

INQUIRY INTO MICROGRIDS AND ASSOCIATED TECHNOLOGIES IN WA-David Karr

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To Chair of Inquiry into Microgrids and Associated Technologies in WA

1. There is a need to understand the concept of electrical microgrids.
2. An electrical microgrid to quote is "a small network of electricity users with a local source of supply that is usually attached to a centralised grid but is able to function independently."
3. Thus for effective microgrids to operate efficiently(as opposed to the Alkimos microgrid), there is a need for the users to feed excess energy into the network during a period(usually daytime if from solar rooftops), for battery storage.
4. During periods of darkness or low solar activity, the users would then draw off the microgrid battery storage.
5. The idea is for the microgrid users to input sufficient excess energy to facilitate the periods when there is lower or no local energy generation.
6. Also the need for external energy input is to be minimal or not required at all.
7. Energy generation needs to be sufficient for the microgrid users with sufficient ability to meet future needs for say at least 10 years.
8. Energy storage needs to be sufficient for the microgrid users with sufficient ability to meet future needs for say at least 10 years.
9. The choice of the type of battery storage needs to be carefully selected to allow for longevity of usage as well as safety.
 - 9.1. For example the Alkimos microgrid utilises Lithium Polymer(Li-Po) type batteries require a complicated cabling system to prevent undue stress on any of the batteries or battery cells.
 - 9.2. This could lead to thermal runaway which could lead to unwanted fires.

10. It is recommended that other types of battery storage be utilised for microgrids. This could include graphene type batteries which do not experience thermal runaway. Also these batteries have an energy density 5 times that of Li-Po batteries.

10.1. The technology is becoming more and more easily available as time goes by.

10.2. Other types of battery storage that could be used include molten salts. Although this type of energy storage could be cumbersome as it requires large tanks.

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