



A Solar Guide for Healthcare Professionals
By Repower Health

Thank you for taking the time to engage with Repower Health!

This fact sheet aims to educate and create renewable energy champions who own, run, or work in health services by:

- identifying the problems which have led to the need for climate action;
- exploring how renewable energy can solve these problems;
- the positive impacts of a renewable energy solution;
- what you can do as a renewable energy champion to promote renewable energy at your health service;
- how to create a business case for renewable energy; and
- how to join the renewable energy community.



Who is Repower Health?

Repower Health is an organisation of health professional, students and community members taking action to address climate change and related threats to health.

What we want:

- Clean Air
- Clean Water
- Clean Energy
- Safe Food
- A Healthy Democracy
- A Safe Climate

Problems



Greenhouse Gas Emissions



The greenhouse effect is the process whereby greenhouse gases (GHGs) in the atmosphere absorb the radiation released by the Earth's surface and then radiate heat in all directions, including back towards the ground and water. Altogether this adds to the heat the Earth receives from the Sun.

The release of GHGs stored in fossil fuels for the production of electricity adds to the greenhouse gas effect and is a cause of rising temperatures within the Earth's atmosphere.

Electricity consumed through the electricity grid currently produces greenhouse gas (GHG) emissions due to the combustion, mining and transport of fossil fuels to generate electricity. The recent National Greenhouse Account Factors released by the Department of Environment and Energy in 2018 reported an emissions factor of 0.82 kg CO₂-e/kWh for electricity consumed through the National Energy Market (NEM) with the electricity sector accounting for approximately one third of Australia's national GHG emissions.

Healthcare costs



The impacts of human induced climate change from the release of GHG emissions may include a reduction in water supply, increasing pollution, rising temperatures, loss of animal and plant species, risks to infrastructure, and increased severity and likelihood of extreme weather events such as floods, droughts, heatwaves and bushfires.

These impacts of climate change may affect health through dehydration, heatstroke, respiratory illness, spreading infections, failing food production, malnutrition and social and mental impacts on drought affected communities.

Electricity Costs



A recent report by the ACCC found that residential customers have seen a 35 per cent increase in their electricity bills over the past 10 years and a price increase of around 56 per cent. This increase is due to a number of factors including an increase in network costs due to the roll out of smart meters as well as upgrading network infrastructure such as poles and wires to account for high peak load, rises in wholesale electricity prices, environmental costs and increases to retail margins and costs.

In Focus: Pollution and Health



Links between pollution and health:

Air and water pollution emitted by fossil fuel mining and combustion contributes to a range of health conditions affecting the cardiovascular, respiratory and nervous systems.

The respiratory system is most directly affected. Exposure to pollutants may cause or exacerbate asthma, chronic obstructive pulmonary disease and lung cancer.

Toxic particles in pollution can also cause inflammation in distant parts of the body, leading to heart attacks and strokes.

Chronic exposure to pollution can result in mercury poisoning and impaired brain development, particularly in children.

Healthcare as a contributor to climate change:

A recent study found the healthcare sector is a major contributor to Australia's carbon footprint, estimated to be more than 7% of Australia's national emissions.¹ Hospitals were found to be the largest emitters within the sector followed by pharmaceuticals with emissions predominantly coming from energy use, transport, and products manufactured, used and disposed of.



¹The carbon footprint of Australian health care. The Lancet, 2018

Time for Change



It's time for real action to reduce greenhouse gas emissions, limit climate change and protect health.

How Renewable Energy Solves these Problems



Affordable and reliable clean energy



Compared with traditional forms of generating electricity from the combustion of fossil fuels, the generation of electricity from renewable sources offers stable energy prices which are not exposed to fluctuations in fuel prices, supply issues, or transport costs. Renewable energy is a reliable source of energy with low operating costs and zero greenhouse gas emissions once the embodied emissions have been accounted for.

Climate action



Implementing renewable energy projects avoids emitting CO₂-e that would otherwise be produced from burning fossil fuels. These emissions reductions contribute to Australia's national emissions reduction targets and can also contribute to the sustainability goals of your own organisation. They will ensure a high standard of living for both current and future generations.

Local Jobs



A renewable energy development will have a positive impact on employment through both the construction and operation phase. The jobs created throughout the project will build the nation's capacity of energy professionals at a time when the world is moving to a more sustainable energy system.



Positive Impacts of a Renewable Energy Solution

Implementing a renewable energy solution will have a number of significant **Environmental**, **Social** and **Economic** impacts.

Positive Environmental Impact

- Zero Greenhouse Gas Emissions after accounting for the embodied emissions
- No onsite noise if displacing a diesel generator
- Improved air quality
- Does not pollute water resources

Positive Social Impact

- Improved public health
- Reduce impacts of climate change
- Increase green collar jobs
- Build capacity in the renewable energy sector
- Stable power supply

Positive Economic Impact

- Economic savings from displacing fossil fuels
- Stable power supply
- Reduce lost workdays
- Stable future energy prices
- Reduce healthcare costs



What can you do?

Healthcare professionals and their employers can help to reduce the negative health impacts of climate change by getting involved and shifting to renewable energy.

The key areas where you can get involved include:

- **People:** Identify a solar champion
- **Communication:** Spreading the word
- **Education:** Understand the problem and solutions
- **Analysis:** Develop a business case
- **Implementation:** Installing and promoting renewable energy
- **Share your story:** Join the community

People, Communication & Education



Are you interested in reducing the impacts of climate change to ensure future generations can enjoy the same standards of living that we have been lucky enough to experience? Would you like to get involved in efforts to reduce emissions across the healthcare sector? If so, you sound like a Solar Champion.

Solar Champions are healthcare workers who want to promote a healthy future through the adoption of solar generation at their homes or workplaces. Click here to see a map of all the sites within the healthcare sector who have already taken action to generate clean emissions free electricity.

As a 'Solar Champion' you can:

- Email colleagues and other healthcare workers
 - Talk to the sustainability officer at your organisation or person you think is most senior. Ask if they can send an email to all staff educating them of any work that is being done for your organisation to go solar, introducing them to Healthy Futures and explaining why it's important to take action to reduce the health impacts of climate change.
- Put up posters
 - Get creative and put up posters around your organisation using photos, quotes and statistics relevant to your message.
- Organise a staff meeting or lunch
 - You could invite staff to a meeting or sustainable lunch to introduce them to Healthy Futures and promote solar power at your workplace.
- Set up a page on your website/intranet
 - Has your organisation also taken action and gone solar? Set up a website or intranet page to tell all the staff about the reduction in GHG emissions and savings from the solar system. This will encourage more solar to be installed through seeing the real savings and impact of going solar.
- Get a page in your annual report
 - Organise a page in your annual report to outline what has been achieved by installing solar or any plans your organisation or staff members have to reduce emissions and take action on climate change.
- Educate by sharing information
 - Sharing resources like this document to leaders within your organisation can help promote the uptake of solar throughout the healthcare sector by educating decision makers about key problems and solutions.

Analysis



Before accepting an offer from a solar installer, it is sensible to conduct an analysis into what size solar system is required for your home or organisation and what it is likely to achieve from both a financial and environmental perspective.

A typical solar analysis may include the following:

Site analysis – It is important to first conduct a site analysis to determine the maximum size system which could be installed at the site. This may be conducted through using satellite imagery such as Google Earth or other online tools. In addition to the size of the available roof space the installer may be interested to know the roof type, meter type and roof angle to ensure the correct components are selected.

Load analysis and current energy charges – A solar consultant or retailer may ask to see your current electricity rates and usage data. Providing the best quality data such as 30-minute interval data as well as any future changes to energy usage such as plans for installing energy efficient lighting or plans to purchase new energy intensive equipment will ensure the most accurate analysis of your site. This information may be used by the analyst to model energy used by the solar system and estimate any electricity required to still be purchased from the electricity grid.

Generation analysis – Location specific solar radiation data can be analysed to produce a generation curve taking into account panel specifications, degradation and losses over the life of the system. This generation data can be used against the load data to produce an estimated future energy mix.

Analysis Cont.



Feasibility analysis – Compiling all the elements of the above analysis, your solar consultant or retailer will be able to present a performance breakdown of what a solar system is likely to achieve at your home or organisation. Key indicators which can be used to assist the decision to go ahead with the solar project may include:



Payback period – Producing electricity from a rooftop solar system avoids the transmission, distribution, wholesale, retail and environmental costs typically found on your electricity bill. It is cheaper to produce electricity from a rooftop solar system than it is to pay for electricity through the poles and wires. These savings are accounted for when estimating the payback period which is the time in years the solar system is operational before the savings compared to business-as-usual cover the cost of installing the system and any operation and maintenance costs.



Solar fraction – This is the solar electricity produced from the solar system divided by the total electricity consumption. If you or your organisation wishes to have 100% carbon free electricity, contact your electricity retailer and talk to them about sourcing any additional electricity from green power or investigate a power purchase agreement with a renewable energy developer.

Internal rate of return (IRR) – This metric is used to determine the profitability of the solar system. The IRR is a discount rate that makes the net present value of all cash flows equal to zero. The higher the IRR the more profitable the system is estimated to be.

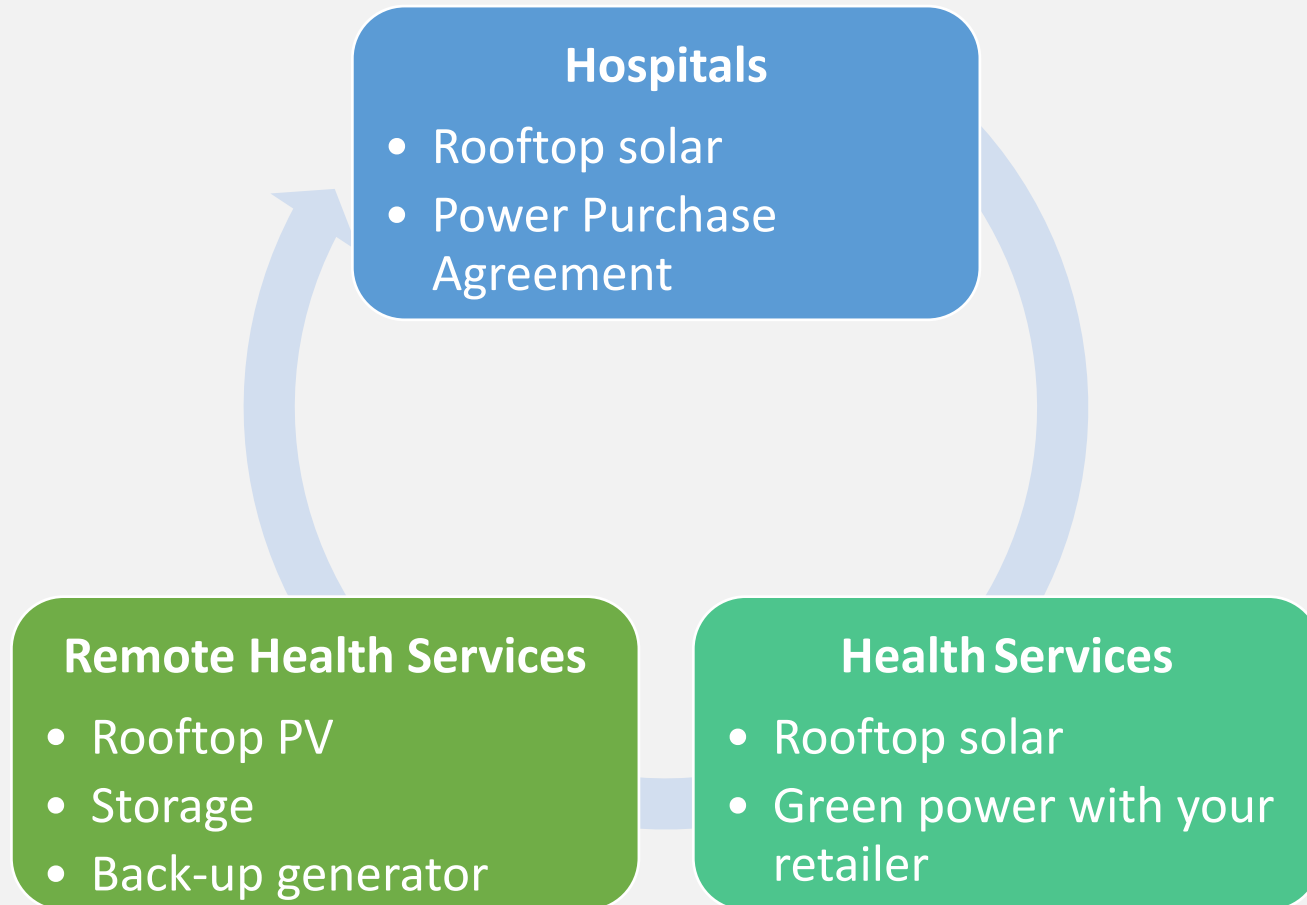


Solar rebate – Solar systems 99kW in size and under are eligible to generate Small-scale Technology Certificates (STCs) based on the estimated generation over a period of time and can be claimed upfront. For systems greater than 100kW, Large-scale Generation Certificates (LGCs) are created based on actual generation recorded each year through the Clean Energy Regulator. Your installer may wish to buy these certificates from you or connect you with a buyer if you do not wish to trade these in the open market.



Components – It's likely that your analysis will also come with a list of components including the solar panels, inverter and balance of system which includes framing, wiring, sales commission, and installer costs. The quality of components used can make a material impact to the life of the system and the performance. Ensure that the system comes with adequate performance guarantees and produce warranties. It is also good to choose panels and inverters from manufacturers who invest in their own R&D, are vertically integrated, have advanced robotic processes and have been manufacturing solar panels for longer than 5 years. These manufacturers are often referred to as Tier 1 solar manufacturers.

What Solution is right for your Health Service?



Contact our preferred installer:



or

Visit the Clean Energy Council's website for a full list of accredited installers



Bunjil Energy



- Indigenous owned company
- Full end-to-end engineering, procurement & construction team
- CEC accredited solar electricians
- 10 years' experience within renewables
- National Capability
- Commercial Solar systems
- Solar Car Parks
- EV Car Charging stations
- Battery Technology
- LED Lighting Upgrades
- Power Factor Correction

Contact

Edward Bennison

edward.bennison@bunjilenergy.com.au

0435217653

1800 769 266

www.Bunjilenergy.com.au



Drysdale Village Medical Centre - 31 kW

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