ECONOMICS AND INDUSTRY STANDING COMMITTEE

INQUIRY INTO MICROGRIDS AND ASSOCIATED TECHNOLOGIES IN WA

TRANSCRIPT OF EVIDENCE
TAKEN AT PERTH
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SESSION TWO

Members

Ms J.J. Shaw (Chair)
Mr S.K. L'Estrange (Deputy Chairman)
Mr Y. Mubarakai
Mr S.J. Price
Mr D.T. Redman

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Hearing commenced at 10.31 am

Mr ZAEEN KHAN
Executive Director, Public Utilities Office, Department of Treasury, examined:

Mr ADEN EDWARD BARKER
Program Director, Public Utilities Office, Department of Treasury, examined:

The CHAIR: On behalf of the committee, I would like to thank you for agreeing to appear today to provide evidence in relation to the committee's inquiry into microgrids and associated technologies. My name is Jessica Shaw and I am the Chair of the Economics and Industry Standing Committee. I would like to introduce the other members of the committee. To my right, Yaz Mubarakai, member for Jandakot; to my left, Stephen Price, member for Forrestfield; and Terry Redman, member for Warren–Blackwood. Sean L'Estrange, member for Churchlands, could not be present today.

It is important that you understand that any deliberate misleading of this committee may be regarded as a contempt of parliament. Your evidence is protected by parliamentary privilege. However, this privilege does not apply to anything you might say outside of today's proceedings. Do you have any questions about your attendance here today?

The Witnesses: No.

The CHAIR: Would you like to make opening statements?

Mr Khan: Just very briefly. Thank you for the opportunity to be present here today. I have had the opportunity to look at some of the evidence that has already been provided to the committee, so I don't wish to elaborate too much to the wealth of information that has already been provided to the committee, other than to say that we all know that the energy sector is in major transformation.

Considerable work is underway by the Public Utilities Office in addressing some of the challenges and policy issues that are confronting us, and I am hoping that during the course of our discussion today I will be able to highlight some of the work that we are doing in addressing some of those challenges and areas that have been already highlighted to the committee during this inquiry.

The CHAIR: Would you like to talk us through that? We have had so much evidence referencing various pieces of work that are underway in the PUO, so maybe if you could give us an overview of what is underway that is relevant to this inquiry, and then we can go from there.

Mr Khan: Indeed, excellent. A very good way to start.

Just a little bit of context first, and I thought that this is probably quite pertinent to the transformation that is occurring. The latest estimates we have of the PV penetration in the south west is around nearly 930 megawatts of capacity at present, latest estimates.

Mr D.T. REDMAN: In the SWIS?

Mr Khan: In the SWIS only. That is equivalent to about 190 to 200 megawatts a year of installation under current levels of installation. That is equivalent to building a 200 megawatt electricity generation each year. Now, that is a significant transformation that is occurring, and if the penetration levels continue to increase—and all indications are they will increase—that is a significant change we are seeing in our electricity sector.

In recognition of that as well as some of the other challenges we have had in terms of our regulatory framework requiring particular changes to deal with some of the specific challenges, the Minister for Energy has asked us to undertake a number of reform work programs. The first and foremost of these is to look at implementing constrained network access to Western Power's network. This is a fundamental reform work that is required to allow for lower cost large-scale generators to connect to our transmission network. At present, we kind of have a half pregnant network access framework that largely stems from the Electricity Networks Access Code in the way that has evolved; that has meant that a lot of large generators have been able to secure firm access rights to the network.

That worked really well when we put the market arrangements in place back in the mid-2000s to ensure that we have sufficient generation capacity to meet the increase in demand, but what that has meant is that, as this fundamental transformation has occurred, we will want lower cost renewables to connect to the network, the network is getting significantly underutilised. So all the new generators that want to connect, who can offer lower cost generators—and these happen to be the renewable generators at present—would have to pay to augment the network; increase the capacity of a network that is already being underutilised. But the fact is, as I have already demonstrated, we have about 930 megawatts of capacity from solar PV of the 6,000 megawatts of capacity we have. That is a significant challenge.

That is one of the things we are working on at the moment. It is a significant body of work, because it is not only about changing the way the connection and access framework works, but also updating the access code, which is the governing framework around how Western Power's network is regulated. That is a fundamental bit of work that we commenced well over a year ago, and we have been undertaking extensive industry consultation and trying to demonstrate the benefits of moving to constrained access.

We recently published a report that showed that the benefit to consumers would be in the order of $200 million over 10 years if we moved to constrained access, and that is because of lower cost generators connected to the network producing electricity to supplement already the growing demand that consumers are putting —

Mr D.T. REDMAN: What is $200 million in percentage terms for someone's power bill?

Mr Khan: That would equate to around—the memory escapes me, but I can take that on notice and provide that to you.

Mr D.T. REDMAN: That would be great, yes.

Mr Khan: That is the first bit of work we have got going. The other bit of work is we have a Wholesale Electricity Market where electricity is sold by generators into the market, the retailers purchase it, and that is something that is well and truly hidden from the consumers. This is all designed to ensure that we get the lowest cost wholesale electricity from the generators.

That wholesale market has not really evolved much for the last decade or so. As we have got more renewables coming in, we have rules and regulations that are in place that have not kept pace; we have IT systems and things that facilitate the exchange of electricity between the generators and the retailers. All of that is really due for significant change. We know that that has always been on the cards, so what we are now doing is undertaking a program of work which Aden is leading that is looking at making significant changes to the way our wholesale market works to ensure that we get the least cost outcomes for consumers. That is very strongly related to the work that we are doing in constrained access, because if we are going to have generators connecting into the network on an equal basis and we want to make sure that those generators that are the lowest cost get dispatched, we need what we call a "dispatch tool" that allows for those generators to somehow

have a merit order that the market operator can dispatch. At the moment, we have a very crude system.

Mr D.T. REDMAN: For a diversity of services.

Mr Khan: Correct.

Mr D.T. REDMAN: Cost base.

Mr Barker: And also reflecting the physical constraints within the network, which currently are managed via very costly manual processes by the operator.

Mr D.T. REDMAN: Ancillary services.

Mr Barker: All dispatch generation, which would include ancillary services as well.

Mr Khan: At the moment, what is happening is that, based on price, all of the generators are stacked according to how expensive they are—least cost to most expensive—and that is determined through the market mechanisms we have in place. But because we have this unconstrained access issue and we have this rising PV penetration that is requiring a lot of manual intervention, that merit order dispatch is having to be breached effectively on a manual basis to allow for the lights to stay on; to make sure that the generators are producing the electricity and the ancillary services that are required to be maintained. So that is actually fundamentally undermining the objective of setting up a market that provides least cost dispatch.

The CHAIR: Will you be shortening dispatch intervals as well? Will you be shortening the intervals within which the price signals come through?

Mr Barker: If I might speak to that briefly. As part of the Wholesale Electricity Market reform program, we are planning on releasing a consultation pack prior to the end of the year. There was a considerable amount of consultation that was undertaken as part of the previous electricity market review with, I think, a final paper released back in mid-2016. I think we want to reflect that there has been a lot of discussion taken place already, and a lot of work; a lot of good work.

Stakeholders have already presented their views on a range of matters, and I think there are some matters which make sense for the market by way of evolution which you would want to bed down before you go on to assess those sort of second and third order parameters for the wholesale market. Dispatch length is probably one of those.

The CHAIR: What, as a primary or a secondary?

Mr Barker: I would say it is one of those things that you could lock down early with market participants in terms of it being a feature of the market. So, yes, more frequent dispatch.

The CHAIR: I am conscious that we are in overview phase, but I think it is probably material to bring it up at this point in your presentation. I think you are quite right to point out that at the moment dispatch is determined by the energy price bid-in for any particular interval. There is obviously an ancillary services market for the provision of certain types of ancillary services, but I am sure as you have had a look through the evidence that we have been going through, there have been a whole range of other, if you like, quasi or additional ancillary services that have been identified by market participants but are neither defined, valued or remunerated at the moment.

I would just be interested to understand what the PUO is doing with regard to things like inertia and VAR support and voltage control and flexibility; what your views are. It has also been put to us that those things do need to be defined, valued or remunerated, but a half-hour by half-hour or 15-minute by 15-minute market for those things is potentially excessive and going to be overly complex.

Nonetheless, there does need to be some sort of signal sent through the market to ensure that those additional ancillary services continue to be provided to enable distributed energy resources.

Mr Barker: Throughout the Wholesale Electricity Market reform program, it is a fundamental trade-off that we consider the benefits of additional granularity in the market by way of economic efficiency and the additional complexity that that creates for market participants. I would say that that is probably a ruler which we run over pretty much every proposal that is put forward as part of the reform program. Ancillary services is an explicit part of the reform program. If you look on the Public Utilities Office website, it is there under the power systems, security and reliability workstream.

What we are doing precisely in the first instance is a review of ancillary service definitions, so how do you actually define the services that are required. An examination of what services, once you have defined them, will be required both now and on an ongoing basis as the generation mix changes, and we have more intermittent generation, PV and wind and potentially dispatchable batteries coming on board as well, and then the third step in that process is how do you most efficiently procure those services from the market?

The CHAIR: What is the time frame for the delivery of that piece of work?

Mr Barker: The work on defining ancillary services is already underway. The Public Utilities Office has engaged expert engineering advice on that right now. We will be consulting with market participants in the new year on those definitions and a view regarding future needs with further consultation regarding the market mechanisms to procure them certainly in the first half of 2019.

Mr Khan: Just adding to that, the changes will very likely require changes to the Wholesale Electricity Market rules, which will then be made either by the Rule Change Panel through an already existing Rule Change Panel process or through the Minister for Energy.

Mr Barker: Just quickly on ancillary services as well, something that is fairly hard-coded into the market and the way it operates right now is the concept of facilities and how they are defined and how they participate in the market. You are a generator or you are a customer, a market customer, which is typically either a very large load or a retailer such as Synergy or Perth Energy. The market framework for facilities in the participation market is not really designed at present for entities that are both a load and a generator, such as battery storage would be.

The CHAIR: Yes, and a network service provider as well.

Mr Barker: And potentially a network service provider. I suppose the important point to make being that storage can perform a wide range of services, both as part of the Wholesale Electricity Market and also for the network service provider, by way of a network-control service. As part of the Wholesale Electricity Market reform program, we are looking at the registration framework for market participation as a whole. That is, I suppose, our Grail in that regard: all technologies are able to participate in all markets within the Wholesale Electricity Market.

The CHAIR: On a tech-neutral basis.

Mr Barker: On a technologically neutral basis, so you will be able to bid in energy, you will be able to provide ancillary services, you will be able to participate in the reserve capacity mechanism.

The CHAIR: Who are you bidding into, AEMO or Western Power? Who is procuring these services, do you think?

Mr Barker: I think that is a secondary question. Obviously, there are different markets. There is a market just for energy; that is what I was referring to. In terms of how it is procured, that is a fundamental question as part of the ancillary services review. It speaks to that trade-off between

complexity and granularity, and having sort of a perfect market on one hand and having something that is fit for purpose for the WEM and workable and understandable for market participants. Currently, just by way of two examples, you can have a sort of open real-time market for ancillary services or AEMO can procure them on a bilateral contract basis. That speaks to two options in that trade-off.

The CHAIR: It is just that it has been such a big question through the course of this inquiry: who is doing what and what the aim is?

Mr Y. MUBARAKAI: That is the million dollar question.

The CHAIR: Depending on how you look at the market, AEMO could face the supply side and demand side and procure the whole box and dice, and Western Power could be a bidder or a procurer in that process; Synergy could. The delineation—how the functions of the corporations are defined; how the different actors participate—is a very key part of also working through what these assets are; what services they provide; who legitimately owns and operates them. Is that part of the piece of work that you are doing? If not, do you have any views on the appropriate delineation, and I guess also operational footprint? Let us park operational footprint. Let us go to the first question first.

Mr Khan: The first thing I want to point out is a lot has been made about ancillary services. The current state of play is that the ancillary services market is quite bespoke. It is not really even a market. There is only a market for one type of ancillary service, which is load following ancillary services. That is the only one that is actually procured competitively at present. The majority of it is in fact provided by Synergy, because Synergy, as a government-owned entity, has a significant generation fleet. In fact there is a requirement in the rules for Synergy to provide some of these services, or, where they are not providing those services, they are required to provide back-up services should the system operator not be able to procure these services on a bilateral basis. The default setting is Synergy is providing these services because it has the generation fleet.

The CHAIR: Absolutely, but there is a cost and an increasing cost associated with Synergy's provision of those things for free as part of the performance requirements for its generation assets, and the fact that the value of that is not being recognised distorts market signals.

Mr Barker: That is a fundamental part of the ancillary services review. I would say, in addition to that, something that was discussed at length previously is the fact that Synergy bids in as a portfolio. The individual generators are not taken as individual generators; they are effectively treated as a single generator. In part because of that, you do not have a lot of visibility as to where those services are being provided, whether they are being provided as part of the ancillary services contract or in the ancillary services market, or they are being provided somewhere else, just by way of either the behaviour of a generator in everyday dispatch or the individual physical characteristics of that generator effectively providing a service to the market for free.

We have the ancillary services market review there as part of the Wholesale Electricity Market reform program. Another market setting that is being considered, and I think is included as well in our next consultation pack in terms of those market sectors that have been discussed previously, is Synergy's bidding into the market on a facility basis as opposed to a portfolio basis.

We do need to work through the implications of that, though, because currently each of those facilities is not geared up to be dispatched. Each is dispatched in a bespoke way with different control systems, different metering onsite. Synergy's internal processes—I do not know whether Synergy spoke to this as part of their presentation to yourselves earlier—will need to work internally as to how they trade with those facilities as individuals rather than a portfolio. So there is quite a lot of work to be done.

Mr D.T. REDMAN: You talked about Synergy being like a default provider of those services, and that they have to, as part of the rules, carry capacity to manage some of those services. My question is how much do you understand Synergy in terms of loading up its balance sheet to supply that in an inefficient way as distinct from an efficient way?

Mr Khan: I do not have information on that.

Mr Barker: That is actually a fundamental problem of the current approach to portfolio bidding; that you do not have that visibility. That is something that will emerge if we move towards facility bidding; the extent to which those services have been provided by Synergy. The next step is appropriate remuneration for those services.

Mr D.T. REDMAN: If you can get a market mechanism that tests that, presumably Synergy can reduce its balance sheet?

Mr Khan: The idea would be that we can then actually price that appropriately.

The CHAIR: And get the most efficient equipment providing it, right?

Mr Khan: Efficient outcome, that is right.

Mr Barker: Yes, that is right.

Mr D.T. REDMAN: One of the questions my colleague here asked a little while ago in one of the sessions was if you are going to price in ancillary services, how does that pricing in get a benefit for a customer at the end? You have to have something reducing or someone taking something off their balance sheet to change that. You have to have that behaviour there on assets that have a 30, 40 or 50-year lifetime.

Mr Barker: Across the individual markets that make up the Wholesale Electricity Market—you have a market for energy, you have a market for ancillary services, you have a market for capacity—participants need to be made whole across those markets if they are to continue to participate. You are quite right: it is almost like the balloon analogy where you squeeze one bit and another bit bulges out. The costs are borne somewhere in the market. The question is making sure that they are borne in the correct part and that you are remunerating the appropriate behaviour. If certain characteristics of generation—provision of ancillary services—are valuable, they are required by the market because you have increase in intermittent generation, then entities ought to be remunerated for providing those services.

The CHAIR: What I would really like to understand is how price signals can operate to ensure that the most efficient provider of those ancillary services is dispatched. At the moment I understand it kind of happens by accident; it is an indirect consequence of bidding in a certain block of energy at a certain price. The most flexible or the most suitable provider of inertia, for example, may not actually be the one being dispatched to provide inertia. What we are trying to understand is if you do price these different aspects of network or operational services, how is that optimising asset dispatch? Where are the efficiencies? We do not want to just price things if that is just going to lead to higher electricity prices. What we would like to understand is by pricing these things, how does that operate to drive down costs? I guess that is the question.

Mr Khan: One of the fundamental things we are looking at as part of our Wholesale Electricity Market reform work program is that we try and introduce this constrained access which requires this dispatch engine. We are doing separately this ancillary services review. But in designing the dispatch engine, we recognise that to get that least cost outcome mutually we are co-optimising energy dispatch with ancillary services, because often a lot of these ancillary services are quite intertwined with what the generator is doing in dispatching physical electrons.

Mr Y. MUBARAKAI: Smart meters are the key solution to basically getting a clear line of sight.

Mr Khan: For a lot of things. Smart meters are a fundamental building block enabler to not just the wholesale market: on the retail side; on the network side; across the board. That is almost a given: that you have to have that to have that line of sight.

Mr Barker: If I just add one thing to Zaeen's comment in relation to the implementation of improved market systems: there is optimising the generation fleet that we have right now, making sure that they are being dispatched in as efficient a manner as possible to reduce the cost for the market as a whole, but there is also providing signals for new generation to come into the market over time. There is short-term operational efficiency and then there is providing long-term signals for investment, making sure that the generation that comes into the market is providing the services that the market actually needs or, rather, consumers actually need.

The CHAIR: What was the PUO's view of the ERA's views on not allowing Western Power to recover the costs of smart meter and ICT rollout?

Mr Khan: We were very disappointed. When the ERA published their draft decision, the Public Utilities Office made a submission supporting the case for the rollout of the communications element of the AMI. Obviously, as you would know, the ERA did approve the AMI, but not the communications element of it.

The CHAIR: To enable it.

Mr Khan: Precisely. So we see a lot of market benefits in doing so. Particularly in relation to all the work that we are doing, we see that as a fundamental piece of the puzzle. For instance, you know, things like innovative tariffs for batteries and things, it requires appropriate signals to be sent to consumers, and if we do not have that—one of the other things we are looking at doing is potentially, as you would be aware, Horizon Power has been running this MyPower trial. That actually is giving consumers the ability—like a mobile phone plan—to manage their consumption to control their bill. That requires real-time access through your mobile phone for the information to flow to the consumer. Without the comms, we would not be able to do those trials to see those benefits in the south west in Western Power's network.

Mr Barker: In the context of microgrids as well, having a market operator, whether it is AEMO or Western Power or whoever, but enabling them to orchestrate and manage the distributed energy resources—so they are a combination of battery systems and some more discoverable renewable energy like PV—you do need those comms. In the absence of that, you are not going to be able to know what that DER is doing, and be able to control it and dispatch it effectively to participate in the market.

The CHAIR: I want to tease this issue out around the relationships between the GTEs, the PUO and the ERA, because there is an incredible amount of innovation underway. The market is clearly changing. We have a core response regulatory framework where Western Power puts together a proposal around how its assets are valued, the services it provides, how they should be remunerated and how it should be incentivised to perform. They put that in to the ERA, and they put in things like: we want to roll out ITC smarts; we want appropriate pricing to encourage distributed energy resources, but the ERA has come back and said no. I would like to understand, if we have a regulator that is perhaps not moving as much with the times as it could, what is the role of the PUO and what is the role of the government then in saying to whomever, whether it is directing Western Power to put forward a braver, more innovative, not necessarily just being remunerated by building more poles and wires but alternative ways that its prices can operate?

If it is putting it forward to the ERA and the ERA is saying, "No, because we've always regulated assets in a particular way"—perhaps quite appropriately, sometimes they are more cautious—what can the PUO do? What can the government do to say, "Look, the times are changing, we've got to have appropriate regulatory frameworks to accommodate these changes"? Could you expand on that? We really have not got to the guts of this issue yet. It is always said, "It's a policy issue and you guys are the policy engine"; so what are your views?

Mr Khan: Very good question, and in fact it is directly related to me trying to give you an overview of the work that we are doing. The ERA is doing what it is meant to do in following the rules, the regulatory framework. The one that is related to Western Power is the *Electricity Networks Access Code 2004*. That sets out the criteria under which the ERA would assess the expenditure proposals put forward by Western Power. Now, that regulatory framework was put in place back in the mid-2000s, when we did not foresee the need for smart meters; we did not foresee this non-network alternative to poles and wires like standalone power systems that have come along—the framework in which the ERA is applying a criteria that was set back in the mid-2000s when the model was very, very static.

The CHAIR: But the ENAC actually contains quite a bit of flexibility in terms of basically enabling Western Power to put forward proposals on how its assets should be valued. None of these things are hardwired in terms of a particular approach to asset valuation or a particular set of services that are defined or tariffs that are remunerated. None of that is in the code. That is put forward by Western Power, and the ERA then assesses those things. Is it the code that requires amendment, or is there sufficient flexibility in the code for a more creative approach to network access regulation?

Mr Khan: I think it is probably a combination, but largely I think it is the fact that the access code needs to have evolved with the times. We are actually in the process of reviewing the access code, and we are in the process of consulting with industry on the changes that we think need to be made to update, if you like, the regulatory framework for Western Power.

The CHAIR: What is the time frame for that?

Mr Khan: Early in the new year we will launch a consultation paper. This is all kind of coinciding with the constrained access framework which we are intending to have all wrapped up by late next year through regulatory changes. That will have flow-on effects on changes to the access code, so as we are making some important changes to the access code to facilitate constrained access, we are also running this parallel to say we want to modernise our regulatory framework for Western Power; we want to look at these options of non-network alternatives; we want to look at these innovative ways; we want to look at the potential for battery services providing network services that can provide alternative services to typical generation being built; we want to optimise the grid use. All this other stuff has related aspects throughout the access code.

So we are doing this work. By the end of next year we should have a regulatory framework in place, with the proposed changes, with a view to making these changes in time for the fifth access arrangement process, which would commence from 2022—23.

The CHAIR: There is a problem in that insofar as so many industry participants have said to us: we do not have five years, we have to get on and we have to do some stuff pretty quickly in order to facilitate the change. My question to you, then, is how much of the program of work that you are anticipating requires legislative change? How much can be done by regulation? What are the quick sort of policy wins, given that this committee is going to need to make some recommendations to government about things it can and cannot do, or things it could do? Would the ENAC amendments, for example, require a wholesale passage of a package of legislation through Parliament?

Mr Khan: Unfortunately, in the electricity space, the regulatory framework is legislation, regulations, codes, to Wholesale Electricity Market rules; it has its own process to follow. In relation to the access code, the Minister for Energy has the ability to amend that through an industry consultation process, which is set out in the access code, in the legislation that underpins the access code. If that process is followed, the code changes can be made fairly quickly with the due process being followed.

In relation to constrained access, for instance, we do need legislative changes. We are in the process of working through what those changes would be, with a view that the minister would introduce legislation early next year or mid next year into parliament, so that we can get that legislation through and then have all the other necessary changes to regulations, codes and Wholesale Electricity Market rules in place by late 2020 so that we can have a start date of 2022.

The CHAIR: Great.

Mr Khan: Unfortunately, some of this stuff is not overnight changes. It requires changes to legislation; it requires industry consultation; it requires building of systems, procedures; and it requires changes by market participants. So we cannot have changes in three months or six months, because we are either going to compromise consultation with the industry, or we are going to compromise on the potential consequences on consumers, or we are going to compromise on good changes that actually deliver on the outcomes.

The CHAIR: We have had evidence presented to us, though, by AEMO that at the moment they are okay, the system is not about to fall over—I just want to make that abundantly clear, there has been no evidence to this committee, I think, that would suggest that—but that there are operational challenges emerging, and they do need tools to manage particularly the duck curve aspect, and visibility, and the ability to operate or deal with a lot of the network management issues that are emerging. What can be done relatively quickly to assist AEMO without having to present legislation to the Parliament to just try and assist with the transition?

Mr Khan: For that one I think we will certainly deal with that as part of our Wholesale Electricity Market reform work program, because that is well and truly a key focus of the work that AEMO is leading, because that requires changes to the Wholesale Electricity Market rules, which does not require legislative changes. It requires consultation with the industry; it requires the decision-maker to demonstrate that there will be actually market benefits. So either it is a Rule Change Panel or the Minister for Energy makes those changes, and we are already looking at a number of changes or the types of responses that are needed to ensure that we have appropriate arrangements in place; that we have appropriate responses in place to deal with any potential challenges that will emerge in the future.

Mr Barker: Specifically power systems, security and reliability settings are currently under review, so examples being Western Power's technical rules with respect to the connection of generators, and frequency operating standards for participants in the Wholesale Electricity Market. Those are both under review, as is the governance framework for those standards. Currently, as Zaeen was saying, you have market rules over here; you have technical rules there; you have bits and pieces of regulation. We are looking at where all those various standards sit; how they are governed; what the change mechanisms are within them, because these mechanisms have remained somewhat static for a long period of time, and shifting the various bits where they ought to be, to within the party that has the best ability to manage the risks and the issues associated with that issue. For instance, those things that were previously managed by system management under Western Power, some of them may still sit in the technical rules; they may be needing to move into the WEM rules, where there is a quite well-articulated change process which is very transparent as well.

The CHAIR: The rule changes are generated through the WEM rules process itself, is it not?

Mr Barker: Anyone can raise the need for a change to the WEM rules, yes.

Mr Khan: In fact, the Public Utilities Office is taking the initiative. Where we see that there are some quick wins, we are actually putting in rule change proposals ourselves to the Rule Change Panel. We recently took two proposals to the Market Advisory Committee that is establishing the Wholesale Electricity Market rules framework, consulting with them on: here is a problem, the industry said this is a problem, this is a high priority issue. One of them had to do with the cost allocation for the spinning reserve ancillary services, the way the methodology is set out in the wholesale market rules, so we want to change that.

The other one is the constraint of payments that generators get when they are constrained off effectively in the network where it is resulting in inefficiencies in market payments to those generators. That has been recently highlighted as a critical issue that is costing market participants fees which then ultimately get passed on to consumers, so we are moving quickly and swiftly to ensure that that issue is addressed and appropriate changes are made so that we can weed out the inefficiency in the market.

The CHAIR: So the changes you propose to the MAC, are they publicly available? Do you publish proposed rule changes and the outcomes of those decisions?

Mr Khan: That is right, all of MAC's deliberations are published. My understanding is that at the last MAC meeting, when we presented our proposal, there was very broad support for progressing those rule changes. So we will now be moving to formally submitting those two proposals to the Rule Change Panel for the formal process to kick off.

The CHAIR: How frequently does the MAC meet?

Mr Barker: I think it is more or less monthly or thereabouts.

Mr Khan: I am not sure, but I am happy to provide any information on that.

The CHAIR: I used to sit on it. I think, Aden, you and I both sat on it many years ago when we both wore very different hats, when the market was first starting out.

Mr Khan: Chair, if I could also just talk very briefly to a comment you made about the quick wins and the recommendations that the committee is looking at making. One of the things that we are looking at—there is a critical need to examine, but we have not actually commenced any work—is around the licensing framework, particularly in the context of microgrids. This is an emerging area.

The CHAIR: Yes.

Mr Khan: It is not necessarily a barrier, but it is fundamentally the licensing framework was not designed to deal with these new business models we are seeing. This has a very real impact on the end-use consumers about protection in particular.

Mr Y. MUBARAKAI: In particular it is the technology.

The CHAIR: This is the ERA's licensing framework?

Mr Khan: The licensing framework that broadly gets enlisted. We have kind of a function to play in terms of exemptions from the licensing framework, whereas the ERA is set up to actually grant those licences and audit the actual licensees. So what we are actually seeing is that the licensing framework itself, largely all of the consumer protection elements that are provided to consumers flow through from that licensing arrangement, and we are seeing an increasing number, for instance, of solar power purchase providers who approach us. PUO has a role to play in advising the

Minister for Energy on exemptions, because that is a least-cost way of ensuring that those licence exemptions are put in place so that the solar PPA providers can continue to provide those services.

That is almost a bit of a bandaid solution, because the existing licensing framework that we have is not geared or designed to deal with that issue. But going forward, as we see more and more of these, the question does get raised that the licensing framework was put in place for a very special reason. If we have more people outside the framework than actually in, then something seems a bit odd, and we need to really look at that to make sure that our framework is moving with the times and new business models.

The CHAIR: It is a nice segue into where I did want to go next, around operational footprints and who is doing what and where. The microgrids and DER topic, if you like, would appear to have three distinct aspects to it: the standalone power systems that Horizon Power operates; the fringe-of-grid parts of the SWIS, the 52 per cent of assets that serve three per cent of customers; and then the meshed parts of the network. It is a theme that keeps coming up over and over again of who does what and where. You have vertically integrated GTEs sitting there with a very clear line of sight from molecule conversion to electron production to consumption; then you have Western Power and Synergy sort of sitting there on the fringe of grid; Horizon Power very well geared up to provide microgrid solutions; and Western Power and Synergy increasingly developing their capabilities and doing their trials, but all three of them notionally looking at the same sorts of things, with manpower or human resources assigned to that.

There is a lot of scope for duplication and overlap; potentially competition between the three providing services. This definition of what the GTEs do, who does what and where, is a very material issue that is repeatedly coming up. I wondered what the PUO has underway in terms of looking at the functions of the GTEs, what the Electricity Corporations Act says they can do, and whether they are doing it. Everybody is doing pilots that seem to be doing very, very similar things. All three of them are doing it because it is perhaps not clear who should be doing it, or some are just doing it because they find it interesting, and it is. What are your views on clearly delineating between the roles of the GTEs and avoiding duplication and overlap?

Mr Khan: We have a body of work at the moment which we are in the process of consulting. We are about to consult with the industry on standalone power systems, and this is an area where this particular issue is clearly evident, where you have that vertically integrated business, Horizon Power, already doing this. The barriers we are actually seeing in standalone power systems being deployed is in the Western Power network.

Just very briefly about standalone power systems work: we are looking at what the regs should really be saying and one of the key barriers that you have is the actual functions and roles and responsibilities for the electricity corporations under legislation. For instance, as you will be very well aware, Western Power has a very, very specific function prescribed in the Electricity Corporations Act that says that it is actually effectively a network operator–distribution and transmission operator. Without even looking at the issue of which entity should be doing what, the fact is that Western Power is not able to look at options unless it is potentially through a trial, and that kind of allows it to bypass.

The Public Utilities Office has in the past, and is currently, supporting the demonstration phase of the standalone power system trial on the basis that customers remain connected to the powerlines; that they are not removed. That, in part, is designed to ensure that customers remain connected so that they can continue to get supply should the demonstration phase result in some sort of issues; but secondly, also, a more legal issue —

The CHAIR: Yes, so nobody goes to jail for doing it!

Mr Khan: I was going to say there is no violation. I am not sure you would go to jail for violating that particular thing, but certainly it is not violated. We are doing that work. In looking at the barriers, the issue that has come up is: what should be the role of the electricity corporations? We have not landed on a specific outcome on this, but we are hoping that this will get fleshed out over the coming months as we consult with the electricity corporations and we consult with the industry about the role that they see playing as well in terms of the provision of services or external power systems.

In addition to that, the Public Utilities Office, now that we are part of the Department of Treasury as well, we are working with the Treasurer and the Minister for Energy looking at the role of the GTEs more broadly. That issue is being looked at in light of should there be a broad objective set for all the three electricity corporations so that they are all geared towards that single objective rather than pursuing their own commercial interests as whole of government.

Mr Y. MUBARAKAI: I will just play a scenario for you and if you can just share your thoughts on that: the current situation is, post-2004, and we are discussing some of the changes that you are recommending. But if, for example, the situation was prior to 2004 in its current state right now, which architectural framework do you see to be more effective right now, moving forward?

Mr Khan: In terms of the electricity corporations?

Mr Y. MUBARAKAI: That is correct.

The CHAIR: I think you are talking about vertical integration.

Mr Y. MUBARAKAI: That is correct. So what I am asking is: post-2004, we created Western Power, we gave it certain structures, Horizon and Synergy. What I am saying is prior to that, it was one entity. So which architectural framework to you seems to be the better option for the current situation right now we are in as we look at the future?

Mr Khan: I think there are two issues there. One is that at present, each of the corporations have very specific roles, and you have to sort of think about whether or not these roles will continue into the future. Clearly Western Power has a role of a network operator transmission distribution. What do we see the role of that going forward? There is a strong move to say that if standalone power systems and microgrids is kind of that decentralised model, then they are kind of seeing a very different world for themselves.

It is not my position to offer a view about whether or not these businesses should be combined together, but I certainly see that the future in the energy space, whether it be private sector or government business, is kind of integrated entities like Horizon Power, because you no longer have the traditional model of generators, transportation and retailer. It is all merging into one—one service provider. So consumers are not out there saying: I want to generate electricity; I want it buy it from here; I want to provide transportation services; I want a single point so that if I want to sell electricity, I can sell it to this one individual company; if I want to buy electricity, I can buy it from that same company. So looking into the future more broadly, it would make sense to see kind of a one-stop shop–style of a business.

The CHAIR: Sort of like an energy solution provider.

Mr Khan: Exactly, and we are seeing that with the private sector. Things like Power Ledger are coming with these models where it is not just a single product; it is a service that they are offering. So we have to think of it from a service point of view. What is it that the consumers are wanting? They want different kinds of services.

Mr Barker: To reiterate the previous point, in respect of the licensing framework, right now we really do have a one-size-fits-all approach, which is predicated by services that Synergy has

historically provided to residential customers and small business. That one-stop shop with that variety of services and that interaction, that current framework might not be fit for purpose from a price consideration.

The CHAIR: We have had some really interesting ideas in this space presented to us. We have some community energy cooperatives that would like to set themselves up in Geraldton or Kalgoorlie or whatever. We have had other companies say that all they want to do is be able to sell the tech to a Western Power or a Synergy, because they do not necessarily want to hold a customer relationship with all of the attendant risks around credit risk and customer default, and they are quite happy just to contract with a Western Power or a Synergy. We have had customers express a view that they do not necessarily want a contract with a guy with a pick-up truck with a battery and a PV; they want utility grade Western Power or Horizon Power or Synergy—someone utility grade standing behind and holding that relationship, because they are a trusted brand and a trusted operator.

So there are all sorts of ideas washing around in this space about the role of the GTEs, the role of the private sector, and how these things are rolled out. Obviously you guys would have been giving thought to those sorts of issues, particularly the role of non-GTE market participants in this space.

Mr Barker: I think it really depends on what we are talking about. If we are talking about the development of microgrids and the provision of those types of services within the existing distribution network, or adding on to that, I think stand-alone power is a different issue with different considerations.

The CHAIR: Yes. Let us talk about in the SWIS.

Mr Barker: Within the SWIS, I think a fundamental issue is making sure that business models as they evolve, regardless of who they are provided from, are not predicated on avoiding costs that are then imposed on others. So if you have a microgrid, let us say a new residential development, and you are wanting to manage the distributed energy resources, batteries, PV, behind the meter, behind the single point of connection—which I would argue the current regulatory framework possibly does not allow anyway, but say that was your business model—then you are still imposing costs on the network by virtue of your participation in the market, your connection to the SWIS, the reliability and security benefits that that provides, but under the current tariff frameworks for network charging you might be avoiding those costs.

When we look at this, I think we look at it from short term, you know, what are the opportunities and what are the barriers. But over the long term, how can we ensure that we are correctly incentivising behaviour to promote security and reliability of supply for not just those consumers who are purchasing services through a microgrid operator, but other customers as well, and the costs that they are avoiding are not then being imposed on others.

The CHAIR: When you talk about tariff reform, then, what are the sorts of alternative tariff reforms that you have potentially been considering to incentivise the right rollout of assets, or the right configuration, and making sure there are not cross-subsidisations in play?

Mr Barker: There are a variety of different options, and I think there necessarily is a split when you are considering network tariffs versus the tariffs that households pay, because of the sophistication of customers, their desire to engage in the nitty gritty detail of those things. Zaeen referred to MyPower previously, and MyPower is an example. It is not the only way to do it, but it is an example of demand charging where, over time, the costs that the customer is imposing on the network and receiving are reflected by way of the tariff, and the customer is actually getting signals regarding their behaviour, and—I think this is really important as well—the opportunity to modify in order to

manage their costs, which is not something you necessarily have if you just have a large fixed charge, which would be one way of recovering costs. You can have a 100% fixed charge. You are recovering all of your costs, but you are not providing much in the way of signals for people to behave in a way that enables them to manage their own costs, and also promote behaviour that reduces the cost of the supply system as a whole.

Mr Khan: If I could sum up this tariff issue, in my previous roles I have done a fair bit of work in tariff reform. I think the way to describe it is that you need to send signals to consumers about what to consume; how to consume; where to consume. That fundamental has not changed as we are transitioning into this new world, new technologies. That fundamental existed in the traditional model; it still exists in the new world. We did not quite get it right in the traditional model, and as we move into this new world, we should make sure we do not stuff it up again. We have to get it right. We have to send signals to consumers, end users, whatever you want to call them, about what to consume, whether it is batteries, whether it is solar PV or whether it is electrons flowing from whatever technology.

Mr Y. MUBARAKAI: EV charging.

Mr Khan: Exactly—EV charging. Where to consume; where you are located in the network; where there is congestion or no congestion; and how to consume. Time frames. Times. Is it adding to peak demand; is it not? So if we get those things right—and that is fundamentally what tariff is all about, those three things. If we get that right, it does not matter what technologies come in, it does not matter what services consumers provide, we will get it right.

Mr Barker: An example being, just on a household scale, an individual household battery—Tesla Powerwall. Having that charge as fast as it can will not necessarily provide any benefits to anyone other than obviously the customer. Having that battery charge a little bit slower could have the potential to help stabilise the network and enable other plant in the market to operate more efficiently as well, reducing the costs for everyone as a whole.

The CHAIR: As part of this piece, what work is underway? With the MyPower trial, I am aware that a piece of analysis has been done on that trial to demonstrate that there was a fairly sizeable proportion of vulnerable customers who did not benefit, and there are a whole heap of people who are not going to sit there on their mobile phones working out how to optimise when they run their pool pump, if they even own a swimming pool, or that do not own PV on their rooftops, or cannot afford batteries.

What work is underway to make sure or to consider not leaving vulnerable customers behind, and making sure also that they do not pay proportionately more for—I am particularly thinking about increased fixed charge. If you are well off enough to afford PV, you can defray a lot of your costs, but vulnerable households always seem to be left behind. So what work is being done to look after the interests of vulnerable consumers as well?

Mr Khan: My understanding of the MyPower trial is, in fact, that I think the vulnerable customers may have been better off; I think the ones that were not as better off are in the Broome and Port Hedland trials that Horizon Power has been running has been around those who actually consume at certain times only. So we are talking things like sporting —

The CHAIR: Could you take that on notice because I do recall—a bell is ringing in my head—that there was a proportion of customers who just were not benefiting.

Mr Barker: My recollection is that Zaeen is in fact correct. We are talking about averages here, which is not to say that there is not a proportion of customers that could potentially be worse off. As part of the MyPower trial a lot of work has been done by Horizon Power into looking specifically at the

effect of those tariffs not just on concession cardholders, but on other types of vulnerable customers as well. I think it is fair to say that we already have a concession system for providing concessions to customers deemed to be vulnerable. That will require reconsideration under alternative tariff charging. It is just a matter of amending it to suit the changing circumstances because there will be a lot of customers who are better off.

Mr Khan: And I think it is also fair to say that we are working with Horizon Power looking at the MyPower trial, particularly those customers who may not be able shift their consumption as easily to benefit from the pricing signals. What options you can provide them? I mean, that is the benefit of doing this trial—you are able to test all sorts of various options and see which one works best to deliver the outcomes that we want, and we want to see good outcomes for consumers. The point I was making about the MyPower trial, those are the consumers who seem not to be able to take advantage of these pricing signals, those that had the least ability to move their consumption. An example might be a sporting ground that only turns its lights on when it is dark, and that happens to be the peak time when everybody else is having their lights on.

For them, now you might say, "Okay, if they have got pricing signals based on the actual peak usage, which is in the evening, they are not going to turn the lights on during the day; they need to have the lights on in the evening. Now you might say that they will not be able to benefit from MyPower, but the alternatives may be for them, they could still be on the MyPower tariff, but if you could supplement that by, say, installing a battery storage and solar panels, for instance, so that during the day, the battery gets charged from the solar panels on the stadium roof and then the three or four hours in the evening that they are needing to turn the lights on, the electricity is coming from the battery. That may well be a win–win situation both for Horizon Power as well as for the sporting facility.

Those are the kind of things, specific to your question, of what are we doing. We are working with Horizon Power to explore how we can use some of these alternative options to get better outcomes for all groups of consumers.

The CHAIR: This is the last hearing in this inquiry, so you are the lucky last! We have obviously an opportunity to make a series of recommendations to government. What would you suggest we consider as, I guess, our first order of priorities? Given that this is—we hope—a multi-partisan process where we can make some sensible recommendations about the things that just need to happen and that are needed to facilitate distributed energy resources, what would you suggest to us we consider as we develop our recommendations?

Mr Khan: I will kick-off with a couple. I think that it is really important that we push ahead with constrained access changes, reform, because that will actually help deliver lower cost energy to consumers, and it will ensure that the existing capacity on the grid is maximised. This will also mean that the opportunities that potential distributed energy resources present will in fact be maximised as well, and that does require legislative changes. The second one would be that we need to look at the licensing framework. That is fundamentally important to ensure that we get the consumer protection's objectives right in this new business model—the new world of distributed energy resources—going forward.

The third one I would recommend to the committee is supporting changes around standalone power systems, to allow that to occur, because that is, I think, part of reducing the cost both for the utilities as well as for consumers. In fact, the benefit, as you would well know, of standalone power systems means better reliability for those fringe-of-grid customers as well, so there is a direct benefit to the individual customer, a benefit to the network in terms of lower cost of augmenting

or replacing the network and, if that is the case, all consumers who are connected remain on the network benefit because they do not have to achieve that. The work that needs to be done —

The CHAIR: The overall cost to serve reduces as well.

Mr Khan: Everyone comes down. The work that we are doing on standalone power systems, we are actually just looking at what those barriers are but we then need to take action to address those barriers, because the standalone power system opportunity is there knocking on the door and that is quite a significant change to our regulatory framework and to our licensing framework—it flows on across the entire supply chain. That change would be significant and would need to happen. Those are my top three.

Mr Barker: I would say further to Zaeen's comments on constrained access, supporting changes to the Wholesale Electricity Market that dovetail with that to enable that safe and efficient operation of the market, consideration of the need for ancillary services and the ability for different technologies to participate in the provision of those services as well, which I mentioned before. I absolutely agree with Zaeen in relation to the licensing framework. I think it is potentially quite a big job and it really speaks to some of the fundamental bedrock of the regulatory framework for customer protection and what we do in WA needs further consideration; and, finally, continued support for trials like MyPower, thinking around how we best provide those signals to customers, not just around how they consume energy but also invest in technology like batteries and PV.

We have already got more than one in four households in the SWIS with PV. We do not have that with batteries yet, but all the signs suggest that battery prices will continue to decrease, customer appetite for those types of technologies is there, so the investment will happen.

The CHAIR: What do you think about federal Labor's announcement around the rollout of subsidised batteries? Have you been thinking about that? That must be on your radar.

Mr Khan: We certainly are thinking about that. The Minister for Energy has asked us to look at—we have the renewable energy buyback scheme rate that remunerates households for the energy that is exported into the grid. We are looking at how we can use that to ensure that efficient decisions are made by consumers so they can actually maximise the value of their investment. As part of that, we think batteries are definitely on the horizon as supplementing that benefit that the consumer gets from having solar PV. As part of looking at that framework, we are looking at what opportunities there might be to allow for battery storage incentives to be provided to consumers. As to whether that results in subsidies remains to be seen, but what we do know is that we need tariffs that are designed for batteries specifically, because this is something that we do not have any previous history of looking at how to price this.

Batteries are a completely new way of saying it is all about two-way flows. It is drawing electricity and it is pumping electricity into the grid. You have these two things. We do not have tariffs at the moment that are designed to capture that. We know that batteries are coming—in fact, a few households in Western Australia already have batteries—but we do not have a pricing structure that allows us to provide the right signals.

The CHAIR: And, indeed, some technical issues as well when you start counting the capacity of a battery plus the capacity of the PV when Western Power is pricing up a connection. That is a bit of a disincentive. There are some funny quirks as well in how we actually physically install these things and the technical rules that sit around that.

Mr Khan: We have not commenced any work yet, but broadly the distributed energy resources itself has these various issues, like doing technical standards. What should be those incentives or signals

that we provide to allow for battery storage to come in now. We are doing bits and pieces of it, but there is no kind of overall distributed energy resources plan as such to bring it all together.

The CHAIR: Would it be helpful to have one?

Mr Khan: Indeed; indeed!

The CHAIR: Would it be helpful for this committee to recommend that we do one?

Mr Khan: Indeed. Because in fact some of the work that we are already doing kind of feeds into that. But having that broad road map kind of picture of this is where the distributed energy resources future is, and these are the kind of things that we need to do will be particularly helpful, I think—definitely for the consumers who are looking to make those investments and for the industry that is looking at opportunities of additional new revenue streams. I think that that would be something that would also be quite encouraging to see.

Mr Barker: Going back to that analogy of the Wholesale Electricity Market, you want it to operate efficiently but you also want to provide the right signals for technology as it comes in. With batteries and new DER, you want to provide people with the correct signals when they actually install it, so the technical settings, the settings for that connection, and then once they have installed it, you want them to operate it in a way that benefits not just them but the whole power supply system.

The CHAIR: That is great. Thank you very much.

Mr Y. MUBARAKAI: You guys have been awesome. Thank you so much.

The CHAIR: We really appreciate the support the PUO has provided to us. I want to put on the record our gratitude. Thank you very much.

I will proceed to close today's hearing. Thank you for your evidence before the committee today. A transcript of this hearing will be emailed to you for correction of minor errors. Any such corrections must be made and the transcript returned within seven days of the date of the letter attached to the transcript. If the transcript is not returned within this period, it will be deemed to be correct. New material cannot be added via these corrections and the sense of your evidence cannot be altered. Should you wish to provide additional information or elaborate on particular points, please include a supplementary submission for the committee's consideration when you return your corrected transcript of evidence. Thank you.

Hearing concluded at 11.41 am

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