

Melbourne's Zero Net Emissions Strategy

‘A collaborative approach to the next four years of action’

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City of Melbourne's approach

Zero Net Emissions is our plan for the next four years and beyond to become a carbon neutral city and create a bold and sustainable future for Melbourne. This strategy outlines a way forward for the municipality of Melbourne that has been developed by the City of Melbourne in collaboration with key stakeholders. We recognise that we can't achieve such an ambitious goal working alone. Council operations make up less than one per cent of the greenhouse gas emissions of the municipality, so we have developed a plan for key stakeholders to work together towards this goal.

In the ten years since the release of the first Zero Net Emissions strategy in 2003 some considerable outcomes have been achieved. Despite this, collective progress in certain areas has been slow, such as reducing Victoria's reliance on brown coal, which is the state's most emissions intensive electricity source. Internationally, we have lacked a binding agreement to replace the Kyoto protocol, and nationally, there was uncertainty regarding federal policy commitment to putting a price on carbon until 2013.

City of Melbourne is more committed than ever to achieving zero net emissions, and we became a certified carbon neutral organisation for the first time for the 2011-12 year. However with our collective progress being slower than expected, achieving this aspirational goal for the municipality by 2020 is becoming increasingly unlikely.

Melbourne becoming a zero net emissions city continues to be contingent on many factors beyond our direct control. We are confident that we can achieve major milestones by working closely with Victorian, Australian, and local governments, businesses and the people of Melbourne on the road to zero net emissions. However achieving zero net emissions would require substantial structural, economic and policy change in Melbourne to drive an increase in energy efficiency; use of less carbon intensive fuel sources and finally offsetting any remaining emissions.

Zero Net Emissions strategy engagement process

- In developing this strategy we have collaborated with a broad range of partners including:
 - Victorian Government departments
 - Energy companies
 - Regulators
 - Property developers
 - Transport providers
 - Education institutions and researchers
 - Non-government organisations
 - Industry associations
 - Other local councils
- From the conception of the strategy, over 30 organisations helped to identify the focus areas, issues and challenges to be addressed. We then consulted further about the actions needed to achieve our objectives and targets.
- An external reference group of relevant leaders also provided input and guidance.
- We will run a one-month community consultation in late 2013, during which community members will have the opportunity to provide feedback on the draft document.

The strategy focuses on the areas where we can achieve the most effective and viable greenhouse gas emissions reductions. It includes what we will do, what others will do and what else needs to happen to achieve zero net emissions by 2020. Those actions identified as 'what else needs to happen' have not currently been committed to by an organisation, but are gaps that need to be filled to allow us to become a zero net emissions city. City of Melbourne will work to bring together key stakeholders to discuss approaches to progress these actions.

Our strategy builds on our strengths in delivering effective programs and on knowledge gained from implementing the 2003 and 2008 Zero Net Emissions Strategies. Annual implementation plans will follow, setting out a clear timelines and budgets for action.

What we do now will have a crucial effect on the city we will leave for future generations. If the municipality of Melbourne continues on its current journey towards reducing its carbon footprint, forecasts reveal annual greenhouse gas emissions will grow to around 7.7 million tonnes by 2020 – a 60 per cent increase on 2010 emissions.

Our six focus areas are council operations, commercial buildings, residential buildings, stationary energy supply, transport and resource waste. In each sector, we are implementing viable initiatives to reduce emissions. We are also trialling new technologies and collaborating on research and future opportunities.

Clear, ambitious objectives for action have been set for each of our focus areas:

Targets:

Section	Strategy Targets
Council operations	<ul style="list-style-type: none"> • Maintain carbon neutrality • Reduce greenhouse gas emissions by 10% by 2018 (based on 2010-11 baseline)
Commercial buildings	Increase the average National Australian Built Environment Rating System (NABERS), or equivalent, rating of commercial buildings to 4 by 2018
Residential buildings	City of Melbourne will establish a baseline and develop a long term target in the first year of the implementation plan
Stationary energy supply	25% of energy from renewable sources by 2018
Transport	Increase the percentage of all trips using low emissions transport from 51% in 2009 to 60% in 2018
Waste management	Decrease waste to landfill by 5% by 2018 City of Melbourne to trial seven precinct waste solutions by 2018

The case for action

Climate change is no longer up for debate with experts already documenting changes to our natural ecosystems, human health and economy. In 2011 Australia's Climate Commission defined 2011-2020 as the 'Critical Decade' for changing the pathway we are on to seeing a greater than two degrees increase in global temperatures. At this point, fundamental change is required to ensure we minimise the impacts of our changing climate.

Climate change is already driving economic and cultural change globally. The transition towards a low carbon economy is well underway. Significant investment is already being made in renewable energy, research and new technologies, and this is expected to grow. Nationally, more than \$14 billion has been invested in renewables since 2009, while employment in the sector has almost tripled to 9,000 jobs. (ClimateWorks Australia – Tracking Progress – Power, July 2013). We are in a position now to take advantage of these emerging opportunities and position Melbourne as a leading city in the inevitable low carbon economy.

Without significant international movement to decrease emissions in the next few years we will experience a temperature increase of between 2°C - 6.2°C by 2100 (Climate Commission, 2013), which exceeds what is now commonly accepted as the threshold for dangerous climate change, a 2°C increase. By 2030 Melbourne is likely to be significantly affected by warmer temperatures and heatwaves, lower rainfall, intense storm events and flash flooding (CSIRO 2007). By 2070 we are likely to be experiencing more than double the number of heat waves, a more than 10 per cent reduction in rainfall and a significant increase in extreme storm events. These climate changes will impact business and the broader community.

How could we get to a zero net emissions city by 2020?

What if 50% of the municipality's electricity came from renewable sources?

What if we didn't waste the 30% of energy which doesn't even make it to the end user? And what if the electricity network made it easy to connect diverse renewable energy sources to the grid?

What if we reduce the city's buildings energy use by 40% by having as standard practice that all buildings are upgraded regularly to ensure they are as energy efficient as possible? And all new buildings used leading technology, design and materials for improved sustainability outcomes.

What if each business and each individual took responsibility for their own activities being carbon neutral? What if the city helped organised this for them? Would it really cost that much? If we were to offset our emissions today it would cost an average of \$467 per resident per year, \$130 per worker or \$2,655 per business¹. Some of us are already doing it.

Could we get to zero? Is this future so unimaginable?

These are the big game changing ideas that are very difficult to achieve, but not impossible. We can't do it alone, and neither can any individual, business, or government entity. But it is achievable.

Over the next four years the City of Melbourne will work to explore these possibilities, in collaboration with key organisations and sectors, through establishing effective networks to take action.

Working together

Reducing Melbourne's greenhouse gas emissions and working to become neutral zero net emissions city requires collaboration from everyone in our community. A comprehensive, forward-thinking approach right now is crucial to implement the sustainable energy, infrastructure, transport and waste systems required to reduce our growing emissions.

Business, Victorian government and research organisations have all been involved in creating this strategy. Through the engagement process around this strategy, key members of the sector have identified City of Melbourne as being uniquely placed to bring stakeholders together to overcome specific challenges.

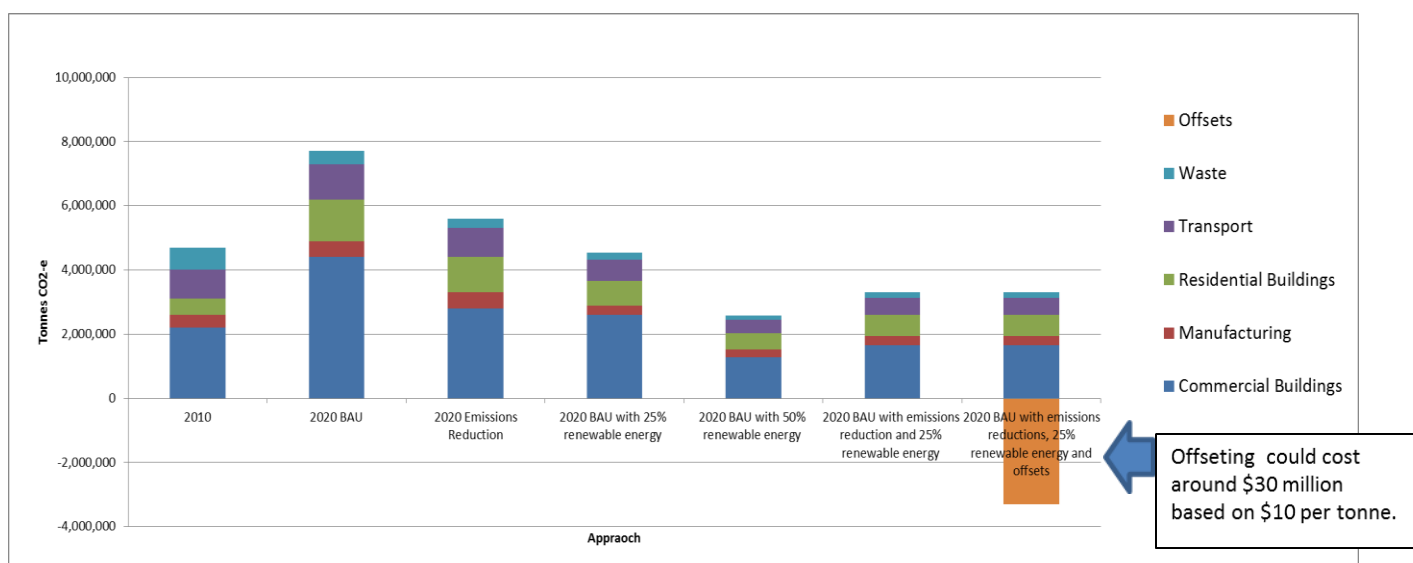
Diagram X. Principles for prioritization of actions in the implementation of Strategy

In implementing this strategy, City of Melbourne will:

- Work with important players to annually review actions to ensure the strategy remains relevant.
- Identify key opportunities, needs and barriers and develop an effective network to address these challenges with the following partners:
 - Property Council
 - Energy Efficiency Council
 - Sustainable Melbourne Fund
 - National Australia Bank
 - The University of Melbourne
 - IBM
 - Dexus Property Group
 - Royal Women's Hospital
 - CityWide



- Zoos Victoria
- MECU
- Facilities Managers Association
- Australand
- Strata Community Australia
- Explore further opportunities to reduce emissions through creating and strengthening effective partnerships.
- Work with various levels government, including Australian, Victorian and local to improve coordination and governance.
- More effectively share information and integrate infrastructure planning and delivery across the private and public sectors.
- Explore delivering an offset service for community members to neutralise greenhouse gas emissions
- Opportunities will be prioritised based on the criteria outlined in diagram X on page 6



Infographic inserted here

Our progress

In 2002, City of Melbourne set an ambitious goal of becoming a zero net emissions city by 2020. We have made significant progress over the past decade.

Queen Victoria Market solar array was installed (252,000 kilowatt-hours capacity)



City of Melbourne replaced old style recycling crates with mobile recycling bins



The Victorian Landfill Levy increased from \$7 per tonne to \$30 per tonne on 1 July 2010

Mandatory Renewable Energy Target (MRET) was introduced committing Australia to 20% renewable energy by 2020



First car share initiative launched in Melbourne

City of Melbourne became NCOS Certified Carbon Neutral for its Council operations.

2001 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013



First Victorian Wind Farm (Codrington Wind Farm) was completed

City of Melbourne established the Sustainable Melbourne Fund



Australia ratified the Kyoto protocol, committing to a 5% greenhouse gas emissions reduction on 1990 levels



Australia's first 6 star Green Star designed office building was built

Completion of the Swanston Street redevelopment increasing public transport and cycling access



Melbourne's emission profile

The latest greenhouse gas emissions data for the municipality of Melbourne shows that overall emissions are trending down, with a significant decrease from 2008-09 to 2010-11.

Non-residential electricity usage by commercial buildings and industry is clearly the biggest single impact, accounting for over 50 per cent of our emissions profile. Residential energy use has gone down over the past year, despite our rapidly expanding population and an increase in the size of our municipal land.

Measuring our progress

We have not compared our progress against the emissions profile in our previous strategies because we have changed our measurement approach.

Previously, greenhouse gas emissions were calculated based on a scaling-down of state and national data, using population and employment data.

Greenhouse Gas Emissions profile			
Carbon footprint (kt CO ₂ -e) Carbon dioxide equivalent	2008/09	2009/10	2010/11
Water (Residential)	11	11	11
Water (Non-residential)	33	35	32
Electricity (Residential)	316	521	448
Electricity (Non-residential)	3,202	2,144	1,908
Gas (Residential)	73	69	78
Gas (Non-residential)	251	241	262
Residential Waste	26	27	30
Industrial Waste	107*	107*	107
Transport	923*	923*	923
Total	4,943	4,079	3,799

* Once-off audit to obtain average annual estimate

We now have access to locally collected data such as electricity and gas consumption, provided by energy distribution companies operating within the municipality. This change gives a more accurate picture of the emissions impact of the city, but makes it difficult to track progress against figures reported in previous strategies.

What is a greenhouse gas? Greenhouse gases are the atmospheric gases responsible for causing global warming and climate change. The Kyoto Protocol lists six greenhouse gases – carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydro-fluorocarbons (HFCs), per-fluorocarbons (PFCs) and sulphur hexafluoride (SF₆)

Our data on transport and waste emissions has been obtained from an audit completed in 2008-09 and we will work with the transport and waste sector to improve the way we collect this data in the future.

Opportunities to reduce emissions

The City of Melbourne engaged ClimateWorks Australia to undertake an in-depth assessment of how Melbourne can unlock opportunities to significantly reduce the municipality's greenhouse gas emissions.

Through extensive research and technical analysis, City of Melbourne has identified evidence-based priorities, which optimise the size of emissions reduction and minimise cost. Commercial buildings represent the largest potential to reduce emissions. Residential buildings, manufacturing, transport, waste and energy supply are other key sectors where technologically feasible and commercially available opportunities to reduce emissions are evident. The data shows the financial benefits for Melbourne's economy from adapting to and embracing a low carbon future.

This research reaffirms the importance of many programs we have underway and shows the need for urgent change by business, residents, industry and state government to reduce emissions.

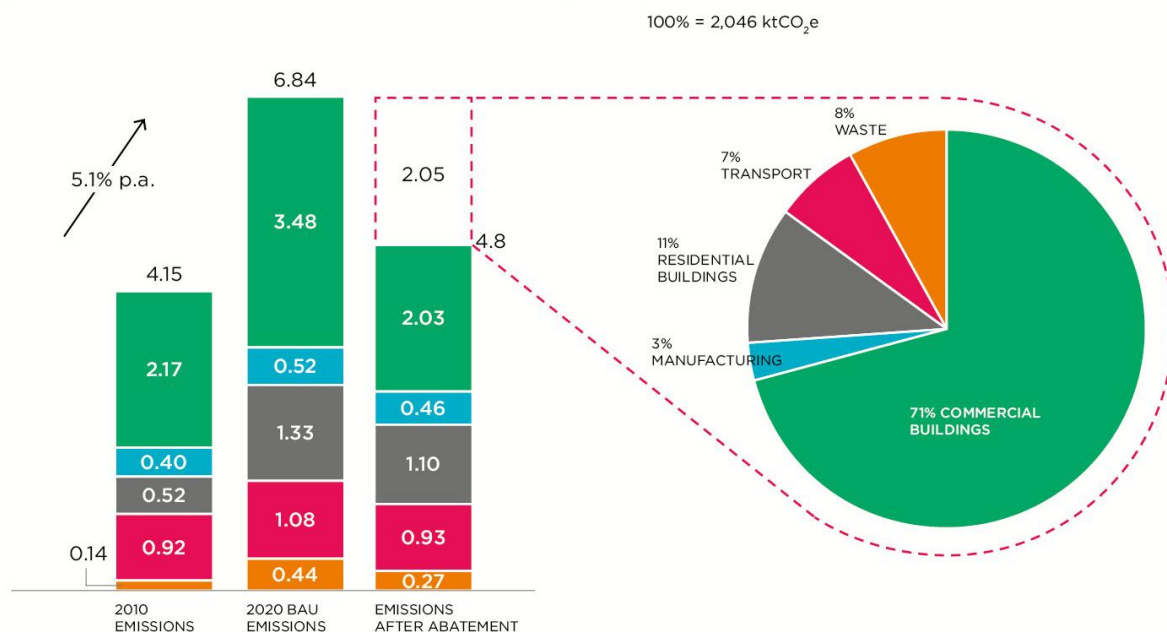
ClimateWorks research reveals that if we continue our current journey towards reducing Melbourne's carbon footprint, greenhouse gas emissions will grow to around 7.7 million tonnes by 2020 – a 60 percent increase compared to 2010.

By implementing the opportunities identified in the report, the municipality could reduce greenhouse gas emissions in 2020 by approximately 2.2 million tonnes, or 28 per cent, which is approximately the same amount of emissions expected from growth over this time.

This is achievable if City of Melbourne, government, businesses and the people of Melbourne work together to successfully implement these opportunities, as fast as possible.

BAU EMISSIONS AND ABATEMENT FOR THE CITY OF MELBOURNE*
(MtCO₂e, 2020 estimates)

BREAKDOWN OF OPPORTUNITY BY SECTOR
(% OF TOTAL ABATEMENT OPPORTUNITY, 2020 ESTIMATES)



Source: ClimateWorks team analysis, City of Melbourne 2010 Carbon inventory

*More detail on the BAU for the City of Melbourne can be found in Appendix C. Emissions in 2010 were provided from City of Melbourne's greenhouse gas inventory and differs from the methodology used by ClimateWorks to estimate 2020 BAU emissions

2020 MARGINAL ABATEMENT COST CURVE

KEY

Opportunities are sorted from left to right by increasing costs per tCO₂e

Each box represents one emissions reduction opportunity



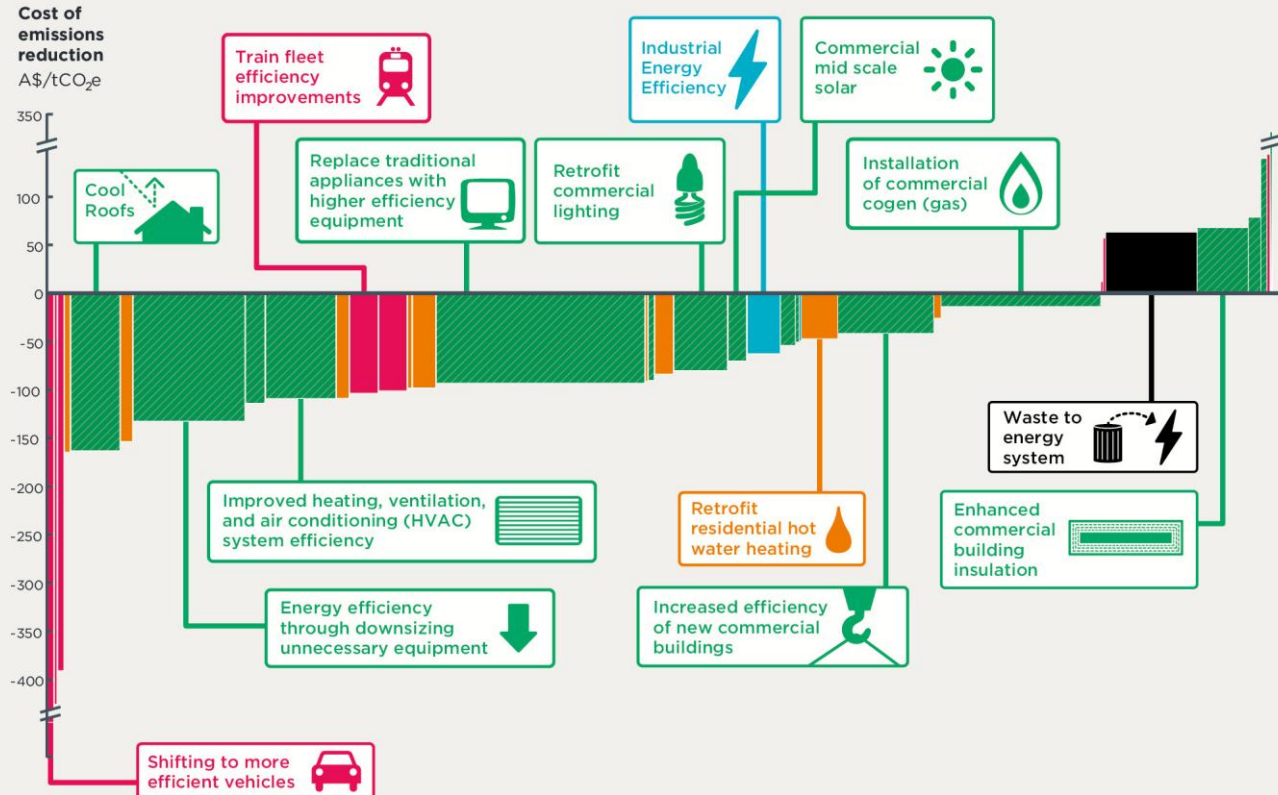
A Estimated cost to reduce emissions by 1tCO₂ (in 2020 \$)

B Annual GHG emissions reduction potential in 2020

■ Waste ■ Industry ■ Transport ■ Commercial buildings ■ Residential buildings

Cost of emissions reduction
A\$/tCO₂e

Emissions reduction potential ktCO₂e per year



Council operations

City of Melbourne has now achieved carbon neutrality for council operations and will continue to implement best practice approaches in reducing emissions.

Targets

- Maintain carbon neutrality
- Reduction in greenhouse gas emissions by 10 per cent by 2018 (based on 2010-11 baseline)

The challenge

In 2002 City of Melbourne adopted an ambitious target of zero net emissions for council operations by 2020. Fast tracking this commitment, City of Melbourne was certified Carbon Neutral for Council operations for the financial year 2011-12 under the Australian Government's National Carbon Offset Standard.

Our challenge now is to continue to lead by example through trialing new technologies and sharing our successes and challenges. For example, we have entered an Energy Performance Contract for 13 of our buildings. For some of our buildings, particularly the heritage listed Melbourne Town Hall; we face considerable difficulties in trying to improve the environmental performance with reasonable payback periods. We have also learnt a lot from building and operating Council House 2, Australia's first new six-star Green Star rated building. The complex technology has required new expertise and time to fine-tune the way it operates. To assist in identifying improvement opportunities, Council House 2 was recently tested under the National Australian Built Environment Rating System (NABERS) scheme, and received a 4 star whole building rating. Council is now implementing changes to improve the performance to its design potential and has allocated the appropriate budget necessary.

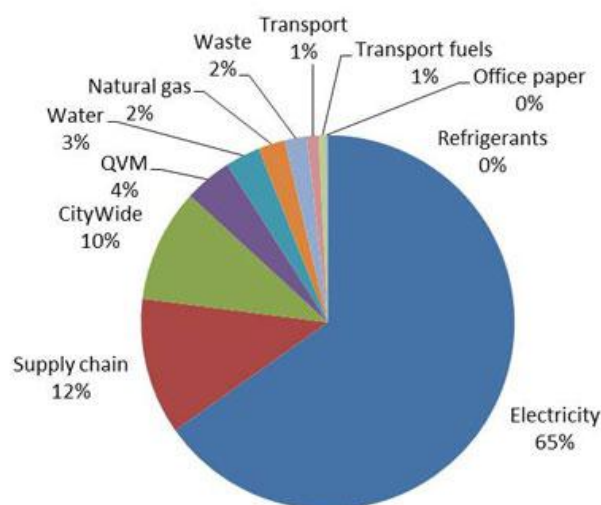
Approach

City of Melbourne will continue to demonstrate leadership in ecological and sustainable practices by reducing electricity and fuel demand, improving energy efficiency and switching to less carbon intensive fuel sources.

In 2011-12, council operations produced 51,996 tonnes of greenhouse gas emissions. By offsetting we have achieved an emissions reduction equivalent to taking over 13,000 cars off the road for one year, or equivalent to planting over 180,000 trees.

We will review and measure the effectiveness of the following emission reducing initiatives annually.

Figure X- Where did City of Melbourne's greenhouse gas emissions come from in 2011-12?



Carbon neutrality

Being carbon neutral means that the net greenhouse gas emissions associated with an organisation's activities, products, services and events, are equal to zero. It is achieved through a combination of measuring and reducing greenhouse gas emissions and purchasing and cancelling of carbon offsets. Zero net emissions and carbon neutral can be used interchangeably.

Carbon offsets are tradeable units that represent abatement of greenhouse gas emissions. Offsets represent the rights to a greenhouse gas reduction, and we retire the carbon offsets we purchase through a registered third party so they cannot be used by anyone else.

City of Melbourne will continue to:**Energy**

- Implement an Energy Performance Contract that includes the retrofit of 13 of the city's largest buildings. This contract, which began in 2010, guarantees emissions savings of 1,560 tonnes CO₂-e (carbon dioxide equivalent) per year and will be achieved through appropriate energy efficiency measures at each site, including the Queen Victoria Market.
- Continue to trial sustainable (energy efficient) street lighting technologies to help develop a city-wide rollout of sustainable street lighting.
- Trial low emissions technologies on council buildings.
- Upgrade existing buildings, as appropriate, to meet current environmental standards. This will include a range of passive energy control methods from insulation and ventilation through to solar hot water and photovoltaic panels.
- Investigate opportunities for precinct energy solutions for council facilities.
- Undertake NABERS ratings for council's largest buildings and make these ratings public.

Corporate travel

- Assess requirements for vehicle use and introduce incentives to change behaviour.
- Investigate new and emerging sustainable vehicle technologies that can be considered for procurement.
- Investigate opportunities to install renewable energy technologies for recharging council's electric vehicles.
- Encourage greater take-up of electric and low emission transport through staff engagement and education.

Waste

- Implement the waste management plan and conduct audits to track progress.

Staff development

- Incentivise staff to reduce paper usage and waste.
- Train staff on council's sustainability commitments and programs and offer specialist training opportunities in how different business areas can contribute.

**Urban Forest**

- Implement City of Melbourne's Urban Forest Strategy to reduce urban heat island effect and therefore decrease cooling requirements for buildings

City of Melbourne will also:**Energy**

- Release an energy reduction plan for our existing buildings outlining our approach for achieving significant emissions reductions. This will include investigating options for office accommodation and fit-outs that optimise energy and space efficiency.
- Develop minimum environmental design standards for new council buildings.
- Release a green information technology plan that explores opportunities to reduce energy used by information technology infrastructure.
- Enhance sustainable buildings knowledge and capacity in City of Melbourne to provide internal and external advice.

Supply chain

- Undertake a review of opportunities to reduce the impacts associated with our supply chain and develop a plan to implement initiatives.
- Require environmental reporting by providers of major impact services and products.
- Increase the number of major contracts for carbon neutral services.
- Ensure all building projects achieve a rating of at least five star Green Star (or equivalent) where 50 percent or more of the building is being renovated.

Subsidiaries

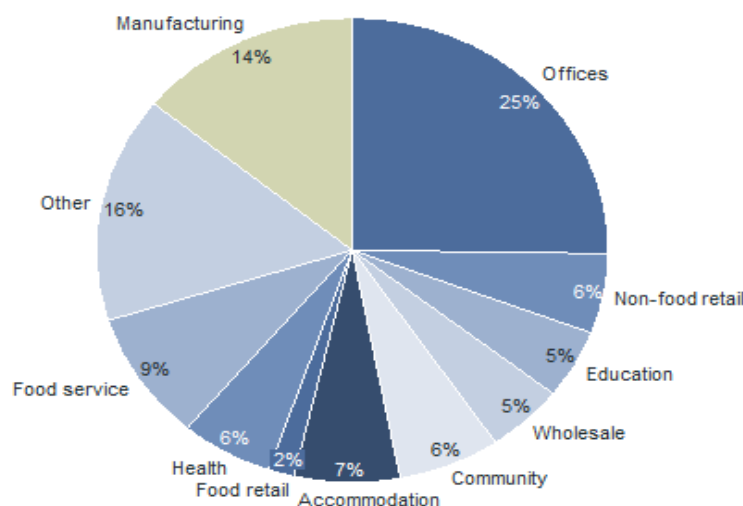
- Work with our wholly owned subsidiary CityWide to implement viable energy, waste and water efficiency opportunities.

Commercial buildings and industry

The commercial building sector offers the largest potential to reduce greenhouse gas emissions. City of Melbourne will work with building owners and managers to implement effective and efficient solutions to reduce emissions.

% of total, 2010-11 estimates

100% = 2,827 ktCO₂e*



*Total estimated emissions in 2010-11 using ClimateWorks model (but CoM's emissions intensity for electricity), which differs slightly from CoM's estimates

Target

Increase the average NABERS, or equivalent, rating of commercial buildings to 4 (which roughly equates to an average increase in energy efficiency of 40 per cent per building) by 2018

The challenge

With over 4.1 million squares of office space, the central city area of Melbourne is the workplace destination of almost 400,000 people each weekday.

Seventy-two per cent of the opportunities identified through the ClimateWorks analysis are for commercial buildings. This equates to around 1.6 million tonnes of emissions reduction and around \$108 million tonnes of annual energy cost saving per year by 2020. Based on this analysis the average cost of retrofitting commercial buildings is paid back in less than four years.

Many lower cost energy efficiency measures have already been implemented in commercial buildings owned by institutional investors, and private building owners are making progress at a reasonable rate. Barriers to action include access to suitable finance, conflicting priorities, disruption to tenants, lack of expertise and skills gaps. Another barrier is split incentives, which arise when owners lack motivation to implement energy saving upgrades because the tenants pay the energy bills.

SERVICES	TARGET AUDIENCE			APPROACH	
	BUILDING TENANT (BUSINESS)	BUILDING OWNER (INSTITUTION/ INDIVIDUAL)	GOVERNMENT	INFO/RESOURCE	FINANCE
INFORMATION RESOURCES					
1200 Buildings 		✓	✓	✓	✓ \$
City Switch 	✓				
Sustainable Melbourne Fund 	✓	✓		✓	✓ \$
Greener Government Buildings (Victorian Government)			✓		
Energy Saver Incentive Scheme (Victorian Energy Efficiency Target)	✓	✓			✓ \$
Smarter Resources, Smarter Business Program (SV)		✓		✓	✓ \$
Carbon Compass				✓	
National Carbon Offset Standard (Carbon Neutral Standard)			✓		
REPORTING MECHANISM					
Commercial Building Disclosure (>2000m ²)	✓	✓	✓		
Energy Efficiency in Government Operations			✓		
NGERS		✓	✓		
Energy Efficiency Opportunities					

KEY

\$ Finance incentive

Ⓢ Finance available

Proposed approach

Over the next four years City of Melbourne will showcase the potential to create positive energy buildings. We will facilitate opportunities to drive efficiency outcomes through the design, construction and performance of buildings. We will also facilitate ways to overcome the barriers currently preventing action to achieve high performing commercial buildings.

City of Melbourne will continue to:

- Engage existing networks for Melburnian's to share ideas on sustainable building solutions.

New buildings

- Identify channels to engage with developers and building designers in the early stages of new projects.
- Implement the Energy, Water and Waste Efficiency Planning Policy to apply specific industry-recognised standards in new buildings.

Building owners

Implement and enhance the 1200 Buildings program that aims to encourage the environmental retrofit of the municipality's commercial building stock. The program will:

- Include more one-on-one engagement with private building owners.
- Promote 'positive energy buildings'.
- Focus on heating, ventilation and air conditioning information.
- Develop information and advice tailored to hotels and large retailers.
- Deliver a cool roofs education program to minimise heat absorption and help reduce the urban heat island effect.
- Explore an expansion of existing finance mechanisms offered to building owners.
- Communicate building environmental performance with government and the private sector.
- Work with Victorian and Australian governments to accelerate inclusion of green building standards into building codes and planning mechanisms.
- Support the financing of commercial building retrofits by providing Environmental Upgrade Agreement financing, administered by the Sustainable Melbourne Fund.

Tenants

- Extend the CitySwitch program that helps commercial office tenants to improve energy efficiency through:
 - Carrying out education on energy efficient appliances and addressing barriers to upgrades.
 - Including resource recovery in office and building advice and support.
 - Creating a targeted program for new tenants.
 - Developing a cost effective model for walk-through energy advice services.

City of Melbourne will also:

- Expand City of Melbourne's business platforms to include resources and services that support hospitality and retail tenants.
- Through the implementation of our Retail and Hospitality Strategy, work with businesses to:
 - Increase sustainable procurement, amenity of waste collection and resource recovery.
 - Support energy efficient practices and a switch to sustainable energy sources.
 - Promote successes around environmental sustainability.
 - Develop options for improving freight efficiency in the central city.

City of Melbourne will also undertake research to:

- Enhance our understanding of the interests and influences of commercial building facilities managers and tenants.
- Update understanding of energy efficiency drivers and barriers for building owners and tenants.
- Explore incentives for improved environmental performance of office buildings.
- Gauge building retrofit activity and economic benefits.

What others will do:

- Victorian Government will deliver the Greener Government Buildings Program
- The Victorian Energy Efficiency Target (VEET) scheme, promoted as the Energy Saver Incentive, will encourage the uptake of energy efficiency improvements in residential, business and other non-residential sectors.

- Sustainability Victoria will assist businesses to make demonstrable energy and material savings and to change inefficient practices through the Smarter Resources Smarter Business program.
- The Green Building Council of Australia will continue to rate, educate and advocate for the transformation of the built environment to more sustainable practices. With the release of the Green Star – Performance, the Green Star suite of rating tools will be expanded to address buildings in operation as well as the design and construction of buildings.
- The Energy Efficiency Council will implement the Integrated Energy Efficiency Retrofit Accreditation Scheme.
- The Australian Sustainable Built Environment Council will advocate for tax incentives for energy efficient building retrofits and a national white certificate scheme.
- Private building owners will showcase positive energy building examples.
- RMIT and University of Melbourne will implement leading renewal and retrofit works including the Greener Government Buildings Initiative.
- Public and private developers in Carlton will measure precinct performance using the Green Star Performance and One Planet Living Tools.

What else needs to happen:

- More regulation and market mechanisms to overcome split incentives for new build, shared spaces and common property building retrofits.
- Energy efficient performance levels for existing commercial buildings to be mandated.
- NABERS to be mandatory for shared spaces and common property of smaller city commercial buildings, including reviews every two years.
- Government legislation that enables Victorian councils to deliver Environmental Upgrade Agreements that provide access to finance for building retrofits.
- An expansion of the Energy Saver Incentive Scheme to include large sites and also accredit heating, ventilation and cooling technologies.
- Energy efficiency actions in existing buildings to be mandated.
- An expansion of the Commercial Building Disclosure Program to require disclosure by more sites.

Residential buildings

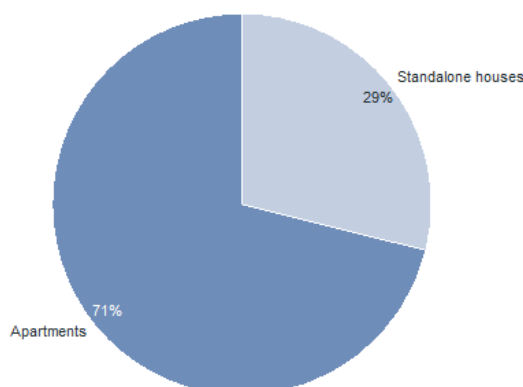
As the city's population and urban density grows rapidly, City of Melbourne will seek cost effective and efficient solutions to help reduce emissions in residential buildings across the municipality.

Targets

- City of Melbourne will establish a baseline and develop a long term target in the first year of the implementation plan

% of total, 2010-11 estimates

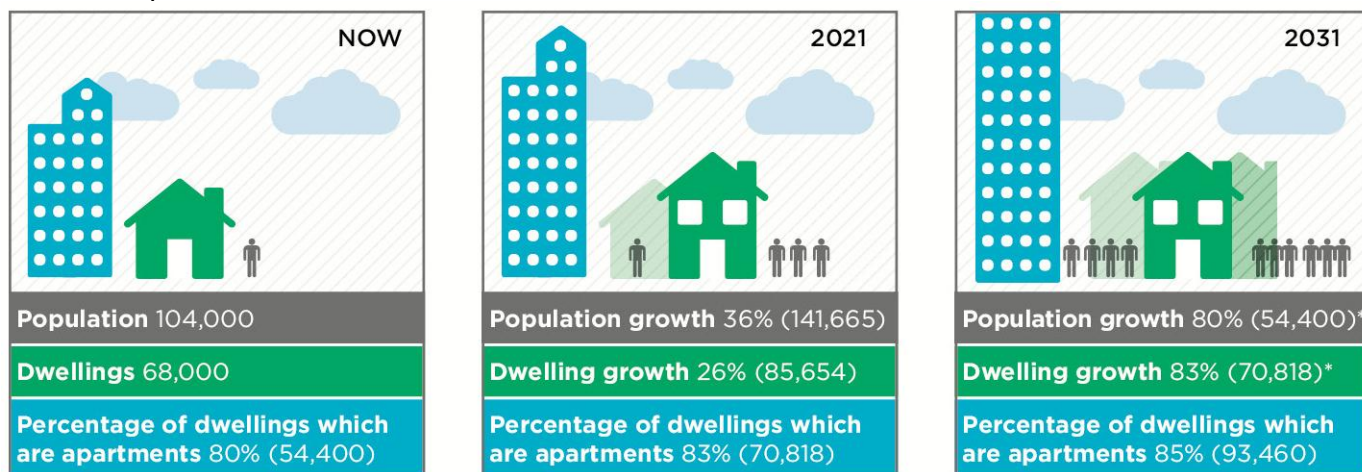
100% = 620 ktCO₂e*



*Total estimated emissions in 2010-11 using ClimateWorks model (but CoM's emissions intensity for electricity), which differs slightly from CoM's estimates

The case for action

High-rise apartments have been shown to be the most energy intensive dwelling type, due in large part to the energy consumption of shared services and common property such as hallway and car park lighting, ventilation and pool and heating pumps. A key challenge is to achieve the largest reduction in emissions for the least cost by encouraging energy efficient retrofits in apartment building common areas as well as within the apartments themselves.



*BASED ON 2012 BASELINE

The challenge

The environmental performance of many new homes built in the municipality of Melbourne has significant room for improvement, most notably in the high-rise apartment sector.

Making change within an apartment building's owners corporation can be complex and each building is unique in its physical and human elements. Apartment residents, managers and owners need tailored assistance and long lead times to create change. High upfront costs and limited access to finance for

retrofits can also impede change as well as overcoming a split incentive between property owners and tenants.

Proposed approach

City of Melbourne will bring together multiple parties to develop convenient, affordable and accessible solutions for reducing emissions from people's homes.

City of Melbourne will continue to:

- Implement the Energy, Water and Waste Efficiency Planning Policy to apply specific industry-recognised standards in new buildings.
- Support the implementation of Smart Blocks, a national program helping apartment owners and their managers to improve the energy efficiency of common property in apartment buildings.
- Promote programs such as Positive Charge, a not-for-profit service, which partners with local councils to provide expert advice to help both residents and businesses save energy. The service also offers access to discounted energy saving products, such as solar, LED lighting and insulation.
- Lead by example with flagship sustainable redevelopments such as the Docklands Library and Queen Victoria Market.

City of Melbourne will also:

- Explore incentives for the improved environmental performance of residential buildings.
- Develop communication strategies for residents and owners on the benefits of environmental retrofits.
- Embed waste management and resource recovery in our engagement programs for building owners and tenants.

Research

- Conduct apartment building research to assist the development of tools, like NABERS, to rate a building's environmental performance.
- Perform market research to identify opportunities to improve our sustainability services.

What others will do:

- Real estate agents will develop a training program on sustainability in buildings.
- The Sustainable Melbourne fund will provide attractive financing to owners corporations to implement environmental improvements.
- Strata Community Australia and partners will evolve Smart Blocks to become commercially viable and more accessible.

What else needs to happen:

- Amendments to legislation to incentivise owners corporations to support environmental initiatives.
- Development of a NABERS rating tool for apartment buildings.
- Australian Government to implement a scheme mandating ratings for large residential buildings.
- Improvements to Australian building codes to ensure all new construction meets a high standard.
- Development of a business case for consumer-led high-rise construction.
- Increased rebates for environmental products, including lighting.
- Development of solutions to overcome financial barriers to tenant investment in environmental retrofits.
- Residential owners corporation template rules to be developed with Consumer Affairs Victoria to support best practice energy efficiency.
- Improvements to the minimum sustainability standards in the building code.

Stationary energy supply

Into the future, Melbourne will utilise energy from low carbon sources, increase use of renewable energy and adopt new approaches to obtaining energy.

Target

25% of energy sourced from low emissions sources by 2018

The challenge

To become a zero net emissions city the carbon intensity of our electricity supply must be substantially decreased. The Victorian electricity grid currently provides electricity, primarily sourced from brown coal, to Melbourne's businesses and households. Victoria's grid supply is the most emissions intensive in Australia.

Low carbon energy source:
Energy obtained from a source that has lower carbon intensity than that of the Australia electricity grid.

Energy sources with the lowest emissions intensity- renewable energy sources- are prioritised.

Research has shown that the municipality of Melbourne can achieve reductions by changing supply sources. By switching 25 per cent of our current grid supplied electricity to low or zero emissions energy sources we could achieve a 10 per cent emissions reduction. While we have set an objective to obtain 25% of our energy from renewable sources by 2018, we are committed to working with key partners to drive transformational change to our stationary energy supply up until 2018 and beyond.

Challenges impacting the uptake of environmentally friendly approaches to our stationary energy supply include substantial uncertainty around the future economics including the price of carbon, natural gas and grid energy. Key barriers to adopting innovative energy solutions include the installation and capital costs of infrastructure and regulatory frameworks, including selling electricity across property boundaries.

Distributed generation of energy ensures a more resilient and diversified system. In many circumstances, developing energy from low emissions sources for a district is more efficient than producing energy for a single building. District energy solutions will be part of Melbourne's journey to becoming a zero net emissions city.

Distributed generation:
Energy obtained from a collection of local sources that can provide lower environmental impacts than a distant centralised facility.

Proposed approach

City of Melbourne will bring together multiple parties to develop solutions to barriers. Below are the actions that need to be undertaken to help make Melbourne a zero net emissions city.

The electricity grid

What others will do:

- Australia's Renewable Energy Target of 20 per cent by 2020 will drive Victoria's grid electricity to include more renewable energy.
- Not-for-profit groups will continue to advocate for the closure of coal-fired power stations and the creation of renewable energy plants.

What else needs to happen:

- Reduced Victorian reliance on brown coal as the primary source of emissions through increased power plant efficiency and retirement of inefficient plants.
- Increased use of smart grids that use information technology to collect data on electricity use and supply in order to improve the efficiency of production and distribution.
- Improvements to the electricity grid to enable greater distributed generation capacity.

Renewable energy

City of Melbourne will deliver a solar program that will:

- Promote solutions for commercial and residential solar that increase accessibility and affordability.
- Provide guidance about navigating planning requirements for solar installation.
- Explore financial models to encourage uptake of solar.

- Facilitate community-owned solar projects on large commercial or institutional roofs.

What else needs to happen:

- Removal of regulatory and process barriers for connecting renewable energy to the grid.
- Decreased cost of renewable energy to allow large-scale installations on commercial buildings.
- Revision of the planning scheme to simplify the approval process for installations.

District or distributed energy solutions

City of Melbourne will continue to:

- Develop an energy map that outlines the municipality's current usage and identifies opportunities for increased efficiency, distributed renewable and district energy systems.

City of Melbourne will also:

- Develop and promote case studies on best practice for Melbourne businesses.
- In partnership with key players, facilitate communication within the energy sector about how to overcome barriers to increased use of renewable energy and decentralised supply.

What others will do:

- The Energy Efficiency Council will implement the Integrated Energy Efficiency Retrofit Accreditation Scheme.
- Energy services companies will explore the opportunity for delivering district energy solutions.

What else needs to happen:

- A review of building rating schemes to encourage cogeneration, district and distributed energy solutions.
- Property developers and building owners need to explore district energy solutions.
- Development of financial and regulatory incentives for district energy.
- Removal of barriers preventing electricity being sold across property boundaries.
- Regulations need to evolve to align with the new ways we use and source energy.

District energy is a system for distributing energy (usually heat) generated in a centralised location for residential and commercial requirements such as space heating and water heating.

Supporting new technologies

City of Melbourne will continue to:

- Facilitate relationships between institutions to co-create and develop low carbon solutions.

City of Melbourne will also:

- Develop and promote case studies on innovative new technologies.
- Facilitate peer-to-peer learning and collaboration between different stakeholders on projects.
- Work with others to support research into and development of innovative clean energy solutions.

Transport and freight

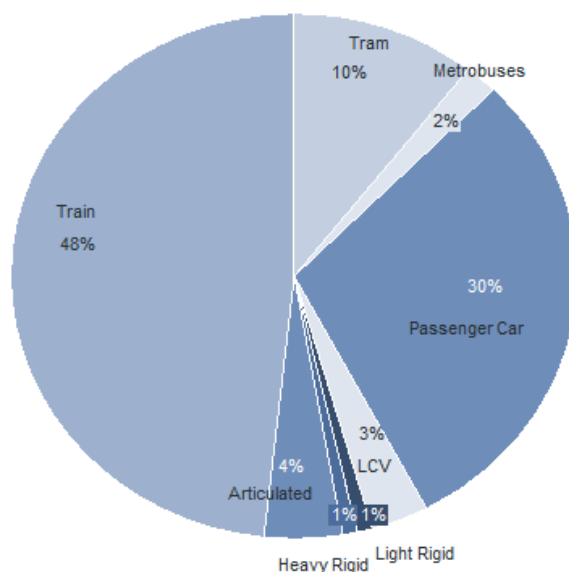
Into the future, Melbourne will have a well-designed, energy efficient freight and transport system that encourages walking and cycling as predominant local modes of inner urban travel.

Targets

Increase the percentage of all trips to and from Melbourne using low emissions transport from 51% in 2009 to 60% by 2018

% of total, 2010-11 estimates

100% = 921 ktCO₂e



The challenge

Melbourne is Victoria's transport hub with over 800,000 people traveling to and around the central city area each day. Making our transport more environmentally sustainable is an important step towards zero net emissions.

Increasing the number of people using public transport is also vital to reducing the municipality's greenhouse gas emissions. Concerns about reliability, safety and the comfort of public transport are key barriers to be addressed.

Encouraging the uptake of new vehicles with improved environmental performance is another challenge, with research revealing that many vehicle purchasers often prioritise characteristics such as size and appearance over energy efficiency.

Improvements to air quality and reduced traffic congestion along with the associated health benefits of walking and cycling are key incentives for changing the way Melburnians currently use transport.

Melbourne is Victoria's transport hub

Over 800,000 people travel to and around the central Melbourne city area each day

Proposed approach

City of Melbourne will bring together multiple parties to develop solutions enabling people to move easily, safely and comfortably using environmentally sustainable transport, and to ensure the city's private transport network complements the public system.

As part of our Transport Strategy 2012 City of Melbourne will continue to:
Improve infrastructure

- Roll out green asphalt for road and footpath construction and investigate other sustainable options.
- Develop policies giving pedestrians priority in central city areas.
- Upgrade the cycling network in the central city including continuing to build separated bike lanes to increase the share of cycling transport.

City of Melbourne will also:

Improve infrastructure

- Develop a Walking Plan to improve the municipality's walking environment to and around current and future train, tram and bus stations and stops.

Improve freight practices

- Create incentives for Melburnians to grow, eat and consume locally in line with our Food Policy.
- Work with others to develop options for improving freight efficiency in the central city area.
- Encourage low emissions delivery systems.

Support community

- Partner with others to educate the community on the benefits of choosing sustainable transport.
- Develop and promote vehicle-sharing initiatives.

Research

- Undertake research to better quantify and understand emissions associated with freight transport.
- Enhance the evidence base on optimum transport/movement approaches in growth areas to minimise greenhouse gas emissions.

What others will do:

- The Victorian Government will prioritise increasing the capacity for more rail trips into the central city area by constructing the Melbourne Metro line.
- The Victorian Government will work to implement the findings from its electric vehicle trial.
- Metro Trains will continue to investigate energy efficiency opportunities to reduce emissions in the operation of the rail network.

What else needs to happen:

- Public transport to be operated using renewable or no emissions energy sources.
- Preferential treatment to be given to low emissions taxis, cars and freight vehicles.
- Freight industry to transition to low emissions vehicles and fuels systems.
- Goods to be sourced from local producers where appropriate to minimise freight travel distance.



Waste management

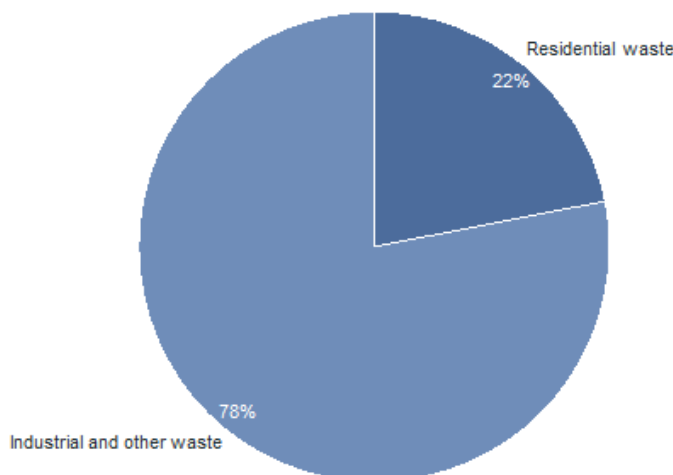
The municipality of Melbourne will produce around 569 tonnes of waste in 2020 - 134 million tonnes more than the city produces today. To achieve zero net emissions we must minimise waste through careful planning and innovation.

Targets

- Decrease waste to landfill by 5 per cent by 2018
- City of Melbourne to trial seven precinct waste solutions by 2018

% of total, 2010-11 estimates

100% = 137 ktCO₂e



The challenge

Over 80 per cent of the municipality's waste comes from the commercial and industrial sector, with the remainder from households. When waste with any organic composition is sent to landfill, it creates methane emissions for decades as the material decomposes.

Commercial waste is a major challenge as its collection in the city is highly fragmented, with around 40 private businesses operating alongside municipal services. There is a significant lack of recycling and organic waste recovery as well as widespread illegal dumping practices.

In high-density living, separating waste to enable recycling by residents is difficult due to inconvenient access to recycling bins compared with garbage disposal facilities.

Proposed approach

City of Melbourne will work with businesses, residents, government and the waste management sector to address the challenges of efficient waste management.

City of Melbourne has already made improvements to commercial waste management collection and disposal through its precinct-based programs. These include the use of waste compactors, the Degraeves Street Shared Recycling Facility and the Love your Laneway Project.

City of Melbourne will continue to:

Waste generation

- Work in partnership with the government and businesses to enhance measurement and reporting of sustainable procurement, waste generation, composition and resource recovery trends.

Waste separation and collection

- Trial local precinct solutions that improve resource recovery through behaviour change and technology.
- Explore more efficient waste collection approaches.

- Improve waste separation and collection within council operations.
- Work with high-rise apartments to provide appropriate on site recycling and waste management facilities.
- Collaborate with government and business to encourage the establishment of more efficient waste collection systems for new and redevelopment areas.

Waste treatment

- Trial waste treatment technologies within local precincts and showcase alternatives.

City of Melbourne will also:

Waste generation

- Implement waste reduction behaviour change programs targeting residents and the commercial sector.
- Increase support to programs that reduce the amount of waste going to landfill and improve commercial recycling rates.

Waste separation and collection

- Trial incentive programs to improve residential recycling rates.
- Identify optimum waste separation methodologies for residential and commercial sectors.

Waste treatment

- Work with the Metropolitan Waste Management Group, councils, developers and building owners to develop alternatives to landfill disposal.

Research

- Research options to address commercial waste streams with no current recycling infrastructure available (for example office and retail tenancy fit-outs).
- Research the greenhouse impacts of different waste separation and treatment approaches for residential and commercial sectors.

What others will do:

Waste generation

The Victorian Government has released *Getting Full Value: the Victorian Waste and Resource Recovery Policy*, which sets a vision and approach to position Victoria as a national leader in resource recovery. The policy's vision is an integrated, statewide waste management and resource recovery system that provides an essential community service by protecting the environment and public health, maximising the productive value of resources and minimising long terms costs to households, industry and government. The policy sets 6 key goals for Victoria:

- Assist Victorians to reduce the waste they generate and save Victorian's money through efficient use of resources.
- Facilitate strong markets for recovered resources.
- Facilitate a Victorian waste and resource recovery system that maximises the economic value of waste.
- Reduce the environmental and public health impacts of waste.
- Reduce illegal dumping and littering.
- Reform and strengthen the way institutions work and are governed to effectively implement government policy.

What else needs to happen:

Waste generation

- Financial markets need to develop, resulting in all materials being recycled or reclaimed, and no waste being sent to landfill.
- Products need to be designed for reuse and recycling.

Waste collection

- Low emissions collection systems to be developed for existing and new developments.
- Organic waste to sewer to be further explored as an alternative to sending organic waste to landfill.
- Victorian Government to ban unprocessed organic waste being used as landfill.

Waste treatment

- Innovative technologies to treat waste need to be identified and adopted on an ongoing basis.

