

Building the next hospital to be net zero carbon emissions (all-electric)

MARCH 2022

About this guide

This guide outlines six practical steps for medical professionals to champion for net zero carbon emission new hospital builds – hospitals that are all-electric. As hospitals built now are likely to continue operating well past 2040, by ensuring our workplaces become net zero, we protect and promote the health of our patients, both now and in the future.

Six steps for building the next hospital to be net zero carbon emissions (all-electric)

1. Become involved at the very beginning
2. Know your stakeholders
3. Secure senior support
4. Demonstrate organisation-wide support
5. Influence the master plan
6. Generate momentum

Background

The health impacts of climate change are well established. Healthcare organisations across Australia and globally have declared Climate Change a Health Emergency. The Lancet has described climate change as both the biggest global health threat of the 21st century and the greatest opportunity to redefine the social and environmental determinants of health. Healthcare professionals have a responsibility to ‘first do no harm’ yet the healthcare sector itself pollutes significantly.

“The carbon footprint of Australian healthcare is substantial, estimated at 7% of total national carbon emissions.”

If the healthcare sector is to play its part in meeting the 1.5°C Paris agreement goal for global warming, then it needs to urgently reduce its carbon emissions to net zero by 2040, with a 2030 emission reduction target of 80%. The rationale for these targets and recommendations to reach them are outlined in [DEA's Net zero carbon emissions report](#). These targets have been endorsed by the [Australian Medical Association](#) and others.

As a percentage of total Australian healthcare CO₂e emissions, hospitals and the energy, goods and services they consume are the largest contributor, responsible for 44%, followed by pharmaceuticals (19%), capital expenditure (8%), community and public health (6%) and general practice (4%).

As hospitals built now will operate for decades, net zero hospital builds are an important part of addressing healthcare's carbon footprint. This means 100% renewable electric supply and no new gas installations or upgrades in Australian hospital facilities. DEA estimates that approximately 15-20% of Australia's healthcare carbon emissions are from the fossil fuel stationary energy used to power and heat health facilities.

The case for electrification

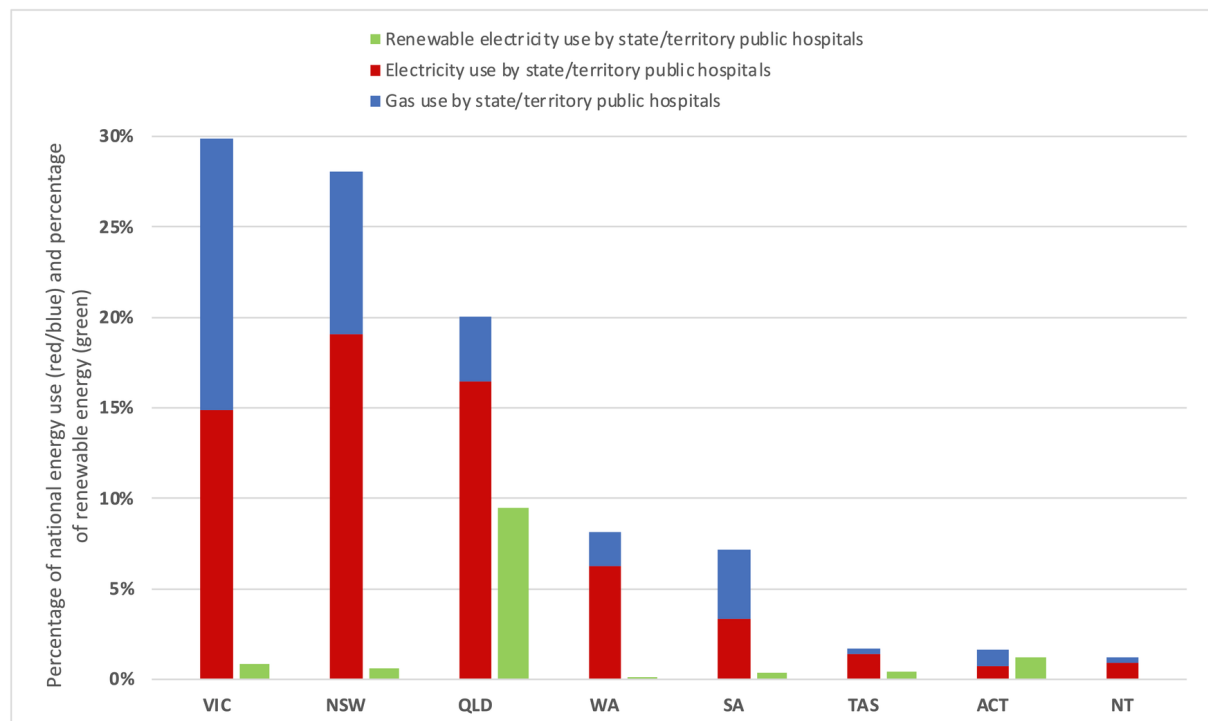
Electrification is a fundamental strategy required to achieve net zero by 2040. It involves changing stationary fuel sources from fossil fuels, such as coal and natural gas, and transport fuels to electricity. This strategy is underpinned through decarbonizing electricity generation by use of renewable energy, such as solar and wind power. Local photovoltaic solar panels are part of the solution, though for large multistorey facilities, rooftop solar installations are very unlikely to meet energy demands (roughly 10-15% at best). Hence purchasing 100% renewable grid supplied energy, such as GreenPower, is required.

Gas in hospitals

Gas infrastructure exists within many hospitals with central energy plants configured to primarily provide heating, with some also having gas powered co- and tri-generation electricity capacity, and the requirement to be able to operate in “island mode” post-disaster situations (assuming gas supply is maintained). However, in a future net zero environment, **gas cannot be part of our energy mix** as it is a significant green house gas.

State and territory public hospital total energy consumption as a percentage of the Australian total public hospital energy use and a percentage of state and territory total energy use that was renewable in supply, 2018-19

Source: Burch H, Anstey M, McGain F. "Renewable energy use in Australian public hospitals." MJA (2021).



ACT = Australian Capital Territory, NSW = New South Wales, NT = Northern Territory, SA = South Australia, TAS = Tasmania, QLD = Queensland, WA = Western Australia, VIC = Victoria.

Figure adapted from Burch H, Anstey M, McGain F. "Renewable energy use in Australian public hospitals." MJA (2021) with permission.

All electric hospital builds

South Australia's new Women's and Children's Hospital plans to be the first 100% all-electric hospital, avoiding an additional 2,178 tonnes of greenhouse gas emissions each year – the equivalent of taking 700 vehicles off the road. Furthermore, the state plans to trial mothballing existing co-generation plants and retro-fitting old gas boilers in existing hospitals to have the whole health sector electrified.

The new extension to Canberra Hospital will also be all-electric.

To gain the maximum benefit from Victoria's commitment to power public hospitals with 100% renewable electricity by 2025 it is essential that gas be eliminated from new hospital builds (and existing hospitals as natural/fossil gas contributed almost 50% of Victorian public hospital energy use in 2018-19).

In existing hospitals with established gas infrastructure or on-site co-generation plants achieving an all-electric hospital requires a significant upgrade. However, the appropriate infrastructure is more easily achieved in new hospital builds.

Paradoxically, an all-electric hospital is less likely to be impacted by natural disasters than gas because gas infrastructure (being less networked) has more possibilities of single points of failure following natural disasters such as fires, earthquakes and storms. On site emergency diesel reserve generators cannot reserve functions powered by gas, such as space and water heating, whereas they can back-up an entirely electric hospital.

Building to the highest NABERS rating of energy efficiency is essential to achieving net zero carbon emissions.

Another significant contributor to hospital CO₂e emissions is embodied emissions, that is from the materials used to build the hospital and the construction process. Hence procuring zero or low carbon steel, concrete and other building materials is an important consideration.

Six step guide: Advocating for net zero carbon emission hospital builds (all-electric)

1. Become involved at the very beginning

It is vital to become involved at the first hint that a new hospital is to be built ([learn more about the process for building a new hospital here](#)).

Get informed – The DEA SustainHealth Special Interest Group will be very happy to share information, resources, and support your efforts.

Your main aims will be to advocate for a hospital that:

- has no natural/fossil gas infrastructure installed
- has 100% renewable electricity supplied
- is as energy efficient as possible.

The return on the initial investment is likely to be followed by ongoing energy savings after about 10 years.

Advocating for a low carbon emissions build is also important as the CO₂e emissions associated with construction should be offset elsewhere.

2. Know your stakeholders

You need to know who the key stakeholders in the process will be and who you will need to influence in order to successfully advocate for a net zero carbon emissions hospital.

Internal

- The major stakeholders in your hospital will be the Board, the Executive/Leadership team, and the Project Director who has been given the portfolio of overseeing the planning, design and delivery of the new hospital.
- It is also helpful to meet with the Director of Facilities, Sustainability Officer, Communications Team, as well as representatives of the Senior and Junior Clinical Staff (Senior Medical Staff Association and RMO Society).

External

- Capital projects for the Department of Health are usually managed by the State Health Department Building Authority, such as the Victorian Health Building Authority (VHBA).
- Most elements of the planning, design and delivery of the project will be outsourced to engineering and architecture firms – find out who has been contracted for the Master Planning Phase.
- An important first step is to email all these stakeholders, outline your position, and request a meeting to discuss.
- In particular, find out if the relevant state health department's Building Authority mandates carbon and water targets. Is there a sustainability allowance (e.g. 2.5% of total construction cost for delivering sustainability initiatives above standard practice in Victoria). Also, a key contact will be the appointed dedicated sustainability consultant.

3. Secure senior support

- Seek out clinicians and managers in leadership roles that will support your initiative and advocate alongside your team. Although you may know who is likely to be supportive, you may be surprised by how many staff will actually be very supportive!
- Your hospital's sustainability officer will likely know a large network of staff at many levels with an interest in sustainable health care. These may include Divisional Directors, Nursing Directors, Directors of Clinical Education & Training, and the Chair of the Senior Medical Staff Society.
- Securing senior support before seeking broader support across your organisation adds legitimacy and authority to your initiative.

4. Demonstrate organisation-wide support

- Draft an online petition letter addressed to your state Building Authority, calling for an all-electric, zero carbon emissions approach to your new hospital.

- There are a number of web-based solutions available to circulate a petition to staff in your organisation via email. Using Google Doc is an easy way to write a letter, circulate using an open link, and invite staff to add their name to the bottom.
- Before moving to enlist broad support from staff across all levels of your organisation it is important that you inform your hospital leadership team that this is what you are planning to do. This additional effort to keep them informed may prevent any later hostility impeding your progress.
- Once you have collected a representative number of signatures, invite your Executive/Leadership Team to sign the letter or meet with you to discuss your plans prior to sending the signed petition to the Building Authority.
- When meeting with your executive team, the goal is to have them agree to facilitate the Building Authority to adopt a net zero carbon design for the new hospital and to inform the Building Authority of just how popular such a net zero carbon design is among staff in your existing hospital as well as the other net zero carbon designs in other states/jurisdictions. **The DEA Sustain Health SIG has a modifiable '10 minute pitch' PowerPoint template for a new all-electric and biophilic build – this is available on request.**
- Ensure the pitch to your executive team aligns your goals to the Organisational Strategic Plan (if the Strategic Plan is up for review, encourage your colleagues to advocate for sustainability and organisational net zero carbon targets).
- Individual letters from staff to the executive team can be a helpful addition, but a co-ordinated message from an organised collective of staff is likely to have the most impact.

Consider involving external parties

- If your efforts are met with significant resistance, consider looking to external parties for support.
- Be wary of approaching public media or social media without clearance from your Hospital Communications Team (there will be a relevant hospital contract clause).
- Organisations such as Doctors for the Environment Australia (DEA), Australian Medical Associations (AMA), and Australian Nursing and Midwifery Foundation (ANMF) can work in parallel to your internal advocacy.

- However, if you are making positive progress through internal channels there is a risk of destabilising that progress if the hospital executive team feel that you have bypassed them.
- The Building Authority and Health Department may be quite supportive of the overall plans but require stakeholder support when negotiating with Treasury regarding funding / business plan etc. If not, State politicians (particularly those from the party in power) can be lobbied to apply the relevant pressure.

5. Influence the master plan

- Request meetings with your Hospital Project Manager for the new build as well as the State Building Authority, and representatives from the Engineering and Architecture firms contracted to construct the Master Plan.
- The Master Plan phase requires multiple meetings with staff across the organization. It is important to have representation at as many of these meetings as possible and ensure sustainability is a regular agenda item and discussed.

6. Generate momentum

- The Master Plan phase is not a short process, and any positive news should be communicated to your supporters.
- Maintain interest in the project and watch for any deviation away from sustainable design at all stages of the build.
- Use the momentum generated among your supporters to launch a broader sustainability movement across the organisation, campaign to get any remaining hospital buildings off gas, and become the voice for sustainability in your organisation.

These steps are a guide and not all will be universally applicable. The most important aspects are to get involved early, make contact with the relevant stakeholders, and advocate that delivering sustainable healthcare is an urgent public health issue that is important to staff across the organisation.

Hyperlinked references in order of appearance below

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- [12] <https://www.hinfra.health.nsw.gov.au/projects/how-to-build-a-hospital>

For further resources, visit:

The DEA Sustainable Health Care web page: <https://www.dea.org.au/our-work/sustainable-healthcare/>

The DEA Sustainable Health Care Special Interest Group can be contacted via:
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About DEA

Doctors for the Environment Australia (DEA) is an independent, self-funded, non-governmental organisation of medical doctors and students in all Australian states and territories. We are supported by a distinguished Scientific Advisory Committee.

We work to address the public health impacts from damage to our natural environment such as climate change, which will increasingly undermine our health and our healthcare services if we fail to act.

A key focus of DEA's work is raising awareness of the healthcare sector's responsibility to reduce its sizeable carbon footprint and to ensuring adequate measures are instigated.

DEA's Scientific Advisory Committee:

Prof Stephen Boyden AM, Prof Emeritus Chris Burrell AO, Prof Colin Butler, Prof Peter Doherty AC, Prof Michael Kidd AM, Prof David de Kretser AC, Prof Stephen Leeder AO, Prof Ian Lowe AO, Prof Robyn McDermott, Prof Lidia Morawska, Prof Peter Newman AO, Prof Emeritus Sir Gustav Nossal AC, Prof Hugh Possingham, Prof Lawrie Powell AC, Prof Fiona Stanley AC, Dr Rosemary Stanton OAM, Dr Norman Swan