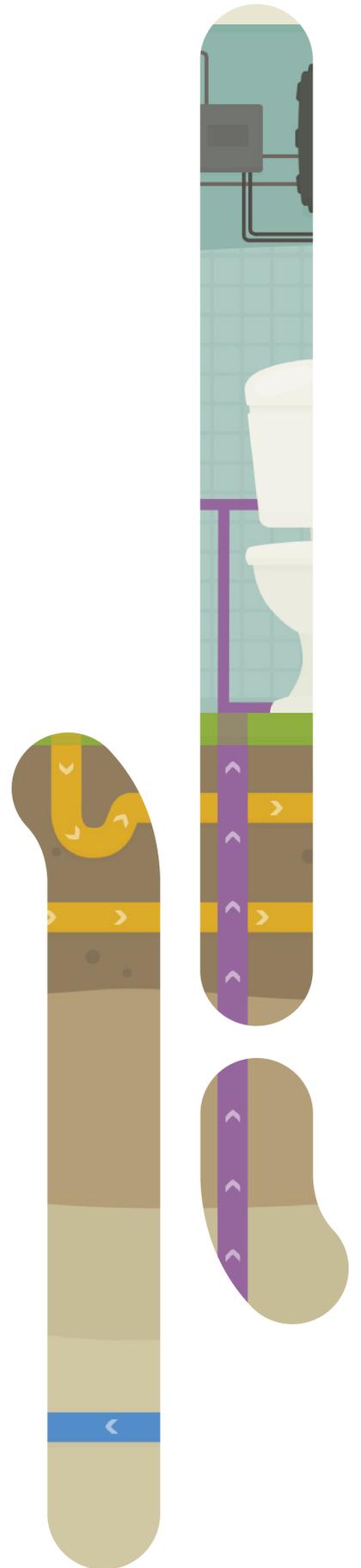




# Stand-Alone Energy Systems in the Electrical Market

Submission to COAG

4 October 2016



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Attached:

CONFIDENTIAL Draft ARENA feasibility study: *Delivering higher renewable penetration in new land and housing developments through edge-of-grid microgrids. Case Study: Huntlee Energy Utility.* This study has yet to be published and is therefore confidential.

# About Flow

Flow Systems, is a multi-utility company specialising in the design, operation, management and retailing of local sustainable water and energy infrastructure and services. Flow is a Brookfield company.

## Introduction

Flow welcomes the opportunity to comment on the *COAG Stand-Alone Energy Systems in the Electrical Market* submission. This submission is focused on stand-alone, or off-grid systems, however Flow views these as a logical subset of the wider microgrid market which represents all distribution systems working autonomously at a local scale.

Microgrids are fast becoming a critical part of future electricity system architecture. In some cases, these systems will be off-grid as developers and utilities creating the homes and workplaces of future generations are looking at self-sufficiency, enhanced liveability, resilience and security of supply. They want to future ready their communities and reduce risks and costs – that means locally generated renewable energy, a decoupling from coal fired power and the elimination of network charges that do not reflect a proportional use of system. There is also the opportunity to reduce network augmentation which will improve affordability across the network in the long term.

The National Energy Market (NEM) as we know it today is simply not equipped to cater for this future – it needs to change. It needs to begin to make the transition to enable 21<sup>st</sup> century energy infrastructure and solutions – removing barriers to the greening of the NEM, incentivising local energy generation and enabling a clean energy future. This will in turn deliver a more resilient NEM, greater customer control and downward pressure on pricing.

The most important contribution stand-alone systems and microgrids generally can deliver is the enabling of fit-for-purpose infrastructure capable of maximising use of local resources such as geothermal, biomass, gas, and solar. Stand-alones and microgrids are maximising the economic efficiency and scale of battery storage – in the more economic district scale scenario. They are also capable of integrating heat re-use from generation such as cogeneration.

The current NEM rules are restricting commercial viability of local generation and along with it global best practice technologies and innovation. National energy markets can do more to capture the full benefits of distributed generation, and nowhere is that more apparent than in stand-alone systems and microgrids. Valuing the contribution of these technologies to the NEM is essential to commercial viability.

As a leader in next generation water and energy utility infrastructure and consumer products, Flow urges COAG to acknowledge the importance of shifting Australian electricity markets into the 21<sup>st</sup> century. These markets must enable new and emerging products, systems and services that give people greater control over energy use and put downward pressure on energy bills.

Flow welcomes COAG's focus on ensuring stand-alone networks provides customer protection, drive innovation and product choice and competitive pricing.

Industry is working hard to make stand-alone energy systems economically, environmentally and socially viable. This is being done without a regulatory framework and any moves to bring stand-alone networks into a national framework must not impose barriers to commercial viability or introduce perverse barriers to take-up.

Importantly, Flow believes stand-alone energy systems should not only comply with National Energy Retail Law (NERL) but a new category of licensing – a Stand-Alone Licence should be established by the Australian Energy Regulator (AER). Further, these systems should be part of a uniform regulatory regime for Microgrids – whether grid connected or stand-alone.

A new licence class will strengthen the protections for customers, reduce risk for investors and begin the journey to competitively include future energy innovations such as microgrids in the NEM.

In the long term this area of innovation has many economic co-benefits for Australia, not least of all is the establishment of a new export market and the ability to increase the release of new affordable housing stock.

## Recommendations

1. Authorised distributors must not be the exclusive operators of stand-alone networks.
  - Regulated Asset Base (RAB) structure is inappropriate for incentivising the innovation and business models required in these networks.
  - A strong competitive market will ensure long-term benefits in terms of affordability and sustainability.
2. A new Stand-Alone Network Licence class should be created.
  - The AER Guidelines need to define a new licence class for Stand-Alone networks.
  - The Stand-Alone Network Licence would be a lighter touch licence similar to Network exemption classes.
  - The Stand Alone Network Licence would be part of a wider regime for Microgrids and be classified according to whether it is grid connected or not.
  - This regulation could be a derivation of the existing regulations for Embedded Networks.
  - The new licence would be issued for either new development areas as agreed between system operators and new land developers, or for retrofitted networks where critical stakeholders have agreed to the implementation of a network.
3. Licensed Stand-Alone networks should:
  - Comply with National Energy Retail Law (NERL) and Australian Consumer Law (ACL), including SAIDI and SAIFI network service standards.
  - Gain a strong social licence from the community to operate.
4. Operator of Last Resort provisions should be introduced:
  - The new licence class should include Supplier/Retailer of Last Resort (SoLR/RoLR) provisions.
  - Consideration should be given to require licence proponents to provide back-up network operator and retailer arrangements to the AER for review and consent.
5. In addition to the core National Energy Objectives (NEO's) the Energy Council's objectives should be broadened to include resilience, sustainability and innovation:
  - To ensure that Microgrids are on a level playing field, the core benefits of sustainability and resilience should be recognised.
  - As with other global markets, the long-term reduction of transmission and distribution costs in the NEM should be recognised and these benefits monetised for microgrid proponents through payments for resilience and ancillary services provided.

# A Stand-Alone Network Licence

Flow agrees with the Energy Council's aspirations to ensure consumers can both fully benefit from innovation and that their interests are adequately protected.

A new light touch regulatory regime for stand-alone networks like the Embedded Network licence class – with financial checks to ensure proponents have skills and experience to deliver high quality infrastructure and services.

Applicants would apply to the AER to obtain a licence. The process should not be as onerous as the licensing process to become a regulated Distributor. This would be too challenging for the fledgling stand-alone market, already attempting to compete in an unlevel playing field. The economic viability of the schemes would be negatively impacted on should proponents be forced into a costly and onerous licensing process involving prudential checks for example.

For greenfield developments, an exemption framework similar in part to the current embedded network model may be appropriate. The benefit of such a framework is that it allows the AER to tailor the regulatory obligations to the level of risk<sup>1</sup>. However, for stand-alone networks, as the consequences of failure of a network distributor or retailer are much more significant than in the case of a grid-connected embedded network, an additional layer of regulation is needed in relation to last resort providers (both network and retail) to ensure reliability and continuity of supply.

## Huntlee Case Study

Flow - in partnership with parent company Brookfield, Huntlee developer LWP, Siemens and ARENA - has completed a feasibility study for a Stand-Alone Energy Network at Huntlee, in the NSW Hunter Valley. The report - *Delivering Higher Renewable Penetration in new land and housing developments through edge-of-grid microgrids. Case Study: Huntlee Energy Utility* – demonstrates the value of stand-alone energy networks to the local community and to the NEM.

The report demonstrates Flow and its partners sought to mirror NERL and ACL obligations for customers at Huntlee, along with establishing a price cap based on at least equivalent NEM based tariffs. It also demonstrates the additional effort required to achieve competition principles to ensure the community gets energy product choice and that the local utility has a social licence to operate.

At Huntlee, Flow and its partners are seeking to exceed the Energy Council's objectives by including resilience, sustainability and innovation.

The feasibility report also shows Microgrids built on the edge of networks of large mixed use communities, such as the 7,500 home community of Huntlee, can deliver significantly higher amounts of renewable generation compared to traditional non-sustainable energy provision. Importantly it also recommends this renewable local supply delivers on key national energy objectives of affordable, reliable, secure and safe supply.

Many of the commercial, technical, regulatory issues in relation to edge of grid microgrids are similar in nature to existing issues being considered in the energy market more widely. The innovation of the Huntlee microgrid pushes the boundaries on many of these issues. The feasibility report found:

- If the Huntlee model could be successfully deployed nationally it could lead to as much as 400 MW additional solar capacity brought on line by 2041. This is assuming Huntlee took up 30MW of additional solar capacity at full development.

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<sup>1</sup> Consultation paper, footnote 5, on p13

- Managing peak demand is one of the key areas where microgrids can outperform the wider network.
- Large scale microgrids have many of the challenges of the macrogrid, however microgrids enable better solutions due to local control system capabilities.
- Microgrids in land and housing developments have significant environmental, social and economic benefits and significantly improve delivery of the National Energy Objective.
- Financial returns are required for each stakeholder – developers, residents, grid operators and owners. There needs to be an equitable sharing of the costs/risks without all costs being absorbed in network charges. Where appropriate benefits provided by the microgrids to the wider network should be recognised through funding for non-network based solutions processes.
- The ideal context for microgrids are communities which have significant servicing challenges or other drivers such as resilience or sustainability.
- The delivery of these microgrids requires government support to close the equity-risk gap in the first few projects. However, the projects will quickly deliver sufficient equity returns in the medium term.
- The future introduction of carbon pricing will likely make microgrids more economic than the wider grid.

## Answers

### Customer protection

1. **How would the discipline of price and service competition be maintained on stand-alone power infrastructure providers, given customers would not be able to switch retailers in the event they became dissatisfied with energy prices and/or customer service?**
  - Stand-alone operators should be held to compliance with NERL requirements by:
    - Having distribution licence that includes regulation and monitoring to ensure benefits are passed back to the community.
    - Creation of customer charters that outline how the local grid will comply with price and service.
    - Gaining a strong social licence to operate.
      - At Huntlee, Flow needed to ensure infrastructure implemented managed peak demand and was socially acceptable to customers. For example:
        - Community rights looked after by the developer. There is a cooperative with rights of enforcement over the operator.
        - When asked, 87 percent of consumers support roof-top solar and only five percent of consumers are opposed to large scale solar.
        - Flow devised products that encouraged energy efficiency – this proved Flow was serious about energy consumption reductions.
        - Products needed to be easily understandable to consumers.
  - Stand-alone operators should comply with relevant SAIDI and SAFI distribution obligations, including:
    - Performance standards should be benchmarked and audited against SAIDI/SAFI standards.
    - Ensuring products and supply chain work with home builders in the community.
2. **What contractual relationships should exist, and to what extent should they be regulated, between parties involved in the supply of the services of stand-alone systems?**

- Flow believes a new Stand-Alone licence category needs to be created by the AER. This could be an extension of existing regulations for Embedded Networks.
  - Retail and Network contracts should be regulated under NERL and form part of the new licence requirements.
  - Stand-alone systems should be held to pricing targets. These targets could be set as part of a submission for an individual network exemption for the network (mirroring the existing submissions required for Embedded Network individual distribution network exemption process).
  - The pricing regimes would need to meet the AER pricing information guidelines for retail and network charges.
3. How can the incentives of the procurers of stand-alone systems be aligned with the end use customers they will serve?
- New licensing category would ensure that there are no split incentives between operators and end customers.
  - In addition, stand-alone utilities should follow best practice guidelines such as:
    - Community ownership, price caps , social licences, shared dividends or shared savings, and demonstrating how the system is operating to constantly improve efficiency.
4. How would we ensure that the public is protected against unreasonable rates, bad service, and negligence that results in safety or human health risks? For instance, would the ACL protections be sufficient for customers on stand-alone systems?
- Relevant customer projections are covered in NERL.
  - Specific protections in terms of new licence category that will implement performance obligations and remedies for the community for non-compliance on the basis of pricing principles and service level.
  - In addition, to ensure reliability and continuity of supply, it may be appropriate that a licence condition be that the proponent submit proposed back-up network operator and retailer arrangements to the AER for review and consent.
5. What would become the equivalent of a “retailer of last resort” in the event that an energy services company, delivering stand-alone power solutions, became insolvent? For example, should an insurance scheme or similar be considered for stand-alone system providers/operators in the event of insolvency?
- Consideration should be given to require licence proponents to provide back-up network operator and retailer arrangements to the AER for review and consent.
  - To minimise costs associated with SoLR /RoLR high level technical standards for microgrids should be established so that these systems can be easily taken over and managed in the case of a step-in.
6. What dispute resolution arrangements should be put in place for customers and should they be energy only dispute resolution or connected to broader tenancy/ownership arrangements?
- EWON has recently prepared an external dispute resolution best practice: *Consumer*

*access to external dispute resolution in a changing energy market*<sup>2</sup> which focuses on exempt retailer, embedded network and alternative energy service growth, and the consequential impact this is having on the ability of energy consumers to access free and independent dispute resolution. These principles need to be upheld for Stand Alone Licence proponents.

- Customer contracts will enforce dispute processes.
- NERL reporting arrangements or auditing.

7. What hardship and financial support provisions should apply to stand-alone energy customers?

- NERL, EWON, as above.

## Reliability and Service Standards

8. How should the service standards that apply to each stand-alone energy system be decided?

These service standards should be a combination of utilising appropriate network standards as a base and then additional standards as agreed with the regulators.

9. How will we ensure that customers are making fully informed decisions about the reliability standards and service quality of the energy services provided through a stand-alone energy system?

- Customers should be consulted from the outset.
- In new communities information should be included in sales disclosures and information packs. This would also include detailed explanation of the different technology solutions, tariffs, requirements.
- In retrofits, long term community consultant and engagement should be part of the process of appointing an operator.

10. Under what governance framework will decisions about reliability versus cost trade-offs be made?

- The Stand-Alone licence class should cover this.
- It should also be canvassed through an agreement spelt out in the customer contract.

11. How and by whom should standards be enforced?

- The AER should manage this.

12. Should some obligation to supply apply in an area where a stand-alone system is in place?

- Yes.

13. Who should be the responsible party if an obligation to supply is put in place in a stand-alone system area?

- The licenced utility.

## Regulatory challenges - Networks

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<sup>2</sup> [http://www.ewon.com.au/ewon/assets/File/EDR%20Access%20Report\\_Public.pdf](http://www.ewon.com.au/ewon/assets/File/EDR%20Access%20Report_Public.pdf)

14. What regulatory barriers exist to third parties supplying stand-alone energy solutions?
  - A requirement to be an Authorised Distributor.
  - State and Territory legislative amendments are required to ensure stand-alone distributors have property access rights and powers in relation to installation, operation and maintenance of electrical infrastructure equivalent to licensed distributors.
15. How should the regulatory framework ensure that a stand-alone power system is considered as an option where this is the most efficient way to provide energy services?
  - Through a new licensing process.
16. What elements of the national framework are potentially applicable to stand-alone energy systems?
  - The NERL and the existing exemption framework.
17. Are the existing connection frameworks adequate for stand-alone energy systems?
  - A new connection framework should be included as part of the new Licence process.

## Regulatory Challenges – Retail

18. In what circumstances should or could a stand-alone system become subject to economic regulation?
  - As noted above these systems should not be part of the RAB structure, but should rather be proportionately regulated. Given the scale of the RAB currently, the appropriate approach is to benchmark these new networks (which will initially be insignificant in the context of the RAB) against the economic regulation of the current infrastructure.
  - In other words these new grids should be assessed based on their ability to deliver competitive pricing at parity with the wider NEM. At the same time this pricing should reflect all the benefits delivered by the local grid in the long term that may be valuable to residents.
  - This may include greater electricity resilience in areas that may be subject to greater climate related crisis weather events. The RAB should be used as a reference point to calculate the long-term infrastructure investment off-sets that would be delivered by stand-alone systems. This reference can then be used to calculate payments to these networks as non-network solutions to investment decisions. The Rit-D and Rit-T processes may be a good starting point for this assessment.
19. How should a regime for economic regulation – if any – be structured to address stand-alone systems?
  - We believe economic regulation should not be required.
20. Should price regulation extend to the entire cost of energy services for customers of stand-alone systems?
  - Price regulation should include distribution charges and retail charges.
21. Should stand-alone systems that have a grid connection be treated as embedded networks for metering and settlement purposes?
  - We believe that this is an appropriate structure for these networks as outlined above
22. In what circumstances should a decision to establish a stand-alone system be regulated? Who by? And what justification should be provided to the regulator?
  - With new greenfields stand-alone systems, the operator should lodge the distribution

- individual licence with the AER in co-operation with the property developer.
- Retrofits are more difficult, however again the regulator should review submissions from an operator along with submissions from residents and other local stakeholders. The licence should be granted based on a combination of these submissions and the ability to meet key NEO objectives.

## Consistency versus tailoring

### 23. What principles should be adopted in determining the need for and nature of any new regulatory arrangements that will apply to stand-alone energy systems?

- The core National Energy Objectives should be the basis for regulatory arrangements
- These objectives should be broadened to include resilience, sustainability and innovation. They currently do not reflect future-proofing, innovation, renewable and local generation or a reduction in carbon emissions.

### 24. What would be the appropriate balance between a strong reporting and compliance regime and a flexible regulatory framework?

- A light touch licence class similar to Embedded Network Exemptions classes with the appropriate levels of monitoring.

## Conclusion

### 25. Of the various issues raised in this paper, which areas and potential market failures have the highest risks and should be prioritized in terms of regulatory interventions and reforms?

- SoLR and RoLR provisions.
- Price gauging.
- Requirement to be an Authorised Distributor.
- Reflection of long-term benefits in terms of network augmentation in providing incentives to these local networks.
- It is important to note that where these networks do have a connection to the NEM a raft of other critical issues should be considered to address the market failures in dealing with existing distributors in terms of proportional pricing for microgrids, and enabling reciprocal payments for benefits provided to the network from microgrids. It is suggested that this issue is part of future consultation processes.

## Conclusion

The stand-alone energy market needs to be fostered, encouraged and protected by standards. Flow believes a new Stand-Alone Licence class will create a benchmark for entry and ensure the highest standards for customers and industry.

However, Flow would never support the introduction of barriers that stifle innovation and critical new thinking which is now ensuring Australia makes the transition to next generation energy solutions and products that are more, resilient, efficient and sustainable.



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**flow** systems