

Watt equity? Australians deserve a Basic Energy Right

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Within the energy industry there is a popular, feel-good refrain that the energy transition will deliver a system that is 'democratised', in addition to being 'decarbonised', 'digitised', and 'decentralised'. Here democratised is used as an umbrella term for a broad suite of desirable values: fair, just, equitable. Yet the way in which democratisation is envisioned to occur is, in contrast, blinkered – households are seen to gain political power as a consequence of their generating and controlling electrical power from rooftop solar, batteries, and electric vehicles – but what about those without?

This prevailing narrative of democratisation overlooks, amongst other things, the connection between privilege and ownership of these technologies, and the structural realities of social, as well as techno-economic, power. In particular, it ignores the systemic effects of managing energy through markets and, consequently, ignoring energy's role as an essential service underpinning modern life.

The starting point of this essay is that the energy transition is not on track to improve equity. This is because equity will only be improved if it is prioritised above competing values, such as profit, in the millions of design choices that constitute the transition.

Such prioritisation is impossible within the existing (artificially) constrained policy landscape, in which the only options are those within the framework of indistinguishable individuals interacting through a market. This eliminates any space for unequal redistribution in recognition of the differing circumstances within the collective, and thereby contributions towards equity.

Progress towards equity rests on expanding the policy imagination. This essay offers one such suggestion: the establishment of a Basic Energy Right that provides all households with a modest amount of energy free of charge to meet their essential needs.

Energy as private property

“A worldview that sees victims but no victimizers” – Norman Solomon

Today’s dreams of a more equitable energy future are taking place within a context defined by neoliberalism and new energy technologies.

Neoliberalism has driven the privatisation of the Australian energy system and the collapse of policy considerations to a singularity: the energy market. For twenty-five years this has fuelled hyperinflation of energy prices and energy poverty¹ and an accompanying hyperdeflation of trust in the energy system and its actors².

It’s hamstrung governments and regulators to lament the ‘victims’ of the situations – pensioners unable to afford to heat their homes – while being reluctant to name the ‘victimisers’ who create and profit from high prices – be they gas plants, government owned hydroelectricity companies, or households with batteries that play the market.

Instead, this worldview constrains discussions to how to improve market access and competition, rather than the fundamental principles under which it operates. This motivates expanding the number of markets customers can participate in³, and facilitating customers having multiple retailers⁴, but overlooks that the regulator’s own surveys show that the vast majority of customers aren’t putting in the effort to find and switch to their cheapest deal⁵.

It also shapes the avenues pursued by community members to accelerate and steer the transition. Community energy investment models – including solar gardens⁶ and solar financing funds⁷ – provide ways for individuals to participate in the energy transition irrespective of their housing situation. However, they’re only accessible to those with financial capital to invest and they have limited impact in changing the rules of the system⁸ towards making business as usual more equitable and/or sustainable.

Similarly, ‘community batteries’ are promoted as a way for all customers to benefit from shared energy storage. However, their operation in the market firstly enforces a zero-sum logic where benefits for one group, say non-solar customers, come at the expense of others. Using Peter to pay Paul therefore obscures the political consequences of who receives what, by hiding it behind technocratic questions of tariff design.

¹ <https://energyconsumersaustralia.com.au/news/how-increases-in-energy-prices-are-impacting-consumers#:~:text=Energy%2520affordability%2520is%2520not%2520just,in%2520the%2520past%252012%2520months>

² <https://www.ewov.com.au/reports/voices>

³ <https://aemo.com.au/en/initiatives/trials-and-initiatives/wholesale-demand-response-mechanism>

⁴ <https://www.aemc.gov.au/rule-changes/unlocking-CER-benefits-through-flexible-trading>

⁵ <https://www.accc.gov.au/about-us/publications/serial-publications/inquiry-into-the-national-electricity-market-2018-25-reports/inquiry-into-the-national-electricity-market-report-december-2023>

⁶ <https://www.abc.net.au/news/2024-04-23/australia-s-first-solar-garden-/103657946>

⁷ <https://www.clearskysolar.com.au/>

⁸ <https://hbr.org/2020/07/impact-investing-wont-save-capitalism>

Additionally, they bring to the fore tensions of who is included, and who is excluded, from a 'community'. Parochial responses favouring 'locals' can garner local support, but risk exacerbating inequities between groups with privileged access to political and financial capital over disadvantaged constituents of the wider community⁹.

Neoliberalism has also influenced the evolution of clean energy technologies, such as rooftop solar, emphasising that they belong to, and benefit, individuals. The common good benefits of reducing carbon emissions and daytime electricity prices are presented as secondary (although they may be priorities for certain individuals).

Innovation is focussed on increasing the participation of these households ("prosumers" who produce as well as consume) with markets, rather than driving positive whole of system social and environmental impacts. This makes it difficult to determine and discuss the wealth transfers that occur through market structures and government subsidies (often aimed at driving adoption of technologies and markets).

For example, the costs of maintaining the poles and wires are recovered on a basis of the amount of energy each customer buys from the grid. Customers with rooftop solar (and batteries) therefore reduce their exposure to these costs – which are typically the largest component of household bills¹⁰ – and their contribution to the upkeep of the collective asset.

This is despite these customers relying critically on the grid for power at many points of the day, and also using the grid to sell their excess solar generation¹¹. On the other hand, the rise of solar generation has brought down daytime electricity prices, which particularly benefits non-solar customers (and is why feed-in-tariffs keep declining).

The same is true for all-electric homes that completely free themselves of contributing to the costs of maintaining (or decommissioning!) the gas network.

(In)equity, consequently, is framed as an issue of (in)access to these private technologies and markets, such as due to financial means or living in an apartment or rental property. This drowns out any conceptions of electricity as an essential service – for cooling and cooking food and thereby keeping out of hospital – to which every person has a right.

This whole situation is doubly regrettable. The public's (often incomplete) awareness of the inequity issues related to clean technologies contributes to resistance to the transition as a whole. And the individualistic mindset of being a prosumer dissuades participation in the coordination of clean technologies for the common good, such as managing the charging of electric vehicles to reduce the need for distribution network upgrades.

⁹ <https://bjornsturberg.com/community-batteries-a-discussion-paper/>

¹⁰ https://www.aer.gov.au/system/files/About%20energy%20bills_2.pdf

¹¹ <https://theconversation.com/think-of-solar-panels-more-like-apple-trees-we-need-a-fairer-approach-for-what-we-use-and-sell-205751>

The price of everything and the value of nothing

“The price of everything and the value of nothing” – Oscar Wilde

The inequities of the current system have a considerable profile in policy and public discourses. Accordingly, there have been many well-meaning, and at times well resourced, attempts to address them. These attempts have, however, been constrained by the use of the wrong toolkit (market designs) in pursuit of the wrong goal (giving atomised consumers/prosumers equal access to the energy market).

Why are markets, irrespective of their (re)designs, the wrong tool for pursuing equity?

Fundamentally, this is because markets are a tool for price discovery based on an existing distribution of property rights (at what price will one party with rights to a certain property sell and another buy) not a mechanism for the redistribution of property rights. And equity isn't pursued by discovering the price at which people will forego essentials like heating their homes.

This gets at another foundation of markets: that the commodities being traded, as well as the market participants, are indistinguishable. Markets are, by design, blind to the difference between a family cooking dinner at 6pm or a battery charging and discharging based on a market optimisation algorithm.

While a renewable energy system benefits greatly from the flexibility to shift energy consumption – and markets offer an effective tool for coordinating this – we need to maintain (or regain) the humane understanding that these uses of electricity are of very different values. We need to ask not just what is the price of energy, but “what is energy for?”¹² and how does society value different uses?

Equal access doesn't equal equity

“Equality is treating everyone the same. But equity is taking differences into account, so everyone has a chance to succeed.” – Jodi Picoult

Now why is the goal of equal access to energy markets and new technologies for individuals incongruous with the goal of energy equity?

The first point is to distinguish between equality and equity. While equality, and markets, treat everyone uniformly, irrespective of circumstances, equity explicitly focuses on differences and appropriately rebalancing these through unequal (re)distribution. Such redistribution can only occur outside of the market, through inevitably political, and ideally democratic means.

¹² <https://journals.sagepub.com/doi/full/10.1177/0263276414536746>

Furthermore, we need to distinguish between the (neoliberal) goal of the right to access (buy) energy and the (collectivist) goal of energy being provided to all as an essential service for modern life.

Energy inequity is not simply due to restricted access to energy technologies and markets. It is a function of self-reinforcing differences in political capital that empower some to write the rules that underpin energy distribution and the distribution of property rights. These broader factors are ever more salient as growth of customer-owned technologies further enmeshes energy equity with broader social equity issues, such as people's ownership of property, their time and energy literacy.

Secondly, the trouble with atomising the community into individual consumers (or prosumers) is that it cuts off channels for redistribution.

As an example, electricity networks connect many thousands of customers and provide a channel through which the current social commitment to equity is enacted by charging the same 'postage stamp prices' for expensive-to-serve customers in regional locations and efficient to serve customers in cities. This reflects societies, huge shared investment in these networks – and their supporting social infrastructure – over decades.

In contrast, systems built around individuals and market participation, such as 'virtual power plants' that coordinate the behaviour of customer owned batteries, enforce a dichotomy between asset owners and all other market participants with little regard for the cost that high prices then impose on other customers.

As an aside, there are also many other reasons to doubt that an energy system built around atomised prosumers would be the most efficient outcome¹³. These include the burden – in time, money, and mental energy – placed on customers to install and maintain technologies¹⁴, which has a tendency of being distributed in a gendered way^{15,16}; the systemic risks of having critical infrastructure depend on millions of individually (non)maintained assets; and the complexity of coordinating millions of devices.

It is also worth examining whether or not new technologies are an appropriate avenue through which to pursue energy equity. The argument against this is the high upfront cost of new technologies, which isn't conducive to providing cheaper equity. On the other hand, the psychology of loss aversion may make it more palatable to unequally distribute the new (and at times unfamiliar) benefits of new technologies rather than taking away (and redistributing) existing benefits.

¹³ <https://bjornsturmberg.com/response-to-saul-griffiths-the-wires-that-bind>

¹⁴ <https://www.ewov.com.au/reports/voices>

¹⁵ <https://journals.sagepub.com/doi/full/10.1177/1354856515579848>

¹⁶ <https://journal-buildingscities.org/articles/10.5334/bc.218>

An alternative that would deliver equity

“The alternative to black and white isn’t necessarily grey: it might be orange” – Alfie Kohn

Having established the pitfalls of misconstruing equity as providing consumers/prosumers with equal access to markets, can we imagine alternatives?

We actually have a tremendous amount of freedom in how to proceed, for equity is determined almost entirely on the abstract plane of social agreements: who has what property rights, how much profit is to be extracted, how are costs distributed, who has what say in decision-making, etc. If there was the political will/pressure, energy could be made free for any chosen vulnerable group with the wave of a pen. The challenge lies in the strategies and processes by which to “win” the social and political case to increase equity by taking from one group to give to another.

To get the ball rolling, here’s just one idea for how equity could be meaningfully improved: establishing a Basic Energy Right for all households.

A Basic Energy Right (BER) would be a modest amount of energy provided to every household for free. The provision of a household BER could be easily implemented within current billing arrangements, with any consumption in excess of the BER continuing to be paid for through existing markets.

A BER would reaffirm that energy is an essential service to which everyone is entitled and whose withholding has devastating, cascading impacts on other essential rights¹⁷, such as health, education and employment, social connection.

Splitting energy consumption into two categories reflects the difference between the value of energy as an ‘essential’ service, for activities like cooking dinner, and ‘flexible’ uses, such as charging an electric vehicle.

Examples of where these ideas have been implemented include New Dehli, where the first 200 kWh of electricity per month is free of charge¹⁸, and some Australian First Nations communities, where the Bushlight program provided households with a circuit dedicated to essential appliances, like a fridge, which remain powered even when the household can’t afford to pay for extra energy.¹⁹

¹⁷ Frequent disconnections of ‘pre-pay’ customers in remote indigenous communities provides stark evidence for this <https://www.sciencedirect.com/science/article/pii/S2214629623001093#bb0175>
<https://doi.org/10.5694/mja2.51610>

¹⁸ As is done in New Dehli, where the first 200 kWh per month are free
<https://economictimes.indiatimes.com/news/india/electricity-usage-above-200-units-in-delhi-to-cost-more-atishi-blames-centre/articleshow/101287571.cms?from=mdr>

¹⁹ “CfAT and the EMU: CfAT’s Bushlight program and Indigenous innovation in energy demand management”, Indigenous Engineering for an Enduring Culture, ISBN: 1-5275-8759-2

With essential uses sheltered from the market, the market for 'flexible' consumption can be a more focused, explicit and efficient tool for discovering the price at which different flexible loads and generators are willing to operate. This is using the power of markets for a specific and appropriate purpose.

This is in contrast to current market arrangements that are as blunt and punishing an instrument as interest rates are for shrinking economy-wide demand. These instruments both rely on causing great pain to a vulnerable subset of the community in order for them to be forced into changing their behaviour. While there will be inequities in how individuals can benefit from the flexibility market, their impacts will be much reduced relative to current arrangements.

The costs of providing BERs for free could be recovered through any number of means (our imagination being the true limit). As the distribution of an equal BER to every household prioritises simplicity and equalness over nuanced responsiveness to differing circumstances, it's important that the funding method be progressive.

An obvious starting point would be the original, and still most powerful, method of democratic redistribution: progressive government taxation. Other options could include redirecting billions in government fossil fuel subsidies by placing a \$50 million cap on fuel tax credit²⁰, or procuring the required energy as part of government offtake agreements with renewable energy generators, or for governments to impose levies on (largely foreign owned) power generators to make them contribute to a BER fund in exchange for the rights to harvest our nation's resources (renewable or fossilised) and connect to our electricity networks.

As a reference point, the cost of providing Australia's 9.275 million households with 4 kWh of electricity per day – roughly a third of household consumption and enough to run the fridge, stove and some heating/cooling – would be around \$2 billion per year. This assumes a conservative cost of \$0.16/kWh including network costs, calculated based on current electricity futures market prices around \$80/MWh²¹ – which is roughly twice the price that governments have recently bought wind power for²² – with network charges added as an equal component of costs²³. This total cost is well within the budgets of the aforementioned government processes.

An approach that is much weaker than a BER, but would still drive towards equity, would be to focus government policies, incentives, and procurement on reducing the costs and carbon intensity of grid power. Grid power is available to, and benefits, everyone and has a disproportionate impact on those unable to reduce their exposure by investing in their own energy assets. On this front it's encouraging to see growing momentum in the development of

²⁰ <https://climateenergyfinance.org/wp-content/uploads/2023/09/Fuel-Tax-Credit-Scheme-and-Heavy-Haulage-Electric-Vehicle-Manufacturing-in-Australia.docx.pdf>

²¹ <https://www.aer.gov.au/industry/registers/charts/quarterly-base-futures-prices-and-volume-traded>

²² <https://reneweconomy.com.au/act-secures-two-big-batteries-for-canberra-and-record-low-price-for-wind-27676/>

²³ <https://www.ipart.nsw.gov.au/1-july-2023-electricity-price-increases>

large scale solar and wind projects, after a decade or two in which the Australian energy transition has had an overreliance on citizen-funded rooftop solar systems (largely fuelled by frustration at government inaction).

Watt price equity?

“The future is already here. It is just unevenly distributed.” – William Gibson

This essay has argued that energy equity is a value and that it is inevitably political. As such, it will not arise inevitably as part of the energy transition, particularly not if the conception of this transition is limited to markets of optimising humans and algorithms²⁴. While political strategy is outside my expertise, three things strike me as necessary.

Firstly, we must stop masquerading equal access to energy markets and technologies as energy equity. More broadly, we must redress our shortage of imagination to see beyond market interventions and consumer information campaigns. The suggestions of a BER is just one example of the possibilities that exist to address inequities directly.

Secondly, energy needs to be reaffirmed as an essential service that’s as fundamental to human wellbeing as healthcare, education, and other public services. Energy equity is therefore a foundational to a well society and should be pursued explicitly in the (inevitably contentious) process of making design choices for the future energy system, rather than being lost in technocratic noise. Relatedly, the costs of equitable redistribution need to also be discussed explicitly, detailing who will lose, how much they will lose, and how much greater the benefits will be to those on the receiving end of the redistribution. The transition ultimately needs trust, not technologies or taxes²⁵.

Thirdly, with the above initiatives in place, and an essential amount of energy provided through a Basic Energy Right, energy engineers and economists can optimise the efficiency of systems – using markets where fit-for-purpose – to minimise the overall costs for society and the environment, and expanding the role of collective structures that facilitate equitable redistribution. A prime example of this is the question of how to deploy energy storage for a fully decarbonised energy system serving a fully electrified economy: what is the role of pumped hydro, large batteries, neighbourhood batteries and home batteries?

Ultimately, energy equity will only ever be one part of social equity, squashed and squeezed by broader social contexts. However, as the leading sector of the decarbonisation transition, it has a heightened potential for determining the outcomes of the economy-wide transition, including for equity.

²⁴ <https://www.nature.com/articles/s41560-021-00885-8>

²⁵ <https://bjornsturberg.com/response-to-saul-griffiths-the-wires-that-bind>