



## CROW Newsletter - September 2022

(much of the annotations below is copied directly from the articles)

### First, a regionally-based story of youth acting on climate...



### The brains behind the Climate Letter Project

Charlie Pinard and Eadie Hartwig are two year 8 students on a mission. They're the brains behind the Climate Letter Project, a program that empowers grade 5 and 6 students to write to the Prime Minister and other Ministers urging action on climate change.

Here's how it works. Charlie and Eadie drop in on primary schools in Indigo Shire and run an hour of hands-on activities and discussion about climate change. They teach kids how to write letters to politicians asking that they stop deforestation, invest in projects and businesses that help reduce carbon emissions, and share their visions and hopes for the future of Australia.

See more at <https://www.facebook.com/iscyouthforclimateaction>

### New South Wales will be the first state in Australia to treat carbon dioxide and other greenhouse gases as pollutants (!)

The NSW Environment Protection Authority (EPA) has launched an eight-week consultation period for its draft climate change policy and related action plan. It marks the first step to require that polluters are on a trajectory towards net zero emissions by 2050.

NSW's approach was triggered by a case brought before the state's land and environment court last year by the Bushfire Survivors for Climate Action. They argued the EPA had a duty

under the Protection of the Environment Administration Act 1991 to develop objectives, guidelines and policies to ensure environmental protection from climate change, and won.

The consultation submissions are due to be considered and a policy formalised before Christmas. The agency would then begin detailed engagement with each sector of the economy on how each would cut emissions and demonstrate they are preparing for future climate impacts.

<https://www.theguardian.com/australia-news/2022/sep/08/nsw-becomes-first-state-to-treat-carbon-dioxide-as-pollutant-to-ensure-industries-cut-emissions>

### **NSW releases rules for the first tender in its large renewable energy transition plan**

The New South Wales government and its agencies have released the final rules of the first tender that signals the start of the biggest energy transition plan ever undertaken in Australia – building the generation and storage needed to replace the country’s biggest fleet of coal generators.

Developers will largely be tendering for long term energy supply agreements (LTESAs) which are a type of underwriting scheme, and[or] access rights which guarantee minimal congestion in the state’s renewable energy zones.

It is the first tender of what are expected to be twice yearly offerings over the next 10 years, a process expected to attract more than \$34 billion of new investment.

<https://reneweconomy.com.au/nsw-lays-out-rules-for-first-stage-of-34-billion-switch-from-coal-to-green-energy/>

### **New records for wind and solar in Australian grid**

A new record for the share of wind and solar generation in Australia’s main grid was just achieved. Wind and solar supplied 61% of generation at one point. In 2018 the highest share for wind and solar in the main grid was 26%. In South Australia a new peak for renewables was also achieved, at 146% (i.e. exporting to other states almost 50% more than its own demand).

<https://reneweconomy.com.au/renewables-at-record-highs-fossil-fuels-at-record-low-with-more-to-come/>

### **\$45 million to accelerate pumped hydro in NSW**

NSW’s pumped hydro future is being fast tracked as five projects, with a combined capacity of almost 1.75 gigawatts (GW), have been awarded funding under the NSW Pumped Hydro Recoverable Grants Program.

Energy Minister Matt Kean said, “If these pumped hydro projects proceed to construction, they are expected to create more than 2,300 jobs and attract \$4.4 billion of private investment, which will help grow the economy and support the regions.

“This is a win for NSW as these grants will be repaid to the Government if a project reaches financial close, meaning that these same funds could be used to support even more projects in future,” Mr Kean said.

Pumped hydro acts like a giant battery for the electricity system. It works by using surplus renewable energy to pump water up a hill when it is sunny and windy, and releasing the water back down the hill through giant turbines that create electricity when it is still and dark.

The areas of the 5 pumped hydro receiving grants are: Lake Lyell and Yetholme (between Lithgow and Bathurst), Wollomombi (near Armidale), Musselbrook, and Kangaroo Valley.  
<https://www.nsw.gov.au/media-releases/pumped-hydro>

### **How much wind, solar and storage do we need to reach nearly 100% renewable electricity in Australia?**

This little analysis over one year, though not at the level of complexity of modelling used by the Australian Energy Market Operator, shows many of the key considerations in moving toward a fully renewable grid. The author analysed actual electricity demand and wind and solar generation over a year ending in August. He scaled up the daily actual wind and solar generation, and assumed a level of energy storage with 5 hours of storage plus the existing hydro power.

When the upscaled renewables and storage could not satisfy demand, the author assumed an 'other' on-demand source existed, such as gas (or hydrogen or biofuels), to fill the gaps in renewable and storage. Over the year, only about 4% of generation had to come from this 'other' source.

The results illustrated "clearly that late autumn and winter will prove to be the most challenging periods for a mostly renewable grid in Australia. Solar generation in late June and early August can often be as low half the annual average [which particularly becomes a problem with periods of low wind]."

However, a highly renewable NEM with significant quantities of solar and five hours of storage is well equipped to cope with extreme demand in summer. Extreme demand days typically occur towards the end of a streak of very hot days, which are usually days with very good solar resource [hence the 5 hour storage is full and ready for the peak].

The simulation ended up having 18% excess renewable generation [i.e. 18% curtailment, wastage or spillage] over the year. Any optimised model of a highly renewable grid will have significant amounts of over-generation. It is better to overbuild renewable generation than to build large amounts of energy storage for the occasional long period of low renewable generation.

It is important to note that wind in Queensland is not well correlated with wind in the southern states. That means that when it is calm in South Australia, Victoria, Tasmania and NSW, it is often windier than average in Queensland.

More wind generation in QLD will greatly help to improve the geographic diversity of renewable generation, making it easier to match supply and demand [throughout all states on the 'national' grid] over the year.

<https://reneweconomy.com.au/a-near-100-per-cent-renewables-grid-is-well-within-reach-and-with-little-storage/>

### **New NSW Large-Scale Solar Energy Guidelines**

NSW has released new guidance on the planning framework for the assessment of large-scale solar energy projects that are 'State Significant Development'.

One of the four objectives of the guidance is to:

“encourage industry to select suitable sites for projects to avoid or reduce the likelihood and extent of land use conflicts and environmental and social impacts [this includes scenic impacts and uses of the more productive classes of agriculture land]”.

Summary - <https://utilitymagazine.com.au/nsw-government-revises-large-scale-solar-guidelines>

### **World first – regular operation of hydrogen train**

In a claimed world first, one state in Germany started regular operation of hydrogen-powered trains in August, replacing 15 diesel trains in the local public transport system. Even though not yet powered by green hydrogen, the operator estimates that 4,400 of CO<sub>2</sub> will be saved annually. The German state of Lower Saxony is also using battery-powered trains, alongside diesel, in areas that lack overhead electric rail infrastructure.

<https://www.cleanenergywire.org/news/world-first-achieved-hydrogen-trains-germany-commence-regular-operation>

### **The swelling pipeline of electrolyser gigafactories**

Electrolysers provide the means to produce green hydrogen from renewably generated electricity.

A recent paper by research group Rethink Energy UK predicts that the global capacity of electrolysers will increase from the current 2 GW to 42 GW by 2025 – a 20-fold growth. Enough electrolyser Gigafactories are expected globally by 2030 to build another 100 GW of electrolysers annually. Within 2 years, the group expects that green hydrogen will be produced at a lower cost than grey hydrogen from methane.

<https://cleantechnica.com/2022/09/01/electrolyzer-supply-to-increase-green-hydrogen-availability/>

### **Building code updated to 7 star energy efficiency**

A seven-star energy efficiency rating and minimum accessibility standard will be required in all new homes built from October 2023, after Australian building ministers agreed to update the National Construction Code.

The changes are expected to cut the thermal energy use of homes by about 25 per cent.

“[Energy efficiency think tank] Renew has found that building 7-star homes with solar and no gas can cut bills by over \$1000 a year.”

Dr Fiona Gray, CEO of Renew, said “It will reduce deaths during extremely cold or hot weather and is also expected to lower the cost of grid upgrades by up to \$12.6 billion by 2050, and reduce poverty and inequality by ensuring higher standards in social housing and private rentals,” Dr Gray said.

Property Council of Australia Chief Executive Ken Morrison said “for homeowners and renters alike, a 7-star home means big savings, as well as higher levels of comfort”.

The new provisions will also mandate that all apartments and some commercial buildings are built to allow electric vehicle (EV) charging capability in all car spaces, and rooftops that are able to support solar photovoltaic (PV) retrofits.

<https://www.apimagazine.com.au/news/article/massive-upheaval-to-building-code-as-all-new-homes-move-to-seven-star-energy-rating>

Also - “Considering only energy savings [the new 7 star standard] is cashflow-positive for most households if they borrow on a mortgage,” Pears said of the upfront costs.

<https://www.theguardian.com/australia-news/2022/aug/25/tougher-seven-star-energy-efficiency-standards-for-new-australian-homes-set-to-be-approved>

### **California regulators end subsidies for gas hookups in new home construction**

California regulators voted Thursday to end subsidies for connecting natural gas lines to new homes.

The subsidies originated to encourage natural gas because it was seen as cleaner than coal and oil, the CPUC said. The state's electricity grid today is much cleaner, the agency said.

“Our current policy of subsidizing natural gas line extensions is a vestige of the past,” CPUC Commissioner Clifford Rechtschaffen said in a statement. “It no longer makes sense for ratepayers to subsidize new natural gas infrastructure.”

<https://ieefa.org/articles/california-regulators-end-subsidies-gas-hookups-new-home-construction>

### **ACT Expands Home Energy Support Program**

ACT Minister for Energy and Emissions Reduction Shane Rattenbury announced the expansion of the Home Energy Support Program to include new rebates of up to \$2,500 for efficient electric appliances; including reverse cycle heating and cooling systems, hot water heat pumps and electric cooktops/ovens.

“We’ve announced our intention to electrify our city and transition away from the use of fossil-fuel gas by 2045,” said Minister Rattenbury. “A critical part of this transition is to make sure we have a just transition by providing support to those who can least afford to make the switch.”

Gas currently accounts for 20% of the ACT’s emissions, so phasing it out over the next two decades is a critical part of the ACT’s goal. New “greenfields” suburbs in the ACT will no longer be connected to gas mains going forward, and from next year, new gas connections will cease for infill developments.

<https://www.solarquotes.com.au/blog/act-energy-efficiency-rebate-mb2637/>

### **High coal prices will be an important factor shrinking markets for Australia’s coal exports**

High coal prices are intensifying nations’ determination to supply their coal needs from domestic sources or to switch to cheaper more energy secure solutions like wind and solar. “Declining demand will impact mining employment. Even under the NSW government’s Base Case scenario, it projected that employment in coal mining will decline by an average of 600 jobs per year over the next two decades.”

Good thing that there are new job and export opportunities emerging with the energy transition.

<https://ieefa.org/articles/australian-thermal-coal-export-decline-will-be-accelerated-global-energy-crisis>

### **Rapid shift to electric vehicles can save 24,000 lives in Australia**

Swinburne University of Technology research has found that an accelerated transition to electric vehicles in Australia could save 1,200 lives per year (from less vehicle air pollution) and reduce CO<sub>2</sub> emissions by 444 million tonnes over 20 years.

<https://theconversation.com/a-rapid-shift-to-electric-vehicles-can-save-24-000-lives-and-leave-us-148bn-better-off-over-the-next-2-decades-190243>

### **Is Toyota really anti-EV or is it playing a long game?**

This article suggests a possible strategy behind what we've been hearing (e.g. [here](#)) about Toyota opposing policies to promote EVs. Alan Pears points out that “Toyota is a major investor in next-generation battery technology that is much lighter, smaller and offers longer range”, and may actually be positioning itself for the pure battery-electric vehicle market.

<https://thedriven.io/2022/09/14/is-toyota-really-anti-ev-or-is-it-playing-a-long-game/>

### **Tesla Model 3 outsells Camry in August in Australia**

Figures gathered by the Federal Chamber of Automotive Industries (FCAI), showed that battery electric vehicles sales accounted for 4.4 per cent of the market overall in the month of August – more than twice that of 2021.

“This is the highest market share for pure battery electric vehicles ever recorded in a single month in Australia,” it said.

Year-to-date, however, EV sales are only 2% of all new cars sold in Australia, due largely to supply chain problems, including the effects of a covid shutdown on Tesla’s Shanghai factory about May.

<https://thedriven.io/2022/09/05/tesla-model-3-grabs-number-4-spot-in-australia-new-car-sales-in-august/>

### **(Some points from the newsletter Future Crunch to finish off)**

One of the hallmarks of the global clean energy revolution is the consistent inability of most journalists to predict its speed. Case in point: the polysilicon sector is now betting on annual sales of 940GW of solar by 2025. That's 5.8% of global electricity demand, *every year*, or the equivalent of the world’s entire fleet of 438 nuclear plants every 20 months. [Bloomberg](#)

We thought that the US IRA [Inflation Reduction Act] was a big deal, but there was also the CHIPS Act -

Although it’s attracted little attention, the United States bipartisan CHIPS Act, signed into law just a few days before the IRA, contains an estimated \$67 billion for clean energy R&D and climate resilience [over the next 7 years or so]. On its own, that makes it one of the largest climate bills ever passed by Congress. [Atlantic](#)

...a bit of context. While it's a lot of money, don't forget that China and Europe are spending even more. China is already spending almost the same as that *every year*, and Europe will spend almost twice as much by 2027. [Bloomberg](#)

[Education of women is argued to be one of the most effective climate investments. For example, see <https://theconversation.com/cop26-why-education-for-girls-is-crucial-in-the-fight-against-climate-change-171394>] Here's one of the least celebrated stories of human progress. Teenage pregnancies are declining across the world, with only a third of all women bearing children in adolescence compared to 50% sixty years ago. The decline is contributing to a positive change in girls' education, and infant and maternal mortality rates. [ORF](#)