Managers are often lacking awareness around energy efficiency and are often spread out across multiple assets so there is not much on-site guidance to support the tenants. It is this lack of awareness which is somewhat preventing the upgrade of buildings in the mid-tier. If tenants are not demanding better quality services and cheaper outgoings, then building owners are not going to be encouraged to implement them.

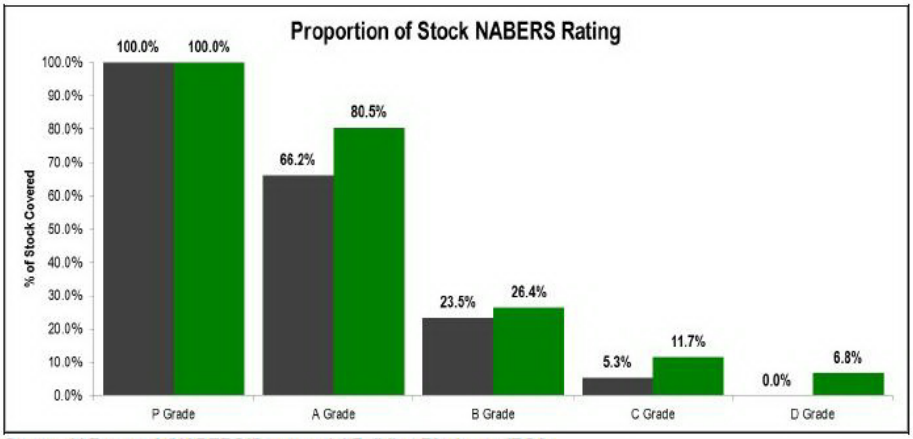
3.4. How many have NABERS ratings?

Note: The PCA Guide to Office Building Quality includes NABERS ratings as part of the overall assessment criteria. Premium and A-grade stock are required to have 4 star and 3.5 star NABERS Energy ratings respectively, B-grade buildings are only required to 'have' a rating, whilst C and D-grade buildings are not required to have undertaken a rating at all.

Research correlating PCA grade with NABERS Energy ratings has been done in some regions of Australia but not on a national level. We know that mid-tier commercial office buildings often have small office tenancies of less than 2,000 square metres, so unless the entire building is up for sale, the current Mandatory Disclosure legislation would not impact on the majority of these assets. This means that there is a large proportion of mid-tier buildings which have 'unknown' energy efficiency and are 'presumably' low energy efficiency.

Reviewing the publicly available data on the NABERS website, of the total of 1,135 current NABERS Office Energy base building and whole building ratings, only 229 buildings are below the average 3 stars which is 20% of the total number of publicly rated NABERS office buildings. Looking at the location, size and ownership profile from information on the NABERS website as well as on the internet, these buildings more often than not tend to be owned by mid-tier owners, or have mid-tier characteristics as outlined in section 2. In addition, approximately 18% of NABERS Office Energy ratings are not publicly listed[10]. Anecdotally we know that most of these are on the lower end of the rating system and presumably would be mid-tier.

Over in Western Australia, Y Research looked at buildings within the Perth metropolitan region. All of the premium grade buildings in 2014 had NABERS ratings, with A-grade rated buildings at just over 80% (some of this missing 20% may be due to the NABERS rating having lapsed). The figure drops dramatically with only 26.4% of B grade properties having a rating, 11.7% of C-grade properties and 6.8% of D-grade properties have a NABERS rating. It might be a reasonable estimation to conclude that the rest of the Australian market is of a similar scale, perhaps a little higher over on the East coast.



Source: Y Research/NABERS/Commercial Building Disclosure/PCA

Figure 5: Proportion of WA NABERS ratings by PCA grade, Y Research, 2014

[10] The Next Wave: Retrofitting Victoria's Office Buildings, 2013

3.5. How do these buildings perform/How do they compare to larger commercial buildings?

Mid-tier buildings are generally more energy intensive due to a combination of age, ownership profile, passive management, tenant expectations and the fact they have less chance of being impacted by CBD legislation. They often have original HVAC plant and older style lighting. The City of Sydney has found that mid-tier buildings that have completed a NABERS Energy rating have an average rating of 2.4 stars, compared to an average of 3.5 stars from the larger institutionally owned buildings. This data would be skewed by the fact that this set of buildings was taken from a large capital city. Buildings outside of this area would potentially have an even lower level of energy efficiency.

The 2012 'Baseline Energy Consumption and Greenhouse Gas Emissions in Commercial Buildings in Australia' report shows that that smaller sized office buildings (which show a correlation to PCA grade) have a higher likelihood of being more energy intensive than the larger assets (2,000 square metres and above). This is due to top tier property investment firms owning the larger buildings and having had strategies in place over a number of years to upgrade their buildings to achieve higher NABERS energy ratings. The mid-tier buildings are still operating original plant and lighting and have subsequently not had the same improvements in energy intensity. Despite their smaller size however, their number makes them ideal for finding energy efficiency opportunities which collectively will have a big impact.

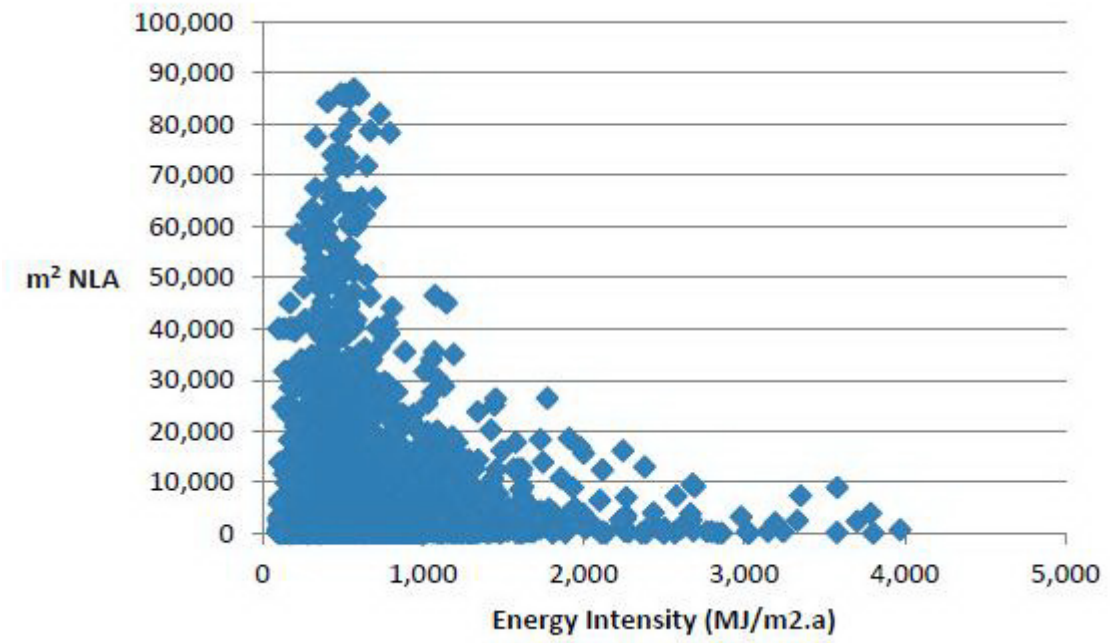


Figure 6: Energy intensity vs NLA, COAG Report, 2012

3.6. What do we know about building upgrade activity in this sector?

The majority of mid-tier buildings are over 10 years old and prime candidates for energy retrofits. Whilst a few years old now, data from the 2009 Davis Langdon Report 'Retro-greening Offices in Australia' shows that there is three times the amount of buildings older than 10 years in Australia.

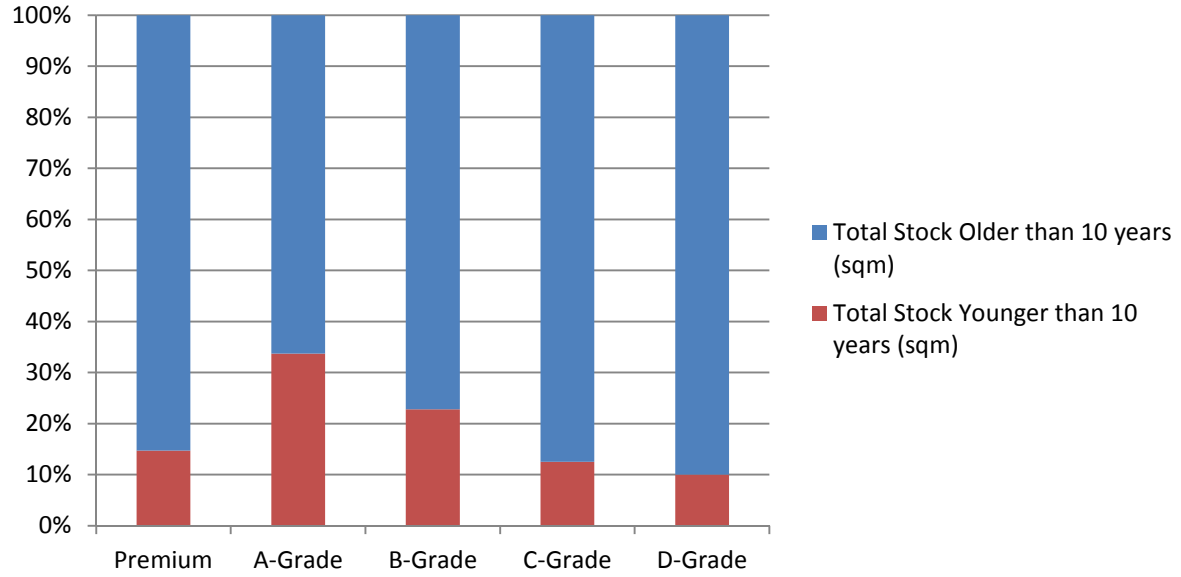


Figure 7: Age of Australian commercial office stock via PCA grade, Davis Langdon, 2009

There is patchy data on building upgrade activity in this sector, however anecdotally we know that more mid-tier owners have been upgrading their buildings since the introduction of the Commercial Building Disclosure Scheme (CBD or 'Mandatory Disclosure') in 2010.

Since 2010, buildings that have had their first NABERS Energy rating and subsequently had at least one other rating, have had an average reduction in energy use of 8.7% and a reduction in greenhouse gas emissions of 11.5%. This demonstrates that disclosing the NABERS rating of the building incentivises many lower performing buildings to improve their energy efficiency.

Some building upgrades have been completed via way of Environmental Upgrade Agreements. Nine buildings have so far completed an upgrade in Australia. Of these, only one would be classified as mid-tier, however there are more that are currently being implemented. EUA's are discussed in more detail in Section 3.7.

Funding such as the Green Building Fund also triggered a good number of mid-tier building retrofits. Case studies on these buildings can be found on the AIRAH website. The Green Building Fund is also discussed in the next section.

Many building upgrades in the mid-tier are triggered by equipment failure or continued vacancies. Mid-tier owners sometimes have an inclination to run their building into the ground and avoid capital expenditure for as long as possible. However, failing to keep adequate conditions inside the building puts the owner at risk of breach of lease requirements and putting tenants offside. Considering that an HVAC upgrade can take many months to procure, install and commission, having this mentality is risky.

In addition, once a decision has been made to retrofit, many owners ask for a 'like for like' replacement of equipment, showing the lack of knowledge around energy efficiency, or the perceived notion that energy efficiency is expensive. Whilst current HVAC technology in the market is generally efficient, (especially when comparing current efficiency to that of a 25+ year old system), the final solution also needs to include proper controls and commissioning, and a detailed assessment upfront to ensure that the equipment is appropriately sized for the building load. This is one extremely important part of the process which doesn't always happen and suggests that contractor and facility management education in this space needs to be improved.

Finally, another common scenario is rather than undertaking a complete energy efficient lighting upgrade, owners may simply get the individual lights replaced. Given that there are a high proportion of energy intensive T8 fluorescent tubes or dichroic down lights in mid-tier buildings, this is a wasted opportunity for energy efficiency improvement.

Some mid-tier buildings are being kept for future redevelopment and upgrades are deliberately not being done. Some mid-tier owners have a strategy of deliberately buying cheaper, poorer performing assets and then undertaking efficiency upgrades to increase the buildings value, PCA grade and rental return. These owners are already convinced about the benefits of energy efficiency and their strategy.

Finally, over recent years, there has been an increasing trend towards converting underperforming mid-tier buildings into residential towers or hotels. This will have the impact of improving energy efficiency by nature of the new development – either through Green Star – Design & As Built certification or NABERS Commitment Agreements, as well as Section J of the National Construction Code.

3.7. What incentives and initiatives are in place or have been used in Australia in the past and what have been their impacts?

Over the last 10 or so years there have been numerous local, state and national programs aimed at energy efficiency in the built environment. They usually involved funding, knowledge raising, or sometimes a combination of both. The major ones are listed here:

#	Name	Type	Responsibility/Remit	Target commercial building audience	Potential for mid-tier
1	Commercial Building Disclosure	Legislation	All buildings over 2000sqm	Owners of buildings over 2000sqm	Yes, with some modifications
2	Energy Efficiency Opportunities	Legislation	National	Top tier owners	n/a program ended
3	Energy Efficiency in Government Operations (EEGO) Policy	Legislation	National	All owners	Yes, but but requires more strict adherence
4	Section J, National Construction Code	Standard	National	All owners and tenants	Yes but won't impact on all mid-tier
5	Minimum Energy Performance Standards (MEPS)	Standard	National	All	Yes
6	AusIndustry Green Building Fund	Funding	National	Owners	Yes, with some modificaitons
7	Emissions Reduction Fund – Commercial buildings	Funding	National	Owners	Unlikely
8	Clean Energy Finance Corporation	Funding	National	Owners	Possibly
9	Environmental Upgrade Agreements	Financing	Various Councils	Owners	Possibly
10	Energy Efficiency Exchange website	Resource	National	All	Yes
11	CitySwitch Green Office	Resource	National	Tenants	Yes
12	Energy Saver Scheme	Financing	NSW	Owners and tenants	Yes
13	VEET Program	Financing	Victoria	Owners and tenants	Yes
14	City of Melbourne's 1200 Buildings Program	Resource (with links to funding)	City of Melbourne	Owners	Yes
15	Sustainability Victoria Smarter Resources Smarter Business – Energy Efficient Office Buildings	Resource & funding	Victoria	Owners	Yes
16	Tune Up Canberra	Funding	ACT	Owners	n/a program ended
17	Smart Energy Savings Program	Legislation	QLD	Owners	n/a program ended

1. National: Commercial Building Disclosure

The 2010 Building Energy Efficiency Disclosure (BEED) Act requires office buildings selling or leasing office space greater than 2,000 square metres to obtain a Building Energy Efficiency Certificate (BEEC). BEECs include the building's NABERS Energy rating without GreenPower and a tenancy lighting assessment of the relevant area of the building. Full mandatory disclosure commenced on 1 November 2011 after a one year transition period during which obtaining and disclosing a NABERS rating was the only requirement.

The impact of Mandatory Disclosure on mid-tier buildings has been significant. According to the 2013/14 NABERS annual report, CBD successfully captured segments of the office market (predominantly the mid-tier) that previously had limited engagement in energy efficiency. The profile of these buildings were different to that of the premium and A grade buildings in that they were generally smaller in size (sub 10,000 square metres, often located out of the capital city CBD's and had a lower energy efficiency performance (refer Figure 8).

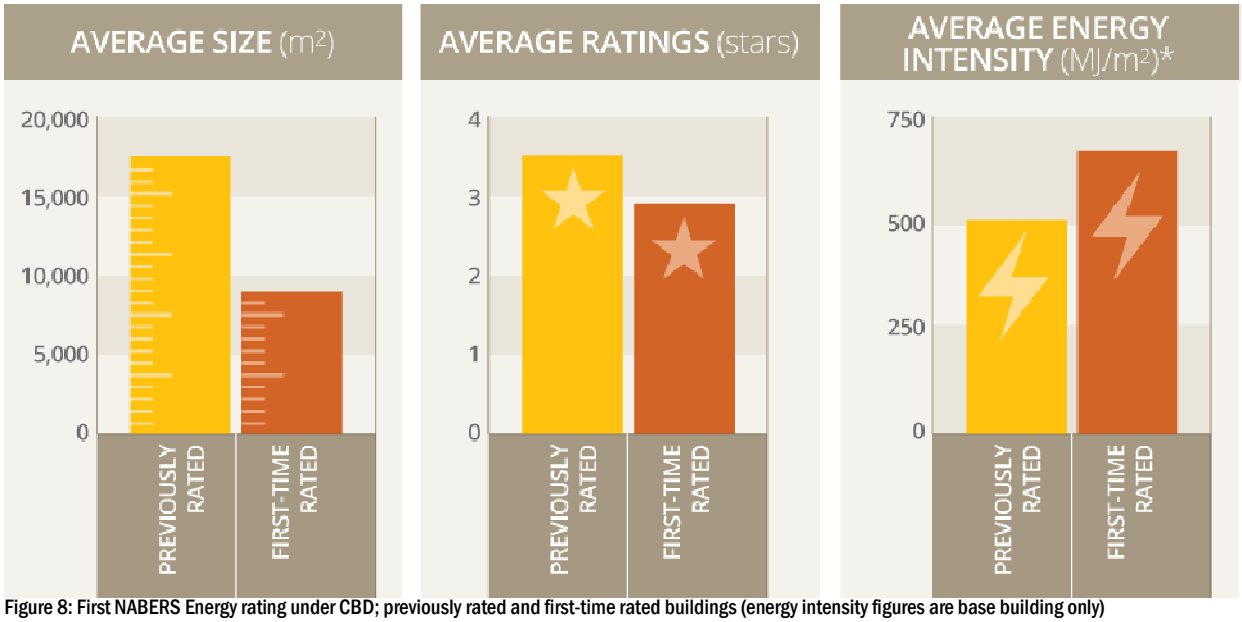


Figure 8: First NABERS Energy rating under CBD; previously rated and first-time rated buildings (energy intensity figures are base building only)

In the last 4 years, NABERS Energy ratings for offices have more than tripled, going from 379 office buildings in the year before CBD to 956 the following year, and 1260 in 2013/14 (refer Figure 9).

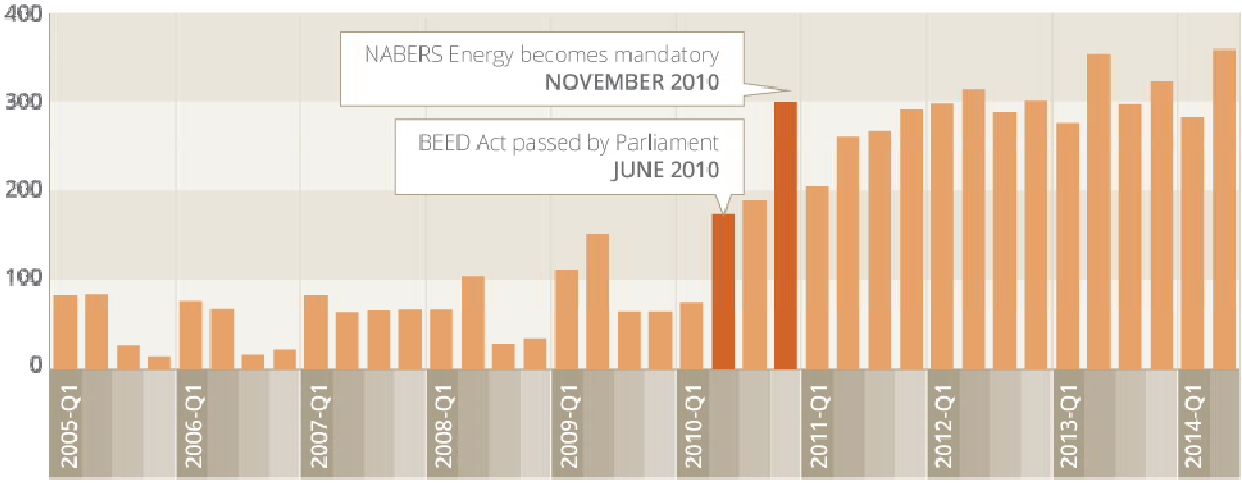


Figure 9: Number of NABERS Energy ratings for offices certified each quarter (base building and whole building)

Of these buildings, those that had at least one subsequent rating were found to have an average reduction in energy use of 8.7% and a reduction in greenhouse gas emissions of 11.5%. These are significant statistics, particularly in light of the fact that building owners are not required to improve their star rating but only to rate and disclose it to the public when transacting space over 2,000 square metres. This demonstrates that disclosing the NABERS rating of the building incentivises many lower performing buildings to improve their energy efficiency, and over the 4 years the program has been in place, the percentage of office floor area lower than 4 stars has almost halved from 60% of the total floor area rated in 2010/11, to just 32% in 2013/14 (refer Figure 10).

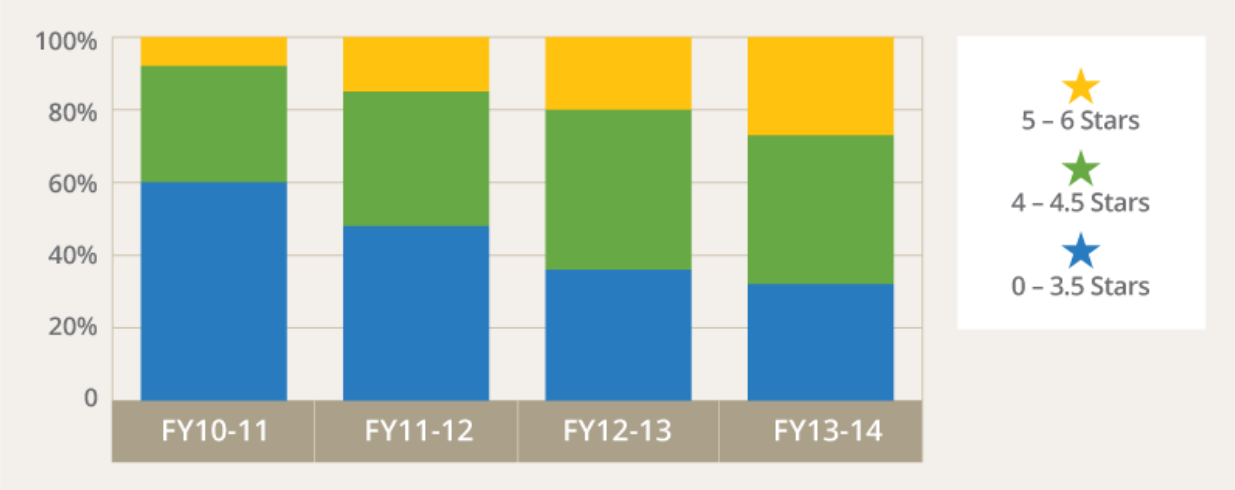


Figure 10: Distribution of office floor area by NABERS Energy star rating (base building and whole building) a move towards higher performing assets over time

2. National: Energy Efficiency Opportunities Program

The Energy Efficiency Opportunities program was created to encourage large energy-using businesses to improve their energy efficiency. The program came into effect on 1 July 2006, and was repealed in 2014. Participation in Energy Efficiency Opportunities was mandatory for corporations that used more than 0.5 petajoules (PJ) of energy per year. Companies that fell into this category were required to identify, evaluate and report publicly on cost effective energy savings opportunities. Given the high levels of energy consumption required to qualify for the scheme, properties affected tend to be in the premium, A and B grade categories and owned by the larger property owners and developers.

3. National: Energy Efficiency in Government Operations (EEGO) Policy

The Energy Efficiency in Government Operations (EEGO) Policy aims to reduce the energy consumption of Australian Government operations with particular emphasis on building energy efficiency. It has had a positive effect on buildings which have Government tenants however anecdotally there are still many inefficient Government buildings that desperately need upgrading. There is currently no penalty for not reaching 4.5 stars and lease requirements are written as 'best endeavors'.

4. National: Section J, National Construction Code

Changes to the Australian National Construction Code to improve energy efficiency in the built environment. Introduced in 2006 and upgraded in 2010.

5. National: Minimum Energy Performance Standards (MEPS)

Minimum Energy Performance Standards (MEPS) specify the minimum level of energy performance that appliances, lighting and electrical equipment must meet or exceed before they can be offered for sale or used for commercial purposes. This includes HVAC, lighting, hot water, refrigeration and appliances.

6. National: Green Building Fund (Commercial Buildings)

The Green Building Fund allocated $90 million in grants over four years (from January 2009) to reduce the energy consumed in the operation of existing commercial office buildings. Whilst the average Green Building Fund grant per project was $423,000 (which must be matched dollar for dollar by the owner), there were plenty of smaller mid-tier buildings who won funding under $200,000. The fact that this funding was 100% allocated after seven rounds, means that a similar national grant scheme aimed at the mid-tier, coupled with good communication channels and a close partnership with industry stakeholders who deal with the mid-tier could equal good uptake.

7. National: Emissions Reduction Fund – Commercial buildings

This initiative, unfortunately, may by-pass mid-tier property owners due to the fact that, in order to be eligible, projects must have an average abatement potential of 2,000 CO_2-e per annum. This would rule out all mid-tier building retrofits. If you compare this abatement per project with the Green Building Fund grant, in round 3, 37 projects were awarded, with a combined reduction in greenhouse gas emissions of around 38,000 tonnes a year. The ERF requires twice as many emissions to be cut per project. Aggregation of projects is possible, but potentially may be deemed risky if building owners need to aggregate their buildings with buildings outside of their own portfolios.

8. National: Clean Energy Finance Corporation

The CEFC has established a corporate financing facility of up to $100 million in finance designated for commercial property upgrades that will reduce buildings' energy consumption and cut greenhouse gas emissions. Whilst the overall uptake or success of the program is not known, there are a number of mid-tier upgrade case studies on their website.

9. National: Environmental Upgrade Agreements

Environmental Upgrade Agreements are a funding mechanism designed specifically for existing building environmental upgrades and is available in a number of cities around Australia. EUA's can enable a building upgrade project to go ahead where it might not otherwise have been possible, or enable a building owner to consider more significant improvements to their asset, thus delivering greater financial returns than would otherwise be possible. Essentially, the building owner borrows the finance at a reduced rate and pays back the loan through a special Council levy on the property. The owner can choose to pass on this levy to tenants in the building thereby removing the split inventive issue.

The Councils currently offering EUA's are:

- City of Sydney
- North Sydney Council
- Parramatta City Council
- Lake Macquarie
- City of Newcastle
- City of Melbourne (through the Sustainable Melbourne Fund)
- City of Adelaide (through the South Australian Government)

Benefits for the owner include:

- Lower than market, fixed-interest rates
- Access to funding without the need for large amounts of upfront equity
- Longer loan terms (up to 15 years) that match environmental building upgrade payback periods.

In addition, under an EUA:

- The cost of the upgrade can be shared with the tenant, if the tenant enjoys savings from reduced energy or water costs.
- The tenant contributions can be used to service the loan and significantly improve the return on investment.
- Depending on the circumstances, the finance may have no impact on the building owners existing credit lines and banking relationships.
- The energy efficiency savings can be used to repay the loan.

The uptake of this finance mechanism however has been slower than expected since its introduction in Australia in 2010. In part this is due to:

- A lack of awareness of the EUF mechanism amongst owners and relevant stakeholders;
- Confusion about the risks, benefits and appropriate uses for EUF;
- Hesitance at passing on the costs of the loan to the tenants;
- Reticence at the annual reporting requirements to building tenants and Councils;
- A limited number of successful examples of the use of EUF;
- Owner doesn't want the risk of having a 'loan' on the property, thereby potentially reducing its overall value

More information on Environmental Upgrade Agreements can be found at http://betterbuildingfinance.com.au/

10. National: Energy Efficiency Exchange Website

The Energy Efficiency Exchange website (eex.gov.au) supports the implementation of energy efficiency practices within medium and high energy-using companies. It shares best-practice information on energy efficiency, case studies and resource materials from Australia and overseas

11. National: CitySwitch Green Office

CitySwitch is a free, national energy efficiency program designed to educate and support commercial office tenants in improving the efficiency of their tenancy. The program uses the NABERS tool to benchmark tenancy energy efficiency year on year and helps to create awareness around the benefits of implementing energy upgrades such as cost savings, reduced emissions and improvements in indoor environment quality. The importance of choosing a high-performing base building is also part of the program as a poor performing base building will impact on the tenant's overall cost of renting space in that building.

12. NSW: Energy Saver Scheme

The NSW Energy Saver Scheme commenced in 2009 and reduced electricity consumption by creating financial incentives for organisations to invest in energy savings projects. Rebates are given for upgrading or replacing inefficient energy consuming items. An upfront rebate can be provided through an accredited provider so the owner doesn't have to submit a lot of Government paperwork, which they may deem to be too onerous or confusing.

The NSW Energy Savings Scheme (ESS) has been highly successful to date, supporting projects that will deliver around 9000 GWh of electricity savings over their lifetimes. These electricity savings are estimated to deliver around $1.4 billion in bill savings for NSW households and businesses over the next decade. With the success of the program, the NSW Government has agreed to enhance the ESS by expanding the scheme to include gas and extending the scheme to 2025;

13. Victoria: VEET Program

Similar to the NSW ESS Scheme, the Victorian Energy Efficiency Target scheme creates certificates when energy efficiency improvements are done to a premises. The money the accredited business makes from selling its certificates can go towards a discount on the product or appliance installed. Reports suggest the VEET Scheme has been successful in implementing energy retrofits to more than 1.5 million households and businesses across Victoria resulting in cost savings, reduced greenhouse emissions and the creation of an industry employing more than 2000 Victorians. The Victorian Government has announced a 2015 target of 5.4 million certificates.

14. Victoria: City of Melbourne's 1200 Buildings Program

1200 Buildings is a program initiated by the City of Melbourne to facilitate energy (as well as water and waste) efficient retrofits of approximately 1200 commercial buildings. The program provides advice on sustainability improvements and funding is available for upgrades by way of the VEET Program, Sustainability Victoria's Energy Efficient Office Buildings funding, or Environmental Upgrade Agreements. The program has a mix of 25 top and mid-tier property owners. There are a number of mid-tier case studies on their website.

15. Victoria: Sustainability Victoria Smarter Resources Smarter Business – Energy Efficient Office Buildings

The Smarter Resources Smarter Business – Energy Efficient Office Buildings program is a $3.59 million, three year program to improve the performance of mid-tier commercial office buildings in Victoria. (Premium and A-grade buildings were not eligible). The program provides funding and support for building owners to carry out a comprehensive energy efficiency opportunities analysis, building tuning, and metering and monitoring activities. The program is still in the reasonably early stages with a number of buildings having undergone building efficiency assessments but not as yet implemented the findings.

16. ACT: Tune Up Canberra

Tune Up Canberra was a $2 million dollar-for-dollar ACT Government grants program in 2010/2011 that offered financial incentives to encourage owners of commercial office buildings to make their buildings more energy and water efficient. Owners of Class 5 commercial properties with more than 1500 square metres in gross floor area could apply for Stage 1 (Preparation of a Tune Up Report) or Stage 2 funding (Capital Works funding up to $100,000). Information on the success of the program could not be found for the purpose of this report.

17. QLD: Smart Energy Savings Program

The Queensland Government's Smart Energy Savings Program (SESP) was a legislative initiative introduced through the Clean Energy Act 2008 to drive energy saving improvements in Queensland businesses upgrade works. The program targeted businesses that fell below the threshold for the Commonwealth Energy Efficiency Opportunities (EEO) Program and required participants to undertake an energy audit, develop an Energy Savings Plan and publish their actions for each relevant site, on a five-yearly cycle. The program commenced in 2009 but was repealed in 2013.

4. What is the potential for change?

As a large consumer of electricity, and producer of greenhouse gas emissions, the commercial building sector is well positioned to contribute significantly to energy savings from efficiency upgrades, with commercial *office* buildings representing the largest opportunity at 3.8 million tonnes (or 23% of the total) of CO2e[11] or 5,142 GWh by 2020. Whilst these figures aren't calculated for the mid-tier alone, it gives an indicator of how much savings could be achieved overall.

Most of these savings can be created from known, cost-effective technologies that we have today, and which are able to create savings even after the upfront costs have been factored in (refer Figure 11) such as HVAC upgrades and tuning, employing economy cycles, efficient lighting upgrades with controls, use of more efficient appliances, and rationalisation.

Implementing energy efficiency measures in the buildings sector also carries considerably less risk relative to other sectors. This is because many of the energy efficiency measures are straight implementations of, or extensions to known technologies and do not require large-scale re-engineering or research and development efforts[12].

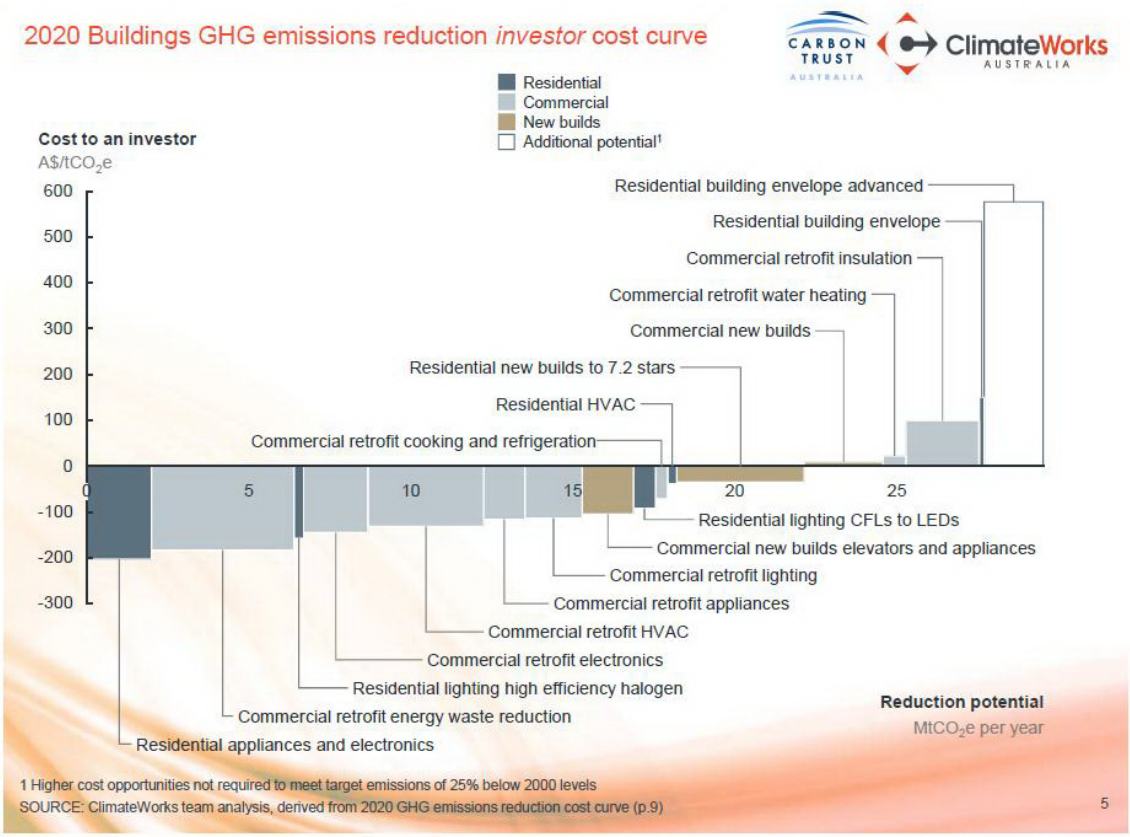


Figure 11: ClimateWorks MAC curve, 2010

[11] ClimateWorks Australian Carbon Trust Report: Commercial buildings emissions reduction opportunities, 2010
[12] The pathway to energy efficiency: Unlocking trapped energy efficiency in the buildings sector, The Allen Consulting Group, 2012

Alongside the ClimateWorks research, various other models have been employed to estimate greenhouse gas savings from existing building energy efficiency improvements. In South Australia, for example, Arup estimated three scenarios of commercial office building energy upgrades across the CBD and fringe areas and came up with the following table, which demonstrates carbon savings, approximate capital investment, and potential uplift in employment based on uptake of Building Upgrade Finance:

Table 1: Estimated carbon savings at different uptakes of Building Upgrade Finance (Arup Segmentation Study, 2012)

	Low uptake (15% of NLA)	Medium uptake (55% of total NLA)	High uptake (85% of total NLA)
Carbon savings (%)	6% carbon saving	21% carbon saving	32% carbon saving
Carbon savings (CO_2/year)	10,800 tonnes	39,700 tonnes	61,400 tonnes
Estimated capital investment	$78m to $117m	$287m to $431m	$444m to $666m
Estimated direct jobs created @ $100k:	310 to 475	Estimated direct jobs created @ $100k: 1150 to 1735	Estimated direct jobs created @ $100k: 1790 to 2685

Potentially a similar methodology could be extrapolated nationally.

The national potential for change in the mid-tier sector could be also be ascertained by the use of the CSIRO diffusion model which is a tool designed to model the impact of an energy efficiency program (eg The Green Building Fund or CBD legislation) on commercial office buildings. It combines geo-physical data (building locations, grade) with energy efficiency potential (based on the Arup Existing Building Survival Strategy report) and social science relating to the barriers to uptake to predict how successful an intervention would be. The benefits lie in the ability to predict what type of changes to your program might be the most effective in increasing its success, as well as being able to pitch it's impact better as it provides figures on the economic ($'s saved, jobs created) and environmental impacts.

5. What are the barriers and challenges?

Retrofitting existing buildings can be a difficult task as it involves the cooperation of a wide range of stakeholders such as tenants, landlords, property managers, local council and contractors.

In addition, environmental sustainability is generally perceived as a low priority, even lower that 'enhancing the buildings appearance'. Unlike the top institutional investors and A-REIT's, branding and reputational risk are not yet as important for these owners.

Various research as well as discussions with individuals from the property industry have come up with a number of consistent challenges the mid-tier sector face when it comes to implementing energy efficiency. For ease of review, these barriers have been grouped into 3 broad categories – financial, knowledge and time.

5.1. Financial Barriers

Item	Barrier or challenge	Detail
1	Reluctance to invest in capital.	Mid-tier building owners may not prioritise spending money in the short term for longer-term impacts/benefits. In some cases they may be choosing to invest capital in other higher earning investments.
2	Management fees are more competitive in the mid-tier portfolio resulting in less management hours. Agents don't have time to spend on looking at ways to improve building efficiency. Sustainability is sometimes viewed as simply 'more work'.	Mid-tier owners often want to minimise property management fees and may hire property managers 'just to keep the building operational'. In addition, some property management organisations that look after the mid-tier may not necessarily have sufficient knowledge around energy efficiency.
3	FMs or property agents are sometimes instructed to minimise costs rather than encouraged to think strategically about the long term value of the property.	Unless there is the risk of high and long-term vacancy many will not be requested to proactively improve the building from a sustainability perspective.
4	Cost for electricity is a small amount compared to other business costs	Price of electricity is immaterial compared to other business costs. Often outgoings are split amongst large group of tenants and costs are simply 'paid' and not questioned.
5	Split incentives	When the base building utility bills are on-charged to the tenant via outgoings, this means that capital spend by the owners to upgrade the building will result in the tenants getting the financial benefit.
6	Net vs Gross lease	Net leases are more common in office buildings than gross leases. A net lease is when the tenant pays a proportion of the base building energy and water costs and any reductions in consumption will be realized by the tenant. A gross lease is when the tenants pays a fixed figure for outgoings. Any savings over and above the fixed amount from an efficiency upgrade will go back to the owner.
7	Lack of motivation amongst owners	Unless the equipment is about to break or there is a concerning high level of vacancy that is affecting his rental income, some owners lack motivation to do anything to improve their building. This is especially the case if the building is not their core or highest-earning business.

5.2. Knowledge barriers

Item	Barrier or challenge	Detail
1	Lack of knowledge regarding energy efficiency .	Sustainability or environmental performance is not usually understood or integrated in the business of the mid-tier. In addition, many property managers may lack knowledge in energy efficiency. Lack of knowledge leads to inertia in the status quo and few imperatives for change. There is also a low awareness of programs, tools, and resources currently available that could support those best placed to make changes and improvements.
2	Information asymmetries	Where property owners or tenants do not have access to a complete set of information to allow them to make the best choice about renting a space, buying a building, or choosing a good contractor. For example, a tenant may prefer a building because the rent is cheaper, not knowing that buy renting this space, they are committing themselves an inferior quality office with much higher operating costs and poor indoor environment quality, leading to reduced productivity and occupant well-being.
3	Perception of energy efficiency benefit of upgrading	Energy consumption reduction doesn't always lead to direct reductions in energy costs but instead smaller increases, which is harder to sell. Owners and tenants often look at the 'cost' of the bill as opposed to the kWh saving – due to lack of knowledge.
4	Lack of tenant demand in the mid-tier buildings	Tenants in the mid-tier are not asking for energy efficiency as they are in many premium and A-grade tenants. This relates back to lack of knowledge and rent per sqm being the main focus for tenants when choosing a building.
5	Government not as strong a driver for energy efficiency	Local, State and Federal Governments and their support (or lack thereof) for sustainability can impact on owners psyches and reduce the propensity for upgrades. If governments demonstrate a commitment to strong and consistent policies that encourage sustainability (both incentives and requirements), as well as leading by example, this has a long-term positive impact on industry with knowledge and capacity increasing over time.
6	Strata titled buildings	Amongst strata-titled buildings, Owners Corporation may see themselves as fulfilling a purely administrative function and not there to provide advice around sustainability.
7	No corporate policies driving environmental outcome	Mid-tier owners don't generally have company policies that consider the energy efficiency and sustainability of their portfolio.
8	Lack of motivation amongst owners	Unless the equipment is about to break or there is a concerning high level of vacancy that is affecting his rental income, some owners lack motivation to do anything to improve their building. This is especially the case if the building is not their core business and it is there in the background providing a steady source of income.
9	Lack of trust and certainty	Information on energy upgrades provided to mid-tier may be seen as coming from a 'vested' interest, not in the best interest of the

		owner
10	Confusion from owners over what is the best option	Mid-tier owners are generally interested in more information which will assist them in becoming more efficient but when it comes to implementation they may shy away due to confusion around the costs and benefits of upgrading or the technology being upgraded itself.
11	Lack of being able to measure savings	Lack of sub-metering systems can make it difficult to measure potential savings from energy efficiency improvements
12	Problems (or perceived problems) with EUAs or funding grants	Mid-tier owners can be reluctant to lock themselves into any financial loan with a council or tying themselves into a funding program where there are a lot of ongoing commitments to M&V. They see these programs as adding to their time commitments and may avoid them for this reason.
13	Perception that the energy efficiency investment won't yield a return	Depending on their IRR, some upgrades may not achieve the required hurdle rate in order for the project to proceed. Especially if the owner has short-term interests rather than a longer term outlook.
14	Perception that energy efficiency 'items' are not as aesthetically pleasing	Some owners may have the belief that energy efficient items such as lights may not achieve the look and feel the owner or tenant might desire.
15	No single industry association or information source that caters specifically to their issues and needs	The mid-tier sector is not represented significantly by any one association or group. For example, the PCA's contact with the mid-tier sector is limited.

5.3. Time and access barrier

Item	Barrier or challenge	Detail
1	Time poor – other competing issues take priority	Programs where there is excessive M&V or confusing paperwork can be a deterrent to the mid-tier who often don't have the time, nor the expertise to adequately carry out these requirements *In a quote from The Next Wave report, several non-corporate organisations interviewed stated that the process for obtaining government grants as too onerous and said they 'didn't have the time' to do it. These considerations are important to the lower grade building office market (particularly in the metropolitan and regional markets) where anecdotal evidence would suggest owners are predominately non-corporate.*
2	Owners are hard to access/contact to inform of the potential opportunities for them. Property Managers may carefully control access.	Especially relevant for overseas owners however also pertinent to private owners.
3	The number of tenants in an office building can have a major impact on the retrofitting decision making process.	Multiple tenants make it harder to implement energy retrofits than if a single tenant due to tenant disruption etc A higher number of tenants will add to the number of stakeholders that need to be consulted and give their approval, hence cause additional time delays and potential risk of dispute.

6. What are the opportunities for change? How do they differ from large commercial buildings?

There is no one solution that will solve the dilemma of improving the energy productivity in the mid-tier commercial office sector. Because of the disparate nature of building owners, each with their own set of drivers and strategies, a pathway for improvement in this sector must involve a range of stakeholders and employ a variety of mechanisms (both legislative and voluntary) in order to see a positive shift in this sector. Whilst some of the sustainability opportunities for large commercial buildings will be of interest to the mid-tier sector, there will need to be adequate consideration given to incentives and ideas which engage the mid-tier sector specifically.

Research conducted by the Klein Partnership as part of the City of Melbourne's 1200 Buildings program suggests that there are a common set of interconnected priorities with mid-tier owners:

1. Financial return
2. Tenant retention and satisfaction
3. Keeping the building operating

Unless any of these priorities are seriously under threat, many mid-tier building owners will not be incentivised to act. The solution therefore lies in communicating to owners and managers of the mid-tier how energy inefficiency and lack of strategic planning may negatively impact their income and risk their asset into the future.

The following list includes some of the opportunities for mid-tier energy efficiency that could be explored further in the workshop. It should be noted that there are many good solutions already in existence; it is how we better communicate these initiatives to the mid-tier that is critical. Whilst most initiatives are aimed at the owners, some opportunities are included for commercial office tenants, or both owners and tenants combined. The list has been broken down into 3 key areas: knowledge raising, finance and legislation.

6.1. Knowledge raising

Item	Opportunity	How
1	Collaborate with councils, industry bodies or educational institutions who are already doing work in this space	There is a lot of great research already been undertaken in this sector on both mid-tier building owners and tenants. Work with these findings to fast track solutions. • City of Sydney • City of Melbourne • Sustainability Victoria • Sustainable Melbourne Fund • City of Greater Geelong • South Australian Government • Clean Energy Finance Corporation • ClimateWorks • CitySwitch Green Office • CSIRO
2	Transparency through leasing agents	Legislation that requires leasing agents to disclose to potential tenants about the condition of the building in terms of its HVAC plant and lighting. This would capture buildings that don't have a NABERS rating under CBD. Giving them this information would educate them, save them money and help transform the sector.
3	Factsheet on high performing *mid-tier* buildings.	Similar to the CitySwitch case study, the production of a 'high performing buildings' factsheet for the mid-tier tenants and owners. This would look at items such as efficient lighting power density, zoning and controls, HVAC efficiency and the concurrent impacts on outgoings as well as indoor environment quality and improved employee productivity, health & well-being and reduced turnover.

4	Communication and awareness through proactive managing agents	Managing agents represent a good opportunity to influence the mid-tier building owners. The more progressive managing agents often have their own sustainability services in-house however this would only represent a small proportion of mid-tier buildings. Many mid-tier buildings are managed by smaller agents, where fees are minimal. They struggle to do the bare minimum for the owner, let alone be proactive around sustainability advice.
5	Simplify and 'talk their language'	Talk in their language rather than 'green' talk. Savings via reduced contractor and maintenance costs, value uplift, reduced vacancy or reduced risk of equipment breaking down may cut through with more success. The mid-tier is all about the dollar savings rather than environmental wins. Ensure that any program is marketed as a 'business efficiency' or financial savings program, rather than sustainability. Adding too many options or talking in complex terms can turn-off the owner, or the property management project team who may be under resourced and lacking detailed knowledge in this space.
6	Lack of proper financial accounting for upgrade items	Owners often only look at upfront capital cost of item rather than the operational energy efficiency and lifespan of the product. Education around proper financial (life cycle) analysis is required in order for them to fully understand the impact of buying 'cheap'.
7	Use existing information	Warren Centre Low Energy High Rise, Arup's Existing Building Survival Strategies, Leasa App, FMA 'Tools for Change' etc.
8	Getting to owners or managing agents at critical times in building lifecycle is critical, i.e. lease expiries, equipment life cycle, changes in legislation, vacancy risk	The probability that an owner will upgrade can be influenced by a range of factors in the building lifecycle. These include equipment reaching the end of its life, major tenants reaching the end of their lease and the owner wanting them to stay on, minimizing vacancies, attracting government tenants or various legislative requirements. Providing the right information at the right time in the decision- making process can be critical for success.
9	Training of facility managers, contractors and other mid-tier service providers	Service providers such as facility managers, maintenance contractors, accountants and agents offer an avenue for influence, however this market has a very wide range of knowledge on sustainability. There needs to be more education for energy efficiency in this market so they can offer the best solution for the building. Knowledge can be lacking in this sector, in particular with the smaller businesses that don't necessarily deal with the proactive and more knowledgeable building owners. BAU is often the case, and whilst there are generally more efficient HVAC and lighting systems as BAU, knowledge of other items such as zoning, better controls, VSDs, building tuning, proper commissioning and correctly sizing equipment can be lacking. Appropriate education and training and potentially options for 'accreditation' of service providers could be considered.
10	A simple industry document which shows owners how to improve energy efficiency and the importance of energy efficiency. Could be supported by the PCA,	Eg a simple process flow chart for EE: 1. Engage & inform 2. Data collection 3. NABERS benchmark

	the REIA, the FMA etc. and delivered through local councils, agents, contractors etc.	4. Audit 5. Retrofit 6. M&V
11	Inclusion of sustainability on due-diligence checklists for property investment	In most instances, due diligence checklists for purchase of mid-tier assets do not reference energy efficiency or sustainability. An education campaign to raise awareness around this would allow potential purchasers of property to be more discerning about their purchase. It would provide greater transparency around the building.
12	Decision making tools and modelling	Decision making tools and modelling will help to provide estimate the uplift in energy efficiency and provide data and evidence to policy-makers. E.g. CSIRO diffusion model.
13	Incentivise through improved branding, marketing and reputation	Creation of industry branding or energy efficient building accreditation. E.g. a sticker communicating that "this is an efficient and well managed building" – which considers a range of factors such as good HVAC, efficient lighting, and good IEQ to help communicate a clear message to tenants or potential tenants. Logo that could be used on real estate websites and in any advertising etc. It will be important not to add to the confusion around 'star' ratings and to carefully consider how existing rating tools already service the market. As mentioned at item 9, accreditation could be developed for service providers in this sector.
14	Improve communication to strata-titled office buildings	Perhaps create a website or fact sheet based on the Smart Blocks website and in particular the 'working with strata' section with business cases for instigating energy upgrades (if nothing similar exists). The website presents the case very clearly and simply. http://smartblocks.com.au/ http://smartblocks.com.au/working-with-strata/
15	Work with exemplar building owners first	Industry peers are often seen as a more trusted source of information than government or industry bodies who usually interact with the more institutional investors. Strategically target the more progressive owners of mid-tier properties (e.g. Cromwell, Quintessential) which will hopefully create a flow-on effect to owners of similar building stock and creating increased awareness through exemplar projects. Use these owners as a conduit to mid-tier owners.
16	Work with industry bodies such as the PCA to specifically target the mid-tier owners.	The PCA tend to work more closely with the top tier corporate property owners and there is not much communication aimed at the mid-tier. Improving this relationship could lead to more engagement and understanding around energy efficiency. Anecdotal comments from mid-tier owners such as 'but we're not a Stockland' shows that there is a disconnect between the mid-tier and the top-tier owners. They don't see themselves as ever being like the top A-REIT's both in terms of size or sustainability. Create a national mid-tier PCA group to encourage mid-tier owners to network with other mid-tier owners. Provide information, case studies etc to this particular sector alone.

17	Marketing energy efficient upgrades or programs as 'business efficiency'	Many mid-tier owners do not uptake environmental programs for reasons such as personal beliefs, perceived confusion around technologies, potential around green wash, the perception it won't lead to a value add within the building etc. Understanding owner sub-groups and sending appropriately tailored messages will be more effective.
18	Upskilling industry	Working with industry bodies such as AIRAH, FMA and PCA to upskill members and work towards mandatory training of all contractors in energy efficiency.

6.2. Financial opportunity

Item	Opportunity	How
1	Discount on stamp duty or capital gains	When the building transacts, a discount on stamp duty or capital gains tax is given to buildings with a higher standard of energy efficiency. This should serve to encourage more owners to upgrade buildings before sale, leading to an increase in the value of the asset as well as reduced capital gains taxation.
2	Financial incentives	Improve the business case by providing financial incentives e.g. accelerated depreciation (green depreciation see below), rebates, low interest loans.
3	Green depreciation	Green depreciation would provide accelerated depreciation for buildings that meet a specified environmental standard. Green depreciation would allow the deferment of tax by reducing taxable income in early years in exchange for bringing forward investment. By allowing investors to defer tax payments, green depreciation can significantly reduce the timing gap problems of energy efficiency investments.
4	On-bill financing	Allows businesses to install and upgrade energy efficiency equipment which is financed by the energy utility. Repayments are made by the business through their monthly power bill and ownership is transferred on final payment of the finance. Up-front capital is not required and repayments can be equal to or less than the energy cost savings achieved. Origin Energy offer this type of finance in conjunction with the Clean Energy Finance Corporation. Origin provides energy saving upgrades through accredited sub-contractors to improve its customers' facilities. The customer repays the cost of the improvements as an on-bill item on their regular energy billing process. These repayments for the installed equipment are tailored over a period of up to seven years, aligned with the reduction in energy costs, so the customer sees the benefit from the outset. On-bill finance is available for projects ranging between $50,000 and $1 million or more that meet the CEFC's eligibility criteria. Origin fact sheet
5	Energy Performance Contracts (EPCs)	EPCs are commonly used as a financing method in the commercial building sector. Energy service companies (ESCOs) guarantee reduced energy bills for commercial tenants, by identifying potential savings in a building's operations, commissioning and funding a retrofit of the building and using the energy saved to fund the upfront costs. This financing model overcomes the inherent barrier of split incentives where building tenants benefit from retrofits through reduced energy bills, but building owners are responsible for the upfront infrastructure costs.

6	Different approaches are needed for payback periods of different lengths	Payback periods must depend on the owners personal drivers. In general the shorter the payback, the more likely they will be to upgrade. Many mid-tier building owners/ investors are not interested in larger, long-term investments, for a variety of reasons, including uncertainty as to how long they will retain the asset.
7	Green Building Fund (or similar) for mid-tier	A similar scheme to the Green Building Fund, aimed at mid-tier. Needs to be uncomplicated. Could potential restrict to 2.5 stars and below buildings to really engage that segment of the market. The average Green Building Fund grant per project was $423,000 (which must be matched dollar for dollar by the owner) however there were a number of mid-tier buildings participating in the scheme with many grants under $200,000.
8	Environmental Upgrade Agreements	While the success of EUAs is still yet to be seen, this type of funding could appeal to more mid-tier owners if they were offered by more councils and if the offering and communication was simplified. If an increasing number of owners take up the finance, knowledge and education could be disseminated by councils contributing to further uptake.
9	A national ESS or VEET scheme for HVAC and lighting Could potentially be targeted at poor performers – eg 2.5 stars and below.	Building on the success of the ESS scheme in NSW and VEET in NSW, implementation of a national scheme with a clear communication campaign. Owners and tenants are always asking about 'funding opportunities' and different states and different councils offer a range of funding and other incentives. Having a well-run national scheme for rebates on lighting, HVAC, commissioning and tuning could assist in improved energy efficiency in the mid-tier.
10	Leasing equipment	Some companies offer the ability to hire energy saving appliances, air-conditioning units and components of office fit-outs. This allows equipment to be upgraded to more energy efficient solutions and the payments can then be made via OpEx rather than CapEx. E.g. Alleasing. This is potentially more of a tenant solution rather than a base building solution and could potentially cause issues with charging via outgoings with tenants. Further research required.
11	Tax breaks for Green Buildings	The Tax Breaks for Green Buildings program was expected to provide a boost of around $1 billion over the life of the scheme to help 'green up' existing buildings across Australia. This program was scrapped in the Federal Budget 2012-2013.

6.3. Legislation

Item	Opportunity	How
1	Local Council incentives	Some local government planning regulations require that new office buildings commit to a high NABERS Energy rating. For example the City of Melbourne's Environmentally Sustainable Office Buildings Policy requires a minimum 4.5 Star Base Building Rating for office developments with a gross floor of 2,500 square metres to 5,000 square metres. Could there be a similar mechanism through Councils for existing buildings? What are the touch points that existing building owners have

		with council? For example, what about a requirement to undertake or achieve a certain NABERS rating as part of a development application? Or a % decrease in Council rates for achieving a certain increase in NABERS rating for existing buildings?
2	Include energy efficiency and its connection to enhanced indoor environment and improved employee productivity as part of WHS considerations	If owners can view energy efficiency in the same light as Workplace Health and Safety requirements, they may be incentivised to do something sooner rather than later. E.g. risk of plant breaking down, poor indoor health for tenants (sick building syndrome from mould and lack of fresh air etc), old lighting which might flicker and cause headaches. In some cases tenants have been suing building owners for poor indoor environmental health in the USA.
3	Review lease clauses to incorporate rental increase in case of energy efficiency improvement	For example changing: 'The landlord cannot recover sustainable items of a capital nature through tenant outgoings' TO: 'The landlord may recover sustainable items of a capital nature that deliver cost savings to the tenant through tenant outgoings'

7. What are the drivers or potential triggers for change?

The drivers for change in the mid-tier sector are varied – much like the ownership profile. What may work for one owner may not necessarily work for another.

Whilst the more progressive building owners realise that having a high-performing building can improve the value of their asset, reduce energy outgoings and maintenance costs, and attract and retain tenants, owners of mid-tier assets can have a completely different set of values and drivers and awareness. This makes energy productivity improvements much more difficult to encourage without the use of some form of legislation, or 'stick'.

The following table outlines some of the key drivers for energy efficiency that could be explored further in the workshop:

Item	Driver	How
1	Legislation (For example, reduction of the Commercial Building Disclosure threshold of 2000 square metres)	For the owners whose only trigger to upgrade may be equipment failure or large tenant vacancy, legislation may be seen as the best driver to enforce energy efficiency. NABERS has found that an additional 1,413 buildings were rated due to Mandatory Disclosure since its commencement in 2010, and since then, those buildings have improved their energy efficiency an average of 8.7%. Reducing the CBD threshold from 2,000 square metres could potentially provide the same impetus for large proportion of inefficient mid-tier buildings. Additional resources, education, and funding assistance may be necessary to assist in the transition - for this is a market where there is often minimal knowledge and awareness around energy efficiency. Combined with limited capital and a completely different set of drivers it could be a tricky but necessary solution. Sustainability Victoria's Next Wave report states that CBD legislation thresholds currently capture 690 existing buildings across Victoria. If the threshold for disclosure was lowered to 500 square metres it would capture an additional 2,107 buildings across the state. Having this data would allow tenants to become more knowledgeable about the performance of the building they are situated in, or hoping to lease. This would help shift market demand to higher performing assets, increasing vacancy in poor performing assets, reducing their yield and making their building not as attractive to rent. It would also give owners some more transparency around their own asset. Further research needs to be undertaken to determine the 'national' potential when reducing the CBD threshold.
2	Risk of losing government tenant	Government tenants are generally long-term and a stable form of income. If there is a risk to the owner of losing a government tenant due to the building not meeting the 4.5 star NABERS Energy requirement, they may be incentivised to upgrade. Given that government tenants make up a very significant portion of the office market in all cities, ensuring that the EEGO Policy is properly adhered to could be a very strong driver of change in the mid-tier at minimal additional time or cost.
3	Rising cost of electricity	The cost of electricity has doubled over the past 7 years and the price of gas is also rising. Whilst the base building costs are usually passed onto the tenants, ensuring that there is open discussion around

		energy pricing with both building owner and tenant, and the long-term importance of having an efficient building, could be another driver.
4	Tenant vacancy	Current and predicted high levels of office vacancy in many cities will potentially force more building owners to upgrade to attract or keep tenants.
5	Tenant demand	Building owners will also be driven by tenants demanding more energy efficient and higher quality spaces. If tenants are educated and know what to ask for when considering moving to a new tenancy, the market will shift in favour of those buildings with newer, better quality plant and lighting, and reduced energy outgoings.
6	Equipment failure	Equipment failure, unfortunately, is often one of the only times a mid-tier owner will look at upgrading. This means that timing is critical in this sector of owners whose knowledge or interest in energy efficiency is minimal. Education around the most efficient replacement solutions for contractors, property and facility management and the owners themselves is paramount.
7	Funding	Mid-tier owners often lack the capital to complete a substantial upgrade. An easily understood funding scheme, without excessive 'green tape', with a good communications campaign run through mid-tier 'touch points' such as property management, local council, industry groups or contractors may drive some owners to upgrade. Anecdotally, this is one of the most common questions when dealing with owners or tenants looking to upgrade. Despite this however, some funding schemes can sometimes have a slow uptake and require a substantial amount of investment in time from funding providers. This reflects a number of interconnected mid-tier barriers around firstly gaining access to owners, gaining their trust, building their interest, and improving their knowledge around the benefits of a high performing building.

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EY would also like to thank the following interviewees for their time:

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- City of Perth, Samantha Hall
- City of Sydney, Mark Matthews
- Climate Works, Eli Court
- Energy Action, Paul Bannister
- FMC, Peter Sherlock
- Future Proofing Greater Geelong, Vicky Grosser
- Knight Frank, Linda Rudd
- Morphosis, Simon Carter
- Quintessential, Shane Quinn
- Savills, Chris Ainsworth and Dale O'Toole
- Sustainability Victoria, Stefan Preuss, Jamie Wallis & Michael Todd
- Team Catalyst, PC Thomas and GS Rao
- Y Research, Damian Stone

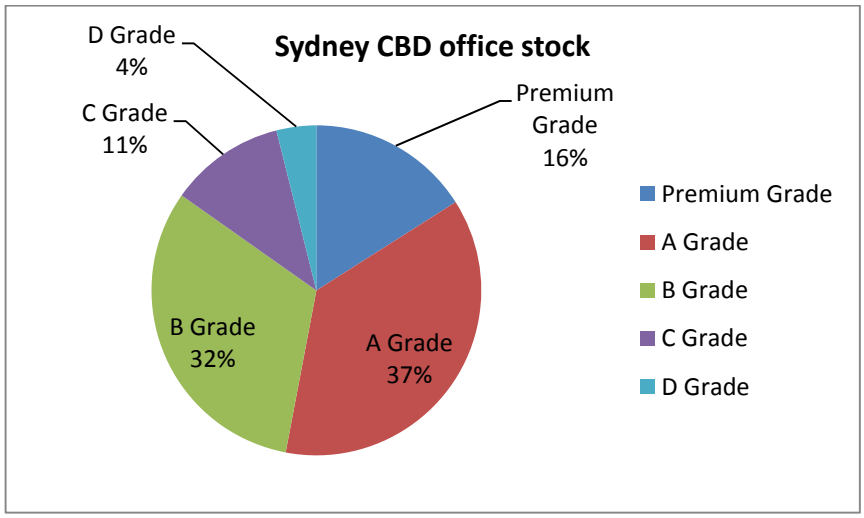
9. APPENDIX A – State findings

Note: Whilst there is some great research on the mid-tier taking place on a local level around the country, there is nothing on a national level. Lack of information is a big impediment in the sector - very little data is available on commercial office floor space outside of large offices and larger CBD's. A national audit of the Australian office market, assessing the location, age, size, ownership and PCA grade would give us a greater understanding of this market and would ensure greater accuracy for predicting the potential environmental and economic uplift from the mid-tier. We know that there is vast potential from all across the country – as evidenced by the Victorian The Next Wave report. Having this information would give us a greater understanding of the current situation and help strategically guide building energy efficiency policy on a national scale.

9.1.1. NSW

Key Findings – Sydney CBD

New South Wales comprises the largest share of the office stock by state, with the Sydney CBD containing nearly 5 million square metres of commercial office space, 28% of the total CBD stock in Australia. Of this, 2.63 million square metres is top-tier and the remaining 2.33 million square metres, or 47%, is mid-tier stock.



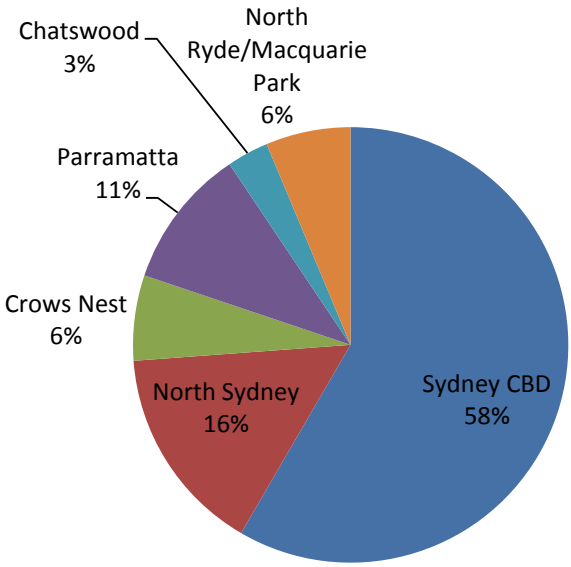
The City of Sydney has done some recent and substantial research into the mid-tier building sector (owners and tenants) within the LGA. They have found that there are approximately 700 commercial office buildings which could be classified as mid-tier and these buildings account for 24% of total LGA emissions (12% from the base building and 12% from the tenant).

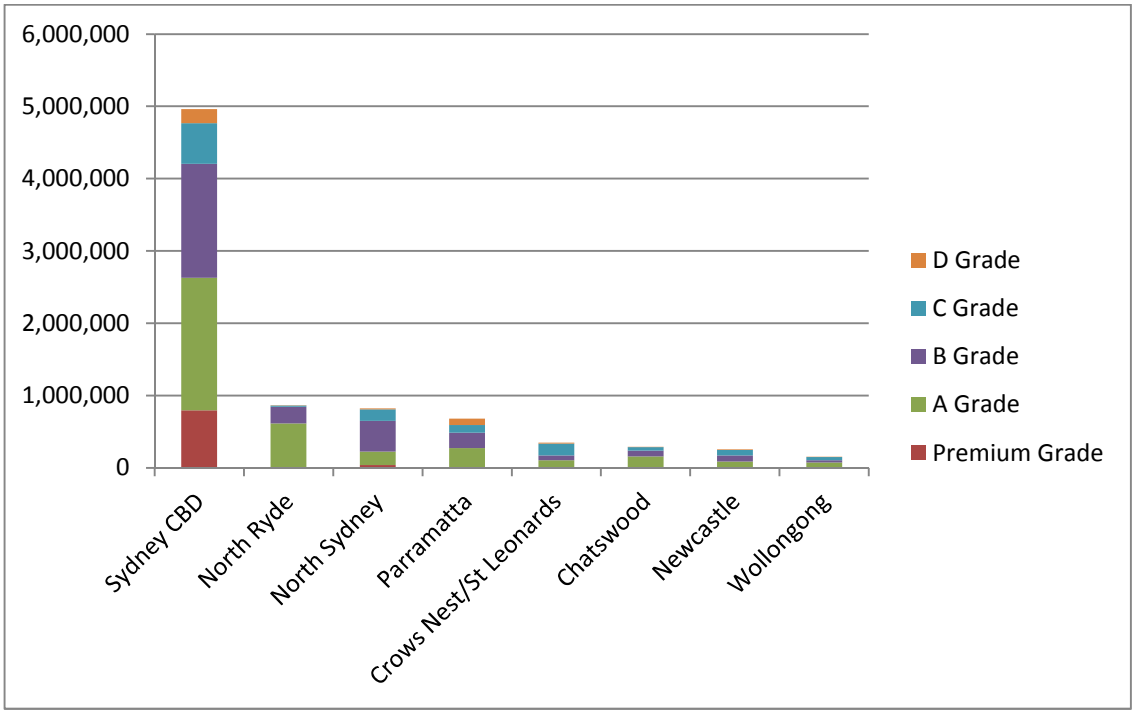
Key findings – Sydney metropolitan

The PCA Office Market report looks at 7 suburban areas outside of the Sydney CBD. There is a total of 3.4 million square metres of office stock in these areas, 54% of this being mid-tier.

BIS Shrapnel data suggests the total NLA of office stock from the metropolitan region of Sydney is over 16 million square metres. This is over 7.5 million square metres more than what is estimated in the PCA report and presumably mostly mid-tier stock.

Geographical location of mid-tier commercial office stock in NSW





Key findings – Sydney Regional

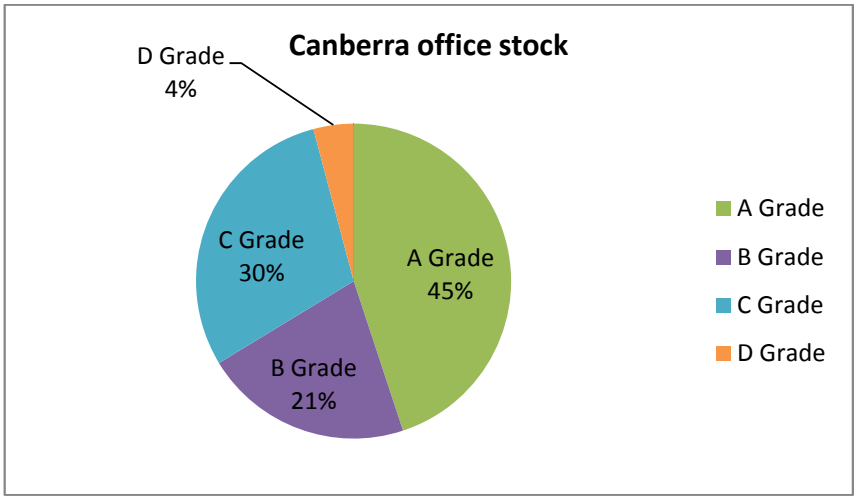
Like most other states, regional data in NSW is patchy and needs to be further researched to gauge potential. Newcastle is Australia's largest regional office market at over 255,000 square metres. Wollongong is the third largest regional office market at over 151,000 square metres.

9.1.2. ACT

The Canberra mid-tier market makes up 55% of the market, or over 1.3 million square metres of office net lettable area. A-Grade assets make up the rest at just over 1 million square metres.

Potentially in part due to the Government Energy Efficiency Opportunities Policy implemented in 2006, over the past 6 or 7 years, there has been tenant-driven interest in modern, energy efficient buildings and this has changed the Canberra market from one of low-quality buildings to higher grade assets with longer term tenants and good cash flow for investors. With Government making up around 70% of the office market in Canberra, this demonstrates how legislation can help drive building efficiency improvements over time, make customers aware of the benefits, and create demand from the bottom up.

Anecdotally we know that there are still a significant number of lower grade buildings in Canberra, some with Government tenants. Ensuring that the EEGO Policy requirements are stringently adhered to would ensure that more of these buildings which have Government tenants would be forced to upgrade.



9.1.3. Victoria

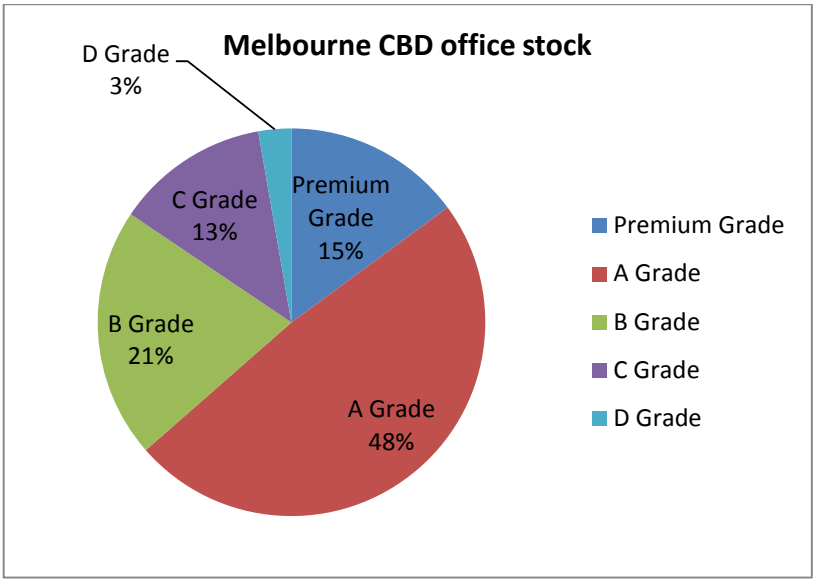
Over the last 2 years, Sustainability Victoria has conducted detailed research into the existing commercial office sector and its potential for energy efficiency savings across Victoria. Alongside this, The City of Melbourne and the City of Geelong have conducted similar work, leading to an impressive amount of knowledge and data from the state overall.

In 2013, Sustainability Victoria commissioned Davis Langdon to undertake a detailed analysis of Victoria's existing building stock – specifically the amount, location and impact of lower-grade (B, C and D-Grade) commercial offices across Victoria. This report was titled "The Next Wave: Retrofitting Victoria's office buildings" and the information in here would serve to inform state policy and various initiatives aimed at achieving the best environmental outcome and economic returns.

According to the research, there are an estimated 20,000 mid-tier buildings located outside of the City of Melbourne. These buildings are typically built prior to 2007 and can be found in many suburban and regional areas.

Key findings – City of Melbourne

The PCA Office Market report says there is an estimated 5.7 million square meters of office stock in the Melbourne CBD, St Kilda Road, Southbank and East Melbourne. Whilst they estimate that 42% of this is mid-tier, the Next Wave thought this was actually closer to 80%. This most likely reflects the different and imperfect data sets being used. The Next Wave have also estimated there are around 4,420 buildings, which gives an average building size of 1,300sqm.

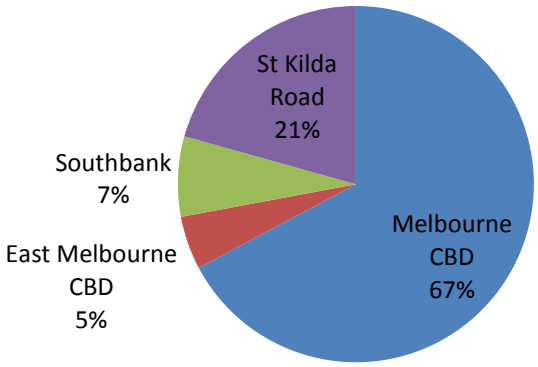


Key Findings – Metropolitan Melbourne

The Melbourne metropolitan region has 16,115 office buildings with a combined total net lettable area of over 5 million square metres (excluding the City of Melbourne)[13]. PCA grade data is nearly non-existent in these areas however based on research done by the Municipal Association of Victoria on a number of the municipalities located in this region, nearly all the buildings were in the mid-tier B, C and D-Grade categories. Therefore we may be able to conclude that nearly all 16,115 buildings would also be classified as mid-tier and potentially suitable for energy retrofits.

[13] The Next Wave: Retrofitting Victoria's Office Buildings, 2013

Geographical location of mid-tier commercial office in Victoria, 2014



Key Findings – Regional Victoria

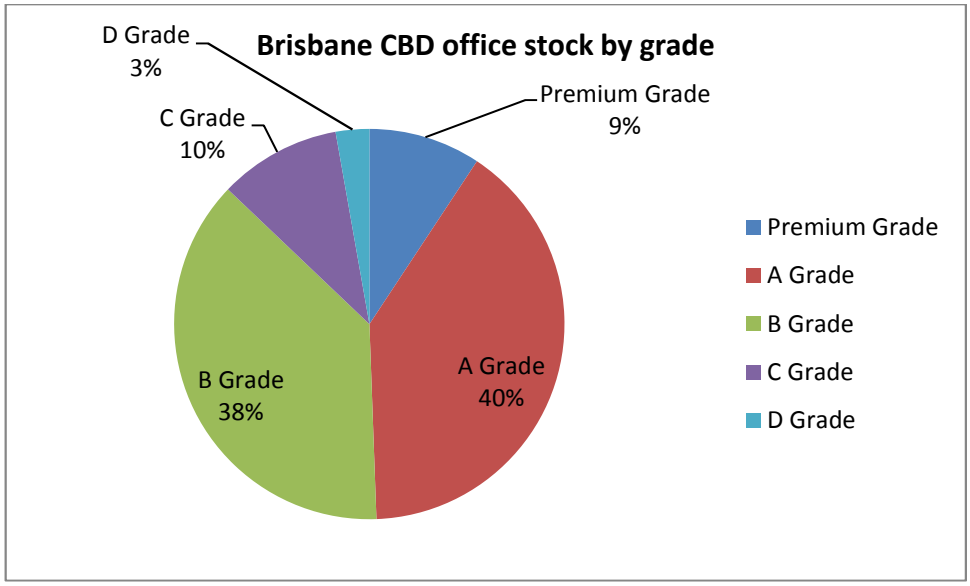
The Next Wave report suggests that there are 4,169 office buildings in regional Victoria with an average office building size of 220 square metres and a total area of just over one million square metres. Geelong is the second largest regional office market in Australia at just over 230,000 square metres.

It should be noted that the 2012 COAG report estimates that there are 16.5 million square metres of office stock across Victoria, which is nearly 5 million square metres more.

9.1.4. Queensland

Key Findings – Brisbane CBD

According to the 2015 PCA Office Market report, The Brisbane CBD office market comprises around 2.2 million square metres of NLA. Of this, there is an even split between the top tier and mid-tier with around 1.1 million square metres of stock each. Outside of the CBD, the Brisbane fringe contains 1.2 million square metres of office space with 584,000 or 48% mid-tier.



Key Findings – Brisbane metropolitan

Within the Brisbane metropolitan region, the PCA review the data from the suburbs of Upper Mt Gravatt and Chermside. There is nearly 136,000 square metres of office stock with only 56,000 of this mid-tier.

The 2012 COAG report suggests the total NLA of office stock from the Brisbane metropolitan region is approximately 6.6 million square metres. This is 3.1 million square metres more than what is estimated in the PCA report and presumably mostly mid-tier stock.

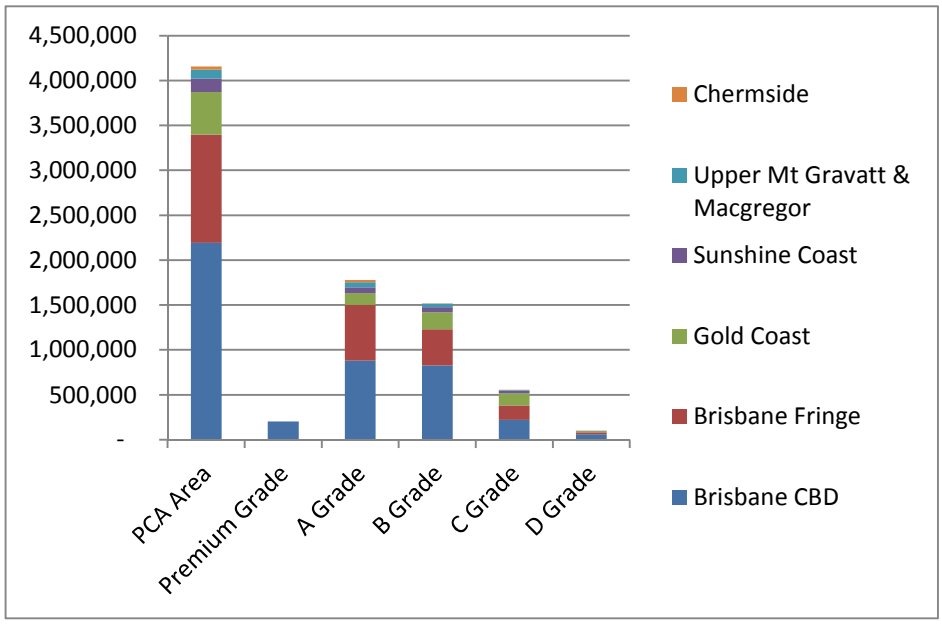
Key Findings – QLD Regional

The Gold Coast has a total of 472,000 square metres of office stock, 72% of which (340,000 square metres) is mid-tier stock.

The Sunshine Coast has 150,000 square metres of office space, 56% which is mid-tier.

There are no published reports on the size of the Townsville and Cairns office markets although some suggest is it around 80,000 square metres each.

COAG shows that QLD regional has over 5 million square metres of office stock indicating there is 8 times more stock available for potential energy efficiency improvements.



9.1.5. Western Australia

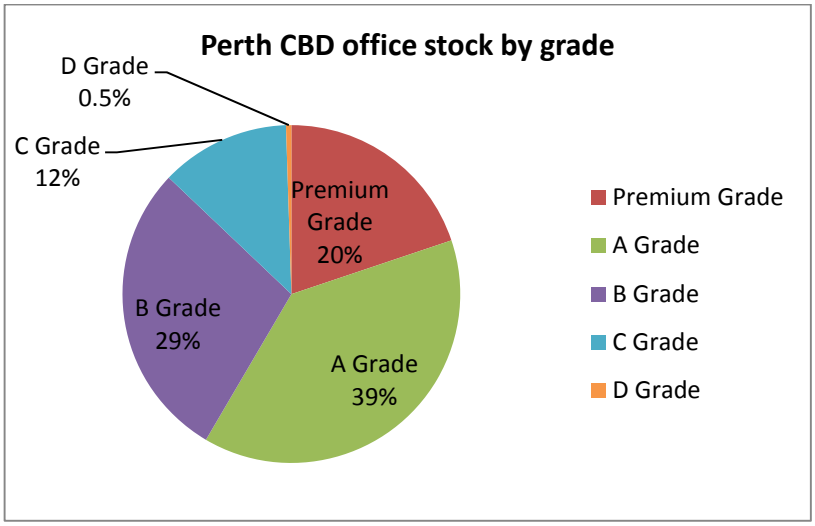
The City of Perth, combined with the Perth metropolitan region contains over 3.6 million square metres of office space. Of this, around 1.6 million square metres, or 44.2% is located in the Perth CBD, with 422,000 square metres or 11.6% of space in West Perth. Metropolitan Perth makes up the rest with 1.6 million square metres or 44.2% of metropolitan Perth's office space across Perth's 151 suburbs.

COAG estimates the total amount of commercial office stock to be over 5 million square metres.

Key Findings – City of Perth

The City of Perth (consisting of the Perth CBD and West Perth) contains approximately 550 commercial office buildings[14]. Of this, the Perth CBD contains 1.6 million square metres of office lettable space, with over 58% (949,000 square metres) top-tier and the rest (675,000 square metres) being mid-tier. Of this, there are 160 buildings (approx. 1 million square metres) developed prior to 2000 that have not had major refurbishments in the past 15 years[15] and could provide good scope for energy savings.

Outside of the CBD, West Perth has the next greatest proportion of office buildings with 284,381 square metres of mid-tier floor space, or 67% of the overall amount of office building NLA.



Key Findings – Metropolitan Perth

There are around 1,950 office buildings spread out across metropolitan Perth[16]. LGA's which have a significant proportion of office stock are the City of Subiaco (Subiaco), City of Stirling (Herdsman/Osborne Park), City of Fremantle (Fremantle), City of South Perth (South Perth), City of Belmont (Belmont) and the City of Vincent (Leederville, North Perth and Mount Lawley/Highgate). Each of these LGA's has over 50,000 square metres of office space[17], which we can assume would be mid-tier.

Key Findings – Regional WA

Data is nearly non-existent outside of Perth however figures from Y Research suggest that Bunbury is the fifth largest regional office market at nearly 80,000 square metres.

[15] Y Research WA Office Market Report, 2014
[16] Y Research WA Office Market Report, 2014
[17] Y Research WA Office Market Report, 2014

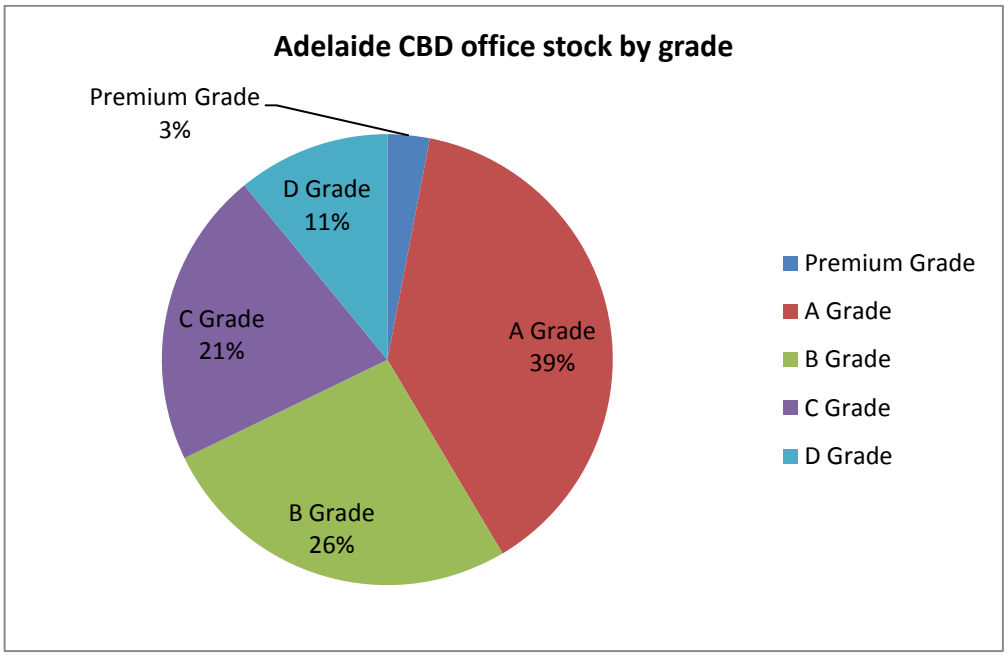
9.1.6. South Australia

Key Findings – City of Adelaide

Commercial office buildings in South Australia are concentrated in the Adelaide CBD and fringe precincts and as December 2014 totaled 1.6 million square metres of space across 388 buildings. The CBD precinct, bound by North, West, South and East Terrace, contains 1.4 million square metres of office space, with the balance housed in the precinct classified as fringe.

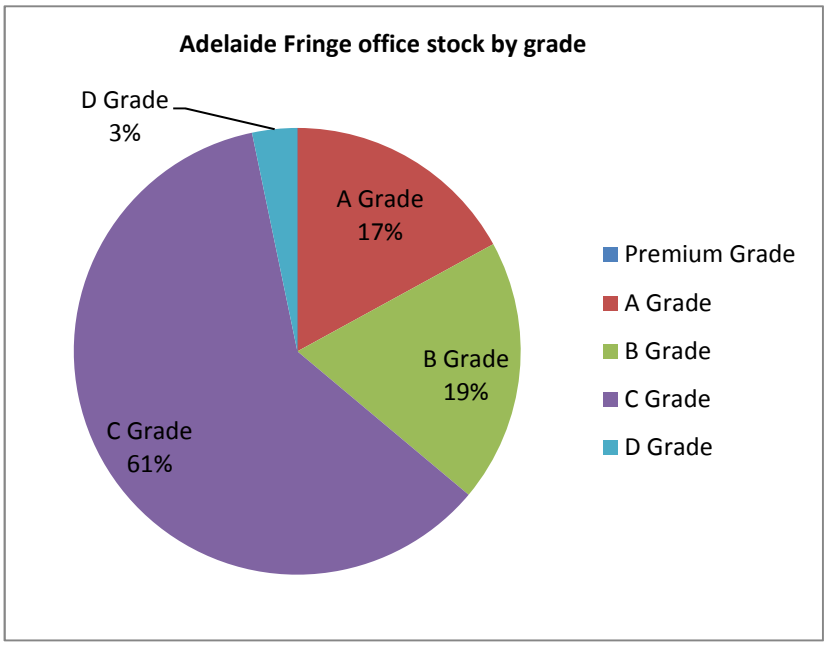
Of this 1.6 million square metres of space, there is nearly 1 million square metres which sits within the mid-tier category (60%).

The study also revealed that the most common building size in the CBD and fringe is 1000 square metres to 5000 square metres NLA with 60% (232 buildings out of 388) of these properties in the CBD and fringe in this size range.



Metropolitan Adelaide

Research shows that there is significant stock of office buildings located in the wider metropolitan region of Adelaide, predominantly in the City of Unley (approx. 500 buildings), City of Burnside (approx. 400 buildings) and City of Norwood Payneham and St Peters (approx. 600 buildings). Most of these would be mid-tier grade buildings.


Adelaide Fringe office stock by grade
D Grade
3%
A Grade
17%
B Grade
19%
C Grade
61%
Premium Grade
A Grade
B Grade
C Grade
D Grade

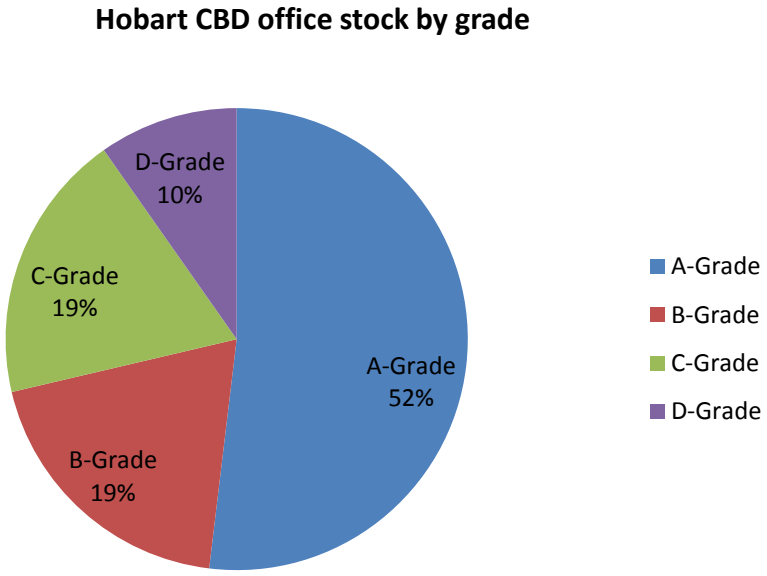
9.1.7. Tasmania

Key Findings – Hobart CBD

In Tasmania, the PCA office market report only covers the Hobart CBD. Out of a total of over 360,000 square metres, mid-tier was just under 50% of the market at just under 175,000 square metres. COAG data suggests that there is 608,000 square metres of office NLA in the Hobart metropolitan area.

Key findings – Regional Tasmania

Launceston is purported to have approximately 55,000 square metres of office space. COAG data suggests that there is 461,000 square metres of space outside of the Hobart metropolitan region.



9.1.8. Northern Territory

The Darwin CBD is evenly split with A-Grade and mid-tier both having 105,000 square metres of office space.

2012 COAG data suggests there is 283,000 square metres of office stock in Darwin and 92,000 square metres in the territory outside of Darwin.