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Steve Douglas

Ms Nicola Cusworth
Chair
Economic Regulation Authority
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Dear Ms Cusworth

MID WEST ENERGY STRATEGY / KALBARRI MICRO-GRID

The Mid West Development Commission is pleased to have the opportunity to make this submission to the ERA in support of the Kalbarri Micro-grid and to highlight key findings and recommendations from our Mid West Energy Strategy (copy attached).

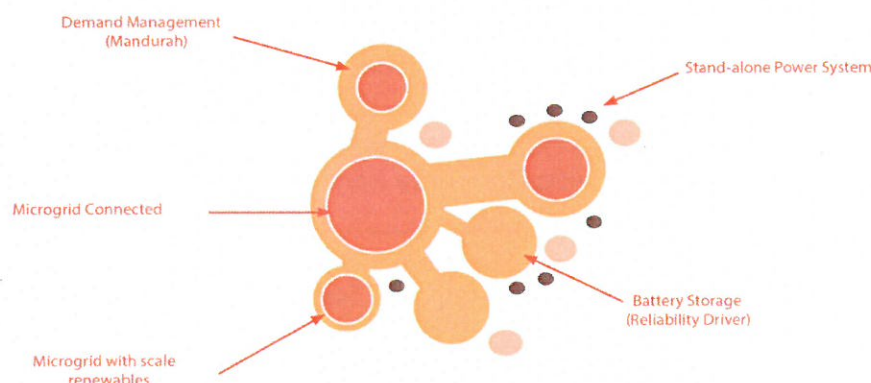
The Mid West Development Commission is a state, statutory authority which aims to enhance the economic and social well-being of Western Australia's Mid West region. The provision of timely, adequate, reliable and affordable energy is fundamental to achieving that outcome.

From an energy viewpoint, Mid West communities can be categorised as being:

1. On the SWIS (the grid)
2. Fringe of grid
3. Off grid, including remote Aboriginal communities

The key findings of the Mid West Energy Strategy from a grid / fringe of grid perspective are:

- Disruptive technology and policy changes will see Western Power's transmission network continue to evolve from an Integrated Network with largely centralised generation to a modular network supported by distributed generation, as shown below.



Meeting the needs of emerging technologies (WP Annual Planning Report 2017)

- There is considerable consumer desire for renewable energy.
- Whilst still a regional priority to drive economic growth and facilitate export of renewable energy, the Mid West Energy Project Northern Section, which extends the 330kV line from Three Springs to Geraldton, is unlikely to be built without appropriate demand triggers.
- A pathway to the development of the MWEPP Northern Section which can deliver adequate, cost effective energy in a timely manner involves the further development of generation closer to energy need. This is particularly relevant to fringe of grid communities in the Mid West including Kalbarri, Perenjori, Morawa and Mullewa.
- There is increasing interest in alternative energy models including some involving embedded networks and ownership or participation by the local community. Further market and regulatory reform including contestability of all consumers would support this trend.
- The Mid West has considerable renewable and non-renewable energy resources. With appropriate policy support the region could become a net energy exporter.

Consistent with the above key findings, listed below are key recommendations relevant to the SWIS and Western Power's future capital works program.

Location	Recommendation
Geraldton	Support the development and implementation of new distributed energy generation models for Geraldton and fringe of grid communities i.e. Mullewa, Morawa, Perenjori.
Geraldton – Three Springs	Work with Western Power to develop a northern section solution to the MWEPP, building longer term strategic capacity in the transmission network and facilitating further renewable energy investment. Continue to work with relevant agencies, local government and other stakeholders to secure the Oakajee Narngulu Infrastructure Corridor.
Kalbarri	Support a hybrid microgrid to supply the town of Kalbarri, improving reliability and enhancing longer term sustainability which will support tourism in the region and provide educational opportunities.
Perenjori	Enhance Western Power's Battery Energy Storage System project (Stage 2) to build a sustainable energy project which supports greater penetration of renewable energy and provides tourism and education opportunities.
Three Springs	With the Shire of Three Springs, Western Power and industry to identify energy related opportunities for Three Springs including its potential as a major energy generation hub.
Geraldton	Work with key stakeholders to undertake a feasibility study into the establishment of a Centre for Regional, Remote and Renewable Energy Solutions.
Mid West	Through established industry and government bodies, raise awareness to remote and off-grid project proponents of the benefits of incorporating

	renewable energy in their power solutions and the enabling technologies available.
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Fringe of Grid

Whilst the supply of power appears adequate, fringe of grid communities in the Mid West including Kalbarri, Perenjori, Morawa and Mullewa suffer significantly from network failures and poor reliability. In large part this is due to the age of the network, most of which was constructed in the 1960s / 70s.

In early 2017, Mullewa (100kms east of Geraldton) experienced power blackouts running into days. In the extreme heat this caused considerable distress to people - particularly those suffering poor health. The situation was severely exacerbated when the lone pharmacy could not keep some medicines adequately cooled / refrigerated resulting in their disposal.

As outlined in the Mid West Energy Strategy, local generation based on renewables has a number of advantages including:

- considerable improvement in reliability;
- meets increasing consumer desire for renewable energy;
- more cost effective and responsive compared to upgrading and maintaining long, 'skinny' lines; and
- Potentially gives the local community greater involvement / responsibility.

Perenjori

MWDC strongly supports the establishment of BESS (Battery Energy Storage System) in Perenjori, which we understand is now fully commissioned. Under certain conditions, BESS can meet local needs for up to four hours. This is expected to address some 80% of outages but does not address the less frequent, but far more damaging, impacts of longer outages. Reliability could be significantly improved if local generation based on solar energy could be incorporated into the model. MWDC is discussing options to progress this with Western Power and other key stakeholders.

MWDC fully supports Western Power working with the local community to undertake further trials/pilots to identify a more reliable and cost effective energy solution for all fringe of grid communities involving local generation using renewables and battery storage whilst retaining connection to the grid until fully proven as a stand-alone solution.

Kalbarri

Kalbarri is a premier tourist destination. Visitation is highest over summer and Easter – times when power is critical to run air conditioners, keep food from spoiling, run petrol bowsers, use ATMs etc. Unfortunately this is also the time when most outages occur and have the most (damaging) impact.

The \$20M Kalbarri Skywalk project, scheduled to be fully completed in mid 2018, is expected to significantly increase visitation. This makes the provision of a reliable power network even more imperative as the town seeks to build on this exciting infrastructure to boost local economic activity and create more jobs - fundamental regional development pillars of the State Government.

Like much of the fringe of grid, the 140km feeder line from Chapman Valley substation to Kalbarri and the surrounding network was installed 50+ years ago during the rural electrification program.

These lines also traverse areas of farm land and National Park, exposing them to a variety of hazards ranging from wayward farm machinery to stubble burning and bush fires as well as the usual birds and other wildlife.

In addition, due to the proximity of the lines to the coast and the strong prevailing winds in the area, large sections of these lines are prone to failures associated with airborne pollution such as salt and dust making them susceptible to pole fires and other pollution related failures.

The figure below highlights that the performance of this circuit is well below the figures quoted by Western Power for the average rural or 'other' customer, but consistent with other parts of the network that are exposed to the type of hostile conditions that exist in this area.

	Average "other"	Geraldton 603 - Kalbarri
Average number of outages pa	5.44	9.24
Average mins without power pa	1001	1548

Kalbarri electricity reliability statistics

The performance of this circuit is also heavily impacted by its very significant length, multiplying the impact of the challenging environment. Similarly, these figures include planned outages for maintenance on the lines supplying this town.

MWDC supports the establishment of a Kalbarri micro-grid which includes a renewable energy generation component (wind or solar) with battery storage. We believe this is an appropriate, feasible and efficient response to the reliability challenges Kalbarri continues to experience. The Mid West Energy Strategy (11.7.2) provides further insights into how power to Kalbarri can be fully developed into a model of best practice, fringe of grid energy solution.

In conclusion, the Mid West Development Commission strongly supports Western Power's proposal to establish a micro-grid in Kalbarri. The Commission will continue to work with Western Power to progress this and other initiatives which aim to provide adequate, timely and cost effective energy to meet current and future needs of the Mid West, including those which may improve reliability to fringe of grid communities. The Commission would also welcome ERA support for Western Power to work in partnership with MWDC to deliver on the strategic priorities outlined in the MW Energy Development Strategy

If we can be of further assistance, please do not hesitate to contact Steve Douglas, Assistant Director Infrastructure and Digital, on 9921725 or steve.douglas@mwdc.wa.gov.au

Yours sincerely

Gavin Treasure
Chief Executive Officer
11 December 2017