



# How to Achieve 100% Renewable Energy

## Guide for Organisations

Date:

5 November 2018

# Introduction

100% Renewables is pleased to provide you with this guide on how your organisation can achieve the ambitious goal of 100% renewable energy or zero net emissions.

We believe it is possible to reach strong clean energy and carbon targets in a cost neutral if

not cost positive way and it is our mission to help organisations like yours move towards such targets in the most beneficial way.

We hope that by reading this paper, you will feel more confident to set ambitious targets or to get closer to achieving your goal.

## Save money. Save the planet. Go 100% renewable.



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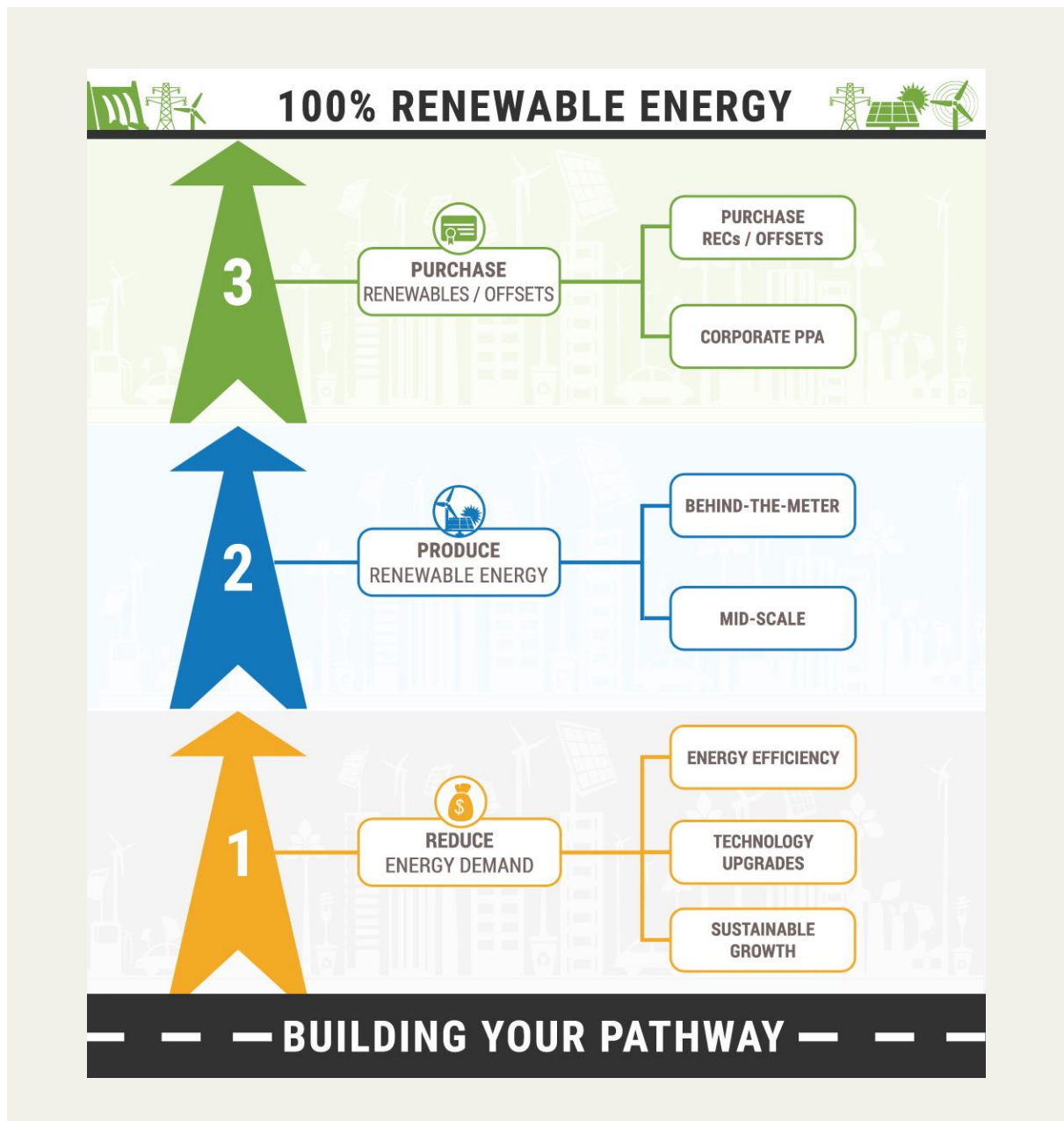
## How to achieve 100% renewable energy

Initially, when you commit to 100% renewable energy, it feels like a daunting target. Cost-effectively changing your whole energy supply from conventional fossil fuel sources procured via a small number of contracts, to one that is based wholly on renewable energy sounds difficult.

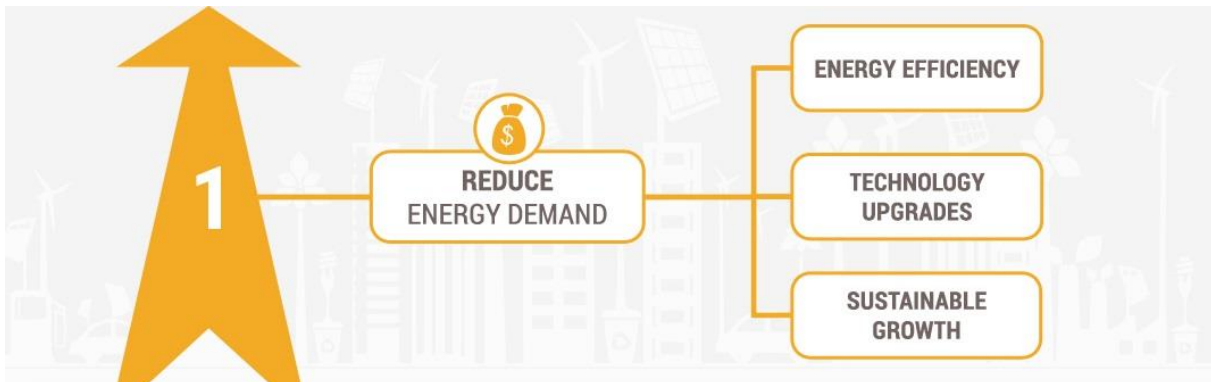
However, when you break this target down using a methodical, planned approach that considers your boundaries, timeframes, what can be achieved now and what you might be able to do in future, your target will feel more feasible and within reach.

Like many approaches to resource conservation, like waste and water, reaching 100% renewable energy involves developing clean energy opportunities into plans which will help you achieve your goal.

In our experience, opportunities can be organised into three broad categories - Reduce, Produce and Purchase. The approach taken is to assess the capacity and cost-effectiveness of actions in each category in the short, medium and long-term so that you can plan ahead and reap the maximum benefits from your strategy.



## Reduce energy demand



The most cost-effective renewable energy is the energy that you don't use. Businesses have made enormous strides to use energy more efficiently in recent years, helped by better information, financial incentives and the rapid development of technologies such as LED lighting.

Rather than a typical energy audit that may look for cost-effective opportunities for reducing energy demand in the short-term, a 100% renewables approach will look at energy demand more holistically. Energy demand reduction can be planned for in terms of three distinct opportunities: energy efficiency, technology upgrades and sustainable growth plans.

By identifying efficiency opportunities in these three ways, you can project what future energy consumption may be. Having more clarity on your future energy use means you are well informed about the likely amount of renewable energy you will need to develop and invest in to meet your 100% renewable energy goal. If you can maintain a focus on optimising your energy demand, it will lessen the cost of renewables in the long term.

### Energy efficiency

Energy efficiency/productivity plans will typically be short-term focused and will look at energy waste, behavioural improvements, end-

of-life technology upgrades and cost-effective retrofits such as LED lighting and Building Management System (BMS) optimisation. Biofuel blends and fuel switching opportunities will also be evaluated.

### Technology upgrades

Technology upgrades look at capital-intensive equipment and fleet that will be replaced over the medium and long-term. The plan will

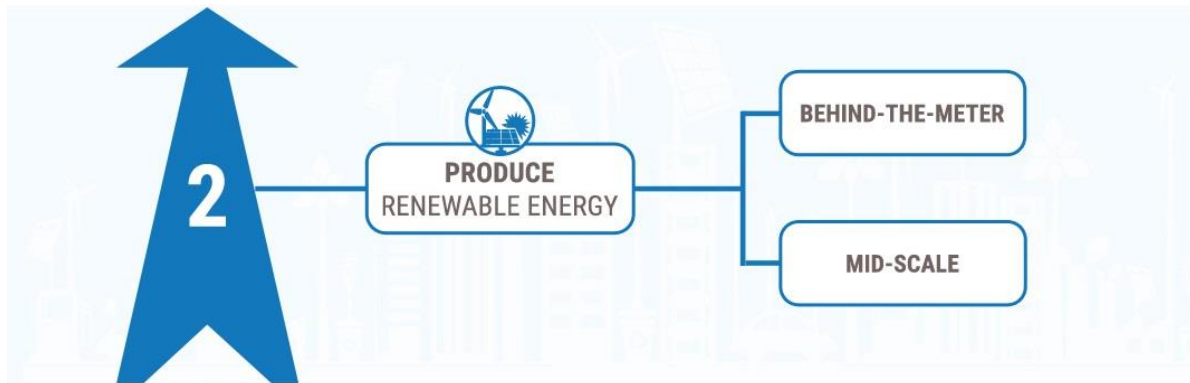
- identify the timing of upgrades or replacements
- evaluate available and emerging options to achieve step-changes in energy efficiency, and
- estimate the likely costs and benefits

This way, end-of-life opportunities to implement best practice technologies are not missed and can be planned and budgeted for. Options can also include fuel switching and electric vehicles.

### Sustainable growth

Sustainable growth or expansion strategies provide opportunities for organisations to ensure the lowest lifetime cost for energy is locked in from the outset rather than as an after-thought, which can be more expensive in the long run. Strategies to achieve this include efficient design, technology selection and control plans.

## Produce your own renewable energy



The last several years has seen an explosion in the use of renewable energy in Australia, with about 2 million solar energy systems installed on properties.

As costs continue to fall, the opportunities for business to benefit from the development of renewable energy projects – especially solar – are increasing. In our experience there are two main types of opportunity for business:

### Behind-the-meter

Installing renewable energy such as solar PV, solar hot water, heat pumps, biomass energy generation or other solar thermal systems after your meter ensures that your business maximises the financial benefits, as energy distribution costs are avoided as well as retail energy charges.

Just a few years ago it was uneconomic to export excess renewable energy into the grid. Nowadays, with lower solar PV prices, increased feed-in-tariffs and declining costs of battery energy storage systems, it makes sense to oversize PV systems if you have roof or land space available. Battery energy storage

systems and complementary technologies are also constantly improving, and their costs are reducing over time. This will help businesses to maximise the value of their renewable energy systems in future and will help reduce grid costs.

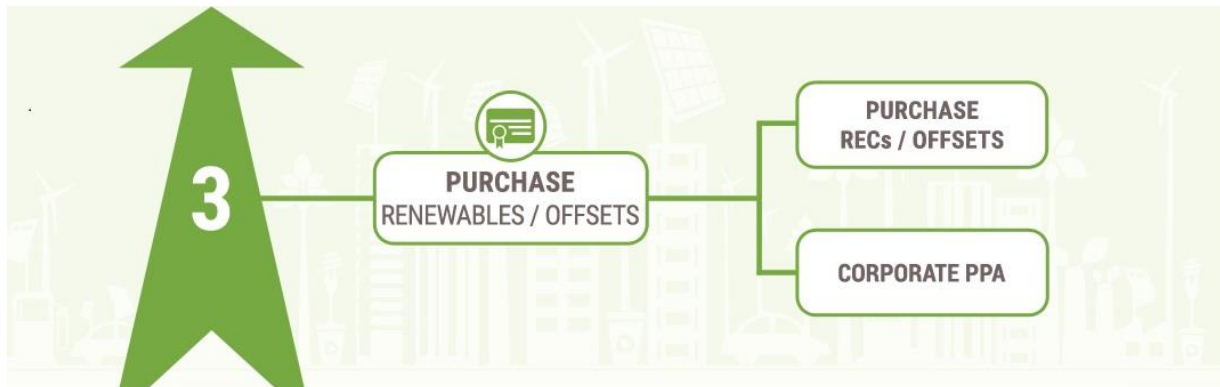
### Generate electricity at customer-, or mid-scale

Many businesses have property (roof) space, infrastructure or land that is ideally suited to the development of renewable energy projects in front of the meter, or “grid-side”. If not, buying or leasing land for this purpose may be feasible.

Wind energy, solar PV, mini-hydro, bioenergy or other opportunities may be viable, and the generated energy can be used to make your electricity supply renewable.

The major aspects that your assessment will evaluate includes the unsubsidised cost of energy generation, treatment of renewable energy certificates consistent with your goals, and retailer engagement and negotiation to facilitate this additional supply source.

## Purchase renewable energy



When the cost-effective capacity of energy demand reduction and renewable energy production has been exhausted, the purchase of renewable energy or certificates may be the best way to complete your journey to 100%. Broadly, there are two ways in which this is being achieved.

### Purchase Renewable Energy Certificates or GreenPower

The traditional way for energy users to source renewable energy has been through the purchase of accredited GreenPower® or other green energy from energy retailers or providers. Usually, this attracts a premium to grid energy supply. Similarly, energy users can purchase Renewable Energy Certificates (RECs)

to 'green' their energy supply, at the prevailing market rate.

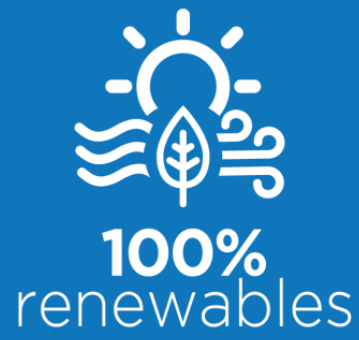
### Purchase renewables via offsite Power Purchase Agreement

More recently, we have seen the emergence of newer models for renewable energy purchasing, including direct purchases by organisations of renewable energy generation output, or the establishment of buying groups to purchase renewable energy, typically from larger-scale plants. Due to the complexities involved with setting up PPAs it is typically larger energy users entering into such an agreement. However, over time, cheaper renewable energy will be available to all businesses.

### The role of carbon offsets

The goal of achieving 100% renewable energy is challenging but achievable. Along the way, the cost-effective capacity of efficiency and renewable energy opportunities may fall short of your desired target. Equally, some plans may be delayed, not achieve their full potential, or your business growth may be different from what was expected.

In these circumstances, carbon offsets may be a good way to ensure targets are met while maintaining the target pathway to 100% renewables. This may be particularly helpful where, for example, transport and stationary fuel sources cannot readily be transitioned to renewables.



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