

## **Attachment B2**

**Planning Proposal Attachment 3 – Planning  
for Net Zero Energy Buildings Briefing –  
Summary Report**

A large graphic on the left side of the page consists of two overlapping circles. The larger circle in the foreground is a solid dark orange color and contains a faint grid pattern. The smaller circle behind it is white with a pattern of small yellow dots. A thin teal line curves around the top and right edges of the circles. The background of the entire page is a faded image of a modern building under construction.

# Planning for net zero energy buildings briefing - summary report

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City of Sydney

13 April 2021



The City has led a quiet revolution in terms of the performance of our city's buildings, with emissions from our city's built environment plummeting over recent years. The work of the City is an amazing example for councils right across NSW and indeed internationally, to emulate"

- Minister for Planning & Public Spaces, Rob Stokes MP



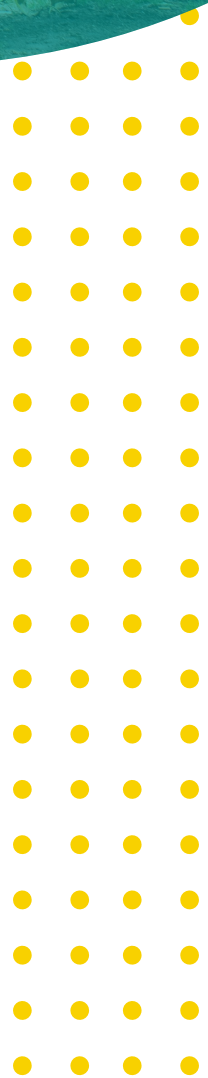
**Report title:** Planning for net zero energy buildings briefing - summary report

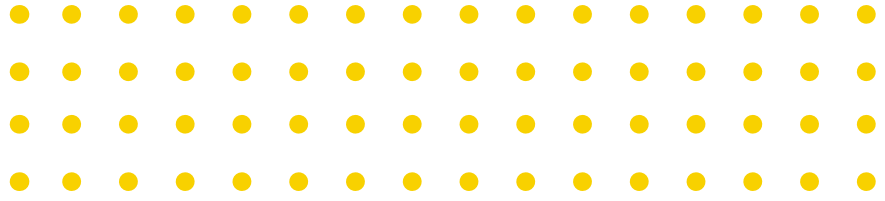
**Client:** City of Sydney

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# 1. Introduction

**This report provides a summary from the planning for net zero energy buildings briefing for industry and government (the briefing) held online via webinar on Thursday 11 March 2021 from 8am to 9.00am.**

## 1.1. Background

Energy use in buildings continues to be a significant contributor to greenhouse gas emissions in Greater Sydney. Planning can support improving the energy performance of buildings to meet NSW and local government targets of net zero emissions. Through planning, local government can also respond to the objective in the Greater Sydney Region Plan to aim toward a low carbon city, the aim in the district plans' to reduce carbon emissions and actions within some local government local strategic planning statements toward a transition to net zero emissions.

The City of Sydney (the City) has collaborated with industry and government over a period of three years to develop performance standards for net zero energy buildings and methods to recognise offsite renewables in planning. A robust evidence base informs the proposed standards and timing of the step changes. To inform the performance standards, WSP undertook energy modelling, WT Partnership completed the construction costing, and Common Capital prepared the cost benefit and broader benefits analysis. This analysis used development typologies that were representative of development across Greater Sydney so that councils across the Greater Sydney Region can use the evidence base.

The briefing is the final in a series of workshops and forums and was held online on Thursday 11 March 2021 from 8am to 9.00am. The proposed performance standards were presented along with the perspectives of a number of presenters including the Minister for Planning and Public Spaces the Hon. Rob Stokes, MP, Environment Commissioner Emma Herd and development industry executives from Lendlease and Stockland.

## 1.2. Briefing purpose

The objective of the briefing was to present the proposed performance standards, answer key questions about the project and confirm support for the implementation of the performance standards by industry and government.

## 1.3. Attendees

A total of 185 people attended the briefing, including:

- 86 representatives from industry, including industry groups, developers and consultants.
- 18 representatives from NSW government:
  - 15 representatives from NSW Department of Planning, Industry and Environment, and
  - Three representatives from Greater Sydney Commission.
- One representative from Victorian Department of Environment, Land, Water and Planning.
- 75 representatives from 24 of the 32 Greater Sydney councils.
- Four representatives from councils outside of NSW:
  - City of Melbourne, Victoria
  - City of Yarra, Victoria
  - Moreland City Council, Victoria, and
  - Sunshine Coast, Queensland.

## 2. Agenda

Below lists the briefing agenda.

Time	Event schedule
8.00am	<p><b>Welcome</b></p> <p>Jen Guice, Associate Director, Cred Consulting</p>
8.05am	<p><b>Presentation (pre-recorded video message)</b></p> <p>Lord Mayor Clover Moore, City of Sydney</p>
8.10am	<p><b>Presentation (pre-recorded video message)</b></p> <p>The Hon. Rob Stokes, Minister for Planning and Public Spaces</p>
8.15am	<p><b>Presentation</b></p> <p>Emma Herd, Environment Commissioner, Greater Sydney Commission</p>
8.20am	<p><b>Presentation</b></p> <p>Ben Pechey, Executive Manager Strategic Planning &amp; Urban Design, City of Sydney</p>
8.25am	<p><b>Presentation</b></p> <p>Joshua McGlone, Project Consultant - Sustainability, WSP Australia</p>
8.35am	<p><b>Presentation</b></p> <p>Neil Arckless, Executive Development Director, Lendlease</p>
8.40am	<p><b>Presentation</b></p> <p>Maryam Litkouhi, Development Manager, Stockland</p>
8.45am	<p><b>Questions &amp; Answers</b></p> <p><i>In-studio panelists:</i></p> <p>Ben Pechey, Executive Manager Strategic Planning &amp; Urban Design, City of Sydney</p> <p>Clare Donovan, Planning Program Manager - Sustainability, City of Sydney</p> <p>Tim Parker, Director Sustainability Management, WSP Australia</p> <p>Matthew Clark, Director and Co-founder, Common Capital</p> <p><i>Remote panelist:</i></p> <p>Josh McGlone, Project Consultant - Sustainability, WSP Australia</p> <p><i>Facilitated by:</i></p> <p>Jen Guice, Associate Director, Cred Consulting</p>
8.55am	<p><b>Closing remarks</b></p> <p>Ben Pechey, Executive Manager Strategic Planning &amp; Urban Design City of Sydney</p>
<b>Event concludes</b>	

# 3. Presentations

This section summarises the key messages from each of the presentations at the briefing.

## Clover Moore, Lord Mayor of Sydney (pre-recorded video presentation)

The Lord Mayor spoke about:

- The importance of a green led recovery post-Covid.
- Residential and commercial developments being a significant source of emissions.
- The performance standards responding to the NSW Government's net zero emissions objectives and the Greater Sydney Region Plan objective for a low carbon city.
- The performance standards covering office, multi-unit residential, hotels, shopping centres and mixed-use developments in Greater Sydney.
- The research is available for use by all Greater Sydney councils to work towards a consistent approach towards a sustainable future.
- The project supporting post-Covid recovery and job creation in regional areas.
- Working together to meet the climate challenge.

## The Hon. Rob Stokes MP, Minister for Planning and Public Spaces (pre-recorded video presentation)

The Hon. Rob Stokes MP spoke about:

- The City of Sydney as leaders in building sustainability and improving the performance of buildings in the city. The City's work is an example for councils across NSW and internationally.
- The biggest lever in the planning system to respond to the NSW Government net zero emissions by 2050 is the Design and Place State Environmental Planning Policy (SEPP).
- Engaging with the explanation of intended effects for the SEPP is important to ensure the SEPP is developed to be effective and encourages innovative thinking and inventiveness in relation to the built environment.



## Emma Herd, Environment Commissioner, Greater Sydney Commission

In Emma Herd's presentation she stated that:

- The performance standards are a crucial part of the tools, frameworks and standards that are needed to make progress to achieve a net zero economy by 2050 or sooner, and mitigate the effects of climate change.
- Despite some good efforts we are not on track to limit global warming to 1.5 degrees, so action must be accelerated to meet the climate commitments of the Paris Agreement, the NSW Government and the City of Sydney to move towards net zero emissions.
- The business case and environment imperative are aligned. Reduced energy use and promoting energy efficiency leads to both cost savings and emissions reduction; however the response must be scaled up to achieve the outcomes we need.
- The performance standards will help deliver progress against the Greater Sydney Region Plan low carbon city objective, as well as the net zero targets many companies have already set.
- Encouraged local councils to consider the planning for net zero energy buildings research and performance standards as a means to help them achieve environmental targets in their local strategic planning statements.
- The Greater Sydney Commission (GSC) wants Greater Sydney to become a leader in its' response to climate change.
- The GSC will update the Greater Sydney Region Plan in two stages; Stage 1 in 2021 to respond to new and emergent issues including Covid-19; Stage 2 in 2023 will be a full statutory review of the Greater Sydney Region Plan and District Plans.



**BEN PECHEY**

Executive Manager, Strategic Planning and Urban Design, City of Sydney

### Ben Pechey, Executive Manager Strategic Planning & Urban Design, City of Sydney

Ben Pechey provided background and context about the planning for net zero energy buildings project and spoke about:

- The emissions from buildings contributing a significant amount to overall emissions across Greater Sydney.
- The change in climate is a shared problem.
- How the project aligns with the NSW Government Net Zero Plan and the action to provide a pathway to low emissions outcomes for buildings. It also helps to meet the vision of the Greater Sydney Region Plan and priorities and actions in district plans and local strategic planning statements.
- This project is a way to put the net zero principles of the of new Design and Place State Environmental Planning Policy into action.
- The planning system provides a framework to make step changes towards net zero buildings. The step changes will enable a planned transition to better performance that will sign-post future improvements to the standards to allow time for adaptation and innovation.
- This project developed a strong evidence base that can be used by all councils across the region.
- Step 1 - implemented in 2023 where the performance standard is met through energy efficiency and on-site renewables.
- Step 2 - implemented in 2026 where the performance standard is met through a combination of efficiency, on- site renewables and off-site renewables.
- Each step has alternatives to demonstrate compliance - energy intensity target, NABERS or green star.
- The performance standards were developed collaboratively with industry and government and this has helped shape the performance standards being presented today.



**JOSHUA McGLONE**

Project Consultant – Sustainability, WSP Australia

### Joshua McGlone, Project Consultant - Sustainability, WSP Australia

Joshua McGlone presented the performance standards, cost benefit analysis that informed them and the offsite renewable energy methods. Josh described the project methodology as follows:

1. Selected three suitable typologies for each asset class, based on existing developments across Greater Sydney
2. Selected a base case - NCC 2019 Section J or BASIX Energy
3. Undertook energy modelling, cost estimates and economic analysis, and
4. Developed standards and timing of implementation.

Josh presented performance standards for office, shopping centre, hotel and multi-unit residential developments and major refurbishments of existing buildings.

Three methods for offsite methods were identified for use in planning over five years:

- Purchasing and retiring large scale generation certificates
- Purchasing GreenPower certificates, and
- Entering into a Power Purchase Agreement.

See Appendix 1 for the detail of Joshua’s presentation of the performance standards.





**Neil Arckless, Executive Development Director, Lendlease**

Neil Arckless stated that:

- Lendlease supports the City in setting these performance standards.
- Customers, investors and staff expect Lendlease to be minimising its impacts on the ecosystem, as well as actively restoring it.
- Lendlease have set their own pathway to net carbon zero by 2025 and absolute zero by 2040.
- The City of Sydney’s performance standards are aligned with the ambitions of Lendlease.
- When setting targets, you don’t need to have all the answers on day one.
- People should be encouraged to embrace the opportunity rather than fear impacts.
- The City of Sydney should be commended on the planning for net zero energy buildings project and in providing leadership.

**Maryam Litkouhi, Development Manager, Stockland**

Maryam Litkouhi stated that:

- It is important to reflect on current sustainability priorities and embed a fresh interpretation of our future focus sustainability goals into the planning framework.
- One of Stockland’s 2030 Sustainability Strategy focus areas is regenerative and circular living. Meaningful carbon emission reduction and committing to a net zero carbon future is a key measurement of success.
- Stockland are bringing their net zero carbon target forward by two years to 2028, and expanding its’ commitment to include remaining asset classes including retail, workplace and residential.
- Stockland believe that the planning pathways to net zero energy buildings will scale and amplify positive environmental, social and economic impacts creating meaningful shared value for all stakeholders.

# 4. Live Questions & Answers (Q & A)

## 4.1. About the Q&A panel

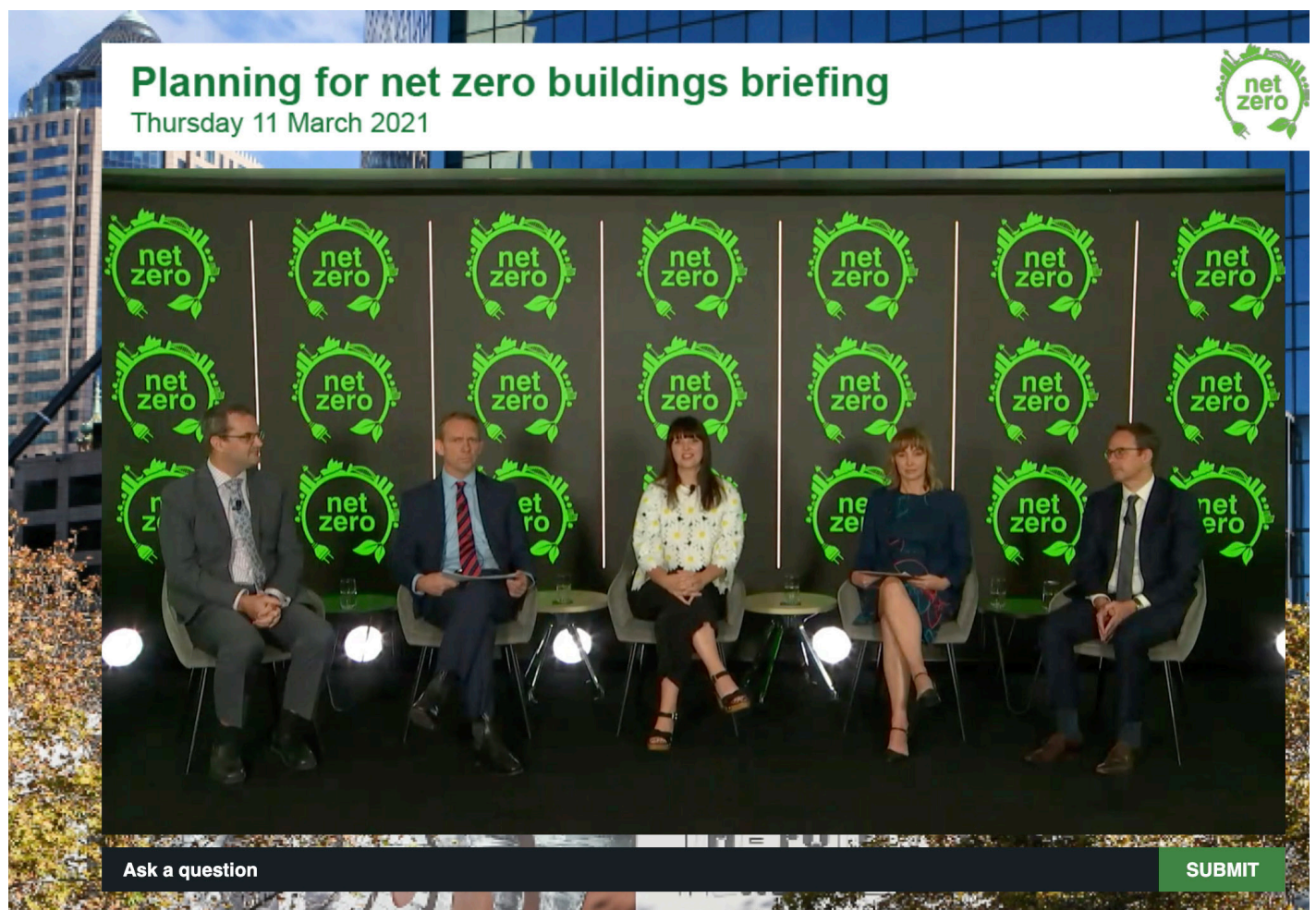
A Q&A panel was facilitated by Cred Consulting at the end of the briefing session, providing participants the opportunity to ask questions about the project, by typing questions into the online chat box. The panel represented some of the planning for net zero energy buildings project team.

Panelists included:

- Ben Pechey, Executive Manager Strategic Planning & Design, City of Sydney
- Clare Donovan, Planning Program Manager - Sustainability, City of Sydney
- Tim Parker, Director Sustainability Management, WSP Australia
- Matthew Clark, Director and Co-founder, Common Capital, and
- Josh McGlone, Project Consultant - sustainability, WSP Australia (online).

See Appendix 2 for the complete list of questions and comments submitted to the panel.

*Note: not every question was able to be answered by the panel live at the event.*



Q&A panelists

# 5. Survey findings

A survey link was provided to participants at the end of the briefing. The survey link only remained active for 45 minutes after the briefing concluded. A total of 55 people (30% of 185 attendees) responded to the survey. This section provides an overview and breakdown of the property and government sector findings.

## 5.1. Snapshot of findings

### Representation of survey respondents

Respondents were asked who they represent:

- 34% or 18 respondents represented the property industry, and
- 55% or 29 respondents represented government.

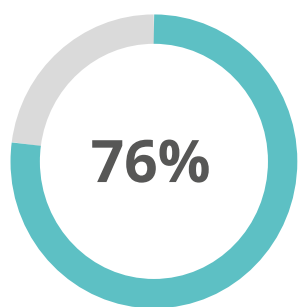
Respondents were able to select 'Other' as an option to this question. 11% or 6 respondents selected this option and specified that they represent a consultancy (planning, ESD and sustainability) and community housing.

### Support for implementing the performance standards to achieve net zero energy buildings

When asked if respondents support implementing the performance standards to achieve net zero energy buildings, most respondents indicated 'yes' (76%; 41 respondents).

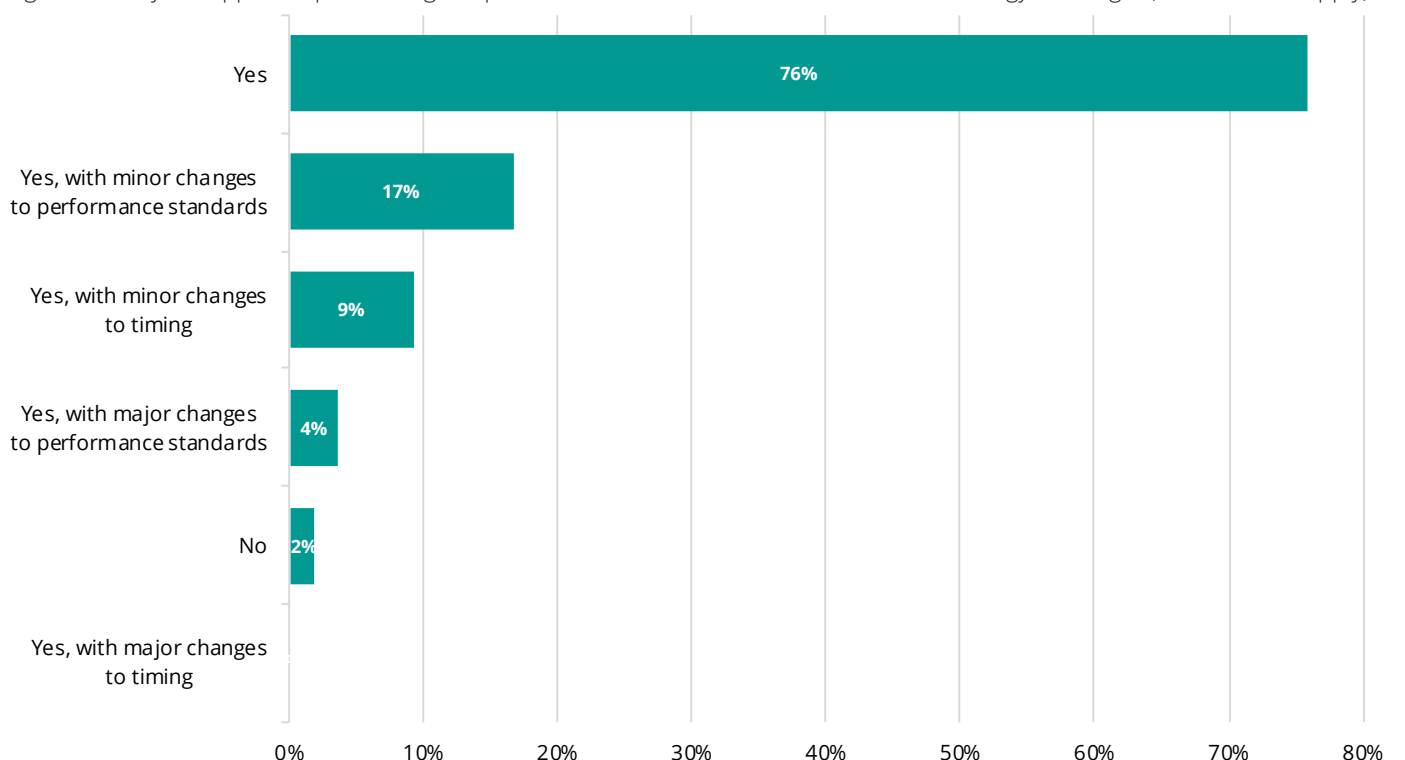
Other responses included:

- 'Yes, with minor changes to performance standards' (17%; 9 respondents)
- 'Yes, with minor changes to timing' (9%; 5 respondents)
- 'Yes, with major changes to performance standards' (4%; 2 respondents), and
- One respondent (2%) indicated 'no' for supporting the implementation of the performance standards to achieve net zero energy buildings.



**76%** of survey respondents support implementing the performance standards as presented.

Figure 1 - Do you support implementing the performance standards to achieve net zero energy buildings? (Select all that apply)\*



\*Please note survey respondents were able to select multiple options listed, therefore total number does not add up to 100%

## 5.2. Property sector findings

The following provides an overview of survey results from respondents who indicated they represent the property sector.

### Property sector representation

18 of the 53 survey respondents (34%) indicated they represent the property sector:

- 33% or 6 respondents were developers
- 28% or 5 respondents were ESD consultants
- 17% or 3 respondents were planning consultants
- 11% or 2 respondents were in construction, and
- 6% or 1 respondent was an architect.

Respondents were able to select 'Other' as an option to this question. 5% or 1 respondent selected this option and specified that they are an asset owner and operator.

### Developers and asset classes

Respondents who indicated they were a developer were asked an additional question 'What asset classes are you planning to develop?' Respondents were able to choose multiple options.

67% or 4 respondents plan to develop **multi-unit residential**. The same proportion of respondents plan to develop **offices**.

50% or 3 respondents plan to develop shopping centres; and 33% or 2 respondents plan to develop hotels.

### Support for implementing the performance standards to achieve net zero energy buildings

Property sector survey participants were asked if they support implementing the performance standards to achieve net zero energy buildings.

All respondents who represent the property industry completed this question (N=18).

#### Development industry

- 50% or 3 of development industry respondents indicated '**Yes, they support implementing the performance standards to achieve net zero energy buildings with minor changes to performance standards**'
- 33% or 2 of development industry respondents indicated '**Yes**' (they support implementing the performance standards to achieve net zero energy buildings as presented), and
- 17% or 1 of development industry respondents indicated '**Yes, with major changes to performance standards**'.

#### ESD consultants

- 60% or 3 of ESD consultant respondents indicated '**Yes**' to supporting the implementation of the performance standards to achieve net zero energy buildings as presented, and
- 40% or 2 of respondents indicated '**Yes, with minor changes to performance standards**'.

#### Planning consultants

- 100% or 3 of planning consultant respondents indicated '**Yes**' in supporting the performance standards to achieve net zero energy buildings, as presented.

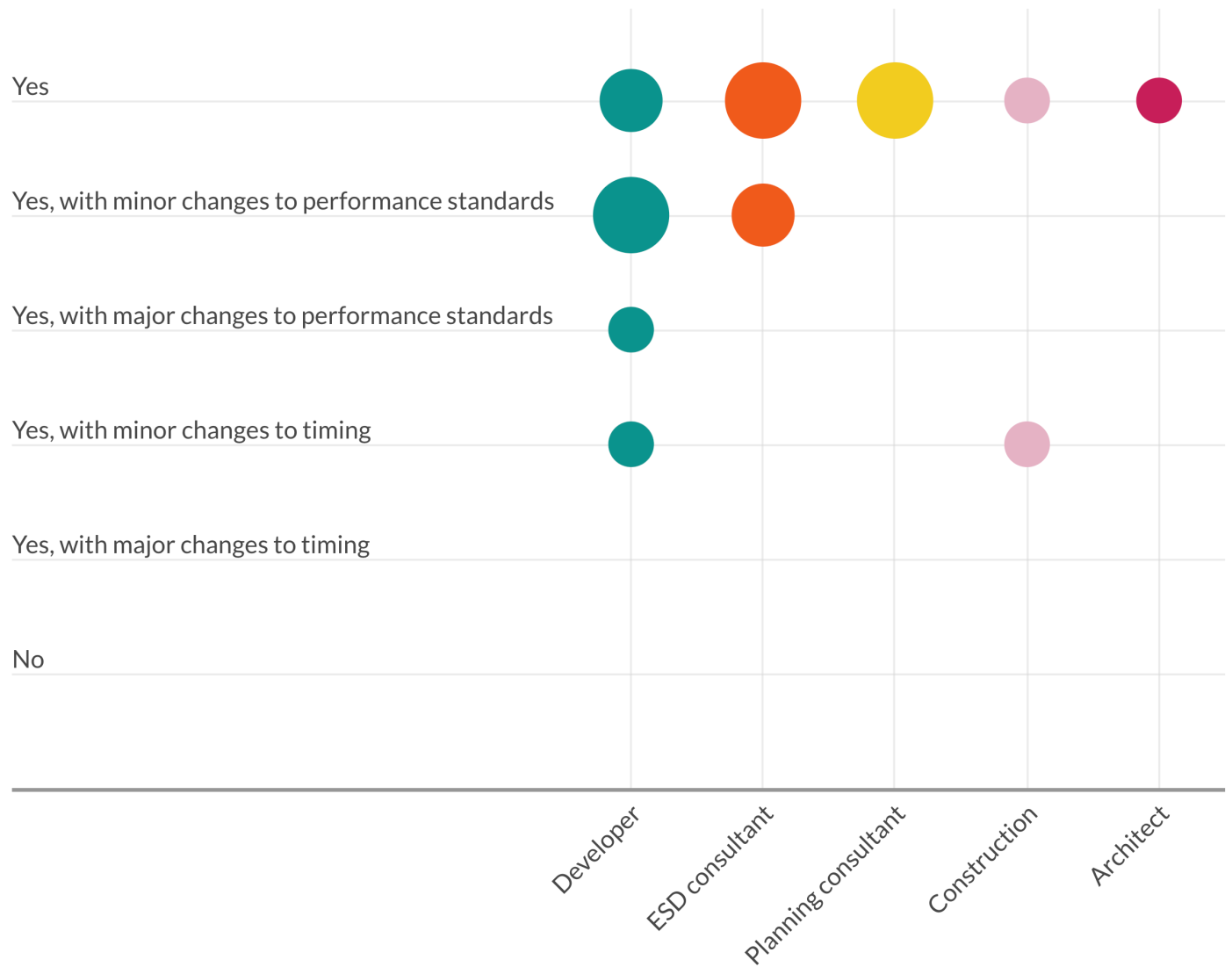
#### Construction industry

- 50% or 1 respondent of construction industry respondents indicated '**Yes**' in supporting the performance standards to achieve net zero energy buildings, as presented.
- 50% or 1 of construction industry respondents indicated '**Yes, with minor changes to timing**'.

#### Architects

- 100% or 1 of architect respondents indicated '**Yes**' in supporting the implementation of the performance standards to achieve net zero energy buildings, as presented.

Figure 2 - Support for implementing the performance standards to achieve net zero energy buildings by the property sector



**Additional feedback**

Property sector survey participants were asked if they had any additional feedback about the performance standards. See Appendix 3 for full list of verbatim additional feedback submitted by respondents.

### 5.3. Government sector findings

The following provides an overview of survey responses from respondents who indicated they represent government.

#### Government sector representation

29 of the 53 survey respondents (55%) indicated they represent government:

- 66% or 19 respondents from Greater Sydney councils, and
- 17% or 5 respondents from the NSW government.

17% or 5 respondents indicated they were from 'other' government including:

- Three respondents from Victorian government
- One respondent was from Sunshine Coast Council, Queensland, and
- One respondent indicated they were from local government but did not specify where.

#### Support for implementing the performance standards to achieve net zero energy buildings

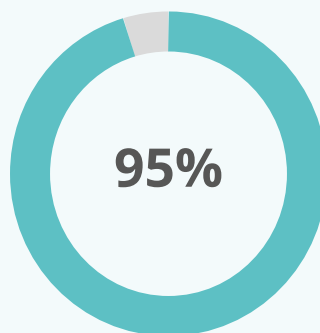
Government sector survey respondents were asked if they support implementing the performance standards to achieve net zero energy buildings.

23 of the 29 respondents who represent government completed this question. 6 respondents didn't complete this question.

##### Greater Sydney councils

95% or 17 of Greater Sydney council respondents indicated 'yes' to supporting the implementation of the performance standards to achieve net zero energy buildings, as presented.

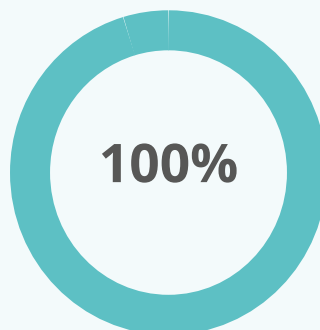
6% or 1 respondent indicated 'yes, with major changes to performance standards'.



95% of Greater Sydney council respondents support the implementation of the performance standards to achieve net zero energy buildings.

##### NSW Government

100% or 5 of NSW Government respondents indicated 'yes' in supporting the implementation of the performance standards to achieve net zero energy buildings, as presented.



100% of NSW Government respondents support the implementation of the performance standards to achieve net zero energy buildings.

#### Additional feedback

Government sector survey participants were asked if they had any additional feedback about the performance standards. See Appendix 3 for a full list of verbatim additional feedback submitted by respondents.

# Appendix 1

Slides presented by Joshua McGlone during the briefing.

# Josh McGlone

Project Consultant – Sustainability  
(WSP Australia)

## office typologies

### B grade office

- floors above ground: 4
- GFA: 8,878m<sup>2</sup>
- floor plate: 2,757m<sup>2</sup>
- Window to Wall Ratio (WWR): 81%
- carparks: ~17 on grade (remainder on street parking)

### A grade office

- floors above ground: 20
- GFA: 35,635m<sup>2</sup>
- floor plate: 1,790m<sup>2</sup>
- WWR: 76%
- carparks: ~65 underground

### premium grade office

- floors above ground: 37
- GFA: 67,684m<sup>2</sup>
- floor plate: 1,870m<sup>2</sup>
- WWR: 76%
- carparks: ~200 underground

## office performance standards

office	performance standards
current requirement	– NCC 2019 / 5.5 star NABERS Energy with Commitment Agreement (CA)
first step	– maximum 45.0 kWh/yr/m <sup>2</sup> of Gross Floor Area (GFA), or – 5.5 Star NABERS Energy CA + 25%, or – certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use, or – equivalent
second step	– first step AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 45.0 kWh/yr/m <sup>2</sup> of GFA

# office cost benefit

office	cost benefit
first step (energy efficiency + onsite renewables)	<ul style="list-style-type: none"> <li>- 10-37% Internal Rate of Return (IRR) 25 years</li> <li>- 0.11%-0.58% CapEx increase</li> </ul>
second step (energy efficiency + onsite renewables + offsite renewable procurement)	<ul style="list-style-type: none"> <li>- 16-28% IRR 25 years</li> <li>- 0.16%-0.52% CapEx increase</li> </ul>



## existing office buildings

- 14 office buildings of 1,000m<sup>2</sup> or more NLA in NSW have achieved a 6 star NABERS Energy rating



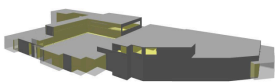
52 Goulburn St, Sydney

- 6 star NABERS Energy rating
- ten storeys
- 22,931m<sup>2</sup> NLA



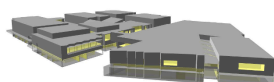
## shopping centre typologies

### small shopping centre



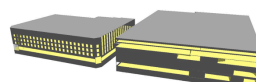
- floors above ground: 1
- GFA: 7,359m<sup>2</sup>
- NLA: 3,021m<sup>2</sup>
- floor plate: 7,359m<sup>2</sup>
- Window to Wall Ratio (WWR): 20%

### medium shopping centre



- floors above ground: 2
- GFA: 26,560m<sup>2</sup>
- NLA: 23,414m<sup>2</sup>
- floor plate: 17,321m<sup>2</sup>
- WWR: 20%

### large shopping centre



- floors above ground: 5
- GFA: 114,443m<sup>2</sup>
- NLA: 84,813m<sup>2</sup>
- floor plate: 19,413m<sup>2</sup>
- WWR: 28%





# shopping centre performance standards

shopping centre	performance standards
current requirement	– NCC 2019 (equivalent 3.5 Star NABERS Energy)
first step	– maximum 55.0 kWh/yr/m <sup>2</sup> of Gross Floor Area (GFA), or – 4 star NABERS Energy Commitment Agreement (CA), or – certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or – equivalent
second step	– maximum 45.0 kWh/yr/m <sup>2</sup> of GFA, or – 5 star NABERS Energy CA, or – certified Green Star Buildings rating with “exceptional performance” in Credit 22: Energy Use <b>AND</b> – renewable energy procurement equivalent to “net zero energy” or a maximum of 45.0 kWh/yr/m <sup>2</sup> of GFA



# shopping centre cost benefit

shopping centre	cost benefit
first step (energy efficiency + onsite renewables)	– 2-23% Internal Rate of Return (IRR) 25 years – 0.16%-0.42% CapEx increase
second step (energy efficiency + onsite renewables + offsite renewable procurement)	– 9-11% IRR 25 years – 0.95%-1.28% CapEx increase



# existing shopping centre development

- 19 shopping centres with 5,000m<sup>2</sup> or more GLAR in NSW have achieved a 5 star NABERS Energy rating



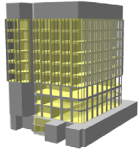
**46 Wilsons Rd, Lake Macquarie**

- 5 Star NABERS Energy rating
- 23,548m<sup>2</sup> GLAR



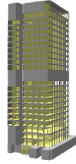
# hotel typologies

## 4 star hotel (small)



- floors above ground: 10
- GFA: 4,420m<sup>2</sup>
- rooms: 92
- floor plate: 548m<sup>2</sup>
- Window to Wall Ratio (WWR): 58%

## 4 star hotel (large)



- floors above ground: 24
- GFA: 11,262m<sup>2</sup>
- rooms: 252
- floor plate: 564m<sup>2</sup>
- WWR: 57%

## 5 star hotel



- floors above ground: 50
- GFA: 38,975m<sup>2</sup>
- rooms: 514
- floor plate: 886m<sup>2</sup>
- WWR: 66%



# hotel performance standards

hotel	performance standards
current requirement	– NCC 2019 (equivalent 3.5 Star NABERS Energy)
first step	– maximum 245.0 kWh/yr/m <sup>2</sup> of Gross Floor Area (GFA), or – 4 star NABERS Energy Commitment Agreement (CA), or – certified Green Star Buildings rating achieving the “minimum expectation” in Credit 22: Energy Use, or – equivalent
second step	– maximum 240.0 kWh/yr/m <sup>2</sup> of GFA, or – 4 star NABERS Energy CA +10%, or – certified Green Star Buildings rating with a “credit achievement” in Credit 22: Energy Use AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 240.0 kWh/yr/m <sup>2</sup> of GFA



# hotel cost benefit

shopping centre	cost benefit
first step (energy efficiency + onsite renewables)	– 17-20% Internal Rate of Return (IRR) 25 years – 0.15%-0.35% CapEx increase
second step (energy efficiency + onsite renewables + offsite renewable procurement)	– 9-10% IRR 25 years – 0.24%-0.86% CapEx increase



## existing hotel development

- 11 hotels with 100 rooms or more in NSW have achieved a 4.5 star NABERS Energy rating



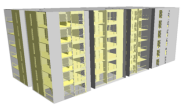
28 Albion St, Sydney

- 4.5 star NABERS Energy rating
- 309 rooms



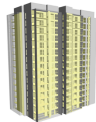
## multi-unit residential typologies

### 9 storey residence



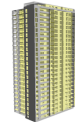
- floors above ground: 9
- GFA: 7,847m<sup>2</sup>
- apartments: 90
- floor plate: 872m<sup>2</sup>
- Window to Wall Ratio: 33%
- carparks: 60 underground

### 15 storey residence



- floors above ground: 15
- GFA: 9,858m<sup>2</sup>
- apartments: 105
- floor plate: 657m<sup>2</sup>
- WWR: 34%
- carparks: 100 underground

### 25 storey residence



- floors above ground: 25
- GFA: 16,995m<sup>2</sup>
- apartments: 194
- floor plate: 691m<sup>2</sup>
- WWR: 35%
- carparks: 170 underground



## multi-unit residential performance standards

multi-unit residential	score		
current requirement	– BASIX Energy 25		
height band (storeys)	<b>6-10</b>	<b>11-20</b>	<b>21-30</b>
first step	– BASIX Energy 40	– BASIX Energy 35	– BASIX Energy 30
second step	– BASIX Energy 45 AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 85.0 kWh/yr/m <sup>2</sup> of Gross Floor Area (GFA)	– BASIX Energy 40 AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 90.0 kWh/yr/m <sup>2</sup> of GFA	– BASIX Energy 35 AND – renewable energy procurement equivalent to “net zero energy” or a maximum of 95.0 kWh/yr/m <sup>2</sup> of GFA



# multi-unit residential cost benefit

multi-unit residential	cost benefit		
height band (storeys)	6-10	11-20	21-30
first step (energy efficiency + onsite renewables)	<ul style="list-style-type: none"> <li>– 28% Internal Rate of Return (IRR) 25 years</li> <li>– 0.64% CapEx increase</li> </ul>	<ul style="list-style-type: none"> <li>– 23% IRR 25 years</li> <li>– 0.41% CapEx increase</li> </ul>	<ul style="list-style-type: none"> <li>– 22% IRR 25 years</li> <li>– 0.44% CapEx increase</li> </ul>
second step (energy efficiency + onsite renewables + offsite renewable procurement)	<ul style="list-style-type: none"> <li>– 20% IRR 25 years</li> <li>– 1.56% CapEx increase</li> </ul>	<ul style="list-style-type: none"> <li>– 18% IRR 25 years</li> <li>– 0.79% CapEx increase</li> </ul>	<ul style="list-style-type: none"> <li>– 20% IRR 25 years</li> <li>– 0.67% CapEx increase</li> </ul>



## existing multi-unit residential development

- 21 multi-unit residential developments that are 6 storeys or higher in NSW have achieved a BASIX Energy score of 35 or higher



138-152 Victoria Rd, Rozelle

- BASIX Energy 50
- 164 units



## recognising offsite measures in planning

### method 1

purchasing and retiring Large Scale Generation Certificates (LGCs)

### method 2

purchasing renewable energy certificates through GreenPower scheme

### method 3

entering into a Power Purchase Agreement (PPA)

### how?

- purchase LGCs or GreenPower annually for 5 years as required by a contract, or
- enter into a new PPA or add development to an existing PPA



# Appendix 2

## Verbatim questions and comments submitted by participants during the online Q&A session.

Government sector	Verbatim questions and comments
Greater Sydney council	Any plans for residential buildings under 6 story in relation to BASIX?
Greater Sydney council	Thanks Josh. What is the contribution of tenants for new offices and shopping centres to the tco2 tonnes presented in the earlier slide? (noting that these pathways will help achieve net zero for base buildings only in those sectors)
Greater Sydney council	As a council how do we drive developers to meet these performance standards?
Greater Sydney council	Will City of Sydney Development Assessment Officers be assessing the new design standards or will Sustainability staff be doing this?
Greater Sydney council	What year's climate data does your energy model currently refer to?;How would higher BASIX targets operate, noting that the Design & Place SEPP may alter how this framework functions?
Greater Sydney council	Thanks so much for putting this fantastic body of work together!; How did the team arrive at the step one and two targets for residential buildings? The BASIX targets fall short of those in the Parramatta Road Corridor Urban Transformation Strategy.  For multi-unit residential building typologies, what key opportunities for energy efficiency improvement did the modelling demonstrate?
Greater Sydney council	Has the modelling demonstrated improved resilience to global heating impacts, such as urban heat and higher extreme temperature events?
Greater Sydney council	Great work today, that was really helpful and informative! Clr Linda Scott
Greater Sydney council	How many buildings will be included in these standards? What's the press across geographies and typology?
Greater Sydney council	Has the divide between builder and tenant been addressed? How is building life cycle considered vs. low cost builder with short term interest?
Greater Sydney council	Could you confirm the geographic area the new building performance standards are proposed to apply? (i.e. Sydney City or NSW)
NSW Government	Will Passive House be considered as compliance pathway?; How could this net zero trajectory work with the Design and Places SEPP mentioned by Minister Stokes?
NSW Government	Does the panel have a view about the applicability of this work beyond Sydney metro urban context?  Was this session recorded and can you share the recording after?
Industry sector	Verbatim questions and comments
Consultant	Do the new requirements include an evaluation of embodied carbon?
Consultant	What's the return when purchasing offsite offsets?
Construction industry	Interested to know whether the City of Sydney will create a buyer's alliance for renewables PPAs to make it very simple for any building owners to take advantage of renewable power at a cost saving.
Developer	Great webinar.

Industry sector	Verbatim questions and comments
Developer	When it is said that you consider base building for office and retail, would that also include HVAC energy attributed to maintaining comfort conditions in tenant spaces? They are not base building areas, but are typically serviced by base building services.; Was there a decision made not to include industrial or warehouse buildings in this assessment? There is a boom in warehouse development over recent years and is likely to continue into the near to medium term.
Developer	<p>For Retail, how will the NABERS Commitment Agreement or Green Star pathways work for major extensions where the agreement or rating only covers the extension and not the whole centre?; Why is the alternative pathway for Office buildings to achieve 'Credit Achievement' for Energy Use in Green Star but for Retail it is 'Exceptional Performance'?</p> <p>For Green Star we have agreed with GBCA a commitment to ongoing GreenPower procurement to satisfy Net Zero commitments, will this be permitted? State wide electricity supply agreements are typically less than 3 years so it will be hard to provide evidence of a 5 year supply agreement for Green Power for an asset. Is the office NABERS target a 5.5 Star Commitment Agreement + 25% or 5.5 Star + a 25% margin that may be assumed as required for a commitment agreement. It would be simpler to just require a 5.5 Star commitment agreement as per the NCC. Thanks</p>
Developer	What is a PPA?
Developer	Can the panel describe what off-site renewable energy is recognised by the planning system? What would be the process for the procurement of this off-site energy?
Developer	What is being proposed for residential buildings below 6 levels?
Developer	Did the project consider water positive concepts and the carbon consumption requirements to achieve water positive in an urban area?
Developer	Is it envisaged that residential developers will enter into a 5 year renewable energy supply agreement for the common property and the residential apartments prior to OC?
Developer	<p>The current BASIX tool is currently not fit to achieve the City's objectives, for example it penalises the removal of gas cooktops and inclusion of induction cooktops into residential building. How has the modelling taken into account such limitations, and what is the strategy to work with Government to update the BASIX tool?</p> <p>How is BASIX being updated to address transition to all electric?</p>
ESD Consultant	Is the renewable energy sector geared up for the marked increase in the purchase of offsite renewable credits bearing in mind renewable energy plants take time to be implemented?;So in an office building we wouldn't count the lighting within the office area because it connects to tenant distribution boards?
ESD Consultant	Can the team advise what is being proposed for Data Centres as these are energy intensive buildings?
Planning consultant	How will these targets interact with the current policy mechanism of Clause 8 of SEPP BASIX which states that any competing energy standards have no effect?
Property industry	Was there any thought given to better addressing resilience of multi-unit residential, in particular passive comfort and heat stress during heat waves? The individual heating and cooling targets in BASIX are progressive compared to other Australian jurisdictions, but they are still ultimately energy efficiency focused.

# Appendix 3

## Additional feedback received via the online survey.

Government sector	Verbatim comments
Greater Sydney council	<p>Thanks very much for sharing this fantastic research project with us! It's really exciting seeing the potential for improvements in large scale development with the right planning.</p> <p>I am keen to follow progress. Would love to be kept updated through email.</p>
Greater Sydney council	This is a great initiative .
Greater Sydney council	<p>I am CEO of Blacktown City Council. I would like to volunteer BCC to lead the development of controls in relation to industrial buildings. We have the largest zoned area of industrial land in NSW and significant redevelopment and greenfields opportunities and have a commitment to zero carbon and a community goal of reduction by 2040.</p> <p>As to residential development, I am unclear as to how the commitments referred to in the presentation relate to the individual strata tenancies each of whom will have their own retail electricity contracts?</p> <p>There was no chat box available during the discussion.</p>
Greater Sydney council	Three major concerns - a) reliance on offsets (easily changed by body corporates and owners); b) cost/benefit analysis for residential developments - savings to residents yes but significant upfront cost to developers (how to battle same old affordable housing arguments); c) planning controls - need DPIE and PC drafting ok - common cause of headaches
Greater Sydney council	This is a great initiative. Congratulations to whole the team.
Greater Sydney council	No. Look forward to release of technical reports etc by CoS.
Greater Sydney council	Great initiative
Greater Sydney council	See the need for other typologies to be modelled, particularly those in the Growth Areas in South Western Sydney. These areas are in great need for this modelling and to understand how this can help or work with the urban heat island effect.
Greater Sydney council	We would be interested in knowing more, performance targets are a great idea.
Greater Sydney council	Need to have a good education package for industry, councillors and the community.
Greater Sydney council	Great event and project thanks.
Greater Sydney council	Congratulations to your team.
Greater Sydney council	Thanks for your work on this.
NSW government	Engagement with DPIE and Parliamentary Counsel is critical.
NSW government	Amazing work. Thank you for your leadership.

Government sector	Verbatim comments
Other government	<p>Well done! This is a very important piece of work and move towards achieving close to the building stock that we need. Planning has and will continue to play a major part in achieving that.</p> <p>Clarity on off-site offsets through renewables will need careful thought and solid legal advice. Certainty that net zero will be met in the long term is key to the success of the work. Commitments that aren't enforceable are a risk of not achieving net zero.</p>
Other government	Ambitious targets and the lower scale and cost developments may struggle.
Other government	My Council DA team doesn't have the training or the resources to review NABERS reports and we don't have dedicated sustainability DA staff to do this.
Other government	Interested to learn from your experience, and how the City of Sydney planing measures would interact with SEPP/Basix (the issue of ensuring there are not competing regulatory requirements).(name and email address removed for privacy)
Other government	What would other councils have to do to adopt the same targets the City has set?

Industry sector	Verbatim comments
ESD consultant	<p>1) BASIX really needs to be updated to reflect today's technology and design practices. We spend too much time with alternative assessments and working with a broken black box. You can't increase stringency and expect consistency, transparency and innovation until BASIX Energy is modernised.</p> <p>2) The Commercial Office first step standards are a little unclear in intent. Perhaps the broader framework will clarify this. Are these intended to be modelled figures or measured? Only modelling can be done in development and design and thus there are questions of energy coverage on all the parasitic loads that can add up to 0.2 Stars if not more and on the level of contingency any estimate or reality carries. Does the city's net zero definition exclude natural gas or other fossil fuels in Step 1 or Step 2?</p> <p>3) When can we get greater definition on these standards? Do we have to wait until May and the public exhibition or is there a parallel industry engagement process we can plug into?</p>
Developer	<p>Would the City of Sydney make available the economic cost modelling between the various asset classes and typologies.</p> <p>Since asset values for buildings within the same asset classes varies depending on it's location in Sydney, the cost of implementing the pathway on projects located in lessor Prime locations and therefore with lower values would need to be a consideration for developers.</p>



Industry sector	Verbatim comments
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Developer	<p>For a Green Star rating we have agreed with the GBCA that a written commitment to ongoing GreenPower procurement can satisfy Net Zero commitments, will this be permitted? State wide electricity supply agreements are typically less than 3 years so it will be hard to provide evidence of a 5 year agreement for GreenPower purchase for an asset.</p> <p>I suggest reviewing the office NABERS Commitment Agreement and changing to similar to below, possibly including quantitative values based on today's benchmarks noting these are subject to change:</p> <ol style="list-style-type: none"> <li>1. A 5.5 Star NABERS Energy Commitment Agreement</li> <li>2. A 5.5 Star NABERS Energy Commitment Agreement with performance 25% above 5.5 Star.</li> </ol> <p>The current wording is ambiguous as there is no fixed buffer above a rating that is required by the IDR in the commitment agreement process. Recent project discussions with two NABERS IDRs has confirmed that a 15% buffer is ok for a 5.5 Star CA given 5.5 Star is already onerous. The design experience on the same project is that a 15% buffer is achievable without major investments like building integrated PV or an anaerobic digester. This is with a 2019 Part J compliant facade and efficient mechanical system. Keen to discuss with the modelling team if possible. My concern is the risk of driving initiatives that may be holistically unsustainable like BIPV in lieu of higher performing off-site PV.</p> <p>Have you considered Step 1 including a commitment to net zero by 2026 at the latest and encouraging it from day 1 with consideration to project time frames. It would be good to get this commitment locked in for the buildings life even if not required for the first few years. A Dec 2025 DA application may not be built until 2028 or later when all new buildings should be net zero as a minimum. For CBD office buildings Step 2 should probably be sooner.</p> <p>Thanks for the presentations and congratulations on the project.</p>
Planning consultant	<p>There is a market value in energy efficient non-residential buildings and so the performance standards are likely to be readily accepted by that part of the industry. However, for residential developers (who do not retain product) the economic proposition is less clear, and so some thought might be required to combat the inevitable claim that these performance standards hurt housing affordability by increasing the cost of apartments. Notwithstanding, it is incredibly important that we move more quickly towards net zero and so this challenge must be overcome.</p>
Planning consultant	<p>Great for taking the initiative to move to a net zero outcome.</p>
Architect	<p>Implementation period is welcomed and is very reasonable.</p> <p>The targets seem very reasonable and still leaves room to go further if desired.</p> <p>These targets should apply for all buildings.</p>
Property industry	<p>Great starting position. For office and shopping centres, addressing tenancy output would be a better outcome.</p> <p>Also a provision of an additional 1-5% extra for new and alteration/addition developments providing credits for heritage buildings.</p>