CITIES POWER PARTNERSHIP

Clean jobs for communities

How local governments can create sustainable, strong economies

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Cover image: Dubbo Regional Council

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This report relies on information provided by Cities Power Partnership member councils. While efforts have been made to verify this information where possible, we cannot guarantee its accuracy in every instance. All queries regarding individual projects should be directed to the relevant local government.

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Cities Power Partnership

The Cities Power Partnership is a national climate action program that is supporting local governments and communities all across Australia transition to net zero emissions.

It is Australia's largest network of cities and towns tackling climate change, with over 135 partner councils that represent almost half of the Australian population.

The Cities Power Partnership is made up of councils of all shapes and sizes - from small regional towns to large cities. When councils sign up to the program, they pledge five actions to tackle climate change locally, from ramping up renewable energy through to planning sustainable transport systems.

In just three years, partner councils have committed to over 525 climate and energy pledges. Some of the innovative projects councils are taking part in include transitioning council fleets to electric vehicles, installing solar battery systems in thousands of homes and businesses, and even spearheading Australia's first carbon-neutral kindergarten.

Local governments are leading the local climate revolution and taking their communities with them.

> "A fantastic program for councils to be a part of. Having a reliable source of information available for those who need it is very valuable and key to accelerating Australia's local energy transition."
>
> City of Newcastle, NSW

> "Participating in the Cities Power Partnership, combined with being on-track to reach our 2020 target has raised councillor and staff awareness of important emissions reduction projects. Ongoing support through the program is incredibly vital to maintaining Council's momentum and meaningful action on climate."
>
> Cairns Regional Council, QLD

Visit citiespowerpartnership.org.au to sign up and be part of the revolution.

Contents

Foreword

As Australia faces twin climate and health crises, towns and cities of all shapes and sizes have a crucial role to play in investing in initiatives that create jobs and set communities up for the future by tackling long-term problems like climate change.

Local governments have long been energy and climate trailblazers. They are surging ahead with emissions reduction plans, switching to cleaner energy and building greener, efficient and more resilient communities. Towns and cities can shape how land is used, investments are made and millions of dollars worth of renewable energy infrastructure is rolled out. They can influence how new homes and businesses are built, determine the ways in which hundreds of thousands of residents will travel each day and band together to lobby for much needed state and federal policy change.

Transforming the way cities use and generate energy alone has the potential to deliver 70 percent of the total emissions reductions needed to stay on track for the 2 degrees limit set under the Paris Agreement (IEA 2016).

As the country looks to recover from COVID-19, this report shows how local governments can deliver and advocate for opportunities to ensure an economic recovery that empowers communities and creates a sustainable and prosperous future.

Creating clean, local jobs: top opportunities for councils

Local governments can accelerate solutions to put Australians back to work quickly while tackling long term challenges like climate change through these top opportunities:

1.
Drive **renewable energy and storage** within councils and communities to lower power bills and increase energy independence and resilience.

Sunshine Coast Solar Farm
Sunshine Coast Regional Council (QLD)

The 15MW Sunshine Coast Solar Farm is providing enough energy to meet Council's entire electricity demand every year, including administration buildings, aquatic centres and sporting facilities, libraries and other public buildings. The facility is expected to deliver Council net savings of over $22 million over a 30-year period.[1]

2.
Accelerate, and advocate for, **sustainable transport** to future proof cities and connect communities and regions.

Fifteenth Avenue Smart Transit Corridor
Liverpool City Council (NSW)

Fifteenth Avenue Smart Transit (FAST) Corridor is a visionary city-shaping project to deliver a sustainable public transport link between the Liverpool CBD and Western Sydney International Airport. High quality public and active transport options (like trackless trams) are critical for commuters, residents and airport visitors and the FAST Corridor will play a key role in the sustainable growth of the Liverpool LGA.[2]

3.
Roll out **energy efficiency** measures within council and the community to create jobs, reduce energy costs and create more comfortable homes and workplaces.

LED Street Light Project
Orange City Council (NSW)

Since December 2019, most streetlights in Orange have been replaced with energy efficient LEDs, and the savings in electricity and greenhouse emissions are already proving substantial with up to 50 percent energy savings and an expected $500,000 savings every year.[3]

4.
Increase **revegetation and urban greening,** as well as undertake ecosystem restoration to maintain unique biodiversity, clean air and water and healthy communities.

Greening Onkaparinga
City of Onkaparinga (SA)

Over 35,000 trees have been planted in streets, parks and waterways since 2017 as part of Onkaparinga's accelerated greening program, which aims to plant 100,000 trees on council land. Council's ambitious targets for tree planting are inspired by mapping of urban tree canopy and heat impacts, as well as a desire to increase habitat for wildlife. By 2045, there will be a 20 per cent increase in both canopy cover and urban green cover, supporting 8 jobs every year.[4]

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1   Sunshine Coast Regional Council, 2020
2   Liverpool City Council, 2020
3   Orange City Council, 2020
4   City of Onkaparinga, 2020

5. Integrate **circular economy** principles across council to close the loop on resource use, such as enhancing organic waste collection and processing, to create jobs and cut carbon emissions.

Your Waste – Got it Sorted?
Wagga Wagga City Council (NSW)

To reduce emissions, save money and cut waste to landfill, Wagga Wagga City Council introduced a food organics and garden organics collection as part of its three bin kerbside waste service. In its first two years, 20,268 tonnes of food and garden waste was diverted from landfill and over $2M was saved in landfill costs.[5] The program also supported 32 jobs in the construction period and provides 7 ongoing jobs.

6. **Support local businesses** to be more sustainable through opportunities like increasing the uptake of renewable energy, aiding energy efficiency upgrades and waste management support.

Sustainability Incentives Scheme (SIS)
City of Adelaide (SA)

The SIS provides financial rebates to the community to support adoption of sustainable technologies and actions that improve environmental performance. Since 2015, the Scheme has leveraged $8.35 for every $1 spent through rebates. During this time, the Scheme provided rebates for 106 energy storage and 302 solar PV systems.[6]

7. Actively **engage communities** to provide a clear understanding of the importance and benefits of taking action on climate.

Whitsunday Climate Change Innovation Hub
Whitsunday Regional Council (QLD)

The Whitsundays Regional Council established the Whitsundays Climate Change Innovation Hub (The Hub) in late 2018 to advance Council's ability to better respond to the various challenges posed by climate change and build resilience. Lessons learned, information gathered, and techniques developed will be disseminated to other local communities nationally and globally.[7]

8. **Prioritise local businesses, skills and supplies** for new or ongoing projects and ensure sustainability is at the core of council purchasing.

Melbourne Renewable Energy Project (MREP)
City of Melbourne (VIC)

The City of Melbourne partnered with 13 organisations (local governments, cultural institutions, universities and corporates) to secure a 10 year renewable Power Purchase Agreement which supported the construction of an 80 MW wind farm in regional Crowlands, VIC. Part of the evaluation criteria included a preference for using local goods and services, which saw the Crowlands wind farm construction deliver significant economic development for the region, including almost 150 local jobs.[8]

5   Wagga Wagga City Council, 2020
6   City of Adelaide, 2020
7   Whitsunday Regional Council, 2020
8   City of Melbourne

Introduction

As Australia, and the world, struggles with the shock of the global pandemic, economic recovery is at the forefront of discussions. Governments of all tiers are working on initiatives to provide much-needed stimulus to the economy.

Strong federal and state policy and investment is required to kick-start the economy, however local governments play a critical role in implementing on the ground policies and action. As the tier of government closest to the community, local governments have the opportunity to lead their communities towards a future that puts Australians back to work and addresses long-term issues like climate change.

Leading economic analysis in the Climate Council's Clean Jobs Plan identified 12 major state policy opportunities to immediately kick-start economic growth.[9] These opportunities represent over 76,000 jobs which can start right now and continue over a three-year period. The analysis doesn't identify every potential job that could be created. Instead, it focuses on the regions that are in the most need of job creation and economic growth. All of these opportunities are shovel ready and have the potential to grow the national economy in the years to come.

Analysis reveals that the Clean Jobs Plan is as cost-effective as, or better than, similar Australian economic recovery programs. The Clean Jobs Plan is also highly focused on maximising the value of public investment. Most of the 12 options identified in the Plan offer significant opportunities to leverage private investment for the Australian economy and were found to be highly efficient job creators due to their labour intensity. Investment in pilot-scale renewable hydrogen facilities would unlock $4 of private finance for every dollar of public investment; utility-scale renewable energy

unlocks $3 for every dollar invested; and investing in electric vehicle infrastructure, improving the collection and processing of organic waste, and community scale energy and storage, would all unlock $2 for every dollar invested.

Many of the opportunities identified in the Clean Jobs Plan can be delivered by local governments, and trailblazing councils are already reaping the benefits. Showcasing over 40 on-the-ground local government case studies, this report demonstrates how councils can create strong, clean economies by rolling out the opportunities like those found in the Clean Jobs Plan.

By focusing on clean policy measures, local governments can build modern, resilient electricity systems, develop new industries and restore and protect Australia's unique landscapes. This protects all of us from climate change, while investing in the growth industries of the future. Australia's experience with the COVID-19 pandemic has shown that we can work together, follow expert advice and take decisive action to keep the virus contained. We must apply this same rigour to other pressing issues and introduce smart, clean stimulus measures to kick-start the economy, create jobs and tackle climate change.

If you'd like to contact any of the owners of projects listed in this report, please email cpp@climatecouncil.org.au and we can put you in touch.

Choosing the right economic recovery initiatives for your community

Selecting economic recovery initiatives requires careful consideration, and every local government area is presented with different opportunities, barriers and strengths which must be taken into account. The following criteria was applied by AlphaBeta when selecting policy options for the Climate Council's Clean Jobs Plan. The same criteria can be applied by councils to deliver an effective stimulus program to set communities up for a resilient economic recovery.

3 key criteria

High impact

Does it maximise the jobs created per dollar invested?

Does it add investment to the economy?

Does it leverage funding from the private sector?

Targeted

Are jobs being targeted at the right industries and occupations?

Are jobs being targeted at the right regions?

Timely

Can the program be scaled rapidly for immediate job creation?

Does the program create jobs in the medium and long term?

High Impact Measures for a Clean Economy

Clean Energy

Utility Scale Renewable Energy
> Install **large-scale wind and solar** generation facilities
> Enter **Power Purchase Agreements**

Community-scale Grid Systems
> Drive **community energy**
> Develop **microgrids**
> Install **solar and battery storage** on council and community buildings
> Facilitate residential and business **solar and battery storage** installation

Renewable Hydrogen
> Pilot local production of **renewable hydrogen**

Restored Ecosystems

Ecosystem Restoration
> Restore **wetland and/or forest ecosystems**
> Improve **land-use change** practices

Organic Waste Management
> Expand collection of **food and organic waste**
> Build **organic waste processing facility** or increase capacity of current facility
> Create **behaviour change** and/or education programs for resident and business organic waste management

Urban and Peri-Urban Gardens
> Increase **urban tree canopy cover**
> Increase **urban food production**

Source: AlphaBeta and Climate Council, 2020
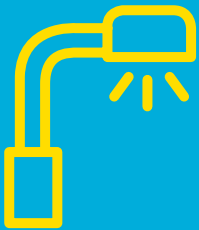
Cleaner Cities

Public and Active Transport
> Increase and improve **cycling infrastructure**
> Build **walkways** and increase **pedestrian urban zones**
> Increase frequency or capacity of existing **public transport**

Public Building Retrofitting
> Increase **efficiency of council-owned buildings** and **community infrastructure**

Residential and Business Retrofitting
> Facilitate **residential and business efficiency retrofits**

Electric Vehicle Charging Network
> Implement **electric vehicle charging infrastructure**
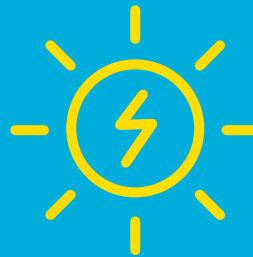
Cleaner Futures

Research
> Fund **research and development** for carbon abatement initiatives
> Provide **support and resources** for climate startups

Education and Training
> Provide **training and education** for a zero-emissions economy

Clean Energy

The clean energy transition presents tremendous opportunities for local investment and job creation while contributing to healthier communities. Local governments can drive this transition through both large and small projects that deliver benefits to local businesses, communities and councils.

17,500 jobs
can be created through clean energy initiatives.

Clean Jobs Plan
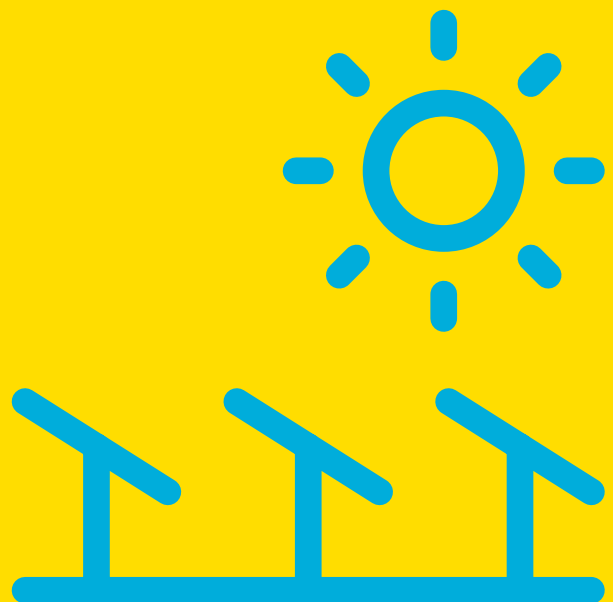
Utility Scale Renewable Energy Generation

The Clean Jobs Plan found installing utility-scale renewable energy can create 15,000 jobs nationwide, and there are many ways local governments can accelerate these projects, including:

> Using purchasing power to support investment in new generation capacity while reducing operational costs and delivering local economic benefits.

> Building council-owned generation facilities or purchasing renewable energy with minimal upfront costs through long-term power purchase agreements.

> Driving development of large-scale renewables by facilitating a speedy approval process and collaborating through the lease of public land to new projects.

> Creating a supportive investment environment by advocating at the state and federal level for greater policy and infrastructure certainty, including the development of Renewable Energy Zones.

15,000 jobs.

Clean Jobs Plan
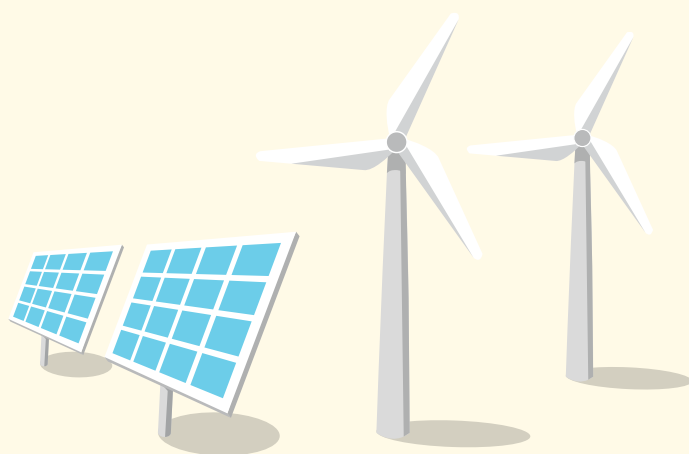
Install large-scale wind and solar generation facilities

Sunshine Coast Solar Farm
Sunshine Coast Regional Council (QLD)

Council will save $22M over 30 years.

Sunshine Coast Council is the first local government in Australia to offset all electricity consumed by its facilities and operations, using renewable electricity generated by its own utility scale solar farm. The 15MW Sunshine Coast Solar Farm is providing annual output sufficient to meet Council's entire electricity demand, including administration buildings, aquatic centres and sporting facilities, libraries and other public buildings. The facility is expected to deliver Council net savings of over $22 million over a 30-year period.[10]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
July 2017	$48M	$20M over 30 yrs	5 yrs	Construction: 100 direct, 60 indirect Ongoing: 4 direct, 6 indirect	Operational

Cost Savings		Carbon Savings	
$2.3M (Jul 2017 to Aug 2020)		69,500 tCO_2-e (Jul 2017 to Aug 2020)	

Source: Sunshine Coast Regional Council 2020.

Install large-scale wind and solar generation facilities

GV Link Solar Project
Greater Shepparton City Council (VIC)

Greater Shepparton City Council has entered a 25 year lease that will enable the transformation of Council-owned land into a $40 million large-scale solar farm. The GVCE Mooroopna Solar Farm is a joint venture between local non-profit social enterprise GV Community Energy (GVCE) and international renewable energy company Akuo Energy. The 20MW solar farm is expected to generate around 39,200 MWh each year, equivalent to the consumption of around 10,100 Victorian households. Direct investment in the project will contribute around $32 million to the Victorian economy with around 100 local jobs created during construction.[11]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
Estimated 2022	$40M	n/a	2-3 yrs from lease agreement	Construction: 100 direct Ongoing: TBD	Approved, Pre-Construction

Cost Savings			Carbon Savings		
TBD			42,340 tCO_2-e per year (over 25 years)		

Source: Greater Shepparton City Council, 2020

The project will contribute around $32M to the Victorian economy and create 100 local jobs during construction.

Enter Power Purchase Agreements

100 Percent Renewable Electricity Deal
City of Sydney (NSW)

The project supported 350 construction jobs and 300 ongoing jobs.

All of the City of Sydney's operations – including street lights, pools, sports fields, depots, buildings and the historic Sydney Town Hall – are now run on 100 percent renewable electricity sourced from regional NSW. This is possible thanks to a Power Purchase Agreement (PPA) to source electricity from three different generators; Sapphire Wind Farm near Inverell, Bomen Solar Farm near Wagga Wagga and Repower Shoalhaven outside Nowra. The ten-year agreement will benefit Council by providing long-term price certainty and substantially reducing operational greenhouse gas emissions. It is also supporting regional jobs and investment by enabling the construction of new renewable energy projects, including a community operated project.[12]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
Plans endorsed by Council in October 2019	None	n/a	10 months	Construction: 350 Ongoing: 300	Approved, Pre-Construction

Cost Savings			Carbon Savings		
$500,000 over the 10 year contract period, based on current electricity rates			200,000 tCO_2-e over the 10 year contract period (20,000 tCO_2-e per year)		

Source: City of Sydney, 2020

Image: Zequn Gui

Image: Felix Fuchs

Enter Power Purchase Agreements

Melbourne Renewable Energy Project (MREP)
City of Melbourne (VIC)

The City of Melbourne partnered with 13 organisations (local governments, cultural institutions, universities and corporates) to secure a 10 year renewable Power Purchase Agreement which supported the construction of an 80 MW wind farm in Crowlands, regional Victoria. Constructing the Crowlands wind farm delivered significant economic development for the region, including almost 150 local jobs. The project developer also established a Sustainable Communities Fund that now supports $25,000 of community grants annually.[13]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2015	$500,000 in FTE and operational expenditure	n/a	4 yrs	Construction: 140 Ongoing: 8	Operational

Cost Savings	Carbon Savings
Achieved 100% renewable electricity at a price cheaper than GreenPower or standard retail prices	96,000 tCO_2-e per year across the buying group

Source: City of Melbourne, 2020

Constructing the Crowlands wind farm delivered significant economic development for the region, including almost 150 local jobs.

Community-scale Grid Systems

The Clean Jobs Plan found 2,000 jobs can be created nationally by installing community-scale energy generation and storage systems. Local governments can support the establishment of infrastructure to generate, store and distribute energy at a community level. This can include installing solar on council facilities and supporting households, schools and businesses to install their own. It may also include support for development of community energy projects and microgrids that enable households, businesses and public facilities to generate and store electricity as well as manage their energy use. Local energy infrastructure can drive down energy costs for consumers and provide energy independence for communities exposed to climate risks such as bushfire or other extreme weather.

2,000 jobs.

Clean Jobs Plan
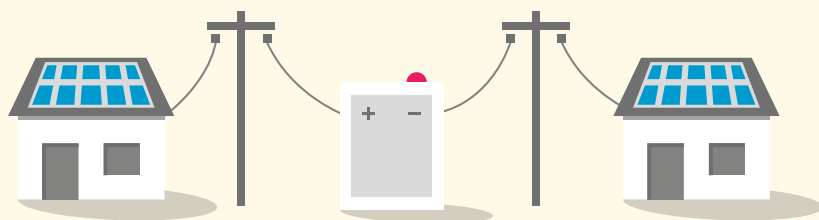
Drive community energy

Hepburn Z-Net
Hepburn Shire Council (VIC)

Hepburn Z-NET, an ambitious community-driven project, is seeking to make Hepburn Shire the first zero-net emissions shire in Australia, demonstrating the social, economic and environmental benefits of decarbonising. Run in partnership between Hepburn Shire Council, Hepburn Wind and community members, Hepburn Z-NET is a 10 year plan to reach zero-net energy by 2025, zero-net emissions by 2030 and aims to cut 262,041 tonnes of carbon produced each year. Hepburn Z-NET works with the community, a population of 15,000, to create clear action pathways and build local engagement and literacy around emissions reduction. The Plan has leveraged $2.6M of community investment, philanthropic and government grants since 2019.[14]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2018	Seed funding of $135,000 for the Community Transition Plan.	n/a	Over 1 yr	TBD	Ongoing

Cost Savings		Carbon Savings	
TBD		The ambition is to reduce 262,041 tCO_2-e per year by 2030.	

Source: Hepburn Shire Council, 2020

Hepburn Z-NET has leveraged over $2.6M of community investment, philanthropic and government grants since 2019.

Develop microgrids

Managing City Facilities as a Smart Microgrid
City of Melville (WA)

City of Melville's Smart Microgrid project, in partnership with Murdoch University, aspires to test and optimise the ability of a Smart Microgrid / Virtual Power Plant approach to significantly improve energy efficiency, water efficiency, energy security and the adoption of renewable energy across local government facilities. Upon completion, this project will provide an integrated system of renewable energy generation at sites, smart metering technology, and an advanced long-term energy planning technique. The project is expected to create substantial cost savings through on-site electricity generation and more efficient use of water and energy.[15]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
June 2019	$1.1M	5 yrs	2 yrs	2 direct, 1 Year FTE – 2 to 3 FTE across Partners and Contractors	Ongoing

Cost Savings				Carbon Savings	
TBD				TBD	

Source: City of Melville, 2020

Develop microgrids

Peel Business Park Renewable Energy Industrial Microgrid (Peel Microgrid)
Shire of Murray (WA)

The Peel-Microgrid will supply power to customers at the Peel Business Park (PBP), a new industrial development with a focus on agri-innovation, currently under development by Development WA's Industrial Lands Authority. The PBP is the first stage in the larger Transform Peel project. The Shire is a key stakeholder in the PBP and has actively advocated for and supported the microgrid. Peel Renewable Energy (previously known as Enwave) will construct, own and operate the scalable microgrid, which will consist of an embedded high voltage electricity network, grid connection, integrated onsite solar generation and battery storage.[16]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
October 2019	$8M (estimated)	n/a	2 yrs	Construction: 2–9 FTE (depending on stage) Ongoing: 1–2 FTE – Future construction phases (including roof-top solar): 4–8 FTE	Ongoing

Cost Savings	Carbon Savings
Avoided network capacity upgrades required to meet the power needs of the PBP are estimated at over $10M. Consumers in the PBP will save at least 30% on electricity bills, compared with published regulated tariffs. Future savings are expected as the PBP grows and the microgrid scales up renewable energy production and storage.	It is expected that at least 50% of the electricity supplied by the Peel Microgrid will be from renewable sources. Carbon savings will be realised during the operational phase of the project, expected to commence late 2020.

Source: Shire of Murray, 2020

Consumers in the PBP will save at least 30% on electricity bills.

Install solar and battery storage on council buildings

Solar PV Installation on Four Wastewater Treatment Plants
Shoalhaven City Council (NSW)

$50,000 savings every year.

To lower future electricity bills and reduce greenhouse gas emissions, Shoalhaven Council is continually scoping investment in onsite renewable energy generation. A total of 230 kW of new ground-mounted solar will be rolled out across four wastewater treatment sites in the 2020/21 financial year. Saving electricity at Shoalhaven Council's wastewater treatment plants will cut power bills for council and prevent price hikes for resident's sewage rate charges for sewerage services. Council will also see a significant reduction in greenhouse gas emissions.[17]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
October 2020	$285,000	6 yrs	6 months	Construction: 8 Ongoing: 2	Planning

Cost Savings			Carbon Savings		
$50,000 per year			260 tCO_2-e per year		

Source: Shoalhaven City Council, 2020

Install solar and battery storage on council buildings

1 MW of Solar on Council Buildings
Logan City Council (QLD)

$200,000 savings in electricity bills every year.

Logan City Council is embracing on-site renewable energy generation. With numerous large rooftop solar PV systems recently installed, Council has just passed the 1 megawatt of solar capacity milestone with 25 solar PV systems installed since 2012. Council also has plans to install further renewable energy projects and is on track to achieve carbon neutrality by 2022. This is an ongoing process across numerous Council facilities including libraries, sport centres, the Council Administration Centre, and wastewater treatment plants.[18]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2012	Approx. $1.5M to date	Approx. 7.5 yrs on projects completed so far	Ongoing process since 2012	Unknown	Ongoing

Cost Savings			Carbon Savings		
The systems installed to date will save an estimated $200,000 in electricity costs per year when fully operational.			The systems installed to date will save an estimated 1,150 tonnes CO_2-e per year when fully operational.		

Source: Logan City Council, 2020

Install solar and battery storage on council buildings

Whitmarsh Reserve Solar Farm
Canterbury Bankstown Council (NSW)

Potential to save over $975,000 in electricity bills every year.

Council is investigating opportunities to reduce carbon emissions and energy costs through a transition to renewable energy. Whitmarsh Reserve is a vacant reserve and former landfill site. Council investigations indicate a solar system of approximately 2–3MW may be feasible, with annual output meeting around 18 percent of Council's current electricity demand. While the electricity produced would be used by Council, opportunities for community participation and community partnerships for solar projects at other locations will be investigated.[19]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
September 2025	TBD	TBD	Ongoing	TBD	Undergoing Pre-feasibility

Cost Savings	Carbon Savings
Cost savings are dependent on the price of electricity over the life of the solar farm (so are difficult to estimate). However, the solar farm has the potential to save Council over $975,000 per year.	The solar farm is expected to save at least 2,540 tonnes in carbon emissions each year. Over the 25 year life cycle of the solar farm that could be over 80,000 tCO_2-e.

Source: Canterbury Bankstown Council, 2020

Install solar and battery storage on council buildings

Accelerating Renewable Energy on Council Facilities
Dubbo Regional Council (NSW)

Over 140kW of solar generating capacity will be installed on five Council owned community facilities. This will help Council achieve its renewable energy goal to source 50 percent of its predicted electricity consumption by 2025 from renewables (directly or by purchasing renewable energy). The project also has the potential to support local jobs in the renewable energy industry through the application of Council's local procurement policy. Depending on $170,000 of funding (Commonwealth Local Roads and Community Infrastructure Program, submitted and awaiting approval).[20]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
September 2020	$170,000	4.6 yrs	Ongoing	TBD	Concept

Cost Savings			Carbon Savings		
Estimated $37,000 per year			Estimated 194,873 kWh per year or 170 tCO_2–e		

Source: Dubbo Regional Council 2020

Estimated $37,000 in savings every year.

Install solar and battery storage on community buildings

Solar Power for Boya Community Centre and Mundaring Arena
Shire of Mundaring (WA)

Rooftop solar PV systems were installed on two major community facilities, the Mundaring Arena indoor sports facility and Boya Community Centre and Library. In June 2020 the new 35kW solar panels with 30kW inverters began powering each site with renewable energy. Over the winter months they have already saved around 8,000kg of CO_2-e emissions and savings are expected to be even higher through the rest of the year.[21] Solar panels on Shire facilities with daytime use are reducing Council's carbon footprint as well as saving money on ongoing power bills.

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2019	$63,189	Estimated 4 yrs	9 months	Unknown	Complete

Cost Savings	Carbon Savings
TBD. Power generation (consumed on site) for both sites over winter has been approx. 25% of total electricity usage.	Approx. 8 tonnes CO_2-e to date

Source: Mundaring Council, 2020

Over the winter months council has already saved around 8,000kg of CO_2-e emissions with savings expected to be even higher for the rest of the year.

Install solar and battery storage on community buildings

Solar my School
Waverley, Woollahra and Randwick Councils (NSW)

Solar my School is a free Council-run program making it easy for schools to install solar power, with independent and expert support from start to finish. Around 150 schools currently participate across 13 Council areas in Sydney (public, independent, Catholic) and 40 solar PV systems have been installed to date (around 1900kW in total) including 5 of the largest solar power systems outside the UNSW in Sydney's east.[22]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2016	$30,000 annual operating budget	n/a	n/a	n/a	Ongoing

Cost Savings	Carbon Savings
Estimated annual cost savings to schools of identified/installed solar: $900,000	Estimated annual CO_2-e savings from identified solar power projects: 6,700 tonnes CO_2-e

Source: Waverley Council, 2020

Estimated $900,000 combined annual cost savings for schools.
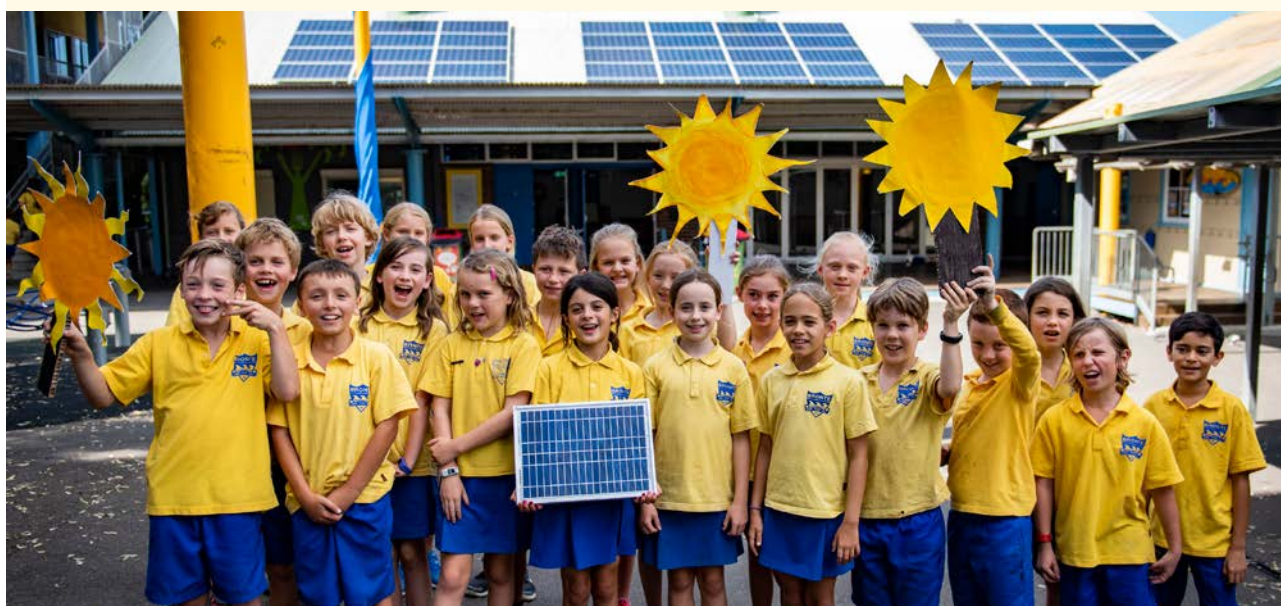
Facilitate residential and business solar and battery storage installation

Community Solar and Battery Project,
Community Power Network
Port Pirie Regional Council (SA)

Port Pirie Regional Council established the Community Solar Project in response to feedback from their community that the rising cost of electricity was affecting residents, especially low income families. The project facilitates access to good quality, affordable solar and battery systems to offset rising electricity costs and reduce households' carbon emissions. Low income households are supported to access the scheme through achievable payment plans. A total of 451 homes have installed solar through the project to-date.[23]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
January 2018	Private Investment: Member households $3.5M	Average of 4.4 yrs for residents on a 5kW system	6 months (concept to start of delivery)	Construction: 4 Ongoing: 1	Ongoing

Cost Savings		Carbon Savings
Group buy in savings: In excess of $1M, as a Community Power Network, with the economies of scale and quality add value packages (one-off).		663 tCO_2-e per year for 451 homes

Source: Port Pirie Regional Council, 2020

451 homes have installed solar through the project to-date.

Facilitate residential and business solar and battery storage installation

Solar Savers
Eastern Alliance for Greenhouse Action (EAGA) and Northern Alliance for Greenhouse Action (NAGA) (VIC)

Almost 1,500 tonnes of carbon emissions saved per year.

Solar Savers relaunched in September 2019 to assist Victorian households to easily access and install quality and affordable solar, following a successful grant-funded pilot program. The program takes complexity and uncertainty out of installing solar by independently evaluating and selecting a solar installer and working closely with them throughout the installation process. Participating households are supported with advice and assistance before and after their solar system is installed. The program leverages community investment and funding from Bank Australia. Participating councils also contribute allocated funding to enable households to pay off their solar system through their rates notice. The program is currently delivered by nine Victorian councils.

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
September 2019	$13,000 per council to deliver the program	n/a	11 months (building on existing program)	Approx. 17 roles in the solar industry (direct and indirect) supported by the program, and 2 ongoing roles.	Ongoing

Cost Savings			Carbon Savings		
Commission from installers ($40 per lead and between $350 – 450 per installation).			1,482 tCO_2-e saved per year from over 1MW of solar PV installed		

Source: Maroondah City Council, 2020

Facilitate residential and business solar and battery storage installation

Next Generation Energy Storage Program
ACT Government (ACT)

The ACT Government is supporting up to 36MW of battery storage systems for ACT homes and businesses. The Next Generation Energy Storage program provides a rebate for eligible installations delivered through battery storage providers appointed through a competitive selection process. The current rebate is $825 per kilowatt (kW) of Sustained Peak Output (e.g. the output capacity of the battery or inverter) up to a maximum of 30kW for homes and 50kW for for businesses.[24]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2016	$25M	n/a	6 months	Ongoing: 3 ACT Government positions. Other jobs (e.g. installers and contractors) not calculated	Ongoing

Cost Savings	Carbon Savings
As of 31 July 2020, the ACT Government has provided over $6M in rebates to members of the ACT community.	Unknown

Source: Government of the Australian Capital Territory, 2020

Facilitate residential and business solar and battery storage installation

Parkes Shire Council Solar Communities Program
Parkes Shire Council (NSW)

The Parkes Shire Council Solar Communities Program was a solar system bulk purchase program in which Council coordinated the purchase of solar systems for private households in Central West NSW. The program allowed residents to access affordable home solar systems, helping reduce their emissions and energy costs. Publicity of the program raised awareness of the benefits of solar power in the community and, coupled with an information event to launch the program, provided information on additional sustainability strategies and practices. The program supported 527 households to install a total capacity of 2,431kW of solar PV systems at significantly lower than market prices, thanks to the combined buying power of the Parkes and district community.[25]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
May 2012 – June 2015	$20,000 for Council to engage consultants; private investment for individual households	Varied by household	May 2012 – September 2013	Construction: 15	Complete

Cost Savings	Carbon Savings
At least $527,000 initial cost savings for all private customers to purchase and install the solar systems due to bulk purchase discount. Based on 20% of electricity being fed into the grid, potential average cost savings for all customers to date could well be more than $4.5M.	Approx. 26,558 tCO_2-e over 7 years.

Source: Parkes Shire Council, 2020

527 households installed 2,431kW of solar.

International: Facilitate residential and business solar and battery storage installation

Solar City Seoul
City of Seoul, Korea

Solar City Seoul is accelerating the uptake or solar power by making it more affordable and accessible for residents. When the state government abolished feed-in-tariffs in 2012, Seoul launched its own, providing AU$3.4 million by the end of 2018 to support households feeding solar power into the grid. The City has also worked in partnership with solar PV panel manufacturers to donate panels to households living on public pensions.

Between 2015 and 2018, 13,125 households received solar panels, cutting monthly electricity bills by AU$11 on average. Household solar panels generated 252,989 MWh of electricity in 2018, equivalent to taking almost 39,000 cars off the road for one year. This is contributing to cleaner air by displacing power once generated using coal, leading to a 9.7 tonne reduction in the emission of harmful particulates in 2019.[26]

Between 2015 and 2018, 13,125 households received solar panels and 3,500 jobs were created.

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2018	TBD	n/a	4 yrs	4,500	Ongoing
Cost Savings			**Carbon Savings**		
n/a			109 tCO$_2$-e in 2018		

Source: C40 Cities, 2020

Renewable Hydrogen Projects

The Clean Jobs Plan estimates that 500 jobs can be created nationally through renewable hydrogen (hydrogen made with renewable energy), an emerging source of zero-carbon energy for use in energy generation, storage and transport. It presents substantial opportunities for uptake at the local scale, including in waste collection, light vehicle fleets and the co-generation of heating, cooling and power for council-owned facilities like aquatic centres. While the jobs in renewable hydrogen are limited in the short term, early investment will reap large rewards in the longer term. Council support for projects that pilot local renewable hydrogen generation and use can drive significant job creation in research, manufacturing and supply chain development.

500 jobs.

Clean Jobs Plan
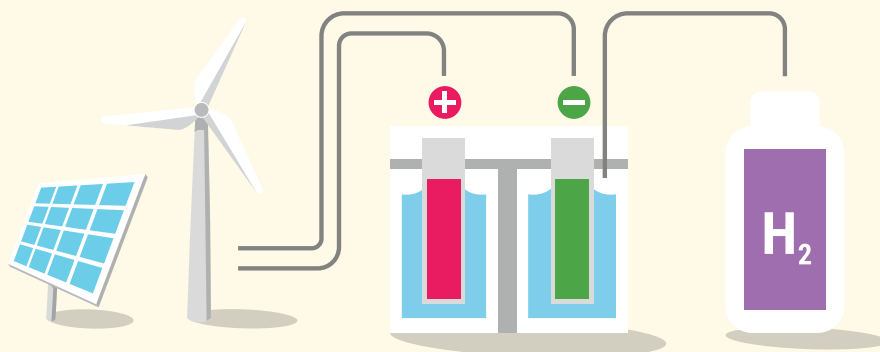
Pilot local production of renewable hydrogen

Renewable Hydrogen for City of Cockburn
City of Cockburn (WA)

The project will create local jobs and help boost a low-emissions economy in Cockburn.

The City of Cockburn is undertaking a feasibility study to examine the use of renewable hydrogen as a zero-emissions transport fuel for waste collection and light vehicle fleets, cogeneration at the Aquatic and Recreation Centre and its new administration building. The study will determine the engineering, design requirements and economics of an off-grid solar array to power a deionised water electrolysis plant at the Henderson Waste Recovery Park for a final investment decision. The project will create local jobs and help boost a low-emissions economy in Cockburn. The City will share the outcomes to support regional and remote areas seeking to invest in hydrogen production and use.[27]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
September 2020	$325,704	TBD	7 months	TBD	Undergoing Feasibility Study
Cost Savings			**Carbon Savings**		
TBD			TBD		

Source: City of Cockburn, 2020

Restored Ecosystems

Restoring ecosystems, diverting organic waste from landfill and expanding coverage of urban and peri–urban gardens present some of Australia's largest opportunities to reduce emissions and remove greenhouse gases from the atmosphere. The Clean Jobs Plan found these projects can create 28,000 jobs nationally and increase the resilience of our native ecosystems, support tourism and improve amenities in cities and towns. Local communities have much to gain from such measures and councils can take a leading role in supporting their uptake. Many of these projects require a substantial workforce and can be adopted quickly for immediate job creation.

28,000 jobs
can be created through initiatives that restore our environment.

Clean Jobs Plan

Ecosystem Restoration

The Clean Jobs Plan found by prioritising targeted ecosystem restoration projects, 12,000 jobs can be created nationally. Ecosystem restoration includes restoring and revegetating forest and wetland ecosystems through tree planting, land use change, irrigation adjustments and the installation of protective barriers. Councils can support these actions through their administration of planning approvals and the management of council-owned land. Local governments can also support businesses and communities to take action and provide advice and assistance to secure state and federal government funding. Improving the health of local ecosystems can create jobs while providing additional economic benefits by enhancing tourism prospects and ecosystem services, such as flood protection.

12,000 jobs.

Clean Jobs Plan
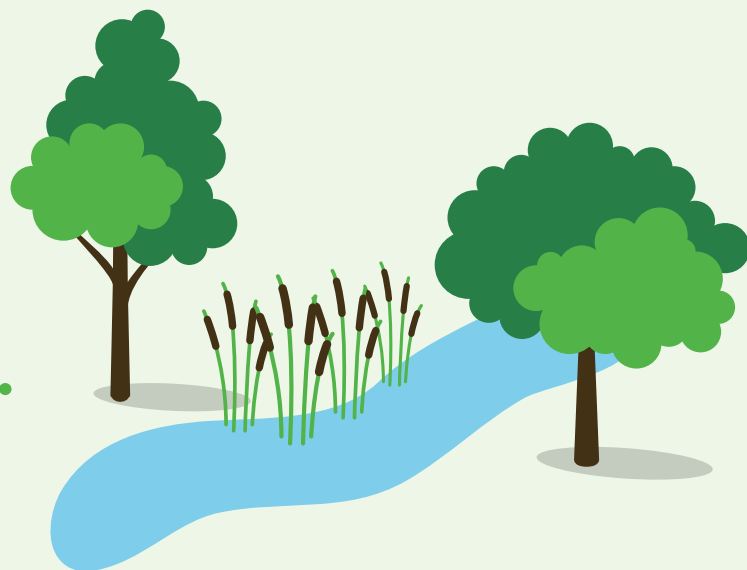
Improve land-use change practices

Coorong Tatiara Local Action Plan
Coorong and Tatiara District Councils (SA)

The Coorong Tatiara Local Action Plan (CTLAP), working under the Coorong and Tatiara District Councils, has a core purpose of aligning environmental management with agricultural production. CTLAP is leveraging commonwealth and state funds dedicated to environmental and sustainable agricultural projects and is producing positive outcomes for primary producers, community groups, schools, and public land managers. So far, projects have provided financial incentives for land managers to undertake improvements in revegetation, remnant vegetation protection, wetland protection, pest animal control, weed control, perennial pasture establishment, clay spreading, farm forestry, and fodder shrub establishment. CTLAP staff provide technical support to land managers, agricultural and environmental groups, Indigenous communities and schools, through events, and online content.[28]

Restore wetland and/or forest ecosystems

Yarra River Biodiversity Project
City of Stonnington (VIC)

The Yarra River Biodiversity project, started in 2010, is one of the largest regeneration projects in the Yarra River's recent history. The project has involved extensive revegetation, wetland development, bioretention ponds, shared path upgrades, Indigenous artworks, educational signage and opportunities for the community to connect with nature. Numerous jobs have been created in the design, construction and ongoing maintenance of the project. It is also delivering physical and mental health and wellbeing benefits through recreation and connection to nature.[29]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2010 – 2019	$8.5M	n/a	9 yrs	Numerous design, construction and ongoing maintenance jobs	Complete

Cost Savings			Carbon Savings		
n/a			n/a		

Source: City of Stonnington, 2020

Organic Waste Management

The Clean Jobs Plan found improving organic waste management with better collection and processing can create 10,000 jobs nationally. Organic waste is a major contributor of greenhouse gas emission from landfills and it often falls under local government jurisdiction. Councils can transform how Australia manages organic waste by supporting the development of a waste processing industry in their communities, which can be a driver of long-term innovation.

10,000 jobs.

Clean Jobs Plan

Expand collection of food and organic waste

Food Organics Garden Organics Rollout
City of Bayswater (WA)

7 jobs created as a result of this project.

Bayswater Council is introducing a food organics and garden organics waste management system to collect organic food waste and other compostable items such as animal droppings and paper products with food oil. When started, this program will enable processing of approximately 50 percent of materials currently taken to landfill. This project will create 7 jobs and the waste will soon be turned into high quality compost.[30]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
March 2021	Approx. $474,000	n/a	6 months	Total of 7 FTE	Planning
Cost Savings			**Carbon Savings**		
n/a			TBD		

Source: City of Bayswater, 2020

Expand collection of food and organic waste

OK Organics Kiama
Kiama Municipal Council (NSW)

Kiama Municipal Council's OK Organics Kiama initiative is diverting household organic waste from landfill through a new waste collection service and comprehensive community engagement and education campaign. The new waste service is fortnightly garbage (previously weekly), weekly recycling (previously fortnightly) and weekly food and garden organics (previously garden only fortnightly). The program has been a resounding success. Waste sent to landfill has decreased by 40 percent, recycling has increased by approximately 38 percent and Council's organics waste stream contamination is consistently less than 1 percent. Overall, Council's resource recovery rate remains at 75 percent, in line with NSW Government targets.[31]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
October 2012 (trial) February 2014 commenced rollout, full service across all waste zones active from July 2016.	$211,230 (NSW EPA Grant)	n/a	9 month trial, full rollout occurred over 4 yrs	Estimated 5 over the life of the project	Ongoing

Cost Savings	Carbon Savings
Waste collection cost savings TBD	17,551.78 tonnes of organic waste diverted from landfill. Avoided emissions not calculated.

Source: Kiama Municipal Council, 2020

5 jobs created over the life of the project.

Expand collection of food and organic waste

Your Waste – Got it Sorted?
Wagga Wagga City Council (NSW)

To reduce emissions, save money and cut waste to landfill, Wagga Wagga City Council introduced a food organics and garden organics collection as part of its three bin kerbside waste service. This service encourages residents to dispose of their food waste via a weekly green lid bin collection as opposed to the rubbish bin. In its first two years, 20,268 tonnes of food and garden waste was diverted from landfill and over $2M was saved in landfill costs.[32]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
April 2018	$2.3M	n/a	18 months	Construction: 32 for a 3 month period Ongoing: 7	Ongoing

Cost Savings		Carbon Savings	
Over $2M in landfill cost savings to date		30,909t CO_2-e to date	

Source: Wagga Wagga City Council, 2020

32 jobs created in construction, 7 ongoing jobs.

Build organic waste processing facility or increase capacity of current facility

Greenwaste Composting at McRobies Gully Landfill
City of Hobart (TAS)

The City of Hobart has diverted over 74,000 tonnes of green waste from landfill over the last decade, cutting thousands of tonnes of methane through airing the organic matter.[33] The processing facility also creates a high value compost product that is sold to the public with the support of City of Hobart staff.

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2009	$700,000	n/a	2 yrs	Construction: 4 Ongoing: 1	Ongoing

Cost Savings				Carbon Savings	
TBD				99,982 tCO_2–e to date	

Source: City of Hobart, 2020

International: Build organic waste processing facility or increase capacity of current facility

Circularity Program
City of Rotterdam, Netherlands

Rotterdam is investing in the circular economy, aiming to halve its use of raw materials by 2030 and to be completely circular by 2050. The programme will focus on construction, green streams, consumer goods and health care. The Municipality plans to lead this transition by raising awareness and by stimulating jobs and economic development through funding and support for incubators and start-up initiatives.[34]

3,500-7,000 jobs created.

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2019	Unknown	n/a	4 yrs	3,500-7,000	Ongoing
Cost Savings			**Carbon Savings**		
TBD			TBD		

Source: C40 Cities, 2020

Image: Jurriaan Snikkers

Create behaviour change and/or education programs for resident and business waste management

Waste Education Campaign – Waste Eating Monsters
City of Tea Tree Gully (SA)

400 tonnes of organic waste diverted from landfill.

Waste-eating monsters are leading an exciting behaviour change initiative in the City of Tea Tree Gully designed to address the increasing cost of kerbside bin contamination and sending waste to landfill. In 2017, the City's 40,000 households sent nearly 20,000 tonnes of waste to landfill, costing the Council approximately $2.2 million. Waste is now a fun part of the everyday with waste trucks branded as monsters and waste monsters breathing Council's messaging on waste. The community is actively involved in managing their waste to reduce the quantity taken to landfill. Council's costs have been reduced as a result.[35]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
January 2018	$60,000 per year	6 months	4–6 months	Unknown	Ongoing

Cost Savings	Carbon Savings
$42,000 in the first year	400 tonnes of organic waste diverted from landfill. Avoided emissions not calculated.

Source: City of Tea Tree Gully, 2020

Urban and Peri-urban Gardens

Expanding coverage of urban and peri-urban gardens can create 6,000 jobs nationally according to the Clean Jobs Plan. Urban and peri-urban gardening includes projects that increase tree canopy cover and urban food production. Increasing tree canopy cover makes cities and towns more liveable by providing usable green spaces and reducing the 'heat island' effect. The natural shade and cooling provided by vegetation can also reduce the energy needed to cool buildings. Localised small-scale food production programs can improve the amenity of local areas and support community development while providing a source of locally produced food. Local governments can accelerate these projects through their management of vegetation, the provision of space for public use and support for schools and community groups undertaking their own initiatives.

6,000 jobs.

Clean Jobs Plan

Increase urban tree canopy cover

Greening Onkaparinga
City of Onkaparinga (SA)

Over 35,000 trees have been planted in streets, parks and waterways since 2017 as part of Onkaparinga's accelerated greening program, which aims to plant 100,000 trees on council land. Council's ambitious targets for tree planting are inspired by mapping of urban tree canopy and heat impacts, as well as a desire to increase habitat for wildlife. In the coming years, pocket forests, legacy trees, street trees and revegetated waterways will all be contributing to a 20 per cent increase in both canopy cover and urban green cover by 2045.[36]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2017	Approx. $1.1M per year	n/a	18 months	Up to 8 FTE per year (contractors)	Implementation

Source: City of Onkaparinga, 2020

Increase urban food production

Princes Hill Railway Garden
Yarra City Council (VIC)

To connect local residents of all ages with interactive green space and build skills in food growing, harvesting and food waste processing, Yarra City Council built its urban Railway Garden located next to the North Carlton Railway Neighbourhood House. The garden has been designed by a local landscape architect as an attractive, accessible organic food-garden, run collectively with no private plots or fenced in areas. It features 10 X 11m beds, some raised, some at ground level, another 6 small raised beds and a restored bocce court to support a wide range of produce. Alongside local skill and capacity building, the garden also enhances food literacy and complements existing programs such as community lunches at the local neighborhood house.[37]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
May 2020	$90,000	n/a	4 yrs	Construction: 6 Ongoing: 4 (pending grant funding) Volunteers: Multiple	Complete

| Cost Savings		Carbon Savings	
n/a		Carbon savings from local food production and composting. Avoided emissions not calculated.	

Source: City of Yarra, 2020

Cleaner Cities and Towns

The Clean Jobs Plan found 27,000 jobs can be created by taking actions to make Australia's cities and towns cleaner. This includes upgrading buildings and facilities to be more efficient and supporting the uptake of sustainable transport. Local governments can play a large role in delivering these actions that make cities and towns more liveable while reducing costs for councils, residents and businesses.

27,000 jobs
can be created by taking actions to make Australia's cities and towns cleaner.

Clean Jobs Plan
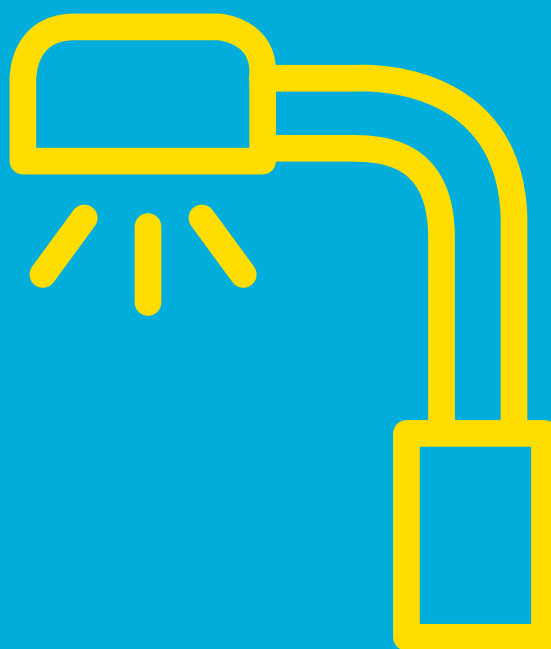
Public and Active Transport

Accelerating public and active transport infrastructure investments can create 12,000 jobs nationally and local governments have a key role to play. Councils can support immediate job creation and reduce emissions from the transport sector by investing in public infrastructure, increasing the frequency of public transport services and encouraging the use of public and active forms of transport, like walking and cycling.

12,000 jobs.

Clean Jobs Plan

Increase and improve cycling infrastructure

Northern Beaches Expanded Bike Paths & Cycleways
Northern Beaches Council (NSW)

The recently adopted Northern Beaches Bike Plan establishes two types of cycling networks for Northern Beaches; a Safe Cycling Network that focuses on establishing a connected cycling environment largely separated from motor vehicle traffic and a Road Cycling Network, which identifies the major routes that bicycle riders use and provides actions to make these areas safer for all road users. The plan commits $31.7 million to extend a network of footpaths, bike paths and shared paths, as well as $10.2 million for improving end of trip facilities. A fully developed and designed delivery program for high priority locations is expected to be completed by the end of 2021/2022.[38]

Build walkways and increase pedestrian urban zones

Safer walking and cycle routes
City of Sydney (NSW)

In response to COVID-19, the City of Sydney and Transport for NSW fast tracked six pop-up cycleways. The 10 kilometers of new bike paths were implemented to increase transport options and reduce crowding on public transport for inner suburb residents. The city also widened streets and rolled out more walking paths to connect key locations, support local businesses and encourage safe and sustainable ways to get around the city. In August 2020, Transport for NSW announced plans to implement another 20 kilometres of cycleways in Greater Metropolitan Sydney.[39]

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38   Northern Beaches Council, 2020
39   City of Sydney, 2020

Increase frequency or capacity of existing public transport

Fifteenth Avenue Smart Transit Corridor
Liverpool City Council (NSW)

The FAST Corridor will play a key role in the sustainable growth of the Liverpool LGA.

To help achieve Liverpool's goal of becoming Sydney's third central business district (CBD), the Fifteenth Avenue Smart Transit (FAST) Corridor is a visionary city-shaping project to deliver an attractive and high-quality public transport link between the Liverpool CBD and Western Sydney International Airport. The FAST Corridor will be high-quality, supporting sustainable development and welcoming visitors to South West Sydney. Council is 'mode agnostic', investigating a range of emerging public and active transport options including 'trackless trams'. The FAST Corridor will help ensure that Liverpool has sustainable transport access to the new Airport and Aerotropolis. High quality public and active transport options are critical for commuters, residents and airport visitors and the FAST Corridor will play a key role in the sustainable growth of the Liverpool LGA.[40]

Public Building Retrofitting

The Clean Jobs Plan found 8,000 jobs can be created nationally by auditing and retrofitting public buildings to improve energy efficiency. As local governments are large consumers of energy through their operation of public infrastructure and facilities like council offices, street lighting and community centres, councils can harness opportunities to reduce costs and carbon emissions through energy efficiency measures.

8,000 jobs.

Clean Jobs Plan

Increase efficiency of council-owned buildings and community infrastructure

Olympic Pool Upgrade
North Sydney Council (NSW)

Running the pool equipment at optimal levels and maximising the available renewable heat has lead to energy, emissions and cost savings.

The iconic North Sydney Olympic Pool includes two outdoor and three indoor pools, a gym, sauna, café and restaurant. Multiple heating systems for the complex were not well integrated making it difficult to optimise energy efficiency. Council engaged a consultant to identify and quantify energy flow throughout the complex to inform upgrades. The data identified the main opportunity for energy efficiency lay in control optimisation of the different heating systems (3 x electric heat pumps; 7 x gas boilers; 1 x gas-fired reciprocating engine; 1 x solar-thermal system). Since implementation, running the pool equipment at optimal levels and maximising the available renewable heat over imported gas and electricity has become easier, leading to energy, emissions and cost savings.[41]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2017	$80,900	2.6 yrs	2 yrs	1 FTE per yr	Ongoing

Cost Savings			Carbon Savings		
Measured savings (May 2017–April 2018): $19,900 Additional expected savings: $11,200			1144 GJ (mix of electricity and gas savings) between May 2017 – April 2018. Avoided emissions not calculated.		

Source: North Sydney Council, 2020

Increase efficiency of council-owned buildings and community infrastructure

LED Street Light Project
Orange City Council (NSW)

$500,000 savings expected every year.

Public lighting plays an important role in providing safe, secure, and attractive public areas for both pedestrians and motorists in the Orange Council area. Lighting also represents around 35 percent of Council's corporate energy consumption and greenhouse gas emissions. To reduce energy and emissions, Council voted to switch the top section of Orange's 4,900 streetlights with new efficient LED lighting at a cost of $2.5 million. Since December 2019, most streetlights in Orange have been replaced with energy efficient LED's and the savings in electricity and greenhouse emissions are already proving substantial with up to 50 percent energy savings.[42]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
January 2020	$2.5M	5 yrs	4 months	Construction: 10 Ongoing: 13 (including same 10 in construction)	Ongoing

Cost Savings			Carbon Savings		
$374,506 to date Expected $500,000 per year			413 tCO_2-e to date		

Source: Orange City Council 2020

Increase efficiency of council-owned buildings and community infrastructure

LED Street Lighting Upgrade and Smart Controls
Bathurst Regional Council (NSW)

Bathurst Regional Council has been working with the Southern Lights project group and Essential Energy to upgrade its street lighting to LED. The project involves the replacement of over 5,600 street lights with state of the art smart enabled lighting to improve quality and performance as well as reduce electricity and maintenance costs by more than 50 percent.[43]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
November 2019	$2.7M (includes LED street lights and smart controls)	3.9 yrs for LED luminaires; Approx. 5 yrs when smart controls are also included	3 yrs	Approx. 4 people over a 6 month period	Ongoing

Cost Savings			Carbon Savings		
Approx. $600,000 per year			1,800 tCO$_2$-e per year		

Source: Bathurst Regional Council, 2020

$600,000 savings every year.
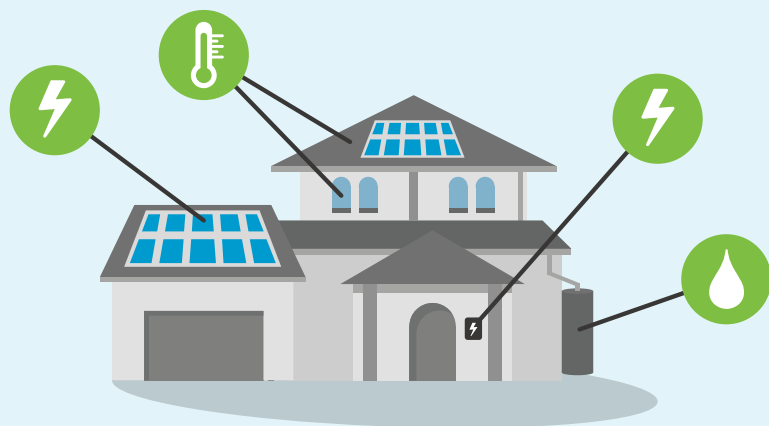
Residential and Business Retrofitting

Improvements in energy efficiency can significantly reduce energy costs and carbon emissions for households and businesses. Councils can support energy efficiency improvements through building upgrades like insulation, glazing, heat pumps and energy efficient appliances. This includes providing advice and partnering with state governments and the private sector to make finance available for households and businesses.

7,000 jobs can be created by supporting retrofitting of residential buildings to improve energy efficiency.

Clean Jobs Plan

Facilitate residential and business efficiency retrofits

Environmental Upgrade Agreements (EUAs)

Mildura Rural City Council (VIC)

Mildura Rural City Council has partnered with Better Building Finance and Sustainable Australia Fund to offer EUAs to the commercial sector within its region. Involving a three-way agreement between the property owner, Council, and a third party lender, EUAs provide an incentive for building owners to upgrade their infrastructure through competitive finance and loans are tied to the building, not the business owner. Property owners can access up to 100 percent project finance with loan terms extending from 5-20 years. Over 200kW of solar in the LGA has been installed on both commercial and agricultural as a result of the initiative.[44]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
January 2018	No council capital cost. $307,000 (third party lenders)	Varies between projects	n/a	Not available	Ongoing

Cost Savings			Carbon Savings		
TBD			Approx. 300 tCO_2-e per year		

Source: Mildura Regional City Council, 2020

Facilitate residential and business efficiency retrofits

Environmental Upgrades for Business
Mornington Peninsula Shire (VIC)

In partnership with Sustainable Australia Fund, the Mornington Peninsula Shire has offered local businesses access to Environmental Upgrade Agreements (EUAs) since 2017. These agreements provide access to long-term, low interest loans for energy, water and waste efficiency upgrades. Over the last three years, thirteen Environmental Upgrade Agreements (EUAs) have been signed by Mornington Peninsula businesses resulting in the installation of 1,039 kW solar and a range of energy efficiency upgrades. Business owners undertaking environmental upgrades using EUAs have seen significant energy cost savings, immediately improving the cash flow of their businesses. The businesses have also experienced improvements in building comfort.[45]

$249,785 savings every year.

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
January 2017	No council capital cost. $2M capital from Sustainable Australia Fund	Varies	Each project usually takes around 6 months from concept to implementation.	Ongoing: 6 (estimated)	Ongoing

Cost Savings	Carbon Savings
$249,785 per year	1,584 tCO$_2$-e savings per year 39,588 tCO$_2$-e total over life of project

Source: Mornington Peninsula Shire, 2020

Facilitate residential and business efficiency retrofits

Sustainability Incentives Scheme (SIS)
City of Adelaide (SA)

The Sustainability Incentives Scheme (SIS) was co-funded by the City of Adelaide and the Government of South Australia. The SIS provides financial rebates to the community to support adoption of sustainable technologies and actions that improve environmental performance and support growth in the low carbon economy. This scheme is available to all building owners and tenants including businesses, residents, education institutions, community and sporting organisations in the City of Adelaide. Since 2015, the Scheme has leveraged $8.35 for every $1 spent through rebates. During this time, the Scheme has provided rebates for 106 energy storage systems resulting in 960 kWh of community energy storage capacity and 4,188 kW (or 4.2 MW) of solar PV installed in 302 systems.[46]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2015	$10.2M	n/a	1 yr	Unknown	Ongoing
Cost Savings			**Carbon Savings**		
Unknown			3,600 tCO_2-e avoided for incentivised solar PV in Adelaide since 2015		

Source: City of Adelaide, 2020

The scheme povided rebates for 106 energy storage and 302 solar PV systems.

International: Facilitate residential and business efficiency retrofits

Retrofit project in low-income communities
City of Cape Town, South Africa

The City of Cape Town has recognised the multiple benefits of supporting households to improve the quality of their existing roofs and ceilings. Following initial pilot projects, the City of Cape Town has drawn on National Government funding to roll-out substantial households retrofits to improve weather sealing and install insulation. The program is reducing energy costs and emissions, improving liveability and addressing residents' susceptibility to dangerous illnesses like tuberculosis. It is also supporting the training and employment of a substantial local workforce.[47]

2,350 jobs created.

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
2008	Unknown	n/a	3 years following pilots	2,350	Complete

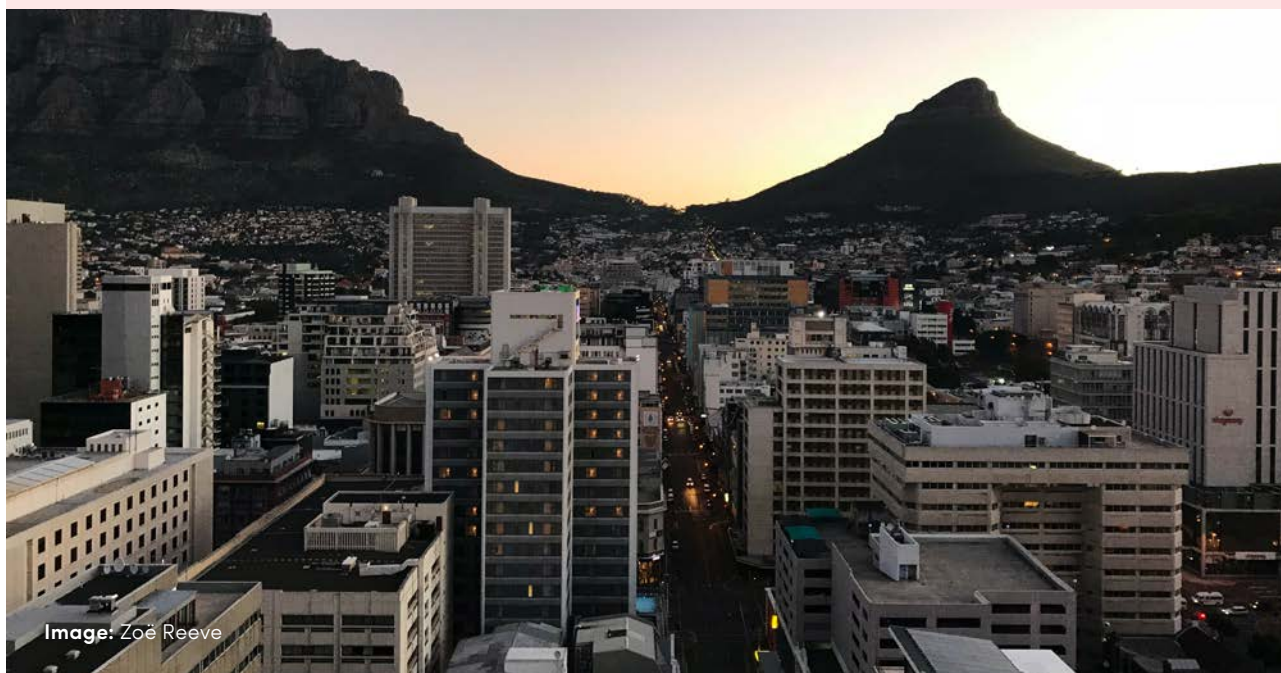| Cost Savings			Carbon Savings		
Unknown			7,400 tCO_2-e		

Source: C40 Cities, 2020c

Image: Zoë Reeve

Electric Vehicle Charging Network

The Clean Jobs Plan found 500 jobs could be created nationally by expanding and improving the electric vehicle charging network. Councils around Australia can support the transition to electric vehicles by facilitating the installation of electric vehicle (EV) charging stations in their communities. Rolling-out this infrastructure will enable the uptake of electric vehicles to drive down emissions, create jobs and promote EV tourism in regional areas.

500 jobs.

Clean Jobs Plan

Implement electric vehicle charging infrastructure

Eastern Suburbs Public Electric Vehicle Charging Station Network
Randwick, Waverley and Woollahra (NSW)

Waverley, Woollahra and Randwick Councils in Sydney's eastern suburbs have installed public on-street EV charging stations in key destination hotspots. These are the first on-street public charging stations of this type in Sydney, and local government backed on-street charging infrastructure in NSW. This project aims to make the Eastern Suburbs 'EV-ready' and support the transition to zero emissions transport, by addressing two main barriers to EV uptake: access to charging infrastructure and drivers' range anxieties.[48]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
June 2019	$160,000	10 yrs	2 yrs	Planning: 2 Design: 2 Implementation: 6 Monitoring and Reporting: 2	Complete

Cost Savings			Carbon Savings		
n/a			9,202 kWh electricity consumed (100% renewable energy). Avoided emissions not calculated.		

Source: Waverley Council, 2020

Implement electric vehicle charging infrastructure

Charging the Regions
Central Victorian Greenhouse Alliance
(CVGA) (VIC)

The project is a unique collaboration of councils working together to deliver a dense network of public EV charging infrastructure across a large part of regional Victoria. The network will encourage greater EV uptake by addressing range anxiety, promote EV tourism, and ensure that the regions don't get left behind in the transition to EVs.[49]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
March 2019	Approx. 1.1M	n/a	1.5 yrs for feasibility	Construction: 2 FTE Project management: 1 FTE	Out for tender

Cost Savings			Carbon Savings		
n/a			n/a		

Source: Central Victorian Greenhouse Alliance, 2020

The network will ensure that regions don't get left behind in the transition to EVs.

Implement electric vehicle charging infrastructure

City of Newcastle E-Transit Hub
City of Newcastle (NSW)

The E-Transit Hub is a cutting-edge public vehicle charging facility with five EV charging points including a 50kW DC fast-charger and four level 2 (22kW) chargers. The facility includes a solar car park cover and enough battery storage with load management capability to provide 100 percent renewable energy supply. The site also incorporates an electric bikeshare station to provide last mile travel into the city centre. An on-demand shuttle also services the facility.[50]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
August 2019	$300,000 (grant funded)	n/a- charging currently provided as a free service	<12 months	30	Complete

Cost Savings			Carbon Savings		
TBD: Additional revenue generated from solar feeding back to grid			20 tCO_2-e to date		

Source: City of Newcastle, 2020

Cleaner Futures

Research, Education and Training

The Clean Jobs Plan found 3,000 jobs can be created nationally by funding public research to mitigate and respond to climate change as well as funding adult education and training to help transition workers to new roles. Research, innovation and skills development are required in Australia to enable long-term carbon abatement initiates and the development of the workforce needed to deliver them. Councils can partner with universities, research institutions and the private sector to support the development of the technology, knowledge, workforce skills and supply chains needed in a low-carbon economy. Key actions councils can take to prepare our future workforce are supporting the research and development for carbon abatement initiatives, providing support and resources for climate-related startups and providing training and community upskilling for a net-zero economy.

3,000 jobs can be created by investing in climate change research, education and training.

Clean Jobs Plan

Research and development for carbon abatement initiatives

Building on Social License through International Partnership
Warrnambool City Council (VIC)

To scope a possible city-to-city Warrnambool and South West Industries hydrogen project, Warrnambool City Council collaborated with Mariestad, Sweden on a solar-to-hydrogen storage and refuelling program technology and learning exchange. The program promotes participation and research for the development of the Hydrogen Industry in Warrnambool while building the social license and acceptance of the technology. The advocacy work and international partnership has also supported Deakin University (Warrnambool Campus) to successfully receive a $2 million grant from the Federal Government. The grant will support the first stage of a hydrogen hub to enable the creation of a research, manufacturing and supply chain project in Warrnambool. Up to eight jobs will be created during the first year of the project.[51]

Support and resources for climate startups

Whitsunday Climate Change Innovation Hub
Whitsunday Regional Council (QLD)

The Whitsundays Regional Council (WRC) established the Whitsundays Climate Change Innovation Hub (The Hub) in late 2018 to advance Council's ability to better respond to the various challenges posed by climate change and build resilience. The Hub will develop collaborative real-world innovative solutions to assist the Whitsunday region in facing climate change challenges. Lessons learned, information gathered, and techniques developed will be disseminated to other local communities nationally and globally.[52]

Start Date	Capital Cost	Payback Period	Time to Implement	Jobs Created	Status
September 2018	Council provides funds for staffing and projects each year. $3.6M from the Australian Government's Building Better Regions program	n/a	1 yr	Total jobs provided during operations at any one time is approx. 6.	Ongoing
Cost Savings			**Carbon Savings**		
n/a			n/a		

Source: Whitsunday Regional Council, 2020

Lessons learned, information gathered and techniques developed will be disseminated to other local communities nationally and globally.

52   Whitsunday Regional Council, 2020

Provide training and education for a zero-emissions economy

Federation Tafe
City of Ballarat (VIC)

Ballarat's Federation Tafe is one of the few institutions in Australia that offers the Global Wind Organisation Basic Technical Training qualification. The course provides entry level training to allow electricians, auto mechanics and mechanical fitters gain the mandatory skills required to work as wind turbine technicians. Recognising the shortage of qualified wind turbine technicians and role renewable wind energy has in transitioning the Ballarat economy to zero emissions, the City of Ballarat has been a staunch advocate for the program and benefits it brings to the region. Although not directly delivering the course, Council's advocacy and support for training in growth industries will shore up the communities' long term economic growth and create the local capacity and skills required to speed up the transition to a zero-emissions economy.[53]

53   Ballarat City Council, 2020

Glossary

Circular economy – An alternative to the traditional model of production, use and disposal of goods. The goal of a circular economy is to keep resources in use for as long as possible, extract the maximum value from them whilst in use, then recover and regenerate products and materials at the end of each service life.

Cogeneration – The simultaneous production of two or more forms of energy, such as heat and electricity, from a single fuel source. Also referred to as 'Combined Heat and Power' (CHP).

Electric heat pump – Heat pumps offer an energy-efficient alternative to furnaces, and air conditioners. Like refrigerators, heat pumps use electricity to move heat from a cool space to a warm space, making the cool space cooler and the warm space warmer. Heat pumps can also be used for water heating as a more efficient alternative to gas and electric resistance systems.

Energy storage – Storage allows energy to be stored for future use making it possible to manage differences between the time when energy is created and the time when it is needed. Batteries and pumped hydroelectricity are both examples of methods to store electricity.

FTE – The number of full-time equivalent employees directly employed by the organisation at a point in time.

Gigajoule (Gj) – A unit of energy measurement frequently used in areas other than electricity. 1 gigajoule = 1,000 megajoules. 1 gigajoule is equivalent to 278 kWh of electrical energy.

Renewable hydrogen – Hydrogen produced via electrolysis from renewable energy sources such as solar and wind.

GreenPower – A government accredited renewable energy product offered by most electricity retailers to households and businesses in Australia.

Kilowatt (kW) – a measurement of power. Power is the rate at which the energy is generated or used. One kilowatt is equal to 1000 watts.

Kilowatt hour (kWh) – a kilowatt hour is a measure of electrical energy equivalent to a power consumption of 1000 watts for one hour.

Megawatt (MW) – A megawatt is a measurement of power. Power is the rate at which the energy is generated or used. One megawatt is equal to 1000 kilowatts.

Megawatt Hour (MWh) – A megawatt hour is a measure of electrical energy equivalent to a power consumption of 1000 kilowatts for one hour.

Microgrid – A localised group of small-scale electricity generators (e.g. rooftop solar), storage units (e.g. batteries) and consumers that can share electricity. Microgrids are usually connected to the main grid, but can also disconnect and run in "island mode" during blackouts or bushfires.

Photovoltaic (PV) – The most common type of solar panel that converts sunlight into electricity.

Power Purchase Agreement (PPA) – a contractual agreement between energy buyers (councils or corporates) and sellers (energy retailers and/or project developers). It's an agreement to buy and sell an amount of energy which is or will be generated by a renewable asset at an agreed price and for a fixed term.

Renewable hydrogen – Hydrogen produced via electrolysis from renewable energy sources such as solar and wind. Also referred to as 'green hydrogen'.

Smart grid – Smart grids modernise the process of delivering electricity from generators to end users, through the integration of new technologies. These enable the collecting and sharing of new information, rapid responses to the operating environment as well as remote management of technology to stabilise the grid in high demand periods.

tCO_2-e – A measure used to compare the emissions from various greenhouse gases based upon their global warming potential. In 2019, per person greenhouse emissions in Australia were 21 tCO_2-e per year.

Virtual Power Plant (VPP) – A system of interconnected power generation (e.g. solar panels) and battery storage units that can be operated together to deliver the types of services that would traditionally be performed by centralised thermal power plants (e.g. coal plant).

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