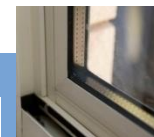




Australian Government

**Department of the Environment,
Water, Heritage and the Arts**



Melbourne – 25 November 2009

Smart Grid, Smart City presentation



Overview

- Australian Government — up to \$100 million to deliver a commercial-scale smart grid rollout
- Pre-deployment report released late September - *Smart Grid, Smart City: A new direction for a new energy era*
- Report recommended *Smart Grid, Smart City* proceed
- Detailed project guideline package released late October – a ‘how to apply’ guide
- We’re now ‘on the market’



Objectives of *Smart Grid, Smart City*

- **Deploy a commercial-scale rollout** to demonstrate the business case for smart grid applications and technologies
- **Build public and corporate awareness** of the economic and environmental benefits of smart grids - obtain buy-in from industry and customers
- **Gather data** to inform a possible national, industry-led deployment
- **Investigate synergies with other networks** - gas and water and the National Broadband Network



Smart Grid, Smart City and the NBN

- The National Broadband Network (NBN) is a \$43 billion Australian Government initiative to bring fibre-to-the-premises (FTTP) technology to 90% of Australian homes over 8 years
- The successful consortium will be required to explore the interoperability of smart grid technologies and applications with FTTP technology
- **Smart grid communications platforms are expected to comprise a range of technologies; FTTP will be one**



Other Smart Grid Initiatives

- Singapore – Recent announcement of Smart Grid trial
 - Includes smart meters
 - Grid side & Customer side
 - EVs
 - Integration of intermittent generation
 - Reflects DEWHA report emphases & focus

- Korea – Juje Island
 - Also appears a reflection of Australian priorities



Broad comparisons between the US and Australian initiatives

- Australia - \$100m
- USA - \$3.4b
- On a teraWatt hour basis - US: Australia = 1.96 : 1
- On a per capita basis - US: Australia = 2.4 : 1
- On a GDP basis - US: Australia = 2.5 : 1
- On installed generation basis - US: Australia = 1.5 : 1



Elements of the *Smart Grid, Smart City* 1

Smart Grid, Smart City will include a **commercial-scale** demonstration of:

- **Customer applications**
- **Active voltage support and power factor correction**
- **Distributed storage**
- **Fault detection, isolation and restoration (FDIR)**



Elements of the *Smart Grid, Smart City 2*

Smart Grid, Smart City should also demonstrate other smart grid applications and technologies at **smaller-scale** including, but not limited to:

- **Electric vehicles**
- **Substation and feeder monitoring**
- **Wide area measurement (WAM)**
- **Distributed generation support**



Location of the *Smart Grid, Smart City*

- Government has considered whether funding should be directed to a single, large-scale project or a number of smaller pilot trials
- *Smart Grid, Smart City* needs to demonstrate benefits of the smart grid across the entire Australian network and be sufficient in size to be scalable, representative and commercially relevant, therefore...
- ***Smart Grid, Smart City* will be located in one Distributor's area so that grid topology, customer demographics and climate are directly representative or can be modelled/simulated**

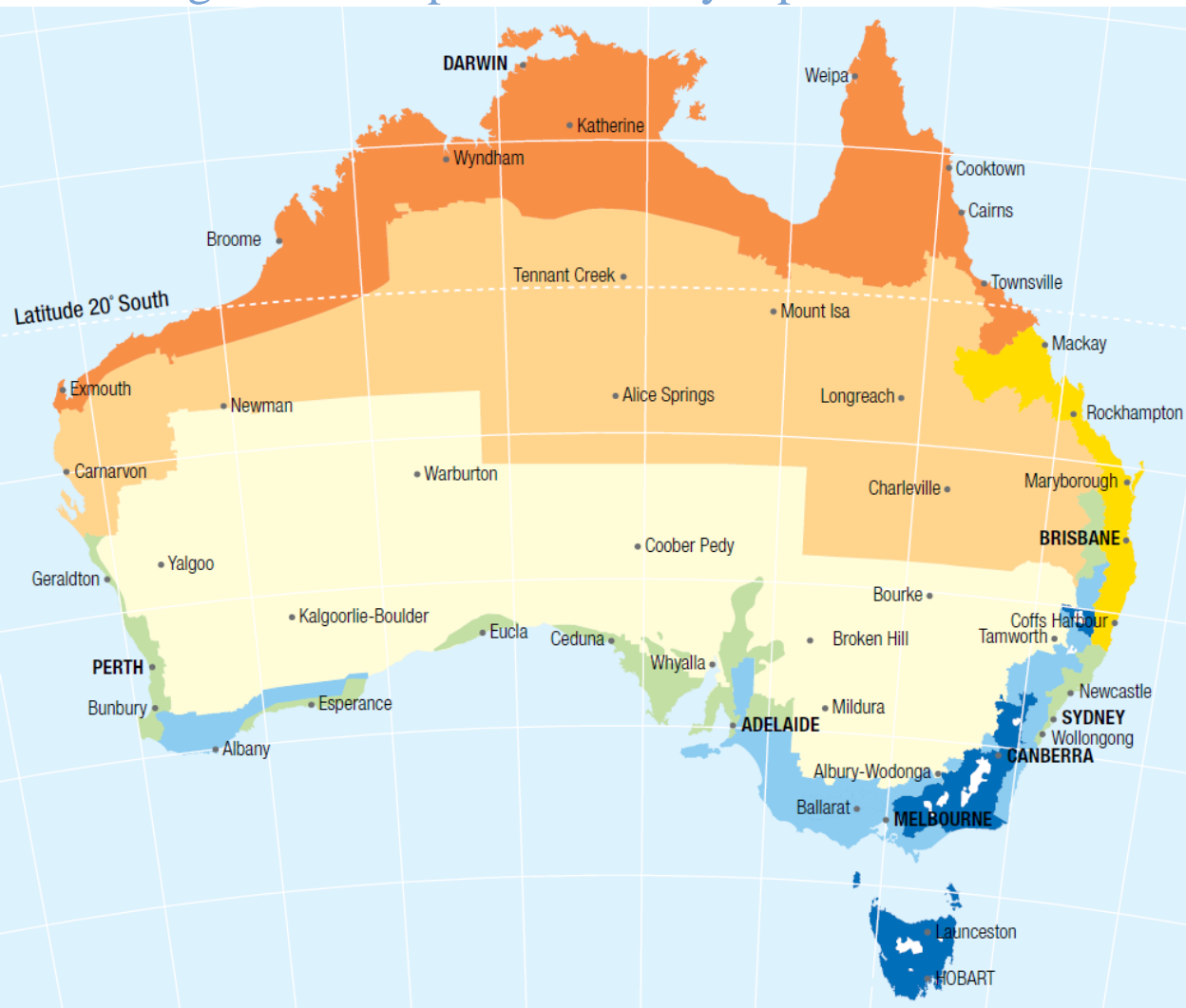


Location of *Smart Grid, Smart City*

Criteria	Single location	Multiple locations	Comments
Testing grid and back office system capabilities	✓	✗	Integrated platform best tested by having more applications in one site—the larger the test, more convincing the scalability of system
Investment cost	✓	✗	Multiple sites requires duplication of back office and communications infrastructure
Visibility and focal point	✓	✗	Identifying a single site provides focal point for marketing
Single point of control	✓	✗	Single point of control maximises speed of trial and consistency of results
Customer segmentation	✓	✓	Multiple sites more likely to give customer segmentation but arguable single site could be sufficient (with appropriate sampling)
Representative network characteristics	✓	✓	Some sites may offer sufficient mix of network architectures
Representative climate	✗	✓	Single site will not be able to provide representation of all 8 climate zones in Australia
Buy-in of more areas and players	✗	✓	Multiple sites likely to involve more consortia members



No single site can provide a truly representative climate



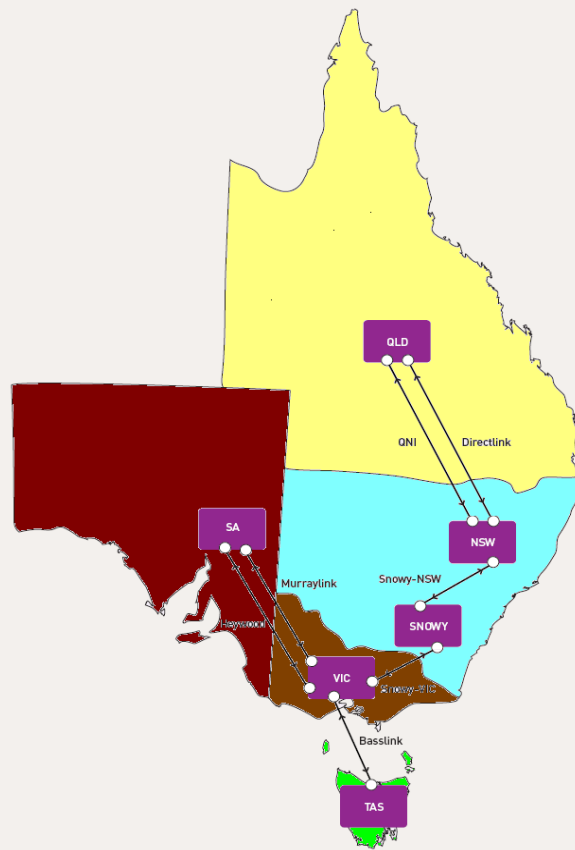
ZONE	DESCRIPTION
1	High humid summer, warm winter
2	Warm humid summer, mild winter
3	Hot dry summer, warm winter
4	Hot dry summer, cool winter
5	Warm temperate
6	Mild temperate
7	Cool temperate
8	Alpine

64% of Australia's population lives in zones 5 and 6



Australian National Electricity Market

Transmission interconnectors in Australia



**Volume of Sent-out Energy
(2007-08) 208,000 GWh**

**Value of Sent-out Energy
(2007-08) AU\$11.1 billion
(Physical Spot)**

**Maximum NEM Demand
34,425 MW**

**Installed Scheduled
Generation 44,400 MW**



Structure of Australian Electricity Industry

- About 33 companies in **generation**
Sell electricity into wholesale market
- About 12 companies in **transmission**
Very HV transmission to distributors and inter-state connectors
- **16 distributors** – target for *Smart Grid, Smart City*
Voltage drop and delivery to homes and businesses
- About 30 companies in **retail**
Buy from wholesale market and on-sell electricity, billing agency



Some Eligibility Criteria

- **Must be a distribution company** – clear timelines, responsibilities & other project management basics
- **Stakeholder engagement and education plan** - a robust and ongoing community engagement plan
- **Retailer engagement plan** – active retailer participation throughout the project is required to recruit consumers
- **Dissemination of lessons** – core lessons and underlying raw data must be made available to allow the broader industry to make informed decisions about investment in smart grids
- **Security plan**– cyber & physical



Selection Criteria

- **Applications, approach and benefits (40%)**
- **Operational plan and risk management (25%)**
- **Dissemination of findings (10%)**
- **Interaction with Working Groups (10%)**
- **Financial viability and governance (15%)**



Barriers to a wider adoption of smart grids

Regulation

- Government is working with regulators to ensure their active participation throughout the *Smart Grid, Smart City* project
- Direct cost increases for customers as a result of *Smart Grid, Smart City* unlikely as the government contribution should offset network investment risk



Overcoming Barriers

Regulatory Working Group

- To monitor *Smart Grid*, *Smart City* to see where activities “bump against” regulations and/or where a regulatory refresh would improve environmental and efficiency outcomes
- Membership and ToR yet to be defined. Will include consortium lead, government agencies, regulatory & market bodies
- Reporting to government through a Ministerial Council



Barriers to a wider adoption of smart grids

Standards

- An absence of agreed standards poses a significant investment risk and can result in stranded assets
- Standards are required for multiple components of the smart grid, including communications security, metering data interface, home area network communications, and grid-side application communications









Overcoming Barriers

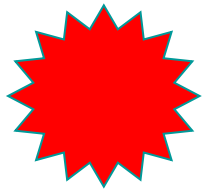
Standards Working Group

- **Work to identify:**
 - Best smart grid standards framework?
 - What's in place and what's about to be put in place?
 - Critical gaps
 - Are these gaps being addressed by others?
 - How are they best closed?
- **Membership, ToR under development**



Timeline

	May 2009	—	Announcement of <i>Smart Grid, Smart City</i>
	July 2009	—	Commencement of pre-deployment study
	August 2009	—	Completion of pre-deployment study
	End September 2009	—	Release of draft grant guidelines
	End of October 2009	—	Release of final grant guidelines & applications open
	January 2010	—	Application process closes



April 2010

- **Announcement of *Smart Grid, Smart City***



Assessment process

- Grant applications close on **28 January 2010**
- **Two-stage process**
- **Expert evaluation** of applications to occur in February 2010.
- **Independent assessment** of short-listed applications will occur in February – March 2010 and will provide a recommendation to government



Getting in Contact

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