



How to Achieve 100% Renewable Energy

Whitepaper

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1 Introduction

100% Renewables (100% RE) is pleased to provide you with this whitepaper on how your organisation can achieve 100% renewable energy.

It is our mission to help organisations like yours move towards 100% renewable energy and we hope that by reading this whitepaper, you will be able to get closer to achieving this goal.

Yours faithfully,
Patrick and Barbara



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2 About 100% Renewables

Barbara and Patrick have 40 combined years of work experience and are known for our thought leadership in sustainability, energy and carbon. We have been specialising in developing renewable energy master plans since 2014. Our experience with working for organisations that want to maximise their renewable energy opportunities shows that most have the following problems:

- 1) They are concerned about rising energy prices
- 2) Leading customers and other stakeholders ask for details on their renewable energy generation and they can't address those queries
- 3) They don't know how much renewable energy installations will cost them and are wondering whether right now is the most appropriate time for implementation

We have a proven methodology for overcoming these hurdles. The combination of our technical experience and engaging key staff results in the identification of the most suitable energy efficiency and renewable energy opportunities. The outcome of our flagship product 'L2RE' work is a fully costed action plan with a financing strategy that is aligned with our client's financial situation and preference. Our solid stakeholder engagement and education process results in an empowered workforce that feels ownership.

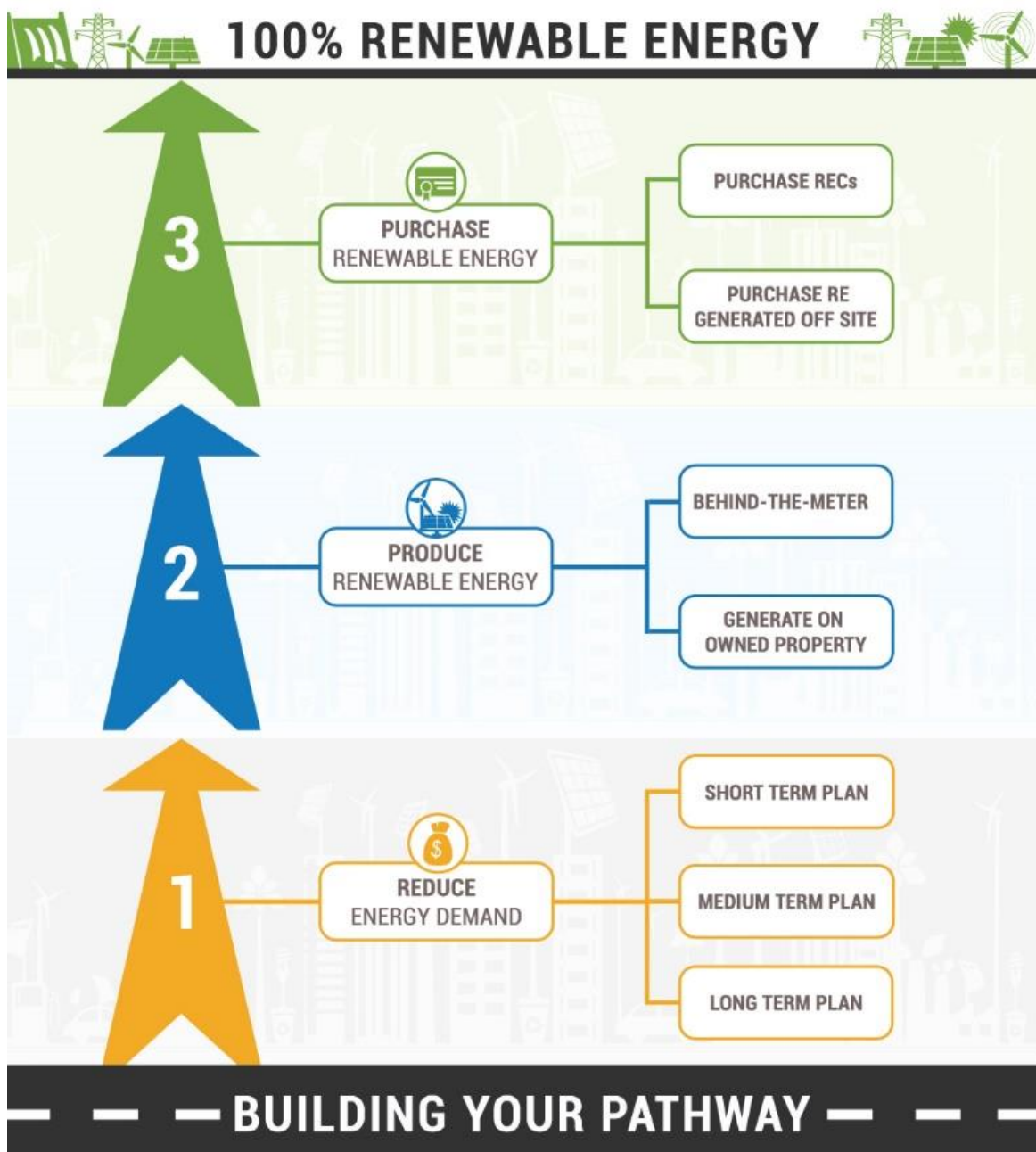
For clients looking for a scoping study to maximise their energy efficiency and renewable energy opportunities we recommend our 'L1RE' product. The outcome of this process is a scoping study, which analyses the RE opportunities and gives recommendations for targets and a staged implementation framework of the opportunities.

The ultimate benefit for client working with us is cost-effective sustainability leadership, with a clear path to a fossil free future and energy prices that are locked in for the long term.

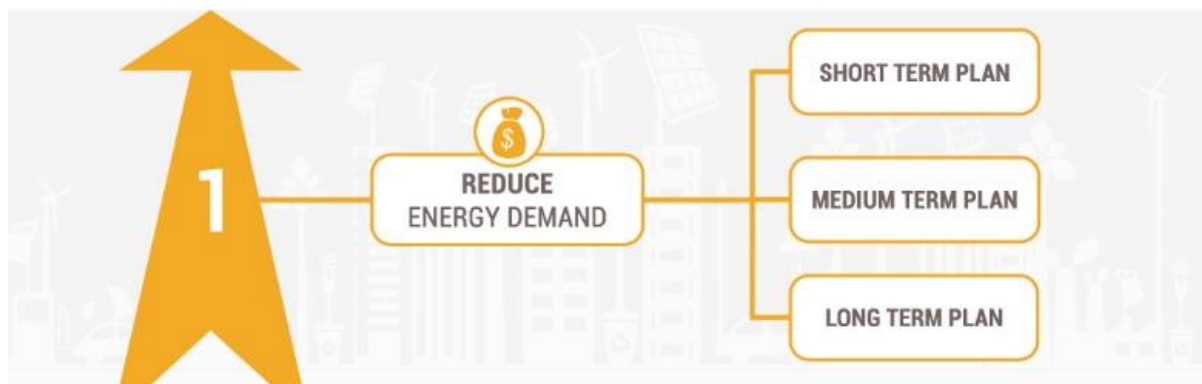
3 How to achieve 100% renewable energy

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 more of in future, your target will feel more feasible and within reach.

Like many approaches to resource conservation (for example, waste, water) reaching 100% renewables involves developing plans for different options for achieving your goal. In our experience, these options can be organised into three opportunity areas (Reduce, Produce, Purchase), and the approach taken is to assess the capacity and cost-effectiveness of actions in each area.



3.1 Reduce energy demand



Referred to usually as ‘energy efficiency’, and more recently ‘energy productivity’, the most cost-effective renewable energy is often 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.

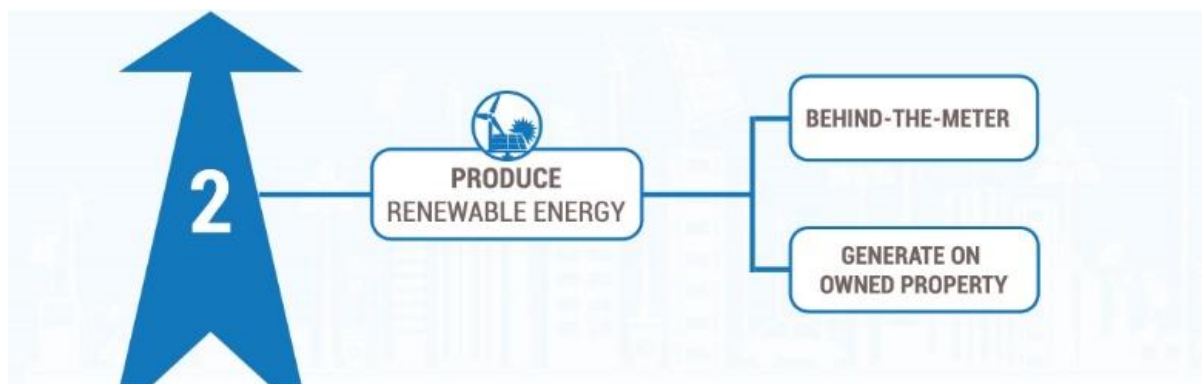
Rather than a typical energy audit that may look for cost-effective opportunities for reducing energy demand in the short-term, a 100% renewables approach will look at energy demand more holistically.

Short-term energy efficiency plans will still look at energy waste, behavioural improvements, end-of-life technology upgrades and cost-effective retrofits such as LED lighting and BMS optimization. Bio fuel blends and fuel switching opportunities will also be evaluated.

Medium-term energy efficiency plans will look at the investments that your business will evaluate and schedule over the next 3 to 5 years. They will ensure planned capital improvements or fleet upgrades are energy efficient, develop a schedule for most capital-intensive retrofits that have good returns, and will continue to capture end-of-life upgrades and ensure maximum efficiencies are implemented with the best available technologies.

Long-term energy efficiency plans will look at the likely capacity for this area to contribute to your 100% renewables goal, so that you are well informed regarding the likely amount of renewables you will need to develop and invest in. Maintaining a focus on optimizing your energy demand will lessen the cost of renewables in the long term. Within this plan you should also look at your future transport needs, including the potential for electric vehicles to contribute towards your future energy mix.

3.2 Produce your own renewable energy



The last several years has seen an explosion in the use of renewable energy in Australia, with well over 1.5 million solar energy systems installed on homes. 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:

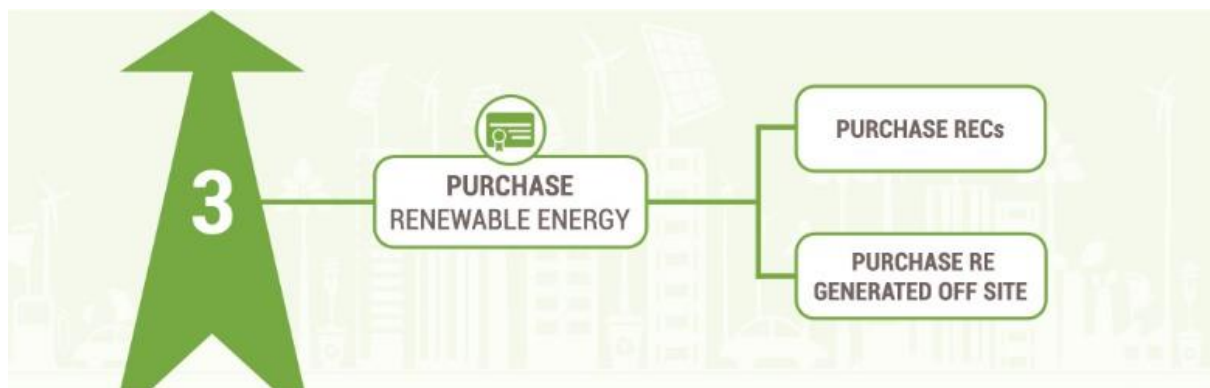
3.2.1 Behind-the-meter

Installing renewable energy such as solar PV, solar hot water, biomass energy generation or other solar thermal system after your meter ensures that your business maximizes the financial benefits, as energy distribution costs are avoided as well as retail energy charges. It is often uneconomic to export excess energy, unless it is to another energy user. Energy storage technologies are improving and their costs are reducing. This will help businesses to maximise the value of their renewable energy systems in future, and will help to reduce grid costs.

3.2.2 Generate on owned property

Many businesses have property (roof) space, infrastructure and/or land that is ideally suited to the development of renewable energy projects. Wind energy, solar PV, mini-hydro, bioenergy or other opportunities may be viable, even if the energy created exceeds the demand of the host sites, with generated energy offsetting retail energy purchases from the grid. The major aspects that your assessment will evaluate include the unsubsidized cost of energy generation, treatment of renewable energy certificates consistent with your goals, and retailer engagement and negotiation to facilitate this additional supply source.

3.3 Purchase renewable energy



When the cost-effective capacity of energy demand reduction and renewable energy production has been identified, 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.

3.3.1 Purchase Renewable Energy Certificates or green power from your retailer

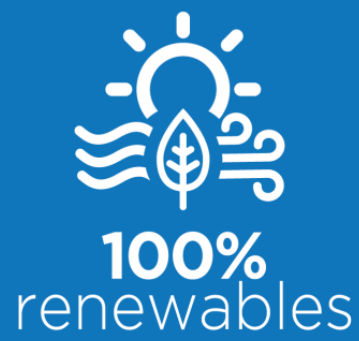
The traditional way for energy users to source renewable energy has been through the purchase of accredited GreenPower or other green energy from energy retailers. Usually this attracts a premium to grid energy supply. Similarly energy users can purchase Renewable Energy Certificates to 'green' their energy supply, at the prevailing market rate.

3.3.2 Directly purchase renewable energy generated off site

More recently we have seen the emergence of newer models for renewable energy purchasing, including direct purchases by end users of renewable energy generation output, or the establishment of buying groups to purchase renewable energy, typically from larger-scale plants.

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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