



Net Zero Expo

Net Zero – the Big Picture

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Moderator: Craig Reucassel



Terry Niemeier

Energy Division, NSW Department of Climate Change, Energy, the Environment and Water



Angel Ambas-Scutts

Youth Advisory Group



Prof Alistair Sproul

School of Photovoltaic & Renewable Energy Engineering, UNSW



David Stuart

Colormaker Industries Australia

(winner of 2023 Business Sustainability Award)



Yianni Mentis

Environment & Climate Change,
Northern Beaches Council



Net Zero – the Big Picture: Question 1

- What does Net Zero even mean?
- Does it cover all greenhouse gasses or just CO2?
- Is Net Zero the same as carbon neutral?
- Does 'zero' mean 'zero'?

> Yianni - Northern Beaches Council



Net Zero – the Big Picture: Question 2

- How will we get there?
- And what is government doing about it?

> Terry - DCCEEW

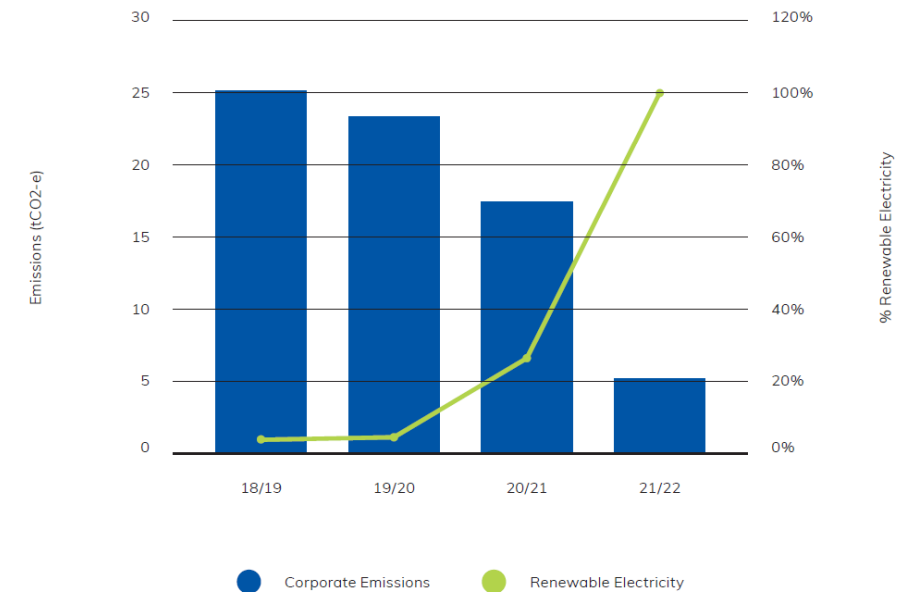
> Yianni - Northern Beaches Council



Northern Beaches Council targets

Carbon emission reductions commitments from the ECC Strategy

Corporate emissions reduction and renewable electricity increase



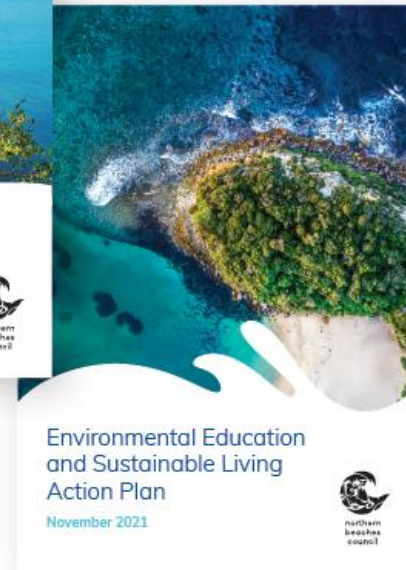
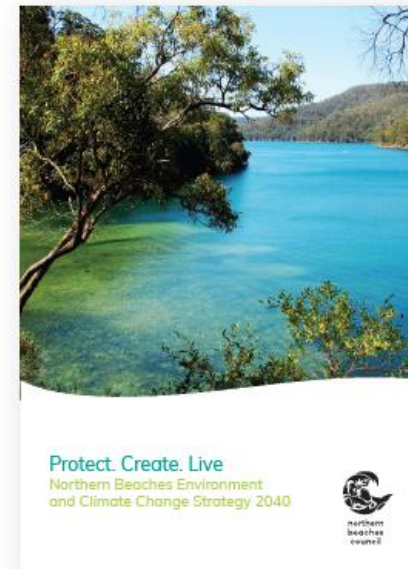
* Targets achieved

Northern Beaches Council targets

Our ECC Strategy and targets are supported by:

- Detailed short term action plans
- Our Resilience Strategy - Withstand. Adapt. Thrive
- Waste and Circular Economy Strategy
- Tree Canopy Plan
- MOVE Transport Strategy 2038, Walking Plan and Bike Plan that include targets and actions to reduce emissions from transport
- Policies that enable both the community and Council to change behaviour such as the single use plastics policy.

ECC Strategy and Key Action Plans



Net Zero – the Big Picture: Question 3

- Is Net Zero on your cohort's radar?
- What does your peers want to see?
- What can we do to capture their support?

> Angel - YAG

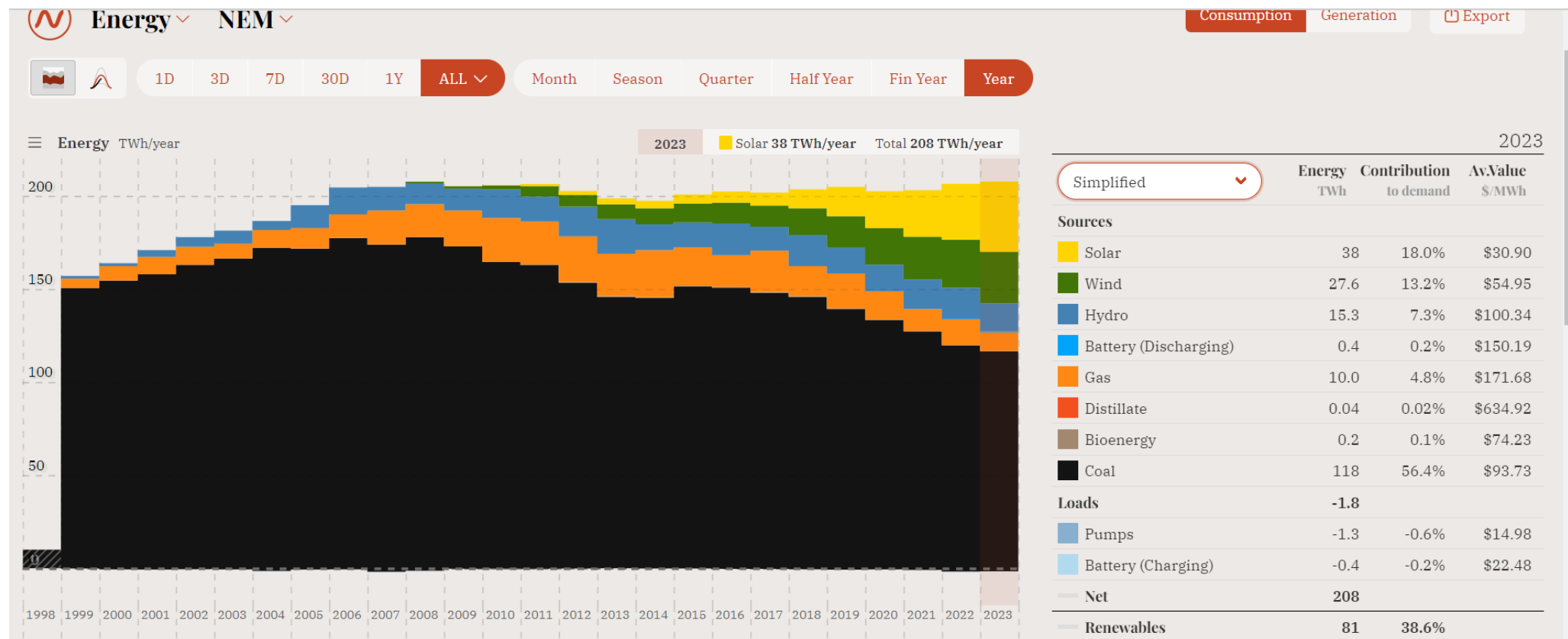


Net Zero – the Big Picture: Question 4

- What are the economic costs and benefits of going net zero?
 - > Terry - DCCEEW
 - > Prof Sproul - UNSW
 - > David - Colormaker



END USE EFFICIENCY, WIND AND SOLAR SQUEEZING OUT COAL AND GAS



- End Use Efficiency (and some industry shifting offshore) - has flattened electricity demand in the NEM since 2008. Unprecedented – electricity consumption has always grown.
- Wind and solar over the past decade has been growing at a factor of ~10x per decade. Solar, wind and hydro in 2023 supplied 39% of the electricity consumed in the NEM.
- One more decade and renewables will be over 80 – 90% of the energy in the NEM.

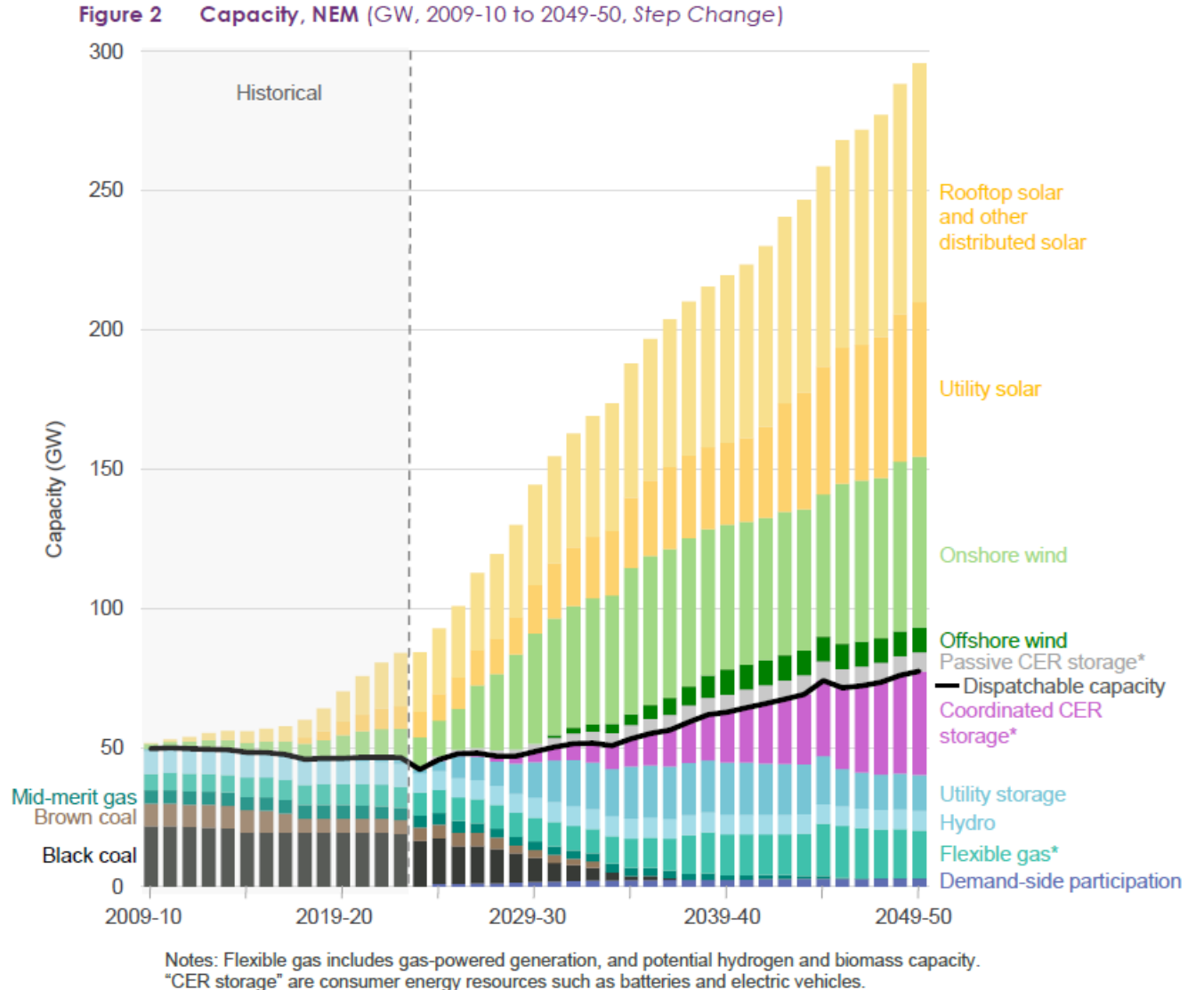
Opennem: <https://opennem.org.au/energy/nem/?range=all&interval=1y&view=discrete-time>

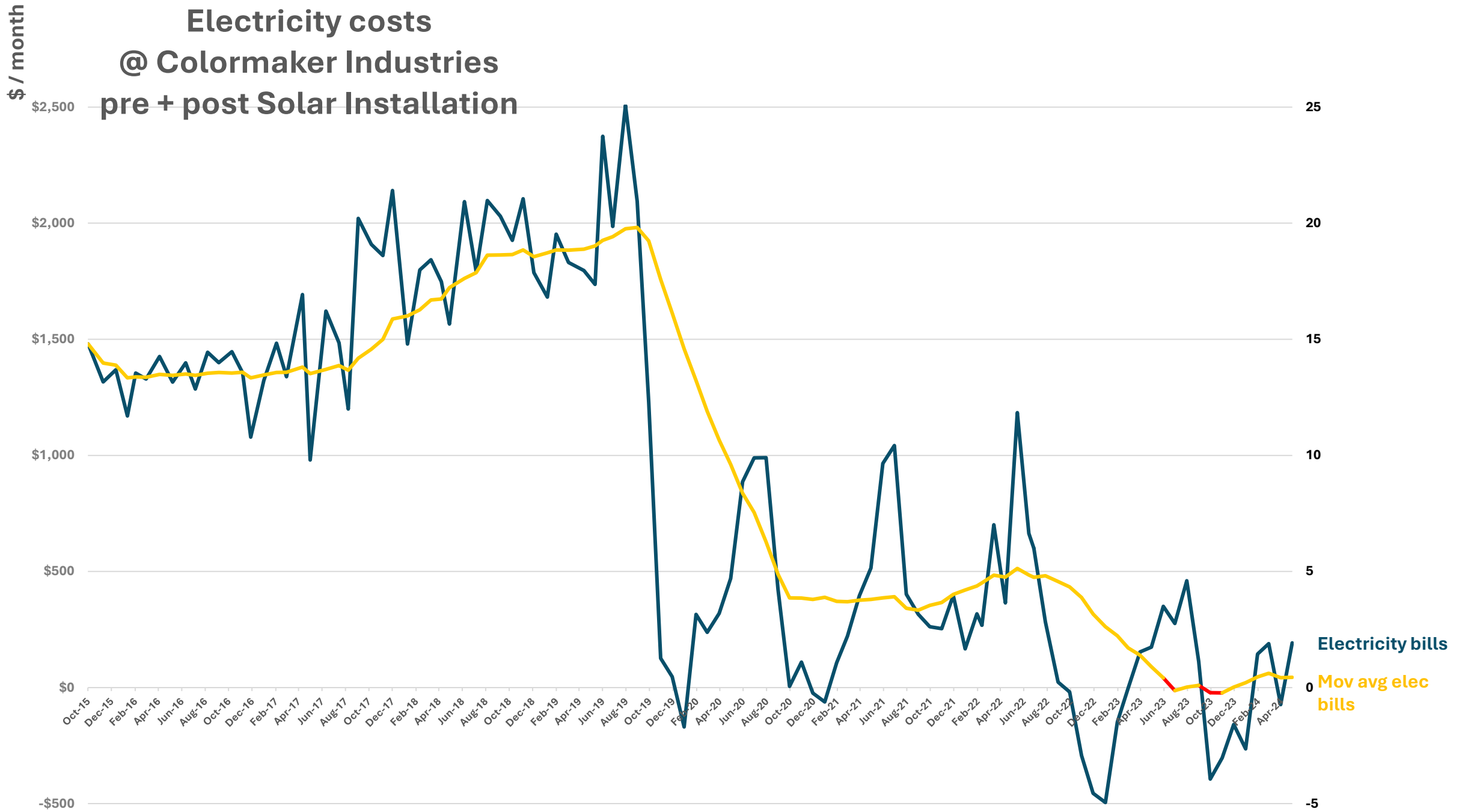
WIND AND SOLAR – LOWEST COST PATHWAY TO DECARBONIZING THE GRID

By mid 2035 – coal will be essentially phased out – the NEM will increasingly be dominated by solar, wind and storage.

2035 – 2050 increasing electrification of transport, heating (residential and commercial), and industry will require continued growth of renewables.

<https://aemo.com.au/consultations/current-and-closed-consultations/draft-2024-isp-consultation>





Net Zero – the Big Picture: Question 5

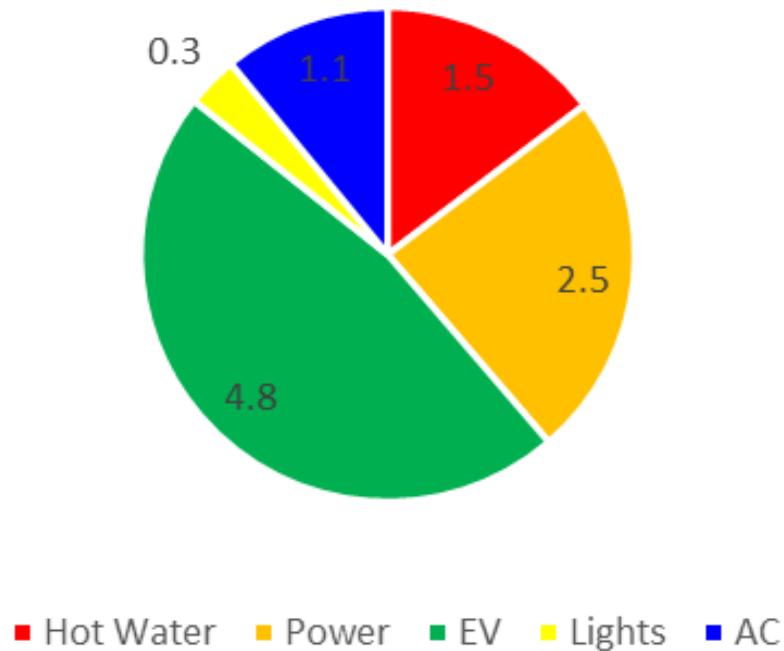
- What are the advances in technology that will help us get there?

> Prof Sproul - UNSW



ZERO ENERGY HOME – NORTHERN BEACHES RETROFIT

Household electricity usage
(kWh/day)



- All electric house in Sydney – well insulated, shaded from summer sun, double glazing, reverse cycle AC with fresh air, air cleaning and humidity control, heat pump hot water, EV plus 9 kW PV system.
- Household electricity usage (without EV) is about 40% of a typical household in Sydney.
- Reverse cycle AC consumption averages at 1.1 kWh/day – about the same as a refrigerator.
- Thermal comfort is excellent as house has good passive solar design but high efficiency AC means it can handle extreme temperatures, high humidity, bushfire smoke, and heatwaves.

What are the advances in technology that will help us get there?

- For households and businesses –go fully electric and power that all from renewables. This can be done now.
- Industrial – need to research best pathways to produce green fuels (e.g. Hydrogen, Ammonia or Methane). Or alternative pathways that don't require high temperatures! (nature can make oyster shells – no furnace required!)
- For solar photovoltaics (PV) – similar to computers or mobile phones in the 1990s – we are just getting started!

1985 – commercial PV = 12% efficiency ,
2024 – now at 26% efficiency
2050 - ??? Theoretical limit = 85%!

- My lifetime is about 50% of the electricity age!
- We are at the beginning of how to best use, generate and store electricity.
- The future is electric.
- Our air, soil and water will be cleaner and our cities healthier once we stop burning fossil fuels
- IF we decide to implement what we know now – we can hopefully avoid the worst of climate change – but we need to change our thinking and make this a priority.



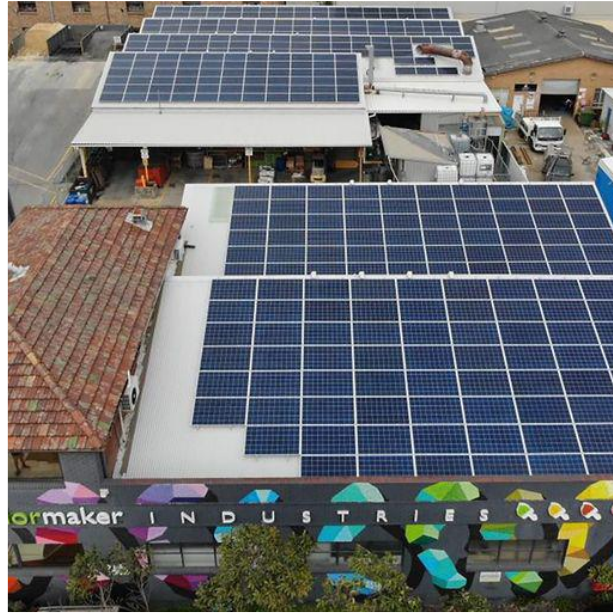
Net Zero – the Big Picture: Question 6

- What practical things can businesses do?
- How did you make your vision reality for your business?
- Did you have a plan?
- What are your 3 tips for businesses?

> David – Colormaker

> Yianni - NBC

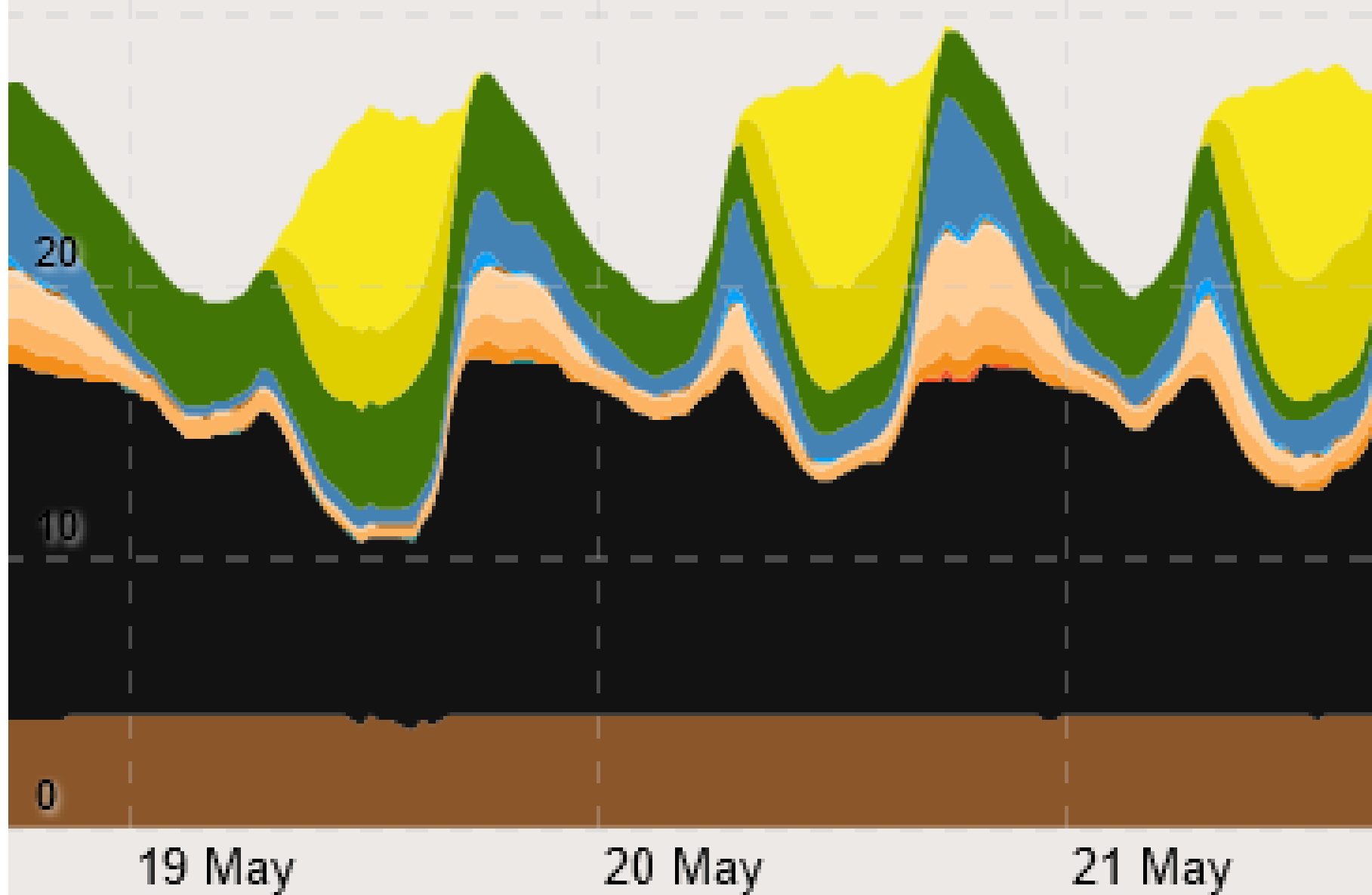




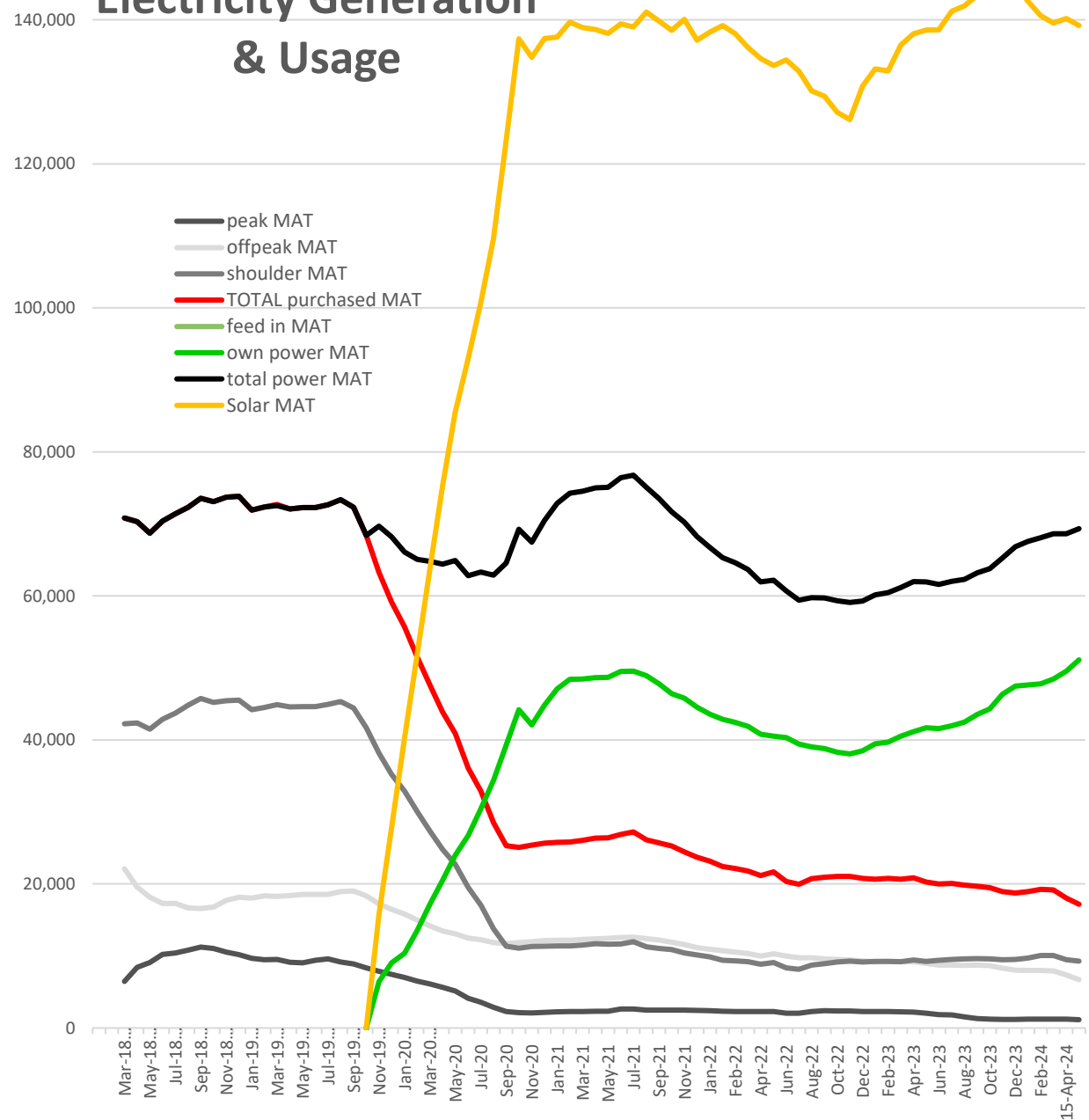
GW

Av.: **25 GW**

Renewables: **31.12%**



Electricity Generation & Usage



Council help for businesses towards Net Zero

- Towards Net Zero Toolkit
- How-to Guides
- Self-assessment checklists
- Interactive map
- Networking events
- Case studies
- Renewable PPA for Northern Beaches businesses
- Business Sustainability Award currently open for submissions

> Yianni



Net Zero – the Big Picture: Question 7

- What one key thing do you want to tell residents about the net zero journey

> all panellists



Net Zero – the Big Picture: Thank You

- Many thanks to the moderator and panellists for supporting Council's first Net Zero event – it's very much appreciated.
- Thank you also to the audience for joining us. We hope you have found this panel discussion interesting.

