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10 September 2019

To whom it may concern,

Thank you for the opportunity to respond to this important government inquiry into the prerequisites for nuclear energy in Australia.

IEEFA has written a detailed submission, which can be found below.

The Institute for Energy Economics and Financial Analysis (IEEFA) conducts research and analyses on financial and economic issues related to energy and the environment. We have analysts situated in Hong Kong, Indonesia, the Philippines, the U.S., the UK, India and Australia, who produce reports carefully reviewing the interaction between energy and financial markets, technology and climate risk.

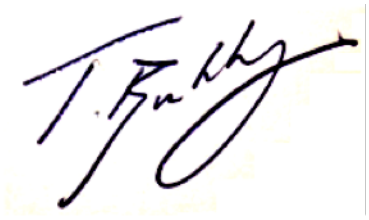
The construction of nuclear power plants globally has proven to be an ongoing financial disaster for private industry and governments alike, with extraordinary cost and construction time blow-outs, while being a massive waste of public monies due to the ongoing reliance on government financial subsidies.

The Australian government would serve its population more productively by providing necessary and desired policy certainty in Australia's energy market, using commercially proven technologies available today, and in encouraging investment in low cost, sustainable renewable energy and energy efficiency technologies over high cost gas and thermal coal to meet energy consumer's needs.

IEEFA concludes that although nuclear options might open up in future decades, the Australian economy needs to agree on and implement a domestic energy plan now, relying on safe renewable technologies already commercially proven, today.

Please contact me via tbuckley@ieefa.org for more information, and to learn more about IEEFA, please visit our website at www.ieefa.org.

Your sincerely



Tim Buckley

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Inquiry into the Prerequisites for Nuclear Energy in Australia

Technology Has Moved On. Nuclear is No Longer A Viable nor Cost Competitive Option for Australia.

Executive Summary

Nuclear is one of the most expensive sources of new energy generation.

The construction of nuclear power plants has proven to be an ongoing financial disaster for the corporates involved and a massive waste of public monies, given the plants are all entirely reliant on government financial subsidies.

Governments have repeatedly failed to comprehend that nuclear construction timelines and cost estimates put forward by many corporates (with vested interests) have proven disastrously flawed and wrong.

NEW NUCLEAR POWER PLANT CONSTRUCTION PROVIDES A LITANY OF FINANCIAL DISASTERS.

This submission details the massive wealth destruction evident in the U.S. at the Summer Nuclear project in South Carolina and the Vogtle nuclear facility in Georgia; Areva of France's Olkiluoto 3 reactor in Finland; Toshiba of Japan's crippling acquisition of Westinghouse Electric U.S.; and the U.K.'s government-sponsored 3.2GW Hinkley Point C which is a white elephant.

Nuclear plants are entirely reliant on long dated government financial and environmental subsidies.

Japan will take decades to overcome the environmental and financial costs of TEPCO's Fukushima Daiichi nuclear disaster. Almost a decade later, the majority of nuclear facilities in Japan remain idle, forcing a continued reliance on massive fossil fuel imports only now being reduced again through a sustained US$20bn annual investment in renewable energy efficiency, including solar and offshore wind.

While traditionally strong pro-nuclear countries like Germany, France and America are increasingly moving away from a reliance on existing nuclear power, there is discussion building on the merits of delaying closure of such facilities in light of the critical imperative of delivering on Paris Agreement commitments, particularly with the rising frequency of ever more costly extreme weather disasters globally.

For all the hype in certain quarters, commercial deployment of small modular reactors (SMRs) have to-date been as successful as hypothesized cold fusion – that is, not at all. Even assuming massive ongoing taxpayer subsidies, SMR proponents

do *not* expect to make a commercial deployment at scale any time soon, if at all, and more likely in a decade from now if historic delays to proposed timetables are acknowledged.

IEEFA notes Australia does *not* have the technical skillsets required, so even if SMR technologies are eventually proven commercially viable overseas, Australia would be relying on both imported technologies and technicians.

IEEFA notes the Australian Energy Market Operator (AEMO) has put forward an excellent Integrated System Plan (ISP) that has been widely endorsed as providing a cost effective and technologically viable roadmap to solve the Australian energy system crisis over the coming decade, and which does *not* include nuclear energy.

Australia's energy crisis has been brought about by self-serving export investment programs of the largely foreign gas cartel now controlling the Australian gas industry. The outcome has been a trebling of domestic gas prices in the last decade, even as global gas prices have hit a multi-decade low across the U.S., Europe and Asia.[1] This has been compounded by a doubling of domestic thermal coal prices over the last decade, again driven by the move to export price parity. Both have had a crippling impact on Australia's manufacturing industry and Australian residential consumers.

AUSTRALIAN AND GLOBAL INVESTORS ARE ENTIRELY READY and willing to invest $5-10bn annually in new renewable energy fully firmed with pumped hydro storage and batteries that can be delivered at less than A$70/MWh, 20% below current Australian wholesale electricity prices.

AEMO's ISP for accelerated deployment of expanded interstate grid connectivity and demand response management technologies is ready to be implemented immediately. All of these technologies are commercially proven in the Australian context, can be deployed at scale now, and are entirely aligned with Australia's Paris Agreement commitments to reduce the world's carbon emissions.

As one of the world's three largest fossil fuel exporters today, the financial, environmental and economic risks of global warming for the Australian economy are huge and growing. It is critical Australia invest in zero emissions industry and technology development so as to build our knowledge and capacity. As has been well documented by Australia's chief Scientist Dr Alan Finkel,[2] IEEFA sees it as an economic imperative that we seek export opportunities for products like green hydrogen as a replacement for fossil fuels given the potentially long term terminal outlook for Australia's current reliance on $120bn per annum of fossil fuel exports.

IEEFA concludes that although nuclear options might open up in future decades, the Australian economy needs to agree on and implement a domestic energy plan now, relying on safe technologies already commercially proven, today.

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[1] IEEFA report: Gas reservation policy would reduce electricity prices in Australia, 8 July 2019.
[2] Australian Government, Australia's Chief Scientist, A hydrogen industry on the National Agenda, 17 August 2018.

Contents

Nuclear Power has a Long International History of Massive Cost Blowouts and Delays

Nuclear is one of the most expensive sources of new energy generation.

IEEFA has long argued that nuclear is an expensive electricity option, viable only with massive taxpayer support. Nuclear power plants have construction timeframes of at least 10-15 years, usually suffer huge capital cost blowouts, and need to rely on massive financial capital subsidies.

The high cost alone of new nuclear plants makes the case for cheaper renewable energy generation, backed up by more flexible technologies than nuclear, including hydro, gas, batteries, other forms of storage, wider interconnection and demand-response.

With tariff deflation and construction times of 1-2 years, wind and solar are far faster to build than nuclear, are lower cost and offer much lower risk options. Wind and solar are without any of the environmental legacy issues of nuclear waste disposal, nor does this technology need for the massive financial capital subsidies that nuclear relies upon – in fact wind and solar are now largely subsidy free.

In our submission, we detail several recent international nuclear experiences as a reminder of the community and immense financial risks involved with nuclear power.

U.S. Nuclear Power Plants Highlight Extreme Time and Cost Blowouts

Two American projects majority owned by Southern company and SCANA Corporation (two big utilities based in Georgia and South Carolina, respectively) have faced ongoing cost blowouts, construction related problems, and new safety requirements from American regulators.[3]

Originally slated to cost US$10bn, the cost estimate blew out to US$25bn.

SCANA spent a decade trying to build the Summer Nuclear Generating Station in South Carolina.

This plant has one Westinghouse 3-loop Pressurized Water Reactor in operation since 1984 and was building two new 1,100 megawatt (MW) Westinghouse AP1000 units scheduled to go into service in 2020. Ongoing construction problems only got worse in March 2017 when designer and contractor Westinghouse Electric Company filed for bankruptcy.

[3] Wikipedia, Virgil C. Summer Nuclear Generating Station, accessed 9 September 2019.

Originally slated to cost US$10bn, the cost estimate blew out to US$25bn. In July 2017, SCANA decided to stop construction of the half-built reactors.[4]

Since 1989, Southern Company has operated the Alvin W. Vogtle Electric Generating Plant, also known as Plant Vogtle nuclear facility in Georgia, with units 1 and 2 having a combined capacity of 2.4 gigawatts (GW).

Southern commenced planning units 3 and 4 in 2006 using Westinghouse AP1000 technology with an initial budget expectation of US$14.5bn (itself 60% higher than the final cost of the first two units of US$8.9bn).[5] This was among the first new nuclear developments in the U.S. since the 1979 Three Mile Island accident, in which a reactor suffered a partial meltdown due to a combination of human error, design deficiencies and equipment failures.[6] The Department of Energy provided a US$8bn loan subsidy to Southern.

Construction commenced in 2013 and completion was due in 2016/17—but has now been delayed five years to 2021/22. In 2017 the construction manager, the Shaw Group, was replaced by Bechtel and the expected cost was estimated to have increased to US$25bn, including financing.[7]

Additional cost increases and further delays can be expected before the two new nuclear plants are completed.[8]

Finland's Olkiluoto 3 Nuclear Reactor Bankrupted Areva

France's Areva's European Pressurized Water Reactor (EPR) reactor at Olkiluoto 3 broke ground in 2005 and was scheduled for completion in 2009. With the latest delay, it is still not operational and is more than a decade behind schedule.[9]

The expected cost of the Olkiluoto EPR has risen significantly with the last public estimate of €8.5bn being almost two-and-a-half times the original €3.2bn.

The last public estimate of the expected cost of Olkiluoto is €8.5bn being almost two-and-a-half times the original €3.2bn.

Finnish utility TVO and French state-owned Areva are mired in multibillion-Euro litigation over responsibility for cost increases at Olkiluoto. Areva has already recorded a €3.9bn impairment on Olkiluoto, forcing a €5bn bailout by investors including the French state, and leading to Areva's merger with French utility EDF.

[4] Bloomberg, Two Half-Finished Nuclear Reactors Scrapped as Costs Balloon, 31 July 2017.
[5] The Augusta Chronicle, Vogtle lays groundwork for first U.S. reactors in decades, 22 November 2009.
[6] U.S.NRC, Backgrounder on the Three Mile Island Accident, June 2018.
[7] Green Tech Media, Georgia Power CEO: Completing Vogtle Reactors Is the 'Best Economic Choice', 7 November 2017.
[8] Greentech Media, More Delays Likely for Vogtle Nuclear Plant, Georgia Regulator Says, 1 August 2019.
[9] World Nuclear News, New delay in start-up of Finnish EPR, 29 November 2019.

Toshiba of Japan Nearly Sunk by Its Westinghouse Acquisition

Toshiba's Westinghouse Electric U.S. held the contract to supply reactors for the Summer and Vogtle projects. In February 2017, Toshiba announced a US$6.1bn write-down for the two American projects.[10] This culminated in Toshiba selling Westinghouse Electric for just US$4.6bn to Brookfield of Canada in January 2018.[11]

The shareholder wealth destruction for Toshiba, Southern Company and SCANA over 2016/17 makes a mockery of the June 2017 deal by India's Prime Minister Narendra Modi with U.S. President Donald Trump for the U.S. Export-Import Bank to provide a US$8bn subsidised loan in return for India importing Westinghouse technology.[12] Any deal remains problematic because in India, any nuclear equipment supplier is liable in case of an accident. This is different from the global norm where only plant operators are liable for damages caused.

U.K. Hinkley Point Nuclear Project: Time and Cost Blowouts

The U.K. government-sponsored 3.2GW Hinkley Point C project is another over-budget and long-delayed nuclear white elephant. It is being built by EDF now, with the support of subsidised Chinese banks.

Hinkley Point's latest estimated cost of over £20bn is double the 2008 initial budget.

A 2017 report by IEEFA[13] highlighted the risk in building a new nuclear plant with the same untested EPR design now a decade behind schedule at Olkiluoto.

Hinkley Point C's latest estimated cost of over £20bn is double the 2008 initial budget. Completion is said to be in 2025, now twice the original construction timeline.[14]

In 2016 the U.K. National Audit Office (NAO) condemned the government's deal to support the Hinkley Point C project through consumer energy bills, in a damning report which accused ministers of putting households on the hook for a "risky and expensive" project with "uncertain strategic and economic benefits".[15]

Given the actual experience to-date, and the experience evident at Olkiluoto, it is impossible to truly know when the Hinkley Point C plant will be finished and how much it ultimately will cost.

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[10] Wikipedia, Virgil C. Summer Nuclear Generating Station, accessed 9 September 2019.
[11] Reuters, Brookfield Business Partners to buy Westinghouse for $4.6 billion, 4 January 2018.
[12] Deccan Chronicle, India seeks loan from US for 6 nuclear reactors, snags remain, 23 September 2016.
[13] IEEFA Brief: U.K. Government at Risk in Over-Budget Nuclear Project That Stands Incomplete, October 2017.
[14] The Guardian, Hinkley Point C: rising costs and long delays at vast new power station, 13 August 2019.
[15] National Audit Office, Hinkley Point C, 23 June 2017.

EDF will be paid £92.50/MWh with 3.5% annual inflation indexation every year since 2012 – putting the current tariff at a ridiculously expensive 106/MWh.

The NAO estimates Hinkley Point C is receiving a total public subsidy at £30bn.[16]

Fukushima Wearing a US$200bn Clean-up Bill

Japan's optimism for nuclear to provide one-fifth of its electricity by 2030 comes amidst ongoing community protests about both safety concerns and the government's decision to use taxpayer money for decontaminating areas in Fukushima affected by radioactive fallout in March 2011.

Fukushima's estimated clean-up cost of ¥21.5 trillion/US$200bn is expected to be passed on to consumers in the form of higher electricity prices. This is yet another nuclear bail out of TEPCO, which was largely responsible for the nuclear disaster.[17]

The catastrophe has not only posed serious questions about the safety-related risks of nuclear power, it has also proven to be financially severe. By 2017, TEPCO's shareholders had seen 80% of their capital destroyed since the disaster, a spectacular hit on its valuation, particularly when considered against the near doubling of the Japanese stock market over the same period.[18]

Flamanville France is a Decade Late and Triple the Budget

A third 1.65GW unit at EDF's Flamanville nuclear power plant in France commenced construction in 2007. It had an initial start date of 2012 and a budget of €3.3bn. Flamanville's latest revised start date is 2024 and revised budget is €10.9bn. This project is more than a decade late and over three times the initial budget (so far).[19]

Germany, France and the U.S. are Moving Away From Nuclear

In 2011, Germany committed to the complete exit from nuclear power, effective 2022.[20] This was a clear outcome of the magnitude of TEPCO Japan's Fukushima power plant disaster.

Germany committed to the complete exit from nuclear power, effective 2022.

Although long reliant on nuclear power for the vast majority of its electricity (70-75%), France has set a law to reduce nuclear reliance by a third to 50% by 2025. As a replacement generation source, the country is ramping up a

[16] IEEFA, Research Brief: A Half-Built, High-Priced Nuclear White Elephant, October 2017.
[17] The Japan Times, The cost of cleaning up Fukushima, 23 December 2016.
[18] IEEFA, Global Electricity Utilities in Transition, October 2017.
[19] Reuters, EDF's Flamanville nuclear plant faces new delay over faulty welding, 20 June 2019.
[20] DW, German cabinet approves 2022 nuclear shutdown, 7 June 2011.

huge investment program in onshore wind, with offshore wind and solar as far lower cost alternatives.

Given the globally pressing need to act on climate change, France is also looking to delay the decommissioning of existing nuclear power plants by one decade, consistent with arguments put forward by Michael Liebreich.[21] This would enable France to cut fossil fuel consumption by 40% between now and 2030, up from 30% under its existing targets.[22]

Investment firm the Carlyle Group argues that absent massive government subsidies, nuclear use in the U.S. will end in the next few decades.[23]

Putting aside the financial disasters relating to the development of new nuclear power plants, journalist David Roberts has highlighted: "America's existing nuclear plants are struggling to compete in wholesale power markets against cheaper gas and renewables. And nuclear power plants across America are shutting down: five have retired in the past five years and 12 reactors at nine plants have announced plans to retire ahead of schedule."[24]

Even with the critically pressing nature of climate warming, absent a high price on carbon emissions, nuclear just cannot compete, argues David Roberts again: "There is no reason to believe that any utility in the United States will build a new large reactor in the foreseeable future. These reactors have proven unaffordable and economically uncompetitive. In the few markets with the will to build them, they have proven to be constructible. The combination of political instruments and market developments that would render them attractive, such as investment and production credits, robust carbon pricing, and high natural gas costs, is unlikely to materialize soon."[25]

IEEFA has written extensively on the failure of the nuclear industry to resurrect itself post TEPCO Japan's 2011 Fukushima power plant disaster.

With the need to decarbonise its energy system, reduce reliance on imported fossil fuels and improve energy security, Japanese Government's Ministry of Economy, Trade and Industry (METI) has continued to expect nuclear power to return to 20-22% of total generation by 2030. However, the reopening of existing nuclear power plants across Japan has been hamstrung by community protests, political opposition and an inability to pass safety tests.[26]

Japan's nuclear target is entirely off-track, with nuclear failing to deliver even half of what is expected some eight years on from the TEPCO Fukushima disaster. Further,

[21] BloombergNEF, Liebreich: We Need To Talk About Nuclear Power, 3 July 2019.
[22] Financial Times, France to delay cutbacks to nuclear power by a decade, 30 April 2019.
[23] Bloomberg, End of Nuclear in U.S. Seen by Carlyle Group Without Subsidies, 26 October 2016.
[24] Vox, A beginner's guide to the debate over nuclear power and climate change, 6 September 2019.
[25] Vox, Scientists assessed the options for growing nuclear power. They are grim, 11 July 2018.
[26] The Japanese Times, Is there a future for nuclear power in Japan?, 16 July 2019.

nuclear power generation in 2019 is below the level of 2018 due to nuclear reactors being taken back off-line post recommissioning.

Offshore wind is the major area of new investment in Japan, building on the huge investments in solar and energy efficiency.[27]

Small Scale Nuclear Reactors Yet to Reach Market

In an excellent review of nuclear power as a key tool against the critical need to reduce manmade carbon emissions to reduce global warming, Michael Liebreich this year concluded: "While the current generation of massive, centralized nuclear power technology has been tested to economic destruction, small modular reactors (SMRs) still look promising."[28]

Back in 2015, a think tank listed over 50 SMR projects in North America[29] – trumpeting that the proponents were backed by cumulative capital of US$1.3bn. Each design however is likely to require several billion dollars to get it to series production.

Progress in bringing small modular reactors (SMRs) to market has been exceptionally slow.

For all their promise, progress in bringing SMRs to market has been exceptionally slow. In the Western world, the company closest to building its first plant is NuScale Power, with a pressurized water design delivering 60MW of electrical power. Its technology is currently undergoing design certification review by the U.S. Nuclear Regulatory Commission, and a first 12-module plant is planned for the Idaho National Laboratory site – but not until "the mid-2020s".

Michael Liebreich notes: "Canada, with 19 operating nuclear plants and a nuclear supply chain based on its old domestic 'CANDU' pressurized heavy water design, is keen not to be left behind. In November 2017, Terrestrial Energy's Integral Molten Salt Reactor – designed to deliver 400MW of thermal output or 190MW of power – completed the first phase of the Canadian Nuclear Safety Commission's regulatory pre-licensing review. But even Terrestrial Power only expects to deliver its first operating SMR "in the late 2020s"."[30]

[27] The Japanese Times, Japan's nuclear industry growing but likely to miss government's 2030 target, 1 November 2018.
[28] BloombergNEF, Liebreich: We Need To Talk About Nuclear Power, 3 July 2019.
[29] Third Way, The Advanced Nuclear Industry, 15 June 2015.
[30] BloombergNEF, Liebreich: We Need To Talk About Nuclear Power, 3 July 2019.

Renewable Energy with Firming is the Least Cost New Solution

The Australian Energy Market Operator (AEMO) outlined in 2018 a very clear roadmap for Australia's electricity system over the coming decade via its Integrated System Plan (ISP),[31] with numerous recommendations that are technologically and commercially proven today.

Expanding interstate grid interconnectivity will facilitate a multi-billion-dollar annual investment in least cost, zero emissions, variable renewable energy zones across regional Australia. These zones will be supported with enhanced grid reliability through the development of an initial round of over 6GW of pumped hydro storage (PHS) across the National Electricity Market (NEM) from South Australia to Tasmania (the Battery of the Nation proposal), and Snowy 2.0 in NSW through to Genex Power's Kidston development in far north Queensland.

Australia should be technologically neutral, but the pressing priority is to stimulate sustained investment and employment now in the least cost way, consistent with our Paris Commitments.

IEEFA references the critically important message delivered in July 2019 by BHP's Chief Executive Officer (CEO) Andrew Mackenzie in his landmark speech "Confronting Complexity: Evolving our approach to climate change". BHP has acknowledged the existential climate threat Australia and the world faces, with Mackenzie going on to say: "But we must also face the challenges that come with these benefits. Because the world's dependence on fossil fuels carries risks with it that could be existential."[32]

Australia's excessive reliance on approaching end-of-life, highly polluting thermal power plants is not a sustainable solution.

Australia is today reliant on AGL stalling the retirement of a 52 year old end-of-life thermal power plant in order to provide grid support this coming summer.[33]

There is a growing bank of evidence that Australia's excessive reliance on approaching end-of-useful-life, highly polluting thermal power plants that have a history of instability and unreliability[34] is not a sustainable solution for Australia's electricity system medium term, let alone in the decade or more required for SMR technologies to be commercially proven in a foreign jurisdiction.

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[31] AEMO, 2019-20 Integrated System Plan.
[32] BHP, Confronting Complexity: Evolving our approach to climate change, 23 July 2019.
[33] ABC News, AGL holds off plans to mothball gas-fired Torrens Island Power Station ahead of summer, 12 July 2019.
[34] The Australia Institute, Coal and gas a reliability liability in the heat: report, 20 December 2017.

Paul Broad, CEO of Snowy Hydro informed the Australian Senate last year that renewable energy fully firmed with pumped hydro storage can be delivered at less than A$70/MWh.[35] This estimate has been repeatedly confirmed by Australia's major power generation firms and grid operators.[36]

IEEFA expects the cost of renewable energy fully firmed will be progressively reduced to below A$60/MWh within the next five years, particularly as Australia's interstate grid transmission network is modernised, and renewable energy hubs are brought online. The direct investment and employment opportunities from implementing this for regional Australia are substantial, and ongoing. It will also result is a sustained reduction in Australia electricity prices. This will have a follow-on benefit to Australian consumers as well as reinvigorating Australian downstream industry through enhanced competitiveness in energy supply.

Renewable energy fully firmed with pumped hydro storage can be delivered at less than A$70/MWh.

Renewable energy and battery storage tariffs are repeatedly hitting new record lows, 15-50% below the previous record lows of just 1-2 years ago in California (June 2019, US$19.97/MWh and fully firmed at US$31/MWh[37]), Portugal (July 2019, €14.8/MWh[38]), Malaysia (August 2019, US$42/MWh[39]) and Brazil (June 2019, US$17.50/MWh[40]).

Deflation has been running in renewable energy and batteries at double digit annual rates for the last decade, and IEEFA confidently expects deflation to continue at 5-10% annually over the coming decade.

Rather than relying on unproven claims of SMR commercial viability at some point in the distant future, IEEFA would rather the government focus on solving Australia's energy system crisis now.

Australia can leverage proven and least cost solutions that will not only improve Australia's energy security, reliability and cost effectiveness, it will also provide domestic investment in commercialising Australian technologies in new key areas of global significance, i.e. renewables generated hydrogen for use both domestically

[35] PV Magazine, Snowy Hydro contracts 888 MW wind, solar to push down energy prices, 2 November 2018.
[36] Renew Economy, Energy Insiders Podcast: On the road to a decarbonised grid, August 2019.
[37] PV Magazine, Los Angeles seeks record setting solar power price under 2¢/kWh, 28 June 2019.
[38] PV Magazine, Portuguese auction attracts world record bid of €14.8/MWh for solar, 31 July 2019.
[39] Project Finance International, Energy Commission receives 112 offers in LSS3, 28 August, 2019.
[40] PV-tech, Brazil auction sets record low solar price of US$17.5/MWh, 28 June 2019.

and potentially as a 100% sustainable replacement to the current reliance on fossil fuel exports.

Given the International Energy Agency (IEA) forecasts that thermal coal use must virtually cease by 2050 if the world is to deliver on Paris Agreement commitments, it is essential Australia invests in new export opportunities to replace the terminal decline trajectory of coal.

The ambitious target for renewables to reach 200% of Australia's energy needs is entirely feasible and economically sensible.[41]

The ambitious target for renewables to reach 200% of Australia's energy needs is entirely feasible and economically sensible.

Case Study: India targets 523GW of Renewable Energy Installs by 2030

Prime Minister Narendra Modi has a visionary ambition for India to install 523GW of renewable energy by 2030 as a way of dramatically reducing air pollution, reducing water scarcity risks, permanently reducing reliance on crippling fossil fuel imports, and hence improving energy security. This puts India on track to well exceed their Paris Agreement commitments, possibly achieving these commitments up to a decade ahead of schedule.[42]

The planning and financial evidence to support the constantly growing, globally important ambitions in India is clear:

1. India's Rajasthan just announced in September 2019 the intent to build 50GW of solar in the next six years, with the expectation of achieving the prevailing price of Rs2-3/kWh or US$35-40/MWh, with zero inflation indexation for 25 years contracted in.[43] In an economy suffering under more than 5% annual inflation, locking in zero inflation energy for 25 years is a critical opportunity for India. The economic and strategic merit of this energy transformation ambition is entirely accepted in India.

2. In August 2019, proponents of the largest thermal power generator in India announced they would build the world's largest solar project – 5GW in total - in Kutch, Gujarat, home to 10GW of stranded import coal-fired power plants.[44] This is the second 5GW solar industrial park proposed for Gujarat, and would be more than double the size of the world's current largest solar park, which not coincidently is the 2.25GW Bhadla solar park in Rajasthan, India.[45]

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[41] Fair Dinkum Power, WE BELIEVE OUR POWER CAN BE CLEAN, CHEAP, RELIABLE & AUSTRALIAN.
[42] IEEFA Report, IEEFA report projects India will overachieve its Paris Agreement targets by 60%, 19 July 2019.
[43] PV Magazine India, Rajasthan eyes 50 GW of solar within six years, 3 September 2019.
[44] IEEFA report: Gujarat can lead renewables race in India, 27 August 2019.
[45] IEEFA Report, Advances in Solar Energy Accelerate Global Shift in Electricity Generation, 21 May 2018.

Conclusion

The terms of reference for this inquiry note: "Successive Labor and Coalition governments have maintained a bipartisan moratorium on nuclear electricity generation in Australia." (See Appendix)

Australia does not have the political mandate, nor scientific, engineering nor budget to subsidise first-of-kind, commercially unproven, ultra-expensive nuclear power plants, be it of the traditional technology and scale, or some hypothetical SMR.

Australia has an energy system which has seen domestic gas prices treble in the last decade, and with it, electricity prices have more than doubled.

The Australian people need a sustainable, least cost energy solution that can be deployed now.

IEEFA recommends the Australian government postpone this inquiry for a decade and then decide to evaluate SMR technology, should there be sufficient commercially viable deployments anywhere in the world to show this is a viable option for deployment in Australia.

IEEFA recommends the Australian government postpone this inquiry for a decade.

Appendix: Inquiry Terms of Reference

The Australian Government supports an energy system which delivers affordable and reliable energy to consumers while fulfilling Australia's international emissions reduction obligations.

Successive Labor and Coalition governments have maintained a bipartisan moratorium on nuclear electricity generation in Australia. Australia's bipartisan moratorium on nuclear energy will remain in place.

Australia's energy systems are changing with new technologies, changing consumer demand patterns and changes in demand load from major industries. At the same time the National Electricity Market is seeing a significant increase in capacity in intermittent low emissions generation technologies.

The Committee specifically inquire into and report on the circumstances and prerequisites necessary for any future government's consideration of nuclear energy generation including small modular reactor technologies in Australia, including:

a. waste management, transport and storage,

b. health and safety,

c. environmental impacts,

d. energy affordability and reliability,

e. economic feasibility,

f. community engagement,

g. workforce capability,

h. security implications,

i. national consensus, and

j. any other relevant matter.

About IEEFA

The Institute for Energy Economics and Financial Analysis conducts research and analyses on financial and economic issues related to energy and the environment. The Institute's mission is to accelerate the transition to a diverse, sustainable and profitable energy economy. www.ieefa.org

About the Author

Tim Buckley

Tim Buckley, IEEFA's director of energy finance research, Australasia, has over 30 years of financial market experience covering the Australian, Asian and global equity markets from both a buy and sell perspective. Tim was a top-rated Equity Research Analyst and has covered most sectors of the Australian economy. Tim was a Managing Director, Head of Equity Research at Citigroup for many years, as well as co-Managing Director of Arkx Investment Management, a global listed clean energy investment company that was jointly owned by management and Westpac Banking Group.