
HEALESVILLE NET ZERO TOWN PROJECT: SCOPE

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The increase in gas and electricity bills in the past decade alongside the clear connection of carbon emissions to climate change has resulted in the rise of Net Zero Emissions targets in Australia. While these targets exist as a state level, some active community groups have taken it upon themselves to reduce their carbon emissions.

Healesville Community Renewable Energy (Healesville CoRE) is a group of local community volunteers whose vision it is to create a net zero emission town. Their aim is to achieve net zero emissions within 10 years and they are being supported by the Yarra Ranges council.

Energy efficiency, demand side management, deployment of renewable energy projects, residential solar PV, grid and local storage solutions are examples of the clean energy transition.

However, implementing these projects at scale comes with challenges that need to be addressed but also opportunities to be seized.

Part 1 – Energy audit of three homes and a school building

The Issue

The first step in the framework for achieving carbon net neutrality is to reduce energy demand. As it stands, the ability to reduce energy demand significantly is available. Constructing a building envelope to best practice standards heating and cooling demands can be reduced by 90%. The Australian government's efforts to implement an energy rating scheme for home appliances and lighting has helped the everyday person to better choose an energy efficient appliance. Although achievable, the effective deployment of these technologies and regulatory schemes in practice faces three main barriers.

The first barrier is **finance**. Although upgrading a home benefits from ongoing reductions in energy bills, there can be significant upfront capital costs. Even if the ongoing savings can replenish the upfront costs, not every household has the available funds for covering these costs regardless of how short the return on investment is.

The second barrier is **education**. The energy demand of a building is at the whim of the owner. There is a great deal of information circulating around reducing energy demand, but if it can't be easily understood and implemented by the owner then its impact remains limited.

The third barrier is **trust**. It's important that the owner of the building can trust that the appliances/insulation/solar PV that is being installed will deliver on the promises of energy reduction. Trust of the energy reducing technologies and techniques will enable them to become common practice throughout the community.

Aim and Deliverables

The deliverables of this part will ensure that these issues are addressed. We aim to communicate the financial benefits and risks involved with implementing various energy saving techniques for a building. Efforts will also be made to provide solutions and recommendations for low-income households

Three Healesville homes - of a wide range of sizes, orientation, areas, occupancy - and a school building will undergo energy audits. These audits will review the energy consumption profile of the buildings with the objective of identifying simple solutions to reducing energy demand. These energy audits will serve as excellent engagement opportunities with the community of Healesville and help communicate the vision of Healesville CoRE.

The information and findings of Part 1 will be presented as a 10-page report and an A1 poster. The information that is presented will be succinct, clear, and easily accessible for the Healesville community so that it may be used as an education tool. The report and poster will be a collation of a wide range of information sources that will simplify the techniques that can be used in a home to reduce energy bills.

What is needed

Three homes and a school building to be energy audited. From these buildings, the following is required:

- 30-minute interval energy consumption data of the past year for each building to be audited
- Site plans/drawings to determine dimensions of the building and insulation details
- **Site visit**
 - Monitoring of the appliances energy usage within the buildings
 - Detailing of the lighting system
 - Potential shading to rooftop solar PV
 - Details of hot water system
 - Draught proofing
 - Site photos

Part 2 – Develop energy baselines

The Issue

To assess potential renewable energy systems for Healesville, it is necessary to understand the energy profile of the town. With this information, it is much easier to optimally size the new infrastructure. Furthermore, identifying peak load periods and seasonality is important in designing system capacity as well as assessing possible techniques for demand management. Establishing the energy baseline will help recognise the system needs and as such must be the starting point for any energy assessment.

Aim and Deliverables

We aim to deliver an energy baseline for the town of Healesville. Identifying energy demand, peak loads and how these change with the seasons will be the main aspects of the energy baseline. The main deliverable will be an excel spreadsheet that defines the energy baseline and presents data both visually and numerically.

There will be a dedicated section in the final report to discuss and analyse the energy baseline, contributing to the context of the report as well as providing data that will be used throughout the report.

What is needed

The main requirements for the energy baseline include:

- Substation level energy data for the Healesville community
 - Preferably 30-minute intervals or less
- Gas use in the town
- Leveraging existing relationships with AusNet to have timely access to robust data as well as professional insight into possible network constraints associated with large renewable energy systems

Part 3 – Opportunities and challenges

The Issue

Healesville CoRE's vision and the support from the Yarra Ranges council are invaluable drivers to making the transition of the town to net zero emissions a reality. Other Australian communities have similar ambitions and are employing a range of strategies to generating renewable energy and managing energy demand (Uralla, Hepburn Shire, Byron Bay). There are many options which Healesville CoRE could explore, but some of these will come with financial, social and physical constraints. Furthermore, these opportunities will be limited by stakeholder involvement and community engagement. Currently, Healesville CoRE has successfully begun the process of engaging the wider community and have contacted a range of stakeholders who might assist in making their vision a reality. The Yarra Ranges council is also wholeheartedly involved in the project and have mobilised support from the local network company, AusNet Services. However, given the overwhelming range of options available, there is an opportunity to provide a high-level assessment of what these options are, with some initial recommendations and guidance on the practical next steps.

Aim and Deliverables

Note: This may be subject to change as we develop the project. Identifying key challenges and opportunities and suggested focus areas under direction from Healesville CoRE and Yarra Ranges Council may vary the direction taken within this section.

By researching existing net zero emissions strategies and community driven renewable energy projects throughout Australia, we will develop a better understanding of the viability, feasibility and desirability of the options that Healesville CoRE could explore. These case studies will help us identify the opportunities and challenges involved with reaching net zero emissions, while learning from the experience of other towns on a similar journey.

This section will also aim to deliver a high-level options assessment, identifying key elements unique to Healesville that provide opportunities for the deployment of renewable energy technologies, with various technology options being explored for viability. However, these opportunities will also be met with a variety of challenges. Identifying these challenges and possible options in dealing with them will help in the future planning and direction of the net zero project. Some aspects that will be discussed include challenges relating to finance, key stakeholders, geography and weather, network constraints, smart technology roll-out, social enterprise, community buy-in, implementation and management, etc.

What is needed

The main requirements for research of opportunities and challenges:

- A clear understanding of the current stakeholders involved and pending involvement with Healesville CoRE
- An overview of Yarra Ranges' existing energy projects, council schemes
- Information on other similar projects throughout Australia
- Liaising with other community groups to share knowledge