



This article is the first in a series of three that will be published in the Bulletin over the coming months. The “*Tatura Home Improvement Information Project*” is supported by the Victorian Government through their *Climate Change Mini Grants program*. Stakeholders in the project are Zero Carbon Tatura (ZCT) and GV Community Energy (GVCE).

“Electrify Everything”

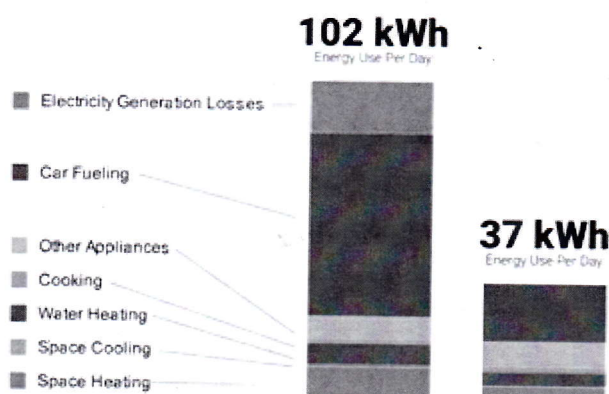
By changing our energy source at home and at work from gas and petrol to electricity we can significantly reduce our energy use and at the same time lower our costs of living.

The “average” Australian household releases 11,000 kg of CO₂ greenhouse gas into the atmosphere every year. Much of this is the result of using conventional fuels like natural gas and petrol. These fuels are both expensive and highly polluting. Our current electricity grid wastes a huge amount of energy using fossil fuels. Many coal power plants are only 25% efficient and natural gas plants only 45% due to the thermal losses involved in combusting these fuels.

Energy use in average Australian households can be grouped into different categories:

- space heating and cooling, - water heating, - cooking, - vehicles/transport, and - other appliances which are largely electric already such as fridges, dishwashers, washing machines, dryers, computers, and phone chargers.

The average household consists of 2.6 people, and 1.8 vehicles. When thinking about households it’s useful to consider the appliance energy use as well as transport fuels. To help accelerate towards a full electric economy, we need to replace our biggest energy consumer being Internal Combustion Vehicles (ICE) with Electric Vehicles. Recreational activities and travelling holidays are lifestyle choices that can be (very) energy intensive (flying!) but they are not included in the below graph.



Energy consumed by average Australian household (left) and electrified household (right)

In fully electrified households, gas appliances are replaced with efficient electric ones, solar panels are installed on the roof with a home battery, and there is an electric vehicle in the garage. As shown, household energy use (based on 2.6 people, and 1.8 vehicles) will drop significantly from 102kWh to just 37 kWh per day and further reductions will occur with improved insulation and draught proofing. This will reduce home and vehicle running costs by around \$5,000 per year and significantly lower carbon emissions.

With abundant solar energy as well as a favourable regulatory environment, Australia is leading the world in rooftop solar panel installation. This allows us to move towards full electrification of all our energy sources much sooner than many other countries.

Our low population density and large land mass is being supplied by a

THE FUTURE IS ELECTRIC



for our energy supplies, compared to other more densely populated countries. Our large houses and sprawling roof spaces do however make us highly suitable for the installation of solar PV systems for more efficient decentralised energy generation.

The low population density also results in high transport costs and the move towards electrification of all our vehicles will result in a big reduction in household energy use and cost.

Many households are already familiar with energy efficient reverse cycle heating and cooling systems. Heat pumps and solar collectors are now increasingly used for hot water services which provide significant savings in running costs. Induction cooktops are equally more advanced and provide far greater temperature control & safety features compared to the traditional ceramic types. These more advanced types of electric household appliances are typically more expensive to purchase, but much cheaper to operate, compared to their fossil fuel-based predecessors.

Finance is a piece of the electrification “puzzle” and new approaches will need to be developed to bring forward these savings opportunities. Banks are now considering how best to provide additional products to support consumer financing for these items.

What has happening?

Australia is putting the foundations in place for the transition to full electrification. More than three million households have already invested in solar.

Victoria is funding community batteries and assisting households and businesses to upgrade to energy efficient electric appliances. They are also investing in community-owned renewable energy hubs such as the Hume Community Power Hub which works with communities to provide advice and resources that support upskilling, engagement, and the development of community-based renewable energy projects. Snowy Hydro-2 will provide flexibility for dispatching electricity.

New South Wales is retiring four of their five coal fired electricity generators early and promoting fuel switching (to electric devices) under their energy savings scheme.

South Australia is prioritising and supporting the installation of home batteries in public housing.

Queensland has the highest penetration of rooftop solar and is working on demand response including water heaters, pool pumps and smarter air conditioners.

The NT is providing considerable rebates on home batteries and offering free registration for EVs.

The ACT is providing stamp duty exemptions and interest-free loans for EVs and phasing out its natural gas network with plans for newly built homes in 2023 to be fully electric.

Tasmania is working on being interconnected more tightly to Victoria’s electricity network, thus using Tasmanian hydro to feed into the national network.

Households in **Tatura** can play their part in the electrification process. Consider installing solar to take advantage of the glorious Australian sun, replace old and outdated appliances with energy efficient electric ones, and phase out gas appliances. Check government websites such as <https://www.energy.vic.gov.au/energy-efficiency/victorian-energy-upgrades> to see what rebates are available when purchasing these products.

What’s Next?

The information provided above is of a general nature and describes what has been happening in Australia over the past decade or so. In the next Bulletin we will provide more detailed information on energy-saving measures we can take locally in our houses and businesses.

Works Cited

Griffith Saul, E. J. (2021, October). CASTLES & CARS SAVINGS IN THE SUBURBS THROUGH ELECTRIFYING EVERYTHING; TECHNICAL STUDY and DISCUSSION PAPER