Electrify Q&A

INTRODUCTION ELECTRIFY MYTHS AND FAQ

It is important to understand that the energy transition and acceleration of renewable energy development, is the beginning of the end for the fossil fuel industry. Peak bodies like the International Energy Agency report annually on the progress (or otherwise of the global energy transition), including the amount of CO2 released to the atmosphere. This includes, when we expect to reach “peak oil”, our progress on reducing emissions and our progress towards “nett zero”.

The IEA report advises us we are still not aligned with the Paris agreement, and we are currently on track for 3 degree C of warming. The main reason we are NOT on track is continued expansion of the oil and gas industry, which is being facilitated by their influence on our governments and the continued Trillions of dollars they receive in subsidies.

When we talk about an all-electric future, remember that the continued operation of all fossil fuel machines (running on coal, oil and gas) is NOT compatible with zero emissions by 2050. In Australia it is calculated that our homes and vehicles create 42% of all our emissions. Electrifying everything in our homes and our transport is achievable, and it is also essential. It will reduce air pollution in our homes and cities. It will improve our health and over the longer term will save us all a considerable amount of money. This paper is an attempt to counter misinformation, that is still being circulated in our community. This negative influence on us all of us is specifically targeted to hold back a renewable energy future and promote the continued use of fossil fuels in particular gas.

Renewable energy: From the sun, wind, stored water(hydro), tides and waves.

These forms of energy are converted to electrical energy using Solar panels, Wind turbines, Hydro-electric power, tidal turbines and wave motion devices. Unlike fossil fuels, these renewable energy sources are free. Fossil fuel powered machines have poor efficiency of less than 45%, whereas electrical machines have high efficiencies over 90%. This makes renewable energy the cheapest form of energy for our homes and machines.

Electrify Q&A

SOLAR PANELS.

Q: Solar panels are not re-cyclable?
A: They are made from an aluminium frame, silicon, silver and glass, which are all 100% recyclable. These materials all have value and are being collected and re-cycled across Australia. There are free e waste re-cycling services available here in Perth.

Q: Are Solar panels dangerous to our health?
A: NO! They are made from everyday materials (see above) which are used in everything we own.

Q: Solar panels take up too much land that could be used for farming?
A: Most of the solar power in Australia comes from our rooftops. Using land for Solar farms are not as destructive as land clearing for mining, logging and cattle farming. Solar farms can exist on farming land with cattle grazing beneath them, this has been shown to be beneficial for the soil and the animals.

Q: Solar panels do not last long?
A: There are rooftop solar panels more than 15 years old still operating long after their warranty (usually 15 years) has expired. Older panels can also be supplemented by adding new panels until they need to be replaced.

Q: How long do Solar inverters last?
A: The same applies here, especially to better quality inverters, which are operating long after expiry of their warranty (usually 10 years). New inverters are now much cheaper today and can readily be renewed, the electrical components can be re-cycled.

Q: Can hail damage Solar panels?
A: No, ordinary hail won't destroy your solar panels (big hail — more than 5cm across, might) but your panels should be covered for hail damage by your home insurance. The undamaged panels will still function when others are damaged.

Electrify Q&A

HOME BATTERY ENERGY STORAGE

Q: Can home batteries catch fire and burn down your home?
A: No. The design and chemistry used in home batteries are very stable and the systems that control charging and discharge are carefully engineered to prevent overheating and thermal runaway. The house fires we see reported in the media are usually caused by cheap batteries and poor-quality battery chargers for electric, scooters, bikes and toys that are not correctly operated or adequately regulated.

Q: Are home batteries recyclable?
A: Yes. Home batteries are 100% re-cyclable and the separated materials used in the manufacture of new batteries. There are several companies in Australia with contracts to do this. There is free e waste re-cycling available here in Perth. For example, Neometals Pty Ltd. is a Perth based ASX listed recycling company.
https://www.neometals.com.au/en/business-units/core-divisions/lib/

Q; Are home batteries reliable?
A: Evidence shows that some early home battery installations are still operating long beyond their warranties. Depending on their usage these batteries may still hold up to 90% of their original capacity.

Q: Home batteries are expensive are they worth the investment?
A: Whilst this may be true, it is very much dependent on your personal circumstances for example, how much energy you use at home (particularly at night), how you value the investment, your desire to reduce your carbon footprint, your need for power during a blackout and perhaps you want to be more energy independent from the grid. Home batteries generally cost about $1,000/kW; however, this cost is falling, and subsidies are now being given in some Australian States. An energy efficient home with lower energy use at night may only need a 5kW home battery, consequently changing the investment scenario. They can also provide energy during power outages.

Electrify Q&A

ELECTRIC VEHICLES

Electric vehicles, this includes electric cars (EV's), bikes and scooters. All of which can be charged at home and be part of our all-electric future, reducing our transport emissions, cleaning up the air that we breathe and reducing noise pollution.

Q: Do EV's have the same range as a petrol or diesel vehicle?
A: On average Australians only drive about 33km per day, do we really need a 500km+ range for commuting, shopping and to ferry the kids around? Evidence shows most EV's are charged at home. If you are a 2 car (or more) family, why not make your next car an EV and use it for all that commuting? For longer journeys chargers are now being installed on motorways, WA is installing the longest electric highway in the country from Kununurra to Eucla and Mundrabilla and south to Esperance.

Q: EV's are more expensive, is it still worth buying one?
A: Yes: Despite the upfront cost of buying a new EV, evidence shows they are still cheaper to run over their lifetime. This is still true when an EV is charged entirely from the grid and is compared with a cheaper Hybrid Petrol car.
EV's have much cheaper servicing and near zero cost to run when charged from your own solar.

Q: Are EV's more likely to catch fire?
A: NO. EV batteries are very safe. Whilst EV fires seem to get some negative publicity, statistics show that ICE vehicle still have more fires. Petrol and diesel (particularly petrol) are highly flammable and definitely much more flammable than batteries.
Electric vehicle batteries: what you need to know | RACV

Q: Are emissions used to make an EV higher than conventional vehicles?
A: YES, but this is changing. The emissions to manufacturing an EV are slightly higher due to the materials and manufacturing of the battery. However as new zero emissions battery manufacturing comes online this will change.
NOTE: Due to the emissions from the fuel burnt over the lifetime in a conventional vehicle, their lifetime emissions are actually about 4 times that of an EV.

Electrify Q&A

Q: Are the batteries in an EV recyclable?
A: Yes. EV batteries (see house batteries recycling) are 100% recyclable and can be made into new batteries. Old EV batteries may still be used for other projects (house batteries, camping) at the end of a car's life.

Q: Do I need to re-wire my house to charge an EV?
A: NO! you can charge your EV from a normal 10A socket. This is called "trickle charging" and takes longer than using a fast charger. However, most people who use their EV for daily commuting usually only need to charge their EV once a week. If you want to charge your EV more rapidly you can install a fast charger or use a community fast charger (free apps are available to show you their location e.g. Chargefox App). If you only have a single-phase switchboard, you can still upgrade but charging will be slower. If you are renovating or building, then the cost of a 3phase switchboard upgrade should only be a few hundred dollars. It is always best to get the advice of competent installer.

Q: Do I still reduce my emissions if I charge my EV from the grid?
A: YES, the efficiency of a conventional vehicle is about 20 to 30% and for an EV is about 80%. Therefore, over the lifetime (cradle to grave) EV's have much lower emissions than a vehicle with a lifetime burning fossil fuels. NOTE: The amount of renewable energy in the grid is continuing to increase.

Q: Doesn't the disposal of EV batteries counteract any reductions in emissions for EV?
A: NO, definitely not, EV batteries are 100% re-cyclable and there are companies in Australia who have contracts with car manufacturers to do this.

https://liviumcorp.com/battery-recycling/

HOT WATER HEATING AND STORAGE SYSTEMS

Heating hot water can be done using the energy from the sun, either from your solar system using a heat pump hot water storage system or by directly heating the water in panels on the roof. Solar hot water is heated by circulating hot water through a panel on your roof and storing it in a tank on the roof or on the ground.

Q: What is a heat pump?
A: A Heat pump uses a compressor to extract heat from the air (in the same way as your reverse cycle A/C system) this heat is stored in the insulated hot

water storage tank. Heat pump systems are rapidly gaining in popularity globally and are falling in price. They can be easily installed in the same location as an existing hot water system.

Q: Why should I remove that old gas water heater?
A: Conventional hot water systems use gas flames or an electric heating element to directly heat the water in the storage tank (like an electric kettle). These are much less energy efficient than a heat pump system, depending on the system can use 2 to 3 times the energy to store the same amount of energy as hot water. Removing an old gas fired unit will reduce air pollution and helps you move towards a fossil free (gas dependent) home with reduced energy bills and a lower carbon footprint.

REVERSE CYCLE A/C HEATING AND COOLING SYSTEMS.

Reverse cycle air conditioning has been around for many years and today is one of the most affordable ways to heat and cool the living spaces in your home.

However, they are large energy consumers and running them 24/7 to maintain comfort in your home may result in large energy bills. You should also consider the provision of ceiling fans which are more affordable and can lower air temperatures by around 3 degrees.

A sustainable well insulated and draught free home, with a high energy rating (>Nathers 6 stars) will considerably reduce the need for heating and cooling and will considerably reduce energy bills.

Advice shows that we should keep internal spaces at around 19 degrees in winter and 24 degrees in summer, just one degree more or less than this can increase our energy use by up to 50%.

Q: What’s the most efficient way to heat and cool a household?

A: Reverse cycle air conditioning is the most efficient, generally heating individual spaces is more economical than ducted systems that cool/heat the whole house, though this depends upon how many people live in the house. A large split system with 9kW of heating and 8kW of cooling should have an energy efficiency of 300 to 600%.

Electrify Q&A

Q: What do I need to consider when buying a new spilt system?
A: When considering the purchase of A/C systems, the most energy efficient will save money over time, buy units with the highest energy rating (>3.5stars). To prevent drafts and heat loss make sure your installer closes-up the holes through walls (for pipework and cables) with expanding foam.

INDUCTION COOKTOPS

What are the key benefits of cooking using an Induction cooktop?

- Cooking is much healthier, there are no emissions from burning gas inside your home.
- They are more efficient because there is no heat loss from naked flames, consequently your kitchen will be cooler when cooking.
- The heat can be controlled instantly from the touch pad and will automatically turn off when the pan is removed.
- Large pans of hot water can be boiled using a high-power (P) setting, which is faster than when cooking with gas.
- Spills can be wiped up instantly and without getting burnt and when you are finished, they are very easy to wipe clean. They are much more convenient to cook with.
- If this is the last gas appliance in your home, you will be reducing your carbon footprint and be able to have the gas disconnected!

Q: Can I stir fry using a wok on an induction cooktop?
A: Yes, use a flat bottom wok on high (8 or 9 setting).

Q: Can I still use my old pans?
A: Sometimes. Most modern pans are suitable for all means of cooking. Test your pans are magnetic, with a fridge magnet!

Q: Will I need a new electrical connection?
A: Yes. If you have a gas stove. Even if you have an electric cooktop, it is better to check with an electrician and factor in the cost of a new electrical connection when changing.

Other useful information:
- Some cheaper units can perform quite poorly, so when buying check consumer feedback and independent testing from Choice.
- If you are renting you could use a plug in portable induction cooktop using a normal 10Amp socket.
- To save energy in your kitchen you can also consider using an air frier, which use less energy than a large oven.

Electrify Q&A

RENEWABLE ENERGY

Q: Do wind turbines kill birds?
A: Wind turbine blades can kill birds, however painting one blade black has drastically reduced bird strikes. Also, it should be noted that this is a tiny fraction of animal deaths, when compared to the pollution from industries related to fossil fuels and deforestation.

Q: Do marine wind turbines kill whales?
A: No, there is no scientific evidence that wind turbines kill whales.

Q: Is the noise from wind turbines dangerous to health?
A: Wind turbines create a humming noise as the blades rotate through the air. It is not loud and there is no scientific evidence that it is damaging to human health.

Q: What about waste from the production of wind turbines and solar power panels?
A: The production of renewable energy machines from steel, copper, aluminium, silicon etc are no more toxic than materials produced in other industries. This is a relatively new industry, and manufacturers are striving to make these new machines 100% recyclable. There is no waste from the production of clean renewable energy converted from the power of the sun and wind. Consequently, it is much less damaging than the waste produced from mining and burning of fossil fuels in power production.

Q: How destructive is mining for solar panel components?
A: Significantly less destructive than mining for fossil fuels and many other minerals like Gold!

Q: Is the purchase price of renewable energy devices worth it/ and what's my Return on Investment?

A: The cost of solar panels, inverters, batteries and wind turbines etc continue to fall. Renewable energy from the sun is the cheapest form of energy on earth. The Energy from solar panels on your roof (2023/24) is currently only 3c/kWh. Solar panels now pay for themselves in about 3 years. Adding a battery to your house will allow you to use the power from the sun at night, batteries prices are falling. EV prices have continued to fall and a number currently on the Australian market are very competitively priced. Remember

Electrify Q&A

the less energy you draw from the grid the more you are reducing your fossil fuel use.

Q: Why does burning gas in the home affect our health?

A: Burning gas in your home emits CO2, carbon monoxide and other noxious chemicals into the air in your home. Getting off gas makes your home healthier and cheaper to run whilst also reducing your carbon footprint.

Q: Is it cheaper to go all electric?

A: YES. Given the substantial savings you will make as modern electric devices are far more efficient and healthier than fossil fuel devices, so they cost less to achieve the same outcome. This is especially true if you swap from gas to electric appliances, you can and power all your electric devices and your EV from your own solar power.

Q: I can't afford to take action.

A: We understand budgets are always a constraint, here are some inexpensive things you can do to save you money and help the environment. For example,

- Installing ceiling fans or using pedestal fans
- Stop cooking with gas! Use one or more portable induction stove/hob, plug in fry pans and an air fryer.
- We can all use electric lap blankets & dress warmly.
- Insulating or improving the insulation in your home and by using more energy efficient appliances.
- Shading windows outside using shade cloth.
- Using curtains with a thermal layer and insulating blinds.
- Join in community action and write to your State and Federal Government ministers to provide subsidies for lower income households so they can electrify.