

## Queensland Productivity Commission - Electricity Pricing Inquiry Submission from Transition The Grove Inc.

### 1. *Who we are*

Transition The Grove Inc is a not-for-profit community group active in the north-western suburbs of Brisbane. We have a focus on building local resilience in our community and region.

### 2. *Where we get our knowledge/ideas*

Members of our group share considerable scientific and technical and professional experience on which they draw. We regularly attend forums and conferences on topics related to future planning for sustainable resource management in a climate-constrained world. Most of our members are active in more than one organisation from which they draw knowledge. We pay particular attention to praxis - practical, applied, experimentation with ideas and technologies to implement them and learn about their potential. Two of our members did coursework in Alternative Energy Technologies.

### 3. *A focus on energy efficiency*

We have explored ways of achieving functional ends with much less electricity usage. Note that this is different from installing a huge array of solar pv panels to generate a lot of electricity, then continuing to use a lot of electricity. The solutions we have been exploring can best be understood by breaking down the functional outcome that is wanted.

So, if what you want is to be cooler in summer, what are ways this can be achieved?

What is on the market is determined more by what will make money for the person selling it than by whether it is the most efficient or effective technology available. Example: An engineer in charge of a big hotel chain set himself the task of reducing the chain's power bill for heating hot water. He arranged for a small handful of polystyrene foam beads to be put inside each shower rose in each hotel room. This was done without letting anyone know except those carrying out the work. The clientele of the hotel chains did not subsequently raise any complaints about the hot water supply in the showers. The power bill for hot water dropped substantially.

The method was never marketed because there is no money in it for supplying polystyrene foam beads. Enough to do a whole hotel can be bought for a few dollars.

The electricity consumers of Queensland are doing all they can to bring down their power bills, but there is little effort being made to systematically teach them about ways to be effective in achieving functional outcomes with much less electricity.

### 4. Here are some techniques we have found:

#### Room/cooling:

- Contrary to the QLD practice, windows and doors should be CLOSED during the daytime in summer, from around daybreak to sunset. If you want to experiment with inside and outside thermometers, there will be a difference between inside and outside temperatures depending on time of day. When it is

hotter outside than inside, close doors and windows.

- Close curtains and/or shutters and/or venetians during the day to stop sunlight entering the rooms. Curtains with strong reflective backing do a better job than plain curtains.
- Open windows and doors at night (with attention to security and mosquitos and wildlife) to let in cooler night air.
- Purchase shadecloth (75% is best) and hang this around the outside of the home in summer. Shadecloth curtains can be made cheaply, quickly and easily using a polypropylene rope (such as BCF sells for a few dollars a metre) sewn into one edge. Caravan track (aluminium track that rope slips through) screwed along the edge of a carport or eaves or outside edge of deck ceilings is an ideal way to hang these shadecloth curtains. They hang quietly all summer with minimal wear and tear. Wind blows through them easily. The shade they provide immediately drops the internal temperature about 20degrees. The shadecloths can be quickly removed at the end of summer and replaced the following year. They last for years and take very little room to store. The total cost to cover a whole house is under \$200. They provide shade, cool and privacy for windows, but can be seen through from inside.
- Old people have been known to die in summer heatwaves in hot homes when simply getting under cold water will help. Introducing the idea of a personal spray bottle of water to mist over oneself to cool down is something anyone can do. Get under a cold/cool shower and get wet. Drink cool water. Consider spending about \$20 to buy a children's paddle pool of the sort K-Mart has lots of to use as a place to sit and relax. If you have a pool, get in!
- Consume more salt in summer. We are continually told not to eat salt, but salt is essential to life. It is so important that the British were able to tax all Indians through a salt tax, because no-one could live without salt. Salt is essential for survival in summer.
- When shading homes, think especially of shading concrete areas, because when they absorb heat they retain and radiate it.
- Consider growing a 'green wall' plant such as a grapevine. One grapevine, trained systematically year after year, and pruned to grow in the direction you want to train it, can cover the whole of the sunny side of a house, shelter it from the sun, provide a lot of grapes, and provide private, cool, shady spaces on verandahs behind it. There is simply no cost for this.
- If you have a dwelling that has an upstairs and a downstairs, move downstairs in summer. It will be considerably cooler.
- Wear less in summer. Purchase clothing made of light, thin material.
- Insulate your home, especially the ceiling, but also walls and floors. Remember, hot air rises.
- Install a roof whirly-bird to evacuate hot air from the roof space (but turn it off in winter).
- Put light/heat reflective contact on your windows on the sunniest sides.
- If you must venture into air-conditioning, there are several engineering solutions available that use less power. One relies on small units that deliver cooling to the vicinity of the head rather than the whole room. Apparently this is where the primary benefit of cooling is experienced. The other is a 'solar'

solution developed in QLD.

- Fans use a lot less power than air-conditioners too.

Swimming pool pumps/chlorination:

- The main component that uses a lot of electricity is the pool pump.
- The pool pump is only needed for one or two hours a day at most to vacuum up leaves.
- The chlorination process via the pool pump takes a lot longer, but using the pool pump to chlorinate the pool is a very inefficient process power-wise.
- A more efficient option for chlorination is to get some via the one or two hours the pump is on for vacuuming up leaves, then get the balance by adding powdered or liquid chlorine.
- An even better option is to make a simple pool chlorinator by putting the chlorination 'electrodes' through a child's 'floatie' and have them linked to a 12volt solar panel. The floatie floats around the pool passively generating chlorine directly into the water.
- Old pool pumps are much less efficient than new pool pumps. Worth trading in old ones.

Refrigeration:

- Most of us are so used to having fridges that we put everything in that we think needs to be cold that we have almost no idea of the 'ideal' temperature for these items to be stored at.
- The 'old-fashioned' Coolgardie safe is a pioneer invention that deserves to be brought back. It is perfect for storing fruit and vegetable. Much better than the drawer at the bottom of the fridge. Every home should have one. Doesn't need to be activated with water over the hessian. Simply having the fruit and veges in an air-flowing shaded storage unit not in plastic bags seems to make them last a lot longer.
- Drinks like beer and soft drinks can be cooled without heavy chilling.
- Cooling hot dishes somewhat before putting them in the fridge reduces the draw on the power to cool them, but care must be taken to cover them and get them into cooling before they get bacteria breeding.
- Foods like yoghurt come from traditional cultures without fridges and were their way of keeping milk. Keep out of sunlight and away from heat sources.
- Used thoughtfully, a smaller fridge for cooling right down, and other storing in cooler places works well.

Personal/room/space heating:

- South-East Queensland doesn't have a problem with being too cold. It can be a pleasure to have a few weeks of cooler weather, to give our immune system a boost. Enjoy it.
- Dress for cooler weather. Wear thermal underwear, warmer socks. Get someone to knit you a beanie. Put on scarves, leg warmers, gloves, hats if you are in a situation where you could be cold.
- Put a rug across your knees when you are watching TV.
- Have a shawl folded in your backpack or carry bag when you go out. It comes in to wrap around you in unexpectedly cold places like the train.
- Set up small spaces to live in in the winter (a small sitting room, or downsize

to a smaller home) with a way of closing curtains and doors to keep drafts out. It is much easier to heat a small space. Your body, lights and electrical equipment will do much of the job for you.

- Insulate your home. Ceiling, and if you are building new, include the walls and floors.
- Put draft stoppers under doors.
- If you use a heater, use it in a spot to heat you directly.
- ...or (in a 2-story dwelling) put a small heater in the lower space, and its heat will rise to the ceiling, warming the floor of the rooms above.

Water heating:

- Install a solar hot water system. You'll never regret it. Why is everyone installing solar pv and not solar hot water??!!
- When you boil a jug of water to make tea/coffee, pour any excess into a thermos and use that for more cups before boiling the kettle again.

These are just some ideas that we have explored and use reliably. They are by no means exhaustive. There is ready potential to drop the overall power usage down to a small fraction of what it started at.

#### 5. *The TINY HOUSE experience*

We have been experimenting with the question: What is enough? On average, Australia has the largest houses on the planet. And they don't need to be.

Without losing functionality, we are demonstrating in practice that a functional home can run on:

- one solar panel providing 120W of power output
- one battery
- 12v equipment
- a small transformer to 240v
- a backup generator.

Our success in this relies heavily on the revolution in size of modern technology, and multi-function devices.

Thus, we are able, on the above power supply, to provide for the needs of two people (and sometimes more) for:

- charging 2 laptops
- charging 2 mobile phones
- running television via a laptop
- radio
- sound system for CDs etc
- fans
- LED lights
- pumps
- charging power tools.

The backup generator can be used for:

- ironing clothes
- cooking (roasts, cakes) in fan-forced cookers
- back-up for battery during long periods of rainy weather.

Given the tiny amount of power involved here, and the very small cost involved to make the tiny house fully functional, it begs the question of why people are saying it is too difficult to go completely off the grid. The main issue is that marketers are pushing huge energy hungry equipment, rather than touting the benefits of small highly functional equipment.

There is a revolution in freedom waiting everyone right now through modern technology and solar power. This reduces carbon emissions dramatically. The big power providers who are locked into old superseded technology hate it, but it is the right step to take, to write down the value of the networks, and help Queenslanders learn how to re-engineer their homes to use very little power.