T R A N S C R I P T

LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into Nuclear Energy Prohibition

Melbourne—Friday, 26 June 2020

(via videoconference)

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WITNESSES

Dr Jim Green, National Nuclear Campaigner, Friends of the Earth Australia; and

Mr Dave Sweeney, Nuclear Free Campaigner, Australian Conservation Foundation.

The CHAIR: I declare open the Environment and Planning Committee's public hearing for the Inquiry into Nuclear Prohibition. Please ensure that mobile phones have been switched to silent and that background noise is minimised.

I would like to welcome the witnesses for this session, Mr Sweeney and Dr Green. Welcome, both of you. We are looking forward to your evidence in a minute.

All evidence taken at this hearing is protected by parliamentary privilege as provided by the *Constitution Act 1975* and is further subject to the provisions of the Legislative Council's standing orders. Therefore the information you provide during the hearing is protected by law. However, any comments repeated outside the hearing may not be protected. Any deliberately false evidence or misleading of the committee may be considered a contempt of Parliament. All evidence is being recorded, and you will be provided with a proof version of the transcript following the hearing. The transcript will ultimately be made public and posted on the committee's website.

What we have allowed is around five to 10 minutes for you gentlemen to present. We have received your submission and members have read your submission, so we do not need to go through the whole submission, but a summary as an opening statement would be appreciated. Who wants to go first? Mr Sweeney or Dr Green?

Dr GREEN: Thanks for the opportunity to speak to this committee. First, I note that we have made two submissions: submission 22 was from Friends of the Earth, and it dealt specifically and in some detail with small modular reactors; submission 39 dealt with a broader range of issues, and that was submitted from Friends of the Earth and the Australian Conservation Foundation and Environment Victoria.

In these introductory comments I will flag a range of issues that committee members might want to discuss and correct a few of the claims made yesterday. Firstly, a committee member suggested yesterday that the federal nuclear inquiry produced a consensus report. In fact dissenting reports were written both by the Labor Party and by Independent MP Zali Steggall. It should also be noted that the federal government has made it clear that it has no intention of repealing legislation banning nuclear power, regardless of the federal committee's findings. Also, I think it was interesting to note that the federal inquiry received submissions opposing nuclear power from the Queensland Liberal National Party, from the South Australian Liberal government and from the Tasmanian Liberal government.

My next point is to note that the committee is in a very difficult position. You are being asked to make sense of wildly divergent analyses of nuclear power. I would like to suggest an organising principle which will make your job much easier, and that principle is to sharply distinguish between existing realities and futuristic fantasies, to distinguish between facts and fantasies. Too much of the evidence you heard yesterday falls into the category of futuristic fantasies and too often witnesses conflated existing realities with fantasies. I will just give one example to begin with and that was the absurd and indefensible claim that meltdown-proof, walk-away-safe reactors exist today. They do not, and I do not think they ever will.

Nuclear power is in a frightful mess around the world. The International Atomic Energy Agency anticipates the closure of more than one-third of the global reactor fleet by 2030 because it is an ageing fleet, and the IAEA anticipates the closure of 82 per cent of the existing reactor fleet by 2050. Nuclear power is certain to decline over the coming decades. Reactor construction projects in the US have been disastrous; the UK nuclear new build program has been disastrous; the French nuclear industry is in its worst state ever, according to the nuclear utility executive; the Chinese program has nearly stalled; and a growing number of countries have nuclear phase-out policies, including Germany, Switzerland, Spain, Belgium, Taiwan and South Korea.

I want to make a few comments about South Korea because so many of the witnesses yesterday were promoting the South Korean nuclear industry. Over this weekend Friends of the Earth will provide the

committee with a supplementary submission demonstrating that, one, South Korea's nuclear industry is deeply, deeply corrupt; two, its business model involves sacrificing safety in order to improve economics, with the CEO of French nuclear utility Areva likening Korea's APR-1400 reactor design to a car without airbags and safety belts; three, that South Korea's supply of reactors to the UAE is years behind schedule and billions of dollars over budget; four, that South Korea is slowly but systematically phasing out its nuclear power industry; and five, that the level of state-sponsored skulduggery associated with South Korea's nuclear industry is almost beyond belief, even extending to a secret military side-agreement to the UAE reactor contract which was agreed upon without the knowledge or agreement of South Korea's parliament. I understand from yesterday's hearing that most and perhaps all committee members understand that large reactors are an economic non-starter for Australia.

If you need any convincing on that point, I would ask you to consider the simple fact that every reactor project in Western Europe and the United States is more than A$10 billion over budget. Let me repeat that. I am not saying that these reactors cost A$10 billion—typically they cost twice as much—I am saying that they have gone over budget by $10 billion or more. And I would put it to the committee that legal bans at the Victorian level and the federal level have served Australia very well by protecting us from those catastrophic cost overruns.

With large reactors off the agenda, that leaves us with so-called Generation IV reactors and small modular reactors. The South Australian Nuclear Fuel Cycle Royal Commission addressed these issues and concluded that, and I quote:

> … advanced fast reactors—

or reactors with other innovative designs—

> … are unlikely to be feasible or viable—

in South Australia—

> in the foreseeable future.

So I am happy to field questions about fast neutron reactors, which are the most important class of so-called generation 4 reactors, and I am happy to field questions about molten salt reactors. Thorium, I am sure, will come up during the discussion period.

Perhaps I can finish with just a couple of brief comments about small modular reactors and firstly remind the committee that submission number 22 deals with this in exhaustive detail. I just want to comment here about the economics. It was noted yesterday, I think by the Australian Nuclear Association or perhaps it was the Minerals Council of Australia—in fact I think it was the MCA—that there will not be a market for SMRs unless they can produce power at something like A$60 to A$80 per megawatt hour. So let us use that as the benchmark. A study commissioned by the South Australian Nuclear Fuel Cycle Royal Commission and carried out by WSP Parsons Brinckerhoff did an economic assessment based on the NuScale design, and their estimate is A$225 per megawatt hour—so roughly three to four times too expensive to play any meaningful role in Australia.

My last point is to alert the committee, if you are not already aware of it, to the latest CSIRO GenCost report. That gives a low estimate for small modular reactors based on heroic assumptions of A$129 per megawatt hour, and they compared that to solar PV and wind with 2 to 6 hours of storage. This is the comparison: small modular reactors, $129 per megawatt hour; renewables with 2 to 6 hours storage, $52 to $86 per megawatt hour. The CSIRO report also gives a high estimate for SMRs of $336 per megawatt hour, which is vastly greater than the high estimates for renewables with storage of $90 to $151 per megawatt hour. So I think that leaves much of the rest of the debate redundant. Economics rules out this industry in Australia, whatever else we might think of it. I am certainly happy to discuss issues such as proliferation and nuclear waste management and so on, but it is an economic non-starter.

Mr SWEENEY: I welcome the opportunity to make an introductory comment, Mr Melhem. First of all, thanks to the committee for the opportunity to speak today on Wurundjeri land on this important issue. I have worked with the national environment group the Australian Conservation Foundation on nuclear issues for over two decades. In that role I have closely watched and engaged with nuclear issues in uranium mining, radioactive waste management and at various times the viability of nuclear power. The industry does pose

unique challenges and risks, and it also faces, I would say, extensive non-regulatory hurdles. It does not enjoy social licence or community acceptance. The economics, as Dr Green has just shown, really do not stack up.

In relation to the social licence point, I would point you to a part of the submission that joint civil society groups have tabled, which is a joint statement on domestic nuclear power, which has gone to the federal inquiry, the New South Wales inquiry and this current Victorian inquiry, from 60-plus organisations: the ACTU; the Public Health Association of Australia; a swag of trade unions, including the education union, the firefighters, Tasmanian unions; and most state and territory peak trades and labour councils. This sector really does not enjoy broad support, and that is really pivotal. The sector has also failed to demonstrate—this is now the uranium sector—active compliance with regulations and expectations during operation or a credible rehabilitation history. This uranium sector has been hard hit by the Australian uranium fuel Fukushima accident, and the market fallout from that has seen the commodity price go from US$120 per pound pre-Fukushima to $30 at best now. A 75 per cent reduction has seen the world's largest dedicated uranium producer, Cameco, which owns the two largest deposits not developed in Western Australia, shelve those projects. It bought within the last decade a $500 million project or ore body, and it now has a book value, today, of zero. That is not regulatory constraints; that is the reality. It is also that reality that has seen Rio Tinto curtail operations at Ranger in Kakadu and prepare to exit. I am really happy to talk further about those uranium issues, and I am really happy to talk further about what is really the key issue here, what is the rationale and the driver for a move for a change. It is not mining because both the Australian Nuclear Association and the Minerals Council have said that it is unlikely, indeed most unlikely, that there would be any expansion of uranium mining or push for uranium mining in Victoria when it is shutting down in other parts of the country.

There are already the section 6 exemptions that permit Victoria to have a mineral sands sector, which covers a mining activity. There is no unintended consequence there. It is not about nuclear medicine or industrial applications, because we already have these. Across the road behind you—those of you who are in the committee at Parliament House—is the Peter MacCallum; down the road is the Epworth. Dotted around Melbourne are centres of excellence in research and medicine and treatment and diagnostic therapies. There is a synchrotron at Monash. There is Steritech's plant for industrial testing. We have calibration devices and material testing and a whole range of industrial activities every day. It does not preclude these.

The other thing here is it is not to promote, as Dr Green said, the nuclear reactors that exist. The MCA said yesterday, and I think this is actually a point of real importance from this inquiry, that they are not advocating for large-scale nuclear power facilities in Australia. So what it is actually saying there—a pro-nuclear advocate that is pushing this—is that the reactors that exist are not fit for purpose in Australia. So then, why? Why remove a legislative prohibition that has enjoyed bipartisan support, that has been prudent and popular for over 35 years, that has remained despite times of intense and highly charged political debate about energy—including in the Kennett privatisation era—for reactors that do not exist, for impediments that do not exist in relation to industrial and medical usage? Basically I think what became clear from my viewing—and I will finish on this, Chair—is the political dimension of this.

Daniel Walton from the AWU spoke about international radioactive waste, and others have spoken about that. We saw that in the South Australian royal commission as the one area for further advancement. The MCA's Patrick Gibbons spoke about if Victoria goes, if New South Wales goes—longstanding legislation against nuclear facilities in those states—that builds pressure for change in Canberra, so radioactive waste storage, distraction politics around climate change.

We clearly need to reduce fossil fuel emissions and dependence. We clearly need to supercharge renewables. The MCA's climate policy referenced yesterday and released on Monday references uranium twice, nuclear twice, and coal once. We are the largest exporter of thermal coal, and it references coal once in a climate paper, and it references uranium twice and nuclear twice. We have a real concern from the point of view of environment groups both about this industry itself but about this issue of dangerous distraction from where we really need to be in pressing energy challenges and concerns and opportunities that we face. I will leave it there and welcome questions. Thanks.

Ms TAYLOR: Thank you for your submissions—again, really, really helpful. A lot was said yesterday—in fact I think the Minerals Council, but again I have to paraphrase—with regard to the nuclear industry and its record on safety and actually extolling its safety record. I found that perplexing, but I would really like to hear

you clarify your thoughts on safety and this kind of loose concept that seems to be around nuclear. There are two of you, so whoever would like to comment.

Dr GREEN: I am happy to begin on that one. Firstly, I think the most important point to make is: what do we include in safety? And I would include the most important existential threat posed by nuclear power, which is its connection to nuclear weapons proliferation, and this connection is strong and it has been repeatedly demonstrated around the world, not least in Australia where the only serious push for nuclear power under Prime Minister John Gorton was definitely underpinned by a hidden weapons agenda, as Prime Minister Gorton later acknowledged. During the parliamentary discussion on the establishment of this committee, a number of people made reference to Michael Shellenberger, an American nuclear advocate. Mr Shellenberger argues that:

> … having a weapons option, is often the most important factor in a state pursuing peaceful nuclear energy …

He also states that:

> … at least 20 nations sought nuclear power at least in part to give themselves the option of creating a nuclear weapon.

So that in my mind is the most serious safety issue.

With respect to routine emissions and accidents, well, the lowest pan-European estimate of the death toll from Chernobyl is 16 000, and that is a figure that I am drawing from scientists writing in a peer-reviewed journal article—and I am more than happy to supply those details.

Ms TAYLOR: Could you? That would be very helpful.

Dr GREEN: Absolutely. But for Fukushima, the World Health Organization has estimated increases in a range of different cancers arising from radiation exposure from Fukushima fallout, but the World Health Organization does not give an estimated total death toll. But others have. For example, British radiation biologist Dr Ian Fairlie gives an estimate of 5000 cancer deaths from Fukushima fallout. But also I would draw your attention to the hideous social costs beyond the death toll: 350 000 permanent evacuees from the Fukushima disaster; for Fukushima 160 000 evacuees, and still 30 000 to 40 000 evacuees almost a decade later. That has had a horrific consequence for all those evacuees.

I will just make one more point, because we could go on all day about these issues. But the costs—for Chernobyl the costs are estimated in the ballpark of A$1 trillion—$1000 billion Australian dollars. For Fukushima, the official government estimate, which is now quite dated, was about A$300 billion, and I think when all is said and done that will be nudging up to A$1000 billion, or A$1 trillion. So these are extraordinary costs. And of course the industry does not bear these costs; the industry does not insure itself against these costs. And these are not victimless crimes. That is a spectacular cost that could be much better deployed on a whole raft of other social issues, including the generation of low-carbon electricity from renewable energy sources.

Ms TAYLOR: Okay, thank you. One more question. With thorium, I think they said that roughly they thought it might be 10 years away in the future that there might be an industry, and that the relative waste profile would take about 300 years to break down. What are your thoughts on those two concepts?

Dr GREEN: Well, could I direct you to section 4.9 of our joint submission—submission number 39. We have dealt with those issues in quite a bit of detail, and we made a point of referencing expert opinion on these issues and also the opinions of the nuclear industry itself. So, for example, the World Nuclear Association, the industry peak body, notes that the commercialisation of thorium faces ‘significant hurdles’. A report by the UK National Nuclear Laboratory states that:

> … more work is needed at the fundamental level to establish the basic knowledge and understanding.

It further notes that:

> Thorium reprocessing and waste management are poorly understood.

It further notes that:

> The thorium fuel cycle cannot be considered to be mature in any area.

Similar points were made by Australian nuclear physicist Professor George Dracoulis. He noted that there are still a number of technical challenges facing molten salt reactors, and section 4.9 of our submission also quotes a French government agency.

With respect to the benefits of thorium, the UK National Nuclear Laboratory report notes that purported benefits are often 'overstated'. With respect to thorium and waste, those claims made yesterday reside purely in the realm of futuristic fantasies. For molten salt reactor and thorium R and D projects, they have created nasty waste legacies that have yet to be resolved. So the contrast between the futuristic fantasies and the existing reality is stark, and I will provide the committee with further information on that point, including important articles written by a former head of the US Nuclear Regulatory Commission.

If I could just finish on this history of nuclear weapons proliferation. The Thorium Network, who you heard from yesterday—their website says thorium cannot be used to produce nuclear weapons. That is true. It is also misleading. The Thorium Network representative said yesterday that the uranium-233 produced from thorium can be used for weapons but it is difficult to do so—but it is not as difficult as they claimed, as discussed in our submission. More importantly, I thought it was appalling that they failed to note yesterday that to kickstart a thorium reaction and a thorium reactor you need fissile material, because thorium is a fertile not a fissile isotope. So you need fissile materials such as highly enrichened uranium or plutonium, which creates another path for diversion to nuclear weapons programs. And these problems are not just hypothetical. India plans to use fast neutron reactors to produce weapons-grade plutonium to use as the driver fuel to kickstart thorium reactors. So this is this brave new world of generation IV reactors. These problems are immensely problematic from a security perspective and from a proliferation perspective, and that is not just my opinion. That opinion is shared by others, such as John Carlson, who was for many years the director general of the Australian Safeguards and Non-Proliferation Office.

Mrs McARTHUR: Thank you, gentlemen, for your comprehensive submission and presentation today. I am interested in point 7 of your national agenda, the 2018 report on the national agenda, that you submitted to the inquiry. That says, 'Create a stronger democracy'. This inquiry is about inquiring and considering and reporting on potential benefits in Victoria of removing prohibitions. We are in fact having a discussion about the prospect of removing the prohibitions, not actually recommending that they be removed. In a stronger democracy would you believe that all forms of free speech are important and that all forms of education and information are important?

Dr GREEN: I would struggle to see how anyone could possibly disagree with that. Dave, did you want to add to that?

Mr SWEENEY: I was just going to say: I absolutely agree with that. In relation, Mrs McArthur, to discussion in consideration of nuclear issues, there has been no shortage of debate on that. There has been a South Australian royal commission, a Howard government review with Ziggy Switkowski, New South Wales and Victorian state inquiries, an EPBC—the federal environment laws—review and now a Productivity Commission regulatory review. So there are innumerable conferences, symposiums, discussions, workshops, opinion pieces—from Clive Palmer doing full-page ads before the 2019 federal election to industry journals and all sorts of things. We speak routinely with the counter voice at all sorts of industry conferences and the like. So I believe that, yes, jaw-jaw is better than war-war—let us put things on the table and consider them. So I have no problem with considering. I think, though, that it is always good to have a cost-benefit analysis, not just a benefit analysis, and I think in the terms of reference of this inquiry it is also good to test and prove, as Jim said in an earlier statement, the real benefits and demonstrable benefits of focus, of clarity and of lack of exposure to both financial and environmental risk that the 35 years of this piece of legislation and this principle embraced by both major parties in the Parliament has delivered for Victorians. So cost benefit, eyes wide open—I am fully supportive of that.

Mrs McARTHUR: Excellent. In point 8 you say one of your 10 actions is to be nuclear-free; yet I think I heard you suggest that nuclear medicine is vitally important, so I am presuming you do not mean totally nuclear-free. I would also like you to comment on the disposal of the waste from nuclear medicine. Do you think it is acceptable that it is stored within hospitals, often, and how would you propose to do that better if you support nuclear medicine? Or does being nuclear-free extinguish nuclear medicine?

Mr SWEENEY: I am happy to comment on both of those and certainly to clear that up. My business card is 'Dave Sweeney, Nuclear Free Campaigner, Australian Conservation Foundation', which is an icebreaker and a conversation starter for that very reason. We are not opposed to all things nuclear. The sun is a nuclear fusion reactor. We actively support using it. We are calling for renewables. We are opposed to Australia playing what we see as a negative role and an unhelpful role in the global nuclear cycle through the provision of uranium, through the countenancing of nuclear power and through the countenancing, perhaps, of international nuclear waste and certainly of nuclear weapons. So it is digging it up, it is nuclear power, it is nuclear waste and it is nuclear weapons. The last time I think I was in the Victorian Parliament was at a reception for the group ICAN, which I was a co-founder of in Melbourne—the group that won the 2017 Nobel Peace Prize for efforts to stop nuclear weapons. As Jim said earlier—Dr Green—this is an existential threat. So this committee is actually addressing two existential threats—unchecked climate change, and nuclear weapons and nuclear risk.

In relation to nuclear medicine, yes, we are very comfortable, and for any person who needs that for diagnostic or therapeutic uses, use it. We have no problem with that. We do not need the superstructure and the architecture of a nuclear-powered, a uranium-mining or a high-level radioactive waste world to enable that access for all Australians to happen. If you need nuclear medicine, access nuclear medicine. That happens every day, delivered with high quality and integrity at services and clinics all around the country, and we have no problem with that. There are other ways, as I note the ETU representatives said, that you can generate radioactive or nuclear medicines, and there is a lot of misconception about nuclear medicine. Perhaps the doctors who are coming later in the day, I understand, who deal with this stuff would be experts to put that to.

In relation to nuclear medicine waste, nuclear medicine waste in Australia is currently stored in a process, Mrs McArthur, known as store and decay. Nuclear medicine waste by and large is actually, with a couple of exceptions, short lived. It lasts a day to three years—that is it. What happens with store and decay is at the place of use it does that, exactly that—it is stored, and it decays to a point where it can be put in the general waste stream. Most of our nuclear waste waits for a while and then goes to landfill—that is what happens. There are a couple of fixed sources and a couple of exceptions that are returned to the Australian Nuclear Science and Technology facility at Lucas Heights in Sydney—granted that. But the overwhelming majority is store and decay.

It is an interesting thing that you raise this, because you might well be aware that there is a federal, national debate now—a Senate inquiry taking hearings next Tuesday in Canberra, looking at a national radioactive waste siting proposal by the federal government. Part of that is all about, 'We need a national radioactive waste site in regional South Australia, against the wishes of traditional Aboriginal owners, because this will guarantee nuclear medicine'. That is fallacious and I believe deeply improper because there is nuclear medicine stored at 100-plus sites. That is true. Not one of those sites, not one of those hospitals, not one of those clinics, not one of those medical centres that uses this material will send that waste to the proposed national facility—not one. The waste that would go to the national facility is ANSTO waste from the Lucas Heights facility—admittedly spent fuel from the generation of nuclear medicine, but not waste from that nuclear medicine itself, a very important difference. So all this talk about material in car parks, material in universities, material in basements and in closets and in suitcases under an old doctor's bed, that is fallacious; that is not about responsible radioactive waste management.

Sorry for taking time. I hope that helps and would be very happy to provide further detail because I believe that we really need to break that nexus that the social and personal benefits that come from access to diagnostic and therapeutic nuclear medicine are in any way linked to the wider architecture of a very, very dangerous and destructive industry.

Mrs McARTHUR: I am sure we are all very comforted to know that no aspect of nuclear waste, including medicine, is going into landfill, given that I am trying to stop PFAS-contaminated soil going into landfill in my electorate. But thank you for that. I am pleased that you appreciate that there is no problem with our inquiring into the potential benefits of lifting prohibitions. That is comforting to hear also, so thank you.

Mr LIMBRICK: Thank you, Mr Sweeney and Dr Green, for appearing and your submission to the inquiry. One of the things with this prohibition regulation is when it was first brought in the justification was around the issues of proliferation and safety. They were the main concerns. If you read the *Hansard* debate back in 1983, that was what everyone was talking about. We are still discussing those issues, as you have discussed today, around proliferation and safety. But there is another element that has been sort of surprising to me, and that is

the issue around economics. This was never a consideration in the prohibition legislation when it was brought in. Is economics a valid reason to maintain prohibition? Are there any other technologies that you believe should be prohibited because we believe they might be expensive? I mean, this does not seem like a valid consideration in the context of prohibition, does it?

Dr GREEN: I think economics is one part of the problem. It means that nuclear power is a nonstarter, but I take your point. I think if economics was the only issue with nuclear power, then it would not justify a ban. But of course that is only one small part of the reasons that we have given you in the executive summary to our joint submission why a ban should be maintained. I think economics is certainly important, and as I noted before, the bans have served Australia very well because they have protected us from the $10 billion-plus cost overruns associated with nuclear power overseas. But there are numerous other issues we have raised. I will not go on in detail, because your question was quite direct about economics, but safety is obviously an issue; waste is an issue.

If I could just add to the previous discussion about waste, there is one deep underground repository for nuclear waste operating anywhere in the world. That is in the United States, in New Mexico. It is called the waste isolation pilot plant. It started up in 1999 with great fanfare and great promises about how this would safely contain waste for literally thousands of years. But within a few years of the commencement of operation of that repository, safety standards fell dramatically and layers of regulation were stripped away. The end result of that was a chemical explosion in an underground waste barrel in 2014, which closed the repository for three years and the direct and indirect costs associated with that accident amounted to about US$2 billion. So I would ask you to reflect on that. We are being told that nuclear waste can be safely contained for hundreds of thousands of years, and yet the practical experience of the only deep underground repository anywhere in the world is that safety standards fell away dramatically in the space of just a few years.

Mr SWEENEY: Mr Limbrick, if I might respond briefly as well, I think, yes, you are right, the economic argument has certainly evolved over time as the economics have been more exposed of the sector. Yes, you are right, it is an impediment to the nuclear sector, but is it a good enough justification to have a piece of legislation? It is not the major driver for that. There are, as Jim said, many other valid and continuing credible reasons to retain this legislation, but one area where the economics are an important driver in relation to legislation is certainty. We all know that money likes certainty, and what this legislation has done in Victoria, and comparable legislation in other states and nationally, has been to provide a degree of certainty about our energy futures. There is broad consensus that we need to drop fossil fuel emissions and fossil fuel dependence. What that legislation in a sense has done is focus that on the need to embrace and supercharge renewables with all the economic activities and benefits that come from that. In that sense the dollar spent is the opportunity cost—you know, if you spend it once, you spend it once; you do not get the chance. It is the opportunity cost.

We are concerned about the distraction, the policy distraction, that is the nuclear industry and the cost of that. If I can put one example: yesterday a University of Technology Sydney report was presented at a Melbourne Uni symposium, and it raised the very powerful point that 11 000 jobs in Australia's renewable energy sector—their jobs now, Mr Limbrick, today, 11 000 of them—are in direct threat of existence possibly by 2023 or maybe 2025 because of uncertainty, contests et cetera over energy policy. Now, that is more than the number of jobs involved in digging up and burning coal for domestic electricity. So 11 000 real jobs—not the promise of something from a technology that might exist in two, three or four decades; real jobs now that are only growing—are at risk because of policy settings, lack of certainty, mixed messages et cetera, et cetera. So we are saying: let us just clearly direct and focus our attention on the energy source, and as renewables is the cheapest new-build energy source in Australia and the world, let us supercharge that for employment, for energy, for a low-carbon future and for climate stabilisation.

Mr LIMBRICK: Onto a different topic, nuclear medicine: has either the ACF's or the FOE's position on nuclear medicine changed? Because it was my understanding that both of your organisations were deeply opposed to the Lucas Heights facility and in fact protests organised by your organisations prevented deliveries of nuclear medicine at certain stages. Has there been a change in your position on this?

Mr SWEENEY: Can I briefly answer first the politics and Jim perhaps the technical dimensions, in which he is expert. Can I say that I do not accept at all that we have interrupted patient transports or doses—at all. I fully accept that we opposed a $500 million spend on a new OPAL reactor at ANSTO's facility. We believed that when the HIFAR reactor ended that should have been the end of Australia having a domestic nuclear

reactor and we should have transitioned and spent what was at that time the largest capex spend on science and technology in Australia's history. We believe that that should have been directed into cyclotrons and other non-reactor-based isotope production. That is strongly what we argued. We still support a diversification and still support hospital-based cyclotrons for a whole range of reasons. But we have never opposed nuclear medicine. We opposed spending a massive amount of money on a reactor to make that nuclear medicine possible when we believed there were other ways.

Mr LIMBRICK: I have one more, on a different topic. I am sorry to take you all over the place on topics, but I have limited time, as does everyone. On the issue of social licence, which has been a discussion both today and in your submissions and evidence, do you think that people have changed in their attitudes? I know that I personally changed my opinion. I used to be antinuclear, like you guys, and I think many people my age grew up with this conflation, you know, during the Cold War, of weapons and peaceful uses of nuclear technologies, and a lot of the younger people do not really have that experience of growing up with that. I had to go through a process where I changed my mind and was convinced that peaceful use of nuclear technology may be of benefit to humanity. Do you think that opposition to nuclear technologies has declined over time and that the position on social licence may be changing?

Mr SWEENEY: Again, briefly, if I could first and Jim has, I know, strong poll detail. I would say that we are perhaps of the same broad era. When we were young, the existential threat front of mind was nuclear weapons, Cold War extinction, when for young crew now, the existential threat is unchecked climate change. So I think there is a difference in, if you like, the popular expression, the degree of frequency that a thing is referenced in a whole range of ways, but I believe there is a deep and a continuing and a demonstrable strong community sense at minimum, Mr Limbrick, I would say, of caution, reservation and 'I really need to be convinced' and at maximum I would say it is an outright hostility to nuclear in Australia, and in many places internationally.

Dr GREEN: And if I could just add to that, I really just find it disturbing that people dispute the connection between nuclear power and nuclear weapons and suggest that that is an outdated argument. It is not. I mean, you can hardly pick up a newspaper these days without reading about North Korea's nuclear program or Iran's nuclear program, where there are clear intersections between ostensibly peaceful nuclear technologies and weapons proliferation. As I mentioned, Mr Shellenberger notes that at least 20 countries have sought nuclear power at least in part to give themselves an option of creating nuclear weapons.

With respect to opinion polls, I think it is one of those issues where you can start with the conclusion and amass evidence to support whichever conclusion you prefer. Historically there was quite a strong shift from support for nuclear power towards opposition. You could certainly argue that there has been a swing back in the other direction, if you choose your polls carefully. I think some of the recent polls I would describe as the Clive Palmer polls, because I think they have been influenced by Clive Palmer's massive election spend, which included the false claim that nuclear power would halve our electricity bills. And in fact at least one of those opinion polls digs deeper, and it found that there was a high percentage of people who did actually believe that claim—that nuclear power would reduce their power bills.

One last point is that the crunch issue is local support. There is no point in having a generalised discussion about nuclear power in Australia or in Victoria if no community is prepared to host nuclear power reactors. Here I am summarising numerous polls, which find 10 to 28 per cent support for the local siting of a nuclear power plant, compared to 55 to 73 per cent opposition for the local siting of a nuclear power plant.

If I could just finish by noting that one of the trade union reps yesterday was suggesting that the Latrobe Valley could have the reactors and the jobs that go with the reactors and that the waste could be dumped anywhere in Australia. I found that quite offensive. I think the proposition would be that if the Latrobe Valley is going to have the reactors and the jobs that go with the reactors, the Latrobe Valley should consider dealing with the nuclear waste legacy for the next 300 000 years and that would sharply swing public opinion in the Latrobe Valley.

The CHAIR: Well, on that note, gentlemen, thank you very much for your contribution today. It is great and much appreciated by the committee.

Mr LIMBRICK: Thank you.

Mr SWEENEY: Thanks for the opportunity.

Witnesses withdrew.