Limitations of Model

November 2022 – April 2023

-This is only accounting for the summer to fall months in Melbourne

<http://www.bom.gov.au/climate/enso/outlook/>

-Demonstrates that Victoria was in a La Nina cycle during the time period, and we are currently on an El Nino watch

<http://www.bom.gov.au/climate/updates/articles/a020.shtml>

-La Niña occurs when equatorial trade winds become stronger, changing ocean surface currents and drawing cooler deep water up from below. This results in a cooling of the central and eastern tropical Pacific Ocean. The enhanced trade winds also help to pile up warm surface waters in the western Pacific and to the north of Australia.

-In the warmer half of the year, southern coastal locations such as Adelaide and Melbourne experience fewer individual daily heat extremes during La Niña years but an increased frequency of prolonged warm spells. Of the 32 Victorian heatwaves between 1989 and 2009, 17 occurred during La Niña years while only 6 occurred during El Niño

<http://www.bom.gov.au/climate/updates/articles/a008-el-nino-and-australia.shtml#:~:text=El%20Niño%20years%20tend%20to,the%20spring%20and%20summer%20months>

-An [El Niño](http://www.bom.gov.au/climate/enso/#tabs=Pacific-Ocean&pacific=About) occurs when sea surface temperatures in the central and eastern tropical Pacific Ocean become substantially warmer than average, and this causes a shift in atmospheric circulation. Typically, the equatorial trade winds blow from east to west across the Pacific Ocean. El Niño events are associated with a weakening, or even reversal, of the prevailing trade winds.

-El Niño years tend to see warmer-than-average temperatures across most of southern Australia, particularly during the second half of the year. In general, decreased cloud cover results in warmer-than-average daytime temperatures, particularly in the spring and summer months. Higher temperatures exacerbate the effect of lower rainfall by increasing evaporative demand.

-This means that for southern coastal locations such as Adelaide and Melbourne, individual daily heat extremes tend to be of greater intensity (hotter) during El Niño years but there is a reduced frequency of prolonged warm spells.

<https://www.openaccessgovernment.org/one-year-impact-of-ukraine-war-global-energy-prices-input-output-analysis/152599/#:~:text=Immediately%20following%20the%20invasion%2C%20energy,28th%20February%20to%203rd%20August>.

-Russian-Ukraine War increased the global energy costs by ~20% (particularly gas supplies)

<https://www.cleanenergyregulator.gov.au/RET/Forms-and-resources/Postcode-data-for-small-scale-installations>

-Almost 700,000 solar power units in Victoria

-Consumer behaviour and trends for more solar panels

<https://www.csiro.au/en/research/technology-space/energy/Energy-data-modelling/GenCost>

“In one silver lining, despite the rising costs the report found ﻿renewables like solar and wind remained ﻿the cheapest form of new electricity generation.

This is largely due to significantly lower costs of electricity generation﻿ - around $60-100/MWh for a combined solar and wind system capable of supplying 60-90 per cent of the market, compared to up to $130/MWh for black coal, or almost $250/MWh for black coal with carbon capture and storage (a more environmentally friendly approach).”

<https://www.energynetworks.com.au/news/energy-insider/2020-energy-insider/commercial-down-v-residential-up-covid-19s-electricity-impact/>

-Comparing one week of lockdown to prelockdown, commercial energy use was down, and home energy use went up. Net was 1% increase so negligible

<https://www.premier.vic.gov.au/new-victorian-homes-go-all-electric-2024>

New Victorian initiative to promote homes going electric and not being hooked up to gas

-This will affect demand for gas

<https://www.vic.gov.au/state-electricity-commission-victoria>

Victoria government bringing back the State Electricity Commission (SEC) to drive down emissions and power bills by investing in delivery of renewable energy