

# ADELAIDE

## AUSTRALIA



As part of a power purchase agreement, the City of Adelaide's municipal operations have been powered by 100% renewables since July 2020, using electricity generated from wind farms in mid-north South Australia and new solar PV farms on Eyre Peninsula and in the South East. This long-term commitment supports the Adelaide Carbon Neutral Strategy 2015-2025, which sets a target for carbon neutrality by 2025.

As a step towards achieving this goal, the City adopted the Carbon Neutral Adelaide Action Plan 2016-2021 to reduce greenhouse gas emissions. The plan sets out 104 actions for council and local government under several low-emission pathways: energy-efficient built form, promoting walking and cycling, hybrid and electric vehicles for individuals and businesses, "zero-emission" transport, towards 100% renewables with solar PV and solar hot water, reducing emissions from waste and water use, and offsetting carbon emissions. The projects under the 100% renewable pathway generate cost savings for residents and businesses along with reducing emissions. In total, the city had installed 8.3 MW-peak of solar PV capacity as of 2019, including 2,362 kilowatts (kW) at city-owned and -operated sites.

Local government investments in energy storage support the deployment of new affordable storage technologies. For example, the Hornsdale Power Reserve, referred to as South Australia's Big Battery, was established in 2017 with 100 MW-peak, and another 50 MW-peak had been added in early 2020. Located next to the 316 MW Hornsdale Wind Farm, the Power Reserve is one of the world's largest lithium-ion batteries, providing grid services that enable the penetration of variable renewable energy sources like wind and solar power.

In addition, the Carbon Neutral Adelaide Action Plan provides incentives to create new economic opportunities and to support the business sector. Building upgrade finance provided by private financiers in partnership with the local council helps to improve the energy, water and environmental efficiency of non-residential buildings and infrastructure. This mechanism offers loans from the financier to building owners, which are repaid by the local council. Upgrading the infrastructure provides financial returns and has the potential to reduce electricity use 43% by 2030.

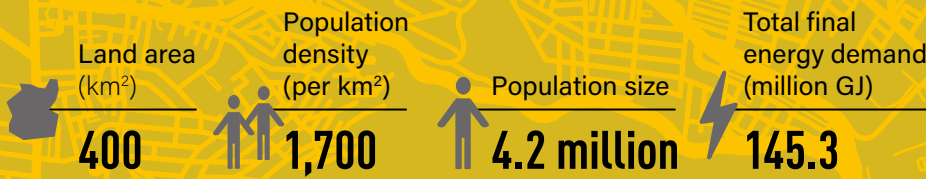
The Sustainability Incentive Scheme and the CitySwitch Green Office support city residents with financial incentives for the uptake of sustainability practices, technology and trends for low-carbon living. Rebates of up to AUD 5,000 (USD 3,831) are available for households, businesses and car parks for the installation of energy-saving technologies, solar PV systems, EV charging, solar hot water systems and energy storage systems.

The City of Adelaide also is assessing adaptation actions to increase the energy self-sufficiency of its wastewater treatment plants by harnessing biogas to generate renewable electricity. A total of 39,000 megawatt-hours (MWh) was generated from wastewater biogas in 2018-19. In parallel, the local government has been exploring the potential of carbon offset projects. In 2017, a demonstration carbon sequestration site was established near Adelaide High School to provide the community with a practical example of a carbon sink.



# CAPE TOWN

## SOUTH AFRICA



**2**

Cape Town is South Africa's second largest economic hub, with a population of around 4.2 million in 2018 and a land area of more than 400 square kilometres. Cape Town contributed 9.8% of the national economic output in 2018 and is dominated by the service sector, with significant finance, insurance, real estate and business activities.

Coal contributed 83% of South Africa's electricity generation capacity in 2016 (latest available data), with nuclear power and natural gas representing 4% and 5% respectively and renewable energy making up the remaining 8%. The government aims to increase the renewable share in the generation mix to around 40% by 2030 through various policy instruments, as promulgated in the Integrated Resource Plan (IRP)<sup>i</sup> of 2019.

The City of Cape Town has taken an active leadership role in renewable energy deployment, emphasising not just technology change but also the need to improve governance and institutions and to engage key players in the energy transition, from national government to business and civil society. The decoupling of electricity demand from economic growth in the Metropolitan Municipality over the last decade is attributed to energy efficiency and renewable energy interventions in the face of soaring electricity prices and insecure electricity supply in South Africa.

The transport sector, which relies almost exclusively on petrol and diesel, accounts for 62% of Cape Town's total final energy demand and contributes a third (32%) of the Metro area's greenhouse gas emissions. The sector's high energy use is largely a result of the city's sprawling and segregated form, which reflects the legacy of apartheid's spatial planning. The commercial sector is the second most energy-intensive sector (14% of total final energy demand) followed by households (12%) and industry (12%).

Electricity is the main energy carrier in Cape Town's non-transport sectors, and because most of the electricity in South Africa comes from high-carbon coal-fired power plants, the built environment accounted for 55% of the city's greenhouse gas emissions in 2018. Residential electricity use in Cape Town is split largely across cooking, lighting and space heating applications, while in the commercial sector electricity use is dominated by lighting, heating and ventilation in office buildings.

The City of Cape Town has been a pioneer in providing more affordable and secure energy access and in reducing the city's carbon footprint while also tackling rapid urbanisation and associated energy poverty, urban sprawl and vulnerability to climate change. Cape Town's long history of renewable energy efforts includes the establishment of a dedicated energy and climate change unit. As early as 2000, an energy advisor was seconded to the City as part of the Sustainable Energy for Environment and Development (SEED) programme of Sustainable Energy Africa (SEA), bringing an energy lens to City operations and service delivery. In 2003, with technical support from SEA, Cape Town completed its first *State of Energy* report, and in 2006 it became the first African city to approve a municipal Energy and Climate Change Strategy, setting an initial target for 10% renewable and clean energy by 2020.

The city benefited from learning by doing. Catalysed by the Energy Efficiency and Demand Side Management Programme, launched by South Africa's Department of Mineral Resources and Energy, Cape Town began an extensive and ambitious drive in 2008 to improve the energy efficiency of municipal operations, saving a cumulative ZAR 225 million (USD 16 million) through 2019. The City began supporting small-scale "embedded generation" in 2011, making it



<sup>i</sup> The IRP provides a medium-term plan for expanding electricity generation in South Africa. It aims to guide sector investment to allow the country to meet its forecasted electricity demand at the least cost and accounting for considerations such as environmental sustainability and water use. The plan incorporates objectives such as affordable electricity, reduced greenhouse gas emissions, diversified generation sources, localisation and regional development.