positive energy

Response to ACCC Discussion Paper on

Points of Interconnect to the National Broadband Network

ENERGEX Limited

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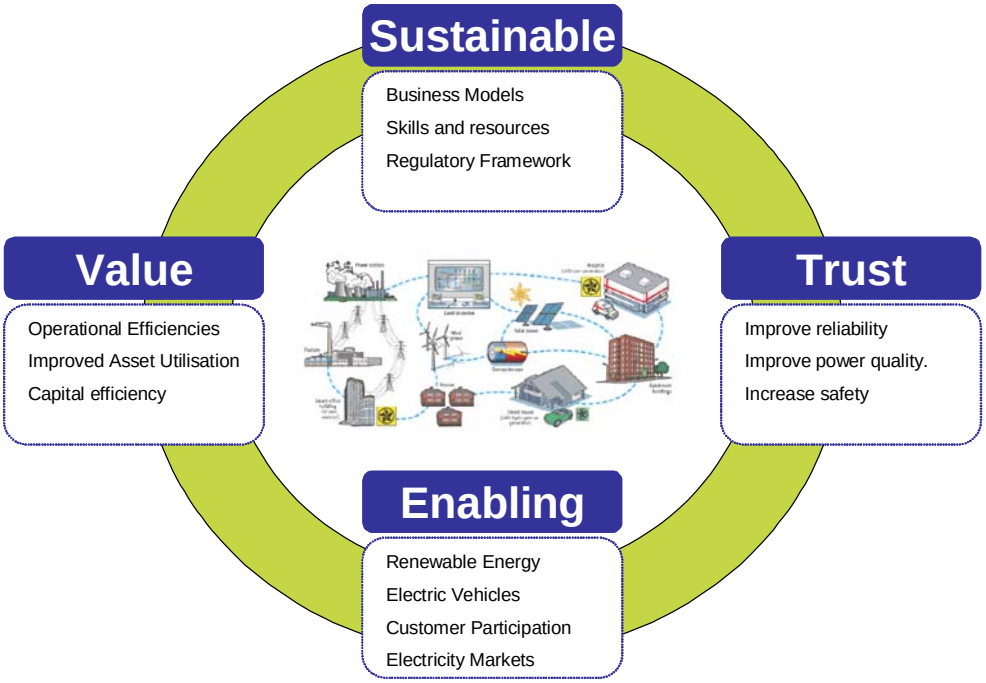
1 Introduction

ENERGEX is committed to developing a Smart Network (SmartGrid) that delivers lower cost network development, improved customer service and customer choice options for the future. The SmartGrid will facilitate these outcomes by providing demand management opportunities, pricing signals and tools to enable customers to be better informed and manage their own demand. It will also enable network assets to be better managed to enable greater efficiency and improved service and cost benefits for customers.

ENERGEX's SmartGrid strategy includes programs, plans and initiatives which overlay and integrate advanced communications, electronics, and computer technologies with our existing network to deliver real-time communication and enhanced information flow to:

- Provide the foundation for business transformation required to meet ENERGEX's customer lifestyles in 2030;
- Deliver improved network intelligence – "More Smarts, Less Network" – by delivering capability to understand the network at a granular level by extending the automation of the centralised high voltage network, to the poles and wires in residential streets, meters and appliances in households.
- Meet increasing SQRA requirements (Security, Quality, Reliability and Availability) to support 21st century energy needs
- Accommodate and optimise the bi-directional flow of electricity from increasing amounts of localised generation sources feeding electricity directly into the low voltage network.
- Improve asset productivity through real time asset management and proactive asset maintenance and the ability to deliver more customer initiated work
- Deliver increased energy efficiency and reductions in carbon emissions
- Deliver capability for customers to manage their energy usage and save money and reduce their carbon footprint

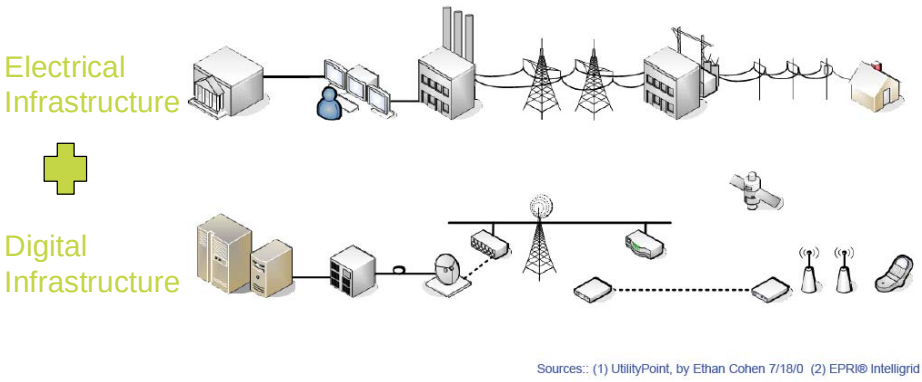
To meet the challenges of 21st century lifestyle aspirations and technological advancement, the ENERGEX network will require new active network technology to enable large scale deployment and control of industrial and residential generation in combination with demand side participation.



Focus	Current	Future
Components	Electro mechanical	Integrated digital devices
Communications	One way	Two way
Generation	Centralised	Central and distributed (including storage and renewables)
Demand Management	Limited • primarily focussed on hot water	• Targeted appliance control across multiple appliance types • High customer penetration
Network Design	Radial	Meshed network
Sensors	Limited • only in substations	Pervasive • equipment, substations and feeders
Intelligence	Majority of information comes directly from customers	"Self Aware" – information comes from network sensors, monitors and devices
Outage Management	Manual restoration	Self healing adaptive network
Maintenance	Modelled and planned	Near real time condition based
Decision Making	Manual people based process	Automated decision support systems
Customer tariffs	Limited price information with few customer choices	Near real time information with multiple customer choices

The near future will see the migration from “SYSTEM” level to “LOCAL” levels of demand management, making decisions based on the local data that is available at any point in time. Local levels of data enable maximum utilisation of the remaining network whilst ensuring assets within the local constrained area are not overloaded or potentially reduce customer’s reliability and power quality. ENERGEX’s SmartGrid strategy proposes that potentially every distribution transformer with more than ten customers will autonomously manage the load and premises for which it serves. Those devices will sense the current state of the network, and then communicate via peer-to-peer communications directly to the premises that are connected to the transformer. This capability will enable the utility to:

- achieve optimal utilisation of its assets;
- maximise the value of any distributed energy resources such as electric vehicles and solar pv;
- reduce the operating costs the our business; and
- in turn reduce the costs to our customers.



Sources:: (1) UtilityPoint, by Ethan Cohen 7/18/0 (2) EPRI® Intelligrid

ENERGEX’s vision is a future medium and low voltage network that has widespread sensing, monitoring and control capabilities that enable smarter management of its network assets. Integration of asset condition sensors will enable ENERGEX to know the state of its assets before they fail, enabling ENERGEX to proactively maintain assets without impacting customer reliability or extending the life of our current assets

The communications networks to support this capability will be pervasive and needs to be appropriately designed and priced.

2 Electricity networks and telecommunications

2.1 Evolution of an ‘adaptive’ electricity network

International research, commencing with the EPRI *Intelligrid* publications of 2004, promote the need for the electricity distribution industry to recognise the changing needs of a 21st Century digital society and better tailor power network safety, quality and reliability to align with their expectations. More recently these discussions have expanded to include consideration of the benefits derived from embedded generation and demand management (energy efficiency).

Electricity distribution companies have been at the forefront of SCADA technology in the monitoring, control and management of their transmission and sub-transmission networks (including substations) for some time. To meet the expectations of today's customers the industry recognises the need to extend this functionality beyond the high voltage network and substation boundary to encompass the broad geographical spread of their distribution and customer networks. The concept of a "smart, self-healing grid" is gaining momentum as the way to satisfy future customer expectations in an efficient way – but it is reliant on distributed intelligence and pervasive communications.

2.2 ENERGEX's telecommunications strategy

Considerable telecommunication investment will be required by the electricity industry over the next 20-25 years to deliver the vision of an 'adaptive' electricity network. Achieving this telecommunications goal requires a strategic and systematic approach. An aligned development plan considers appropriate technologies, platform efficiencies and deployment options. The total solution will include a combination of both cabled (primarily optical fibre, potentially some power-line carrier) and radio systems (point-to-point microwave, mobile wireless and advanced mesh-based technologies).

2.3 NBN and Utility Telecommunication Requirements

The NBN could potentially form a significant part of the communications requirements for a SmartGrid. The coverage, speed and security of the network to fixed service locations is one option open to utilities for establishing two way communications between network devices and customer premises to facilitate improved network reliability and customer value through distributed intelligence, network automation, the management of distributed energy resources included small distribute renewable generation and energy storage, dynamic demand management and new energy services.

2.4 Long Term Interests of End Users

In determining the preferred solutions for their telecommunications needs, utilities consider solutions that not only deliver cost effective and future proofed outcomes for their business but also, wherever possible, avoid the uneccesay duplication of infrastructure. It is believed that there would be significant public benefit through improved allocative efficiency if utilities are able to be a direct customer of the NBN for network management and dynamic demand management. The alternative will be for utilities to extend their own infrastructure, potentially duplicating the NBN in some areas and increasing total costs to consumers as well as delaying the realisation of smart grid infrastructure benefits to electricity customers. Furthermore, should utilities be able to become direct customers of the NBN, this would be expected to reduce utility demand for fixed wireless services and thereby free up spectrum to accommodate the expected strong growth in demand for mobile broadband services.

3 Issues for Discussion

Effect on relevant markets

1-6: No Comment

Location of POIs on the NBN and provision of related services

7: For utilities to consider using the NBN for network operations and dynamic demand management, the number and location of POIs will need to correspond well with the design of the electricity network so that the benefits of a smart grid can be realised while minimising the risk of overloads and outages that impact significant numbers of electricity customers. ENERGEXs bulk supply points typically supply around 50,000 customers and ENERGEX has a preference for POIs to be established on a similar basis. This would enable ENERGEX to connect from NBN into its own core fibre network at zone substations and avoid the need to extend this network further at considerable cost and prolonged deployment. The distributed POI model ensures that distributed intelligence and dynamic network and customer demand control can be successfully deployed while minimising the risk of significant loss of capability and / or customer outages that may arise due to a fault in the NBN fibre network, ENERGEX fibre network or centralized computer systems. ENERGEX therefore considers that NBNCo's Option 1 – No Consolidation would be the ideal solution, however, it is understood some industry players would prefer to have the option to access the NBN at a more aggregate level. ENERGEX considers therefore that Option 4 – Composite, would be acceptable with appropriate business rules in place to govern access arrangements.

8: The strength of the composite model is that it provides for improved allocative efficiency by establishing access points that would meet utility requirements for network communications and, subject to appropriate commercial terms, minimise the risk of overbuilding of fibre networks by electricity utilities. The model also provides the flexibility for access seekers to connect to the NBN at a more centralised level if it is in their interests to do so. From a holistic perspective, facilitating utilities to become customers of the NBN may also lower utility demand for wireless communications spectrum for fixed broadband services, freeing up this resource for truly mobile communication requirements. The success of this will, however, depend on the business rules and commercial arrangements that are established for the provision of access at distributed POIs.

9: The key factor that should determine the location of distributed POIs should be whether a genuine business reason exists for the establishment of the POI in that location. Provided that not all access seekers are required to source backhaul from each POI, i.e. they have the option of connecting to the NBN at higher points of aggregation, then backhaul should not be a limiting variable.

10-11: No Comment

Timing and business rules for interconnection under NBNCo's composite approach

12: Interconnection at the distributed POIs should be governed by genuine business reasons. For utilities, the need to manage risk in the deployment and management of a smart grid, including the application of distributed intelligence and dynamic demand management, will require access to the NBN at distributed POIs as this mirrors the design characteristics of electricity infrastructure to meet required service levels and customer expectations. The presence of distributed POIs with their reduced consequences of single point failure will be a key issue in considering the use of the NBN for communications services.

13: NBN Co should establish a stardardised request for interconnection process that determines the location of the required POI, provides a framework for access seekers to set out their case for interconnection against the business rules and provides a timeframe for assessment, outcome notification and connection to the required POI.

Changes to the initial POIs

14: From a utility perspective, any change in POIs that leads to an increase in consolidation (to significantly greater than 50,000 connected customers) would not be acceptable. For reasons stated earlier in this submission, utilities to become customers of the NBN requires firmness around the POI between the utilities core communications network and the NBN. Utilities would accept any change in POIs that results in an increase in the total number of POIs. This may result due to increasing customer connections in a particular area, either as a result of the continued development of residential and commercial precincts or increased urban density due to the replacement of detached housing with multi-unit dwellings. An appropriate noficication and consultation period with existing and potential access seekers of not less than 3 months should be required.

15: In circumstances where NBN Co wishes to move the physical locality of a POI and this does not affect the number of connected customers downstream of the POI, then NBN Co should be required to notify all access seekers of the proposed change and provide 3 months for submissions on the appropriate location.

Layer 1 unbundling

16: No Comment

Uniform National Wholesale Pricing (UNWP)

17-20: No Comment

Wireless Services

21: Wireless and satellite services are simply an alternative medium to deliver the same communication service requirements for access seekers. Accordingly the same principles that apply to determining the number and location of POIs for NBNCo's fibre services should be adopted for wireless and satellite services.

Other

22: No Comment

23: There are potentially significant societal and economic benefits to be gained be establishing POIs for the NBN in a manner that meets the needs of electricity utility's in deploying and managing a smart grid. If a highly aggregated model is adopted, whereby there are only a few POIs in any utility service area, then the utilities cannot be customers of the NBN. Some level of diaggregation is therefore necessary. Taking into account legislated service levels

and customer expectations and the designing of the electricity the electricity network ENERGEX believes that the disaggregated POIs should be based on connected customer numbers of around 50,000.