

TRANSCRIPT

LEGISLATIVE COUNCIL ENVIRONMENT AND PLANNING COMMITTEE

Inquiry into Nuclear Energy Prohibition

Melbourne—Friday, 26 June 2020

(via videoconference)

MEMBERS

Mr Cesar Melhem—Chair

Mr Clifford Hayes—Deputy Chair

Mr Matthew Bach

Ms Melina Bath

Mr Jeff Bourman

Mr David Limbrick

Mr Andy Meddick

Dr Samantha Ratnam

Ms Nina Taylor

Ms Sonja Terpstra

PARTICIPATING MEMBERS

Ms Georgie Crozier

Dr Catherine Cumming

Mr David Davis

Mrs Beverley McArthur

Mr Tim Quilty

WITNESSES

Mr Michael Watson, Political Officer, and

Mr Trevor Gauld, National Policy Officer, Electrical Trades Union (Victoria branch).

The CHAIR: I declare open the Environment and Planning Committee public hearing for the Inquiry into Nuclear Prohibition. Now, please note that mobile phones have been switched to silent and background noise is minimised. So for witnesses and members who are online, you need to mute yourself unless you are speaking.

I would like to welcome our first witnesses for today, Michael Watson from the ETU and Trevor Gauld from the ETU as well. Gentlemen, thank you very much for your time and the submission you have put in as well.

All evidence taken at this hearing is protected by parliamentary privilege as provided by the *Constitution Act 1975* and further subject to the provisions of the Legislative Council standing orders. Therefore the information you provide during the hearing is protected by law. However, any comment repeated outside of 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. 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 website.

Well, gents, what we allow is about 5 or 10 minutes for you guys to give us sort of an overview. We do have your submission, and we thank you for that. After that we will go through questions by the committee members. We only have five members this round, which is good. It will give us more time to ask questions. So please go ahead. Who would like to kick off? Michael? Trevor?

Mr GAULD: I will kick off, thanks, Chair. I am going to make the opening statements, and Michael will assist with any questions. I will use the 10 minutes, if that is okay. I will start by acknowledging I am on Wurundjeri country and pay my respects to the elders, past, present and emerging. I want to thank the committee for taking an interest in this important subject and for the time and opportunity to speak to you.

The ETU represents members throughout the energy industry from constructive resources to power generation, distribution, transmission, rail, construction, manufacturing, aviation, ship building, automation—if you can find electrons in a workplace, chances are you will find an ETU member there as well at some stage. The ETU has opposed nuclear in Australia for a very long time. The official policy of the ETU dates back to the 1950s, resulting from the shared experience of ETU members who were returning service personnel, who shared their experiences and stories returning from Japan following World War II. In the 60 years since, our union has regularly revisited this policy to learn more about the nuclear fuel cycle, changes and advances to technologies, the interaction of the industry and its outcomes for the environment, health, safety, First Nations people's impacts, as well as matters such as the technical interactions with the network. The most recent culmination of these considerations was July last year. We had a conference of over 350 rank-and-file members of our union, where we invited scientists, environment groups, nuclear industry representatives and political party representatives from all the major parties to present to the conference. Following this, open debate was facilitated by the membership, which resulted in a unanimous conclusion to retain our policy of opposition to nuclear energy.

The ETU was signatory to the joint civil society statement on nuclear, supported by both the Victorian Trades Hall Council and the Australian Council of Trade Unions and many other large unions from both Victoria and around the country. I note yesterday, unless I misheard it, that the Minerals Council appeared to claim that Victoria's prohibition was somehow obstructing nuclear medicines. Perhaps this is what people meant when the word 'hysterical' was referenced so frequently yesterday. I hardly think the Australian Nursing and Midwifery Federation or the Public Health Association of Australia would be signatories to the joint statement if that claim had any basis in fact. The joint statement lists 10 broad factors, which should convince anyone who has the time to research them to conclude there is no reason for Australia to choose to embark upon a nuclear power industry. I understand there are other presenters to the committee today, some with more direct expertise than the ETU on some of the other factors listed in the joint statement, so for the purpose of today I will concentrate my opening statement to three of them: safety, jobs and the economics of nuclear power.

In regard to safety, the ETU remains deeply sceptical about the safety of the extraction of uranium. Mining is an inherently dangerous industry. Nothing about the extraction of uranium makes it safer, as was demonstrated by the multitude of incidents at Ranger uranium mine when it was in operation. We are deeply sceptical about the safe operation of nuclear power plants. Whilst the likelihood of a dangerous event may be low, the consequences of that event are catastrophic—many, many times greater than a catastrophic event in other electricity generators. The ETU remains concerned about the absence of a feasible solution to the waste storage problem. The future of a high-skilled, high-wage nation will hardly be served by the small number of security guards employed to monitor the security of a stack of radioactive barrels. Should we move to remote storage facilities, have we considered who that impacts and how? Perhaps we should ask the traditional owners of Muckatjy how safe these proposed locations felt for them when a waste dump was proposed to be built on their lands without their consent, or ask the United Workers Union how safe it is when their emergency services personnel members are required to respond to a train derailment containing nuclear waste thousands of kilometres from the nearest city, or the workers on our ports who may be directed to unload shipping containers of waste should Australia become the world's nuclear waste repository, as some have called for.

We recognise there are claims nuclear is safer. We note no-one independent of the industry is making those claims. They are claims of the nuclear industry's peak international lobby organisation. Notwithstanding the sceptic in me thinking this is a bit like Philip Morris telling us that cigarettes were safe, it is still important to test these assumptions, and it falls short in our analysis for several reasons, including the period that coal has been mined extends many hundreds of years more than uranium, meaning the cumulative effects in one industry are significantly greater than the other. There are literally tens of thousands of coalmines around the world producing some 4.6 billion tonnes of coal compared to worldwide production of uranium of less than 80 000 tonnes from less than 1000 mines. The methodologies associated with the total fuel cycle of each is also different.

The countries in which the nuclear fuel cycle operates do not always have stable, open, democratic disclosure, transparency and reporting regimes which can be relied upon for sound evidence. Nearly half of all nuclear plants are spread throughout China, India and Russia. In our view, the current safety analysis by the nuclear lobby does nothing to draw out these issues. Lastly, but no less importantly, there is the consideration of community safety. With coal, as in the case of Moura 30 years ago, 12 miners tragically lost their lives in a coalmine explosion. The mine resumed operations not long after, and whilst the community was deeply impacted by these events, they were not displaced and mining and other economic activity continues in the region to this day. With solar, as in the case of a solar farm in Queensland that had a panel fail recently, there was a small grassfire that emergency services quickly extinguished. In stark contrast, Chernobyl and Fukushima are no-go zones and will continue to be for generations. Exclusion zones of many thousands of square kilometres have created economic dead zones which will remain long into the future.

In regard to jobs, the nuclear lobby has issued various claims for job creation and it can be difficult to pinpoint what their actual number is, a little bit like Adani in North Queensland, which claimed thousands of jobs and then quietly released its forecast of just a hundred jobs during operation. But the average figures for a 2-gigawatt station is approximately 3500 workers at construction peak. Australia's small-scale renewable energy construction workforce sits at just under double that figure, and the large-scale renewable energy construction sector is more than double the small scale. Both of these sectors are growing, and growing right now. Once operating, a nuclear plant of the same size employs approximately 400 direct jobs, but only a quarter of those are actual blue-collar jobs, with the other three-quarters engaged in administration, regulatory compliance, energy marketing, sales, science and some emergency personnel, with many of these jobs usually located in the company's head office in the nearest capital city or offshore rather than on the site of the reactor itself. In comparison, the operations and maintenance sector of renewables currently employs 6500 direct jobs and is growing. I acknowledge that nuclear power generation could create jobs, but so too can the renewable energy sector, the difference being renewables are already doing it and have the capacity to do more of it much faster and now.

With the economics of nuclear power I am cautious to get into too much discussion about the technical aspects because it is easy to go down a rabbit hole that, frankly, most people outside of the energy industry are not particularly interested in following me into, so I will mention some straightforward, uncontested facts publicly available from numerous sources, including the various energy industry regulators. Victoria's maximum demand is about 9 gigawatts and is forecast to fall slightly in coming years. Current total supply in Victoria is a little over 12 gigawatts, 7 gigawatts of fossil fuels and 5 gigawatts of renewables. New generation committed

by the end of this year is an additional 2 gigawatts, taking us to about 14 gigawatts or a little over of supply. New supply planned by 2025—so this is supply in the approval, application, sometimes construction process—is an additional 9 gigawatts, the current demand that exists in Victoria. On top of that, there are transmission upgrades increasing Victoria's access to the Tasmanian, New South Wales and South Australian markets, both improving the efficiency of the network and reducing the losses in the network. There are energy efficiency upgrades underway in Victorian homes and businesses, which will further reduce demand. This is all occurring despite there being no federal energy policy certainty, little investment certainty and no federal emissions reduction target beyond 2030.

If, and it is a massive if, the Victorian regulatory changes occurred, the federal regulatory changes occurred, all of the community consultation and approval occurred, environmental approvals occurred, the skills that we need were sourced, contracts were signed, insurance was somehow secured and a nuclear power station was built and somehow all of that miraculously occurred within the next four and a half years despite nuclear power stations never being built that fast before in countries that already have the policy, regulatory and community settings needed and the average time being closer to 10 years and usually 15 years, if somehow all of that happened between now and 2025, the renewable deployments already occurring in the grid, the grid expansions, the upgrades already in place between now and 2025, plus whatever developments occur in that time—and I note the pace of the development of hydrogen fuel cells is rapid—then the nuclear plant that was built would literally have no market to bid into unless the government subsidised every single megawatt of its power it ever produced by something in the order of 60 to 80 per cent to even get it close to the same price as either the renewable generators or the remaining coal generators still in operation.

The ETU has taken a measured and considered risk-based approach over a long period of time on this issue and engaged with both the proponents and opponents as well as with experts from the scientific and medical communities, amongst others. The reality is Australia is in a very lucky place. We simply do not need nuclear power. There is no inherent intractable policy problem in Australia for which the only possible answer is nuclear. When it comes to energy generation there are safer, cheaper, faster, cleaner options that can deliver the outcomes we need and deliver them now.

The CHAIR: Thank you, Trevor. That has been a really good submission. Any further from Michael, or will we just go straight to questions? I will ask the first question. Put nuclear power aside for a second—and I hear you clearly on your view on that—do you see any scope for Victoria to develop its nuclear industry in areas other than power generation, for example in nuclear medicine? I know we do have some of that existing, so have you got any thoughts on that? For example, the reactor in New South Wales has been operational for many, many decades, so do you see any scope for developing nuclear for medicine purposes in Victoria?

Mr GAULD: No, there is no demand for expansion of those facilities. They currently satisfy Australia's needs. They are already established. In fact, we could reduce our demand on those facilities if we moved away from developing some of those medicines using nuclear and in fact invested in some of the ways that those medicines can be created synthetically, which would remove some of the nuclear risk that currently is associated with that medicine.

The CHAIR: And the second question I think you touched on earlier relating to power generation and baseload power. Companies like Alcoa, the steelworks and various other things currently really depend on coal, and it is great that the renewables are really taking off. I am interested in your view on if coal sort of disappears in the next decade or so—all indications are that it is heading that way, and whether it is government or even industry, generators are moving away from coal—how do you see that replaced if, let us say, nuclear is discounted? I think you did also talk about hydrogen, and I am really interested what the ETU is sort of thinking about how we replace that to support heavy industry. What are your thoughts on that?

Mr GAULD: I think there are numerous studies which demonstrate that a combination of intermittent energy sources firming with more stable renewables can supply to those industries, and of course the advancements in hydrogen fuel cells in particular are quite exciting in that regard. The issues that we tend to have are network constraints more so than they are the generation issues. It is important—the language gets bandied around a lot but the concept of baseload is an economic argument; it is not a technical argument. In Queensland, for example, when everyone turns the power off at night demand plummets. Coal-fired and nuclear have the same issues. It cannot respond to the level of fluctuation in demand, so up in Queensland they attach a whopping great water tank next to everyone's house and put a heater element in it so that they keep the

demand up overnight to make sure that the power station is not inefficient and does not run at a loss. So these are sort of different issues that get thrown in, in our view, to muddy the water. Yes, there are absolutely challenges in the network to make sure that we are able to supply those EITE businesses, but nuclear is not the answer to that. Improved network upgrades and a more coordinated and planned deployment of both firmed and intermittent renewables is the answer to that. It is also important when we think about this—you look at the Portland smelter, for example. In their board deliberations recently that they publicised, their biggest consideration was not base load, it was not prices—though these are important issues for them. Their biggest issue was their emissions profile and their emissions exposure. That is their largest international consideration at present as to their future operations in various countries.

Mrs McARTHUR: Thank you very much for your submission and presentation today. We are most grateful. I am interested in your views on onshore conventional gas exploration and thorium.

Mr GAULD: Look, we are not supporters. Gas is not the transition fuel that it is hyped up to be, and in fact it has got the same issues as far as emissions exposure through methane. It is not the answer in our view. Again, the cheapest, fastest deploying energy source right now is renewables, so from a simple economic standpoint why would we pursue other things? There is absolutely a role for gas at present, but we think it is overstated. Similarly, the proponents of small modular reactors have been advancing their cause for some time now, yet there still are no small modular reactors in operation in the world. It is a prototype. We might as well be here debating flying cars. They do not currently exist. When they exist, we will reassess them and analyse their efficacy.

Mrs McARTHUR: I have follow-up question. Thank you very much for that answer. Do you accept that there are industries that can only work with gas? Electricity is not the source of energy they need. Industries like the drying of milk, the kiln-dried timber industry—these industries use gas. They can only use gas because that source of energy is the only source they can use in their production process. Would you comment on the fact that thorium is, as we learnt yesterday, a useful addition to the production of hydrogen energy given that hydrogen energy will not be clean and green as it is currently proposed? It uses fossil fuels because it needs electricity to produce the hydrogen, unless you have massive supplies of renewables for a hydrogen plant. There is a research facility now being developed in my electorate. What is your view on thorium, leaving aside nuclear?

Mr GAULD: There is a fair bit in that question. First of all, I guess I prepared to present to a nuclear inquiry, not a gas inquiry, so I am probably going to be limited on the details that I am going to respond to on that. But Australia has sufficient gas reserves available to feed all of its manufacturing feedstock needs now. It just so happens that we choose to sell it overseas at a very high price, and we attach our domestic price to our international price. These are choices the government has made. There is not a shortage by volume; there is a shortage by design and choice. So I do not see that there is some deficiency here that needs to be corrected by onshore gas fracking or any of these sorts of things. I think perhaps the government should just make a different choice.

Mrs McARTHUR: Just to clarify, I said conventional gas, not unconventional gas exploration.

Mr GAULD: Sure. Again Australia already has sufficient reserves for its domestic supply; it is just that we choose to export it rather than reserve our domestic needs. We should change that choice, in my view. As far as needing fossil fuels to create hydrogen—if that was the case, then Tasmania would not be bidding to be a hydrogen export hub, because they do not produce their electricity using fossil fuels. It is entirely achievable to satisfy the energy needs of the hydrogen processes using renewables if we choose to deploy them in a rapid and well-planned way.

Mrs McARTHUR: Just one more question: in many of the areas of industry in my electorate at the moment diesel is having to be used because of the unreliability of the power supply, and we are also potentially going to bring in diesel as a source of energy for the state. What are your views on using diesel as an energy source?

Mr GAULD: Yes, look, our union is deeply frustrated with the lack of maintenance and the lack of maintenance decisions that are being made both in the coal-fired generators and in the network, leading to large parts of this situation of less reliable supply. It is really frustrating when we see the cuts to the maintenance budgets and it is frustrating when we see the cuts to the capex budgets, and these things are regularly occurring

because profit is being put in front of what the community needs. It is a terrible situation that we are in, and it is disappointing that they would be considering using diesel. I am glad that Victoria has taken a bit of a lead on this front and changed its approach to the national electricity laws to stop the delays that have been occurring through the regulatory process and to start making the upgrades that are needed both to ensure reliability but also to upgrade and augment the network that are needed.

Ms TERPSTRA: Thank you both, Michael and Trevor, very much for your presentation, and your submission and evidence that you have given this morning have been excellent. I have a couple of questions. I just wanted to get a sense from you in regard to renewables because we have heard a lot of evidence throughout the inquiry that nuclear seems to be the panacea for jobs for people in the regions, so can you just talk us through some of the job opportunities? Not only local people that might be employed in renewable projects that might be built, but also the downstream effects and what that might mean for manufacturing, for local businesses, for local cafes and the like. What sort of job opportunities are there for local people?

Mr GAULD: I might start a bit on the national perspective, and then Michael can talk specifically for Victoria. The biggest challenge for us is the complete lack of regional diversification strategies led by the federal government. What we are finding is that regional communities are starving for plans and opportunities to transition their regions into the future. That is a really desperate situation for them, and it is why we see peddlers of different ideas down in Gippsland every other week and in other regional communities in Australia. I guess I tend to categorise them as peddlers of false hope. There have been some good things in those places, but there are often many false promises. But you are right, there is a lot of opportunity in renewables for regional areas. Michael can talk in particular for Gippsland and other parts.

Mr WATSON: Yes. There is no doubt that the great thing about large-scale renewable deployment is that some of the best places to do that are in our regions. Gippsland comes up as a common example. The trade union movement in Victoria is very supportive of a project called Star of the South down in Gippsland—2000 megawatts of offshore wind. If you start from what jobs are required to build that, well, you need seafarers, you need construction workers, you need manufacturing workers to build pylons, to build the turbine blades, and then you need people to maintain it. And those people who are maintaining it and those people who are building it are living in those communities. They may drive down from the former coal parts of the valley to work in servicing or building the plant. There will be thousands of jobs in the construction, and there will be many hundreds of high-paid, high-skilled jobs in the maintenance.

Then you go further downstream—these maintenance workers buy breakfast, they buy houses and they send their kids to school. The sorts of skill sets you need for these offshore wind farms: for example, for some of the undersea cabling that is very high-tech cable jointing work, and it is a skill set that a very, very small group of people globally have; but the seafarers who go out and deliver the technical support and deliver those workers—those are skills we have in Victoria. The metal trades workers, the electrical trades workers—those are the skills we have, and those are skills that we can build in the long term.

Then you take advantage of the resource that is there, and this is one of the things that is talked a lot about with renewables: while no-one is using the electricity during the night, if it is windy, you can pump it into creating clean hydrogen without using a single bit of fossil fuel. That hydrogen can be pumped through Victoria's existing gas network and can be used either to generate electricity or in industrial processes. In Germany right now they are doing large-scale experiments on steel, manufacturing steel using purely hydrogen. From start to finish, there are jobs, investment and industry development there.

Mr GAULD: It also sets Victoria up to be a perfect export hub for the rest of the country for future offshore wind opportunities. The disappointing thing is that the biggest impediment to the Star of the South project at this point in time is there is no federal regulatory environment that will allow that project to go ahead, despite the project components advocating to the federal government some three years ago for the need for that change. There is still no legislation before the Parliament to fix those issues. The drafting of that legislation at the moment is intending to regulate it like the fossil fuel industry but also to impose a big new tax on the Star of the South—should it go ahead—that they do not actually apply to the fossil fuel industry. There are a lot of issues in there, but if we can resolve those impasses, there is huge opportunity for that part of Victoria.

Ms TERPSTRA: Just two more questions, if I might, Chair, just very quickly. I asked the other unions who appeared yesterday about health and safety aspects, but I just want to throw one other issue in. If I can just

quickly go to the health and safety aspects, I did ask the AWU and the CFMEU yesterday about their concerns about health and safety. I will quote this study again; in 2005 there was a study done of 400 000 nuclear workers across the world that showed that the people who work in nuclear power plants—because there is a constant exposure to low levels of radiation—have about a 10 per cent higher risk of death due to cancers. But in terms of leukaemia, it is actually found to be 19 per cent higher. Do you share concerns for your members around health and safety, and can you tell us if there has been any significant improvements to mitigate that risk or not?

Mr GAULD: Look, it is a shared concern, and I suppose it is why we have continued to take a long-term view of this industry. Absolutely it might deliver a sugar rush of construction jobs and a small number of operation jobs, but what are the long-term effects? We have seen long-term health effects from other industries—you know, all those Telstra workers now who are all retired who are contracting mesothelioma from asbestos exposure. The difficulty here is that often the exposures in this industry are not felt until long after the worker has left the industry, and so the capacity of the employer to deny that there is a workforce causation to it is entirely problematic. Certainly, I had personal experience of representing workers up at the Ranger uranium mine more than a decade ago, and the safety standards on that site were atrocious. Guys were wearing lapel monitors to monitor their exposure to uranium; they had a number of issues where there were spikes. So the company stopped providing them their daily doses and moved to a monthly averaging exercise. So there are issues about how transparent the industry is about this, but there is also overwhelming evidence that there are long-term health effects from this industry. I guess it comes back to the point that there are long-term health effects in other industries. The point is: we do not need nuclear. Like I said, there is no intractable policy problem that nuclear is the only answer to. So we have got an industry without long-term health effects or a proposed industry with long-term health effects. Why choose that one when you have already got one that does not?

Ms TERPSTRA: Yes, and from what I understand with reading, often, as you say, there can be long-term health effects, and that might develop over many, many, many years. So consequently the impact is under-reported because it may transpire many, many years later as to the cause and effect.

Just one last question, just in terms of workforce. We do not currently have a nuclear power industry in Australia. So would you agree with me: from what I understand, the only countries that are building nuclear reactors or are in the business of building nuclear reactors—they are around the world, but—are principally Russia and Korea, I think, and because we do not have a workforce I would anticipate that overseas workers would actually be brought in rather than Australian workers, because we do not currently have training in this area? Can you just talk through that issue a little bit for me? Do you think that is a likelihood, that we might see more overseas workers coming in rather than jobs for local people in the regions?

Mr GAULD: Absolutely that will be a challenge. It is currently a challenge in the renewables deployment. There are some areas where there is particular technical expertise being brought in, and what we are seeing is that employers are not transferring those skills to the Australian workforce. That exists in many other parts of the industry in Australia, and there is no difference for the nuclear industry. I suspect that those exact same challenges will be presented.

The CHAIR: Thank you. Can I ask Ms Bath, from your new office—your car.

Ms BATH: Thanks, my office in the car. This is how we make it all work in the country. Thank you, gentlemen. I am actually a Gippsland MP and am very passionate about sustaining and creating jobs in certainly Central Gippsland. I am very supportive of the Star of the South; I think it has great promise. I am a Nationals MP so I do not know the in-depth workings of unions, but I am quite flabbergasted that yesterday we heard from two gentlemen I know, Geoff Dyke and Mark Richards from the CFMEU, and Daniel Walton from the AWU really endorsing the nuclear energy. It is a real counterpoint to your argument. I am just interested—that is the first sort of short one—as to why there is such a diverse opinion within the unions? That is my first one.

Mr GAULD: I would suggest it is the same reason as for the diverse set of opinions within the National Party. We are a broad church; we have people with different views. It is not unusual. As you know and have lived probably more so than me, these are people that have been completely displaced and decimated by the closure, and the government of the day did not require that private energy company to give advanced notice of

closure. For a lot of the things that were put in place, the state government had to backstop all of the things that would normally be within the federal remit. So they are displaced, they are desperate; you know that. What I heard yesterday was people that are desperate for jobs in the region. And I think if there are alternatives available—such as the Star of the South, such as hydrogen production, such as advanced manufacturing—if you presented that workforce with those choices, then I am confident that they would not choose nuclear. The problem is at the moment no-one is presenting them with any choice.

Ms BATH: Well, I will take that as a comment. If those gentlemen were back in and having a discussion today, I would think that they may have a different argument to that. You made a comment around nuclear in terms of the job creation, and you made a comment I believe that went to the point that there were not a lot of blue-collar workers and that the white-collar workers could and would be potentially based in the city or overseas. Now, that to my mind is an opinion—and you are free to have it—but that is not a given. There is no reason why all workers could not be or many of them could not be stationed in the region in which that plant existed. Just to make the counter point to that you have made in terms of Star of the South, you have said that many of those workers would actually live in that region and buy their coffee and send their kids to school, so it seems to be a differentiation there that I do not understand.

Mr GAULD: I understand that. At the end of the day I suppose some of that comes down to government procurement policy and their willingness to enforce that procurement policy. What I was stating about nuclear was examples that we understand from talking to our international, I guess, unions—the IBEW, the TEEU and others from around the world—and what their workforce composition and make-up has been and how those things have operated. I am not saying that it is a *fait accompli* that if a nuclear power plant was built in Gippsland that that would be how the workforce composition was made up. I was just commenting on the international experience.

Ms BATH: Thank you.

Mr GAULD: And you are right—with the Star of the South I would urge the state government to consider what procurement settings it puts in place to maximise those local employment supply chains. I think that is a really important thing to do.

Mr WATSON: And you can see in the Victorian Trades Hall Council submission to this inquiry, one of the trade union movement's goals in supporting projects like Star of the South is to make sure that as many displaced workers and young people living in those regions, you know, in Gippsland, have a just transition—a transition into employment where they can continue to live where they live and have a stable job. If that is taken across the whole state and hopefully the country, communities that have been decimated by the ending of a coal-fired power station can move into something in that community.

Also, just on that point, you mentioned the blue-collar jobs space for nuclear—there are not long term that many blue-collar jobs associated with the running of a nuclear power plant. Even if they are required to be on site, they are not often jobs that are what we would consider traditional blue-collar jobs in a coal-fired power station. They require complex physics degrees and the like, and you are more professional management staff of a complex scientific infrastructure than you are the traditional blue-collar worker as well, which is a problem for those communities where they have the traditional blue-collar trade space. It is not easy to pick up a degree in advanced physics after 40 years of working in a coal-fired power station.

Ms BATH: Chair, if I may, I have just one more question that the gentlemen might like to take on notice. In my mind there is a question: if we speak specifically around electricians, for example, is there a breakdown of, let us say, megawatt-hour output for each different type of energy source? We have talked gas, coal, solar, wind et cetera. Is there a breakdown of electricians per kilowatt hour? Is that something that you could take on notice and send me? It would be interesting to do that work.

Mr GAULD: The challenge is if you go to the renewable industry, they have their version. If you go to the nuclear industry, they have their version. The challenge is that there is that kind of research out there but it varies.

Ms BATH: It depends on the interpretation maybe. Is that what you are saying?

Mr GAULD: Yes. I guess the biggest point for us now is that the renewable industry has got community acceptance, it has got social licence, it is being deployed now and it is employing people now. It does not, other than the Star of the South, have regulatory hurdles. Why? Why would we not just choose to better invest and plan the thing that is already here that is cheaper?

Ms TAYLOR: Thank you for the very detailed submission. That was very, very helpful. The two questions I have—one of them: a repetitious theme yesterday was conflating the cure for climate change being the nuclear industry and that if we do not have that we are very unlikely to combat climate change. I am paraphrasing, but I will take that liberty. What would be your comment to that? Because I would be interested to hear what you think.

Mr GAULD: Our engagement with this industry over the period of time—it was interesting to watch a few years ago the pivot of some of their marketing people to ‘Nuclear is the answer to climate’. Every four to five years they seem to pivot to a shiny thing that has community concern and then present nuclear as the solution to that community concern. Again the emissions profile, the capacity for Australia to deploy new energy sources right now—the immediate economic opportunity is renewables. It can do the job. We are not arguing that nuclear power does not have jobs when it gets built; it does. We are not arguing that it does not have a lower emissions profile than other generation sources; it does have lower. But the economic facts are that we have renewables here now which are low and zero emissions which we are already deploying. We already have social licence, and they are cheaper. So we do not need to make this choice. Also in their emissions discussions, and what we see from the nuclear lobbyists, is that when they try and compare like for like they almost universally leave waste management and storage out of their emissions profiles.

Ms TAYLOR: Yes, right.

Mr WATSON: If we take emissions out of it, you are simply taking one environmental issue and replacing it with another down the track in waste and disposal and management of that. There are various countries that have a developed nuclear industry that simply cannot work out what to do with the waste. The United Kingdom has 20 submarines sitting in harbours. They have been using nuclear submarines for years. They cannot work out how to dispose of them, and that is a First World country that has got an experienced industry.

Ms TAYLOR: The other question was actually going to be on the topic of waste—it is a huge concern to me. What was coming through as a theme yesterday is that we will just throw it into the outback. To me, I am concerned what that means for our traditional owners, and there is this assumption that it does not matter—you just throw it out there and forget about it. I wondered what your thoughts were about that.

Mr GAULD: They are absolutely shared concerns. It seems strange that when we talk about the issues with waste somehow we are always going to put them in the remote outback somewhere. I never understand why Indigenous communities, tourism industries and agricultural industries are somehow lesser industries which deserve a nuclear waste repository built in otherwise productive lands. It does not make a great deal of sense to us. I think it is just simply moving it to small voter bases.

Mr LIMBRICK: Thank you, Mr Gauld and Mr Watson, for your submission and evidence today. Just following on from Ms Taylor’s question about land use, we have heard evidence that one of the big issues is with displacement of people through land use. However, we have heard evidence that the land use, because of the energy density for nuclear energy production, is orders of magnitude less than pretty much any other energy source. What would your response be to that—just the fact that far less land is required than, say, for instance, solar?

Mr GAULD: Yes. Again, I think it is the statement of fact. The footprint of the solar farm of an equivalent output is going to be larger than the footprint of a nuclear power plant—that is not, I do not think, a disputed issue. But if we have a look at where those things are being deployed, the large-scale solar, often the agricultural industry are using it to provide some sort of baseline income on otherwise unproductive agricultural land to supplement their agricultural activities. Then, in saying that, the renewables opportunities are not confined to large-scale solar, though that is one piece in the puzzle. The opportunity to exploit offshore wind is huge. The opportunity to further explore onshore wind is huge. The ANU recently—maybe a few years ago—released a report identifying 22 000 locations around Australia for potential hydro and pumped hydro opportunities. So I understand absolutely your question. I do not contest that a solar farm of the same output is

going to have a smaller footprint—it will not. But that is not the only renewable source that is available. In fact often those large-scale solar farms are providing secondary income streams to our agricultural sectors, potentially tourism sectors, and potentially First Nations traditional landowners can establish some self-sufficiency if we plan and do these things right.

Mr LIMBRICK: Thank you for that answer. On the issue of waste, it is true that there are amounts of waste with any energy production source. The amounts with nuclear require special management, but they are very small amounts of waste. But if we look at other industries, such as wind and solar and some of these other industries, we also see intractable waste problems, don't we? Things like: what are we going to do with the solar plants? We have heard in other inquiries with the solar panels—there are no recycling facilities in Australia yet for these. The turbine blades are non-recyclable. Indeed the rare earth production required for a lot of the wind turbines is all done overseas—most of it is done overseas in China—and produces a lot of waste. The waste issue is not what I am getting at. The waste issue is not unique to nuclear; it is across every energy source.

Mr GAULD: That is absolutely correct. I suppose there are a few points in that. First of all, a used solar panel does not cause cancer. Secondly—

Mr LIMBRICK: Well, cadmium telluride is not exactly safe, though, either, is it?

Mr GAULD: I have seen reports about hundreds of thousands of solar panels lying around with no method of disposal yet. I have not yet seen a picture of these thousands of panels doing nothing. If you do a quick google search, you will see that there are already at least two companies in Australia that are currently specialising in the recycling and repurposing of used solar panels. Unfortunately most of this is currently done overseas, but that is a choice issue not an issue of solar panels inherently being unable to be repurposed or recycled. We simply as a nation have chosen not to invest in recycling, and I think that was fairly evident in some of the recent challenges that we have seen with recycling in Victoria. The same with the wind blades—I understand exactly what you are saying. There have been issues where the methodology for disposing of used windfarm blades has been to bury them. Again, that is not because they are currently unable to be recycled. The reason for that is that there is no infrastructure that has been built yet to do it in Australia. However, there are significant advances occurring internationally around how they can repurpose and re-use and recycle those things. So these are things that are not a situation where inherently renewable technologies are not able to be re-used, recycled and repurposed. It is just we currently have not chosen to invest in the technology in Australia to do that. Internationally it exists. It is in its early stages in Australia.

Mr LIMBRICK: One of the bits of evidence that we heard yesterday that was quite interesting, and I read through one of the submissions, was around going back to the rare earths, such as neodymium, that are required for wind turbines and lots of other things. Because of the prohibitions in Victoria downstream processing of these rare earth materials cannot happen in Victoria, so that is done in South Australia or China mostly. Does it concern you that the current prohibition in Victoria will effectively prevent Victoria from ever having a fully integrated supply chain for renewables due to this prohibition? It is quite an ironic thing that the nuclear prohibition is preventing a renewable supply chain, but I am interested in your thoughts on that.

Mr GAULD: Look, I will have to come back to you. I am not of any understanding that the nuclear prohibition in Australia is causing these constraints, so—

Mr LIMBRICK: Specifically this is around Victoria, not other states.

Mr GAULD: But, yes, you are right. It is a terrible choice that we make in Australia that we dig up all of our really useful resources and send them to other countries to be processed and then sent back to us and sold at a higher price. I agree: we should not do that. But I am not aware of the nuclear prohibition legislation in Victoria restricting Victoria's capacity to have a supply chain for renewables in any way.

Mr LIMBRICK: One of the things that you mentioned is the existing uranium industry. I think, off the top of my head, it is about 10 000 tonnes of uranium concentrate that we export every year. That amount of uranium that we export—it is my understanding that that will generate electricity equivalent to approximately Australia's entire electricity production. So our current exports of uranium are generating zero-carbon electricity equivalent to our entire electricity production, except we are not generating it in Australia. Should we continue with the current uranium export industry or is this something that we find unacceptable? And if it is

unacceptable, if we do not want to export this uranium, how are we going to generate that zero-carbon electricity globally and replace what we are currently exporting?

Mr GAULD: So first of all, I do not think it is correct to characterise it as zero-carbon electricity generation. It still has a carbon footprint.

Mr LIMBRICK: Well, let's say low carbon then.

Mr GAULD: Also, it is our view that we should progressively close the uranium mines in Australia over time. We have sufficient reserves to satisfy the medical needs. As I discussed earlier, if we invested in some of the new technology that is available around synthetic creation of those medical isotopes and other things, then our reliance would fall considerably. Look, I understand exactly what you are saying: there are other countries in the world who have, for whatever policy reasons, decided to go down the nuclear path and have nuclear power stations. I note that most of those countries, despite some of the reports that come out, are moving away from nuclear. South Korea have announced that they intend to exit nuclear and retire all of their nuclear power plants. A lot of the places that are quoted as saying that they are building nuclear power plants have commenced construction and subsequently ceased construction. It is not the global growth industry that I think is described. And also I think there are uranium deposits available in many of those countries that operate uranium. To me it is more about a choice as to whether or not we wish to be in this industry or whether or not we wish to invest in other safer job-producing, revenue-producing industries.

Mr LIMBRICK: But these countries that you talk about that have been scaling back—and I do not dispute that, there are a lot of countries that have been scaling back their nuclear electricity production capacity—they have also seen large problems with their CO₂ emissions profiles. The classic case is Germany. They have made a decision to scale back their nuclear production and they have massively increased their renewables, but it has not satisfied their energy requirements and they are in the process now of opening coal-fired power plants. If you compare that to somewhere like Ontario in Canada, which has large-scale nuclear production along with hydro, they made a decision a few years ago to get rid of all coal-fired electricity production and replace it with nuclear. They have a very, very low emissions profile. So we see this issue globally where the only countries that have successfully decarbonised their electricity grid so far are the ones—we heard evidence yesterday—where they have a very large proportion of hydro-electricity, which we have got in Tasmania but we are limited through geography in other places, and/or nuclear. And in places that have gone for very large amounts of variable renewables we have not seen large-scale decarbonisation. Do you think that this is something that is achievable considering it has not been achieved yet anywhere?

Mr GAULD: Look, I do not think the statement that it has not been achieved anywhere is entirely accurate. There are examples from around the world. You are traversing a lot of different subjects here that are significantly outside of my understanding of the inquiry, but I will do my best, and where I cannot answer I might try and follow up with some written submissions.

I suppose Australia's responsibility and Victoria's role in that is that we should consider how we achieve the Paris targets, how we commit to net zero by 2050 and how we focus on a rapid, well-planned and well-transitioned deployment of renewables of both an intermittent nature and a firm nature. I think that is what our role and what our focus should be, and we should encourage other countries to fulfil the Paris commitments and look to strong commitments beyond that. You are right: there are issues around intermittency and network constraints all around the world. They are often levelled at the power generation source as the single issue that is causing that, not recognising the challenges that they are facing similar to us—that their transmission networks were designed around single generation sources over long linear distances to where the demand is and they are transitioning to distributed energy sources. So they have got to deal with issues of inertia and switching control and protection. Absolutely these challenges are real and they exist, but they exist whether you generate electricity using renewables, whether you use coal or whether you use nuclear.

When it comes back to Australia, we have a choice. We do not have to use nuclear. We can satisfy our energy needs without it if we upgrade our network. Those countries are facing similar constraints. The difference in some of those countries—like Germany, for example—is that they decided to do a partnership between the federal government of Germany, the unions and the employers to do a staged transition that looks after the community and closes down their highest emission brown coal plants through the Ruhr Valley. Yes, absolutely, they have still got black coal set out, but they are also working on a plan about how that gets phased out. So it is

not like these countries are replacing their problems with permanent high-emissions solutions; they are all working towards—and I would suggest often much more rapidly than Australia at this point—future solutions to reduce emissions. Some of them have chosen nuclear. That has been their choice; we do not have to make that choice.

Ms TAYLOR: Yesterday there was a lot of discussion about nuclear being cheaper energy and that the reason there are rising costs of energy is perhaps because—I am paraphrasing—we have not made that investment. What would you say are the real contributors to rising energy costs?

Mr GAULD: There are numerous studies on this. The Australia Institute's study into the effects of privatisation, marketisation and corporatisation of the energy sector is very telling. By way of example there, from the average consumer's electricity bill that they pay each year, \$80 of their power bill each year goes to the retail company to pay for their marketing budget to put ads on TV to convince them to buy the electricity that they are already buying. They are allowed to make a profit on line items in their balance sheets called 'goodwill' so their reputation and their capacity to make a future profit is deemed to be a balance sheet item that they are entitled to make 6 and 10 and more per cent profit on. So if you look at your average consumer bill and you look at the profit margin of the large energy retailers, your average annual bill, about \$380 or your annual bill is profit margin for often foreign-owned companies—and when I say foreign-owned, they are regularly owned by subsidiaries of the Chinese government, who have decided that it is highly profitable to buy Australia's energy networks and retailers, and these companies are notorious for not paying tax in Australia. So if we attach to our network any generation source of your choosing, whether it be nuclear, renewables, more coal or some new technology, these issues—the fact that we have a national electricity market, a fake electricity market, rather than a national electricity system that serves the community—and these problems will still exist.

The CHAIR: Thank you. I think it is a good subject to end on in your evidence. I think you are spot on. I think our biggest problem is in distribution costs, not necessarily generation.

Gentlemen, thank you very much for your contribution. It is much appreciated by the committee.

Witnesses withdrew.