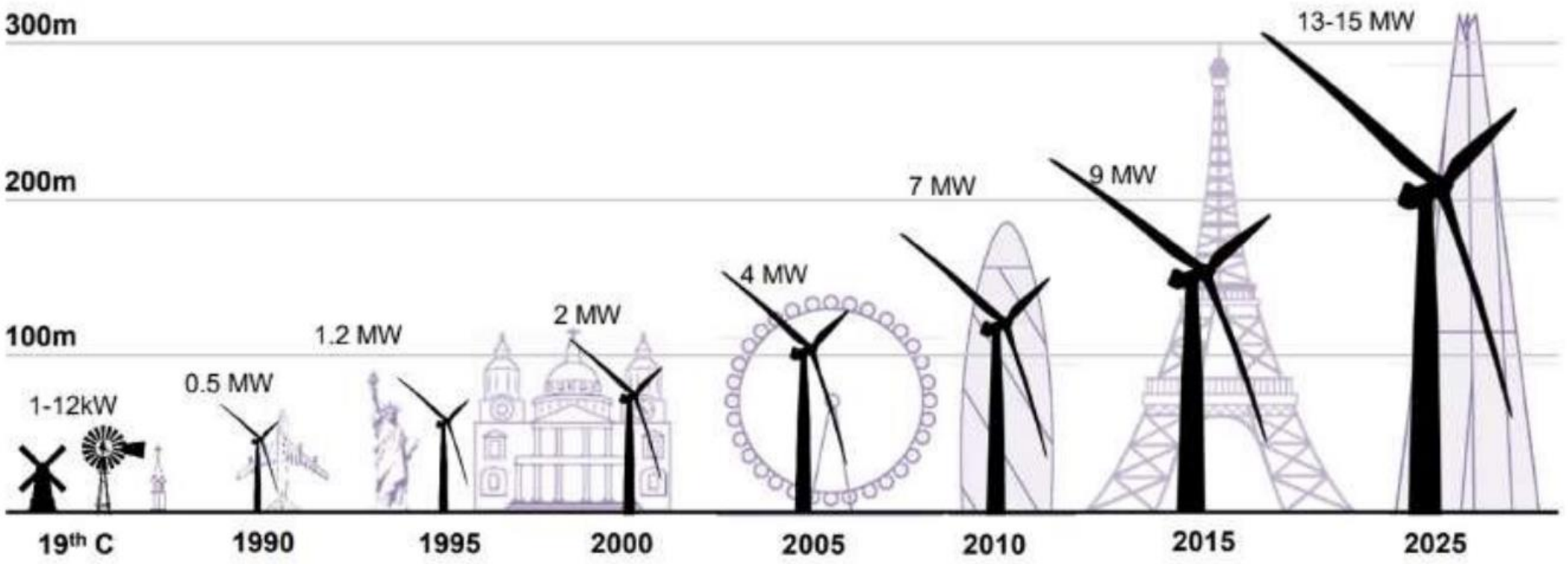


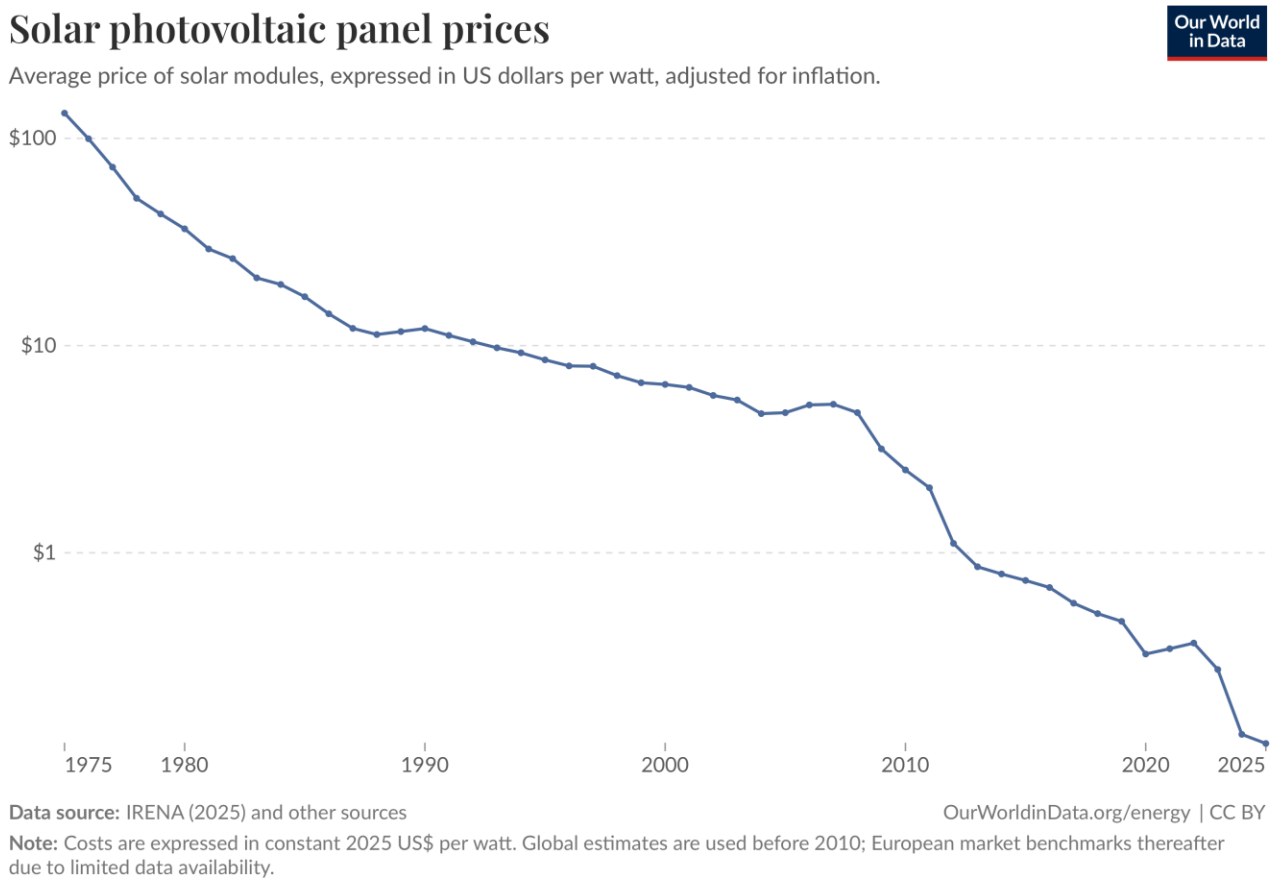
Why a struggling energy transition represents a catastrophic risk

The economics of power generation have changed



1: Evolution of wind turbine size and output (Liebreich, 2017).

The cost of solar is still rapidly declining



Renewables are now the cheapest form of power generation

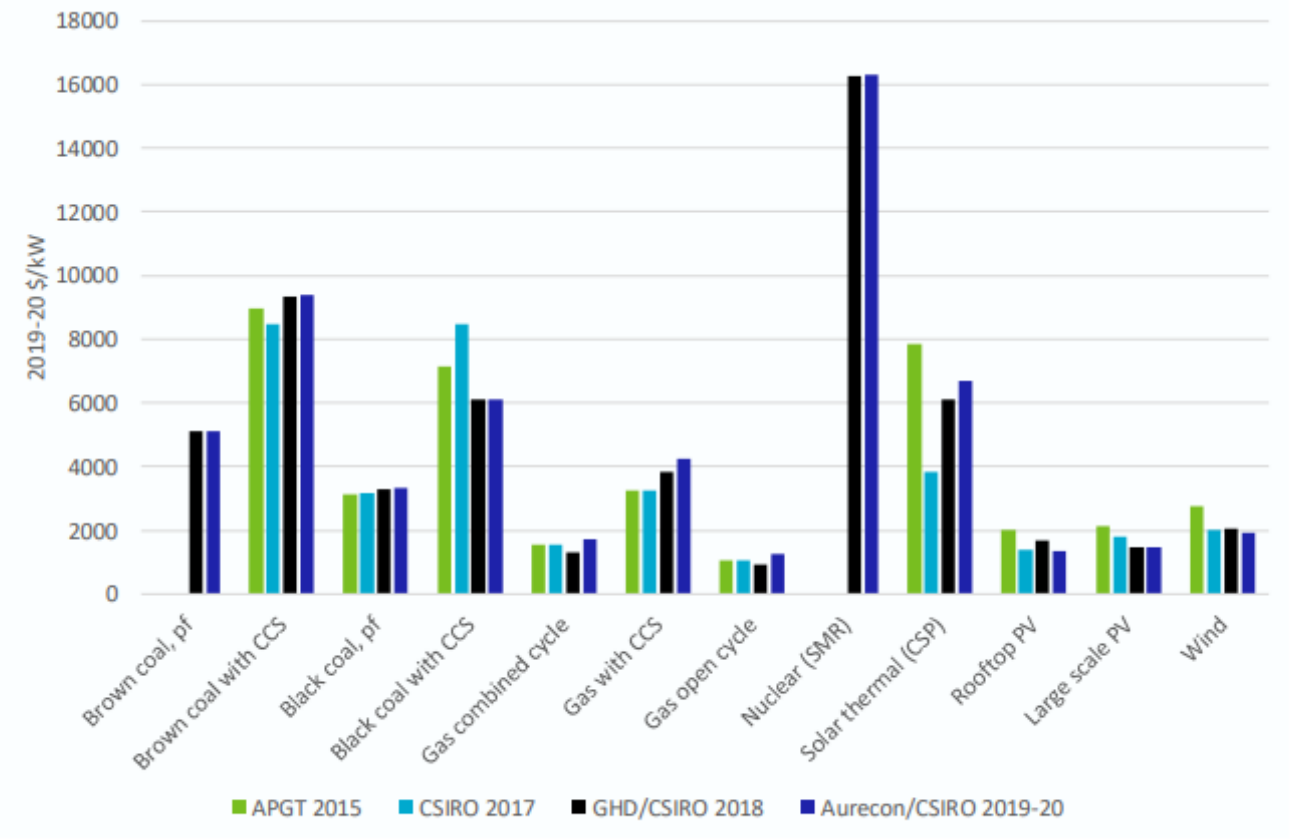
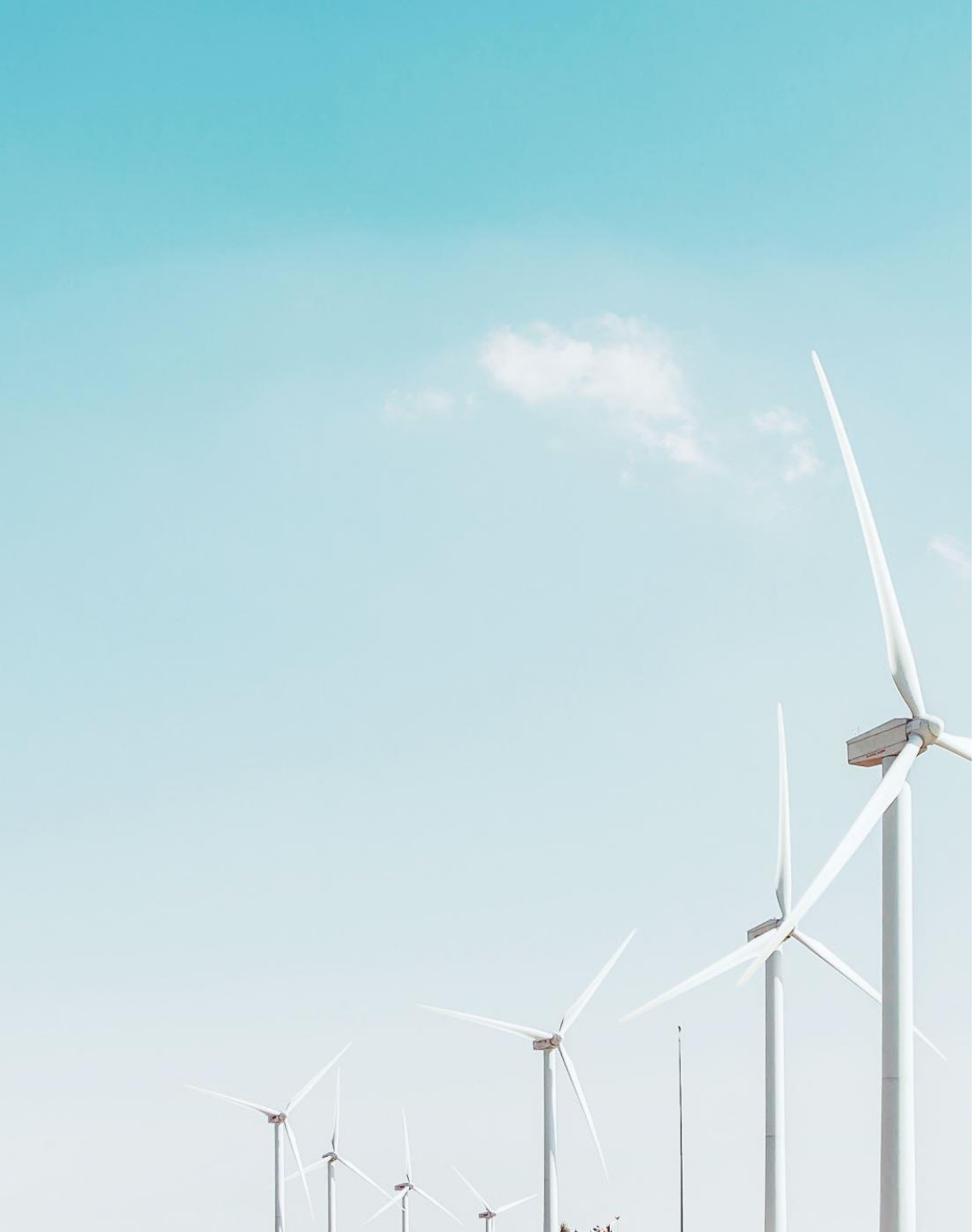


Figure 2-1 Comparison of generation technology capital cost estimates for 2019-20



Characteristics of renewable energy

Complicated in relation to jobs

- Jobs in construction, but not so many ongoing – more in wind, especially offshore wind
- But we need A LOT of renewables, so there are lots of jobs.
- Solar doesn't take very long to build, so construction jobs are often short-term
- Not necessarily built in the regions where fossil fuels are.
- To maximise job benefits we need to look at the whole supply chain – can we create manufacturing jobs in renewables as well?



Distributed rather than centralised

- This means renewables can be used to take control from big corporations
- Can be put in the hands of households or communities, through, for instance, cooperatives
- Requires transmission system upgrades, which can create good jobs.

Don’t just expect fossil fuel jobs to be replaced with jobs in renewables. Economic diversification is needed.

The renewable energy industry is not necessarily union-friendly.

Policies are needed to ensure local communities share in benefits – community sharing agreements, for instance.



Understanding liberalised energy markets

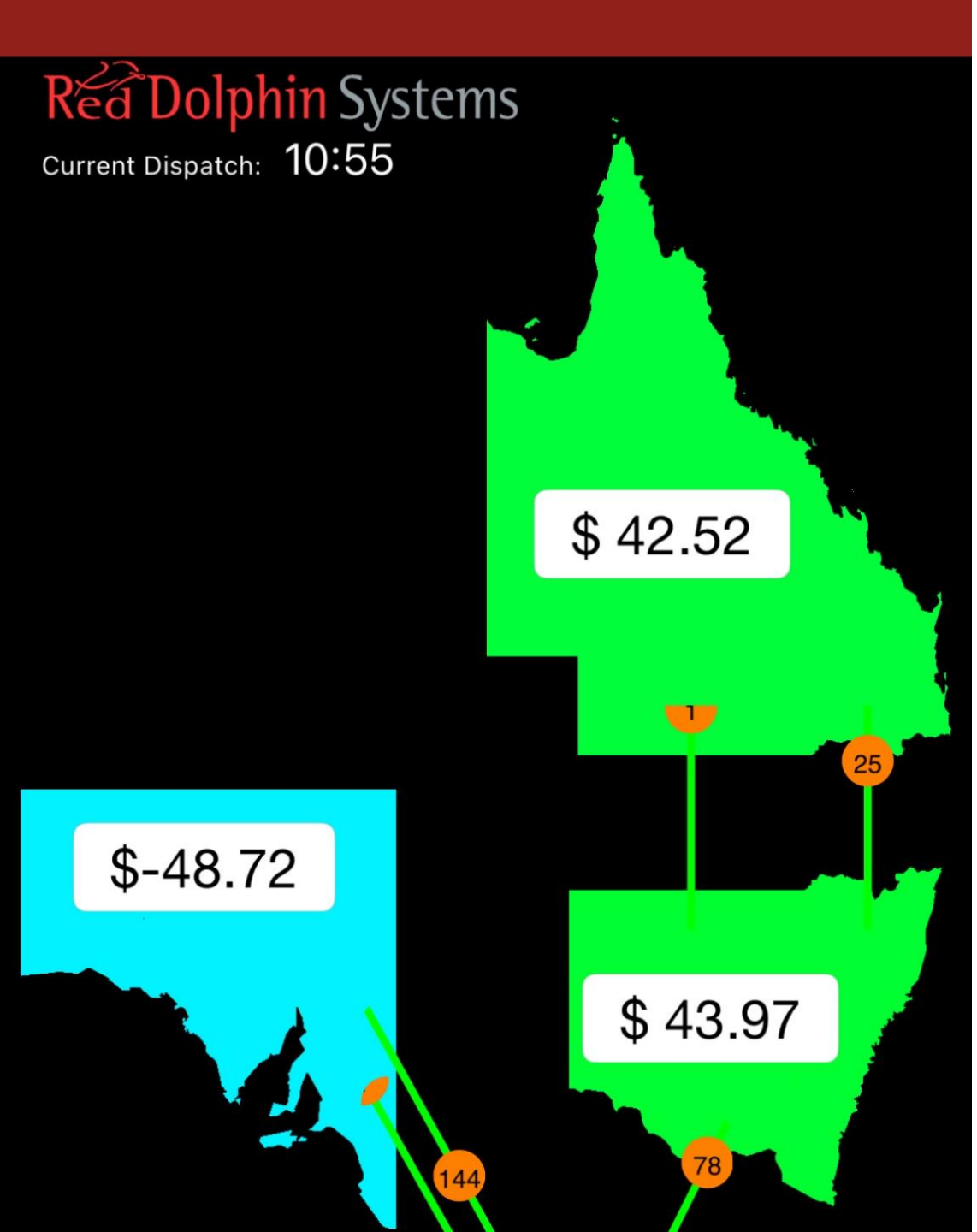
- UK energy bills increased by 50% between 1996 and 2018.
- Australian electricity bills increased by 183% between 1996, when privatisation occurred, and 2016. During the same period overall prices increased by 64%. Wages increased by less than half that in the same period. In fact, real wages increased by less than 10%.
- Between 2009 and 2019, electricity prices doubled in Australia, behind only tobacco in the Consumer Price Index, and more than 3 times wages and four times general inflation.

	A	B	C	D
				
	1200MW $60/MW	600MW $100/MW	2000MW $200MW	200MW $1000MW
Demand: 2500MW	1200MW	600MW	700MW	zero

Spot price: $200 (the price of the highest cost generator – C)

Demand: 4000MW

All generators dispatched.
Spot price: $1000 (the price of the highest cost generator – D)



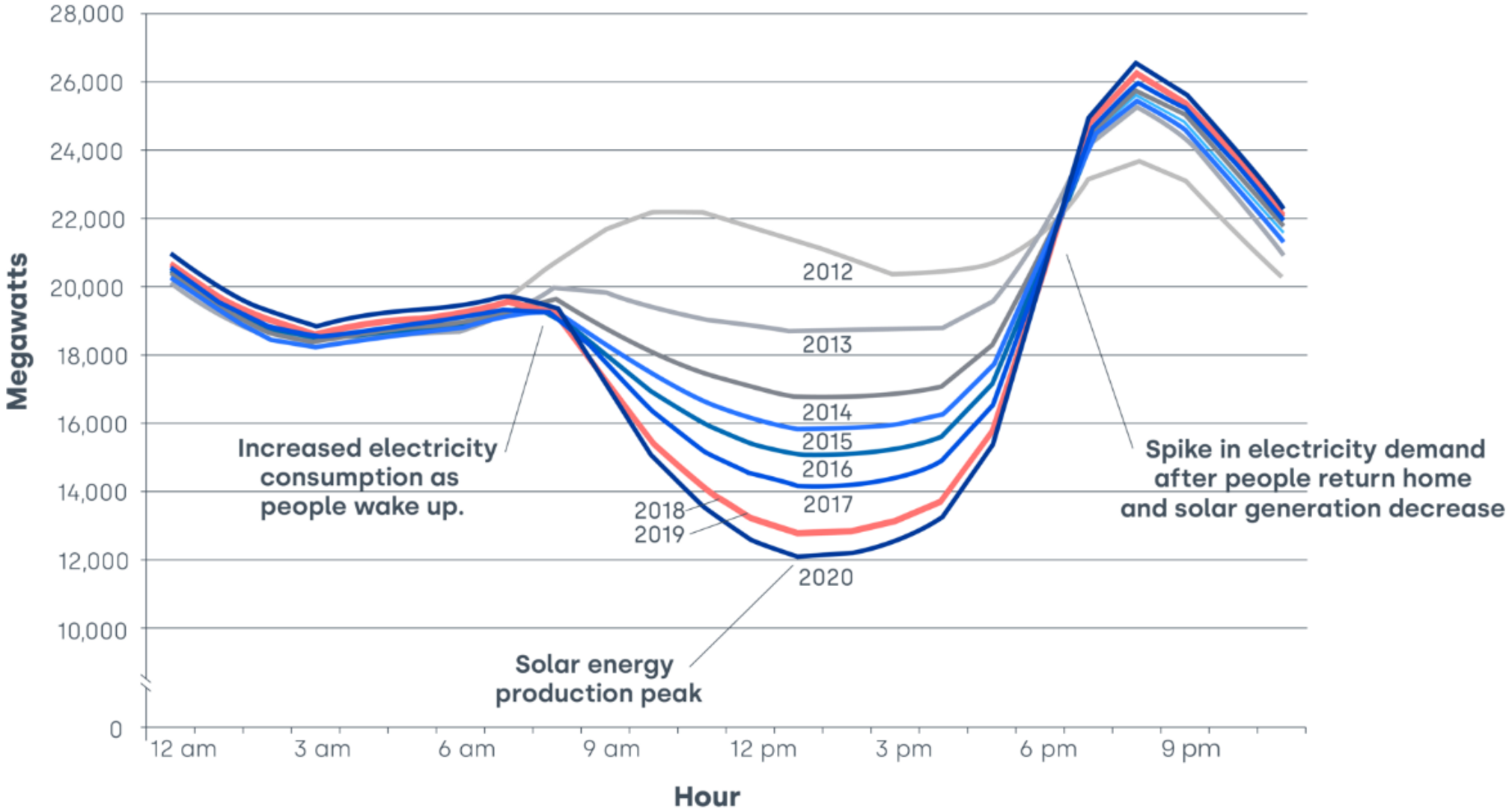
The issue of zero marginal cost

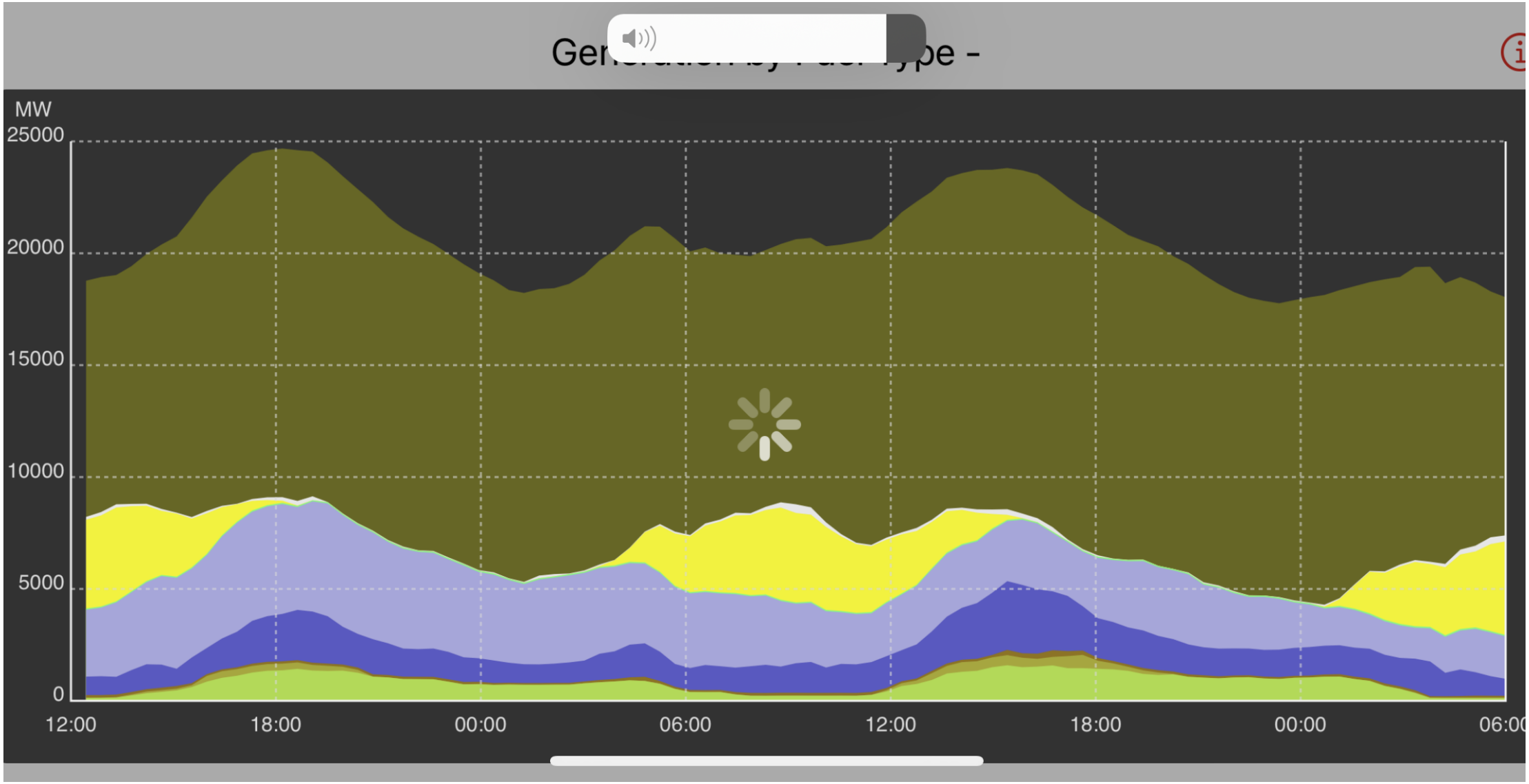
The more renewable energy that is generated during the day – particularly solar – the lower the spot price. All generators are paid (or have to pay) this price at this time.

In the case of the blue regions, the generators have to PAY money to put their generation into the grid.

How can a private, for-profit system make money at these times?

(Net load - March 31)




MW
25000
20000
15000
10000
5000
0
12:00
18:00
00:00
06:00
12:00
18:00
00:00
06:00

Contracts for difference

A form of subsidy that de-risks investment in renewables for private investors.

The government and renewable energy generator enter into a contract.

If the price of electricity on the spot market falls below an agreed price, the government will pay the generator an agreed amount. If the price goes above a certain level, the generator pays some of the profit to the government.



Reverse auction

Example.

Government says it wants to get 1GW of renewable energy.

Companies bid to deliver projects, of whatever size.

The cheapest bids win.

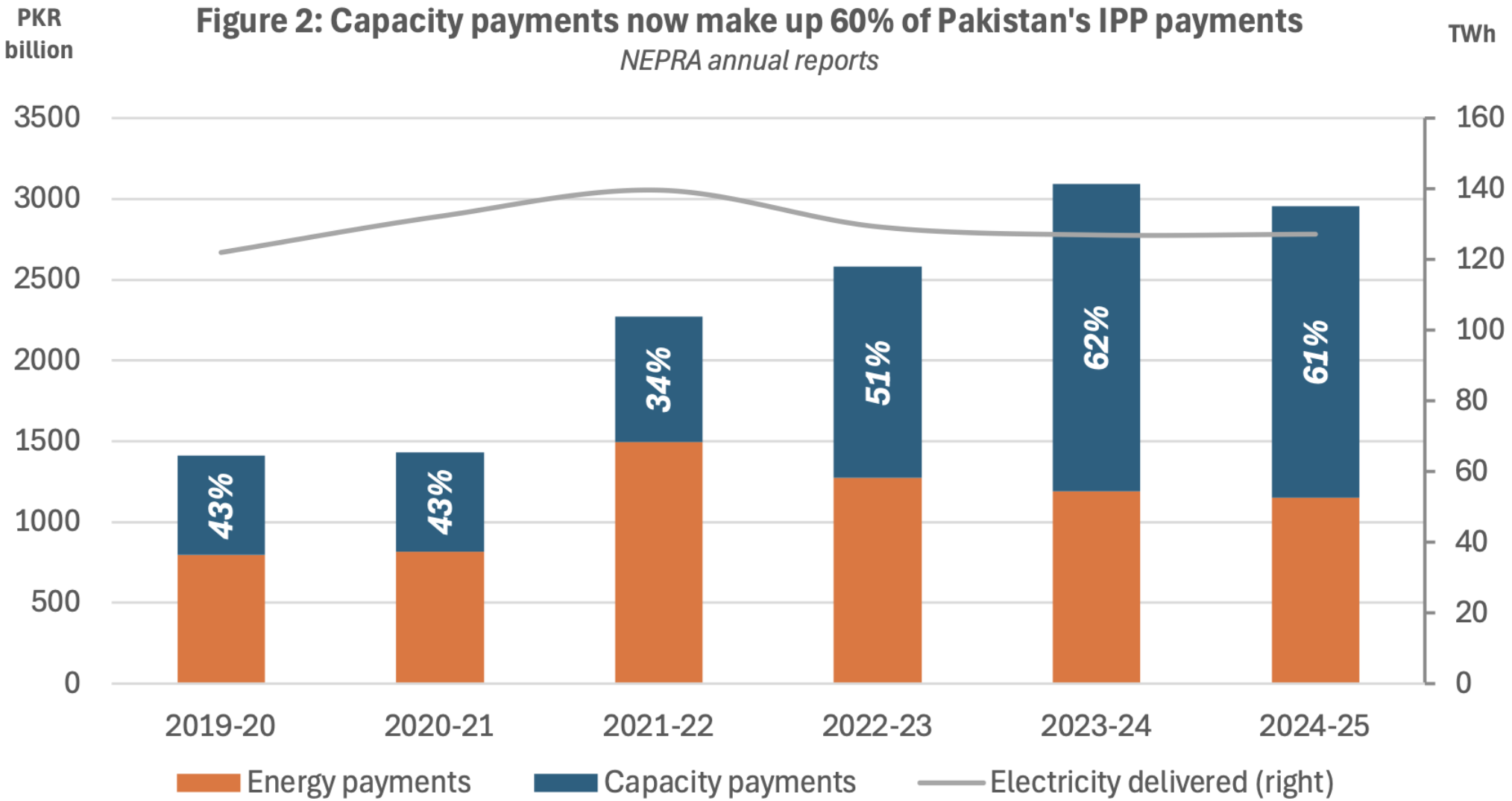
Problems:

- Sometimes bidders bid at unrealistically low prices. They then have to find savings.
- Encourages a race to the bottom on price. This often means that developers will try to make savings in labour costs.



Figure 2: Capacity payments now make up 60% of Pakistan's IPP payments

NEPRA annual reports





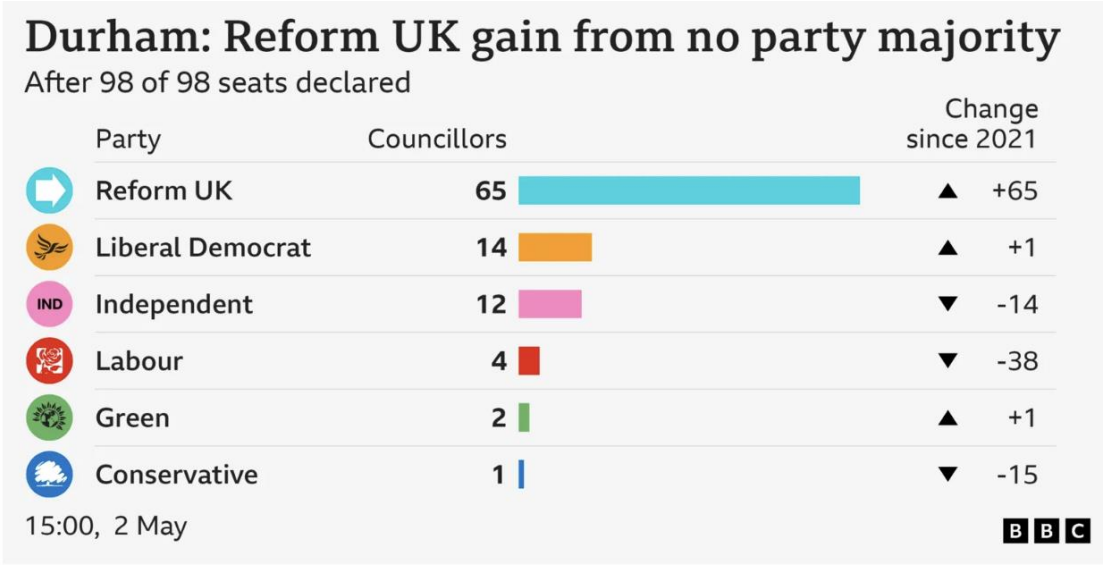
County Durham, UK

13

Durham County Council 2005

Durham County Council election, 2005[3][4]								
Party	Seats	Gains	Losses	Net gain/loss	Seats %	Votes %	Votes	+/–
Labour	**53**	***N/A***	***N/A***	***N/A***	**84.1**	**56.7**	**124,683**	***N/A***
Liberal Democrats	5	*N/A*	*N/A*	*N/A*	7.9	20.4	44,878	*N/A*
Conservative	2	*N/A*	*N/A*	*N/A*	3.2	14.7	32,358	*N/A*
Derwentside Independents	2	*N/A*	*N/A*	*N/A*	3.2	3.6	7,835	*N/A*
Independent	1	*N/A*	*N/A*	*N/A*	1.6	4.5	9,833	*N/A*
Socialist (GB)	0	*N/A*	*N/A*	*N/A*	0.0	0.1	288	*N/A*
BNP	0	*N/A*	*N/A*	*N/A*	0.0	0.1	119	*N/A*

Durham County Council 2025



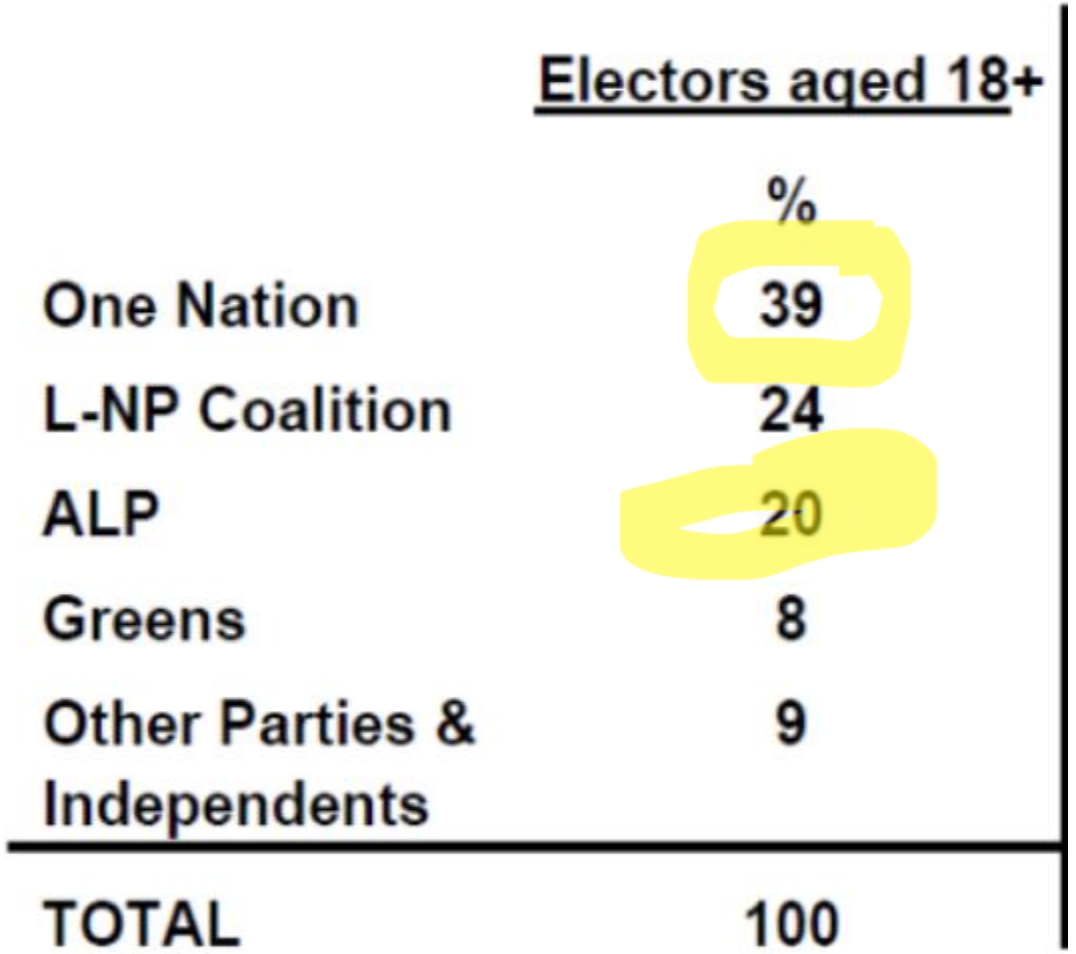
PAS DE CALAIS REGION, NORTHERN FRANCE

Election	Winning candidate	Party	%	2nd place candidate	Party	%
2022	Marine Le Pen	FN	57.49	Emmanuel Macron	LREM	42.51
2017[12]	Marine Le Pen	FN	52.06	Emmanuel Macron	LREM	47.94
2012	François Hollande	PS	56.18	Nicolas Sarkozy	UMP	43.82
2007	Ségolène Royal	PS	52.04	Nicolas Sarkozy	UMP	47.96
2002[12]	Jacques Chirac	RPR	77.83	Jean-Marie Le Pen	FN	22.17
1995[13]	Lionel Jospin	PS	57.28	Jacques Chirac	RPR	42.72

District of Morwell

Combined Morwell, Hastings, Pakenham

Member	Party	Term	ALP TPP (average)
Jim Balfour	Liberal	1955–1967	
Archie Tanner	Liberal	1967–1970	
Derek Amos	Labor	1970–1981	61.6
Valerie Callister	Labor	1981–1988	61.4
Keith Hamilton	Labor	1988–2002	54.6
Brendan Jenkins	Labor	2002–2006	54.9
Russell Northe	National	2006–2017	44.5
	Independent	2017–2022	
Martin Cameron	National	2022–present	45.4



The public ownership approach

- About 30% of US households get their energy from public or cooperative utilities. (The Power of Community Utilities | climateandcommunity)
- In Germany, 72 municipal utilities have been founded since 2005 to bring energy back into public hands.

The benefits of public ownership

- Governments have the fiscal capacity to pay for what we need.
- The focus can be decarbonising the grid, not on profits for developers.
- We are not dependent on the profit needs of private developers.
- We can emphasise just transition.
- Prices can be set to ensure justice and low cost to consumers
- The focus can be on the public good
- We can introduce energy democracy

Socially-focused renewables



- Renewables can also be used to foster community and cooperative ownership.

E.g. Cooperative Power, community batteries, solar gardens



Behind-the-meter renewables

Usually rooftop solar
Household batteries

Advantages:

- Directly benefits households
- Reduces cost of transmission infrastructure
- Efficient use – no transmission
- Doesn’t take up space for agriculture

Disadvantages:

- Not everyone can afford
- Often subsidised, and often benefits those who can already afford
- Can be difficult to manage within the whole grid – see Duck Curve