

# RETROFIT MELBOURNE

Framework to enable mid-tier commercial buildings to transition to be zero carbon ready.

OCTOBER 2023



CITY OF MELBOURNE

## **Acknowledgement of Traditional Owners**

The City of Melbourne respectfully acknowledges the Traditional Owners of the land we govern, the Wurundjeri Woi-wurrung and Bunurong / Boon Wurrung peoples of the Kulin Nation and pays respect to their Elders past and present. We acknowledge and honour the unbroken spiritual, cultural and political connection they have maintained to this unique place for more than 2000 generations.

We accept the invitation in the Uluru Statement from the Heart and are committed to walking together to build a better future.

# Foreword



Melbourne is admired as one of the most liveable cities in the world. To safeguard our celebrated way of life, the City of Melbourne has declared a climate emergency and set an ambitious target to reach 100 per cent renewable energy by 2030, and zero net emissions by 2040.

Our city's commercial buildings play an important role in achieving these goals. Many were built at a time, and to codes, that paid little to no attention to environmental impact. They are now the biggest polluters in the municipality, accounting for almost 60 per cent of the city's carbon emissions.

The Retrofit Melbourne Plan draws on international and local best practice to support building owners improve the environmental performance of their buildings.

From guides and resources available in the retrofit portal, to advisory groups and thought leadership events, the plan will provide a roadmap for the property sector, simplifying the process and allowing them to accelerate building upgrades across the municipality.

Retrofitting existing buildings is not only necessary for our environment and emissions reduction targets. It offers inspiring and updated facilities for our city's employees, boosts property values for better tenant attraction and retention, and enables a range of co-benefits including healthier and more comfortable buildings, and precinct revitalisation.

The City of Melbourne has a long history of supporting building retrofits through the Postcode 3000 and 1200 Buildings programs, which have made a measurable difference.

However, addressing the issue of decarbonisation, just in the existing mid-tier commercial building sector, means Melbourne needs to retrofit about 80 properties each year to meet our climate goals. Currently, we average seven.

We are not daunted by the enormity of the task ahead. Melbourne's environmental credentials are strong, and we have garnered great support on the plan and its objectives in consultations with more than 200 stakeholders in the property and building sectors. We're confident this comprehensive plan and its measures, implemented alongside industry, will go a long way in moving toward our goals together.

We thank our industry stakeholders for their insights and enthusiasm and look forward to working with them, and with the Victorian and Australian governments to deliver the plan.

While the mid-tier sector remains a focus, the plan reflects the diversity of our city's buildings as well as their ownership profiles. This is about ensuring we leave no organisation behind and achieve the full suite of benefits associated with a coordinated response.

We are proud to be leading the charge by accelerating retrofits in our municipality and securing a liveable and sustainable future for our community.

Sally Capp AO  
Lord Mayor

Councillor Elizabeth Mary Doidge  
Portfolio lead for Sustainable Building

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## **Executive summary**

Commercial buildings are responsible for nearly 60 per cent of emissions in the municipality. City of Melbourne has set a target for all existing buildings to be 'zero carbon ready' by 2040. It's a crucial part of our plan to reach net zero emissions by 2040; without it, we'll fall short.

We have led various initiatives to promote building retrofits over the last two decades, but the rate remains too low to meet our target. We need more than 80 buildings to be retrofitted each year. However, only seven buildings are currently retrofitted yearly.

This document sets out an implementation plan to rapidly increase the pace of zero carbon retrofits. We mainly focus on mid-tier buildings because they are the most common and face the most barriers to change. This plan is part of an increasing movement to promote zero carbon building retrofits elsewhere in Australia and the world.

### **Our initiatives**

Over the last two years, we have developed and consulted on how to make this implementation plan work. We will undertake 11 initiatives, organised into four work streams: advocacy, information and support, enabling mechanisms and regulation. Each initiative addresses a specific barrier to zero carbon retrofits, and together, they create a more powerful system than the sum of its parts.

#### **Advocacy**

We will continue to advocate to the Australian and Victorian Governments for regulation supporting zero carbon ready retrofits. Initially, this will focus on:

1. Periodic building energy use disclosure
2. Building retrofit fund

#### **Information and support**

City of Melbourne will deliver information, support and knowledge-sharing systems for easy access to best practice guidance for zero carbon ready retrofits, to be the one-stop shop for industry knowledge. Our next step is to develop and implement these initiatives over the next 12 months to two years:

3. Zero carbon buildings portal
4. Zero carbon buildings advisory group
5. Zero carbon buildings teams
6. Zero carbon buildings thought leadership and events

#### **Enabling mechanisms**

We will deliver and support mechanisms and tools that make implementing zero carbon ready buildings easier. Our next step is to develop and pilot these initiatives:

7. Zero carbon precincts
8. Zero carbon leases
9. Zero carbon risk tool

## **Regulation**

We will investigate options to incentivise emissions reductions and regulate the total allowable emissions from commercial buildings. We will work with other levels of government to develop, test and enable the best mechanism. Our next steps are to develop business cases (including impact assessments) and to continue discussions with the Victorian and Australian Governments regarding:

10. Rates incentives or penalties
11. Setting an emissions cap

Thank you to everyone who helped to develop this implementation plan: the 70 experts who contributed to the Zero Carbon Buildings for Melbourne discussion paper, the organisations and individuals who provided feedback on it, and the 1000 or more people who engaged with us in workshops, events, masterclasses and discussions as we tested out how to make the most practical, effective plan to Retrofit Melbourne.

# Context

Like cities all around the world, our municipality is going through a major transition. After COVID-19, the central city is experiencing a permanent shift to a more remote workforce, which has increased vacancy rates – especially in lower-grade commercial buildings.

This transition offers as many opportunities as it does challenges. Many of Melbourne’s commercial buildings are much loved and they have the potential to be repurposed and adapted for different uses. Every building in the municipality must be ready for a low-carbon future, whether it’s being built, retrofitted, adapted or otherwise redeveloped. As they achieve zero carbon outcomes, some buildings may transition from commercial to mixed-use, or help us respond to the affordable housing crisis.

This plan sets out how City of Melbourne will support and facilitate the investment required to make Melbourne’s commercial buildings zero carbon ready.

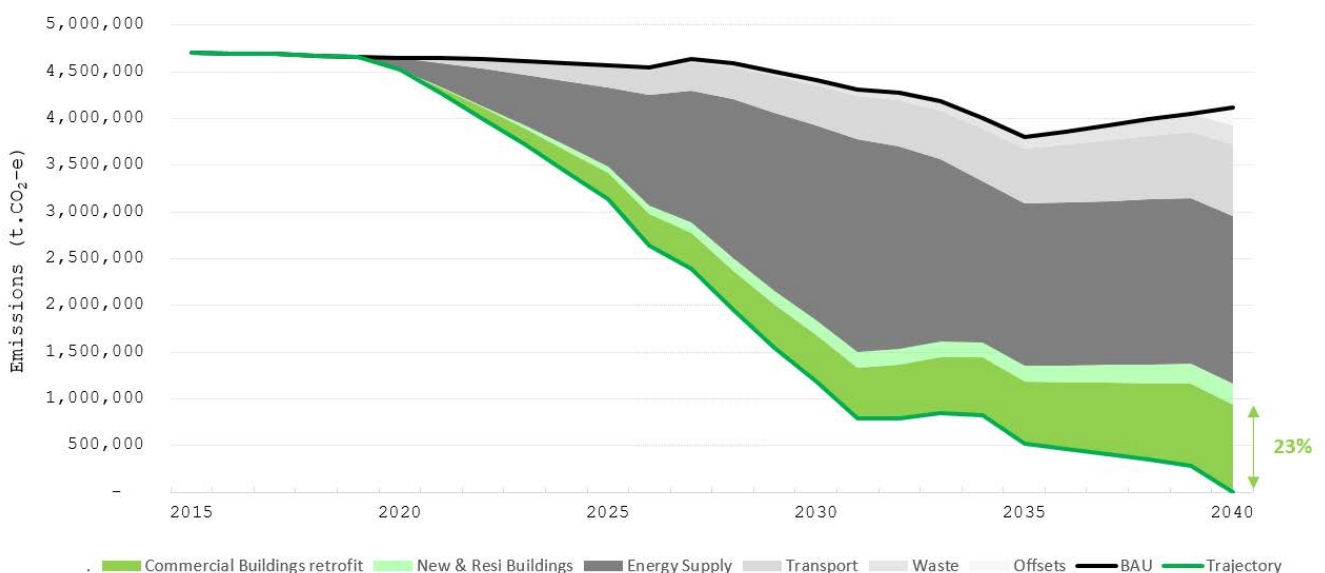
We must work with building owners to deliver this plan, but doing so presents a particular challenge in Melbourne because building ownership types and structures are more diverse compared to the rest of Australia (Sustainability Victoria, 2018). Generally, Melbourne’s mid-tier buildings are owned by smaller portfolios, family trusts, international investors and individuals. We have developed a suite of initiatives that incentivise different stakeholders, so we reach all buildings in the municipality.

## The challenge posed by Melbourne’s commercial building stock

Commercial buildings are responsible for nearly 60 per cent of emissions in the municipality (City of Melbourne, 2022). We’re aiming for all existing buildings to be ‘zero carbon ready’ by 2040 so that their emissions fall as the electricity grid is decarbonised. But there are more than 1500 mid-tier commercial buildings. More than 80 buildings will need to be retrofitted each year to reach this target. Now, however, only seven buildings are retrofitted yearly. This document sets out an implementation plan to rapidly increase the pace of zero-carbon retrofits.

If we don’t act, we will fall short of net zero emissions in 2040 by 23 per cent, even with a fully decarbonised electricity system.

Figure 1: Analysis of emissions reductions over time as the grid is decarbonised

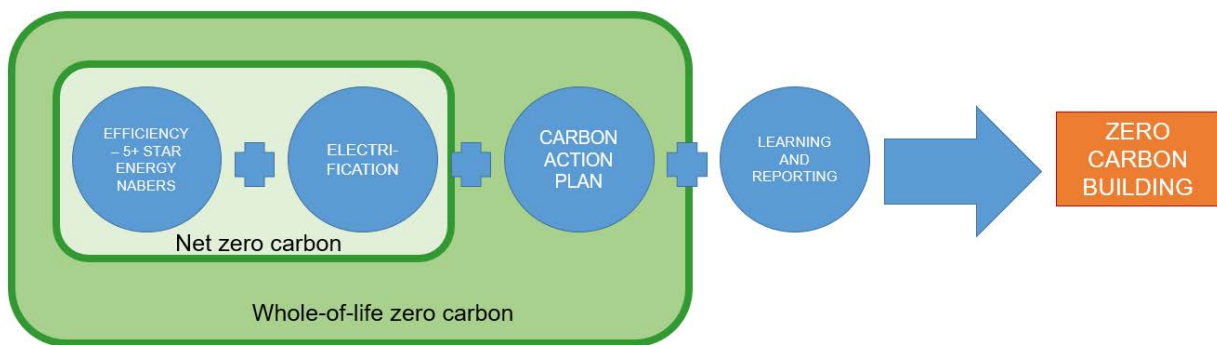


## What is a 'zero carbon ready' building?

1. It has a high level of energy efficiency. City of Melbourne will set a 5-star NABERS whole-building energy rating as a minimum efficiency benchmark.
2. It uses no fossil fuels in its operation. It uses electric building services that can be powered by 100 per cent renewable electricity.
3. It has a carbon reduction action plan to transition the building to whole-of-life zero carbon (including embodied carbon) after 2040.
4. Its owners regularly report on its progress towards zero emissions, embedding learning.

This definition is similar to that used by the World Green Building Council's Net Zero Carbon Buildings Commitment (2018) and the International Energy Agency (2021).

Figure 2: Elements of zero carbon ready buildings



## Progress in reducing emissions from buildings

Over the past 20 years, City of Melbourne has led a range of initiatives to reduce emissions from buildings and improve their performance, including:

- strategic work to improve energy efficiency and support green buildings, which resulted in the development of the Green Star rating tool
- the construction of Council House 2, which featured world-leading sustainable building design and construction in 2006
- the 1200 Buildings retrofit program and funding mechanisms to support retrofit costs, including developing Environmental Upgrade Agreements.

Despite the work we've done previously, the current rate of progress will not be enough to meet our zero emissions target by 2040.

## Retrofits and mid-tier buildings

Effective building retrofits can boost the economy. Modelling by consultants Point Advisory (2022) suggests they could add over \$2.7 billion to the Victorian economy by 2040, with 12,000 jobs and a yearly reduction in energy costs of over \$184 million.

EY (2015) outlines several barriers to owners retrofitting buildings, including:

- the absence of effective incentives
- ineffective government interventions – government schemes to support retrofits are not implemented for long enough or are duplicated at different levels of government and industry
- different priorities, pressures and capital constraints – building owners have many competing demands on their time and capital and do not prioritise energy efficiency upgrades



- split incentives – landlords are unable to access returns from investing in energy efficiency upgrades that benefit only tenants
- the absence of or difficulty accessing affordable and trustworthy technical support
- the land banking of office space and associated lack of investment in maintenance – some owners hold onto old buildings for capital growth without the capacity to maintain them properly or invest in upgrades.

Most commercial buildings in Melbourne fall into the ‘mid-tier’ category – smaller, older buildings with non-corporate owners (see box for further explanation).

Premium and A-grade buildings are more likely to be retrofitted:

- They are more likely to be owned by institutional property investors, with ready access to capital, industry capability and skills.
- Owners are held to account by corporate ESG reporting requirements.
- Tenants of these buildings seek out high environmental sustainability performance to satisfy their ESG reporting requirements.

Reducing emissions from mid-tier buildings is more difficult due to additional barriers:

- Mid-tier building owners do not usually share knowledge with each other.
- They are under-represented in industry bodies such as the Property Council of Australia.
- They are usually occupied by small tenants that do not demand better environmental performance, due to a lack of awareness or corporate policy.

### **What is a mid-tier building?**

Mid-tier buildings are often defined as any building lower than Premium or A-Grade, as outlined in the Property Council of Australia’s Guide to Office Quality. Market research has shown mid-tier buildings share common characteristics (EY, 2015) that may present barriers to implementing emissions reduction retrofits:

- smaller footprints of 10,000 m<sup>2</sup> or less
- built before 2000, with older building services, including the original HVAC system and fluorescent tube lighting
- diverse ownership profiles, including private, family trusts, strata-title and owners living overseas
- higher vacancy rates when compared to Premium and A-grade assets
- small leased floorplates, with tenants that are small and medium-sized enterprises
- lower rents per square meter
- no NABERS rating because most do not trigger mandatory disclosure under the *Building Energy Efficiency Disclosure Act 2010*, as they have small floor plates and do not get sold often
- no dedicated property or facilities manager.

### **Policy context**

Many jurisdictions worldwide, including local governments, have policies supporting energy efficiency and emissions reductions in buildings. City of Melbourne doesn’t have control over all the required policy and regulation, so we are advocating for change at all levels of government to support this work.

## Victorian Government

The Victorian Government has committed to reducing emissions by 28 to 33 per cent by 2025, 45 to 50 per cent by 2030, and 75 to 80 per cent by 2035. Its Built Environment Climate Change Adaptation Action Plan includes investment in efficiency upgrades for low-income and vulnerable households and upskilling for professionals and the community. The Victorian Government has also updated its Victorian Energy Upgrades program under the *Victorian Energy Efficiency Target Amendment Act 2022*.

## Australian Government

Australia has committed to achieving net zero emissions by 2050 and reducing greenhouse gas emissions by 43 per cent below 2005 levels by 2030 (Australian Office of Financial Management, 2022). In 2023, the Australian Government Budget committed over \$2.9 billion for energy performance upgrades and decarbonisation over the next four years.

For commercial buildings, Australian Government measures include:

- the Building Energy Efficiency Disclosure Act, with the associated Commercial Building Disclosure program requiring NABERS ratings to be disclosed when buildings are sold or when spaces over 1000 m<sup>2</sup> are leased
- the development of training on embodied carbon for all sectors of the building industry
- increased new building efficiency through the National Construction Code 2025.

## International approaches

As in Australia, there are no examples around the world where governments have implemented a comprehensive framework of policies, knowledge support and advocacy required to tackle the barriers to zero carbon ready retrofits. Current international policies on building energy efficiency include the following broad categories:

- **Emissions caps** on maximum allowable emissions from commercial buildings, for example, New York Local Law 97, Tokyo Metropolitan Government's cap and trade scheme, City of Vancouver's Annual Greenhouse Gas Emissions and Energy Limits By-law, and similar legislation in Seattle, Boston and Washington DC
- **Resource provision** including guides, plans, fact sheets, case studies and education programs, such as the Zero Emission Building Exchange as part of the Metro Vancouver Zero Emission Innovation Centre
- **Partnerships** such as the Copenhagen network of building owners
- **Leading by example** by decarbonising government-owned buildings and piloting new technologies
- **Strategic collaboration and leadership**, such as acceleration collaboration and technology strategies developed by the Hong Kong Government to engage industry on retro-commissioning and energy efficiency.

City of Melbourne aims to bring together the best aspects of domestic and international policy. The following existing complementary programs could support our journey to zero carbon buildings.

Program	Explanation	Limitations	Benefits
<b>Environmental upgrade agreements (EUAs) finance</b>	A fixed-rate loan for energy-efficient upgrades uses energy savings to pay for the loan to maintain a positive cash flow.	Slow uptake – there have only been 13 EUAs since 2011 in Melbourne. There are less demanding sources of cheap money available.	EUAs can support our initiatives and their take-up could be improved if we can help to rationalise their administration.
<b>On-bill finance</b>	A loan for improving the energy efficiency of a	This method requires ongoing collaboration with	On-bill finance has the potential to support our

Program	Explanation	Limitations	Benefits
	building, repaid over time through additional charges on utility bills.	utilities. We need to evaluate why it has not reached its potential.	initiatives, so we need to collaborate with potential users to make it more effective.
<b>Energy performance contracting (EPC)</b>	The EPC vendor assesses the building, develops a strategy and installs the necessary equipment to improve energy efficiency at no charge to the client. In return, the EPC vendor receives a significant proportion of the savings made.	Low uptake rate – this program has not accelerated deep retrofits. Some issues arise with trust, implementation and process.	EPC has the potential to support our initiatives, so we need to collaborate with potential users to make it more effective.
<b>Equipment and service leasing (also known as energy as a service)</b>	Like leasing a printer and paying per page, this method involves hiring energy-saving equipment and paying for the levels of comfort provided.	Low uptake – it is a complex option because measures of comfort are often subjective.	Service leasing could enable long-term design, upgrades and better management. It can also support data accessibility and continual improvement.

Table 1: Existing complementary programs – limitations and benefits

## How this report was developed

This report comprises work conducted or commissioned by City of Melbourne over the past two years in four distinct phases:

- **Phase 1** involved listening to over 70 Australian and international industry experts, academics and policymakers to propose policy initiatives and develop a discussion paper.
- **Phase 2** involved consulting with industry and the community on the Zero Carbon Buildings for Melbourne discussion paper. We received responses from over 150 individuals, organisations and industry groups (including Green Building Council of Australia, Property Council of Australia, C40, Energy Efficiency Council, NABERS, Master Builders Victoria, JLL Australia and ISPT).
- **Phase 3** involved key stakeholder workshops to develop the definition of zero carbon ready buildings and hear more from mid-tier building owners.
- **Phase 4** will arise from this Retrofit Melbourne plan. We will develop the detail of each initiative, achieve Council endorsement and implement the initiatives.

## Refining our initiatives

As part of phase 2, we asked for feedback on the effectiveness and practicality of seven proposed initiatives. The initiatives were generally seen to be both effective and practical, with most support for incentivising periodic disclosure, zero carbon retrofit teams and emissions caps. During the workshops in phase 3, we discussed ways to adapt the seven initiatives better to address barriers to zero carbon ready retrofits.

Figure 3: Responses on the effectiveness and practicality of previously proposed initiatives



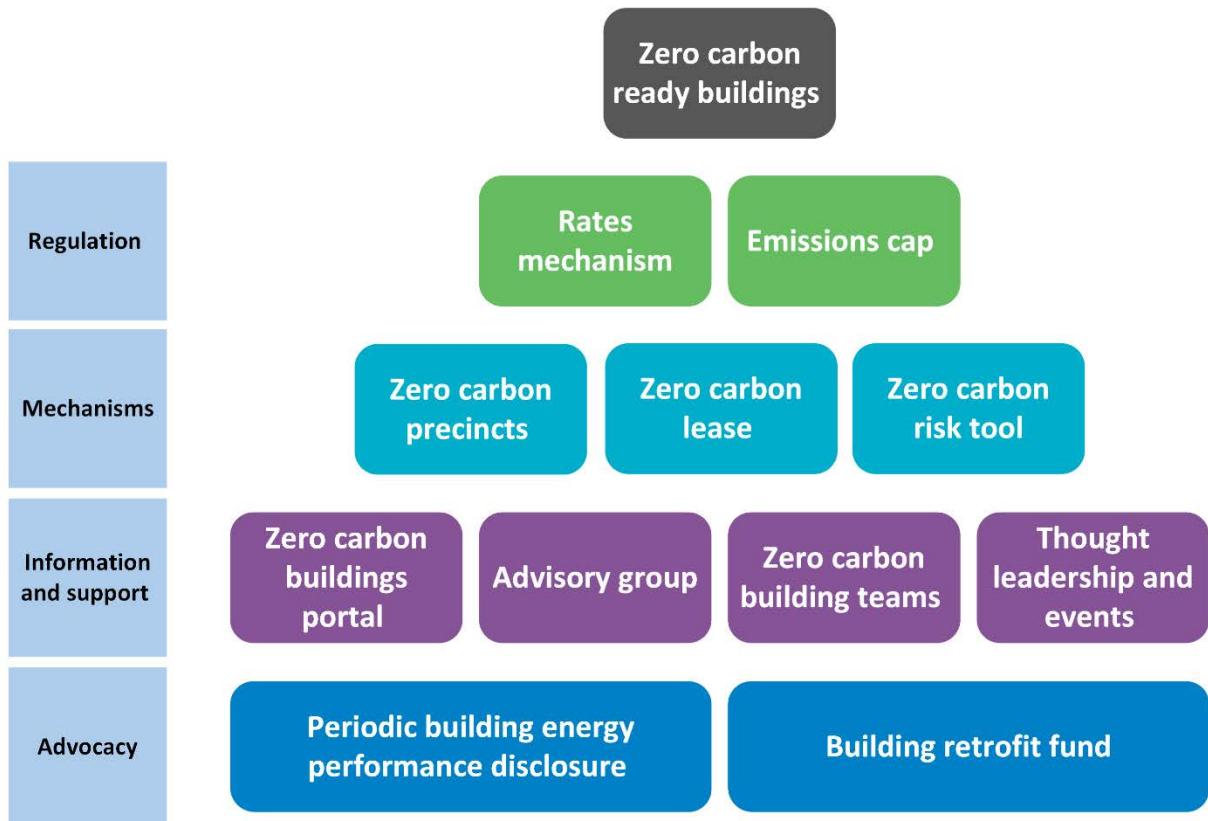
Source: Global Research

# Initiatives

Retrofit Melbourne sets out our plan to support zero carbon ready retrofits for the municipality’s buildings, focusing on mid-tier buildings. We will undertake 11 initiatives, organised into four work streams: advocacy, information and support, enabling mechanisms and regulation.

The initiatives work together. Those grouped under the advocacy stream – periodic disclosure and building retrofit fund – underpin the effectiveness of those that follow in information and support, and so on. For example, zero carbon building teams will not be successful without periodic disclosure requirements. As shown in the diagram below, the initiatives lower in the pyramid underpin the effectiveness of the initiatives above them.

Figure 4: The Retrofit Melbourne initiative pyramid



The following sections of this plan will outline the details of each of these initiatives, including:

- barriers it addresses
- how it helps deliver zero carbon ready buildings
- what we heard from the consultation
- links with the other initiatives
- next steps for implementation.

Each initiative addresses a specific barrier to zero carbon retrofits; however, together, they create a more powerful system than the sum of its parts. The implementation timeline is based on the nature of the initiative and increasing stringency over time.

## Advocacy

Continued advocacy will be crucial to the delivery of this framework and achieving net zero emissions by 2040. We have identified two immediate priorities below, but more will be necessary to accelerate our journey to net zero in 2040. For example, additional advocacy may be required to facilitate retrofits with future adaptive reuse models. The retrofit policy environment is dynamic and we will periodically review our advocacy priorities to ensure they align with what's happening in the market.

### 1. Periodic disclosure

City of Melbourne's role – facilitate, pilot and advocate  
Delivery timeframe – continual advocacy

Since 2010, some building owners must provide energy efficiency information to buyers and tenants using the NABERS energy rating system as part of the sale or lease transaction. National Commercial Building Disclosure regulations apply to sellers and lessors of commercial office spaces over 1000 m<sup>2</sup> in buildings that comprise more than 75 per cent office space.

This program will expand beyond commercial office buildings to include properties such as hotels, data centres and retail. It will also include periodic disclosure – every 12 to 24 months, owners of buildings over 100 m<sup>2</sup> will be required to report base building energy performance. This expansion was put on hold due to COVID-19, but it is a central part of the Australian Government's Trajectory for Low Energy Buildings (Commonwealth of Australia, 2018).

#### Barriers it addresses

Periodic disclosure responds to the following uncertainties:

- 'What is the benefit of investing?' – owners are often unaware that inaction risks their property value. Having data on building performance information available during the sale or lease will clarify this risk.
- 'None of my competitors are doing it, why should I?' – yearly data will reveal performance and enable comparison between buildings.
- 'What difference will it make?' – information will help us understand the scale and potential return of retrofits, enabling planning. Comparative data will give certainty to funders.
- 'How do we do it?' – periodic disclosure will create a large body of experience, case studies and data to demonstrate what is practical, overcoming our current low learning rate.

#### How will it help deliver zero carbon ready buildings?

Mandatory periodic disclosure of energy ratings will significantly accelerate the retrofit rate. It increases accountability and incentivises retrofitting to remain competitive in the market.

Voluntary use of NABERS ratings has not delivered retrofits at the rates needed to achieve net zero targets, even with incentives and support. The cost of rating assessors remains a hurdle for new starters. For example, our City Switch program has a discount for NABERS ratings but has not driven significant uptake from mid and low-tier building owners.

City of Melbourne does not have the regulatory power to introduce mandatory periodic disclosure but will advocate to the Australian Government to introduce it as soon as practicable.

#### What we heard from the consultation

In feedback on our Zero Carbon Buildings for Melbourne discussion paper, the 'incentivising periodic disclosure' concept received the most support. More than eight in 10 respondents said it would be 'effective' or 'very effective' in helping meet our zero emissions commitment for 2040. Nearly seven in 10 respondents said these incentives would be practical (see Figure 3). Very few people – under 5 per cent – responded that such measures were 'not practical' and 'not effective' (City of Melbourne, 2023). Based on this feedback, it is clear that we need to incentivise using NABERS and make it easy to use.

'Periodic reporting of a building's NABERS rating will assist owners and tenants in the buildings, as often tenants actively seek a higher NABERS rating because it is aligned with their company values. This, in turn, will incentivise owners of those lower-class assets to upgrade them and support high transparency levels of the classes of building in the market.'

Property Council of Australia

### **Case study – performance reporting around the world**

Periodic performance measurement is occurring in many places around the world. Each city uses different metrics, aiming to incentivise energy use reduction. Cities include:

- New York City
- Seoul
- St Louis, Missouri
- Tokyo
- Vancouver
- Washington D.C.
- Boston.

The European Union has introduced country-wide periodic building performance reporting under its Energy Performance of Buildings Directive.

### [Links with other initiatives](#)

Mandatory periodic disclosure would provide benchmark measurements that could form the basis for a rates mechanism or emissions cap.

### [Next steps](#)

City of Melbourne will continue advocating for mandatory periodic disclosure as a critical enabler for buildings to reach our zero-carbon target. We will work with other levels of government to facilitate piloting and gather data to support a nationwide rollout of these requirements.

## 2. Better buildings fund

City of Melbourne's role – advocate in partnership with the Council of Capital City Lord Mayors  
Timeframe for delivery – continual advocacy

A better buildings fund would be a national funding pool to invest in retrofitting commercial buildings. It would include a training and skills package to build the industry's capacity in the relevant trades.

### Barriers it addresses

A better building fund would enable the following:

- the participation of owners who lack the finance to deliver zero carbon ready buildings
- funding targeting specific building industry issues
- funding for the necessary building technologies
- funding for training and skills development.

### How will it help deliver zero carbon ready buildings?

A lack of qualified and available consultants and tradespeople is stalling progress for owners who want to retrofit their buildings. Because retrofitting has failed to gain momentum in Melbourne, local professionals have had little incentive or opportunity to improve their expertise. To accelerate this transition, we need a skilled workforce capable of meeting increased demand.

### What we heard from the consultation

Many industry stakeholders also advocate for the Australian Government to create this funding stream. For example, the Green Building Council of Australia and the Property Council of Australia's policy plan, Every Building Counts, recommends the Australian Government prioritise growing the workforce and investing in a program for skills, research and education as part of a nationwide zero carbon ready, resilient building strategy. The plan states that priority should be given to ensuring effective compliance with minimum standards through training and incentives and improved mechanisms for dispute resolution.

### Next steps

Continue to advocate alongside the Council of Capital City Lord Mayors and investigate other advocacy partnerships, such as with the Green Building Council of Australia and the Property Council of Australia.



## Information and support

### 3. Zero carbon buildings portal

City of Melbourne's role – deliver and manage

Timeframe for delivery – 12 to 18 months

The zero carbon buildings portal will be a website where anyone interested in retrofitting their buildings can learn how to start, with guides, research, tools, case studies and relevant events. It will also enable them to chart their paths towards zero carbon readiness and ensure they comply with applicable legislation. City of Melbourne will manage and update the portal.

#### Barriers it addresses

The portal will help overcome the following common complaints:

- 'I don't have time to find the information' – it will be a quick resource for time-poor building owners and managers.
- 'I don't trust what I can find on Google' – it will meet a need for trusted information.
- 'We don't have the time or the people to do this' – it will support small organisations.
- 'I don't know what the first step is, so it's too hard' – it will meet a need for case studies, guides and information to support decision-making.
- 'Why should I do it if no one else is?' – it will create a sense of momentum for building retrofits.

#### How will it help deliver zero carbon ready buildings?

A great deal of relevant information is already available (for example, from CitySwitch, NABERS and the Green Building Council of Australia and on our website). However, it is housed across multiple websites and documents. The portal will be a 'one-stop-shop' for information, including grants. In bringing together existing information, we will identify and fill any gaps.

#### What we heard from the consultation

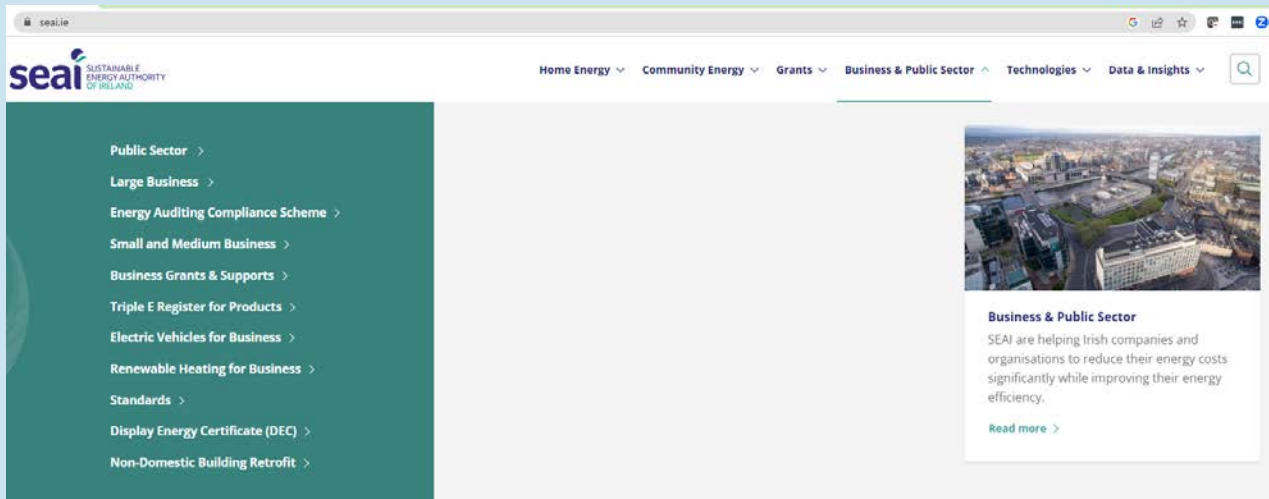
C40 is a global network of mayors of the world's leading cities who are united in action to confront the climate crisis. In its feedback, C40 highlighted the success of international portals that bring service providers together with building owners and allow building owners to share knowledge and good practice. It referred to New York City's Retrofit Accelerator, Copenhagen's Energy Leap and the Washington DC Building Innovation Hub.

## Case study – Ireland’s one-stop-shop

The Sustainable Energy Authority of Ireland has a website that is successfully enabling building retrofits: [www.seai.ie](http://www.seai.ie)

It contains reports, guides, case studies and podcasts, and information about schemes, grants, pilot projects and legislation. In 2021 the portal led to the following:

- over 1.2 million website sessions
- more than 400 small and medium enterprises registering for an energy audit scheme
- more than 600 members joining their sustainable energy community network.



The Sustainable Energy Authority of Ireland website

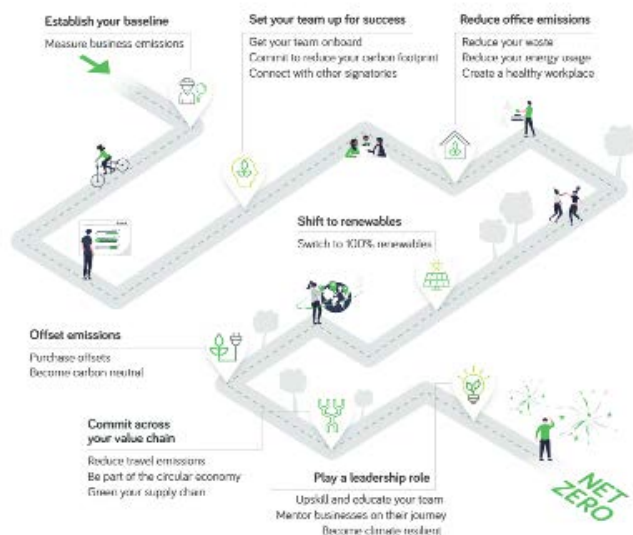
## Links with other initiatives

The portal is a key to our delivery of retrofit information and support. It will equip stakeholders to access other drivers and mechanisms, such as zero carbon precincts, retrofit teams and zero carbon leases.

## Next steps

We will develop and deliver the portal over the next 12 to 18 months. It will involve designing and building the website, creating a zero carbon ready building roadmap, collating existing materials and producing new content.

## Your pathway to net zero



## 4. Zero carbon buildings advisory group

City of Melbourne's role – convene and manage  
Timeframe for delivery – 12 months

We will bring together a group of expert stakeholders to support the delivery of retrofits across the municipality. It will comprise mid-tier building owners, tenants, property portfolio owners, property managers, peak bodies and academics. We will facilitate and manage ongoing regular meetings of the advisory group.

### Barriers it addresses

The advisory group will help connect us with the reality for building and business owners to ensure we provide the information and support they need. Doing so will avoid the perception that the program is ineffective because we are out of touch with day-to-day business pressures.

### How will it help deliver zero carbon ready buildings?

A key role of the advisory group's members will be to engage with their sphere of stakeholders. They will amplify this plan and its associated mechanisms. Without deep engagement, particularly in the mid-tier sector, we will not achieve our target of net zero emissions by 2040.

The advisory group will also advocate and advise on specific projects relevant to the plan; for example, considering alternate pathways for buildings subject to heritage overlays. They will also collaborate with other expert groups – in this example, a heritage advisory group, which will be developed as part of our heritage strategy.

### What we heard from the consultation

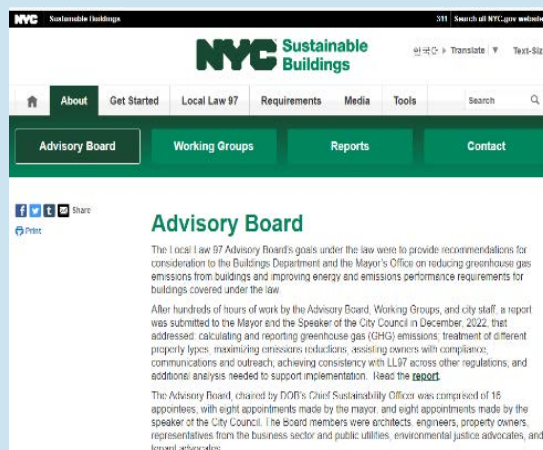
Global commercial real estate services company Jones Lang LaSalle told us that 'providing a network for landlords and connecting them to different service providers in the industry will help further facilitate and drive the change'.

### Case study – working groups in New York

New York City has an ambitious program to address its existing building stock, including working with building owners on practical, challenging, yet realistic measures.

Su-Fern Tan, from commercial real estate services and investment company CBRE, told us about her experience there: 'I was an advisor for New York City's Local Law 97, for the working group on commercial building technology and pathways.

'Several working groups focused on their own sector so that the city's transition to net zero would balance practicality with urgency and aspiration. I believe this process was vital to implementing the law and setting New York City up for a more successful future. Also crucial was the engagement of utility and grid stakeholders.'



The NYC Sustainable Buildings website

### Links with other initiatives

The advisory group will promote and support all initiatives by establishing a community of practice.

### Next steps

We will further refine the group's remit and membership. Once it is convened, the group will agree on terms of reference to define its focus. We expect that this process will take place within 12 months.

## 5. Zero carbon buildings teams

City of Melbourne's role – provide information, develop a community of practice and run a pilot  
Timeframe for delivery – 12 months to two years

Building owners will set up a team committed to transitioning to a zero carbon ready building over a defined period. The team will determine a project trajectory and map asset replacement plans, which allow owners to forecast costs and resources and ensure steady investment into the building. The group forges relationships with the building's stakeholders.

### Barriers it addresses

Zero carbon buildings teams respond to the following challenges:

- short-termism – by overcoming knowledge gaps and enabling the development of zero carbon building trajectory plans
- lack of momentum – by building and sustaining momentum for improved building performance
- transactional approach – by promoting a holistic perspective for the retrofit project
- lack of capital – by developing a long-term plan that demonstrates ongoing benefits
- slow learning rates – by creating long-term relationships that incentivise sharing innovations.

### How will it help deliver zero carbon ready buildings?

Teams comprising experts and stakeholders will help building owners create decarbonisation plans over 10 to 15 years to 2040. As shown in the case study below, a long-term plan to upgrade a building can create a zero carbon outcome. This case study describes an engineering-driven solution; however, teams that comprise multi-disciplinary advisors, such as building managers, tenants, engineers, designers and heritage experts, can realise a broader range of benefits.

#### Case study – building fitness program

Engineering firm Cundall has developed a building fitness program, which maps out a process of staged upgrades and improvements to a building. The aim is to reduce emissions, improve occupants' experience, comfort and wellbeing, add market value and ensure the structure remains viable and valuable. The program explains the simple steps in making any property future-fit, trimming waste energy use and improving operational performance. It also gives an overview of the tools, techniques and strategies involved, starting with understanding and benchmarking current performance and long-term asset management goals.

For their Workzone East building in Perth, Knight Frank and RF Corval engaged Cundall to produce a five-year sustainability roadmap. By the end, Workzone East was rated as Perth's first zero carbon commercial building. Its NABERS energy rating increased from 4.5 to 5.5 stars, and carbon dioxide emissions fell from 535,355 kilograms in 2017 to 349,960 kilograms in 2021. Following the Australian Government's Climate Active Carbon Neutral Standard for Buildings, they achieved carbon neutrality.



*The Workzone East building at 1 Nash Street, Perth*  
Source: Knight Frank

## What we heard from the consultation

During our consultation phase, this initiative was the highest rated overall (see Figure 3), with 78 per cent of respondents saying it would be effective or very effective in helping meet our commitment to zero emissions by 2040. Respondents also rated it highly for practicality, at 69 per cent. People told us it is worth investing in because it addresses many barriers that stall momentum. Feedback also suggested:

- developing a code of conduct for team participants
- creating a consultant and contractor panel to answer questions, which are then made publicly available on a website (this may be a role for the advisory group discussed above)
- using a facilitator to provide leadership and support during the creation of teams.

## Links with other initiatives

The zero carbon buildings portal will equip these teams for success, as will the advisory group and thought leadership events. Periodic disclosure will enable teams to track and measure their success.

## Next steps

Within 12 months, we will host roundtables with mid-tier building stakeholders to understand how these teams would work best for them. This initiative is not being used at scale elsewhere, so we expect to undertake some additional research and modelling. We will prepare to facilitate a pilot project within two years.

## 6. Thought leadership and events

City of Melbourne's role – convene

Timeframe for delivery – continue our current series

Events bring together the leaders in industry and government to present and discuss the emerging opportunities and issues of building retrofitting. We propose hosting quarterly events for the emerging community of practice.

Events will provide opportunities for networking and sharing case studies, best practices, questions, tools, guidelines and initiatives. It also connects City of Melbourne to the community and industry, giving us an ear on the ground for emerging issues.



*An event at Melbourne Town Hall*

### Barriers they address

A series of thought leadership events will help us overcome the following:

- the lack of momentum
- the lack of information and knowledge
- the absence of a community of practice
- the low learning rate.

### How will they help deliver zero carbon ready buildings?

The thought leadership series will develop capacity in the industry and establish a community of practice. It will create regular opportunities to share knowledge. Professionals working on zero carbon building retrofits can meet, exchange ideas and listen to speakers discuss critical aspects of the future of buildings in the city. The events will underpin the delivery of all our initiatives relating to information and support – providing training, case studies, tools and access to expertise.

### What we heard from the consultation

The concept of a thought leadership series was raised during phase 2 of the consultation. City of Melbourne has run a trial schedule of events to support the early stages of development of the concept of zero carbon buildings in Melbourne. The consultation also clearly stated that many stakeholders did not know how or where to start their retrofit trajectory, highlighting the need to create a range of events to support varied cohorts and stages.

### Case study – starting our community of practice

City of Melbourne hosted the following thought leadership events from February to May 2023:

- zero carbon retrofits – delivering value-add in partnership with JLL Australia
- retrofitting zero carbon precincts, in collaboration with CBRE
- electrification masterclass for commercial buildings, in partnership with Cundall.

Each of these events was oversubscribed, showing the industry's strong interest in facilitating these knowledge-sharing opportunities.

### Links with other initiatives

Our events will help people to share skills, knowledge and information. If we can successfully advocate with the Australian Government for the better buildings fund, we may be able to expand the event program. These sessions will also allow the industry to contribute to ongoing dialogue and showcase their achievements, contributing to momentum building.

### Next steps

Following our successful trial, we will host an ongoing series of thought leadership events.



## Enabling mechanisms

### 7. Zero carbon precincts

City of Melbourne's role – provide information, develop a model and community of practice, partner to pilot

Timeframe for delivery – pilot within two to three years

A zero carbon precinct is an exemplar block of zero carbon ready buildings. To deliver a precinct, we must collaborate with all the buildings to decarbonise, revitalise and activate the block. It could also include pilot projects for particular types of buildings, such as heritage-listed buildings.

#### Barriers it addresses

Precinct retrofits will help overcome the lack of a positive vision for what can be achieved. Owners can be inspired by greening, placemaking, sharing a local battery and seeing more people walking around. Economies of scale, precinct activation and peer support will incentivise smaller, older, resource-constrained buildings to act. Establishing a critical mass of action in one area will also help to overcome some building owners' lack of access to expertise, capital, information and knowledge.

#### How will it help deliver zero carbon ready buildings?

When we focus resources on a block-by-block or precinct basis, we create a situation where we collaborate with buildings of all tiers in the precinct. It also provides an opportunity to revitalise particular areas in the municipality, by improving amenities and activating streetscapes.

#### What we heard from the consultation

Our discussion paper presented this concept of aggregation in terms of building typology, but the idea was not well supported. However, stakeholders did express support for geographical aggregation. Several major portfolio owners have volunteered to partner with City of Melbourne to pilot the concept:

'It makes sense to work on a precinct level ... if an area is at risk like Elizabeth Street is with a flood, then it makes sense for people working together to address the risk while activating their areas and upgrading their buildings.'

Wardle Studio

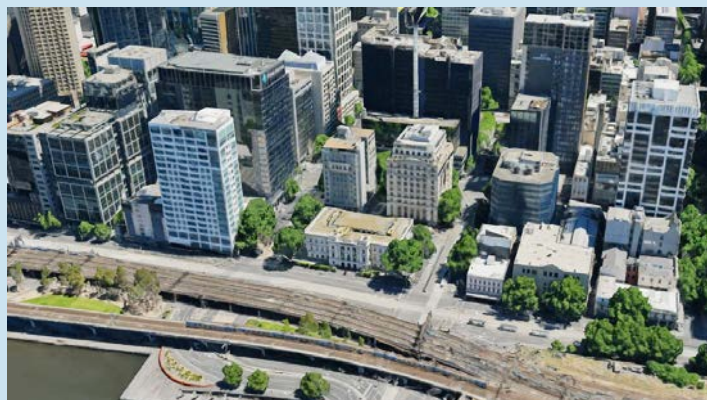
'This initiative could help reduce the duplication of assessments and retrofit strategies, reducing costs and providing building owners with a pathway for improved energy efficiency.'

Master Builders Victoria

#### Case study – a pilot precinct

We propose piloting this initiative in a precinct already actively collaborating – it provides a rich opportunity for building local capacity, resilience, adaptation and pride.

One example is the Turning Circle precinct, bounded by Collins, Queen and William Streets and the Yarra River. In 2019, the Immigration Museum, Turning Circle Collective and residents founded an action group named Neighbourhood Circle: [neighbourhoodcircle.squarespace.com](https://neighbourhoodcircle.squarespace.com)



*The Turning Circle precinct*

## Links with other initiatives

Research for our discussion paper – and the feedback we received on it – showed that building owners need different entry points to begin working on zero carbon ready retrofits. Because it is a cross-cutting support initiative, a precinct approach could provide a way in for smaller, older, mid-tier and unrated buildings. It provides a relational and capacity-building approach to help with resilience, wellbeing, activation, economic development and many other precinct-level outcomes.

## Next steps

Within 12 to 18 months, City of Melbourne will develop a precinct model, investigating mechanisms that will align various precinct activities.

We can learn from our recent development of the Sustainable and Climate Resilient Assets tool, which demonstrated all the climate risks that could affect an area of the city and suggested design strategies. A similar mechanism could bring together initiatives in each precinct.

We will also explore potential sites and partnerships with asset owners with a view to delivering a pilot following the development of the model.

## ^ Climate Change Risk Reports

Use the location and asset specific climate change risk reports to understand the **climate change impacts** and **risk profile** of your project, as well as the **relevant design strategies** to address the risk.

Select an asset type from the tiles below to access the relevant climate change risk report page.



City of Melbourne's Sustainable and Climate Resilient Assets tool

### Purpose:

Identifies early business case considerations relating to climate change hazards and risk.

- Incorporates climate change risk into the project site investigation.
- Identifies and links design interventions relevant to climate change risks.

### Users:

Project managers, project sponsors, designers.

### PMF Phase:



## 8. Zero carbon lease

City of Melbourne's role – commission draft clauses, convene a workshop and pilot  
Timeframe for delivery – 12 months

A zero carbon lease is a mechanism for tenants to request a zero carbon space. It also provides building owners and managers with a means to ensure tenants do what is needed to produce zero carbon outcomes for the whole building. Leases include clauses that set out the minimum requirements for a zero carbon lease.

### Barriers it addresses

Zero carbon leases will align the interests of owners and tenants, which will help to overcome the following challenges:

- inability to manage and report on the carbon performance of whole buildings
- split incentives – owners spend capital while tenants make operational savings
- lack of a clear definition of net zero carbon for all parties
- lack of ways to measure and improve performance.

### How will it help deliver zero carbon ready buildings?

A zero carbon lease provides a mechanism for tenants and owners to hold each other contractually accountable for building performance. It will require a minimum NABERS rating of 5 stars for the base building and tenancy. It will commit tenants and owners to a range of other activities aimed at transitioning the property, including emissions reduction, offsetting and reporting.

### What we heard from the consultation

More than seven in 10 respondents said zero carbon leases would be effective or very effective in helping meet our 2040 zero emissions commitment.

'We anticipate an increased demand from companies attempting to reduce their carbon emissions for office spaces that meet that demand. Identifying buildings and leases that provide zero carbon office spaces will support such objectives. This will require a trusted, inexpensive assessment tool, otherwise consultants will use vast financial resources to assess a building and develop a strategy for zero carbon.'

Master Builders Victoria

However, industry participants also told us they were less certain about the practicality of this initiative; they were unsure what a lease could contain. Some raised concerns that using a fixed set of lease clauses may add complexity or deter some parties from negotiations. Their responses highlight the need for us to workshop and pilot a series of draft clauses with relevant stakeholders.

### Links with other initiatives

A zero carbon lease is a supporting mechanism. Our research and the feedback we've received have shown that building owners and tenants need a variety of pathways to make buildings zero carbon ready. Leases can provide a straightforward tool for tenants to request zero carbon spaces and for owners to promote specific behaviour from tenants.

### Next steps

Within 12 months, we will commission the development of the carbon neutral and zero carbon lease clauses, workshop the clauses with the industry and then pilot the outcomes.

## 9. Zero carbon risk tool

City of Melbourne's role – support the University of Melbourne to lead the delivery of this mechanism  
Timeframe for delivery – to be determined by the University of Melbourne

A zero carbon risk tool is a way for building owners to measure the impact of their building's carbon performance on its value.

### Barriers it addresses

The tool helps overcome the lack of momentum by highlighting the risks of inaction to building owners and investors. It provides the data to show the timeframe in which owners need to upgrade buildings before they become stranded assets. It also responds to the lack of clear metrics that underscore the need to invest in retrofits.

### How will it help deliver zero carbon ready buildings?

In consultation with the industry, we will develop a zero carbon risk tool to make sure it's simple for owners to understand, manage and report on carbon risk – a 10-minute tool, for example. It will be designed as a metric to drive retrofit investment decisions based on the impact of a building's carbon performance on its value.

### What we heard from the consultation

Feedback indicated that if developed well, with trusted impartiality, the tool would be helpful in understanding 'why' it is crucial to invest in retrofitting buildings. For example, the Property Council of Australia said:

'The Property Council supports this strategy, as understanding the future risk of carbon for mid and low-tier buildings will help owners make good choices to potentially seek a deep retrofit. This will enable future-proofing of assets that will bring down energy prices and be a more valuable asset to them overall.'

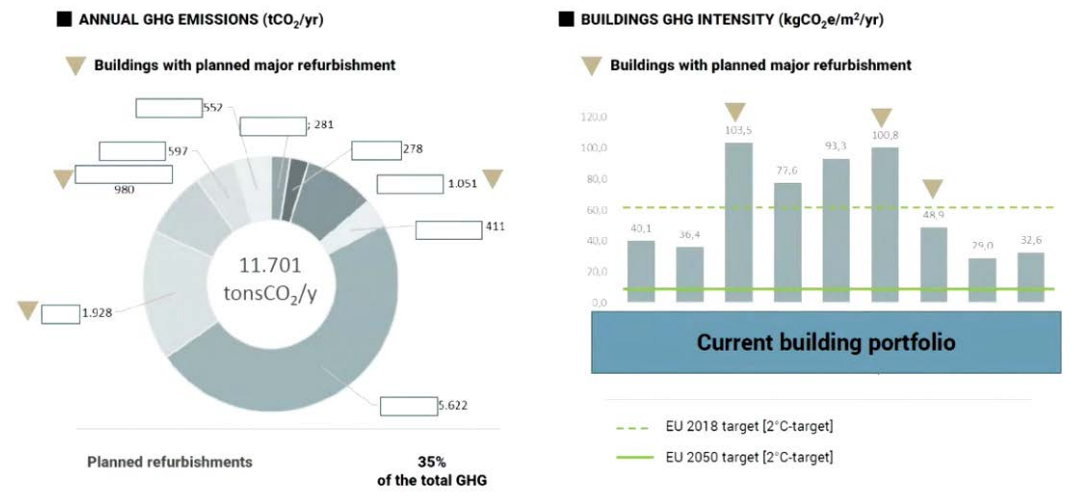
More than six in 10 respondents thought a carbon risk tool would be effective or very effective in helping us meet the 2040 net zero emissions commitment.

## Case study – understanding the risk of stranded assets

The Carbon Risk Real Estate Monitor, a free online tool for the European Union, allows property owners to assess the risk of individual assets becoming stranded: [www.crrrem.eu](http://www.crrrem.eu). It helps building owners understand the market's carbon performance expectations and decide retrofit options and purchase priorities. The COIMA property group case study below shows how an €8 billion company measures the carbon intensity of its buildings to manage its portfolio actively.

### IMPACTS OF THE SUSTAINABLE FINANCE

#### Active portfolio management



Source: ARUP webinar on net zero carbon, 2021

#### Links with other initiatives

The carbon risk tool allows mid-tier building owners to understand their risks. It incentivises retrofits. It will provide an effective way to retrofit when it is backed up with information and support, such as the portal, events and funding, and enabling mechanisms such as zero carbon leases.

#### Next steps

The University of Melbourne is leading the development of this tool. We will help them engage stakeholders in its development, provide feedback and assist with piloting and promotion.

## Regulation

Evidence from around the world and previous programs implemented by both local and state governments indicate that, without regulation, it is difficult to increase retrofitting activity by the mid-tier property sector. It is therefore critical to create a regulatory mechanism to signal to owners of existing buildings that they need to retrofit for energy efficiency.

Evidence also suggests that heralding the introduction of regulatory mechanisms – such as the emissions caps in New York City, Boston, Vancouver, Seattle and Tokyo – has resulted in building owners starting to take action. That is, the signal of incoming regulation in these cities prompted retrofitting activity to avoid sanctions.

City of Melbourne will progress with a business case and impact assessment, developed in discussion with the Victorian Government, on both regulatory mechanisms outlined below. We will develop a clear pathway and signal towards zero carbon for building owners.

### 10. Rates mechanism

City of Melbourne's role – develop, implement and enforce  
Timeframe for delivery – three to four years

Under this mechanism, building owners who increase their NABERS energy ratings by at least two stars would receive reduced rates over 10 years. It would be funded by maintaining – or in some scenarios increasing – the rate-in-the-dollar applied to buildings that do not participate, rather than reducing rates as property and rental values rise. As proposed, this mechanism will not get a building to zero carbon ready status – proposed to be a 5-star NABERS rating and full electrification – however, that level of incentive could be the next step.

#### Barriers it addresses

A rates mechanism will help overcome the following challenges:

- difficulty identifying and engaging with mid-tier owners – rates notices could be an effective method to connect and communicate with building owners
- lack of incentive for building owners to undertake retrofits
- lack of momentum – rates will be a regular reminder of the need to transition their building to zero carbon.

#### How will it help deliver zero carbon ready buildings?

Our discussion paper and subsequent feedback demonstrated that incentives are needed to stimulate retrofits. In 2019, we started to investigate using a rates mechanism to incentivise energy efficiency in existing buildings. This initial work on the mechanism and economic and emissions outcomes showed that a modest reduction in emissions could be achieved. Based on different policy scenarios, we calculated a reduction in emissions for the mid-tier building sector of between 3.9 and 14 per cent over 15 years.

During the more recent consultation process, mid-tier building owners responded that a reduction in rates would not be substantial enough to motivate broad uptake. Within the context of City of Melbourne's commitment to zero net emissions by 2040, a rates mechanism alone would not create the deep emissions cuts we seek.

## What we heard from the consultation

In our consultation, the industry supported the use of rates incentives:

'With supporting measures, rates incentives can be an important and effective measure.'  
RMIT University

'This initiative would need to provide adequate incentives to act. It could perhaps be linked to a method of labelling zero carbon buildings to highlight this.'  
Master Builders Victoria

Strikingly, the feedback showed that of all the initiatives we proposed, a rates mechanism has the most alignment between it being effective, 70 per cent, and practical, 69 per cent (see Figure 3). Respondents said that the impact of rate reductions is not just in the money saved but in the continual reminder of the efficiency opportunities. The impact will be amplified by linking it to case studies, comparisons with neighbours and reminders of the benefits, such as occupancy, value, health, environmental, social and corporate governance, and tenant attraction and retention.

We note that the industry highlighted that a land tax reduction, controlled by the Victorian Government, would provide an even greater incentive in terms of dollars potentially saved. A rates mechanism could be used in advocacy to other levels of government as a model to demonstrate the value of financial incentives.

## Links with other initiatives

A rates mechanism incentivises building owners to use the information, support and regulations proposed in this plan to accelerate their retrofit trajectory. Rates notices also provide an opportunity to remind building owners that these resources are available and that they can financially benefit if they choose to use them.

## Next steps

We have previously analysed the potential impact of a rates mechanism but put further development on hold during COVID-19. We will begin the next phase by testing the outputs of our analysis with building owners and key industry stakeholders to develop a rates mechanism model for Council endorsement.

## 11. Emissions cap

City of Melbourne's role: develop, pilot and advocate to the Victorian and Australian Governments  
Timeframe for delivery: three to five years

An emissions ceiling or cap is a regulatory tool that mandates a limit on building emissions following a transition period. Building owners must follow a compliance order if their building's emissions exceed the cap or face financial penalties for inaction.

The proposed date for the enforcement of the cap must be communicated clearly to give owners a fair opportunity to comply with the expected level of performance. It must also meet our target for net zero emissions by 2040.

Marshall Duer-Balkind, from the Institute for Market Transformation, was part of the team that delivered the Washington D.C. and Vancouver cap policies. He explained the importance of clear communication and timelines this way: 'There is a lot you can do if you have a long runway.'

### Barriers it addresses

An emissions cap will help us overcome the following challenges:

- lack of incentive to act – by mandating emissions reductions
- lack of knowledge – by encouraging building owners to understand their energy use
- lack of clear expectations – by providing building owners with a clear path for retrofit strategies based on the increasing stringency of the cap
- lack of urgency – by giving a clear emission reduction timeline.

### How will it help deliver zero carbon ready buildings?

Based on a benchmark building energy performance standard, an emissions cap provides a clear timeline for required action, a clear target metric, and financial consequences for non-compliance and inaction. It has proven effective in accelerating retrofit rates in several cities in the United States, including New York – noting that cities in the United States have different regulatory controls at their disposal to Australian cities.

Once implemented, an emissions cap is a potential revenue source that could support further decarbonisation initiatives.

### What we heard from the consultation

Through our discussion paper research and subsequent feedback, we heard clearly that a strong market signal is required to drive retrofit momentum. Respondents considered an emissions cap the most likely to be effective of all the initiatives proposed. It is seen as fair if well foreshadowed, because the industry is provided with a clear timeframe to make the necessary adaptations.

'This initiative also provides a strong incentive for all institutions to reduce emissions – which in turn strengthens a number of the previous initiatives. Maybe this is a scheme that could be collaboratively undertaken with other CBD municipalities across Australia?'

ARUP



## Case study – New York City’s emissions cap

In 2019, New York City Council introduced [Local Law 97](#), setting emissions intensity limits for various building typologies. The first emission limits apply from 2024 until 2029, with tighter limits from 2030 to 2034, when the financial penalties also increase. This timeframe gives property owners time to evaluate their stock and identify strategies to meet requirements. It also allows the industry to build the capacity to support these strategies.

The law has brought in the ‘social cost’ of carbon – a penalty of \$US268 (around \$A358) for every metric tonne of carbon dioxide equivalent above the cap limit. The strategy will reduce greenhouse gases from all of NYC’s building stock by 80 per cent by 2050.

The emissions cap is part of the city’s *Climate Mobilization Act 2019*. The Act aims to reduce six million metric tons of greenhouse gases, create more than 26,700 jobs, avoid 150 hospitalisations and prevent 50 to 130 deaths annually by 2030 (Petross, 2022).

Other cities that have local law emissions caps and building energy performance standards include (Ribeiro et al. 2020; Institute for Market Transformation, 2021):

- Washington State
- St Louis Missouri
- Washington D.C.
- Tokyo
- Vancouver
- Seoul.



*The Flatiron Building, New York City*  
Source: rawpixel.com

### Links with other initiatives

A cap with effective support and information will incentivise building owners to invest in their retrofit; for example, by taking up a zero carbon lease, being part of a precinct, or engaging a zero carbon team.

### Next steps

An emissions cap must be developed over the next three to five years. The first step is to model it for the municipality, in consultation with the Victorian Government, taking lessons from successful overseas models. We will also need to work with the industry to agree on a fair implementation timeline, which gives owners fair warning to make necessary retrofits while delivering on our target for net zero emissions by 2040.

## Comparison of the two regulatory approaches

The table below compares the two proposed regulatory initiatives, taking into account their impact on emissions reduction and influence on the market, and our ability to deliver.

Initiative	Advantages	Disadvantages
<b>Rates mechanism</b>	<ul style="list-style-type: none"> <li>• provides a periodic reminder for building owners to be involved and a means to share information and support</li> <li>• creates a financial incentive over 10 years</li> <li>• establishes a clear measurement mechanism via NABERS</li> <li>• uses City of Melbourne’s powers</li> </ul>	<ul style="list-style-type: none"> <li>• low impact – does not deliver zero emissions; forecast to incentivise emissions reductions of between 3.9 and 14 per cent over 15 years</li> <li>• lacks support from building owners</li> <li>• lacks precedent for buildings, although it has been used for other areas such as waste</li> </ul>
<b>Emissions cap</b>	<ul style="list-style-type: none"> <li>• high impact – enables net zero emissions, if the grid is decarbonised</li> <li>• provides a clear direction and end point</li> <li>• establishes clear steps for implementation</li> <li>• creates revenue – for example in New York City building owners are charged US\$0.50 per square foot for not reporting, and US\$268 per tonne carbon dioxide equivalent over the cap</li> <li>• creates capacity to support at-risk buildings and groups</li> <li>• follows precedents in Europe, North America and Asia.</li> </ul>	<ul style="list-style-type: none"> <li>• requires other levels of government to implement because City of Melbourne lacks the legal power to establish an emissions cap</li> <li>• may insufficiently incentivise retrofits because of the current limits on the fines we can impose – that is, it may be cheaper to pay the fine</li> <li>• creates an uneven playing field for our municipality against the rest of Melbourne – requires the Victorian Government to apply a similar mechanism elsewhere</li> <li>• needs resourcing to create metrics, steps, tools, guidance, training and information.</li> </ul>

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## How to contact us

### Online:

[melbourne.vic.gov.au](http://melbourne.vic.gov.au)

### In person:

Melbourne Town Hall - Administration Building  
120 Swanston Street, Melbourne  
Business hours, Monday to Friday  
(Public holidays excluded)

### Telephone:

03 9658 9658  
Business hours, Monday to Friday  
(Public holidays excluded)

### Fax:

03 9654 4854

### In writing:

City of Melbourne  
GPO Box 1603  
Melbourne VIC 3001  
Australia



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