



Electricity Demand Management

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BAI

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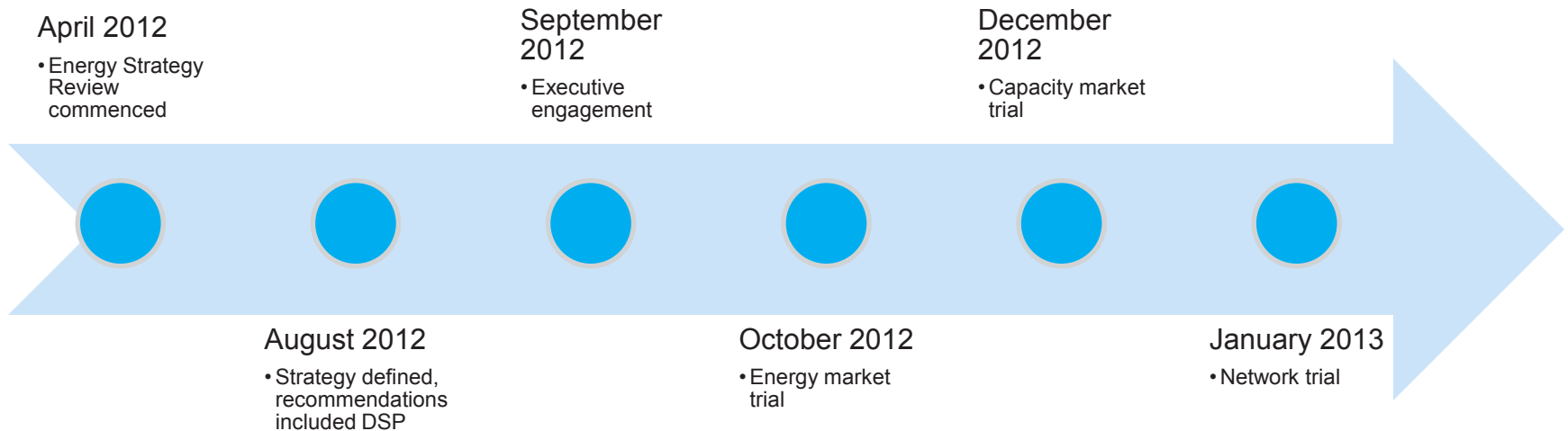
ABOUT BAI

- Designer, builder and operator of communications infrastructure and services in broadcast, private radio networks, emergency radio networks, enclosed space (subways, tunnels, buildings etc) cellular and WiFi, online and tower infrastructure
- Businesses in Australia, Hong Kong, New York and Toronto
- Enterprise and Government focus - resilient, safe, shared and smart solutions
- Key Customers: ABC, SBS, mobile operators, NYC Transit Authority, public safety agencies
- Majority owned by the Canada Pension Plan Investment Board (CPPIB)



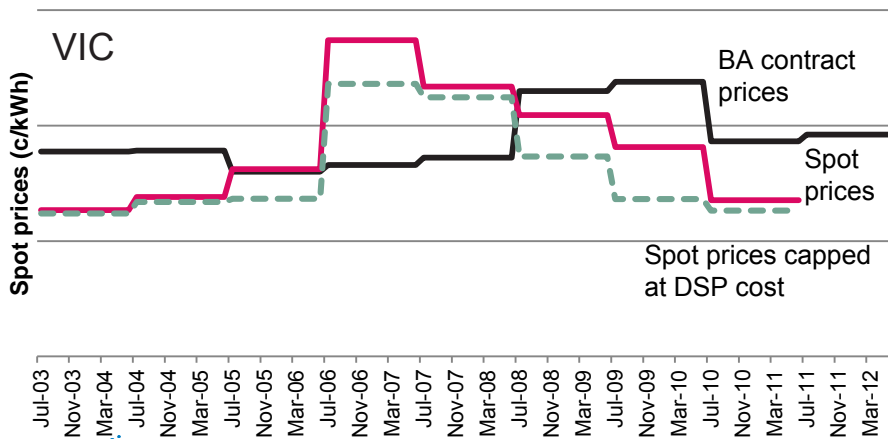
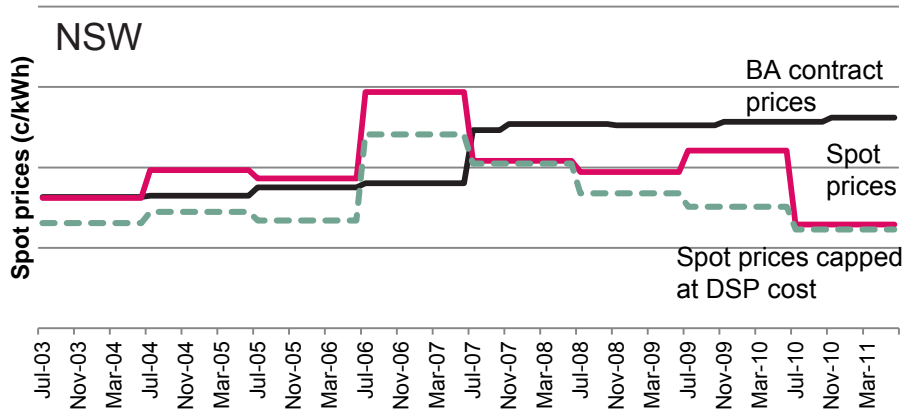
JOURNEY SO FAR

Energy has a strategic importance in broadcasting infrastructure; the security of supply is essential to stay on air, and the cost is a major component of opex



ENGAGING WITH THE EXECUTIVE

With our initial focus on the energy market, the executive engagement process focussed on risk clarification, and addressing concerns about DSP



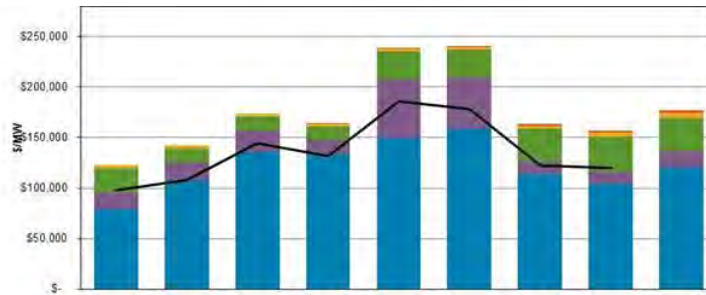
Historical performance was analysed for potential downside as well as quantifying upside. This highlighted the execution of approach as fundamental.



Small scale approach agreed to refine the operational execution with minimal financial exposure.

OPPORTUNITIES IN OTHER PARTS OF THE VALUE CHAIN

WEM Capacity Market



Capacity Year	08/09	09/10	10/11	11/12	12/13	13/14	14/15	15/16	16/17
Power Station Cost	\$ 79,110	\$ 107,404	\$ 135,701	\$ 134,091	\$ 149,306	\$ 158,710	\$ 113,971	\$ 104,178	\$ 119,942
Transmission Costs	\$ 16,558	\$ 18,017	\$ 20,672	\$ 13,151	\$ 58,493	\$ 51,621	\$ 12,329	\$ 12,164	\$ 16,127
Fixed O&M	\$ 23,900	\$ 13,363	\$ 14,392	\$ 13,431	\$ 27,335	\$ 26,649	\$ 33,384	\$ 34,239	\$ 33,238
Fuel Costs	\$ 2,907	\$ 3,456	\$ 2,631	\$ 3,151	\$ 2,615	\$ 2,825	\$ 2,239	\$ 4,680	\$ 5,442
Land Costs	\$ -	\$ -	\$ -	\$ 293	\$ 769	\$ 818	\$ 1,973	\$ 1,783	\$ 2,064
MRCP (nearest \$100)	\$ 122,500	\$ 142,200	\$ 173,400	\$ 164,100	\$ 238,500	\$ 240,600	\$ 163,900	\$ 157,000	\$ 176,800
Excess Capacity	6.43%	11.44%	2.19%	5.83%	8.99%	14.59%	13.79%	11.02%	n/a
Reserve Capacity Price (per yr)	\$ 97,837	\$ 108,459	\$ 144,235	\$ 131,805	\$ 186,001	\$ 178,477	\$ 122,427	\$ 120,199	n/a

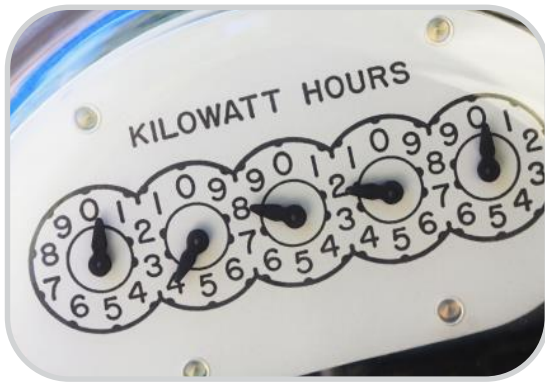


SP AusNet's Critical Peak Demand tariff

Tariff	Criteria	kVA Price p.a.	MVA Equivalent p.a.
NSP56	LV <400MWh	30.43	\$ 30,430.00
NEN56	LV Medium demand	20.63	\$ 20,630.00
NSP75	LV <750MWh	79.1901	\$ 79,190.10
NSP76	LV >750 MWh	80.5101	\$ 80,510.10
NSP77	LV >2GWh	89.0301	\$ 89,030.10
NSP78	LV >4GWh	102.9501	\$ 102,950.10
NSP81	HV – 11kV	64.7901	\$ 64,790.10
NSP82	HV – 11 kV Shoulder	57.5901	\$ 57,590.10
NSP83	HV – 11 kV Shoulder	4.5501	\$ 4,550.10
NSP91	HV – 66kV	3.9201	\$ 3,920.10
NSP94	HV – 66kV	2.6001	\$ 2,600.10
NSP95	HV – 66kV	6.3201	\$ 6,320.10

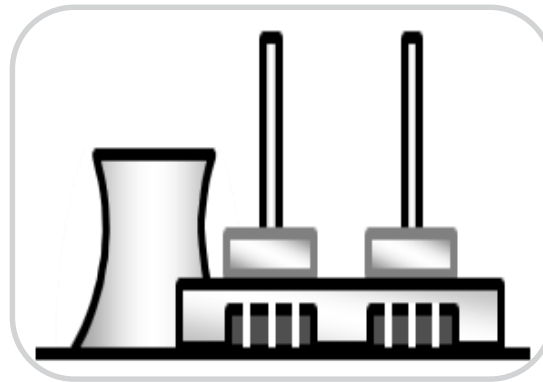
Both schemes offer large incentives with minimal financial risk, i.e. you incur a cost for NOT participating which is equivalent to the cost of power elsewhere. However, these schemes are not nationwide, and hence not scalable.

EXPERIENCE TO DATE FOR EACH OF THE TRIAL PROGRAMS



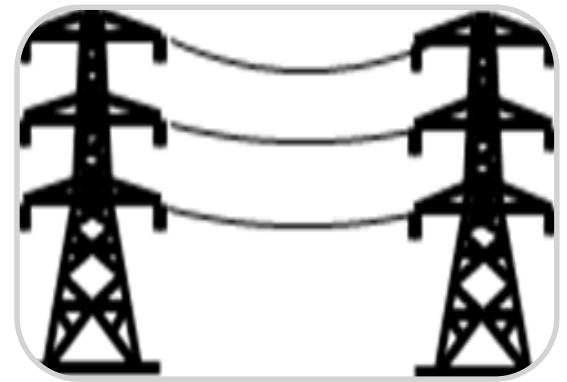
Energy

- 15% Reduction against contract price



Capacity

- 50% Reduction against capacity costs



Network

- 23% Reduction in network costs

ADDRESSING THE CHALLENGES

5 minute bids vs 30 minute prices

Spot range \$/MWh		Dispatch interval						Sum
		1	2	3	4	5	6	
\$1,000	\$3,000	27	19	17	25	24	44	156
\$3,000	\$5,000	-	2	-	-	1	1	4
\$5,000	\$7,000	2	1	1	1	1	3	9
\$7,000	\$9,000	5	2	2	2	3	3	17
\$9,000	\$11,000	-	-	1	1	1	6	9
\$11,000 +		7	3	5	4	14	22	55
Total		41	27	26	33	44	79	250

Source: Visy response to AEMC Rules changes – Bidding in Good Faith 22nd May 2014

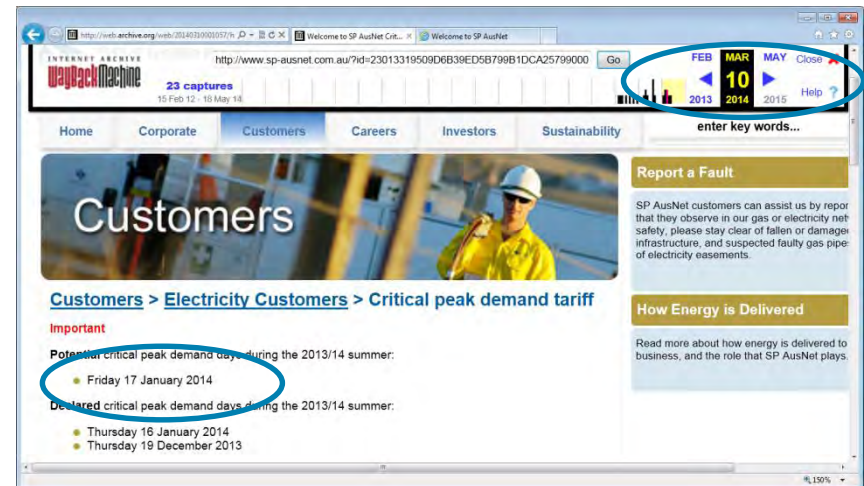
When a high bid occurs in the later half of the dispatch intervals it has the affect of increasing the average price that a user will pay without allowing them to change their behaviour to avoid the cost.

Clarity of Communication

None of the three trials use the same notification process

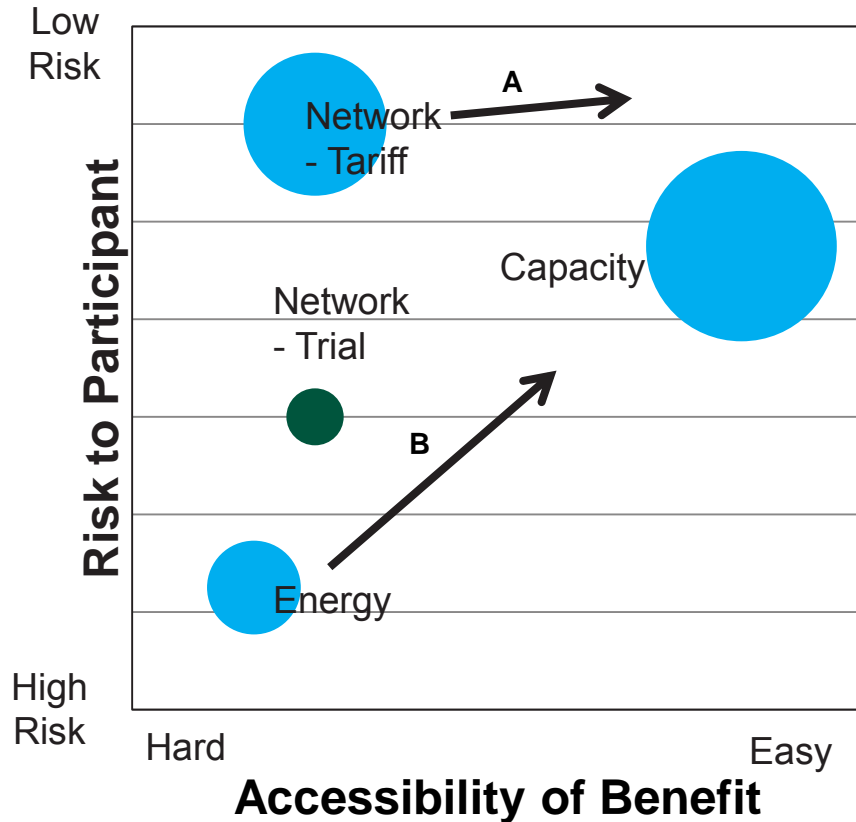
- Energy uses 3rd party software
- Capacity uses an IVR
- Network uses web and SMS

Accuracy can be challenging!



HOW WOULD WE ASSESS DEMAND SIDE PARTICIPATION IF WE WERE A NEW ENTRANT NOW?

Attractiveness of DSP



There is real value to be achieved by Demand Side Participation. It could be increased with

- A. Nationwide adoption of Critical Peak Demand tariff structure with improved communication methods
- B. Changes to market structure
 - To enable DSP to be dispatched, and/or;
 - To prevent the problems arising from 5 minute bidding and 30 minute pricing

A LAST WORD

A key assumption in economic theory is perfect knowledge; outcomes improve remarkably with communication

- There is real value, and tangible benefits to demand side participation. For those that haven't done so to date, don't be afraid, take the jump
- Programs should be extended across jurisdictions (CPD)
- Remove barriers to communication/knowledge, have a common standard for enabling DSP
- As part of the regulatory reset process, we recommend energy users push this position