Watt price equity?

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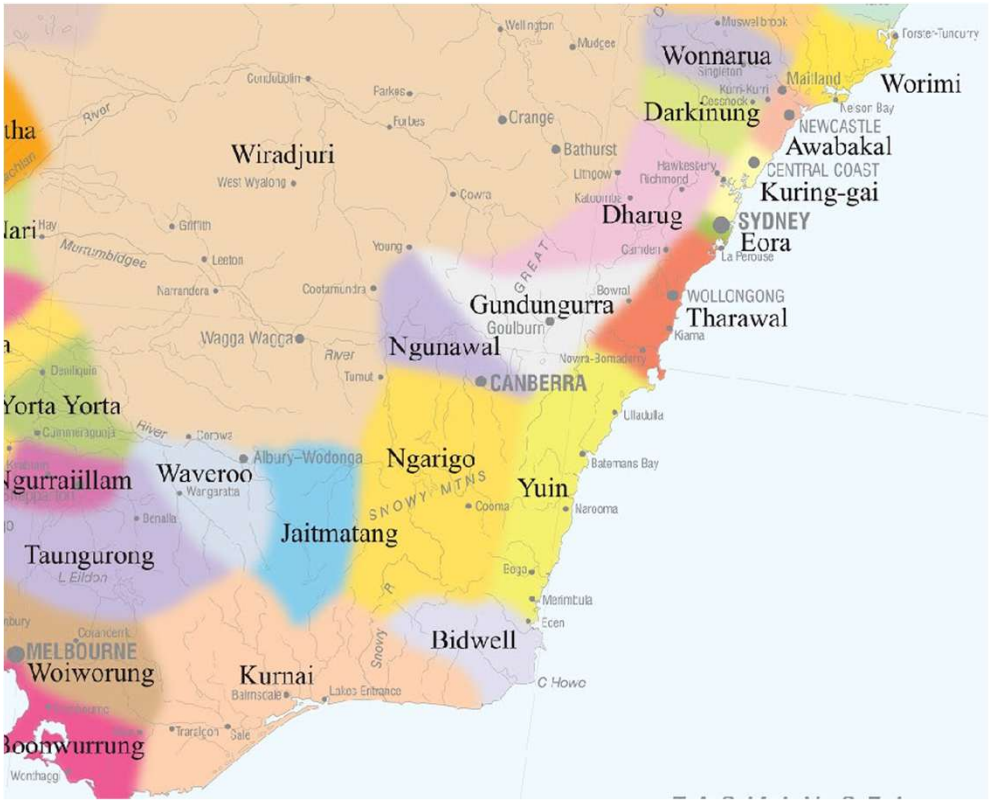
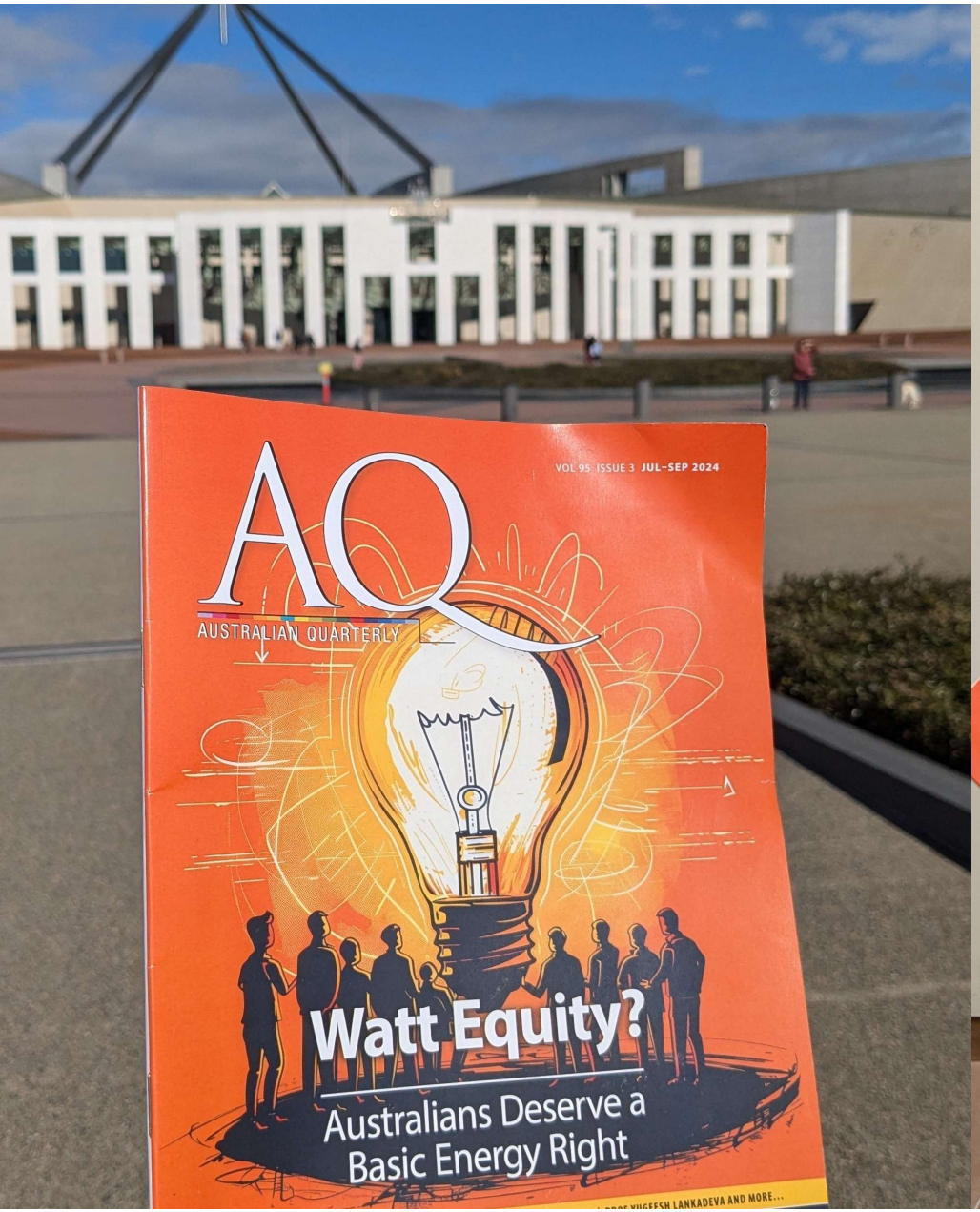
Acknowledgement of Country




AQ
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Watt Equity?
Australians Deserve a Basic Energy Right


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(in)Equity is a choice

Markets are antithetical to equity

Markets are a tool for price discovery

Equity inherently involves unequal distribution

Each goal requires its own policy instrument (Tinbergen rule)

https://bjornsturmberg.com/watt-equity-australians-deserve-a-basic-energy-right/

Outline

1. **Problem** of (energy) inequity

2. **Proposal** for **2 instruments** to achieve **2 goals:**
   - **Efficiency** – minimizing total economic & ecological costs
   - **Equity** – human wellbeing, individually and collectively

3. **Politics** for change

Peculiar to electricity

* **Electricity**/energy

1. Fixation on **supply side**
2. Oddities of the **electricity market design**
3. Disruption of **Customer Energy Resources (CER)**
4. Value of **variability**

Peculiar to electricity

1. **Supply side**
   - Dominates discourse (e.g. bills, solar for rentals & aps)
   - Aggregated nationally, abstract price setting & distribution
   - Compliant to policy wand

   Demand side
   - Inescapably localized (households)
   - Concrete challenges, resistant to policy wand
   - Getting off gas… e.g. Energy Health Nexus

Peculiar to electricity

2. Electricity market design

- Artificial market, barrier to exit, “market design failures”
- Ideological constrained to competition, consumer choice
- Complexification: ‘takers’, ‘shoppers’, ‘traders’ vs AGL
- Misallocation of risks

- See Ron Ben-David @ Monash

https://www.monash.edu/__data/assets/pdf_file/0007/3733441/Ron-Ben-David-What-if-the-consumer-energy-market-were-based-on-reality-rather-than-assumptions-July-2024.pdf

Peculiar to electricity

3. Customer Energy Resources

- Atomises: ‘prosumers’
- Further enmeshes privileges ($, housing, literacy)
- Reduced contributions networks (electricity & gas!)

Peculiar to electricity

4. Variability

- Coincident demand drives costs (generation & network)
- Flexibility of demand extremely valuable (++ RE system)
- Tremendous opportunities: hot water, electric vehicles, …

- *Using 1 price to signal to EV charging & family cooking: constrains one while punishing other*

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“The alternative to black and white isn't necessarily grey: it might be orange”

– Alfie Kohn

Proposal

Split electricity services: **essential | flexible**

2 Goals

Equitable essential energy

- Moderate cost*
- Minimise volatility*
- Equitable distribution cost/benefits*

**accept efficiency penalty*

Efficient use of flexibility

- Maximise asset utilisation
- Minimise asset capacities: network, gen, storage
- Minimise CO2 emissions

2 Instruments

Equitable essential energy

- Non-market
- Not-for-profit
- Government-led

Human readable

Efficient use of flexibility

- Perfect competition market
- Free innovation
- Commercially led

Machine readable

2 Instruments – Networks

2 Instruments – Generation

2 Instruments – Networks

Essential energy

- Wealth based fee, eg. based on Unimproved Land Value

- *Value ≈ access ≠ kWh*
- *Costs = peak kW ≠ kWh*

Flexibility market

- Demand response
- Dynamic Operating Envelopes
- Dynamic Network Prices

2 Instruments – Generation

Essential energy

1. Not-for-Profit retailer
2. Flat(ish) /kWh tariff (w/o network ToU)*
3. Auto put on best tariff

* respect this demand inelastic

Flexibility market

- Viable market size: EV, hot water > 50% household
- Incentivize lower cost than essential (and/or mandate)

Snowy Hydro: *"Battery of the People"*

Essential energy

- 100% Gov owned
- Retailers: Red Energy, Lumo
- **Storage hedges volatility**
- Scale

Flexibility market

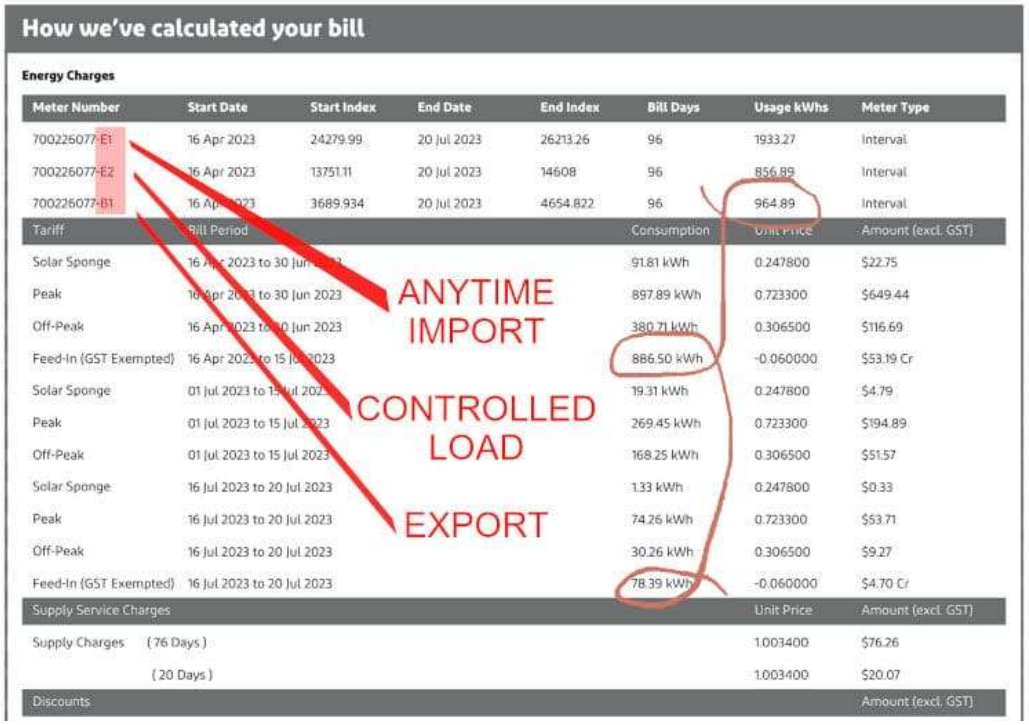
- For-profit in wholesale market
- Ring fence from customer flexibility

Optional extra: *Universal Basic Energy*

Essential energy

- Free x/kWh/day
- kWh foregrounds electricity as service
- Which kWh/day? The most expensive – Snowy ideally suited
- Multiple ways to fund: gov budget, gov electricity scheme, grid connection levy, etc
- Challenge to allocate across retailers

Practical illustration: customers



How we've calculated your bill

Energy Charges

Meter Number	Start Date	Start Index	End Date	End Index	Bill Days	Usage kWhs	Meter Type
700226077-E1	16 Apr 2023	24279.99	20 Jul 2023	26213.26	96	1933.27	Interval
700226077-E2	16 Apr 2023	13751.11	20 Jul 2023	14608	96	856.89	Interval
700226077-B1	16 Apr 2023	3689.934	20 Jul 2023	4654.822	96	964.89	Interval
Tariff	Bill Period				Consumption	Unit Price	Amount (excl. GST)
Solar Sponge	16 Apr 2023 to 30 Jun 2023				91.81 kWh	0.247800	$22.75
Peak	16 Apr 2023 to 30 Jun 2023				897.89 kWh	0.723300	$649.44
Off-Peak	16 Apr 2023 to 30 Jun 2023				380.71 kWh	0.306500	$116.69
Feed-In (GST Exempted)	16 Apr 2023 to 15 Jul 2023				886.50 kWh	-0.060000	$53.19 Cr
Solar Sponge	01 Jul 2023 to 15 Jul 2023				19.31 kWh	0.247800	$4.79
Peak	01 Jul 2023 to 15 Jul 2023				269.45 kWh	0.723300	$194.89
Off-Peak	01 Jul 2023 to 15 Jul 2023				168.25 kWh	0.306500	$51.57
Solar Sponge	16 Jul 2023 to 20 Jul 2023				1.33 kWh	0.247800	$0.33
Peak	16 Jul 2023 to 20 Jul 2023				74.26 kWh	0.723300	$53.71
Off-Peak	16 Jul 2023 to 20 Jul 2023				30.26 kWh	0.306500	$9.27
Feed-In (GST Exempted)	16 Jul 2023 to 20 Jul 2023				78.39 kWh	-0.060000	$4.70 Cr
Supply Service Charges						Unit Price	Amount (excl. GST)
Supply Charges	(76 Days)					1.003400	$76.26
	(20 Days)					1.003400	$20.07
Discounts							Amount (excl. GST)

Essential energy

$x network connection ($a/day*)

$y usage (z kWh @ $b/kWh)

* based on property land value

Flexible appliances

$x total

$y/kWh av. energy cost

$z/kWh av. network cost

Practical illustration: industry

Networks

- Sunk collective investment
- Regulated return asset base
- Target cost drivers (peaks)

Generation/demand

- Market for efficient price discovery from generators and flexible (elastic) loads
- Fraction of consumption insulated from variability

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Politics for change

Against

- Ideology
- Vested interests
- Redistribution = loss (for someone)

For

- Gov leadership: SEC (Vic), Cap. Invest Scheme (Fed)
- NEM Review
- Snowy: $900m profit, Statement of Expectations

Summary

1. **Problem** of inequity, hurts people & exacerbates mistrust

2. **2 goals -> 2 instruments: essential | flexible electricity**
   - Manage essential energy for equity using non-market tools
   - Optimise flexibility for efficiency using markets
   - Snowy Hydro perfect vehicle

3. **Political** moment provides opportunities

Let’s keep going

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Australian
National
University

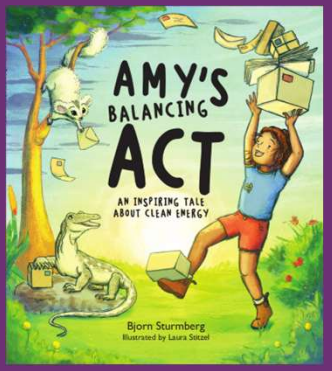
Bonus material

https://bjornsturmberg.com/shop/

“A terrific book…

Parents proudly read it to their children… explaining their role in the energy transition”

- **Daniel Westerman, CEO AEMO**



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