## ECONOMICS AND INDUSTRY STANDING COMMITTEE

*Eighth Report — "Taking Charge: Western Australia's Transition to a Distributed Energy Future" — Tabling*

**MS J.J. SHAW (Swan Hills)** [9.57 am]: I present for tabling the eighth report of the Economics and Industry Standing Committee titled "Taking Charge: Western Australia's Transition to a Distributed Energy Future".

[See paper 3223.]

**Ms J.J. SHAW**: Significant changes are underway in Western Australia's energy industry. We have wholeheartedly embraced distributed energy technologies, particularly in our homes, and are now witnessing the most fundamental shift in our energy production model since electrification. This inquiry has considered the implications of our transition to a distributed energy future. The committee has examined the potential for microgrid technologies to contribute to the provision of affordable, secure, reliable and sustainable energy supply, in both metropolitan and regional WA.

This inquiry has been the most interesting, challenging and educational project I have ever undertaken. I am deeply grateful to the many people and organisations who took the time to provide the committee with submissions and who were so generous in their engagements with us. I would like to acknowledge the contributions of my fellow committee members, our new deputy chair, the member for Warren–Blackwood, who was my wingman through the course of the inquiry, and the members for Jandakot, Forrestfield, and Churchlands, who remained with the committee until the end of this inquiry.

I would also like to express my thanks to Mr Matthew Bowen of Jackson McDonald lawyers, whom the committee engaged to assist it throughout the course of the inquiry. I really appreciated the ability to test ideas and concepts with Matthew. The committee gained greatly from his knowledge and insights. I would also like to thank Hansard and the committee staff, Dr David Worth, Mr Lachlan Gregory, Ms Suzanne Veletta and Ms Franchesca Walker, for their patience and assistance throughout the course of this inquiry.

A broad range of benefits are associated with microgrid technologies. We outlined value chain implications in the interim report. This final report finds that as microgrids mature and work in conjunction with traditional generation and network assets, they can act as reliable, dispatchable energy resources; supply essential services to the system; and act as balancing resources. Microgrid technologies can also reduce total system costs by deferring, reducing or entirely removing the need to invest in costly pole and wire replacement programs. Their ability to provide these benefits depends, however, on market and regulatory frameworks. The committee has found that WA's market structures no longer reflect the physical realities of our electricity system, and are not sending efficient signals for asset development and system operations. This affects total system costs and, if left unaddressed, could have long-term implications for system security and supply reliability.

No government has undertaken a significant, meaningful market reform process since the Carpenter Labor government established the wholesale electricity market in 2006. The emergence of microgrid technologies presents us with an opportunity to both facilitate new technologies and commercial models, and address a range of longstanding structural market issues. The overwhelming weight of evidence to this inquiry supported reform and urged action. The state government's energy transformation strategy contains six objectives that the committee has endorsed: to maintain a secure and reliable electricity supply; ensure affordable electricity for households and businesses; reduce energy sector emissions; transition affected workers in the Collie region; and promote local jobs and growth.

A range of other principles also emerged from the evidence to this inquiry: the policy framework must be flexible and capable of adapting to and encouraging technological change over time; policy should provide clear direction and certainty for industry; energy solutions should be selected on a technologically neutral, economically efficient and cost-effective basis; and the private sector should play a key role in the energy supply chain. The committee considers that these broad principles should inform energy market reform.

The evidence suggested four key focus areas to maximise the benefits from microgrid technologies: market roles, market rules, economic regulation and network and retail prices. On roles, the committee considered the three government trading enterprises, Horizon Power, Synergy and Western Power, and found there is considerable scope for duplication and overlap between them. We have recommended that the minister provide clear and unequivocal direction regarding functions and accountabilities.

The private sector also has a vital role to play. A number of innovative companies can supply a range of technologies and services, and many successful partnerships now exist with the government trading enterprises. Our report discusses other proposals for virtual power plants, blockchain technologies and community energy cooperatives. There are also commercial opportunities associated with the provision of essential energy system services. The challenge is to ensure that the GTEs create the space for private sector participation in product development and procurement processes, and that wholesale market signals exist to encourage competition and technologically neutral participation.

The committee has found that electricity market price signals should align with system reliability and security requirements, and that electricity traded through wholesale electricity market mechanisms should reflect the true costs of production. However, the evidence to this inquiry demonstrated that WA's market structures are increasingly ill-suited to the emerging distributed energy model. Market and regulatory structures are sending inefficient, blunt signals and contain skewed incentives that drive uneconomic generation and network asset configuration and utilisation. This likely imposes a range of additional costs on WA taxpayers and electricity customers, and over the longer term, could present challenges to energy system security.

Electricity market reform is extremely complex. The committee was presented with a range of often very detailed reform proposals that it was unfortunately not equipped with the resources to consider. We are aware that the Energy Transformation Taskforce is undertaking an ambitious reform exercise. The progress under that project, announced early last year, is impressive, and this report hopes to complement that work.

We chose to limit our rules discussion to three high-level aspects relevant to microgrid technologies: essential system services, microgrid participation in market structures, and the role of batteries. Batteries are a particularly exciting initiative. Grid-scale batteries are rapidly demonstrating their capacity to assist with secure and reliable system operations. Battery assets can be developed through partnerships between the GTEs and private sector, and if market reform progresses, opportunities can arise for discrete battery-based services from market participants.

The committee also considered whether electricity network regulation encourages microgrid technologies. Evidence suggests that it does not incentivise the most efficient asset development or utilisation. Strong signals exist to expand network assets rather than consider alternative technologies. We recommend that the Minister for Energy expand the role of incentive-based mechanisms to encourage cost-effective alternatives to traditional pole-and-wire solutions.

Evidence also suggested that the administration of the regulatory process is problematic. The committee found there is scope for better consultation and collaboration through the development of access arrangements. We note the genuine need, at this time, of radical transformation and for more innovative regulatory approaches that acknowledge the importance of investing in innovation, research and new technologies.

The evidence also strongly suggests that network and retail tariffs should be reviewed. Witnesses repeatedly stated that network tariffs no longer incentivise efficient investment, and that retail tariffs for small-use customers do not reflect the actual cost of electricity supply. They maintained that tariff reform, both network and retail, is essential if the full benefits of microgrids and associated technologies are to be realised. The committee agrees that time-of-use and locational network tariffs would provide signals about the impact of electricity consumption patterns and the cost of supply at particular points across the south west interconnected system. Network tariff reform should be included in the scope of works of the Energy Transformation Taskforce. With respect to retail tariffs, successive Western Australian governments have upheld the application of the uniform tariff policy, whereby metropolitan and regional small-use customers pay the same retail tariff for electricity, irrespective of the actual supply cost. For decades, through the UTP, metropolitan energy consumers have subsidised the extremely high costs to serve regional customers. To the extent that microgrid technologies reduce or place downward pressure on costs, the UTP should also ensure that all Western Australians now share any benefits.

The committee received evidence that time-of-use retail tariffs have influenced electricity consumption in small regional systems. We have recommended that Synergy undertake tariff trials for small-use customers in the SWIS, to determine whether responses are replicated in different geographical and demographical contexts. Evidence also arose regarding broader structural issues associated with retail contestability thresholds. Support for change came from existing and potential private retailers. Opposition to change centred on the impacts on regional customers and concerns about market structures and anti-competitive conduct.

A range of recent publications question the benefits of full retail contestability in the national electricity market. Studies have highlighted that additional costs, such as duplicated overheads, call centres and advertising spend, add little or no value to the production and delivery of electricity. Studies have also raised issues about product confusion and anti-competitive market behaviours. Competition is an important driver of innovation and can promote efficient asset development and utilisation, thereby lowering system-wide costs and placing downward pressure on price. It undoubtedly works at points in the electricity supply chain, and should be encouraged where appropriate. It is not, however, an end in itself.

The east coast experience demonstrates that it is highly questionable whether loading consumers up with the additional costs associated with full retail contestability actually contributes to a more secure, reliable, sustainable and, importantly, affordable energy system. The need to address the significant structural issues in the national electricity market lies at the heart of the federal government's big-stick reform package—whatever people's views on how defective that big stick may be.

The committee found that capturing the system-wide benefits offered by microgrids and associated technologies is not dependent on alterations to contestability thresholds. Any changes to contestability thresholds should be introduced only when it can be clearly and unequivocally demonstrated that they will place downward pressure on prices and deliver system-wide benefits that can be equitably shared. Irrespective of the technical, operational, market and regulatory complexities, ultimately microgrid technologies are challenging traditional constructs because of consumers' energy choices. An increasingly consumer-centric energy system raises a number of complex regulatory and policy challenges. Access to distributed energy resources is not equitable and energy poverty continues to challenge policymakers. The evidence provided to this inquiry demonstrates that socioeconomically disadvantaged households are less likely to be able to afford distributed energy resources and they reside in forms of housing that are less energy efficient. The social impacts of this inequitable access are significant, given that low income households tend also to consume more energy. Although recent retail tariff increases have been limited to the consumer price index, the significant rises over the past decade have had a negative impact on the cost of living and quality of life for vulnerable households and individuals. Electricity market reform is essential to support the transition to a more cost-effective and efficient energy system. However, the committee found that reform should be accompanied by a wholesale review of supports and concessions for vulnerable households.

Small energy consumers also require consumer protections, recognising the essential service characteristic of electricity supply, its traditionally monopolistic industry structure, the significant disparity in bargaining power and sophistication between provider and customer, and the extreme danger inherent in energy supply. In the committee's view, microgrid operators should be subject to the state's electricity licensing regime and customer voices must also be heard in energy policy processes.

Microgrids and associated technologies offer Western Australia a range of broader opportunities. As cost profiles shift and increasing volumes of energy are delivered at low to zero marginal cost, there is an obvious opportunity to attract industries with complementary load profiles into the state. There are also workforce implications. The increasing volume of DER and the associated information and communications technology systems are changing the nature of work and the demand for traditional new skill sets in the power industry. The state government and government trading enterprises have started to address workforce transition. We recommend that the GTEs develop comprehensive workforce capability plans aimed at building existing and future employees' skills and capabilities.

The people of Western Australia own highly valuable assets in the form of microgrid-related intellectual property and the delivery capability possessed by the GTEs. These valuable assets could be readily commercialised, in partnership with the private sector and research institutions, to provide the people of Western Australia with a direct return on the substantial investments they have made in microgrids over many years through the GTEs. Demand exists both in Australia and overseas for microgrid technologies, and it is likely to increase as our neighbours develop and electrify their rural communities and adopt ambitious carbon-abatement and renewable energy targets. The GTEs could market their intellectual property and delivery capability into other jurisdictions, generating concomitant opportunities for private sector partners. We could also leverage our microgrid capacity, harnessing the technology, expertise, capability and thought leadership of recognised energy leaders through the establishment of an advanced microgrid centre of excellence.

Microgrids offer Western Australia the opportunity to optimise our electricity systems and export our valuable intellectual property, all whilst reducing our carbon intensity. As nations around the world act to address climate change and demand more sustainable forms of electricity production, WA has demonstrated its world-leading capacity to meet this market. We can build a thriving industry, leveraging the knowledge and benefits gained through our own transition to a more sustainable energy economy.

I want to briefly mention a few unique advantages we hold over other Australian jurisdictions. Our separation from the national electricity market provides the ability to reform market structures and regulatory processes to suit our specific circumstances and in light of the needs of all Western Australians. The WA government does not need to negotiate with the commonwealth and state governments. It can proceed despite the toxicity and total energy policy dysfunction displayed by the commonwealth. Western Australia can also observe the adverse consequences of NEM reform processes and take steps to avoid them. Moreover, the state's ownership of the GTEs enables it to pursue broader public policy objectives and facilitate the changes underway in the sector in the interests of all Western Australians by directing the GTEs' activities and their forms of participation in energy markets. This would be impossible had we privatised Western Power.

Networks have been privatised in the national electricity market. Here, the people of Western Australia own Western Power, enabling the state government to make decisions about the network with a broad range of energy policy objectives in mind, rather than having to accommodate the narrower, albeit legitimate, profit motives of private shareholders. Network regulation and asset return structures can change without the need to negotiate with or compensate multiple private network owners. The state can direct the market power activities of Western Power and Synergy to create opportunities for new market participants when private operators would otherwise be highly incentivised to leverage monopoly assets or dominant market positions or exploit the advantages of incumbency.

The interim report observed the benefits of possessing a clear line of sight from electron production right the way through to consumption. We are the last state in the nation to possess this capacity and it resides in the GTEs. Of all states and territories, Western Australia is uniquely positioned to take charge of its energy future. We can develop and implement policies that encourage energy market outcomes for the public good, more efficient capital investment, a reconceptualisation of value in network assets and a mix of technologies to optimise supply and manage risk, producing natural restraints on costs for consumers and placing downward pressure on prices.

More than at any other time, there is a need for government, industry, academia and the broader community to work together to understand and benefit from a distributed energy future. We can deliver a more secure, reliable, affordable and sustainable electricity system. Together, we can create commercial opportunities that encourage innovation, new market entrants and new industries, whilst moving to a more sustainable energy economy and facing the challenges presented by climate change. I commend the report to the house.

**MR D.T. REDMAN (Warren–Blackwood)** [10.17 am]: I also want to talk about the Economics and Industry Standing Committee's final report on its microgrid inquiry. From the outset, I thank my colleagues, particularly the chair, the member for Swan Hills, who is a self-described energy geek. Members will understand when they read the report how a fair bit of energy from her horsepower has gone into the outcome. It was great to have her on the team. I also thank the former deputy chair, the member for Churchlands, who is here today and who will contribute to this debate because he was a big part of the inquiry before moving on to another inquiry; the member for Jandakot, who is not in the house, and the member for Forrestfield, who both had solid input; and the member for Cottesloe, who is also on the team. I also give my thanks to the team that helped put all this together: Suzanne Veletta, Franchesca Walker and, in the past, David Worth and Lachlan Gregory, who is now working in the chamber.

There have been two reports. The interim report was the first report for this inquiry, which was, of course, the committee's fifth report. It is probably a slightly easier read. In it, some of the more technical aspects of our network and of what distribution energy resources mean and the microgrid opportunities come to the fore. It refers to electric vehicles and some of the trials that both Western Power and Horizon are doing around the state. It is a fantastic read as a starting point. I encourage everyone in the house to look at it. A lot of people in my electorate are interested in it, which is tremendous. The report that has been tabled today is a slightly harder read and it does a couple of things. In the first instance, it reinforces the opportunities and values that microgrids and distributed energy resources can bring to the table in reliability and support for various ancillary services as a balancing resource. It demonstrates that, if they are done right, they can be a very effective solution to many of the intractable challenges that we have had in the past.

The second broad component in the report is that it highlights the regulatory and energy market constraints to getting the best out of this technology. That is a harder read, because we have some pretty complex legislation that drives the decision-making process for our government utilities in particular, and the interaction of that with the opportunities in the microgrid technology is complex, but, again, this report highlights that strongly. I might add that government has taken steps already, which is really pleasing, and has to some extent overtaken a bit of our work, but that is a good thing. Being on the committee, I as much as anyone else recognise the importance of getting on with the job.

I will mention a few other areas of interest. We have discussed the process of actual regulatory reform, including the rules around investment decisions and access arrangements, making sure that we have efficient processes to deliver the best outcomes. Tariff reform is an interesting area. I am going to give a little example in a minute of the importance of tariff reform and its impact on people's behaviour in electricity and energy use, which can be of benefit, particularly to our network. Another area of interest is the value of the private sector. Although I recognise that the government has taken a strong position on ownership of utilities, a lot of private sector innovation could be brought to the table to ensure that we have the best mix and not only the rigour of the government agencies and the government bases there, but also open up the opportunities for innovation to come to the table. That is really critical. It has been mentioned already by the chair that the last people off the ranks to get access to solar photovoltaic—for example, the people who cannot afford it—are the people who probably need it the most. We have what is described as an energy poverty issue, and we see it in the regions. The first people who have the resource get the benefits and reduce their power bills; others cannot. We have to find a way to navigate that and have everyone participate in the opportunity. There are certainly some jurisdictional challenges between the government utilities. It is probably not a good description, but I call it a turf war. Particularly Horizon and Western Power are trying to put themselves up as having the technology and the expertise to be able to deal with this. We need to have them talking closely and getting the best for everyone, for the public good. I think they are on board with that, and certainly a little bit of a prompt from government would be a good thing. Defining their roles a little better would certainly help that.

Consumer protection has been mentioned by the chair. This is a case of finding the balance for those in our community who actually want to participate in the energy space. There are a lot of people, particularly in Margaret River and

Denmark, who want to play a bigger role, have microgrids and community microgrid opportunities, but once we start having the discussion about who to go to when something goes wrong, it starts to generate consumer protection–type issues that come to the fore. We have to find a way to ensure that we allow participation but maintain some of the rigours of the government regulatory arrangements to ensure that they have a level of protection, and rightly so, because energy can kill people. We also need to ensure reliability and security. A whole range of issues come under that broader community protection discussion.

Challenges will emerge from this. As a member for regional Western Australia, I know that the headworks costs have been the bane of the past. Those on the fringe of grid who have to take a big hit on headworks for a connection can be a big distraction from good regional development opportunities. We do not want people disconnecting from the grid or choosing not to go on the grid, because the more people who participate, the broader the share of the grid network costs. These headworks issues will be a challenge for the government and the National Party will certainly be paying close attention to them. Another issue is the level of solar PV penetration. Some communities have a cap. Again, we want everyone to have a share of that. It will be important to try to navigate that.

In the last three or four minutes, I want to pave something out. Consider yourself living in Denmark, which is my home town. Denmark has a community wind farm; a couple of big turbines generate power when the wind blows. Say I buy myself an electric vehicle that is 100 kilowatt hours. A battery at 100 kilowatt hours would probably run my house for a week, to give members an idea of the scale of that. I could go into a special deal with Western Power that allows me to suck out cheap energy or, indeed, get energy from the wind farm, but if Western Power needs the power out of my car battery, it could suck it back out and support the network, and I would get paid for that. I could go onto a special tariff agreement that would allow me to navigate and have benefits from having the battery. I would have bought a battery on behalf of Western Power. I would also contribute to the network costs, because I am still connected to it; therefore, I would be sharing the cost of that with others. The community might even have a grid-scale battery. Excess solar power for the day would go into the battery, people could suck it out at night and reduce their energy costs. Consider that circumstance in a little town like Denmark. What are the benefits? I would get cheap power for my car out of a wind farm when the wind is blowing and no-one else wants to use the energy; my car would have value for the grid, because it would have a battery, and I would get paid for that value; I would contribute to the network cost, which would share the burden for everybody; the utility would get to defer some capital investment, because there are, in fact, constraints on the network down there, so it would not need to spend what it would normally spend to maintain the reliability of the network, so it could defer some of that cost. It would allow higher penetration of rooftop PV for the community, so everyone could get the benefit of some of those investments and not just the first movers. Of course, community participation in a carbon-positive energy solution is smart. Communities want to be a part of that, and why should they not? Of course, for places such as my electorate, reliability improvement is a massive issue.

Right now, we cannot do all of what I have just described. This report starts the discussion, and government is working—also past governments, I might add; we did this—to set the pathway to get to a point where we get the most efficient way of delivering those technologies out of the technology that exists. One of the great things about being a member of the Nationals WA is that one of the groups to benefit will be regional Western Australia. That is where much of this works; it works from a financial sense and is a massive opportunity. The challenge for government is to navigate that. We will be watching closely, because there are certainly regional benefits. The opportunity presented by this technology should be shared by all.

There is a nice little pump hydro project happening in Walpole that Western Power is connected to. It is moving towards a financial decision at the end of March. Again, that investment from the private sector is delivering services to the network at points in time and getting the benefit for that, and bringing community participation in energy storage and reliability to an area that does not have it. I really look forward to seeing how that might land. I think that is a fantastic initiative and I am so pleased that Walpole is one of the communities that Western Power is supporting with an initiative like this, because it has been crying out for reliability for a long time.

I am really pleased with what we have done on this report. It is a fantastic bit of work, and it is well worth members having a close look at it. It is a really important piece of work for Western Australia and all Western Australians need to get the benefit from it. Thank you.

**MR S.J. PRICE (Forrestfield)** [10.27 am]: I rise to contribute to the tabling of the eighth report from the Education and Health Standing Committee, which is titled, "Taking Charge: Western Australia's Transition to a Distributed Energy Future". The subheading is "Inquiry in the emergence and impact of microgrids and associated technologies in Western Australia". As mentioned previously, this is the final report. Earlier we produced an interim report that essentially outlined some of the basics of what we were trying to deal with, and this report then dives into some of the difficult issues and makes the findings and recommendations. I, too, would like to thank the other members of the committee—the chair, the member for Swan Hills; the deputy chair, the member for Warren–Blackwood; the member for Cottesloe; the member for Jandakot; and the previous deputy chair, now

a co-opted member, the member for Churchlands. I have to say, I think this committee is one of the hardest working committees in this fortieth Parliament. This report highlights that.

As member for Warren–Blackwood said, I would strongly encourage everyone to have a read of this report. It is groundbreaking and industry leading right across Australia in what we have looked at and been able to experience with what has been happening in this area of technology, not only within Western Australia, but also around the world. We were fortunate enough to have incredible support from a number of different stakeholders, including the Australian Energy Market Operator and Western Power. We visited Nickel West in Kwinana and we went up to Carnarvon to visit Horizon Power as well. We essentially have a number of different government trading enterprises and private organisations competing in this space and undertaking similar but different work. As the member for Warren–Blackwood alluded to, it would appear that a bit of a turf war is going on between organisations. There is certainly an opportunity to harness the experience and the knowledge between all of them.

The committee was also fortunate enough to travel to the United States for the inquiry. In the committee's view, a number of agencies over there were more advanced than Western Australia in dealing with distributed energy resources. They were able to give us some insight into what they are doing. One of the key elements of the energy industry is the fact that it is changing so rapidly. We need to make recommendations about how we can free up some of the constraints to allow our GTEs and the private sector to get involved and come up with adequate solutions to some of the issues.

As we know, renewable energy is a very important part of our energy mix going forward. The underlying principle for anything to do with energy is energy security. I use the term "security" as it is actually about the continuous supply of energy and at the right voltage, according to what is required. That is the challenge. As the member for Warren–Blackwood mentioned, it is typically our fringe-of-grid customers—those in regional and remote areas—who are impacted the most by the system when it does not work appropriately. As it stands, there are constraints on how they can deal with reliability and security issues.

The committee made 73 findings and 21 recommendations in its very detailed and comprehensive report. One of the things that I personally found quite interesting from the inquiry was the significant role and importance that Western Power plays. Western Power's network includes the south west interconnected system—predominantly transmission and distribution, the poles and wires. That particular GTE is critical to anything that we do. It would be a significant mistake if the poles and wires of our energy distribution and transmission system were not controlled by government. Without that particular part of the overall power network, we have no control. It does not matter what system is in place or who generates the power, unless there is some control over how that power is distributed across the community, there is no control over pricing and security of supply. It would really expose Western Australians to unknown electrical costs. It was always the government's position that it would maintain Western Power in public hands. One of the key takeaways from the inquiry was that that is the right thing to do.

I would like to also acknowledge the assistance throughout this inquiry of our research staff, in particular David Worth, who has retired now; Lachlan Gregory, who is again working in the Legislative Assembly chamber; Suzanne Veletta, our new principal research officer; and Franchesca Walker, our research officer. I would also like to thank the member for Churchlands for his guidance and positive contributions, not only through this inquiry, but also through previous ones whilst he has been on the committee. It has been beneficial and quite worthwhile having someone with us who has had previous experience. My final thanks go to the chair, the member for Swan Hills. Her knowledge and enthusiasm in this area are contagious. I would like to thank her for providing her knowledge and sharing it with us. It helped a lot of us develop a pretty strong understanding of what we were inquiring into. It made us aware of a lot of the more difficult issues that, without her assistance, I am sure we would have struggled with in certain circumstances.

I would like to conclude by quoting from the chair's foreword in the report. This sums up what the report is all about. She states —

> This inquiry has been technically challenging and has involved some very complex and potentially sensitive issues. The level of collaboration and constructive engagement throughout this process has been remarkable. The production of a consensus report with findings and recommendations on a number of key issues will hopefully contribute to a constructive debate on Western Australia's energy future.

This is exactly what the report will do. I commend the report to the house.

**MR S.K. L'ESTRANGE (Churchlands)** [10.35 am]: I, too, rise to speak about this *War and Peace* report on microgrids, titled "Taking Charge: Western Australia's Transition to a Distributed Energy Future". It has been a journey for all of us on the committee to embark on this inquiry. The committee tabled an interim report in April last year, which led to a lot of the aspects of this report that has been tabled today.

To recap, microgrids are essentially a source of energy—for example, gas, wind and solar—that creates the electricity generation to supply to households or a battery. These small grids can be either plugged into the overarching network or isolated away from the network and operate in that way. Battery technology is key to the success of microgrids. Many Western Australians know the importance of lithium to that. As the member for Warren–Blackwood pointed

out, regional communities that operate on the fringe of existing network systems such as the south west interconnected system are sometimes impacted by fire, flood and storms, or things like that, which can make energy supply difficult. Microgrids, and the efforts and energy that we have put into this report to identify ways in which they can be supported, has been a good outcome of this report.

In her foreword, the chair outlined some pretty bold things for the government to consider. For example, she said —

> Western Australia's regulatory and market structures no longer reflect the physical realities of our electricity system and are not sending efficient signals for asset development and system operations. This affects total system costs and prices for end users and, left unaddressed, could have long-term implications for system security and supply reliability.

That is a key finding of this committee. If we have a government that is not prepared to look very closely at these findings and recommendations to make sure that it can get cheaper electricity to consumers, it is not taking advantage of the effort that has gone into this research. The chair's foreword also noted —

> The emergence of microgrids and associated technologies presents the State Government with an opportunity to both facilitate new technologies and commercial models, and also address a range of long- standing structural issues in the market.

Again, that highlights the need for the government to roll up its sleeves, get its hands dirty and make changes that will look after Western Australians. The chair also said in the foreword —

> The overwhelming weight of evidence to this inquiry supports reform and urges action.

For me, the report also identified a clear lack of effort on the part of the state Labor government on how it will secure a reliable energy supply. It is stated on page iii of the chair's foreword that we need to maintain a secure and reliable electricity supply to ensure affordable electricity for households and businesses. That has to be a key approach by all members of this place. If we are not trying to make the cost of living for Western Australians more affordable by reducing energy prices, we are not doing our job. If we get access to these types of new technologies, including microgrids, and if we can get the private sector working with the government trading enterprises and the public sector to get energy out there cheaper, that is what we should be doing and that is where our reform focus should be. On page iii of the report, the chair states —

> Witnesses considered that the policy framework must be flexible and capable of adapting and encouraging technological change over time and that energy policy should provide clear direction …

I absolutely agree. I think members on both sides are looking for that clear policy direction to address the issues highlighted in this report. The chair's foreword also states —

> Equally, it is vital that the space exists for the private sector to participate in energy markets. The private sector has demonstrated its capacity to innovate and supply a range of energy technologies and services.

Again, the McGowan Labor government seems to be tying one hand behind its back on this. On the one hand, the former Minister for Energy and current Treasurer is privatising aspects of the energy market. On the other hand, the government is trying to pin privatisation to a Liberal policy position. The government seems to be in two different camps on this issue. The chair's foreword and this report highlight that there is a need to look at privatisation carefully, acknowledge that it will have inherent strengths, and ask how it can support the energy market and consumers in that market. If we look in the report for aspects of privatisation, we see finding 31, at page 85, which says —

> Partnerships between private providers and the Government Trading Enterprises could leverage private sector finance for the deployment of microgrids and associated technologies. Significant opportunity also exists for the Government Trading Enterprises and the private sector to develop a Western Australian industry focussed on the delivery of microgrids and associated technologies.

On page 85 of the report, Synergy is quoted as saying —

> Broadly speaking, fostering competition and service provision should deliver outcomes that are in the long term interests of consumers, although assessment and evaluation at a whole of system level is important to ensure this is the case … If it is more efficient to install a microgrid with distributed generation and storage, rather than replacing ageing, grid connected poles and wires, then it should not necessarily follow that the incumbent network operator should be given the monopoly to replace one with the other in its asset base. The long term interests of customers should be better served if microgrid investment can be delivered by fostering competition.

If members interested in the economics of energy read this report, they will see threaded throughout it this need to break free of the shackles of this Labor-dominated idea about public sector ownership of assets, like energy assets, which is actually causing prices to be higher in the market.

The report goes on to say —

> Western Power acknowledged that the range of forms of microgrids in rural and metropolitan areas would likely attract investment and operational interest from the private sector:
>
> …
>
> Western Power stated that energy and electricity stakeholders are seeking a framework that provides investment certainty with appropriate risk and reward, together with incentives and mechanisms that encourage investment in the right areas:
>
> > It would be beneficial for the Government to consider each individual issue related to microgrids and associated technologies and decide if it is a matter for the private sector, government, or both.

As the chair highlighted in her foreword to the report and committee members have highlighted, there is a need for reform in this sector. There is a need for the state Labor government to step up and show some leadership in this space and make a real effort to reduce cost-of-living pressures on consumers, who are all reliant on a power supply to their households and businesses. The state Labor government needs to do more to support that endeavour.

I also join with other committee members in thanking the secretariat. We have had a number of secretariat members over the duration of this inquiry, and I thank them all. I also, of course, thank Dr David Worth, who retired from Parliament at the end of last year. He played a key role in supporting the committee in this inquiry. Although I sit in opposition to the Labor government, I must say that the members for Forrestfield and Jandakot are fine gentlemen—they are pleasure to work with and always have a great sense of humour and a great sense of camaraderie, which is essential to the successful operations of a committee. I thank those two gentlemen in particular. Of course, the member for Warren–Blackwood took over the position of deputy chair at the end of last year when I stood down from the committee to take on a new committee role more closely aligned to my portfolios. I thank the chair, the member for Swan Hills, for her motivation to look carefully at this issue. I know the member came from the private sector, in the energy sector. She has knowledge in that space. I think the government would do well to not be frightened of the private sector and take on some of her advice in order to move towards reform at a faster pace than it is doing currently.

**DR D.J. HONEY (Cottesloe)** [10.44 am]: I rise to make a small contribution to the debate on the Economics and Industry Standing Committee's eighth report, "Taking Charge: Western Australia's Transition to a Distributed Energy Future". Members may know that I only recently joined the committee. I do not wish to make a detailed commentary on the report, but I will touch on some aspects of it. First, I would like to acknowledge the passion for this topic of the chair, the member for Swan Hills. She clearly has brought some knowledge to this inquiry from her role outside Parliament. Generally, one of the pleasures of working on committees is that we get to know members outside our sort of gladiatorial roles in this chamber. It has certainly been a pleasure working with all the committee members. I also recognise the staff. We are blessed in this Parliament with outstanding support staff, and in the short time I have spent on this committee, I have been extremely impressed by the calibre of the staff. I will not mention them individually, but it is certainly a very effective and hardworking committee, as one of the other members mentioned. This report is a major body of work, so congratulations to the committee members. I especially wish to recognise the member for Churchlands' contribution in the role of deputy chair. He has now left the committee, but I know how passionate he is about this topic, and I am sure he will make a valuable contribution on future committees.

I think the report is a really excellent analysis of the issues around the distributed energy network. In particular, I want to focus on levelling energy supply on those networks. As I said, I came into the committee at the end of this inquiry. I think other committee members have done a good job—especially the chair, who has done a very good job—outlining the holistic issues in this report. Batteries have become a very topical issue in our community; in particular, the use of lithium batteries as a way of levelling power.

Sorry, Madam Deputy Speaker; I am just having a bit of trouble concentrating because of the background noise.

**The DEPUTY SPEAKER**: Members.

**Dr D.J. HONEY**: I thank the Deputy Speaker. I recognise it is on my side of the chamber, but it is quite distracting.

The renewable energy sources referred to in the report are principally wind and solar. Members would know that they are highly variable. If the network has the capacity to cope with that—if it has swing power sources that it can bring in to cope with that—it is perhaps not such a big problem, but members would know that the penetration of renewable sources now is so great that our network is reaching a pivot point at which it cannot possibly cope. The logical thing to look for are energy sources or at least storage sources to store that excess electricity when it is not required and then feed it back into the network when those renewable energy sources are not capable of providing that energy. Traditionally, that has been done by coal-fired power stations, which does not handle that very well at all. In fact, it tends to destroy those factories, if you like, or power stations. Obviously, gas turbines

have been one way of coming up quickly and generating power, but clearly there is a move towards more and more renewable energy sources.

Battery storage has been a prominent issue. We know that South Australia has that large Tesla installation. The report focused on batteries a lot. Because I came in at the end of the inquiry, I did question whether hydrogen had been added as a topic. The chair suggested that there was maybe an opportunity to talk about that as an additional topic to consider. Lithium batteries are a really interesting topic. They are going to become a bigger issue when we look at the life-cycle analysis of lithium batteries. When we talk about lithium batteries, we are not talking about one lithium battery; there is a vast range of different types of lithium battery, including lithium cobalt oxide, lithium manganese oxide, lithium nickel manganese cobalt oxide, lithium iron phosphate and lithium titanate batteries.

The big batteries at a Tesla facility are not just "a big battery". It may surprise members to know that those battery installations are simply agglomerations of millions of smaller D-cell sized lithium batteries. The sorts of batteries that people use in their power tools or garden tools are the same batteries that make up the massive installations—millions of them are joined together. There is a real life cycle issue with lithium batteries. The technology in those batteries is identical to the technology of the battery in phones or watches. In fact, the intrinsic component is essentially the same, but there is just more of it in those D-cell sized batteries. The problem with that is that recycling is extremely difficult. The battery container and the copper electrodes can be recycled pretty easily; however, recycling the components in lithium batteries is extremely difficult. Some of the metals can be recycled, although some of them do not have much value. Nickel and cobalt do, and they can probably be recycled, but lithium, in effect, is almost unrecyclable. This was my area in a technical sense many years ago in the recovery of metals. The recovery of lithium from the batteries costs five times more than getting lithium from an ore source. It is not insurmountable. I understand this technology better than anyone in this place, I think, having actually done it.

**Mr W.J. Johnston**: Go and talk to the people who are there today.

**Dr D.J. HONEY**: I have talked to them, minister. The lithium is extremely difficult to recover cost-effectively and is extremely difficult to recover in a pure form. That is a real issue. The reason I am raising that is that we need to consider it when considering the life cycle of this. The other factor is that it raises an opportunity for us, as the minister alluded, to look at lower cost ways of recycling. Western Australia has a very well developed hydrometallurgical and metallurgical research industry. This state would be one of the best placed in the world to devise processes for the large-scale recycling of lithium batteries.

I want to bring into the mix the opportunity with hydrogen. I do not think it is a deficiency in the report, because the report talks just about opportunities to level supply through energy storage and in recovering energy. The life cycle analysis for hydrogen through fuel cells is significantly simpler than with lithium batteries. The other factor is that hydrogen allows simple bulk storage of energy on a very large scale. In fact, hydrogen generation, and then the regeneration of electricity through fuel cells, is a technology that is now well developed and is coming to an industrial scale. An enormous opportunity exists in Western Australia for us to be part of this and get ahead of it. I will say in the first instance that in this case we are talking about generating hydrogen and reusing it, but on a broader global scale it is an enormous opportunity for our natural gas industry here to move into bulk hydrogen production and selling hydrogen offshore. I want to put in a plug for that. This is an opportunity. The state government has an initiative around this, and I welcome that initiative and encourage that. In relation to the energy networks, having a greater look at the role hydrogen can play would be worthwhile.

In closing, I congratulate the committee for its work. The committee has done an outstanding job. I congratulate the chair of the committee for the passion and knowledge she brought to this report.