ATTACHMENT C

SYDNEY'S SUSTAINABLE OFFICE BUILDINGS PLAN

Sydney's Sustainable Office Buildings Plan

Draft February 2018

A plan for efficient office buildings running on renewable energy

Contents

Left: Photographer: Jamie Williams / City of Sydney
Cover: Photographer: Jamie Williams / City of Sydney, 2011

01 Executive summary

Together we can accelerate the number of net zero emissions buildings and harness economic and social benefits

In creating Sustainable Sydney 2030, Sydney's community members – residents, visitors, workers and businesses – established their vision of a sustainable future. To support achieving this vision, the City of Sydney has set bold targets including a 70 per cent emissions reduction for the local government area from a 2006 baseline, and net zero emissions by 2050. These targets are in line with the historic 2015 Paris Climate Agreement, which commits over 130 parties, including Australia, to pursue efforts to limit the global temperature increase to less than 1.5 degrees.

The City has also set targets for 50 per cent renewable energy by 2030, 70 per cent commercial waste recovery by 2021 and no increase in potable water consumption by 2030 from a 2006 baseline.

We cannot meet these targets through the City's actions alone. This plan calls on the whole office sector: government agencies, building owners, tenant companies, their employees, building managers and developers to act together to improve environmental performance for the benefit of all.

A number of property companies and office based organisations are already demonstrating international excellence in sustainability action[1] and the City's current policies and voluntary programs have so far motivated some leading organisations in the office sector to reduce consumption[2]. However, substantial cost effective opportunities for emissions reduction and water and waste efficiency[3] remain in the sector.

Office buildings and their occupants were responsible for 45 per cent of carbon emissions, 20 per cent of commercial waste and 27 per cent of water consumption in our local government area in 2015/16.

Reducing overall energy and water consumption levels in the sector will go a long way towards meeting the environmental targets we set out in Sustainable Sydney 2030. Improving the environmental performance in office buildings will also: reduce costs through lower energy use and overheads; increase asset value; support employee wellbeing and productivity[4]; manage corporate risk and address directors' fiduciary obligations.[5]

The City of Sydney has an international reputation as a leader on sustainable buildings. Through this and other plans, we support leaders to accelerate towards net zero emissions buildings and support wider government policies that secure renewable energy to power these buildings. We will encourage innovation and leadership and continue to raise the bar on voluntary practice. We also support policies to create new buildings that do not generate new emissions.

For those yet to take action, this plan will stimulate activity by advocating for higher minimum standards for new build and refurbishment work and mandatory disclosure of NABERS Energy ratings for tenancies in office buildings. For the rest of the sector, we will continue our business support programs and to call for market signals and incentives to create market pressure. We will support accelerated uptake of renewable energy for all through advocacy, government partnerships and direct investment.

1 CDP 2016 – NAB, Westpac; 2016 GRESB Report – Lendlease, DEXUS; Dow Jones Sustainability Index 2016 Components List – Stockland, Mirvac, GPT, DEXUS, Westpac,
2 CitySwitch Program Report 2016, BBP Annual Report 15/16
3 Pitt & Sherry Office Sector Emission Modelling Final Foundation Report 2016
4 Why Choose a High Performing Building, CitySwitch
5 Australian Institute of Company Directors, 2016

World Square / City of Sydney

A substantial increase in renewable energy supply is key to this strategy. NSW's current renewable energy supply is 14 per cent[6] and Australia's supply is 17 per cent[7].

The federal government's 2020 Renewable Energy Target aims to increase the supply to 23 to 24 per cent of the total electricity demand. However, this is insufficient to achieve the Sustainable Sydney 2030 environmental targets or make an equitable contribution to international efforts to limit global warming to 1.5 degrees. The City will work with State and Federal government to increase the share of renewable energy into the grid.

6 NSW Renewable Energy Action Plan Annual Report 2016
7 Clean Energy Australia Report 2016

Sector emissions reductions and measures

Between 2005/06 and 2015/16, emissions from the sector fell 14 per cent.

If the below policy measures are implemented through delivery of the actions in this plan, sector emissions could:

- Reduce by 26 per cent by 2021/22 (from 2005/06 levels)
- Reduce by 46 per cent by 2029/30 (from 2005/06 levels)

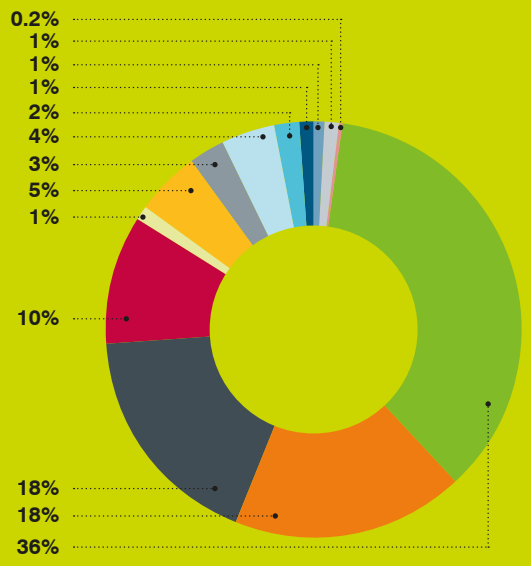
However, there is still a significant gap before the sector's emissions reach the City's target for the local government area - 70 per cent reduction by 2030 from 2006 levels. And an even greater gap exists to the net zero by 2050 target. This gap must be filled by a large increase in renewable energy in the grid, and potentially other energy efficiency measures not yet identified.

More detail on the assumptions behind each measure is available in Appendix A.

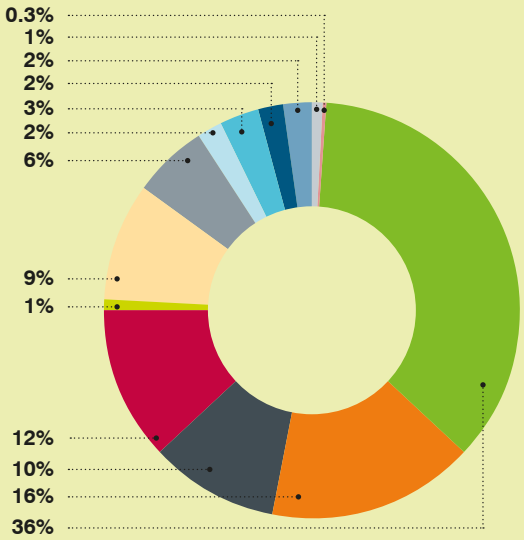
Carbon emissions reductions

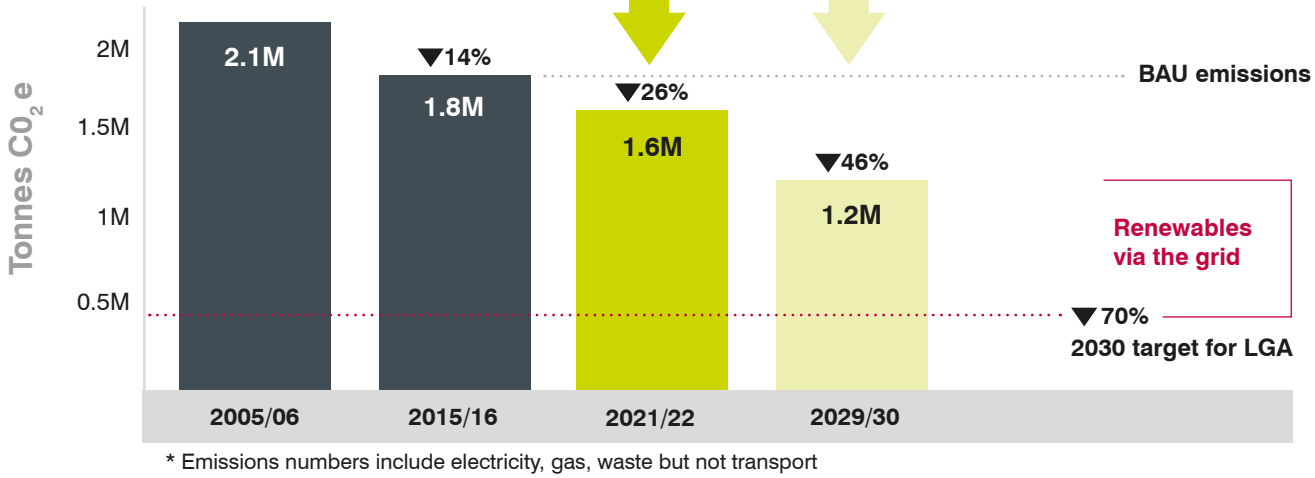
- Renewable energy campaign
- Expansion of Commercial Building Disclosure Scheme
- NABERS Commitment Agreements
- Higher energy standards in National Construction Code
- Increased compliance with National Construction Code
- Enhanced Minimum Energy Performance Standards
- CitySwitch Growth
- NSW Government Leasing requirement for 6 stars NABERS energy
- National financial incentives
- Data driven campaigns
- Voluntary best practice standards
- Environmental grants and building tune-up program
- Waste Strategy Implementation

Emissions reduction 2015/16 - 21/22

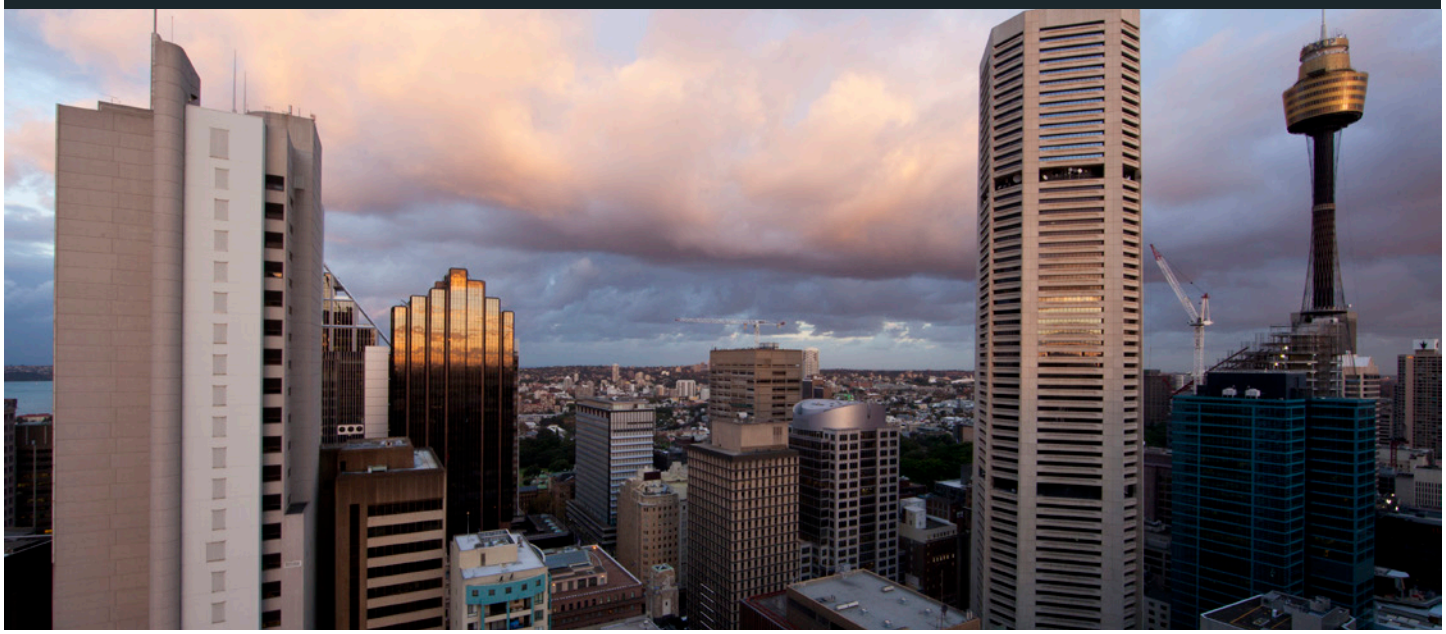


Emissions reduction 2015/16 - 29/30





* Emissions numbers include electricity, gas, waste but not transport



Photographer: Jamie Williams / City of Sydney

Actions

This plan outlines opportunities and areas of action for:

- Building owners
- Office building tenants
- Building managers
- Developers
- Government

The table on page 8-10 summarises these actions and also the ways in which the City will provide support.

Without implementation of the actions in this plan, emissions for the sector are predicted to remain at 2015/16 levels until 2030. Under business as usual conditions, continuation of current trends in energy efficiency and policy drivers would deliver a reduction in emissions intensity, however this would be offset by projected growth in the sector's floor space.

These actions would also help Sydney achieve net zero emissions by 2050 – a goal adopted by the Greater Sydney Commission, the NSW state government, and many countries, states and organisations, such as Mirvac, Investa and AMP Capital.

The actions in this plan can also enable the sector to deliver:

- Zero increase in potable water use from 2006 baseline by 2021/22; and a 9 per cent reduction by 2029/30, achieved through water efficiency and recycled water
- An increase in resource recovery to divert 70 per cent of waste from landfill by 2021/22; and up to 90 per cent by 2029/30.

Industry actions and City support

Owners

Energy and emissions

- Implement environmental upgrades
- Rate and disclose NABERS Energy performance ratings for base building, combined and whole building in collaboration with tenants
- Support energy performance disclosure and improvement by their tenants
- Upgrade all general lighting systems within tenancies
- Use green leases to enable collaboration with tenants
- Maximise on-site and off-site renewable energy supply options

Waste

- Provide source-separated waste management services for recyclable materials, including organic waste where appropriate
- Use industry best practice to manage and report on waste generation in offices via the NABERS Waste tool to improve industry insights and identify new opportunities for resource recovery
- Work with product and service contractors to implement innovative ideas to minimise waste generation on site and to encourage the re-use and replacement of non-recyclable materials with re-usable or recyclable materials
- Seek non-landfill solutions when establishing waste contracts

Water

- Undertake and disclose NABERS Water whole building ratings
- Install sub-meters to detect and rectify leaks and drive water-efficient behaviour in tenants
- Optimise cooling tower water efficiency
- Regularly check for leaks and upgrade water fixtures to improve efficiency
- Investigate recycled water supply to cooling towers and other non-potable water consumption and connect when access becomes available

Transport

- Provide ample bike parking and end-of-trip facilities

Office building tenants

Energy and emissions

- Rate and disclose environmental performance
- Upgrade to energy-efficient lighting and appliances
- Maximise renewable energy options
- Demand high-performing buildings
- Engage with building owners on base building performance improvements, including owner-provided general lighting systems in the tenancy
- Collaborate on whole-building performance

Waste

- Request better waste services and reporting from owners
- Engage staff to recycle correctly
- Introduce print on demand software to reduce paper wastage

Water

- Assess water efficiency and contract management to upgrade water fixtures and install sub-meters

Transport

- Encourage cycling, walking and public transport

Building managers

- Implement environmental upgrades
- Measure and present the savings to owners and tenants
- Develop business cases for major upgrades
- Preference the replacement of end of life equipment with the highest efficiency option rather than like for like – considering the life cycle costs and benefits rather than simple cash up front

City support

- Advocate for regulatory reform to facilitate increased investment in, and use of, renewable energy
- Advocate for increased minimum environmental performance standards in building codes, equipment and appliances
- Provide support for whole-building data disclosure and NABERS Energy Ratings
- Continue to deliver the CitySwitch Green Office Sydney program to office-based businesses
- Continue to deliver the Better Buildings Partnership program for leading property owners in the local government area
- Support environmental innovation through the provision of grants and the sharing of success and knowledge
- Encourage private owners to take action with information, disclosure and campaigns
- Promote green leasing to enable upgrade activity
- Support the cost effective uptake of renewable energy with information and campaigns
- Encourage the design, construction and operation of net zero office buildings, both new and existing
- Deliver a tune-up program to support privately-owned buildings to make environmental performance upgrades
- Encourage and support buildings to connect to recycled water

City support continued...

- Encourage and support buildings to connect to recycled water
- Provide guidelines to assist the business community with operational and contract waste management templates to achieve improved sustainability outcomes and value for money
- Support improved commercial waste data collection and verification
- Educate the business community about available non-landfill, alternative waste treatment solutions for operational waste management
- Continue to deliver the Liveable Green Network, providing connected walking routes across the city
- Advocate for and develop an integrated bike lane network and distribute cycling and walking maps

Developers

- Design and construct new buildings to the highest level of sustainability performance available
- Utilise the highest available NABERS Energy Commitment Agreement
- Comply with the City of Sydney's Waste Management Local Approvals Policy and Guidelines for Waste Management in New Developments
- Include dual plumbing in planning proposals where there are opportunities to connect to a recycled water scheme
- Ensure highest available Water Efficiency Labelling Standard (WELS) for taps, toilets and urinals, and dishwashers.
- Minimise water wastage from fire protection systems testing
- Provide bike parking and facilities
- Minimise general car parking and provide car share vehicle spaces and dedicated charging stations for electric vehicles where possible and appropriate

City support

- Advocate for increases to the National Construction Code (NCC) minimum environmental performance standards for building and refurbishments, and increased compliance with the NCC
- Continue to promote the Section J compliance checklist through industry partners
- Advocate for regulatory reform to facilitate increased investment in and use of renewable energy
- Investigate the inclusion of planning control provisions that introduce NABERS Energy Commitment Agreements for new commercial office buildings and major commercial office refurbishments over 500 sqm or 1000 sqm.
- Update the Development Control Plan (DCP) to specify minimum waste and recycling storage requirements in buildings
- Develop a pathway for the City's current planning controls to be strengthened over time to deliver net zero building standards
- Encourage the design, construction and operation of Sydney's first net zero buildings, both new and existing
- Encourage and support buildings to connect to recycled water
- Investigate how dual plumbing could be mandated in areas where recycled water is available

Industry actions and City support

Australian and New South Wales government

Australian Government

- Establish a price on carbon and increase the mandatory renewable energy target providing policy certainty to the energy market
- Remove energy market barriers for decentralised energy and affordable off-site renewable energy access
- Implement regular mandatory disclosure of NABERS tenancy and whole-building ratings, as opposed to at the time of sale or lease and investigate the opportunity for retro-commissioning of existing buildings to minimum standards
- Increase minimum standards in the National Construction Code
- Increase Minimum Energy Performance requirements (MEPS) and accelerate uptake of energy efficient appliance standards under the national Greenhouse and Energy Minimum Standards (GEMS) program
- Promote the National Carbon Neutral Offset Standard for Carbon Neutral Buildings
- Develop financial incentives for high environmental performance in buildings

New South Wales government

- Increase the Government Resource Efficiency Policy (GREP) to specify that agencies need to occupy buildings with minimum 5.5 - 6 star NABERS Energy rating and ultimately net zero buildings
- Rate and disclose the energy and water performance of government owned buildings
- Collaborate with industry associations to build capacity and deliver targeted information, resources and training to private owners
- Deliver waste market reform to incentivise resource recovery (avoiding waste, recycling, alternative waste treatment, and transparent waste reporting on volume, weight, composition and diversion from landfill)
- Deliver a recycled water pipeline along George Street between Circular Quay Station and Central Station by 2018
- Fund, and where appropriate deliver, an integrated bicycle network to encourage the further take up of cycling
- Deliver key components of an integrated and safe walking network, including road crossings and links through Government lands and developments

City support

- Advocate for increased minimum environmental performance standards in building codes, equipment and appliances
- Advocate for the Government Resource Efficiency Policy (GREP) to specify that agencies need to occupy buildings with minimum 5.5 - 6 star NABERS Energy rating and ultimately net zero buildings
- Advocate for the mandatory regular disclosure of tenancy ratings and retro-commissioning to above minimum standards, including tax incentives for action
- Provide support for whole-building data disclosure and NABERS Energy Ratings
- Share waste generation data to assist with monitoring recycling performance and identify opportunities for increased resource recovery
- Advocate for water pricing that reflects resource value and promotes innovative water-sensitive solutions including recycled water
- Advocate for regulatory reform to facilitate increased investment in, and use of, renewable energy

02 Our vision for Sydney's sustainable offices

Efficient buildings running on renewable energy will be in high demand across all parts of the office sector

The City of Sydney will continue to lead, advocate and support our businesses to take action. But without strong state and federal policies, the vision of a sustainable Sydney will not be achieved. This plan encourages everyone in the office sector to act and collaborate to achieve even greater business and community benefit for all.

This plan targets the following outcomes by 2030

- Mainstream demand for net zero office space and buildings
- Owners and tenants from all office segments are leveraging targeted resources, support and incentives and are taking action
- Continuous improvement of environmental performance in existing buildings
- New developments are designed and constructed to the highest level of sustainability performance available.
- Significant increase in renewable energy demand and supply leading to 50 per cent renewable electricity consumption
- Property owners and office-based businesses are demonstrating process and technology leadership
- Improved waste management, monitoring, reporting and verification leading to 90 per cent resource recovery
- Improved water efficiency and access to recycled water for non-potable water use.

03 Net zero emissions

Buildings represent the greatest opportunity for reducing greenhouse gas emissions in Sydney

Net zero emissions buildings are run on renewable energy and offset any remaining emissions. They maximise resource efficiency and ideally take into account building envelope[8]. They use passive design, which maximises the use of natural light, heating and cooling through building orientation, windows, glazing and natural ventilation to reduce the need for additional cooling or heating.

For example, a western façade that receives the strongest sun at the hottest part of the day could be designed to reduce the need for energy for cooling and in turn reduce water consumption. Water efficiency reduces the energy needed for pumping water.

New buildings will need to be designed with passive design, the highest available efficiency, and building management systems for maximising environmental performance in operations. Existing buildings will need deep retrofits: from lighting to chillers and building envelope upgrades. Both new and existing buildings will require access to on-site and off-site renewable energy.

Net zero building actions

Net zero buildings firstly maximise energy efficiency, then generate or procure renewable energy, then offset any remaining emissions

In 2017, the federal government developed a National Carbon Offset Standard for carbon neutral buildings[9]. The standard provides an opportunity for carbon neutral certification of either base buildings or whole buildings. The whole building certification will require building owners to collaborate with tenants to meet the requirements of certification. Tenants generally use about 40-50 per cent of the energy required for the whole building. The use of the whole building standard is an important part of moving industry towards net zero buildings and the City encourages the adoption of this standard. The City also recognises that the achievement of this for all buildings is currently challenging and is committed to supporting industry to overcome these challenges.

Businesses that occupy net zero buildings will be able to report to staff and customers that their building has little or no environmental impact during operation. Occupants will be more comfortable with better indoor air quality, levels of productivity, and health and wellbeing[10].

9 National Carbon Offset Standard for Buildings, Australian Government Department of the Environment and Energy

10 Health, Wellbeing & Productivity in Offices – The next chapter for green building, WGBC

Net zero emissions buildings

King George V recreation Centre, The Rocks, May 2014 / City of Sydney

There are already many local and international examples of net-positive and net zero buildings found in cities from Sydney to New York City. The City of Vancouver has recently approved its Zero Emissions Building Plan and Singapore's Building Construction Authority is aiming for positive-energy low-rise, zero-energy medium-rise, and super low-energy high-rise buildings.

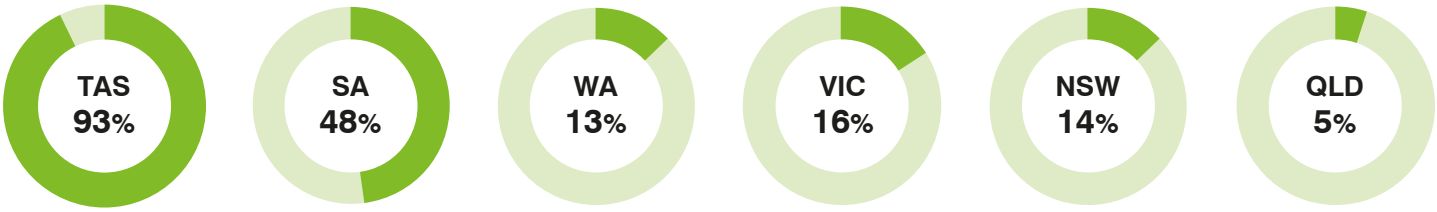
In Australia, realisation of net zero buildings at scale will require collaboration across all three levels of government. The City looks forward to more action by the Australian Government on renewable energy supply and implementation of its National Energy Productivity Plan; as well as collaborating with the New South Wales Government on its target to achieve net zero emissions by 2050.

Policies to incentivise and accelerate action are needed at the national level. Delaying the implementation of opportunities could cost the country $24 billion over five years.[11]

11 Low Carbon High Performance – How buildings can make a major contribution to Australia's emissions and productivity goals, ASBEC, 2016

04 Renewable energy

Renewable Energy Penetration – state by state in 2016[12]



Net zero emissions will require large scale renewable energy commitments from the office sector

Australia's coal-fired electricity has high carbon emissions – a major contributor to climate change. Renewable energy, such as solar power, produces no emissions and the price is decreasing relative to coal-fired power. NSW's current renewable electricity supply is 14 per cent and Australia's supply is 15 per cent[12]. The federal government's 2020 Renewable Energy Target (RET) provides incentives for 23-24 per cent renewable energy.

This plan indicates that the office sector can reduce its 2006-level emissions by 46 per cent by 2030 through efficiency and the voluntary uptake of renewables.

The remaining 24 per cent reduction to get to the net zero target will need to be made up from offsets, a material increase in voluntary renewables purchasing and/or the greening of the grid supplied energy.

The City of Sydney is working with the Council of Capital City Lord Mayors and industry bodies to advocate for changes to state and federal policy that would accelerate the adoption of clean energy. This includes national electricity market rule changes that would unlock the potential for locally generated energy to be more appropriately priced by the market[13].

GreenPower purchase and other procurement models including corporate power purchase agreements offer possible solutions to assist organisations to manage climate risk exposure and mitigate against electricity market price volatility[14].

Analysis by sector stakeholders has found that a NABERS Energy five star rated building using green power is cheaper to run than a four star rated building using black power[15].

12 Clean Energy Australia Report 2016, NSW Renewable Energy Action Plan Annual Report 2016
13 City of Sydney Rule Change Submission to AEMC
14 Energetics – The Outlook for Energy and Carbon Management, Energetics, 2017
15 Bruce Precious, National Manager, Sustainability & Property Services, The GPT Group

05 About the office sector

All players in the office sector have a role in creating a market that values efficiency and productivity

Businesses are playing a key role in the transition to a global low-carbon economy and they have a particular role in relation to the office buildings that they own, lease and occupy. The City has been actively working for over ten years with owners and tenants of office buildings who are taking the lead on sustainability.

There are currently around 800 buildings within the City of Sydney for which the primary purpose is office activities, meaning that at least 50 per cent of the net lettable area (NLA) is for office purposes. These offices comprised almost 12 million square metres in 2015/16, with 7.8 million square metres being net lettable area. Almost 5 million square metres of that space is located within Sydney's central business district. By 2030, the total office floor area is expected to grow to around 9.6 million square metres of NLA.

This plan segments buildings by ownership groups. Implementation pathways for improved environmental performance differ greatly depending upon the type of entity that owns a particular building. Each of the following ownership groups has different challenges and opportunities.

- Institutional owners: Real estate investment trusts
- Property groups: Trusts that hold diverse portfolios of buildings
- Private owners: Private individuals and family trusts
- Owner occupiers: Usually government organisations or medium sized businesses.

Most buildings contain a mix of large, medium and small tenants who can play two important roles: managing their own environmental performance within their tenancy; and creating market demand for landlords to improve the performance of the buildings that they occupy.

In 2015/16, the office sector in the City of Sydney was responsible for an estimated 1.8 million tonnes of greenhouse gas emissions, over 45 per cent of the city's total emissions.

Breaking down these emissions across different ownership types shows the substantial impact of the many and diverse buildings that are privately owned. Privately owned buildings and their occupants have the greatest impact at 44 per cent of the sector's emissions. Arguably this group of buildings represents the greatest opportunity for energy efficiency gains. The institutional owners, after achieving significant emissions reductions to date through energy efficiency upgrades, are responsible for 39 per cent and have the most capacity to innovate, test and de-risk new energy efficiency technologies, and to secure renewable energy supply to demonstrate pathways to net zero emissions. Property groups and owner occupiers contribute 8 per cent and 9 per cent respectively and will have varying levels of opportunity and capacity.

Institutional owners[16]

Large premium grade buildings with building management and a dedicated sustainability resource; premium corporate tenants. Less energy intensive building with efficient base building equipment and lighting.

Share of net lettable area[17]

39%

Share of sector emissions

41%

Property groups

Diverse, typically smaller more energy intensive buildings, corporate and government tenants. Some sustainability and building management resources.

Share of net lettable area

9%

Share of sector emissions

8%

Owner occupiers

Variable levels of building and sustainability management, few buildings with NABERS ratings. 50% government owned.

Share of net lettable area

8%

Share of sector emissions

8%

Private owners

Older, smaller and lower grade buildings, without dedicated building management. Inefficient lighting, equipment and controls, SME tenants. No sustainability resource.

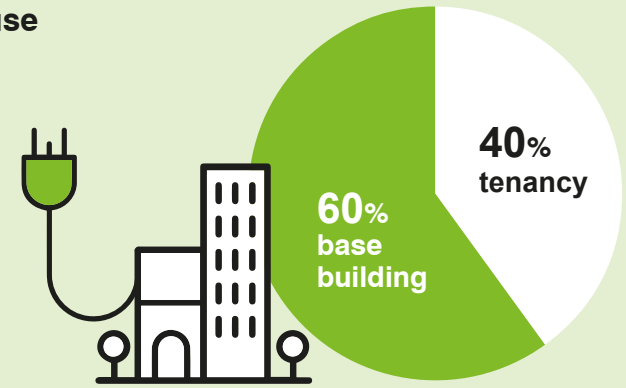
Share of net lettable area

44%

Share of sector emissions

43%

Office building energy use



16 Interim (2022) and 2030 Abatement Potentials: Final Report, Strategy. Policy.Research., 2017

17 The figures for NLA and emissions are estimated, based on 2012 floorspace data and 2014/15 emissions.

Note: the above percentages are estimates only, based on City of Sydney analysis of available data on building ownership.

Photographer: Richard Glover / City of Sydney

The Commercial Building Energy Efficiency Disclosure scheme was introduced in 2010, requiring mandatory reporting of energy performance (using the NABERS rating tool) of base buildings when spaces of 2000 sqm or more are sold or leased. As of July 2017, this requirement applies to the sale or lease of spaces of 1000 sqm or above. Currently, 211 office buildings in the City of Sydney have accredited NABERS ratings, 54 have a Green Star rating (Design, As Built or Interiors) and 133 offices[18] are voluntarily participating in the CitySwitch program.

But current policies and voluntary programs for improving sustainability are motivating only a small segment of the office sector; in 2015/16 there were only 70 NABERS Office Energy for tenancy ratings undertaken in NSW.[19]

Given the efficiency gains made by the leaders, the greatest opportunity for energy efficiency now lies in privately owned buildings and with tenants in all buildings. All office market segments can make even further emissions reductions with renewable energy options.

4.1 Institutional owners

Institutional landlords own around 39 per cent of the city's office space – which tends to be large premium and A-grade buildings with building management and a dedicated sustainability resource. These landlords are mostly real estate investment trusts whose investors require strong governance and transparency. Due to the need to attract global investment flows with expectations of corporate social responsibility and accountability, some owners are global leaders in sustainability, ranking highly on global investor indices like the Global Real Estate Sustainability Benchmark (GRESB) and the Dow Jones Sustainability Index (DJSI).

Since 2011, the City of Sydney has worked with the leading landlords of commercial property, forming the Better Buildings Partnership (BBP), to improve the environmental performance of Sydney's top-tier institutionally and publicly owned commercial buildings and to engage and transfer knowledge to property groups in the broader building and property sector. The BBP had 12 reporting portfolios in 2016/17, covering almost 2.7 million square metres of space within 101 office buildings, which is over half of the office space located in the central city (or about 30 per cent of the office space across the entire local government area).

In 2016/17, BPP members collectively reduced their emissions by 52 per cent from their 2006 baseline and saved $33 million p.a. in avoided electricity costs whilst increasing their floor space by 10 per cent since 2006. As BBP members maximise base building efficiency, other than upgrading major equipment that is not at the end of its life, the move to renewable energy is their natural next step towards net zero offices.

This sub-sector frequently sets new benchmarks for sustainable buildings, such as Lendlease's Barangaroo South development, which aims to be the first climate-positive and water-positive precinct in the world by using locally generated and off-site renewable energy.

Other leading property owners are also making public commitments: Mirvac, Investa, and AMP's Wholesale Office Property Fund have committed to achieving net zero emissions.

18 Green Report June – December 2016, City of Sydney
19 NABERS Annual report 2015-16

Eureka Funds Engagement, CitySwitch Green Office signatory, April 2015. Photographer: Jamie Williams, City of Sydney

4.2 Property groups

Property groups are generally trusts that hold more diverse portfolios of buildings. Property groups currently own around 9 per cent of the total office space in the local government area.

Property groups typically own smaller buildings than institutionally owned buildings which are, on average, more energy intensive B and C grade assets[20]. There is, however, a wide spread of both low- and high-performing buildings.

Similar to institutional owners, property groups generally have good capacity for assessing and investing in improving building performance. But fewer have comprehensive sustainability strategies and transparent reporting, and they have fewer listings on sustainability indices like GRESB and DJSI.

4.3 Tenants – or office-based business

Office based businesses have much to gain from managing their environmental impact. These benefits include reduced costs on electricity and rental outgoings, better managed carbon risk and exposure[21], corporate reputational benefits with customers, staff and investors, and improved productivity and well-being for staff.

Office space with high NABERS and/or Green Star ratings, good amenity and facilities for health and wellbeing helps attract and retain talented employees and can lead to substantial productivity improvements whose bottom line benefits overshadow savings from direct electricity costs[22].

Office based businesses have two clear roles in this sector strategy; to optimise their own business' environmental performance within their tenancy space and to drive demand for high performing office buildings from their landlord.

Tenant demand and collaboration with owners is key to unlocking net zero workplaces. But tenant engagement with landlords on environmental performance varies within each building.

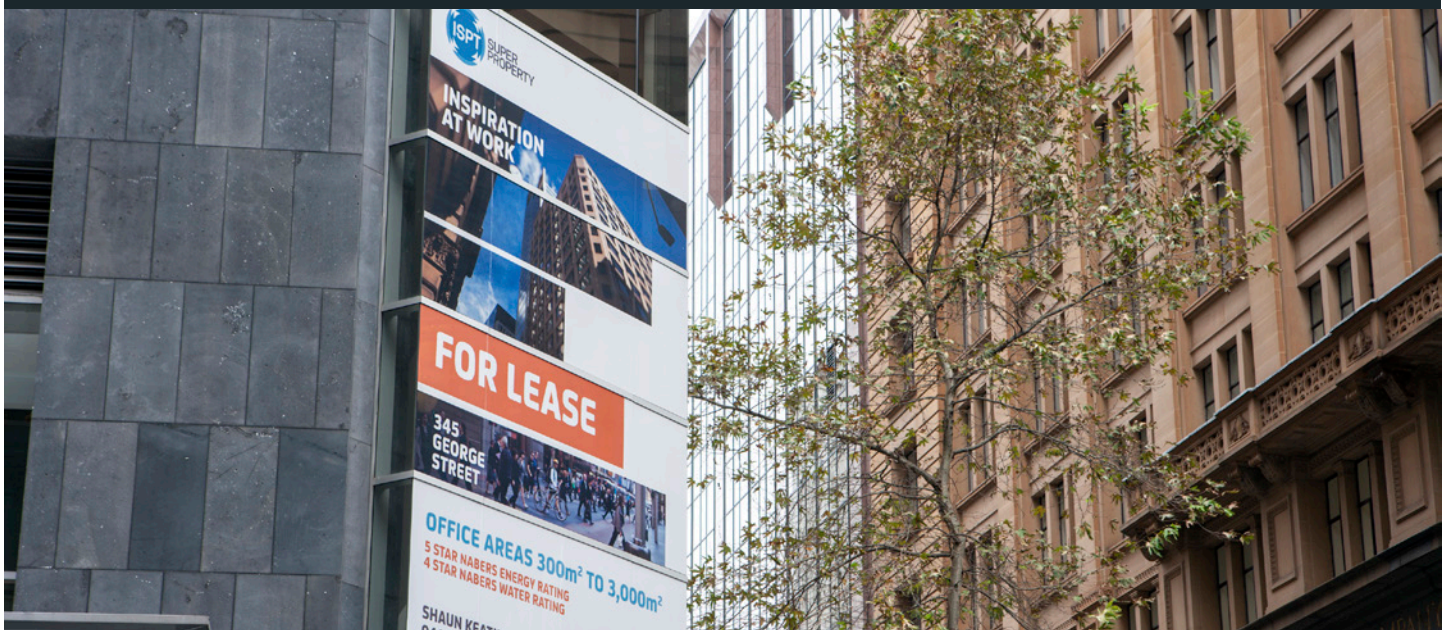
Institutionally owned buildings tend to offer premium office space, attracting business tenants that demand, and can afford, superior facilities and high-performance office space. The large floor plates of premium buildings are more likely to be occupied by large companies with global branding and/or corporate social responsibility policies. These large organisations are more likely to employ a tenant representative to negotiate their ongoing needs as building occupants. They are more likely to receive information and feedback from building owners on the performance of their buildings and subsequent opportunities to improve it.

Tenants in buildings with strong base building performance still need to address energy and resource consumption within their own tenancies.

Larger businesses are slightly more likely to conduct their own NABERS Office Energy for tenancies ratings, although there is substantial opportunity to increase this across the board.

For over 12 years, CitySwitch Green Office has fostered collaboration and leadership among a growing network of large and small businesses across Australia. These office-based tenants have improved their performance by an average of 26 per cent through participating in a program that offers them resources, support and recognition of achievement.

20 As defined by the Property Council of Australia Guide to Office Building Quality, 2012
21 Australian Institute of Company Directors, 2016
22 Why choose a high performing building, City Switch



Photographer: Richard Glover / City of Sydney

4.4 Private owners

Private individuals and family trusts own around 44 per cent of office space in the City of Sydney.

This ownership group is often referred to by industry as 'mid-tier', which describes office buildings other than Premium and A-Grade assets as defined by the Property Council of Australia. This plan focuses on private owners of what are generally the 'mid-tier' building type to better understand this diverse group, ranging from high net worth individuals to average-income "mum and dad" investors. Property ownership is often not the core business for this group, meaning that there is less active asset management and different decision-making structures across a diverse set of buildings.

Many studies and pilot projects have shown it is challenging to gain access to these owners because there are so many, and few have the time or resources to dedicate to upgrading their buildings. Nor do they have shareholders or tenants who demand better performance and transparency.

Collectively, private individuals own a larger share of the City's office floor space than institutional owners. These buildings tend to be older, smaller and lower grade, operating without dedicated building management. The buildings tend to have higher vacancy rates and shorter lease terms. Many of them have inefficient lighting and building management controls that are out of date. Buildings over 20 years old will often have major equipment such as chillers that are nearing the end of their operational life.[23]

The results and benefits of upgrading buildings have been clear in institutionally owned buildings. But this is not filtering down to the private individual owners. Voluntary sustainability programs in both New South Wales and Victoria have proven the opportunities are abundant but are not being realised by these owners, probably due to the diversity and varying capability level of building owners and managers.[24] Without mandatory levers to upgrade buildings these owners stand to miss out on cost savings, investment opportunity, increased asset value, improved tenant retention and rental return.

In 2014, the City conducted a survey of tenants in privately owned buildings to identify their needs, barriers and motivations in relation to sustainability[25]. While these businesses reported caring about the environment, they do not act unless there is no cost or little effort involved. Their priority is a low-cost office space; they are not engaging owners on efficiency upgrades as it is perceived that this will result in higher rent. Instead, these businesses choose to focus on day-to-day business.

23 Mid-Tier Commercial Office Buildings in Australia: A national pathway to improving energy productivity, Green Building Council of Australia, 2015

24 Energy Efficient Office Buildings – Transforming the mid-tier sector, Sustainability Victoria, 2016

25 Mid-tier tenant engagement survey, City of Sydney, 2014

Image courtesy of Stockland

4.5 Owner-occupiers

Owner-occupiers hold about 8 per cent of total office space in the local government area. Government bodies are an important owner-occupier, owning some 43 per cent of this office space.

In theory, owner-occupiers have the strongest incentives for resource efficiency due to the absence of a split incentive between tenant and landlord. In practice, however, there is very little data on the resource efficiency of owner-occupied buildings. Very few are rated under programs like NABERS, perhaps because they are less likely to be sold or leased and therefore are not required under the Commercial Building Disclosure Program to disclose energy performance.

Compared to more professionally managed buildings, owner-occupiers may have less internal expertise in sustainability and energy management. And any priority placed on environmental upgrades will largely be driven by the internal policies of the owners, not tenants, building managers or clients.

4.6 Building managers, contractors and intermediaries

Property and facility managers, on-site building managers, equipment and maintenance contractors, accountants, procurement managers and lawyers play an important role in improving the environmental performance of buildings[26]. A well managed building can increase up to 1.3 NABERS energy stars through good building management[27].

Building managers and contractors are often the intermediary between owners and tenants and provide technical knowledge to manage, maintain and upgrade buildings. The inclusion of environmental performance management obligations in their duties and their level of expertise varies.

Professional management firms are often contracted by institutional owners and property groups to proactively identify and implement no-cost and low-cost opportunities, optimise key equipment and systems and develop asset management plans, presenting business cases and reporting results to owners.

Private owners may specify that building services provide a low-cost service to maintain the building, leaving little capacity to act on environmental performance opportunities. Many owners may not contract dedicated building or facilities management at all; contractors simply maintain key equipment and respond to tenants' complaints.

Accountants and lawyers also influence key decisions on lease agreements, building management and capital spend. There are economic opportunities in upskilling managers, contractors and intermediaries enabling them to identify and mitigate risk, access capital and upgrade the assets that they manage.

26 Building Retrofit Toolkit Scoping Study Final Report, Energy Efficiency Council & Property Council of Australia
27 Warren Centre, 2009

06 Challenges

Strong policy measures are needed to overcome barriers to investment in environmental performance

The City is committed to leading Sydney's ambitious but achievable and necessary goal of net zero by 2050. But we can't do it alone. To develop this plan, the City spoke to the owners, managers and tenants of office buildings about environmental performance opportunities, the barriers and benefits of action, and what would help them act on these opportunities.

Overwhelmingly, they pointed to the need for strong policies that address barriers to investment in environmental performance. These barriers include: unpriced carbon emissions, the centralised energy supply, unengaged owners and tenants, split incentives between building owners and tenants, and, in many cases, limited information, management decision-making time and access to investment capital.

5.1 Policy and regulation

Policies such as carbon taxes and emission trading schemes have been successful in Australia, other countries and other cities[28]. However, the Australian Government repealed the carbon tax and continues to debate the mandatory renewable energy target. Investors want policy certainty on how markets will operate over the long term.

Energy market reform and increased minimum performance standards are crucial, overdue and the most cost-effective way to improve energy productivity, maximise efficiency and progress to net zero emissions.

The City works with other progressive organisations to promote an updated National Electricity Objective. Climate change should be added to existing considerations like total system cost and security of supply.

Allowing buildings to share power and accessing off-site renewable energy is particularly important to the institutional and property group owners to maximise efficiency and progress to net zero emissions.

While energy efficiency incentives and current mandatory disclosure requirements under the Commercial Building Disclosure (CBD) Program have reduced emissions in the office sector, this is not sufficient to secure the City's environmental targets, the community benefits of Sustainable Sydney 2030, or the Paris agreement.

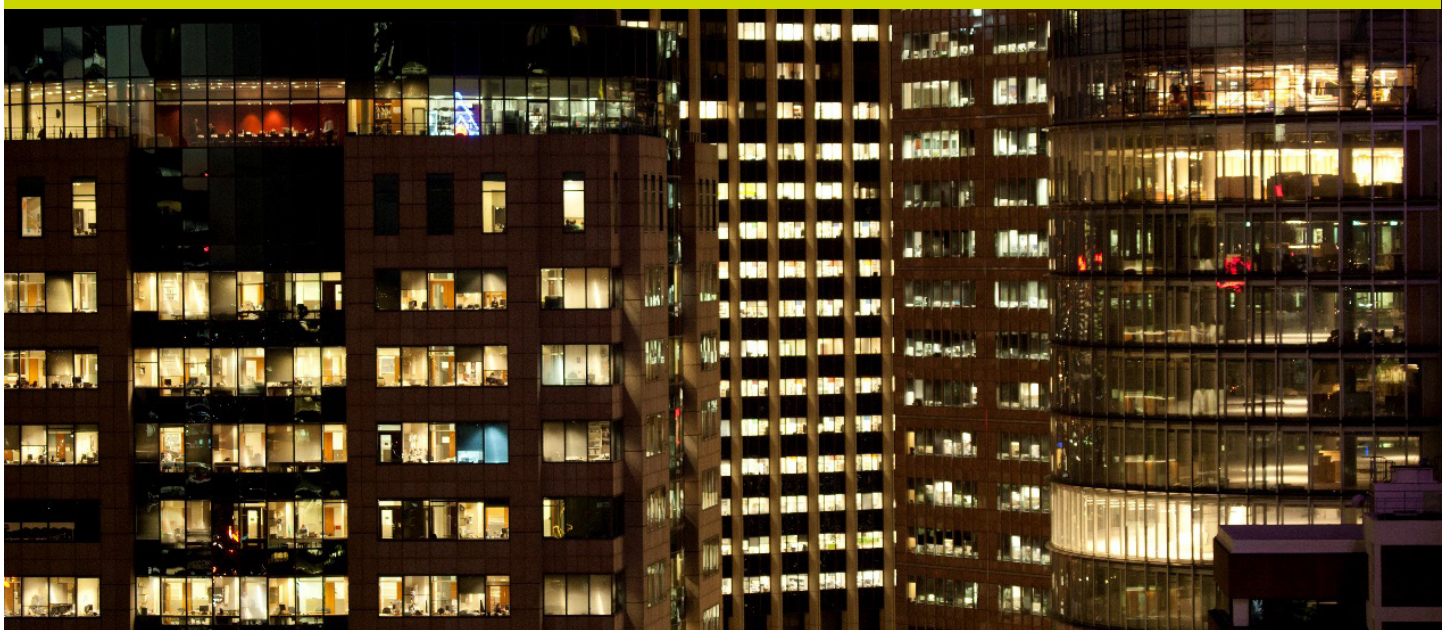
Mandatory disclosure of base building energy performance on sale or lease improves performance. However, privately owned buildings are sold less often, leased by less discerning and empowered tenants, and owned and managed by individuals with less skills and capacity to act on energy performance. Even with the reduced disclosure threshold of 1000 square metres, many will not be required to report in the next five years.

Sustainability Victoria has identified that private owners are responsive when replacing end-of-life equipment or broken assets. But replacements are often unplanned and therefore tend to be 'like for like' rather than upgraded to higher efficiency equipment, because energy consumption and maintenance savings were not considered.[29]

Regular mandatory reporting by all building owners and tenants would ensure that energy performance was regularly reviewed and enable a more planned response to end-of-life equipment replacement.

28 Alternative building emission-reduction measure: outcomes from the Tokyo Cap-and-Trade Program

29 Energy Efficient Office Buildings – Transforming the mid-tier sector, Sustainability Victoria, 2016



Photographer: Jamie Williams / City of Sydney

5.2 The limits of voluntary action

The current demand for environmental performance in buildings is voluntary. Driven by corporate social responsibility and sustainability policies and targets, corporate tenants are choosing high performing buildings to attract employee talent and support productive staff. Energy performance has benefits of comfort, health and wellbeing, translating to higher productivity and lower absenteeism.[30]

Corporate tenants tend to publicly report the environmental rating of the base building they occupy but much less so the rating of their own tenancy space. Stakeholder consultation indicated many rely on building owners to act on sustainability. Base building NABERS ratings are being used in corporate reporting without the corporation taking the initiative of rating their own tenancy.

While some tenants, particularly in premium institutionally owned buildings, are aware of these benefits, many perceive that as tenants they have little control or influence over energy costs and environmental performance. Many tenants are not aware of the environmental performance of their office space, the benefits they may be missing out on, and that they can rate and improve tenant performance.

In terms of moving to net zero emissions, the institutional and property group owners are concerned about the lack of engagement of tenants and access to renewables. The Better Buildings Partnership has committed to achieve the City's vision and environmental targets. To achieve this and keep up with international best practice, owners and tenants must work together to maximise whole-building efficiency and secure renewable energy.

Tenants of low-grade buildings prioritise affordable office space close to clients and suppliers. They generally do not query building performance in lease agreements, nor question owners when hit with high energy bills. Owners of these buildings prioritise low maintenance costs and overheads. Generally, the relationship between owners and tenants is managed by contractors who manage multiple buildings and are time-poor.

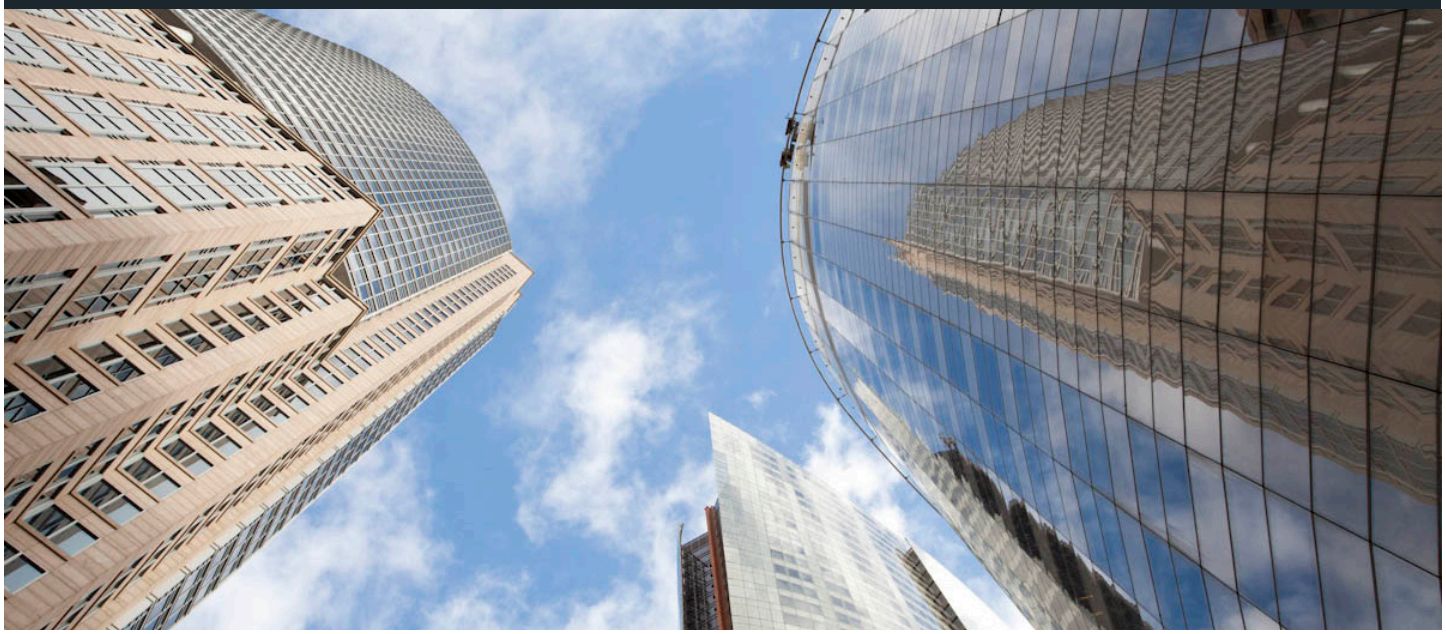
5.3 Energy data for whole building performance

To maximise whole-building efficiency and benefits from cost savings to comfort levels, it's important to understand not just the energy used by base building plant and equipment but also the energy used in the tenanted spaces.

The Commercial Building Disclosure Program has provided much-needed understanding of base building performance and improvement. There is, however, very limited information on the performance of tenanted office space, given that the scheme specifies it is the obligation of the owner to disclose base building performance and the efficiency of tenant lighting systems only at the point of sale or lease.

To inform this plan, NABERS and CitySwitch data was aggregated to indicate whole-building performance across the ownership profiles. While insufficient data was available to establish energy intensities by subsector, analysis showed that the estimated energy intensities are higher than previously understood, and only marginally lower in institutionally-owned buildings.

30 The Benefits of Benchmarking Building Performance, IMT 2015



Photographer: Jamie Williams / City of Sydney

In New South Wales, owners cannot easily access tenant energy data to measure and manage whole-building performance. Solving this problem is key to effective collaboration. Typically, whole-building energy use is split about 60:40, where 60 per cent is attributed to the base building of which its energy use is owner-controlled and 40 per cent is attributed as the share of tenants.

However, if the energy consumed by the tenant lighting systems that are owned by the building owner is attributed to the building owner then the energy use split may be 70:30 or higher.

In 2017 a NABERS Co-assess tool pilot explored methods for base building and tenancy data to be collected together, but to provide back separate ratings for each participating party. This streamlined method of data collection will enable building owners to offer tenant ratings as a value add service which could result in substantially more disclosed ratings and improved collaboration on the subsequent findings.

Better data disclosure and sharing between parties is important to identify, incentivise and target tailored support to buildings, foster collaboration and accelerate the implementation of upgrades[31]. Green leases provide an industry recognised mechanism to support these outcomes, whilst protecting the needs of individual parties[32].

5.4 Incentives for high-performance buildings

The BBP have upgraded their buildings to maximise base building efficiency, achieving a 52 per cent reduction in emissions since 2006. Sustainability Victoria's Energy Efficiency Office buildings program identified no-cost and low-cost efficiency upgrades resulting in an average savings of 29 per cent in energy costs for privately owned buildings.[33]

Unlocking no-cost and low-cost upgrades in these buildings would secure:

- Lower energy bills and better comfort for tenants
- Reduced tenant complaints and contractor call-out fees
- Improved performance, better asset value and tenant retention.

But there is little incentive for owners and tenants to collaborate to maximise mutual benefit. This is important in all ownership categories, except perhaps the owner-occupiers.

Lighting upgrades are proven and cost effective. The Commercial Building Disclosure (CBD) Program regards 7 watts per square meter as best practice, but technology is already improving that benchmark. The industry must overcome the split incentive to prioritise lighting efficiency as the highest impact, lowest cost upgrade. Owners can support tenants to upgrade lighting to best practice as defined under the CBD Program.

31 NABERS annual report, 2016
32 BBP Leasing Standard

33 Energy Efficient Office Buildings – Transforming the mid-tier sector, Sustainability Victoria, 2016

WWF Australia, CitySwitch Green Office signatory. Photographer: Ute Wegmann Photography

Further emissions reductions often require investment in larger capital upgrade projects such as replacing chillers, on-site renewables or retrofits to the building envelope. Engaging tenants on whole-building performance has also proven to be resource-intensive.

Privately owned older buildings have old chillers with refrigerants that are being phased out. These upgrades afford long-term savings but need greater capital investment than lighting and heating, ventilation and air conditioning optimisation. However, investing in energy efficiency is not perceived to yield a return, and is seen as potentially disrupting tenants during upgrades.

Financial incentives are important to accelerate investment in major upgrades in all office subsectors. The NSW Energy Savings Scheme and introduction of climate bonds provide assistance in reducing project investment costs.

Additional incentives for institutional and property groups should focus on innovation, securing renewable energy and working towards net zero emissions, whereas incentives for private owners should focus on incentivising high-efficiency upgrades over 'like for like' replacements.

5.5 Demand for high-performing, net zero office space

Owners reported a willingness to invest if there was greater demand for net zero emission buildings. In the past, federal and NSW state policies have preferenced occupation in buildings with high NABERS ratings, and this increased demand was met by the market. Government and business procurement policies could be used to catalyse base building upgrades and improved design standards. The Government Resource Efficiency Policy sets the minimum requirement for government office space at 4.5 stars. The City has started to investigate the inclusion of minimum environmental performance in the Development Control Plan.

Making information on utility bills and indoor environmental quality available at point of sale or lease is important for informed consumer choice. Base building performance ratings are mandated to be disclosed on sale or lease, not tenancy ratings. While a well-performing base building can improve tenancy performance, this does not secure efficient productive tenant space.

To achieve net zero emissions buildings, tenants need to rate their office space, improve their ratings, secure and promote the benefits of environmental performance in buildings, buy GreenPower and allowable offsets, and collaborate with fellow tenants and the building owners.

Business waste recycling at Liberty Place. February 2017 / Photographer: Jamie Williams

5.6 Low resource recovery from office waste stream

The office sector generates around 135,000 tonnes of waste a year, or 20 per cent of the city's total commercial waste.

Office tenancies nominally recycle just less than 50 per cent by weight, but contamination of recycling streams can be high and the amount subsequently rejected at the waste recycling facility is unknown.

While procurement of services for recycling for paper and plastic is common in offices, the separate collection of food waste is less common. Food waste, which can be up to 30 per cent of the non-recycled waste stream, can be recovered for energy and to be made into a high-quality fertiliser.

Significant opportunities exist to improve resource recovery through improved material collection systems and data consistency. Collaboration with other tenants, building managers and owners is key to success within the building. It will also be key to work with both ends of the supply chain to maximise waste avoidance and improve resource recovery at end of life.

In view of increasing waste volumes and the greenhouse gas impacts caused by waste in landfills, state policy reform is need to incentivise waste avoidance, recycling and alternative waste treatment and the reporting of waste weight, volume and composition.

5.7 Increasing potable water consumption

In 2015/16, commercial office buildings consumed over 9,900 megalitres of water, or 27 per cent of total city consumption. Annual consumption for the office sector has been steadily increasing over recent years.

While office buildings use relatively less water than residential apartments or visitor accommodation, every drop of water is precious. In view of increasing high heat days and prolonged droughts, it is everyone's obligation to save water wherever possible. Water-efficiency measures are extremely cost-effective, but limited metering and poor feedback mechanisms prevent improvements, such as simple maintenance to detect and rectify leaks and upgrading ageing fixtures to improve efficiency.

Currently, potable water is used for many non-potable purposes in office buildings, such as toilet flushing and air-conditioning cooling towers. Connecting to alternative sources of water for non-potable uses would be beneficial. It would reduce demand on the centralised water supply and could reduce the future need for major water and wastewater network investment to meet increased demand.

07 Opportunities

Solutions like optimising lighting, heating and cooling are cost-effective and available. But without policy measures to support them, they will continue to be ignored by tenants, private owners and owner-occupiers.

Analysis by C40 Cities shows the greatest impact within the buildings sector can be made by establishing data reporting and codes affecting new and existing buildings and driving energy efficiency improvements for existing buildings.[34]

The City commissioned detailed emissions modelling to understand the most effective technical and policy initiatives to overcome barriers and reduce emissions in City of Sydney office buildings. Ideas and feedback from the owners, managers and workers of office buildings were included. The following initiatives are the most effective opportunities for emissions reductions; all of them provide net economic gains for the city and businesses:

- Increased renewable energy uptake
- Mandatory disclosure of NABERS ratings and use of NABERS Energy Commitment Agreements
- Higher minimum standards for new build and refurbishment work
- New developments committing to net zero and 6 star NABERS agreements.

All measures except off-site renewable energy supply could potentially improve the quality and performance of office buildings. Improvements in heating, ventilation and air conditioning, and quality efficient lighting can positively impact the health and wellbeing of office occupants, which in turn can boost cost savings from upgrades, with further financial gains in employee productivity and lower absenteeism.[35]

Benefits from improving sustainability in office buildings are:

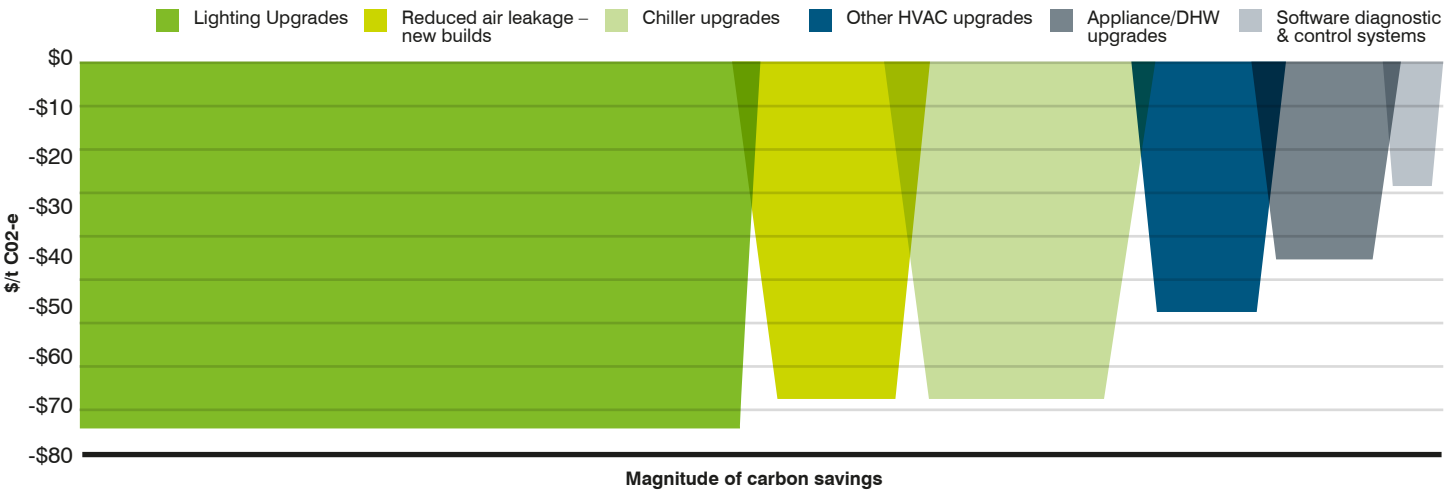
- Cost savings – no need to maintain inefficient lighting and equipment
- Comfort – efficient buildings deliver comfortable conditions for tenants and reduce complaints while saving energy
- Productivity – better design and comfort makes workers healthier, happier and more productive
- Value – rating and improving building performance can attract and retain tenants, reduce overheads and increase asset value
- Recognition – staff, investors, clients and customers positively recognise efforts.

Staff costs are the greatest expense for many office-based businesses. Therefore, productivity gains from improving the comfort and wellbeing of staff are valuable benefits derived alongside upgrading the environmental performance of buildings. This will be increasingly important during prolonged heat waves, when efficient and effective heating and cooling systems will maintain comfort levels for building occupants and reduce the energy load on the grid.

These benefits may not be enough to motivate owners to upgrade their buildings. The City will continue working with industry to advocate for compliance-driven policy and mechanisms to unlock retrofit investment in privately owned buildings.

34 Deadline 2020 – How cities will get the job done, C40 & ARUP, 2016
35 Health, Wellbeing & Productivity in Offices – The next chapter for green building, WGBC

Cost effective upgrades for offices[37]



Many cities require buildings to undertake periodic auditing and/or retro-commissioning every few years, often mandated along with reporting and benchmarking schemes. Across C40 cities, these mandates are mainly for large commercial buildings; some exclusively focus on building cooling systems and others on whole-building performance, including tenant and base building areas.[36]

How could similar mandates be applied in Australia? It may involve incremental steps for the office sector to make the transition to net zero emissions by 2050. The first step is the voluntary take up of combined NABERS energy ratings by industry. The City will advocate for the mandatory disclosure of tenancy ratings. This would effectively allow the transition to whole-building ratings to inform the need for minimum requirements and provide better understanding of opportunities for improved performance and improvement.

Requirements for net zero new buildings would follow, and by 2050 all buildings would be operating at net zero emissions.

City governments can also lead by example in their own municipal buildings. Cities often disclose their own building energy performance data, require environmental performance in construction and refurbishments, and test innovative technologies and pilot initiatives in municipal buildings, before demonstrating and promoting outcomes.

6.1 Cost effective upgrades

Research commissioned by the City identifies that many cost effective upgrades are available to the market.[37] The chart above identifies the most cost-effective energy efficiency upgrades for offices, all of which provide a positive return on investment. Energy efficiency is now well established and provides a rapid return on investment for all sub-sectors of landlords and tenant. Any economically rational property owner or business could consider a costed plan for tackling these opportunities over time.

Lighting consistently shows as the greatest area of opportunity, but may sometimes lack action due to the split incentive, where the equipment is owned by the building owner, but operated (and paid for via electricity bills) by the tenant.

Given the expertise for property management sits with the owner and their agents, and not with the tenant, this strategy suggests that the landlord assume responsibility for upgrading all general lighting to best practice.

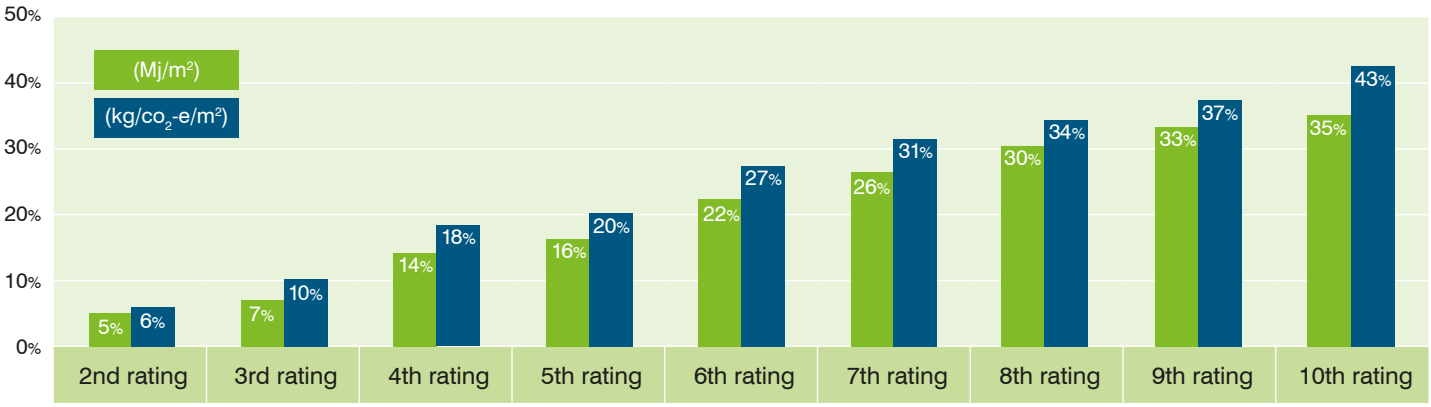
A number of financial mechanisms and schemes including the NSW Energy Savings Scheme (ESS) are available to reduce upfront costs of replacement. There is an opportunity for landlords to come to arrangements with tenants whereby the tenant contributes to the upfront replacement cost in exchange for enjoying the operating costs savings over the longer term.

36 Urban Efficiency – a global survey of buildings energy efficiency policies in cities, C40, 2015

37 Interim (2022) and 2030 Abatement Potentials: Final Report, Strategy. Policy.Research., 2017

Average reduction in energy use after multiple ratings[38]

NABERS ENERGY FOR OFFICES (Base and Whole Buildings)



6.2 Mandatory disclosure of tenancy or whole-building NABERS energy ratings

Strong evidence suggests that what gets measured gets managed; multiple NABERS Energy ratings are correlated with increased performance of more than 30 per cent.

Most NABERS Energy ratings and improvements have been on base buildings. Analysis of data from the NABERS website shows that only 32 tenancy ratings were undertaken during 2014-15 in the City of Sydney - a tiny proportion of the thousands of office tenancies in the city. Incentives for improving energy efficiency by tenants are weaker. Building owners aiming for very high building performance often struggle to engage tenants.

Mandating the regular disclosure of tenant ratings would trigger tenants to recognise their impact, and their contribution to whole-building energy performance. This may motivate businesses to improve performance, upgrade lighting and appliances, and collaborate on whole-of-building performance.

Tenants could be supported in identifying low-cost upgrades or with information to find better-rated office space to reduce energy costs over the term of the lease.

38 NABERS annual report, 2016, https://nabers.gov.au/AnnualReport/2015-2016/life-of-program-statistics.html

International Womens Day Park / Katherine Griffiths

6.3 Market signals, incentives and support for high-performing buildings aiming for net zero emissions

Tenants have the power to influence building energy efficiency with their operational and purchasing decisions. For example, a procurement target set by government leaseholders to occupy net zero emission office space would send an important signal to the market. Although government is not the largest tenant in terms of space in the city, it is a valuable and reliable tenant; building owners would be motivated to upgrade buildings to meet government requirements.

Targeted campaigns to raise awareness of the value and benefit of net zero emission buildings, focusing on whole-building performance and collaboration between tenants and owners are also important to support further emissions reduction.

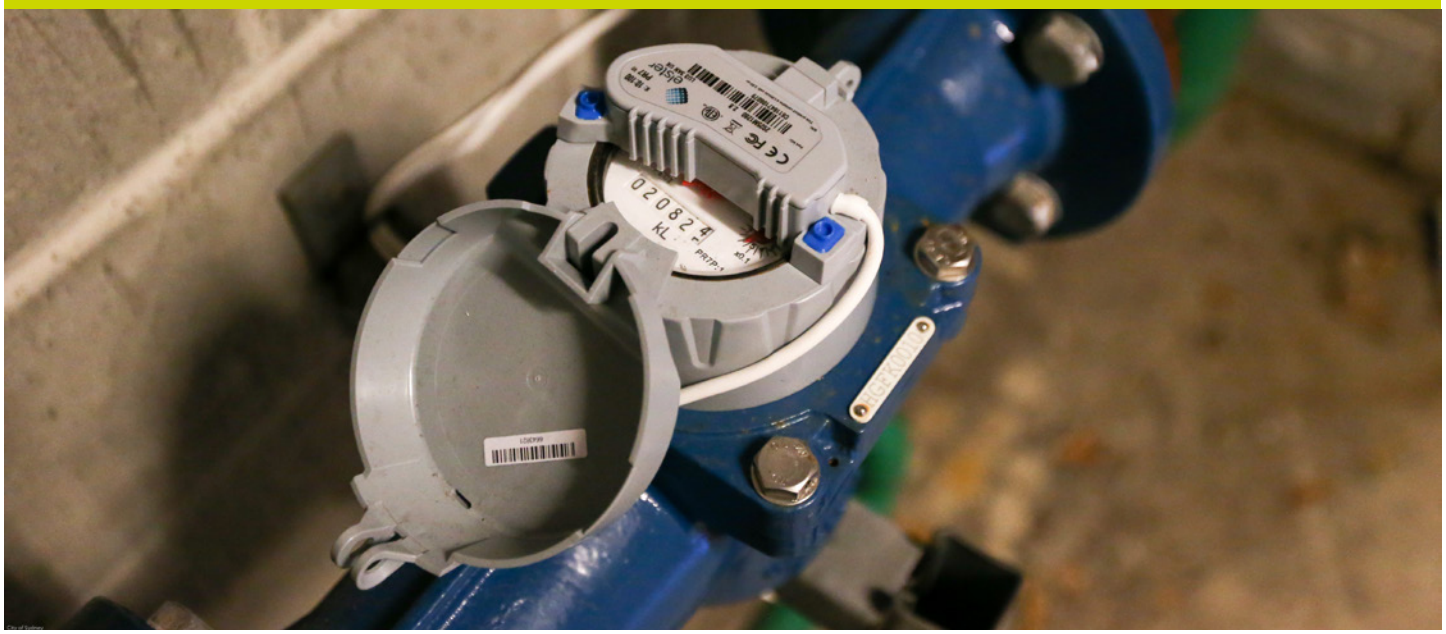
If the National Energy Productivity Plan, the NSW climate change policy framework, market demand and government procurement targets are not enough to motivate emissions reductions, minimum energy performance standards for existing buildings would be justified.

6.4 Improved resource recovery

Building owners and tenants can use their power as customers and consumers to seek out alternative waste solutions, better waste management, and better data and reporting.

CitySwitch has a guide and audit tool for tenants. BBP has produced waste management guidelines that assist owners to procure and manage waste contracts to maximise resource recovery. Office owners and tenants can use the NABERS Waste tool to benchmark their performance.

Building owners can use these tools and guidelines to work with tenants, waste contractors and facilities to encourage meaningful recovery of waste resources.



Water metre/City of Sydney

6.5 Reduced potable water consumption

Building owners can implement water-efficiency measures such as installing smart meters to detect leaks and more efficient fixtures and fittings. This applies to base building equipment such as cooling towers and to office space through collaboration with tenants to maintain water-efficient fixtures.

As part of the CBD and South East Light Rail project, recycled water pipelines are expected to be constructed by the NSW State Government along George Street between Circular Quay Station and Central Station by 2018. It is the City's role to facilitate the delivery of a recycled water scheme that utilises this pipeline. Once a recycled water scheme is developed, buildings close to George Street will be able to access recycled water for all non-potable uses including cooling tower use, toilets, laundry and irrigation.

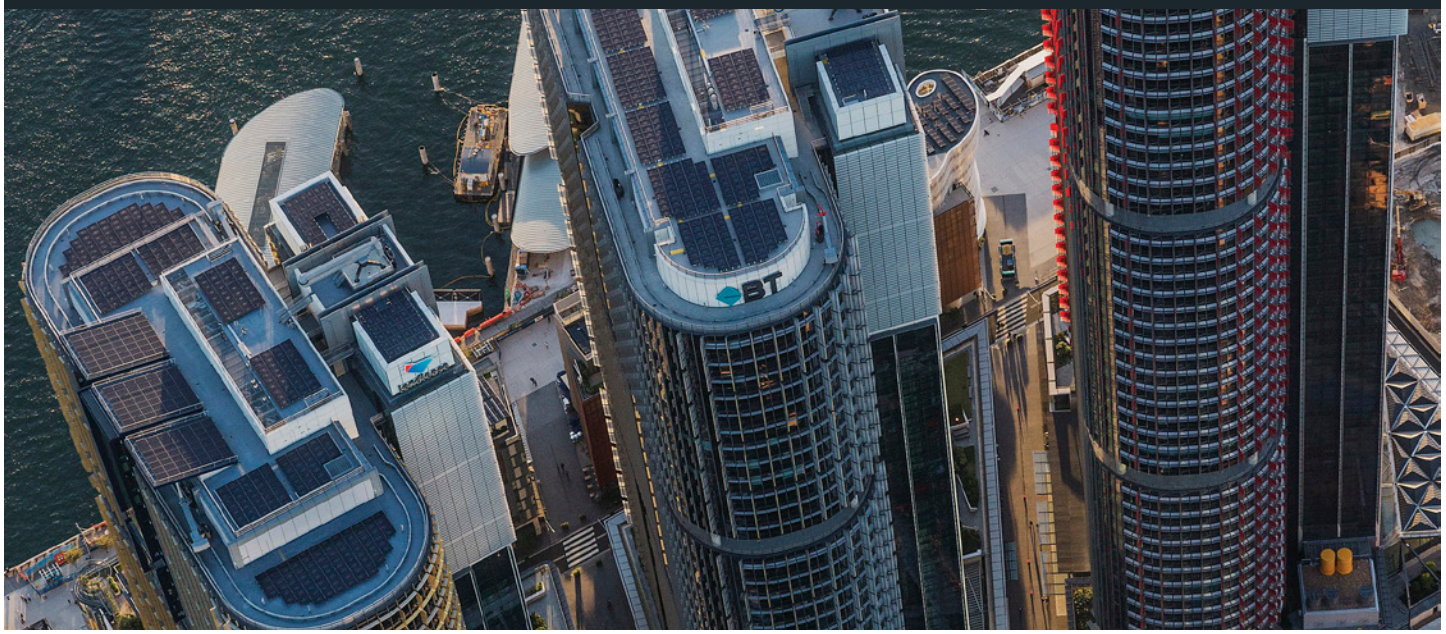
Initially, existing buildings may choose to connect cooling towers to recycled water, while future buildings or buildings undergoing major refurbishments could connect for all non-potable uses. It is important to ensure that new development is future-proofed through the inclusion of dual plumbing for recycled water where it will be available.

6.6 Off-site renewable energy supply

The energy market is complex, outdated and needs reform to encourage renewable energy investment both in buildings and in supply to the energy grid. Progressive businesses are achieving great results from local and community renewable energy generation projects. However, onsite renewable energy generation is insufficient to reach our city's renewable energy target.

The City is advocating for regulatory changes to the National Electricity Rules to improve financial returns for local generators. The change would have a positive effect on taking up renewable energy generation across Australia in buildings and at the district level.

The City is also exploring opportunities to facilitate renewable energy generation projects outside our city to help achieve the 50 per cent renewable electricity target for the local government area. This type of project would be additional to the amount of renewable energy supplied through the Australian Government's renewable energy target. Opportunities may include aggregated power purchase agreements, encouraging the use of GreenPower, and direct investment in projects.



International Towers, Barangaroo, part of the Climate Positive Precinct. Photo courtesy of Barangaroo Delivery Authority

6.7 Higher minimum standards for new build and refurbishment work

The biggest opportunity for both carbon emission reduction and energy efficiency gains is to increase the minimum standards set in the National Construction Code (NCC) and ensure compliance with these higher standards.

Australia's minimum construction standards for commercial buildings are far behind international best practice.[39] The National Construction Code is due to be updated in 2019 – advocacy is needed immediately to ensure that long-term, cost-effective building efficiency and emissions reductions are in line with international best practice standards in both new buildings and major refurbishments.

A study of C40 cities has shown that many cities develop their own codes for new buildings and major renovations that are broader or more stringent than national or state codes.[40] Recognising the importance of immediate action to avoid locking in new emissions, the City will explore amendments to the Local Environment Plan (LEP) and Development Control Plan (DCP) to secure net zero emission developments.

6.8 New developments delivering net zero and 6 star NABERS agreements

New buildings are not being built to maximum efficiency. This means that further carbon impact and the need to retrofit in the future are locked in. While the majority of environmental impact is in the operation of buildings, the most cost-effective time to secure efficiency is in building design and construction rather than subsequent retrofits.

Analysis undertaken by the City determined that significant emissions savings can be achieved through use of 5.5 star NABERS Energy Commitment Agreements for new commercial office buildings. The City will investigate the inclusion of planning control provisions that introduce NABERS Energy Commitment Agreements for new commercial office buildings or major refurbishments over 500 sqm or 1000 sqm.

39 Low Carbon High Performance – How buildings can make a major contribution to Australia's emissions and productivity goals, ASBEC 2016

40 Urban Efficiency – a global survey of buildings energy efficiency policies in cities, C40, 2015

08 Industry action and support from the City of Sydney

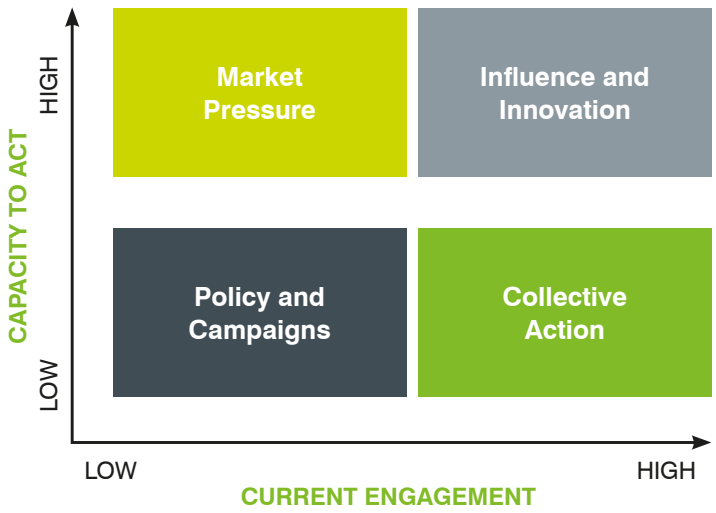
Governments, owners, tenants, managers and developers need to take action towards net zero, showcase its benefits and collaborate to achieve the best outcomes at the lowest cost.

This plan proposes a range of techniques to stimulate activity. It will seek both to raise the bar on minimum compliance expectations for those with low engagement, and to offer support and leadership opportunities to those with high engagement.

It will increase the whole sector's capacity to act with targeted support programs and incentives.

Depending on the level of capacity and engagement, sector players have different roles to play. For example, given the engagement and capacity of the BBP, they are well placed to innovate and influence tenants and peers. Private individual owners may need policy and support to help them act. Corporate tenants without a NABERS rating can request a tenancy rating and engage their building owner on efficiency upgrades. Engaged tenants and managers could access programs like CitySwitch to amplify their action with the support of their peers through collective action.

Sector engagement and relevant actions



All building owners stand to benefit from taking action to improve the environmental performance of buildings.

7.1 Owners

All building owners, from individuals to institutional, stand to benefit from taking action to improve the environmental performance of buildings. Private owners are currently losing money maintaining old equipment, reacting to tenant complaints and paying contractors for band-aid solutions that are not long-lasting. Replacing old equipment with high-efficiency equipment and optimising building management systems should be the priority of private owners to deliver lower costs, reduce tenant complaints and achieve higher asset value.

Action to complete energy assessments and develop long-term asset plans will prepare buildings for policies and regulation that mandate minimum performance standards.

The City will work with government and industry associations and membership groups to engage private owners and provide relevant information at critical decision-making points such as lease expiry, changes to regulation and during the equipment lifecycle.

The City will also continue to work with the BBP and CitySwitch to engage tenants, secure renewable energy and demonstrate to others the benefits of moving to net zero emissions.

Institutional owners and the BBP can focus on collaborating with the City to secure affordable off-site renewable energy and advocate for mandatory disclosure of tenancy ratings.

Actions for all owners

Energy and emissions

- Implement environmental upgrades
- Rate and disclose NABERS Energy performance ratings for base building, combined and whole building in collaboration with tenants
- Support energy performance disclosure and improvement by their tenants
- Upgrade all general lighting systems within tenancies
- Use green leases to enable collaboration with tenants
- Maximise on-site and off-site renewable energy supply options

Waste

- Provide source-separated waste management services for recyclable materials, including organic waste where appropriate
- Use industry best practice[41] to manage and report on waste generation in offices via the NABERS Waste tool to improve industry insights and identify new opportunities for resource recovery
- Work with product and service contractors to implement innovative ideas to minimise waste generation on site and to encourage the re-use and replacement of non-recyclable materials with re-usable or recyclable materials
- Seek non-landfill solutions when establishing waste contracts

41 Better Buildings Partnership Guidelines for Operational Waste

Photographer: Katherine Griffths / City of Sydney

Water

- Undertake and disclose NABERS Water whole building ratings
- Install sub-meters to detect and rectify leaks and drive water-efficient behaviour in tenants
- Optimise cooling tower water efficiency
- Regularly check for leaks and upgrade water fixtures to improve efficiency
- Investigate recycled water supply to cooling towers and other non-potable water consumption and connect when access becomes available

Transport

- Provide ample bike parking and end-of-trip facilities

7.2 Tenants

Office tenants, as the customer, have a high degree of influence over others in the property supply chain. They need to exercise their purchasing power by choosing high-performance buildings. They need to understand their own environmental impact and its influence on whole-building performance.

Tenants potentially lose money and pay higher energy bills due to low building performance. By conducting a NABERS Energy and/or indoor air quality rating tenants can identify energy efficiency opportunities to lower bills and improve staff comfort levels and productivity.

Environmental initiatives can engage staff and customers by showing examples of business values and responsibility to reduce impact. Independent third-party recognition of these efforts is important to validate, motivate and lead further change.

Many companies across the City of Sydney have publicly stated sustainability targets. To build a shared community commitment to net zero and establish pathways to achieve it, the City will recognise and showcase leading companies and share their experiences for others to follow.

CBRE, CitySwitch signatory. Photographer: Marcus Clinton Photography

Actions for all office tenants

Energy and emissions

- Rate and disclose environmental performance
- Upgrade to energy-efficient lighting and appliances
- Maximise renewable energy options
- Demand high-performing buildings
- Engage with building owners on base building performance improvements, including owner-provided general lighting systems in the tenancy
- Collaborate on whole-building performance

Waste

- Request better waste services and reporting from owners
- Engage staff to recycle correctly
- Introduce print on demand software to reduce paper wastage

Water

- Assess water efficiency and contract management to upgrade water fixtures and install sub-meters

Transport

- Encourage cycling, walking and public transport

7.3 Building managers

Building managers and contractors play a crucial role. It is their responsibility to implement upgrades. They often encourage collaboration between owners and tenants. Many have the authority and resources to implement optimisation with no-cost and low-cost upgrades. Many have done so already, and could access the City's grants for ratings and assessments to explore bigger upgrades, present opportunities to owners and tenants, implement and measure performance improvement and report the results.

Actions for building managers

- Implement environmental upgrades
- Measure and present the savings to owners and tenants
- Develop business cases for major upgrades
- Preference the replacement of end of life equipment with the highest efficiency option rather than like for like – considering the life cycle costs and benefits rather than simple cash up front

Pedestrian access to International Towers, Barangaroo. Image courtesy of Barangaroo Delivery Authority

7.4 Developers

All new developments and refurbishments can seize the most cost-effective opportunity to integrate sustainability, at the design and construction stages. Incorporating higher environmental performance standards in new buildings and refurbishments is the most cost effective mechanism in the sector for the reduction of greenhouse gases.

Actions for developers

- Design and construct new buildings to the highest level of sustainability performance available
- Utilise the highest available NABERS Energy Commitment Agreement
- Comply with the City of Sydney's Waste Management Local Approvals Policy and Guidelines for Waste Management in New Developments
- Include dual plumbing in planning proposals where there are opportunities to connect to a recycled water scheme
- Ensure highest available Water Efficiency Labelling Standard (WELS) for taps, toilets and urinals, and dishwashers.
- Minimise water wastage from fire protection systems testing
- Provide bike parking and facilities
- Minimise general car parking and provide car share vehicle spaces and dedicated charging stations for electric vehicles where possible and appropriate

7.5 Australian and New South Wales governments

Many stakeholders argued for the need for stronger policies and regulations to improve the environmental performance of buildings, specifically the need to raise minimum standards, reform the energy market to secure further efficiency and more renewable energy and direct the market to net zero emission buildings by engaging the unengaged sectors.

Key actions for Australian and New South Wales government:

Australian Government

- Establish a price on carbon and increase the mandatory renewable energy target providing policy certainty to the energy market
- Remove energy market barriers for decentralised energy and affordable off-site renewable energy access
- Implement regular mandatory disclosure of NABERS tenancy and whole-building ratings, as opposed to at the time of sale or lease and investigate the opportunity for retro-commissioning of existing buildings to minimum standards
- Increase minimum standards in the National Construction Code
- Increase Minimum Energy Performance requirements (MEPS) and accelerate uptake of energy efficient appliance standards under the national Greenhouse and Energy Minimum Standards (GEMS) program
- Promote the National Carbon Neutral Offset Standard for Carbon Neutral Buildings
- Develop financial incentives for high environmental performance in buildings

Industry action and support from the City of Sydney

NSW and ACT City Switch Awards, Sydney, November 2014 / City of Sydney

New South Wales government

- Increase the Government Resource Efficiency Policy (GREP) to specify that agencies need to occupy buildings with minimum 5.5 - 6 star NABERS Energy rating and ultimately net zero buildings
- Rate and disclose the energy and water performance of government owned buildings
- Collaborate with industry associations to build capacity and deliver targeted information, resources and training to private owners
- Deliver waste market reform to incentivise resource recovery (avoiding waste, recycling, alternative waste treatment, and transparent waste reporting on volume, weight, composition and diversion from landfill)
- Deliver a recycled water pipeline along George Street between Circular Quay Station and Central Station by 2018
- Fund, and where appropriate deliver, an integrated bicycle network to encourage the further take up of cycling
- Deliver key components of an integrated and safe walking network, including road crossings and links through Government lands and developments

7.6 The City's actions

The City will demonstrate leadership in its own office buildings. Engaging tenants, piloting and testing initiatives to improve environmental performance, demonstrating the value of whole-of-building ratings and working towards net zero emissions.

Other actions the City will take:

- Advocate for regulatory reform to facilitate increased investment in, and use of, renewable energy
- Advocate for increased minimum environmental performance standards in building codes, equipment and appliances
- Advocate for water pricing that reflects resource value and promotes innovative water-sensitive solutions including recycled water
- Advocate for increases to the NCC minimum environmental performance standards for building and refurbishments, and increased compliance with the NCC
- Continue to promote the Section J compliance checklist through industry partners
- Advocate for the Government Resource Efficiency Policy (GREP) to specify that agencies need to occupy buildings with minimum 5.5 - 6 star NABERS Energy rating and ultimately net zero buildings
- Advocate for the mandatory regular disclosure of tenancy ratings and retro-commissioning to above minimum standards
- Provide support for whole-building data disclosure and NABERS Energy Ratings

Photographer Jamie Williams/City of Sydney

- Continue to deliver the CitySwitch Green Office Sydney program to office-based businesses
- Continue to deliver the Better Buildings Partnership program for leading property owners in the local government area
- Support environmental innovation through the provision of grants and the sharing of success and knowledge
- Encourage private owners to take action with information, disclosure and campaigns
- Promote green leasing to enable upgrade activity
- Support the cost effective uptake of renewable energy with information and campaigns
- Encourage the design, construction and operation of Sydney's first net zero buildings, both new and existing
- Deliver a tune-up program to support privately-owned buildings to make environmental performance upgrades
- Investigate the inclusion of planning control provisions that introduce NABERS Energy Commitment Agreements for new commercial office buildings and major commercial office refurbishments over 500 sqm or 1000 sqm.
- Update the DCP to specify minimum waste and recycling storage requirements in buildings
- Develop a pathway for the City's current planning controls to be strengthened over time to deliver net zero building standards
- Encourage and support buildings to connect to recycled water

The City will increase the whole sector's capacity to act with targeted support programs and incentives.

- Investigate how dual plumbing could be mandated in areas where recycled water is available
- Provide guidelines to assist the business community with operational and contract waste management templates to achieve improved sustainability outcomes and value for money
- Support improved commercial waste data collection and verification
- Educate the business community about available non-landfill, alternative waste treatment solutions for operational waste management
- Share waste generation data to assist with monitoring recycling performance and identify opportunities for increased resource recovery
- Continue to deliver the Liveable Green Network, providing connected walking routes across the city
- Advocate for and develop an integrated bike lane network and distribute cycling and walking maps

09 Existing policies and programs

This plan builds on existing policies, programs and support towards net zero emissions in office buildings.

Better Buildings Partnership

The Better Buildings Partnership (BBP) is a program for Sydney-based institutional owners and property groups to collectively improve their impact. BBP establishes best practice standards for use by owners and their representatives including green leasing, operational and strip-out waste management guidelines.

CitySwitch

CitySwitch supports office-based businesses to improve their day-to-day energy and waste efficiency, increase productivity, reduce operational costs and create value for employees. It includes a resource hub, engagement campaign templates, and industry briefings and events.

National Australian Built Environment Rating System (NABERS)

NABERS is an Australian government initiative that measures and rates the environmental performance of Australian buildings and tenancies.

Commercial Building Disclosure (CBD) program

CBD is a federal government scheme that requires the disclosure of base building NABERS energy ratings and tenancy lighting assessments for spaces of 1000 square metres and above, at the point of sale or lease.

Training for private owners of mid-tier buildings

The NSW Office of Environment and Heritage provides training for facilities managers of privately owned buildings, focusing on simple maintenance, tuning and upgrade opportunities.

Energy Saver

Energy Saver is a NSW government program providing guidance and calculators for upgrading HVAC and lighting, considering net zero impact, and more.

Sustainability Advantage

Sustainability Advantage is a NSW government program that assists organisations across New South Wales to achieve increased competitiveness and improved bottom lines through better environmental practices.

Energy Savings Scheme (ESS)

The Energy Savings Scheme is a NSW government program which creates financial incentives to invest in energy savings activities and improves the rate of return on upgrade projects by creating tradable carbon abatement certificates that can be sold to liable energy generators.

Environmental Upgrade Agreements

Environmental Upgrade Agreements is a NSW government finance mechanism for building owners to access finance for upgrade works of existing buildings that result in energy, water and other environmental savings.

Environmental Grants

The City of Sydney provides grants that incentivise action and innovation in environmental performance.

Cycling in the city

The City is building a bike network which includes dedicated bike paths separating riders from traffic and pedestrians. The City's Sydney Rides events offer expert advice on everything from route planning to buying a new bike. The City also offers courses and bike care and maintenance at the Sydney Park Cycling Centre.

10 Plan development and reporting

The City of Sydney is dedicated to building a culture of sustainability to achieve the objectives of Sustainable Sydney 2030. This plan aims to engage the office sector to act on environmental performance opportunities and lead the city to net zero emissions.

9.1 Plan development

The office sector was prioritised as key to achieving the net zero goal, given the success and leadership of the Better Buildings Partnership and CitySwitch members, the untapped opportunity in the rest of the sector, and the fact that commercial office buildings make up the majority of the floor space in the City of Sydney area.

Targeted engagement was undertaken to gain ideas and insights from office sector stakeholders within the city and test the City's assumptions on the barriers and motivators to environmental sustainability. An external technical and policy Reference Group was convened to provide the City with strategic advice and influence the development and delivery of the plan.

The Reference Group consisted of representatives from a number of key government and private organisations, which included: NSW Office of Environment and Heritage; NSW Department of Planning and Environment; Urban Growth NSW; NSW Department of Trade and Investment; Transport for NSW; Green Building Council Australia; Property Council Australia; Better Buildings Partnership; Energy Efficiency Council; Facilities Management Australia; Engineering Association Australia; Sydney Water; and Jemena.

The City met with the Better Buildings Partnership to understand how the City can further support their leadership. Across the board, there was support and interest for the development of the plan and an overall consensus on the next focal areas for the sector: renewable energy, tenant engagement and privately owned offices.

The City commissioned detailed carbon emission modelling to understand the most effective opportunities for the sector to reduce emissions and conducted targeted engagement to gain insights from office sector stakeholders.

Over 40 stakeholders attended tailored briefings for owners, managers and tenants. The City then held a follow-up session to report back how stakeholder feedback had been incorporated in the plan.

Opportunities identified in these meetings and briefings are included in this plan's suite of actions. Feedback during the consultation also reinforced the need and desire for continued engagement with industry stakeholders.

This is a draft plan and is open to further input from the office sector during the public exhibition period. It is the City's hope that the sector will lead on delivering the plan facilitated and supported by the City.

9.2 Reporting

Progress will be reported annually as part of the City's environmental reporting. The plan will be reviewed in 2022, and adapted as required to support the sector's progress towards 2030 goals.

Appendix A: Measures, assumptions and actions

The table below details the assumptions behind each carbon reduction measure and how the City and industry actions will deliver on the measures. These actions are a sub-set of those outlined earlier in this plan, which also included actions to reduce water use and waste generation, as well enabling actions that don't provide a direct carbon reduction but which are essential to creating change in the industry.

Renewable energy campaign				
Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	93,700	% of 2014/15 - 21/22 abatement	36%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	250,700	% of 2014/15 - 29/30 abatement	36%
Key assumptions	Campaigns to encourage voluntary uptake of renewable energy are assumed to lift 100% renewable energy take up to the following levels by 2030: 100% of BBP base buildings; 25% of BBP tenants and of other institutional base buildings and tenants; 12% of property group and owner occupiers (base and tenancy); with no take-up by private owners (base or tenancy).			
City actions	• Encourage the design, construction and operation of Sydney's first net zero buildings, both new and existing • Support the cost effective uptake of renewable energy with information and campaigns • Promote green leasing to enable upgrade activity • Advocate for regulatory reform to facilitate increased investment in and use of renewable energy			
Industry actions	**Owners:** • Maximise on-site and off-site renewable energy supply options **Tenants:** • Maximise renewable energy options • Collaborate on whole-building performance **Government:** • Establish a price on carbon and increase the mandatory renewable energy target providing policy certainty to the energy market • Remove energy market barriers for decentralised energy and affordable off-site renewable energy access • Promote the National Carbon Neutral Offset Standard for Carbon Neutral Buildings			

Expansion of Commercial Building Disclosure scheme

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	47,200	% of 2014/15 - 21/22 abatement	18%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	111,400	% of 2014/15 - 29/30 abatement	16%
Key assumptions	Assumes Commercial Building Disclosure scheme applies to all buildings and tenancies greater than 500 sqm as at June 2018, and requires disclosure every four years (where not triggered by sale or lease). Also assumes that the current exemption for buildings with less than 75% office space no longer applies. Assumes energy use reductions in line with that reported by NABERS annual report 2016 (see page 27 of this plan).			
City actions	• Advocate for the mandatory regular disclosure of tenancy ratings and retro-commissioning to above minimum standards, including tax incentives for action • Develop a pathway for the City's current planning controls to be strengthened over time to deliver net zero building standards			
Industry actions	**Owners:** • Rate and disclose NABERS Energy performance ratings for base building, combined and whole building in collaboration with tenants • Use green leases to enable collaboration with tenants **Tenants:** • Rate and disclose environmental performance, engage in cost-effective upgrades **Government:** • Implement regular mandatory disclosure of NABERS tenancy and whole-building ratings, as well as at the time of sale or lease and investigate the opportunity for retro-commissioning of existing buildings to minimum standards • Rate and disclose the energy and water performance of government-owned buildings			

NABERS Commitment Agreements

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	46,400	% of 2014/15 - 21/22 abatement	18%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	69,300	% of 2014/15 - 29/30 abatement	10%
Key assumptions	• Assumes 5.5 star NABERS commitment agreements (CAs) for buildings outside the CBD and 6 star for whole buildings in CBD (with height incentives). Savings are initially high, at around 50% compared to National Construction Code minimums, but fall back to around 25% after the Code is assumed to be lifted in 2019 to 5.5 star. • Assumes institutional and property groups adopt 6 star CAs with height incentives, other building categories don't. • Assumed to apply to the following proportions of floor space per annum: institutional base buildings & tenants 3%; property groups base building 3%; property groups tenants 2%; Private/foreign-owned base building & tenants 1.5%; owner occupied base building & tenants: 1%.			
City actions	• Investigate the inclusion of planning control provisions that introduce NABERS Energy Commitment Agreements for new commercial office buildings and major commercial office refurbishments over 500 sqm or 1000 sqm.			
Industry actions	**Developers:** • Utilise the highest available NABERS Energy Commitment Agreement			

Appendix A: Measures, assumptions and actions

Higher energy standards in National Construction Code

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	27,200	% of 2014/15 - 21/22 abatement	10%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	87,700	% of 2014/15 - 29/30 abatement	12%
Key assumptions	Applies to new buildings and major refurbishments in all sub-sectors. Assumes National Construction Code Section J energy performance requirements are lifted in 2019 by around 38% - savings are assumed to be lower for institutional owners, as they tend to build above Code minimums already – although assumes 10% of the potential savings are lost through under-compliance.			
City actions	• Advocate for increases to the National Construction Code (NCC) minimum environmental performance standards for building and refurbishments, and increased compliance with the NCC			
Industry actions	**Government:** • Increase minimum standards in the National Construction Code			

Increased compliance with National Construction Code

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	3,000	% of 2014/15 - 21/22 abatement	1%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	9,700	% of 2014/15 - 29/30 abatement	1%
Key assumptions	The measure is a program to enhance compliance with existing minimum mandatory standards in the National Construction Code (NCC), both in the case of new builds and major refurbishments. For modelling purposes, we assume that the energy savings available through such a measure would be similar to those associated with a building tune-up, as poor commissioning is understood to be one of the most common sources of under-performing commercial buildings. Improved Code compliance is assumed to recover 10% of the potential savings from Code upgrades.			
City actions	• Advocate for increases to the National Construction Code (NCC) minimum environmental performance standards for building and refurbishments, and increased compliance with the NCC • Continue to promote the Section J compliance checklist through industry partners			
Industry actions				

Enhanced Minimum Energy Performance Standards

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	12,200	% of 2014/15 - 21/22 abatement	5%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	61,500	% of 2014/15 - 29/30 abatement	9%
Key assumptions	Assumes Minimum Energy Performance Standards on equipment and appliances are 10% higher than would otherwise be the case.			
City actions	• Advocate for increased minimum environmental performance standards in building codes, equipment and appliances			
Industry actions	**Government:** • Increase Minimum Energy Performance requirements (MEPS) and accelerate uptake of energy efficient appliance standards under the national Greenhouse and Energy Minimum Standards (GEMS) program			

CitySwitch Growth

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	7,600	% of 2014/15 - 21/22 abatement	3%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	39,500	% of 2014/15 - 29/30 abatement	6%
Key assumptions	In 2014/15 there was 8 million sqm of office floor space in office buildings growing at 1.2% a year. CitySwitch members currently represent 1 million sqm of this floor space. Measure assumes an additional 3.3% of office floor space in office buildings will join CitySwitch each year until 2022 (5% institutional, property group and owner-occupied tenancy floor space, 1% of private owners = 3.3% of total sqm). The CitySwitch participation rate would also grow in line with an assumed sector growth rate of 1.2% p.a. Savings rate is assumed to be up to 15% savings for new members over the 5 years.			
City actions	• Continue to deliver the CitySwitch Green Office Sydney program to office-based businesses			
Industry actions	**Tenants:** • Demand high-performing buildings • Office tenants join the CitySwitch program and retrofit/upgrade their tenancies			

NSW Government Leasing requirement for 6 star NABERS Energy

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	9,300	% of 2014/15 - 21/22 abatement	4%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	14,600	% of 2014/15 - 29/30 abatement	2%
Key assumptions	Assumes that NSW Government agencies are required to lease 6 star NABERS Energy rating buldings. This would represent a significant (up to 50%) saving over current practice, but the impact is assumed to be modest due to the small share of NSW government leased space. Assumed to apply from mid-2018.			
City actions	• Advocate for the Government Resource Efficiency Policy (GREP) to specify that agencies need to occupy buildings with minimum 5.5 - 6 star NABERS Energy rating and ultimately net zero buildings			
Industry actions	**Government:** • Increase the Government Resource Efficiency Policy (GREP) to specify that agencies need to occupy buildings with minimum 5.5 - 6 star NABERS Energy rating and ultimately net zero buildings			

National financial incentives

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	4,900	% of 2014/15 - 21/22 abatement	2%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	24,600	% of 2014/15 - 29/30 abatement	3%
Key assumptions	A set of financial incentives in the form of tax breaks, accelerated depreciation and low cost finance etc aimed at the private owners and owner occupiers has been modelled. These incentives support annual savings of 10% on average, for those who do respond, but this is only assumed to be a small share of the floor area annually (2%).			
City actions	• Advocate for the mandatory regular disclosure of tenancy ratings and retro-commissioning to above minimum standards, including tax incentives for action			
Industry actions	**Government:** • Develop financial incentives for high environmental performance in buildings			

Data driven campaigns

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	2,200	% of 2014/15 - 21/22 abatement	0.85%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	12,200	% of 2014/15 - 29/30 abatement	1.73%
Key assumptions	Data driven campaigns target owner-occupiers and private owners only, and are assumed to achieve savings of 5%, on average, for those who do respond, but assumes that only 3% of private owners and 5% of owner occupiers (who have a stronger incentive) do so each year.			
City actions	• Provide support for whole-building data disclosure and NABERS Energy Ratings			
Industry actions	**Government:** • Collaborate with industry associations to build capacity and deliver targeted information, resources and training to private owners			

Voluntary best practice standards

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	2,100	% of 2014/15 - 21/22 abatement	0.81%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	11,200	% of 2014/15 - 29/30 abatement	1.60%
Key assumptions	Voluntary uptake by property groups of Better Buildings Partnership best practice standards. Assumes that around 5% of the floor area (base and tenants) responds each year, and achieves 20% savings on average.			
City actions	• Continue to deliver the Better Buildings Partnership program for leading property owners in the local government area			
Industry actions	**Developers:** • Design and construct new buildings to the highest level of sustainability performance available			

Environmental grants and building tune-up program

Abatement to 2022	Reduction from 15/16 emissions (t CO2-e)	1,800	% of 2014/15 - 21/22 abatement	0.69%
Abatement to 2030	Reduction from 15/16 emissions (t CO2-e)	9,400	% of 2014/15 - 29/30 abatement	1.33%
Key assumptions	Environmental grants offered by the City and a building tune up program offered by the City are assumed to induce savings of around 5% on average, but with limited take-up varying between 0% and 3% of the floor area annually, depending upon the ownership class.			
City actions	• Support environmental innovation through the provision of grants and the sharing of success and knowledge • Deliver a tune-up program to support privately-owned buildings to make environmental performance upgrades			
Industry actions	**Owners:** • Implement environmental upgrades • Upgrade all general lighting systems within tenancies **Tenants:** • Upgrade to energy-efficient lighting and appliances • Engage with building owners on base building performance improvements, including owner-provided general lighting systems in the tenancy **Building managers:** • Implement environmental upgrades • Measure and present the savings to owners and tenants • Develop business cases for major upgrades • Preference the replacement of end of life equipment with the highest efficiency option rather than like for like – considering the life cycle costs and benefits rather than simple cash up front • Seek out support and training			

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