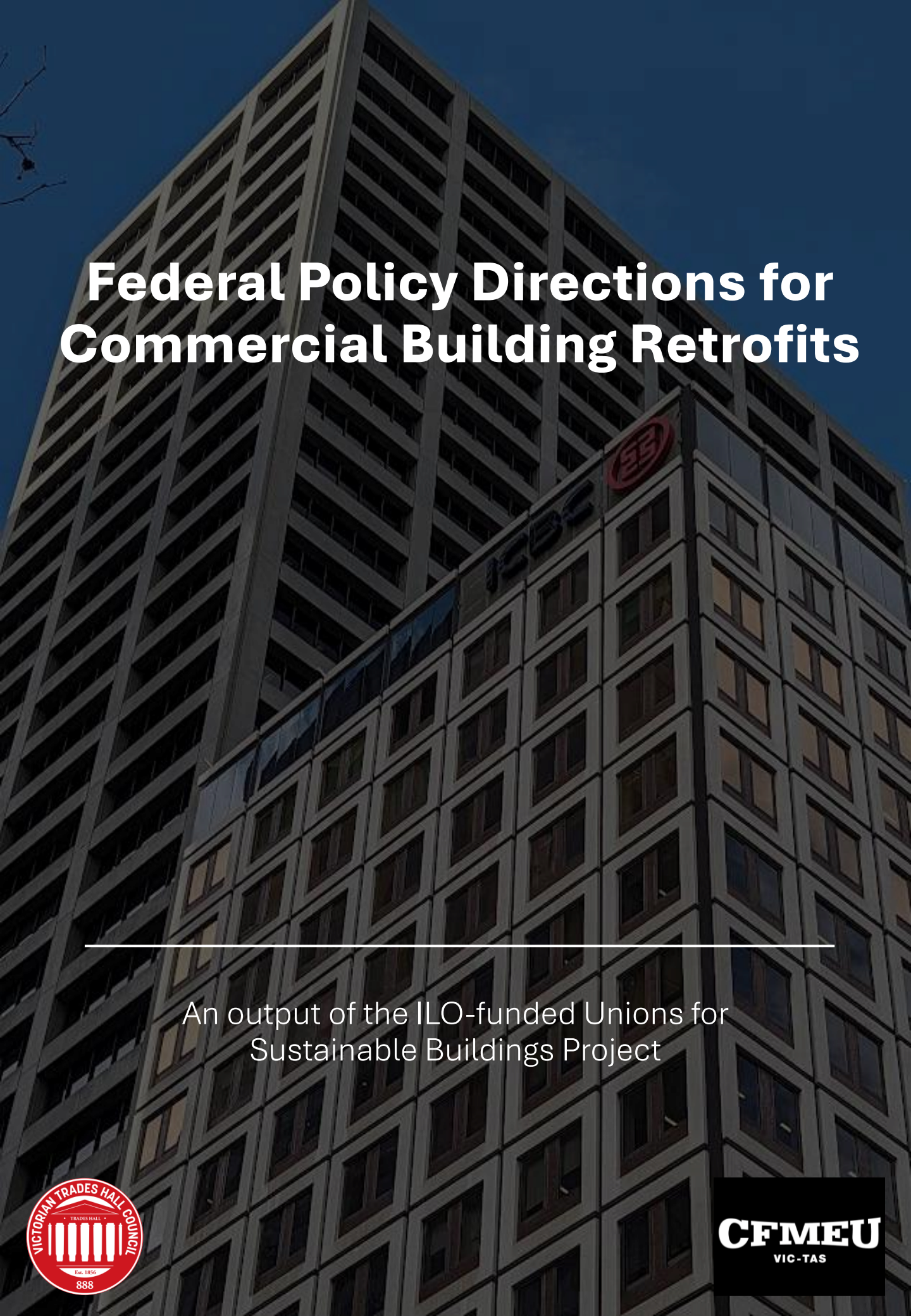

Federal Policy Directions for Commercial Building Retrofits

An output of the ILO-funded Unions for Sustainable Buildings Project

VICTORIAN TRADES HALL COUNCIL
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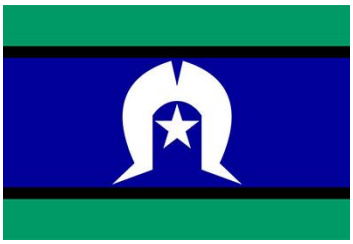
Acknowledgement of Country

Victorian Trades Hall Council acknowledges the Traditional Custodians of the land on which it stands; the Wurundjeri people of the mighty Kulin nation. We pay our respect to their elders past, present and emerging. We extend that respect to all Aboriginal and Torres Strait Islander peoples today. This land was stolen and never ceded. This always was and always will be Aboriginal land.



Acknowledgements

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Abbreviations

ASBEC	Australian Sustainable Built Environment Council
BPFI	Banking and Payments Federation Ireland
BZE	Beyond Zero Emissions
CBD	Commercial Building Disclosure
CFMEU	CFMEU Victoria/Tasmania Construction and General
COAG / COAG Energy Council	Council of Australian Governments Energy Council
CoL	City of London
EEC	Energy Efficiency Council
EY	Ernst & Young
GBCA	Green Building Council of Australia
HVAC	Heating, Ventilation and Air Conditioning
IEA	International Energy Agency
MECLA	Materials & Embodied Carbon Leaders' Alliance
NABERS	National Australian Built Environment Rating System
NatHERS	Nationwide House Energy Rating Scheme
NCC	National Construction Code
NEPS	National Energy Performance Standard
SEAI	Sustainable Energy Authority of Ireland
VTHC	Victorian Trades Hall Council
WBLCA	Whole-Building Life-Cycle Assessment
WWF	World Wildlife Fund

Executive Summary

This is a rapid review and report on interviews on the key policy-asks to take to the Commonwealth government. In doing the research we talked to 15 people in peak industry and knowledge fields and looked at reports and research from Australia and around the world.

At a high level, there are four areas that will create an ecosystem of policy mechanisms that will enable commercial building retrofits to accelerate jobs creation and improve building performance for our future needs. For each we have provided several policy asks:

1. **Enabling mechanisms**
    a. Establishment of an independent Energy Efficiency Authority which would coordinate all things related to energy efficiency - policy development, implementation, evaluation, effectiveness reporting etc.
    b. Establishment of a national coordination initiative to support owner and industry uptake including training, research and information provision to support an increased learning rate.
    c. Set a target for building decarbonisation with a long runway, potentially through enabling national city-based emissions caps.

2. **Removing barriers**
    a. Consistent national, state and local approach - national goal setting, state resources to develop detailed implementation, local government to support their communities to implement them.
    b. Documentation consistency and alignment - requirements of documents to be provided on building handover with fines for enforcement.
    c. Addressing skills shortage and professional gaps through investments in increasing capacity, training and education with clear pathways for upskilling and job opportunities.

3. **Funding and finance**
    a. Revolving Retrofit Fund - as upfront costs, finances and time are recognised globally as barriers to retrofitting, consistent, reliable and innovative funding schemes are required to promote building retrofits.
    b. Innovation grants to develop the local technologies, industries, case studies and conversations.

4. **Regulatory mechanisms**
    a. Expand the Commercial Building Disclosure (CBD) requirements to all commercial buildings, apartments and spaces under 1000 m^2.
    b. Integrate requirements for existing building embodied carbon consideration, for example, using whole-of-life optioneering to encourage evaluation of renovation, adaptation or extensions instead of demolishing and rebuilding.
    c. Long term planning for NEPS and NCC (consistent with federal net zero goals and targets)
    d. Mandatory documentation, inspection and enforcement of regulations.

How will the above support update and impact?

Based on experience, the people spoken to and the reviewed literature, the following is a quick analysis of the ability to use these policy-asks to impact the retrofit of commercial buildings. This is an initial step and would require further verification work and is here as a basis to support discussion and decision-making. Ideally, these make up an ecosystem of initiatives that will create the momentum, tools, mechanisms and capacity to retrofit all buildings.

Table 1: Key policy recommendations, their effectiveness and impacts.

Policy recommendation	Short term effectiveness	Impact	Comment
Independent Energy Efficiency Authority	High	Medium	Quick to implement; impact will be dependent on capacity to implement changes.
One stop shop	Medium	Medium	Will take time to establish; great opportunity to get buy in from solution provider; impact will depend on uptake.
Decarbonisation target / cap	High	High	New York City has shown that mandated caps will get industry to shift, and guarantee impacts in the long term.
Consistency	Low	High	Will take time to negotiate and align.
Handover, documentation and inspection consistency	Medium	High	Will take time to implement throughout the industry but will mean scaffold is in place to improve buildings.
Skills and education	Medium	High	Critical to enable retrofits but will take time to create a program and develop the market.
Revolving retrofit fund and/or tax incentives to retrofitting	High	Medium	Easy to develop; barriers are initial fund, administration and uptake.
Innovation, pilot and manufacturing grants	High	Medium	Easy to develop; funding source and method for allocation and verification will take some time, uptake will be the main issue.
Expand CBD - disclosure of energy or carbon at purchase and lease	Medium	High	CBD has become internationally known for its impact on the large commercial buildings sector, but its expansion will require time for metrics development and the capacity to disclose.
Optioneering of whole of life carbon	Low	High	Will take time to develop the tools but high impact if WBLCA is an approval requirement.
Long term planning for NEPS and NCC	Medium	Medium	Will take time to plan and implement long term strategy and without bipartisan buy in, it will not have potential impact.
Regulatory enforcement	Medium	Medium	Will take time to develop enforcement capacity and will take resources, will be unpopular but can provide buyer/tenant confidence and add value for good performers.

Table 2: Estimated time frame for outcomes of policy implementation.

Impact	Implementation time frame	Impact - Capacity to enable retrofit of all buildings
High	Next year	All buildings will be retrofitted as part of initiative
Medium	Next 3 years	Many buildings will be retrofitted as part of initiative
Low	Next 5 years	Some buildings will be retrofitted as part of initiative

Introduction

This document is a review of policies to provide targeted recommendations to the Energy Retrofit Alliance organiser on policy requests to take to the Federal Government. This is built on a rapid review of reports and literature on the current barriers to retrofitting for Australia. The aims are to support policy recommendations that can be used to lobby local, state and federal governments to address the barriers. Where practical, given the time constraints, case studies and resources are provided to support recommendations.

The goals here are:

- Facilitating energy efficient retrofitting to moving beyond policy and happening on the ground.
- Ensuring that we have a good idea of what the skills needs are, and how to ensure that they are being met.
- Learning from others, including in Australia and overseas, about what works and developing policies and methods that can streamline implementation, reduce costs and maximise benefits.
- Helping to overcome any barriers to commercial building retrofitting from happening at scale.

Building Retrofit Introduction and Opportunity

For commercial buildings, 90% of the buildings we have are over 10 years old, and 80% of the buildings we have now will still be standing in 2050. In 2015, the GBCA and EY, with support of Sustainability Victoria and the Australian Government Department of Industry, Innovation and Science, estimated that '*there could be as much as 64 million square metres of commercial office space in Australia'.*[1]

Furthermore, the GBCA and EY's report argues that the focus should be on the mid-tier: "*Whilst the top-tier premium and A-grade buildings make up around 12.7 million square metres, the rest of this space could be classified as mid-tier (around 52 million square metres). Extrapolating findings from a report on retrofitting office buildings in Victoria, indicates that there could be up to 80,000 mid-tier buildings across the country".*

A follow up to the 2015 report is EY's 2019 report 'Achieving Low Energy Existing Commercial Buildings in Australia'. EY argues that it is not just a volume opportunity, but also an impact opportunity, with commercial buildings contributing 10% of Australia's greenhouse emissions.[2]

This work was done in response to the 2019 Energy Ministers agreement "*on the 'Trajectory for Low Energy Buildings', a national plan that aims to achieve zero energy and carbon ready buildings in Australia and address Australia's 40% energy productivity improvement target by 2030, as set out in the Council of Australian Governments Energy Council's (COAG or COAG Energy Council) National Energy Productivity Plan*."

[1] GBCA (2015), Mid-Tier Commercial Office Buildings In Australia: A National Pathway To Improving Energy Productivity
[2] EY (2019), Achieving Low Energy Existing Commercial Buildings in Australia

EY also highlights that the problem in upgrading, retrofitting and climate proofing commercial buildings is not just a technological one, but one of policy, skills and capacity: "*many of the technologies required to achieve carbon neutral buildings already exist and can be cost-effective. For example, upgrades to lighting and heating, ventilation and air conditioning (HVAC) equipment can generate large energy savings resulting in positive financial returns through reduced energy bills*."

This report focuses on commercial buildings, but the opportunity is even larger in residential buildings, where there are over 9 million homes according to COAG 2019[3]. Most of these homes perform under 3-star NatHERS, in comparison to the level set up at the NCC for new homes at 7 stars. This means that most homes are uncomfortable, or require large amounts of energy to be comfortable, which incurs large and increasing energy and healthcare costs to occupants.

Retrofitting or renovating these homes is a significant opportunity not only for jobs but also as a contribution to the health of the nation. In energy and carbon terms, there is also a significant saving, whereby "implementing energy efficiency policies targeting existing houses could reduce greenhouse gas emissions by 40.3 million tonnes of CO2 equivalent ($MtCO_2$-e) to 2050 and deliver a net present value of $3.4 billion".[4]

Returning to commercial building retrofits for the City of Melbourne, to upgrade all commercial buildings to be zero carbon ready by 2040, Point Advisory modelling suggests in 2022 that this could add over $2.7 billion to the Victorian economy by 2040, with over 12,000 jobs created and a yearly reduction in energy costs of over $184 million.[4]

[3] COAG Energy Council (2019), Report for Achieving Low Energy Existing Homes

[4] City of Melbourne (2023), Retrofit Melbourne

Methods

To carry out this rapid review, three activities were undertaken.

Firstly, we spoke to leaders in the area from the following groups:

- Australian Sustainable Built Environment Council (ASBEC)
- Green Building Council of Australia (GBCA)
- Property Council of Australia (PCA)
- World Wildlife Fund (WWF)
- Materials & Embodied Carbon Leaders' Alliance (MECLA)
- Climateworks Centre
- Energy Efficiency Council (EEC)
- Beyond Zero Emissions (BZE)
- Engineers Australia
- The University of Melbourne
- Aurecon Group
- Arup Group
- EcoMaster
- Fender Katsalidis (FK)

Secondly, we carried out a desktop review of documents produced over the past 10 years, focused on Australia but with some international perspectives. Lastly, the barriers and policy outcomes from the first two methods were looked at through research on what makes effective policy to support the transition.

In carrying out the research that underpins the recommendations, we looked specifically to inform the development of a policy ecosystem that can support effective implementation of the solutions needed for this complex and multifaceted industry.

Where relevant the research, though aimed at the Federal government, provides comments on the difference between states, as this can impact the capacity for policy to be effective.

A (non-exhaustive) list of documents and reports that were reviewed is shown in Table 3, with a total of over 1000 pages. The full bibliography list is available at the end of the report, and key documents used are hyperlinked in the footnotes to provide rapid access.

Table 3: Key documents reviewed for barriers and policy analysis.

Country	Year	Title	Organisation / Publisher
Australia	2023	Retrofit Melbourne	City of Melbourne
	2023	Retrofitting Cities: Challenges And Opportunities In Australia	Melbourne Centre for Cities
	2023	Submission to the National Energy Performance Strategy consultation paper	Energy Efficiency Council
	2023	Every Building Counts	Property Council of Australia, Green Building Council of Australia
	2019	Achieving Low Energy Existing Commercial Buildings in Australia	Ernst & Young, Department of the Environment and Energy
	2016	Low Carbon, High Performance	Australian Sustainable Built Environment Council
Global	2022	Technology and Innovation Pathways for Zero-carbon-ready Buildings by 2030	International Energy Agency
	2021	Seizing The Urban Opportunity	Coalition For Urban Transitions
	2019	How to set energy efficiency standards for existing buildings	C40 Knowledge Hub
Europe	2022	Overcoming the main barriers to the uptake of building retrofit through an industrialised approach	European Commission
Ireland	2022	An Examination of Blockages to Retrofitting and Heat-pump Installation in Ireland	Friends of the Earth Ireland
	2018	Energy In The Residential Sector: 2018 Report	Sustainable Energy Authority of Ireland
United Kingdom	2022	Whole Life-Cycle Carbon Optioneering	City of London Corporation

Results

Desktop review of papers, report and initiatives in Australia and internationally

One of the most relevant reports is EY's 2019 report[5], where the key policy recommendations they make after a comprehensive review of best practice, barriers and opportunities are:

1. Clarify and enforce NCC provisions and add minimum energy efficiency standards.
2. Mandatory HVAC inspection and certification.
3. Universal, low-cost, mandatory disclosure consistent with existing schemes (including NABERS).
4. Mandatory minimum standards for government owned or leased buildings.
5. Financial incentives linked to minimum performance.
6. Expand Minimum Energy Performance standards for building technologies and equipment.

Internationally, the IEA provided the following recommendations for consideration in policy development[6]:

Market creation and standards

1. Review and upgrade building codes for new and existing buildings (eg. the NCC for Australia).
2. Enforcement, monitoring and compliance of building codes.
3. Introduce and update standards, labels, certificates and communication protocols.
4. Creating the market conditions and mechanisms for clean and efficient buildings technologies.

Planning instruments

1. Integrated and holistic approach to local design and planning.
2. Integrated energy and infrastructure planning.

Economic and financial instruments

1. Designing financial incentives to accelerate technology deployment.
2. Supporting new and innovative business models.
3. Instruments and subsidies for affordability for low-income/vulnerable inhabitants.

Education and training

1. Awareness campaigns and demonstrations.
2. Capacity building for all stakeholders.

[5] EY (2019)

[6] IEA (2022), Technology and Innovation Pathways for Zero-Carbon-Ready Buildings by 2030

In addition to the two key reports above, we have summarised the rest of the papers into the areas of enabling, removing barriers, funding and regulatory.

1. Enabling
    - A zero carbon buildings portal for information and support[7], enables interested parties to explore and learn through how-to guides, research and case studies. This will also empower them to navigate their own journey towards zero carbon buildings, while complying with relevant legislation.
    - A free and open access zero carbon risk tool[7], which provides an easy method for building owners to gauge how their building's carbon performance influences its value and energy costs.
    - Used together with currently available tools: EPiC database and Green Factor for understanding embodied carbon emissions.
    - Supporting regulatory sandpits for testing[8], including demonstration projects to enable creation of innovative practices and to test new business models.
    - Development of frameworks and training to enhance the workforce for roles that currently do not exist, refining training for existing roles with incomplete requirements, and fostering cross-cutting professional development to boost overall capability within the buildings and retrofitting sector.[9]
    - Local, state and federal governments to collaborate closely with urban leaders and the private sector on prioritising energy efficiency in buildings for a clean and resilient city.[10]
    - Establishment of an independent Energy Efficiency Authority, which would coordinate all things related to energy efficiency - policy development, implementation, evaluation, effectiveness reporting etc.[11]
    - Promote applied research for development of better, cost-effective products, systems and techniques to streamline installation processes and outcomes.
    - Advocacy for the additional value brought about by retrofitting, extending beyond energy, costs or carbon considerations.

2. Removing barriers
    - Addressing skills shortage and professional gaps through investments into increasing capacity, training and education with clear pathways for upskilling and job opportunities.
    - Targeted incentives and programs to motivate and accelerate action towards higher performance.[11] For example:
        i. Stamp duty concessions
        ii. Green door policies for retrofitting
        iii. Green depreciation
    - A range of supporting data and information measures for research, analysis and review of retrofitting impacts. This includes:
        i. Development of a national built environment energy data and information strategy.
        ii. Better access to energy consumption data.

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[7] City of Melbourne (2023)
[8] Melbourne Centre for Cities (2023), Retrofitting Cities: Challenges and Opportunities in Australia
[9] EEC (2023a), Commercial Building Energy Upgrades Workforce Mapping
[10] Coalition for Urban Transitions (2021), Seizing The Urban Opportunity
[11] ASBEC (2016), Low Carbon, High Performance

- Actively understand and reduce perceptions of risk and hassle among building owners, families and small to medium-sized enterprise (SME) owners.
- Targeted end-to-end support for low-income occupants and households, as they tend to live in more inefficient buildings, spend more of their household income on energy, and face stronger barriers to upgrading.
- Engaging with tenants regarding their issues with landlords, building and facility managers to ensure that programs effectively address these concerns.

3. Funding

- As upfront costs and finances are recognized globally as barriers to retrofitting, consistent, reliable and innovative funding schemes are required to promote building retrofits.
- Low-interest loans and mortgages were offered to eligible landlords and homeowners in Netherlands[12] and Ireland[13] for retrofitting measures across their buildings.
- The IEA[14] also emphasises the importance of financial incentives and market mechanisms like subsidies to increase attractiveness and accelerate retrofits.
- The aim here is to reduce the upfront costs and de-risk clean energy and technology investments in the building sector, leading to a higher uptake of building retrofits.
- Including and utilising mechanisms in loans to extend payment periods in the event of unforeseen issues and circumstances.
- Expand and build on currently available retrofit schemes and funds.
- A particular focus should be given to low-income commercial tenants and households as well, to reduce energy poverty and improve quality of life.

4. Regulation

- Across Australia, multiple organisations[15] have called for mandatory building energy use or energy performance disclosure. This increases accountability and transparency for both tenants and building owners, which incentivises retrofitting and building improvements, and leads to higher asset values.
- Creating and implementing a clear national plan towards achieving zero carbon buildings by the specified date.[11]
- Measurements of building performance can also serve as the foundation for a rates mechanism or emissions cap-and-trade[16] scheme in the future.
- Setting minimum standards across buildings, rentals and building technologies and equipment.[15] These standards urge building improvements and the phase-out of inefficient technologies.
- Long term planning and mapping of the NEPS to cover and include building energy performance, decarbonisation and addressing embodied carbon emissions.[15]
- Improvements and inclusions into the NCC in 2025, or as soon as possible[17]:
    i. a comprehensive definition of zero carbon buildings
    ii. embodied emissions and whole life cycle assessments of buildings (also known as WBLCA)

[12] Government of the Netherlands (2023), Central government promotes energy savings
[13] Delaney (2023), It takes a village to build a nation's energy efficiency and electrification program
[14] IEA (2022)
[15] EEC (2023b), Submission to the National Energy Performance Strategy Consultation Paper
[16] C40 Knowledge Hub (2019), How to set energy efficiency standards for existing buildings
[17] Climateworks Centre (2023), Raising Australian building standards can deliver climate-ready homes sooner

- Introducing legislation to bring existing buildings up to code.[16]
    i. Expand the scope of mandatory building codes to include major building renovations.
    ii. Require upgrades to meet the code for targeted building types, regardless of renovations.
    iii. Use outcome-based codes. These assess a building based on actual energy performance.

Case Studies

Residential: Ireland

The majority of the housing stock in Ireland is energy inefficient, with Irish homes using 7% more energy than the European Union average, while emitting 58% more CO_2[18]. This is due to the use of high carbon fuels, as 73% of Irish buildings are reliant on fossil fuels for heat.[19]

To address these issues, the National Retrofit Scheme[20,21] was announced in February 2022, and included several additional measures to increase retrofitting. Together with the 2021 Climate Action Plan, it aims to address barriers to retrofitting through four key areas: (1) driving demand and activity (2) financing and affordability (3) supply chain, skills and standards and (4) structures and governance. This scheme also incorporated the launch of:

- One Stop Shops that would provide support with project management and access to financing.
- Grants of up to 50% for full retrofit to a Building Energy Rating of B2 standard.
- 80% grants for attic and cavity wall insulation.
- 100% grants for homeowners who receive social welfare payments under the Warmer Homes Scheme.

This has led to several key outcomes:

- ➢ Establishing the Sustainable Energy Authority of Ireland (SEAI) as the chief entity that oversees and manages the rollout of energy efficiency and electrification measures.
- ➢ Introduction of registered regional and national one-stop shop services that manage the entire retrofitting process and provide end-to-end solutions.
- ➢ Collaboration between SEAI with banks and credit unions to make green finance available, including personal green loans, and green mortgages at lower interest rates.
- ➢ Allocation of about $13.2 billion (8 billion Euros) towards enabling the scaling of supply chain and jobs creation to meet retrofitting targets.

Commercial: City of London

Most of the building stock in the City of London (CoL) have high operational emissions due to poor energy efficiency standards and technologies that were used during their construction in contrast to current requirements.[22] Another significant contributor comes from the widespread use of natural gas for space heating and hot water systems.

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[18] SEAI (2018), Energy In The Residential Sector: 2018 Report
[19] BPFI (2023), Decarbonising Homes in Ireland
[20] Friends of the Earth Ireland (2022), An Examination of Blockages to Retrofitting and Heat-pump Installation in Ireland
[21] SEAI (2022), Government launches the National Retrofitting Scheme
[22] City of London Corporation (2022), Whole Life-Cycle Carbon Optioneering

Carbon optioneering was thus introduced due to the growing realisation that the construction of new buildings using common and contemporary techniques and materials leads to high carbon emissions throughout the building's life cycle.[22] This method allows for:

- a consistent, unified framework for all major applications submitted within the CoL to report on whole life carbon during the pre-application stage and at application submission/determination stage.
- a first step of carbon evaluation, that is designed to enable a consistent, early-stage approach to assessing options.
- a method to enable consistent reporting of whole life-cycle carbon emissions for a range of typical development options for different degrees of major interventions in the commercial built environment.[23]
- clarity about the measures that would yield the most significant reduction in whole life-cycle carbon emissions for each development proposal, both short and long term, whether through retaining buildings or building elements or through redevelopment.

The outcomes of this methodology are:

- ➢ facilitates the review and decision-making process through the submission of more in-depth information, which demonstrates how applicants arrived at a specific development decision.
- ➢ requires all developments to consider and assess both operational and embodied carbon emissions over a whole lifecycle.
- ➢ requires the full exploration of options before considering substantial demolition.
- ➢ contributes to CoL's commitments towards operational net zero carbon emissions by 2027 and net zero carbon emissions by 2040 across CoL's investments and supply chain.

Interviews

The interviews resulted in recommendations of key things people were looking to the Victorian Trades Hall Council (VTHC) and CFMEU to advocate for. These have been summarised into the 4 categories from the literature - enabling, barrier removal, funding and regulation. Also, key actions have been added as they have been raised by the interviewees.

1. Enabling
    - Enable a different way of working that is about collaboration, not competition. One of the issues that drives up prices is the lack of collaboration and capacity to work together on a project from the start. It would be good to advocate for a review of tender process requirements to support increased co-design, collaboration and risk sharing.
    - Policy clarity - clear, unambiguous policy signals will give businesses and markets the confidence to invest in energy efficiency, energy management, electrification and other energy performance activities. *"Lack of a long-term plan on key issues, particularly electrification and energy efficiency improvements."* -GBCA
    - Ambitious policy around commercial and residential upgrades *"The 'policy ask' could be ambitious - how do we develop a multi-year program of retrofit upgrades with adequate training and investment so that everyone in Australia can live in a healthy, comfortable home… This should include pilots, with effective training and enough time, let's say over 5-7 years to ensure effective implementation."* -MECLA and WWF

[23] Gerald Eve (2022), Whole Life Carbon Optioneering – City Of London Planning Advice Note Consultation

- Ensure that all existing building embodied carbon is considered at the planning application stage for any new building requiring an existing building demolition. NABERS needs to be enabled to look at whole life carbon analysis (not just upfront). It can support effective decision-making through optioneering (optioneering is being brought in by places like the City of London, through statutory planning). *"Lack of priority on reducing upfront carbon emissions"* -GBCA
- Guidance for what is 'reasonable' in NCC for major upgrades/change of use of underused buildings at risk of premature decay/stranded assets, with the definition of 'reasonable' including energy efficiency and healthy air quality standards.
- Localisation of materials and manufacturing - supply chain development in the retrofit market is critical to ensure reduction in risks in costs and time. *"strategic investments in the onshore production of low-emissions technologies, particularly where areas of onshore competitive advantage, expertise, or bespoke local requirements are identified"* -EEC
- Leadership through Australian Public Service net zero building upgrade commitments and alignment of state governments to have the same aspiration for their accommodation needs. Consider a retrofit first policy.
- Support a series of demonstration projects for decarbonising existing commercial buildings (including large apartment buildings) to build awareness, skills and supply chains.
- Prefabrication solution development for retrofit - are there facade upgrade, HVAC upgrade, heat pump upgrade solutions that could be prefabricated?
- Skills development across all of the industry: the recent EEC report reviewing all of the critical construction and building industry skills shows that there are no professionals in the market with the skill set needed to support the retrofit momentum required to meet emissions targets.[24]
- Consistent information provision - the "*YourHome/YourBuilding retrofit edition' enabling clarity around roles, opportunities, information needs, and so forth."* -Engineer
- Effective management of the labour market - one of the barriers to retrofits at present is the lack of availability of people at all stages of the construction process. This is true for new and existing buildings. State governments independently begin major infrastructure projects without reference to the national job market, sucking up people from other states, escalating costs, creating uncertainty and resulting in many project budgets blowing out. *"Significant barriers to creating and sustaining an appropriately skilled and sized commercial building energy upgrade workforce have been identified. Of serious concern is the lack of sufficiently high-quality data to enable governments to quantify both the existing workforce capacity, and to determine future needs."* -EEC

Actions that could follow on from this are:

a) Net Zero Retrofit First government accommodation requirement.
b) Develop an optioneering guidance/framework, including the verification of embodied energy, and to support local government areas to bring in optioneering as a statutory planning requirement and suitable for environmental, social and governance (ESG) reporting.
c) National coordinated approach of the labour markets and big infrastructure projects.
d) Invest in localisation of critical retrofit element product/system design and manufacturing - heat pumps, HVAC, glazing, insulation, etc.

[24] EEC (2023a)

e) The Commonwealth, state and territory governments should establish a national energy performance body to link policy areas together.
f) National toolkit for workforce development to deliver commercial building energy upgrades with six key activities:
    i) Utilise procurement and regulatory levers to create demand.
    ii) Unlock scale through integrated policy drivers.
    iii) Attract workers to the sector with clear entry and upskilling pathways.
    iv) Catalyse development of systemic education and training.
    v) Build strong industry links and communities of practice; and
    vi) Create confidence, expertise and awareness through initial investment.

2. Removing barriers

- Consistency of implementation of National Construction Code (NCC). Advocate for consistent roll-out of national regulations by the states. *"Currently the NCC 2022 process where NSW/ACT rolling out at the intended time with QLD/VIC May 2024, SA/WA later (potentially 2024) and Tasmania 2025+ is the most expensive and inefficient way to do this."* -GBCA
- A critical barrier to effective retrofit is consistency and standardisation. Time, money and risk are critical barriers to retrofitting existing buildings. Most existing buildings have little documentation, and when documentation does exist, it is of varied quality and completeness, which can cause significant blowouts in costs. *"Consistency and standardisation are major barriers in the building industry at the moment. There needs to be greater alignment across jurisdictions so that regulations in one state are not vastly different to those in another state… Standardisation of documentation will lead to efficiencies for the entire building sector."* -Engineers Australia
  "Consistency, enforcement, regulations, and a review of the role of surveyors" -Climateworks Centre

A couple of actions that could follow on from this are:

a) A uniform regulatory regime covering engineering practitioners in Australia.
b) National consistent approach to professional engineering service delivery over the course of the entire project to ensure that the documentation of engineering systems meet the contractual and regulatory requirements.
c) A standard documentation requirement on building sale.
d) A standard building management documentation register.
e) Consistent record keeping standards.

3. Funding

- Funding innovation such as:
    i. A revolving building retrofit fund, this could be used for commercial and residential buildings and enable engagement of private capital in driving retrofit momentum and/or
    ii. Improve the tax regime to incentivise refurbishments for buildings (see p.29 of the PCA and GBCA document, 'Every Building Counts' for federal policy) - learn from *"the Inflation Reduction Act, US has incredible incentives for building improvements, including electrification, embodied carbon reductions, etc."* -GBCA

- Provide a significant funding stream for increasing training and skills development across all the value chain.
- Funding for electrification. *"Incentives for electrifying existing buildings, and a plan for the phase out of the gas network"* -GBCA
- There needs to be some retrofit fund; the costs to retrofit just do not stack up in the current environment where the risk is high, the uncertainty is high, the skills and capacity to deliver on time and on budget is poor. *"At the moment the costings do not stack up, so make retrofitting less than attractive to a developer."* -PCA and *"Lack of financial or policy incentives to refurbish buildings"* –GBCA

4. Regulatory

- Introducing apartment CBD requirements at point of lease - this will drive tenant capacity to vote with their feet and drive apartment performance improvement and retrofit *"Introduce energy and emissions transparency at the point of leasing or sale for all commercial and residential buildings"* -GBCA
- NCC - zero carbon aligned NCC, to drive demand for better buildings as a minimum. Federal government to coordinate for this through Building Minister Meetings/NCC and also through their Net Zero Plan, Built Environment Sectoral Plan, and the Trajectory for Low Energy Buildings.
- Regulating independent third-party verification of construction.
- Increasing disclosure requirements beyond CBD to more building typologies and 500 m^2 as this will capture the smaller older buildings. *"Lack of transparency on building performance"* –GBCA
  "If there was one thing we need, and we need, ASAP it is the expansion of the CBD program. expansion of NABERS and Commercial Building Disclosure (CBD) to additional building types." -EEC

A couple of actions that could follow on from this are:

a) CBD expansion.
b) Requiring independent third-party review before issuing a construction certificate.
c) NCC zero carbon aligned trajectory with 3 yearly upgrades of the standards including simplification.
d) Requiring Circular Economy Statements assessing recyclability/reusability of buildings and component materials.

Recommendations

Taking the above results from both the interviews and literature, below are the recommendations to start with. While many policy options can be adopted simultaneously, they can be considered through the lens outlined below. This has been developed based on the knowledge, experience and research of the participants in this report. They have also been informed through the research on what makes effective policy in the transitions space.

We are moving to a time when linear, dogmatic policy which is siloed into government departments and cost codes will no longer work. The issues of today's economy and society are too complex and multi-scalar to be addressed in simplified pieces. This has always been the case; the escalating issues we are facing now shows the folly of the earlier approach.

We now have the tools and capacity to develop policy approaches that are based on providing an integrated ecosystem of pathways that enable all aspects of the system to participate in the way forward. Regenerative policy development brings together the best of human capacity and the ecological reality to create a new relationship between how we govern and live.

This paper is too short to go into depth, and the work of Luetjens et al. (2019) showed the difference between a transactional policy approach - which leads to the need of bringing in more and more restrictive regulations; and an ecological-relational approach - which enables the economy to adapt, building agency and responsibility in its participants. This is not a rejection of the transactional approach; it is not an either-or way of looking at policy. The ecological approach weaves in transactional/regulatory aspects as needed but only as they support the overall aims to create a more agentic, relational society.

Luetjens et al. (2019)[25] examined 20 policy case studies and suggested that effective policies have the following things in common:

1. They address a problem that has been well defined and broadly acknowledged at the outset of the policy development process.
2. They provide conceptually coherent, evidence-informed advice that pays attention to the realities of implementation.
3. Political leadership and awareness - cases for policy change are carefully built with understanding and preparation with workable solutions to issues of implementation; and they understand that any major policy will have implementation challenges, building in the capacity for perseverance, learning and adjustment of approaches to enable longer term success.
4. Involvement of stakeholders in the policy-making process, building a sufficiently broad appeal that policies survive changes of government.
5. They have champions and stewards during the design and decision-making phase but are equally critical during the implementation phase.

The above strategies and the recommendations below of policy asks should be tested with industry, especially with the stakeholders of the VTHC and CFMEU. There are many more ideas above that could be drawn on if they align better with the priorities of the organisations.

[25] Luetjens et al. (2019), Successful Public Policy Lessons From Australia And New Zealand

High level recommendations

At a high level, there are four areas that will create an ecosystem of policy mechanisms that will enable commercial building retrofits to accelerate jobs creation and improve building performance for our future needs. For each we have provided several policy asks:

1. Enabling mechanisms
    a. Establishment of an independent Energy Efficiency Authority which would coordinate all things related to energy efficiency - policy development, implementation, evaluation, effectiveness reporting etc.
    b. Establishment of a national coordination initiative to support owner and industry uptake, including training, research and information provision to support an increased learning rate.
    c. Set a target for building decarbonisation with a long runway, potentially through enabling national city-based emissions caps.
2. Removing barriers
    a. Consistent national, state and local approach - national goal-setting, state resources to develop detailed implementation, local government to support their communities to implement them.
    b. Documentation consistency and alignment - requirements of documents to be provided on building handover with fines for enforcement.
    c. Addressing skills shortage and professional gaps through investments in increasing capacity, training and education with clear pathways for upskilling and job opportunities.
3. Funding and finance
    a. Revolving Retrofit Fund - as upfront costs, finances and time are recognised globally as barriers to retrofitting, consistent, reliable and innovative funding schemes are required to promote building retrofits.
    b. Innovation grants to develop the local technologies, industries, case studies and conversations.
4. Regulatory mechanisms
    a. Expand the Commercial Building Disclosure (CBD) requirements to all commercial buildings, apartments and spaces under 1000 m^2.
    b. Integrate requirements for existing building embodied carbon consideration, for example, using whole-of-life optioneering to encourage evaluation of renovation, adaptation or extensions instead of demolishing and rebuilding.
    c. Long term planning for NEPS and NCC (consistent with federal net zero goals and targets).
    d. Mandatory documentation, inspection and enforcement of regulations.

How will the above support update and impact?

Based on experience, the people spoken to and the reviewed literature, the following below is a quick analysis of the ability to use these policy-asks to improve the retrofit of commercial buildings. This is an initial step and would require further verification work and is here as a basis to support discussion and decision-making. Ideally, these make up an ecosystem of initiatives that will create the momentum, tools, mechanisms and capacity to retrofit all buildings.

Table 4: Key policy recommendations, their effectiveness and impacts.

Policy recommendation	Short term effectiveness	Impact	Comment
Independent Energy Efficiency Authority	High	Medium	Quick to implement; impact will be dependent on capacity to implement changes.
One stop shop	Medium	Medium	Will take time to establish; great opportunity to get buy in from solution provider; impact will depend on uptake.
Decarbonisation target / cap	High	High	New York City has shown that mandated caps will get industry to shift, and guarantee impacts in the long term.
Consistency	Low	High	Will take time to negotiate and align.
Handover, documentation and inspection consistency	Medium	High	Will take time to implement throughout the industry but will mean scaffold is in place to improve buildings.
Skills and education	Medium	High	Critical to enable retrofits but will take time to create a program and develop the market.
Revolving retrofit fund and/or tax incentives to retrofitting	High	Medium	Easy to develop; barriers are initial fund, administration and uptake.
Innovation, pilot and manufacturing grants	High	Medium	Easy to develop; funding source and method for allocation and verification will take some time, uptake will be the main issue.
Expand CBD - disclosure of energy or carbon at purchase and lease	Medium	High	CBD has become internationally known for its impact on the large commercial buildings sector, but its expansion will require time for metrics development and the capacity to disclose.
Optioneering of whole of life carbon	Low	High	Will take time to develop the tools but high impact if WBLCA is an approval requirement.
Long term planning for NEPS and NCC	Medium	Medium	Will take time to plan and implement long term strategy and without bipartisan buy in, it will not have potential impact.
Regulatory enforcement	Medium	Medium	Will take time to develop enforcement capacity and will take resources, will be unpopular but can provide buyer/tenant confidence and add value for good performers.

Table 5: Estimated time frame for outcomes of policy implementation.

Impact	Implementation time frame	Impact - Capacity to enable retrofit of all buildings
High	Next year	All buildings will be retrofitted as part of initiative
Medium	Next 3 years	Many buildings will be retrofitted as part of initiative
Low	Next 5 years	Some buildings will be retrofitted as part of initiative

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About Victorian Trades Hall Council

Victorian Trades Hall Council (VTHC) is the voice of Victorians at work. We are an organising movement; coordinating the efforts of 41 affiliated unions and over 500,000 Victorian union members. Victorian Trades Hall Council is the decision-making body of the Victorian union movement. A representative elected Executive Council meets monthly, but day to day campaigns, policy, and events are managed by the Secretary and two Assistant Secretaries who are elected by VTHC delegates.

Our Trades Hall is the oldest State Trades and Labour Council, and pre-dates our Federal union peak body, the Australian Council of Trade Unions. Trades Hall also coordinates with several Regional Trades and Labour Councils acting locally in Victoria's regional centres.

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