Regional WA’s Electricity Landscape and its Future.
A view of regional Western Australia

Remote communities
- Marble Bar
- Nullagine
- Warnamboola
- Wiluna
- Andalya
- Beagle Bay
- Bidyadanga
- Camballin/Looma
- Djarindjin/Lombadina
- Kalumburu
- Yungngora
- Fitzroy Crossing
- Halls Creek

Small tourism and agricultural / mining towns
- Denham
- Exmouth
- Hopetoun
- Laverton
- Norseman
- Yalgoo
- Sandstone
- Menzies
- Gascoyne Junction
- Coral Bay
- Meekatharra
- Mount Magnet
- Onslow
- Wyndham

Regional centres
- Broome
- Carnarvon
- Esperance
- Karratha
- Kununurra
- Port Hedland
- Denham
- Exmouth
- Laverton
- Norseman
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NWIS Regulatory Reform
- This reform will involve increased use of Horizon Power's networks by others through a light handed regulatory regime
- Creation of the customer framework
- Changes to the funding arrangements for Horizon Power (the Tariff Equalisation Contribution) and;
- Changes to the way in which the NWIS networks are operated role allocation for the Australian Energy Market Operator (AEMO) as the Independent System Operator (ISO).

- Residential customers at times experiencing financial hardship and want more control over their bills
- High rates of tenancy creating disengagement in energy management and/or barriers to DER installation
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- Thriving towns replicating all the needs of capital cities at a smaller scale
- Still strongly dependant on centralised generation but present opportunities to shrink the grid around them
- Create the incentives for development of economical activities around them
Horizon Power is vertically-integrated

- Serves all of WA except for the South West Interconnected System
- 30+ remote microgrids
- Advanced metering
- 1 customer per 58 km²
Regional energy supply

Gas pipeline infrastructure

Horizon Power System Fuel Type

There are approximately 200 additional remote microgrids that are not operated by Horizon Power.
Revenue and cost to supply magnitudes

Subsidy range
- Level of subsidy depends on the system and customer type.
- System fuel mix and network size are key cost drivers.
Subsidy framework

State Government pays a direct subsidy to Synergy and Horizon Power. Western Power customers pays an indirect subsidy to Horizon Power’s customers through the TEF.

The future electricity system

Technology
Will be decentralised to produce, consume, store & sell low-carbon electricity locally

Home Battery Storage
Customer Analytics
Distributed solar

Advanced Metering
Digital Phone Apps

Smart Inverters
Smart Appliances

Augmented Reality
Flexible Pricing Plans

Safety Management Systems
Connected Trading Platforms

Smart
Appliances
Flexible Pricing Plans

Cyber-security Platform
Flexible Regulatory Frameworks

Customers
Will be empowered to use electricity how they choose, supported by new products & services

Markets
Will use data analytics to connect & incentivise participants to drive equitable pricing

Networks
Will be safe, reliable, efficient & support the digitisation & automation of systems

Cyber-security Platform
Communications & Analytics Platforms

The future

Networks
Technology
Customers
Markets

The future electricity system

The future

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The future
Remote high cost locations – opportunities and challenges

Opportunities

- Digitalisation. Eg: Advanced metering infrastructure, mobile bill payments and energy monitoring
- Reduced costs by embracing renewables
- Reduced carbon emissions
- Equitable pricing
- Value added energy services

Challenges

- Small market
- Comparatively low household income
- High percentage of bills rebated or paid by a third party
- High level of transience
- Low level of owner occupiers
- Remote worker / skill shortages
- Seasonal weather events and harsh climate
- Communications infrastructure inadequacies
The rapid change is already upon us …

Modular generation capacity

High penetration renewable energy and storage

Stand-alone Power Systems

Intelligent System Control

Multi-Flow network

Intelligent Consumer Services

Efficient demand based pricing and customer equity

Advanced Metering

Customer tools and information

High penetration renewables and storage

Standalone power systems

Multi-flow networks
Mega Challenge - Hosting Renewables

CSIRO: Change and choice - The Future Grid Forum’s analysis of Australia’s potential electricity pathways to 2050
Future Challenge - many things to manage
Leading the energy revolution - The Onslow Story

- Home to Australia’s largest DER microgrid.
- 50% of the town’s electricity needs to be serviced from renewable energy sources.
- Includes a mix of distributed renewables, conventional gas powered generation and energy storage.
- Will reduce cost to supply Onslow and provide more flexibility for customers.

https://www.youtube.com/watch?v=m3glvLZt_Kc
Future electricity grids may be a ‘federation’ of microgrids

- Electricity systems supplied by millions of micro-generation sources (not a handful large centralised generators) need new control architectures.

- Microgrids can provide this architecture at a local level and enable thousands of DERs to operate in harmony and constantly balance supply and demand.

- Large traditional grids may be re-architected over time for optimal efficiency as a federation of microgrids; usually functioning together but sometime independently (to minimise widespread outages).
What's next for incumbent utilities…

• Accept the revenue model of the past is history…
• Provide a simple product for the consumer or prosumer…
• Embrace change…

Thank You