I am making a personal submission
Name: Mr Geoffrey Miell
Suburb: LITHGOW **State:** NSW **Postcode:** 2790
Political Donations: No
Agree to Terms/Conditions: Yes
My view on the application: **I object to it**

Message: To Whom It May Concern,

The Paris Climate Agreement, although flawed, locks-in the end of coal. Such a geopolitical agreement could not have been reached in the absence of the growing civil society and market signals that coal's demise was already happening.

The proposed SSD-5602 APMEP fosters the continued long-term operation of Mt Piper Power Station (MPPS), facilitating ongoing greenhouse gas (GHG) emissions through the combustion of carbon-based substances, that **contributes to escalating the risk of civilisation collapse within this century.**

Overwhelming scientific evidence unequivocally links human-caused climate change to the increasing risk of frequent and severe bushfires in the Australian landscape. That same science tells us these extreme events will only grow worse in the future without genuine concerted action to rapidly reduce global emissions of GHGs.[1]

Humanity must stop burning all carbon-based substances as soon as possible. MPPS should cease operations by no later than 2030, and certainly long before reaching its intended operational design life of 50 years (or in year-2043),[2] rendering any other associated projects, like the proposed APMEP, unviable in the long-term.

How viable is the proposed APMEP in a likely post- 'peak oil and gas' supply world? Coal transport by fossil-fuelled trucks and rail locomotives would become significantly more difficult and expensive. Personnel may find travel to/from work more difficult.

Please see the following pages for more detailed information.

The proposed SSD-5602 APMEP must be denied; otherwise it contributes to an immediate existential threat to human civilisation and conflicts with Australia's commitments given in the Paris Climate Agreement to make substantial reductions to our carbon-based emissions.

You may publish this entire document. Please don't publish my contact details.

Thank you for the opportunity for me to present my views on this critical issue.

Geoff Miell

Lodged: 2020 Apr 28

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[1] https://australianbushfiresandclimatechange.com/

[2] **EnergyAustralia paves way for NSW coal power upgrade**, by Angela Macdonald-Smith, *AFR*, 8 Jul 2019, https://www.afr.com/companies/energy/energyaustralia-paves-way-for-nsw-coal-power-upgrade-20190705-p524ml

Today's CO_2 levels far exceed any present on Earth for >800k years

In 1958, Charles David Keeling of Scripps Institution of Oceanography began measuring atmospheric CO_2 concentrations at Hawaii's Mauna Loa Observatory.

Keeling discovered a seasonal cycle of minimum and maximum concentrations as plants grew in spring and died back in autumn. He also detected a steady increase that he attributed to the use of fossil fuels. The chart depicting that rise is known as the Keeling Curve.

Ice core data reveal that today's atmospheric CO_2 levels far exceed any present on Earth for more than the last 800,000 years (see Figure 1 below).

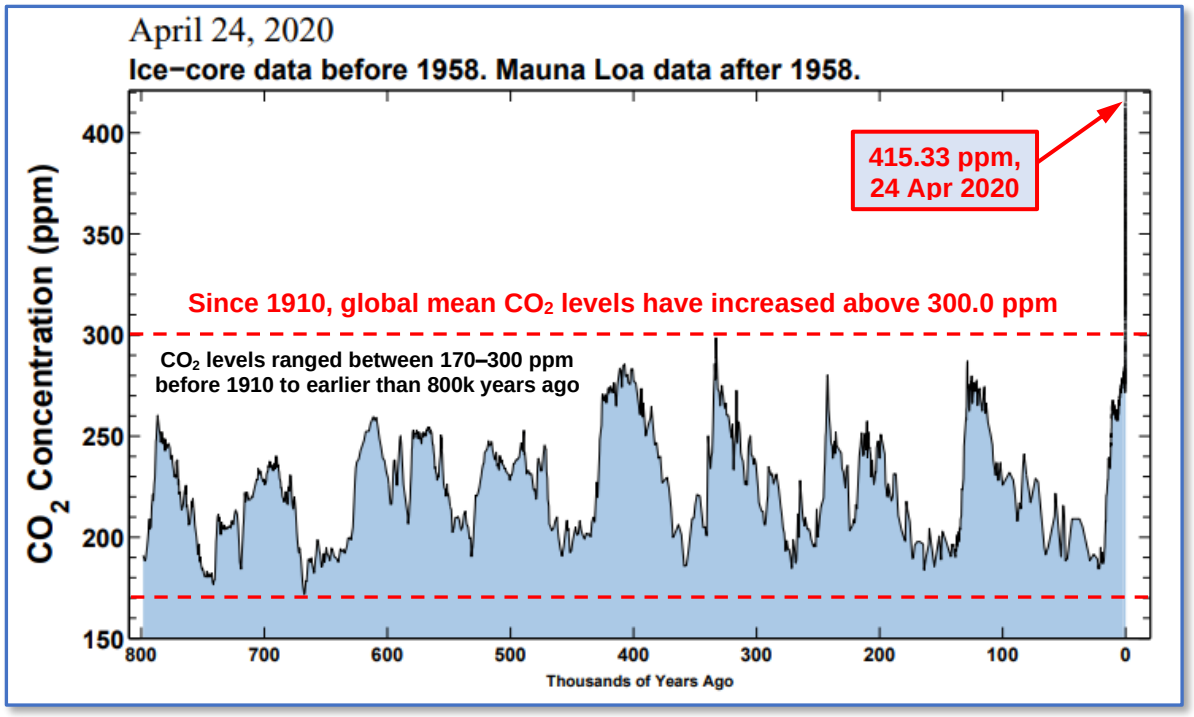

Figure 1: Atmospheric CO_2 Concentrations – 800,000 years ago to 24 Apr 2020[3]

The last time planet Earth's atmosphere was so rich in CO_2 was millions of years ago, back before early predecessors to humans were likely wielding stone tools; the world was a few degrees hotter, and sea levels were tens of metres higher.

While Mauna Loa has become the global standard for CO_2 levels, measurements taken in other places have confirmed the Mauna Loa results. NOAA's network of marine surface stations, and even a monitoring station in remote, pristine Antarctica, **all passed the 400 parts per million (ppm) threshold in 2016.**[4] NASA's Orbiting Carbon Observatory-2 satellite shows the planet's CO_2 levels now above 400 ppm, with variations from one place to another, thanks to atmospheric circulation patterns.

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[3] Accessed 26 Apr 2020, https://scripps.ucsd.edu/programs/keelingcurve/pdf-downloads/; **Global Mean CO2 Mixing Ratios (ppm): Observations**, https://data.giss.nasa.gov/modelforce/ghgases/Fig1A.ext.txt

[4] **How the World Passed a Carbon Threshold and Why It Matters**, by Nicola Jones, *YaleEnvironment360*, 26 Jan 2017, https://e360.yale.edu/features/how-the-world-passed-a-carbon-threshold-400ppm-and-why-it-matters

Where on Earth is humanity heading: Pliocene or Miocene climate?

On 17 November 2018, Professor H. J. Schellnhuber CBE, then Director Emeritus of the Potsdam Institute for Climate Impact Research, Member of the Pontifical Academy of Sciences, and Member of the German Advisory Council on Global Change, presented his Aurelio Peccei Lecture in Rome, Italy, titled "Climate, Complexity, Conversion".[5] At the beginning of his lecture, Professor Schellnhuber refers to a co-authored scientific paper titled *Trajectories of the Earth System in the Anthropocene*[6] that he described as a **"*landmark paper*"** and a **"*game-changer*"**. From about time interval **0:23:23 through to 0:26:45**, Professor Schellnhuber outlines two (2) Earth climate state possibilities that **humanity could experience within this century**, dependent upon the global human-induced greenhouse gas (GHG) emission trajectory path that ensues within this decade (i.e. the 2020s), namely Options:

A. A harsher climate state paradigm may be like in the **Mid-Pliocene age**, that occurred **3–4 million years ago**, where atmospheric CO_2 levels were in the range of **400–450 ppm**, mean global temperatures were **+2.0–3.0°C** (above pre-industrial age), and sea levels were **+10–22m higher than today** (stabilised over centuries), but requires humanity to rapidly reduce human-induced global GHG emissions now (i.e. >50% reduction by 2030, and to zero by 2050).[7]

B. The alternative highly undesirable climate state may be like in the **Mid-Miocene age**, that occurred **15–17 million years ago**, atmospheric CO_2 levels were in the range of **300–500 ppm**, mean global temperatures were **+4.0–5.0°C**, and sea levels were **+10–60m higher** (stabilised over centuries), **which is likely with our current global GHG emissions trajectory.**

Humanity and human civilisation might adapt to Option A – Mid-Pliocene climate like conditions, but human civilisation (as we know it) is highly likely to collapse in Option B – Mid-Miocene climate like conditions, with a global population likely declining below one billion people before 2100.[8]

A 1°C global mean temperature rise (above pre-industrial age) means the emergence of dangerous climatic conditions; 2°C means the onset of "*extremely dangerous*" climatic conditions; 3°C means "*outright chaos*"; and 4°C means "*incompatible with organised global community*".[9]

Humanity must stop emitting GHGs: >50% reduction by 2030; zero before 2050.

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[5] ***Keynote Debate Can the Climate Emergency Action Plan lead to Collective Action_ (50 Years CoR)***, from time interval **0:05:31 to 0:40:20**, Club of Rome, https://www.youtube.com/watch?v=QK2XLeGmHtE

[6] **Trajectories of the Earth System in the Anthropocene**, by Will Steffen, Johan Rockström, Katherine Richardson, Timothy M. Lenton, Carl Folke, Diana Liverman, Colin P. Summerhayes, Anthony D. Barnosky, Sarah E. Cornell, Michel Crucifix, Jonathan F. Donges, Ingo Fetzer, Steven J. Lade, Marten Scheffer, Richarda Winkelmann, and Hans Joachim Schellnhuber, published in the *Proceedings of the National Academy of Sciences of the United States of America* (PNAS), vol. 115, no. 33, pp8252-8259, online on 6 Aug 2018, http://www.pnas.org/cgi/doi/10.1073/pnas.1810141115

[7] ***Existential climate-related security risk: A scenario approach***, by David Spratt and Ian Dunlop, published by Breakthrough – National Centre for Climate Restoration, May 2019 (updated 11 June 2019), https://www.breakthroughonline.org.au/papers

[8] http://www.climatecodered.org/2019/08/at-4c-of-warming-would-billion-people.html

[9] *Ibid*. 5, presentation by Ian T. Dunlop from about time interval **1:32:55 through to 1:42:20**

1.5°C temperature rise likely to be reached around 2030

On 14 February 2020, David Spratt, Research Director at Breakthrough – National Centre for Climate Restoration, made a presentation to the opening plenary, "The New Climate Reality Check", at the National Climate Emergency Summit 2020 at the Melbourne Town Hall.[10] Spratt highlighted that the world has a short-run problem, where a 1.5°C temperature rise above pre-industrial age is likely to be just a decade away, as a consequence of past GHG emissions already in the atmosphere.

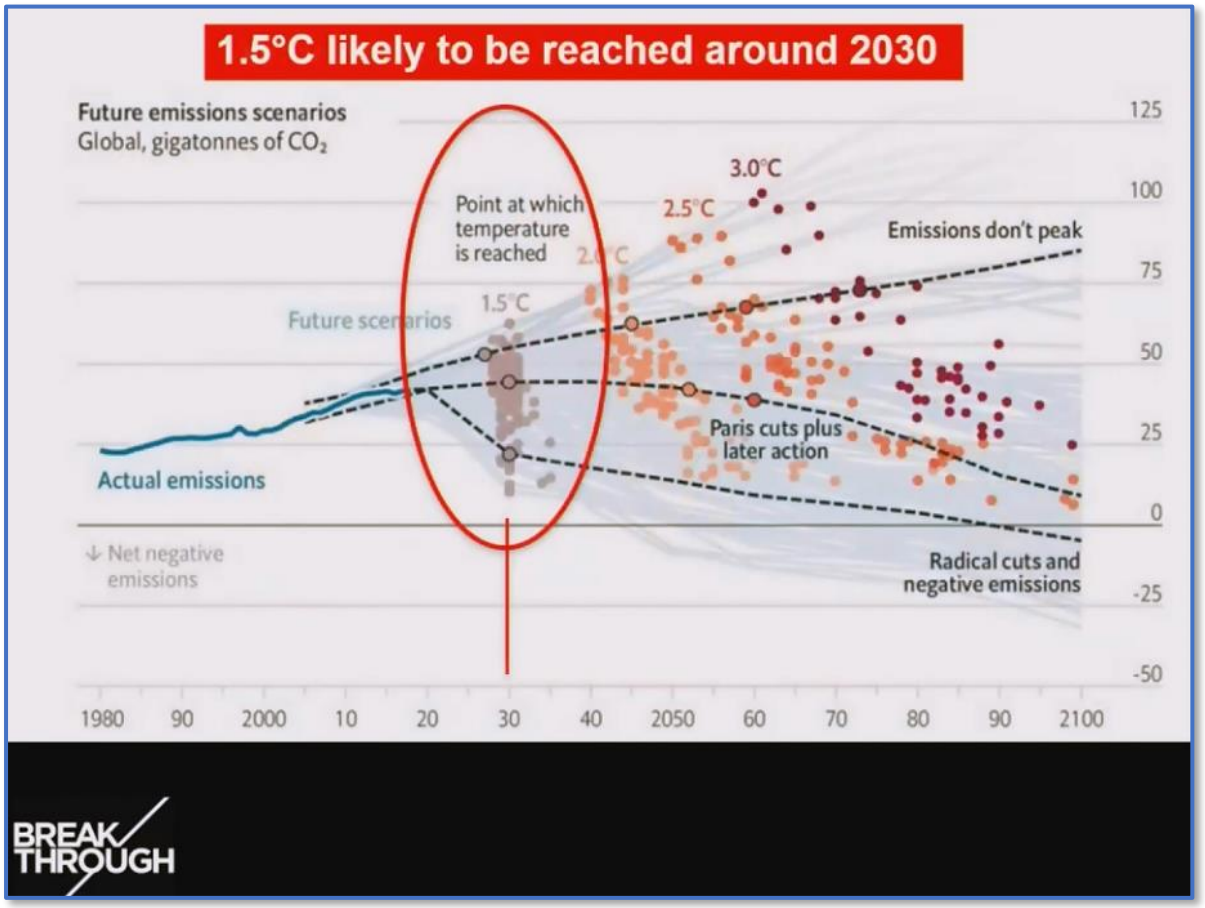

Figure 2: Future emissions scenarios, temperature rise and timings up to 2100[11]

1.5°C is dangerous, close at hand (see Figure 2 above), and now practically impossible to avoid, as there is no carbon budget remaining for 1.5°C.

To stay below 2°C, itself far from safe, requires global emissions to be more than cut in half in the next ten years, and much more in the high-emitting rich nations like Australia. **This means the proposed APMEP must not proceed.**

Climate disruption is now an existential threat to our civilisation as we know it today. This is an emergency requiring everyone making climate the primary priority of economics and politics, because slow, incremental change now means we are losing.

Australia must prepare for the consequences of an inevitable 1.5°C rise by 2030.

[10] https://www.climateemergencysummit.org/full-program/
[11] http://www.climatecodered.org/2020/02/a-climate-reality-update-at-2020.html

All coal capacity will be uncompetitive with renewables by 2030

Analysis recently published by Carbon Tracker indicates **renewables are already cheaper than new coal-fired power stations in all major markets, exposing almost a trillion dollars of new investments and depressing Australia's coal exports, and that by 2030 at the latest, new wind and solar farms will be cheaper to build and operate than existing coal plants.**[12]

It makes undeniable economic sense for governments to cancel all new coal-related projects immediately and rapidly phase out existing thermal coal mines and coal-fired power plants while encouraging rapid and effective deployment of renewable generation and energy storage solutions together with transmission upgrades.

Climate change mitigation responses

Professor Andrew Blakers indicated at a recent 100% renewable energy workshop at ANU[13] that an effective climate change mitigation response requires:

- Renewable electrification of nearly everything – electricity generation, land transport, heating/cooling, and heavy industry;
- Zero oil, gas, and coal – this means 85% GHG emissions reduction;
- Meeting targets building new solar and wind generation at a build rate of:
  - **2.5 GW/year** (Government projections) means completion by about **2200**;
  - **6 GW/year** (current rate) means completion by about **2100**;
  - **15 GW/year** means completion by about **2050 – Not Fast Enough**;
  - **21 GW/year** means completion by about **2040 – Barely Adequate**.

Professor Blakers says there are two federal electorates in NSW which would be ideal locations for renewable energy zones:

- **Calare** – currently held by Andrew Gee MP, National Party; and
- **Hume** – currently held by Angus Taylor MP, Liberal Party.

Both are ideal for wind and solar generation, and pumped-hydro energy storage, and both have good transmission corridors. Blakers reportedly said:

- **"*We're talking about tens of billions that could come into these electorates.*"**
- **"*It's unbelievable that the local federal and state members aren't all over this.*"**

There's "***nothing to invent***" to switch the energy grid to 100% renewables.

Given the overwhelming scientific evidence, why are governments delaying what must be done to mitigate the escalating existential risks of dangerous climate change, that if we fail to act urgently and effectively, would likely extinguish billions of people's lives in the coming decades; yet are willing to accept and promptly act on scientific advice, whatever the cost to economies and disruptions to people's lives, to mitigate non-existential risks to most of humanity from COVID-19?

[12] https://carbontracker.org/reports/how-to-waste-over-half-a-trillion-dollars/

[13] https://www.solarquotes.com.au/blog/transmission-renewable-energy/

Proposed Angus Place Colliery life extension

The APMEP's *Amended Report*, dated 6 Dec 2019, states in Section **2.2 Mine Life**:

> The amended APMEP now proposes to undertake mining operations up to 31 December 2053 with rehabilitation activities to continue beyond this date. This aligns mining operations at the Angus Place Colliery to the current projected life of the Mount Piper Power Station.

MPPS's first generator (Unit 2) was completed in 1992, and the second (Unit 1) in 1993.[14] Internationally, only 1% of power stations in operation are older than 50 years.[15] If MPPS's Unit 2 would be operating for a 50 year life, that would occur in year-2042, and Unit 1 in 2043. **Where is the evidence that MPPS is intended to be operational for at least 60 years, until year-2053? What's EnergyAustralia say?**

Will 2019 be the year of global 'peak oil / gas' supply, then decline?

Conventional oil and gas discoveries have fallen to their lowest level in 70 years. Discoveries aren't even close to keeping pace with the depletion and loss of conventional resources. According to Rystad Energy, the current resource replacement ratio for conventional oil is only 16 percent – or alternatively put, **only one barrel out of every six consumed is being replaced with new resources.**[16]

Shale gas and tight oil from low permeability reservoirs have provided a resurgence for US oil and gas production. Tight oil has allowed US oil production to more than double from its 2005 lows, and shale gas has similarly enabled a major increase in US gas production. However, the nature of these reservoirs is that they decline rapidly, such that production from individual wells falls 70-90% in the first three years, and field declines without new drilling typically range 20-40% per year. **Continual investment in new drilling is therefore required to avoid steep production declines.**[17]

Saudi Arabia's (and the world's) single largest and best oil field, Ghawar, was estimated to be producing at levels generally above 5 million barrels of oil per day (Mb/d) between 1993 and 2008. After 2009, production declined below 5 Mb/d, and after 2016 fell further, below 4 Mb/d, with levels at around 3.8 Mb/d in 2018.[18] **This means Ghawar appears to have already peaked and future production is highly likely to decline further.** The remaining state-owned Saudi Aramco oil fields: Shaybah, Khurais, Safaniyah, Zuluf, and others; will need to increase production (after the COVID-19 crisis ends and oil demand likely increases) to offset Ghawar's likely continuing production decline. For perspective, per *BP Statistical Review of World Energy 2019*, **global oil production in 2018 was 94.718 Mb/d (annual average).**

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[14] https://en.wikipedia.org/wiki/Mount_Piper_Power_Station

[15] **Timing is everything: Liddell Power Station's record of breaking down when it is needed most**, by Mark Ogge, The Australia Institute, May 2018, page 1, http://www.tai.org.au/sites/defualt/files/P548%20Timing%20is%20everything%20Liddell.pdf

[16] **Rystad: Oil and gas resource replacement ratio lowest in decades**, *Oil & Gas Journal*, 9 Oct 2019, https://www.ogj.com/exploration-development/reserves/article/14068305/rystad-oil-and-gas-resource-replacement-ratio-lowest-in-decades

[17] ***Shale Reality Check: Drilling Into the U.S. Government's Rosy Projections for Shale Gas & Tight Oil Production Through 2050***, by J. David Hughes, Post Carbon Institute, Feb 2018, page 158, http://www.postcarbon.org/wp-content/uploads/2018/02/Hughes_Shale-Reality-Check_Winter-2018.pdf

[18] **The Attacks on Abqaiq and Peak oil in Ghawar**, *Crude Oil Peak*, 1 Oct 2019, https://crudeoilpeak.info/the-attacks-on-abqaiq-and-peak-oil-in-ghawar

Ghawar's Light Arab crude has an API of 34 with a sulphur content of 1.9-2.2% by weight (which the nearby Abqaiq refinery plant must remove). Much of US shale oil is very light and extra light (API >40). Therefore, much of US shale oil cannot replace Ghawar oil production directly. Unlike Saudi Arabia, the US is **not** a swing producer that can quickly (i.e. within 30 days) ramp up production, due to US shale oil legacy decline rates limiting any further production growth.

At some point soon, Saudi Arabian oil production will likely begin a sustained decline that will likely have global supply consequences.

US tight (shale) oil production ramped-up when oil prices were around US$100 per barrel but peaked in March 2015 and then declined as oil prices dropped to US$50 per barrel. Production began recovery in September 2016 but almost half of the production, mainly from Bakken, Eagle Ford, Niobrara and Anadarko, has already peaked again in October 2019. The other half of the production, from the Permian (in Texas) was still growing (up to March 2020) but monthly growth rates have declined from 180 kb/d in mid-2018 to 40 kb/d recently. Recent data are preliminary.[19]

US tight oil producers were already facing a tough 2020, but effects of the COVID-19 crisis on world economies is putting them under even more financial stress. Amid an oversupply of oil and gas, and an oil price-war stoked by Russia and Saudi Arabia, plus cuts to spending to appease investors over dismal returns, greater challenges are being imposed on a business sector where many firms are already saddled with debt.[20]

Since the 2008 oil price shock, a problem has emerged that **oil prices must be both affordable to consumers AND high enough for the oil industry to be profitable to survive** while the transition to low-emissions solutions progresses. The COVID-19 crisis is battering global economies and financial systems riddled with accumulated debt incurred during the high oil price period and after the end of the low-cost oil era.

Biofuels are unlikely to become a widespread, affordable replacement for petroleum fuels because of their poor Energy Return on Investment (ERoI) and fossil fuel dependency.[21]

Since the COVID-19 crisis, energy experts say profit margins for an increasing number of older oil wells have morphed into losses – companies cannot even cover fixed costs. Under these circumstances, it makes no sense to produce oil, and wells will have to be turned off completely – a process that's expensive to reverse and sometimes damages wells.[22]

Will an oil and gas glut now, that is supressing new resource exploration and developments, quickly flip to global shortages when the COVID-19 crisis ends? How will that influence the viability of the APMEP in a post- 'peak oil/gas' world?

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[19] **Impact of Corona Virus similar to some earlier peak oil scenarios**, *Crude Oil Peak*, 10 Mar 2020, https://crudeoilpeak.info/impact-of-corona-virus-similar-to-some-earlier-peak-oil-scenarios

[20] **Coronavirus May Kill Our Fracking Fever Dream**, by Bethany McLean, *The New York Times*, 10 Apr 2020, https://www.nytimes.com/2020/04/10/opinion/coronavirus-texas-fracking-layoffs

[21] ***Twenty-First Century Snake Oil: Why the United States Should Reject Biofuels as Part of a Rational National Security Energy Strategy***, by Captain T. A. "Ike" Kiefer, Waterloo Institute for Complexity & Innovation (WICI), Jan 2013, https://uwaterloo.ca/complexity-innovation/sites/ca.complexity-innovation/files/uploads/files/kiefer-snake-oil31.pdf

[22] **Oil Companies on Tumbling Prices: 'Disastrous, Devastating'**, by Clifford Krauss, *The New York Times*, 31 Mar 2020, https://www.nytimes.com/2020/03/31/business/energy-environment/crude-oil-companies-coronavirus.html