27 April 2018

UNIONSWA
WA's PEAK UNION BODY

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Ms J J Shaw, MLA
Chairperson
Legislative Assembly
Economics and Industry Standing Committee
Parliament House
4 Harvest Terrace
WEST PERTH WA 6005
Email: laeisc@parliament.wa.gov.au

Dear Madam/Sir

UnionsWA and ASU WA Branch submissions to the Inquiry into Microgrids and Associated Technologies in WA

UnionsWA is the governing peak body of the trade union movement in Western Australia, and the Western Australian Branch of the Australian Council of Trade Unions (ACTU). As a peak body we are dedicated to strengthening WA unions through co-operation and co-ordination on campaigning and common industrial matters. UnionsWA represents around 30 affiliate unions, who in turn represent approximately 140,000 Western Australian workers.

Please find attached the submission to the inquiry from our affiliate the Australian Municipal, Administrative, Clerical and Services Union (ASU) WA Branch. UnionsWA endorses their submission, and calls the Standing Committee's attention to this paragraph on its page 5:

> *The current Labor Government went to the 2017 election with an anti-privatisation platform and overwhelming won. With an increasing take up of renewable technologies by consumers it is imperative that the GTEs of Western Power, Synergy and Horizon be given the capacity to continue to further develop and invest in the microgrid field, thus retaining network safety and security in the hands of government control. Re-investment in a directly employed, highly skilled and experienced workforce is an absolute requirement for the future of these GTEs.*

In 2011 UnionsWA, with the support of public sector unions, launched the Save Our Services (SOS) campaign which aimed to ensure all West Australians, particularly those most in need, can access decent health care, schools, public transport and other government services. This can only be done by keeping public assets in public hands and to that end it fought the previous State Liberal-National government's agenda of privatisation, outsourcing and cuts. The SOS campaign wants WA to be a state in which the public sector restores balance to the economy in order to build employment, income and wealth for everybody. For this goal to be achieved, it is vital that the working people of the public sector have the skills, training and employment conditions so as to be flexible, adaptive and innovative in meeting the needs of all Western Australians. This is why, as the ASU states, GTEs in the energy sector must be re-invigorated to provide long term, permanent job opportunities. This can only be done if they remain in public hands while they take up the task of developing and investing in microgrids and associated technologies.

UnionsWA and its affiliates thank the Standing Committee for the opportunity to make this submission. Please contact me on 08 9328 7877 or MHammat@unionswa.com.au if you would like to discuss matters further. We are happy to appear before the Inquiry to discuss our submissions directly.

Yours sincerely

Meredith Hammat

Secretary

ASU Submission

Inquiry into Microgrids and Associated Technologies in WA

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Date:	27 April 2018

Introduction

1. Nationally the Australian Municipal, Administrative, Clerical and Services Union (ASU) is one of Australia's largest unions, representing approximately 135,000 members.

2. The ASU was created in 1993. It brought together three large unions – the Federated Clerks Union, the Municipal Officers Association and the Municipal Employees Union, as well as a number of smaller organisations representing social welfare workers, information technology workers and transport employees.

3. Currently ASU members work in a wide variety of industries and occupations because the Union's rules traditionally and primarily cover workers in the following industries and occupations:

   - Electricity generation, transmission and distribution;
   - Local government;
   - Social and community services;
   - Transport, including passenger air and rail transport, road, rail and air freight;
   - Clerical and administrative employees in commerce and industry generally;
   - Call centres;
   - State government;
   - Water industry.

4. The ASU has members in every State and Territory of Australia, as well as in most regional centres. Around 50% of ASU members are women, the exact percentage varies between industries, e.g. in social and community services and clerical and administrative around 70% of our members are women.

5. The ASU's rules Part XIV, Part XV and Part XXIII define the electricity eligible membership coverage as consisting of an unlimited number of employees employed by the SECWA, the Gas Corporation, the Electricity Corporation, or a Utilities Corporation and employed by IPM Operation & Maintenance Kwinana Pty Ltd at the Kwinana Co-generation Plant, Kwinana, Western Australia, ("IPM") or any successor, assignee, or transmittee, whether immediate or not to or of the business or part of the business of IPM.

6. For the purposes of those rules:

   "SECWA" means the State Energy Commission of Western Australia.
   "Electricity Corporation" means the body established as one of the successor organisations to State Energy Commission of Western Australia on 1 January 1995 pursuant to the Electricity Corporation Act (WA) 1994 and any successor, assignee or transmittee to the business or part of the business of the Electricity Corporation.
   "Gas Corporation" means the body established as one of the successor organisations to State Energy Commission of Western Australia on 1 January 1995 pursuant to the Gas Corporation Act (WA) and any successor, assignee or transmittee to the business or part of the business of the Gas Corporation.
   "Utilities Corporation" means any of Electricity Generation Corporation (T/A Verve Energy), Electricity Networks Corporation (T/A Western Power), Electricity Retail Corporation (T/A Synergy), Regional Power Corporation (T/A Horizon Power), AlintaGas Ltd, Alinta Limited, ATCO Gas Australia Limited, Monadelphous Energy Services Pty Ltd or any successor, assignee or transmittee to or of the business or part of the business of any of those entities.

"Employees" means all persons engaged:

(1) as salaried officers;

(2) in administrative, clerical, technical, engineering, scientific, professional, supervisory, managerial and operational classes of work;

(3) in occupational health nursing;

(4) in journalism or public relations.

Definition of a microgrid

7. The Australian Trade and Investment Commission report Microgrids, Smart Grids, and Energy Storage Solutions defines them as “Microgrids are autonomous grids which can operate off-grid or connected to existing grids and which can combine different assets and loads.[1] Types of microgrids include standalone, embedded network and large microgrids

[1] Australian Trade and Investment Commission. Microgrids, Smart Grids, and Energy Storage Solutions https://www.austrade.gov.au/ https://www.austrade.gov.au/ArticleDocuments/2814/Microgrids Smart Grids and Energy Storage Solutions.pdf.aspx - Last Modified 10 Jul 2017

ASU comments as they relate to each term of reference

Terms of Reference

a) The potential for Microgrids and associated technologies to contribute to the provision of affordable, secure, reliable and sustainable energy supply, in both metropolitan and regional WA:

1. Western Australia has a small population relative to its land mass, requiring the delivery of electricity across long distances in some cases for small consumer bases. Whilst metropolitan and regional requirements are very different, the common motivators in designing future electricity grids that include generation, transmission, distribution and storage must be safety, security, reliability and cost effectiveness in that order. Whether connected to the grid or not these must be the primary factors in determining the potential to utilise microgrids and any associated technologies to meet the future challenges of the state's energy supply.

2. The Australian Trade and Investment Commission report Microgrids, Smart Grids, and Energy Storage Solutions asserts "As more countries incorporate renewable sources into their energy systems, microgrids are becoming increasingly important. In Australia, they offer a means of addressing challenges such as rapidly rising electricity costs, ageing infrastructure and the need to serve a large geographic area."[2]

3. The Building and Energy Division of the Department of Mines, Industry Regulation and Safety Building and Energy is responsible for the technical and safety regulation of all the electrical production, transmission and distribution, consumers' installations and appliances and most of the gas distribution, production plants connected to gas distribution and consumers' installations and appliances.

4. When SECWA was split in 1995 it was determined that Western Power and AlintaGas would retain responsibility for inspecting all customers connected to their networks and to perform initial breach investigations and EnergySafety was to carry out inspections of installations not connected to a network, and for all regulatory activities. These inspections occur via a sampling system as approved by the Director of Energy Safety and applies to both network operators and installations not connected to a network.

5. The frailty of privatised networks was highlighted in Victoria in the disaster of the 2009 Black Saturday bushfires which claimed 173 lives and destroyed thousands of homes. The Bushfire Royal Commission found that "…five of the 11 major fires that began that day were cause by failed electricity assets; among the fires was that at Kilmore East, as a result of which 119 people died." Further, it found the assets in question were not constructed to industry guidelines at the time and the risk of fallen electricity assets was foreseeable and should have been prevented by following proper procedures. The Royal Commission made it clear that the protection of human life and community safety was the highest priority.

[2] Ibid

6. Once electricity networks are placed in the hands of private companies, either by sale or through long term lease, the only thing that guides decision-making around maintenance and investment in new infrastructure is profit. Electricity networks are delivering a potentially lethal product to users who need certainty that safety and security are the topmost priority. ASU believes this must be delivered primarily through Government Trading Enterprises (GTE) investment and development.

7. Whilst safety and security are of primary importance as they deal with potential loss of life, the reliability of networks is a key element in the development of microgrids and associated technologies. It is estimated that around 26.6%[3] of Western Australian households have invested in small renewable energy systems, mostly solar. It is important that the grid, micro or otherwise, that supports them is up to the challenge that poses.

8. In the current market the independent body, reporting directly to State Parliament, the Economic Regulation Authority's (ERA),has a primary review function that includes the access arrangement and licenses of Western Power. Whilst negotiating on behalf of the Western Australian community with Western Power these access arrangements cover prices, services, policies and terms and conditions that support fair prices, quality services to ensure customers can continue to enjoy a good quality of service while network safety, security and capacity is maintained. Whilst it is recognised that the future grid will look different it is important that the changes are primarily delivered through the GTEs.

9. Financial factors that need to be considered include capital investment in generation, distribution and storage to meet the fast paced changes in the sector in technologies, and how they will impact on potentially reducing the cost to the consumer. These factors are inevitably impacted by constantly developing information and communication technology (ICT). As ICT allows for more and more remote monitoring through the unifying of communications, integrated telecommunications, computers, software, middleware, storage, and audio-visual systems, it enables users to monitor, manage and measure electricity capacity and flow with less hands-on requirements. One example of this is in the metre reading field. This will inevitably lead to job losses 'in-field' and will therefore require investment into re-training and re-skilling so as to not leave workers stranded.

10. The current Labor Government went to the 2017 election with an anti-privatisation platform and overwhelming won. With an increasing take up of renewable technologies by consumers it is imperative that the GTEs of Western Power, Synergy and Horizon be given the capacity to continue to further develop and invest in the microgrid field, thus retaining network safety and security in the hands of government control. Re-investment in a directly employed, highly skilled and experienced workforce is an absolute requirement for the future of these GTEs.

[3] https://onestepoffthegrid.com.au/one-quarter-australian-homes-now-solar/

b) Opportunities to maximise economic and employment opportunities associated with the development of Microgrids and associated technologies, including (but not limited to):

i. Development of raw material resources/primary commodities
ii. Research and development
iii. Design, engineering and construction
iv. Advanced manufacturing
v. ICT
vi. Ongoing asset operations

1. Western Power, Synergy and Horizon Power are all currently looking to the future, investing in the research and development of projects to pursue opportunities to maximise economic and employment opportunities associated with the development of Microgrids and associated technologies.

2. Examples in this field include:

    a. Kalbarri - 'a microgrid that will be designed and managed by Western Power in 2019. It will be a small-scale power grid but one of Australia's largest microgrids to run in complete renewable mode, which will also be connected to the main electricity network.'[4]

    b. White Gum Valley – 'Western Power and Curtin University are trialling a shared energy storage system that will make sharing power between neighbours possible through a solar-powered microgrid and battery storage system. The residents of the 80 dwellings, including units and townhouses, will be part of a microgrid that will make use of energy captured through their solar panels and topped up by the main electricity network.'[5]

    c. Ravensthorpe, Lake King, West Lake and Ongerup – Western Power has trialled a stand-alone power system included solar panels, a battery, an inverter (to convert DC to AC) and a backup diesel generator.[6]

    d. Perenjori - The first town to trial a backup battery supply on the Western Power network with a 1MWh network battery that has been installed on the outskirts of town.[7]

    e. Carnarvon – Trial to look at the benefits of two 1,000 kilowatt batteries housed in two 40-foot containers at the Mungullah Power Station.[8]

    f. Carnarvon – Trial is to understand how cloud movements impact on solar photovoltaic (PV) electricity generation, and how this impacts on the network.[9]

[4] Western Power https://westernpower.com.au/energy-solutions/projects-and-trials/kalbarri-microgrid/
[5] Western Power https://westernpower.com.au/energy-solutions/projects-and-trials/white-gum-valley-energy-sharing-trial/
[6] Western Power https://westernpower.com.au/energy-solutions/modular-network/the-modular-network-our-energy-future/
[7] Western Power https://westernpower.com.au/energy-solutions/projects-and-trials/perenjori-network-battery/
[8] Horizon Power https://horizonpower.com.au/our-community/projects/carnarvon-energy-storage-trials/
[9] Horizon Power https://horizonpower.com.au/carnarvon-distributed-energy-resources-der-trial/

g. Onslow – Construction of a new modular power station for Onslow, with final commissioning of the power station scheduled for early 2018. A detailed options analysis has begun for the deployment of distributed energy resources in the form of batteries and solar.[10]

h. Broome – A research pilot, currently limited to 12 participants in LandCorp's Warranyjarri Estate in Broome North. Residents taking part in the research pilot will purchase a Smart Sun package for a heavily-discounted, fixed price of $5,000, which includes installation. The package would normally retail for between $25,000 and $35,000. The pilot looks to understand how to integrate higher levels of solar energy generation into the electricity network while also reducing the amount of high-cost infrastructure required in new housing developments as well as how to make the network stable and stop intermittency that arises from high levels of solar generation.[11]

i. Alkimos Beach – An energy storage trial conducted in collaboration with trial partners Lendlease and Landcorp. Every property in Alkimos Beach needs to have a solar PV system of at least 1.5 kilowatts, so it's an area with a really high concentration of solar systems. This trial could make a big impact across WA and the rest of Australia, especially in the way that new land sites are developed in the future.[12]

j. Greenough River – Australia's first utility-scale solar farm, and looking to expand to four times its current size.[13]

k. Wind farms – Esperance Wind Farm has nine turbines positioned at Ten Mile Lagoon. In 2004, six more turbines were built at Nine Mile Beach. The two wind farms now generate enough to meet around 20% of Esperance's power needs. Additional to this are the Kalbarri Wind Farm, Mumbida Wind Farm, Bremer Bay Wind Farm, Hopetoun Bay Wind Farm, Coral Bay Wind Farm, the expansion of Albany Wind Farm, and Denham has its own power supply provided by our smart wind-diesel system.[14]

3. GTEs are clearly investing in future research and development, maintaining and expanding this should be a priority for the current state government through the GTEs of Western Power, Synergy and Horizon. Whilst a quarter of West Australian households have to date invested in solar renewables this is still a long way from being the majority of the population. Giving GTEs the capacity to continue to further develop and invest in the entirety of this field, will not only meet job creation commitments to the West Australian public, it will allow for future development and investment whilst maintaining the future of our energy supply in government control.

[10] Horizon Power https://horizonpower.com.au/our-community/projects/onslow-power-project/
[11] Horizon Power https://horizonpower.com.au/our-community/projects/smart-sun-pilot/
[12] Synergy https://www.synergy.net.au/Our-energy/Alkimos-Beach-energy-trial
[13] Synergy https://www.synergy.net.au/Our-energy/Renewable-program
[14] Synergy https://www.synergy.net.au/Our-energy/Make/Its-1987-and-wind-farms-are-totally-rad

c) Key enablers, barriers and other factors affecting Microgrid development and electricity network operations, including:
i. Regulatory barriers
ii. Technical factors
iii. Workforce planning and development
iv. Social factors
v. Electric Vehicles

1. In order consider the key enablers, barriers and other factors affecting Microgrid development and electricity network operations it is necessary to consider the current differences between the operations of Western Power, Synergy and Horizon Power.

Western Power

a) As the West Australian government is the sole owner and Western Power the sole operator of the south-west electricity network (SWIS), it is effectively a natural monopoly delivering an essential service.[15]
b) Western Power's licence excludes it from operating generation facilities and storage facilities other than for the maintenance and supporting the operation of the network—so, maintaining frequency, for instance, in small parts of the network and network stability.[16]
c) Western Power's transmission and distribution network connects Western Australians to a range of both traditional and renewable energy sources.[17]

Synergy

d) Synergy generates electricity, and sells electricity and gas to customers. Synergy generates electricity using a range of non-renewable and renewable energy sources They also trade wholesale electricity and gas under ring fenced arrangements. They participate in the Wholesale Electricity Market in Western Australia which was set up in 2006.[18]
e) The workforce of about 980 employees are located in Perth, Kwinana and Collie, with power stations at located in Collie, Cockburn, Pinjar, Mungarra and West Kalgoorlie, and a joint venture power station at Worsley Alumina refinery near Collie, as well as wind farms at Albany, Esperance, Kalbarri and Mumbida, a solar farm near Geraldton and wind-diesel systems in Bremer Bay, Coral Bay, Denham and Hopetoun.[19]
f) WA's biggest energy retailer, supplying one million residential, business and industrial customers within the South West Interconnected System (SWIS) of Western Australia.[20]

Horizon Power

g) Horizon Power is a Government Trading Enterprise which generates, distributes and retails electricity to more than 47,000 connections. So, it has the whole customer relationship. It is effectively allowed, due to its licensing, to own and operate those systems when they are brought in, and by way of the system of economic regulation.[21]
h) Horizon Power is a State Government-owned, commercially-focused corporation that provides safe and reliable power to about 100,000 residents and 10,000 businesses across regional and remote Western Australia.[22]

[15] Western Power https://westernpower.com.au/about/regulation/why-are-we-regulated/
[16] Ibid
[17] Ibid
[18] https://www.synergy.net.au/About-us/Who-we-are/What-we-do?tid=Who-we-are:side_nav:What we do
[19] Ibid
[20] Ibid
[21] Horizon Power https://horizonpower.com.au/about-us/who-we-are/
[22] Ibid

i) The service area is vast, approximately 2.3 million square kilometres, which means Horizon Power services the biggest area with the least amount of customers in the world. For every 53.5 square kilometres of terrain, they have one customer. [23]

j) Regulation does not occur through the Economic Regulation Authority in this instance; it is through the Department of Treasury—certainly they could make the case that that is a better option in terms of electricity supply for their customers.[24]

2) As the market expands in the electric vehicle sector it is clear that the technology is growing exponentially, to the point that it is a question of when not if. A recent Bloomberg article stated "In China the numbers are staggering. China had about 99 percent of the 385,000 electric buses on the roads worldwide in 2017, accounting for 17 percent of the country's entire fleet.[25].

3) Western Power notes that there are currently 270 electric or plug-in hybrid vehicles in Western Australia across 167 suburbs. (March 2017).[26] Western Power are also seeking to 'understand the short and long-term effect of a widespread rollout of electric and hybrid vehicles on the electricity network, and how we can ensure both customers and Western Power gets the most out of this technology. 100% battery electric vehicles use electricity stored in a rechargeable battery to power the electric motor. Plug-in hybrid electric vehicles have an option to use the internal combustion engine, which is fuelled like regular cars, or can be powered by a smaller battery which is recharged by plugging into the grid.'[27]

4) The opportunities to maximise economic and employment opportunities would appear to be the where the future is and Western Power should be supported in developing these opportunities.

d) Initiatives in other jurisdictions to facilitate the development, and maximise the value of, Microgrids and associated technologies.

ASU understands Western Power and Horizon are leaders in electricity network innovations.[28]

[23] Ibid

[24] Ibid

[25] Bloomberg https://www.msn.com/en-us/money/markets/once-an-industry-joke-electric-buses-start-to-dent-oil-demand/ar-AAwfI4i

[26] Western Power https://westernpower.com.au/energy-solutions/projects-and-trials/electric-vehicles-plug-in-to-the-network-s-future/

[27] Ibid

[28] Deloittes Australia Innovation in Electricity Networks Report 2017

Conclusion

The West Australian GTEs have the knowledge, capacity, and forward thinking to be the primary drivers in this field. The ASU is of the opinion that they must be supported by the state government to fulfil this capacity.

This would fulfil the commitment made at the 2017 state election to not privatise state-owned energy assets, re-invest and re-invigorate these assets and provide long term, permanent job opportunities, maintain control of the public assets whilst looking to their future and that of the energy sector in general.

To that end the ASU is of the opinion that there is potential to explore the reintegration of Western Power and Synergy. This has already been partly achieved with the re-integration of Verve and Synergy.

This will allow the one entity to operate in the SWIS in the same way as Horizon in the regions, across the whole customer experience. It would also facilitate financial savings for the state by combining the research and development opportunities as well as operating with one Board and one CEO.