

ACOSS/Choice Forum- **Energy at home:**
Prices, products, pressures, protections and politics

Energy Bills and Peak Demand:
What can be done?
A longer term perspective.

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**Sustainable
Futures**



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In a nutshell...

1. Cutting carbon pollution is our biggest long term challenge
2. Introducing a Carbon Price has become much harder due to steeply rising power prices (e.g. 76% in NSW in 5 years)
3. Network capital spending and peak demand the main drivers
4. Carbon Price to raise power prices by ~10% in July 2012
5. Tax cuts and benefits to offset this price rise
6. But power prices will rise by much more (~>20% in July 2012)
7. Given recent price rises, consumers may feel duded
8. Consumers (and the Govt) need an effective response
9. Rule changes may help, but will be too slow
10. Only collaboration can deliver timely solutions

Challenges for the Electricity Sector

Short Term Challenges

- **Rising prices and bills**
- **Rising Peak Demand**

Longer Term Challenges

- **Peak Oil & Electric Vehicles**
- **Peak Gas** (exporting gas may raise local gas prices)
- **Peak Coal** (coal fired power fell in 2010)
- **Peak Carbon** (emissions must start to fall soon)
 - Solar Power reaching cost parity with Grid - a game changer?
- **Peak Energy** (grid energy has plateaued - the new normal?)

Climate Change: Long term challenge needs short term response

“... it is critically important that we bring about a commitment to reduce emissions effectively by 2020...”

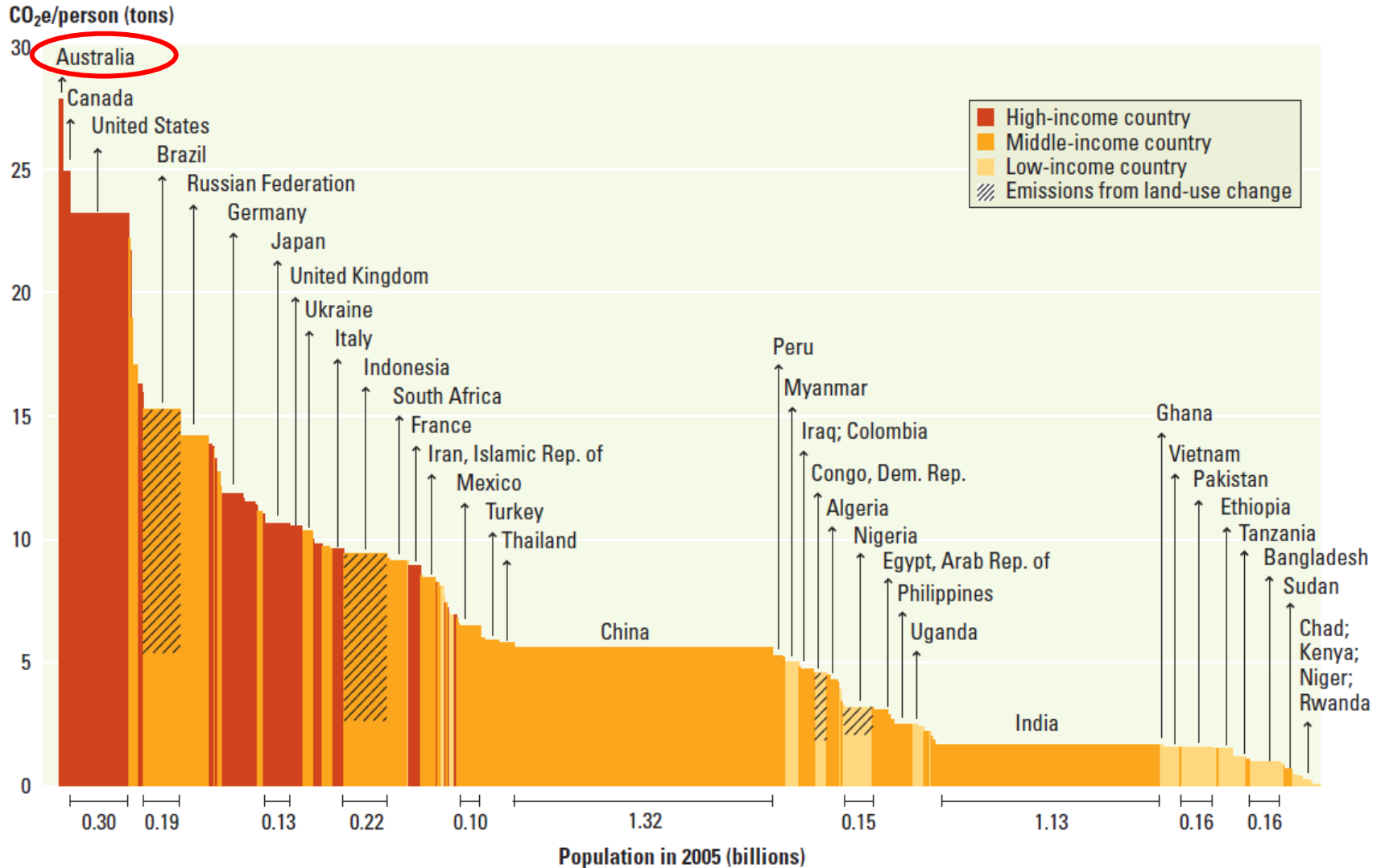
“... to ensure stabilisation of temperatures at [2°C], then ***global emissions must peak by 2015.***”



Rajendra Pachauri,
Chairman,
Intergovernmental Panel on
Climate Change (IPCC)
15 Oct 2009

http://news.yahoo.com/s/afp/20091015/sc_afp/unclimatewarmingpachauri

Per capita Greenhouse Gas Emissions (2002)

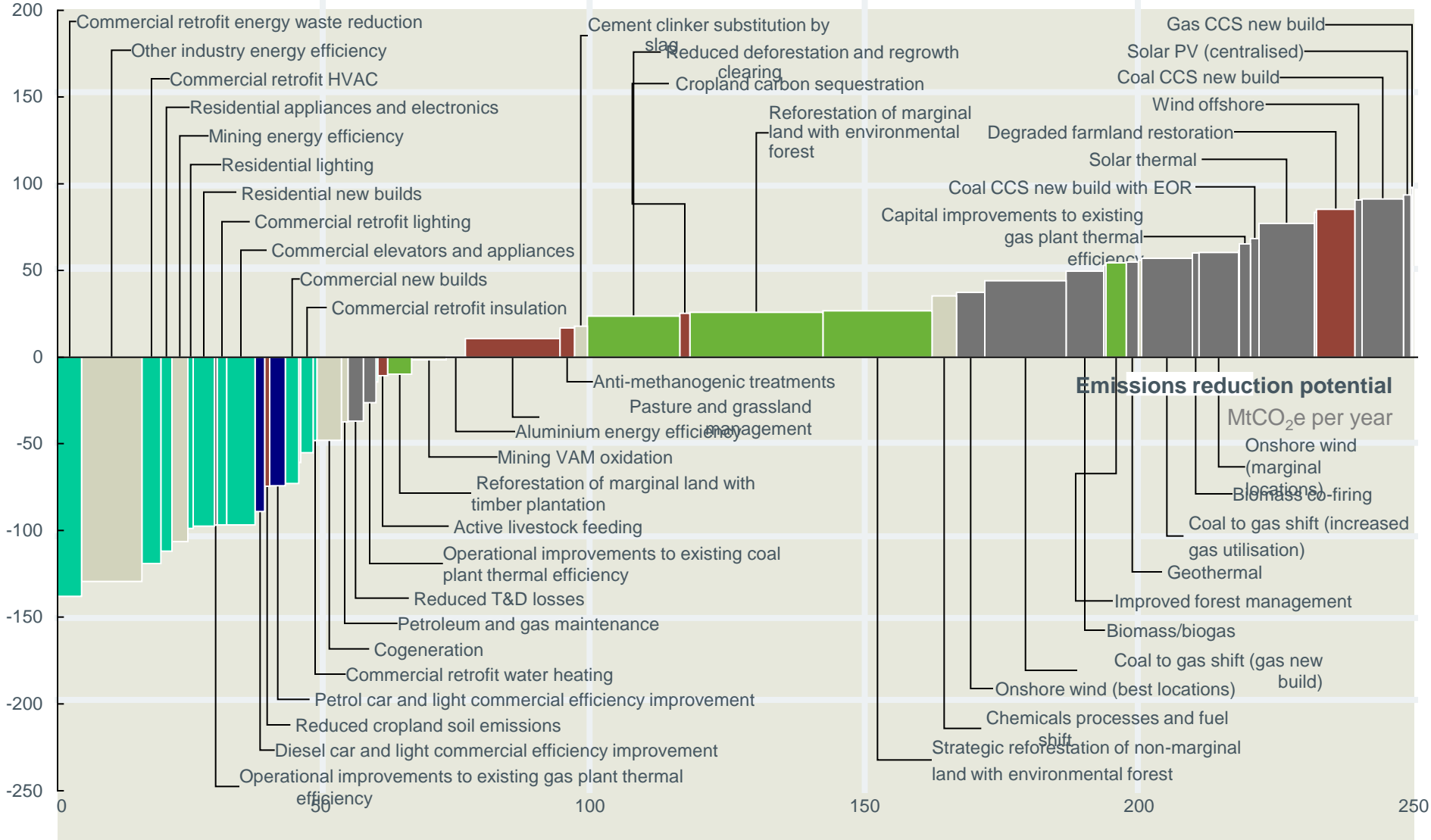


Carbon emissions reduction cost curve to 2020

- Power
- Industry
- Transport
- Buildings
- Forestry
- Agriculture

Cost to society

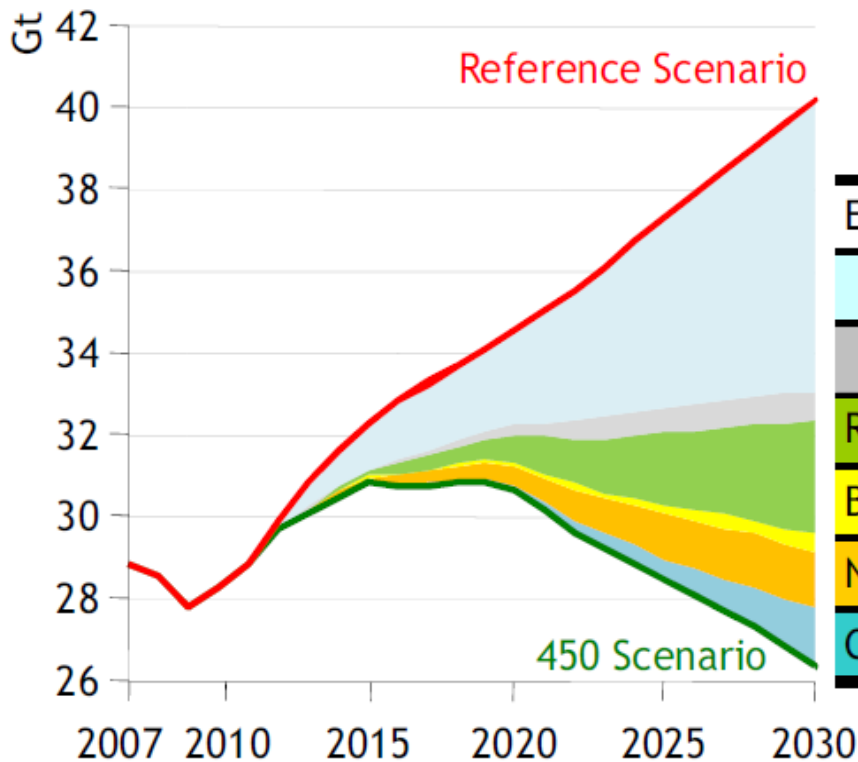
A\$/tCO₂e



SOURCE: ClimateWorks team analysis (refer to bibliography)

Saving energy: “the top priority”

Source: International Energy Agency (2009), *World Energy Outlook*



	Abatement (Mt CO ₂)		Investment (\$2008 billion)	
	2020	2030	2010- 2020	2021- 2030
	65%	57%		
Efficiency	2 517	7 880	1 999	5 586
<i>End-use</i>	2 284	7 145	1 933	5 551
<i>Power plants</i>	233	735	66	35
Renewables	680	2 741	527	2 260
Biofuels	57	429	27	378
Nuclear	493	1 380	125	491
CCS	102	1 410	56	646

One Neglected Solution

Demand Management

“Reducing or shifting demand, *as an alternative* to providing more supply capacity to meet demand”

What is Demand Management (DM)?

Peak Load Management

Time of Use tariffs

Ice Storage

Interruptible loads

Battery Storage / EVs

Electric to Gas Hot Water

Power factor correction

Gas Chillers

Biomass Generation

Behaviour change

Small Gas Generation

Efficient motors & chillers

Solar Photovoltaics

Cogeneration

Efficient Lighting

Standby Generation

Efficient showerheads

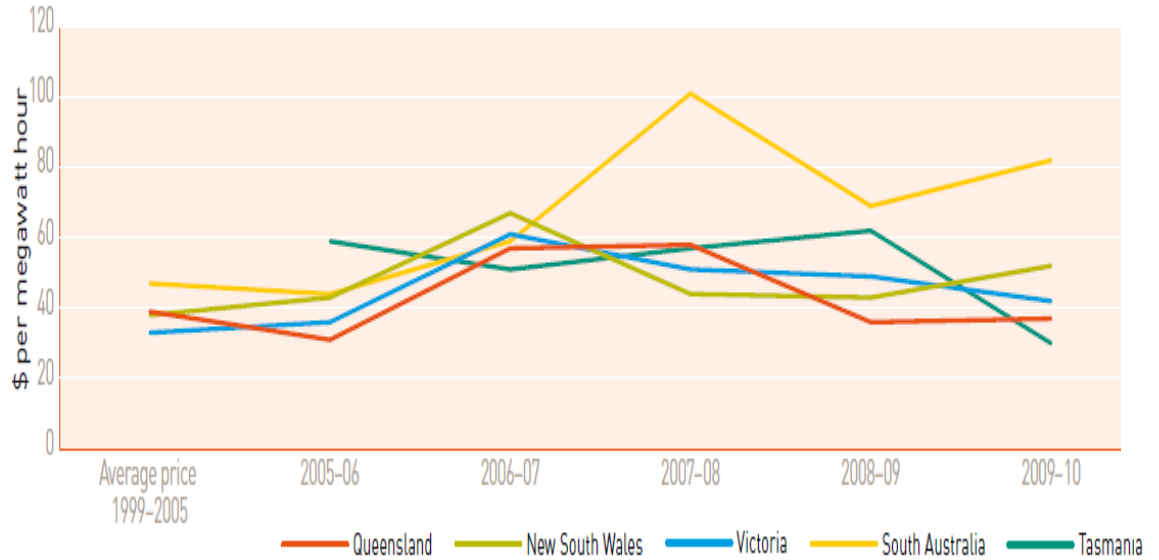
Efficiency Retrofits

**Distributed
Generation**

**Energy
Efficiency**

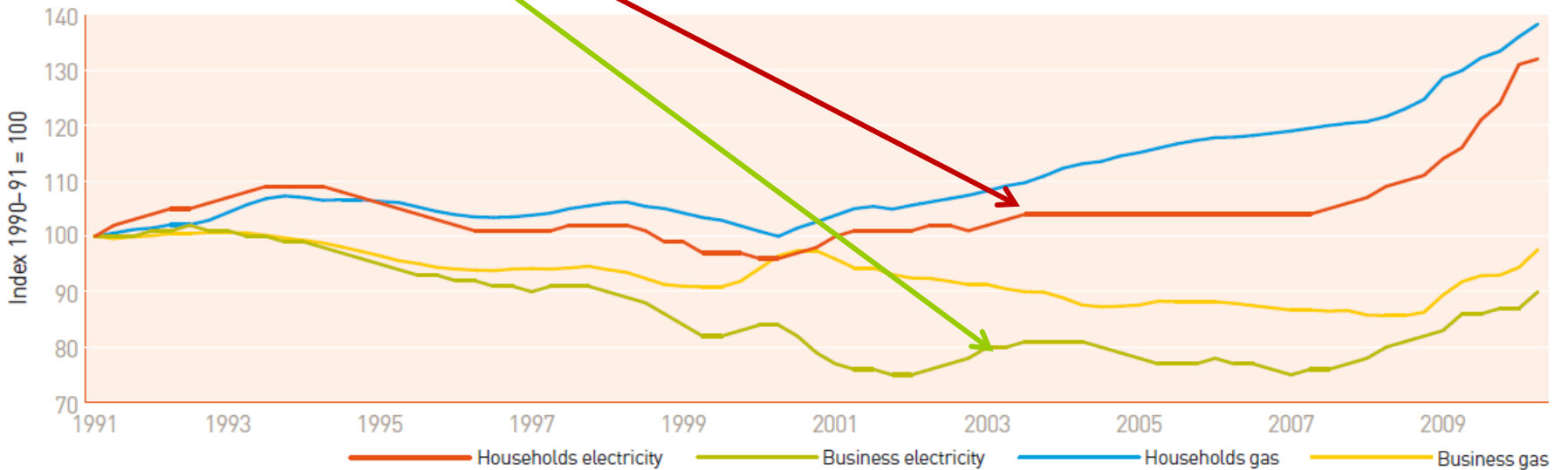
Generation Power Prices (1999-2010)

Figure 3
Weighted average spot prices—electricity



Retail Power Prices (1991-2009)

Figure 9
Electricity and gas retail price index (real)—Australian capital cities



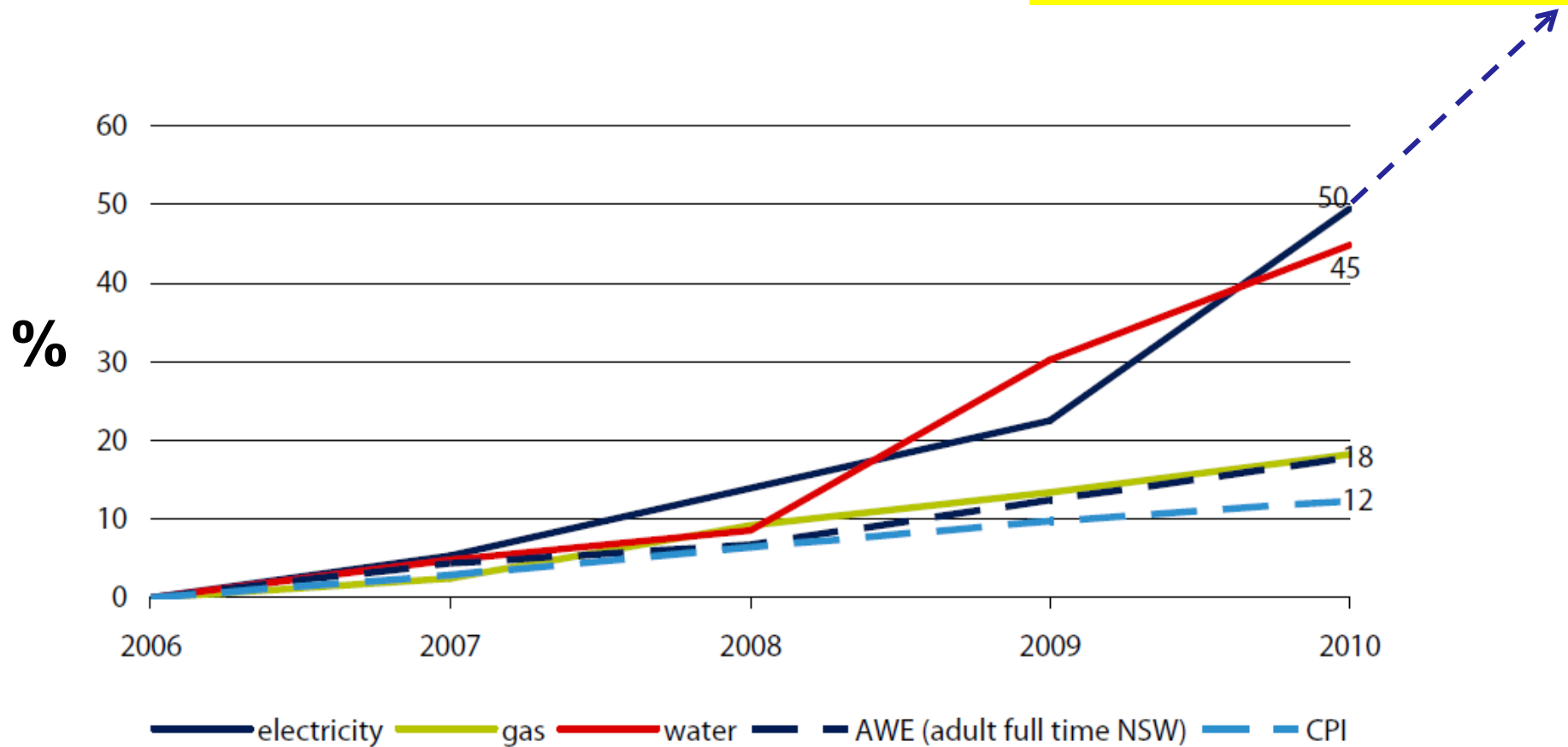
Source: AER State of the Energy Market (2010)

Sources: ABS, Consumer price index and Producer price index, cat. nos 6401.0 and 6427.0, various years.

Increases in electricity prices (NSW)

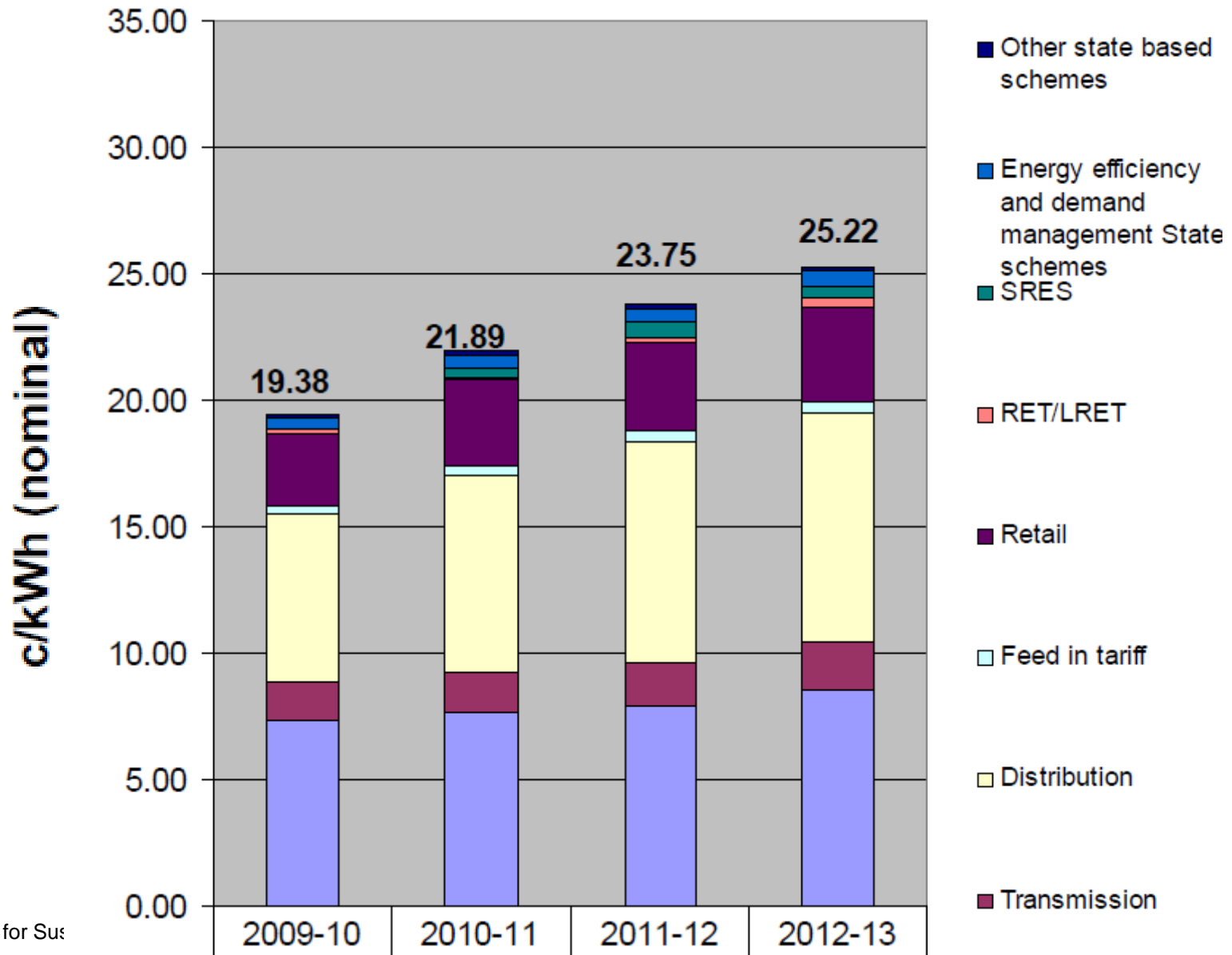
(nominal %)

IPART 2011 Decision: +17% = 76%



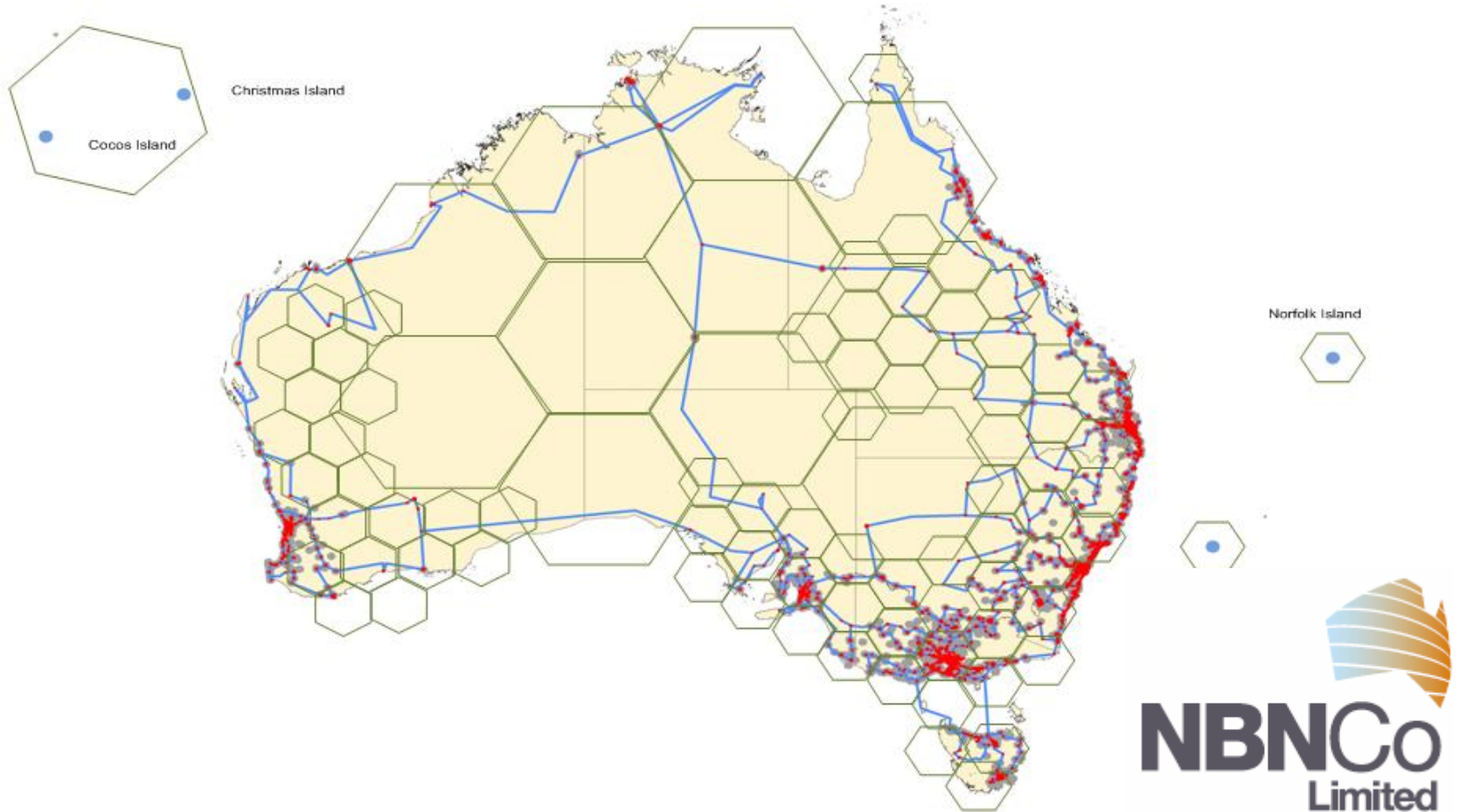
Source: <http://www.ipart.nsw.gov.au/files/Report%20-%202010%20HH%20survey%20report%20FINAL%20website%20-%20APD.PDF>

Australian Forecast Electricity Prices



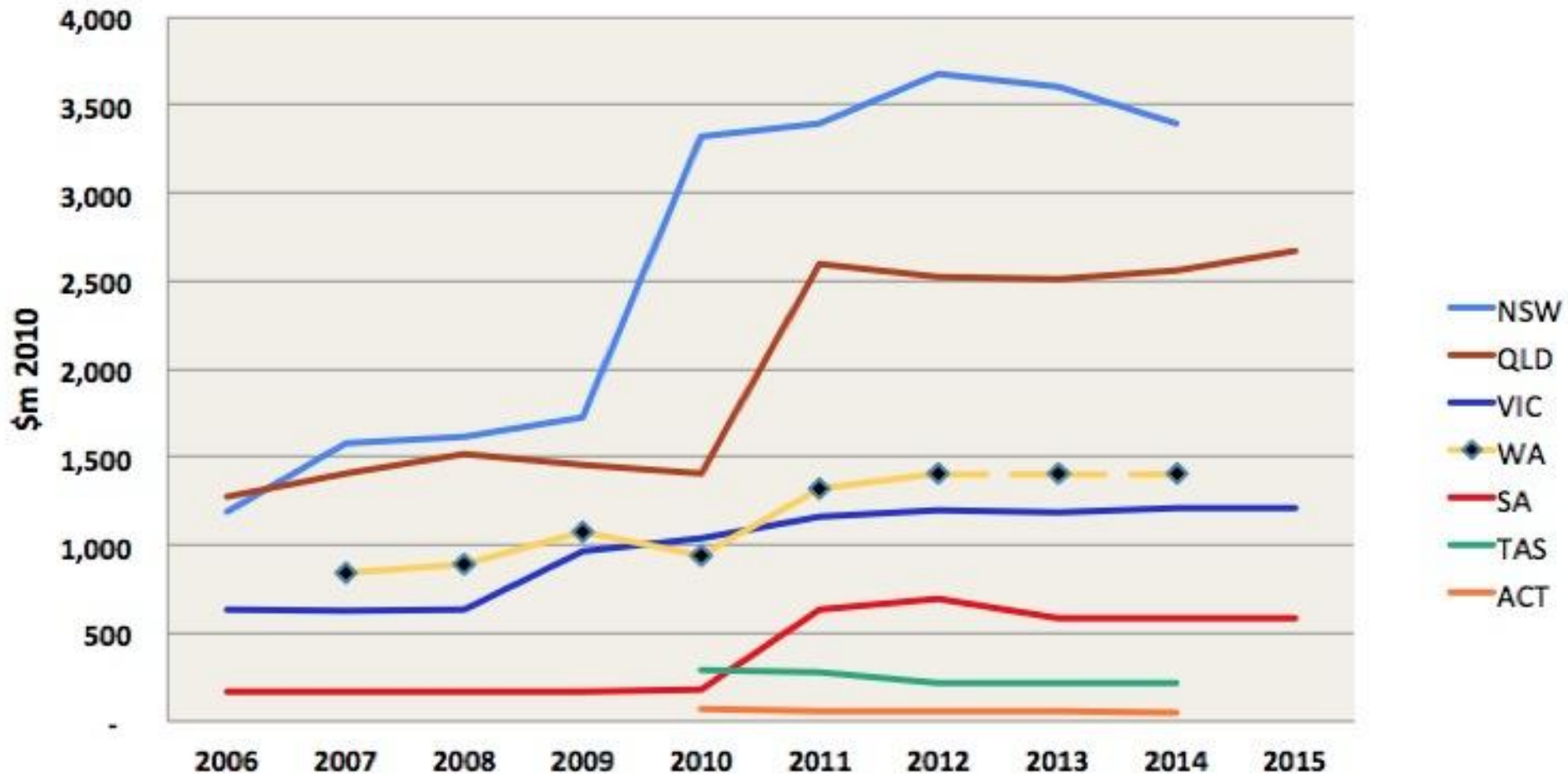
Source: AEMC, Future Possible Retail Electricity Price Movements: 2010 to 2013

National Broadband Network: \$36b in Capex by 2020



Network Investment: >\$45 Billion by 2015

- Bigger (and sooner) than National Broadband Network

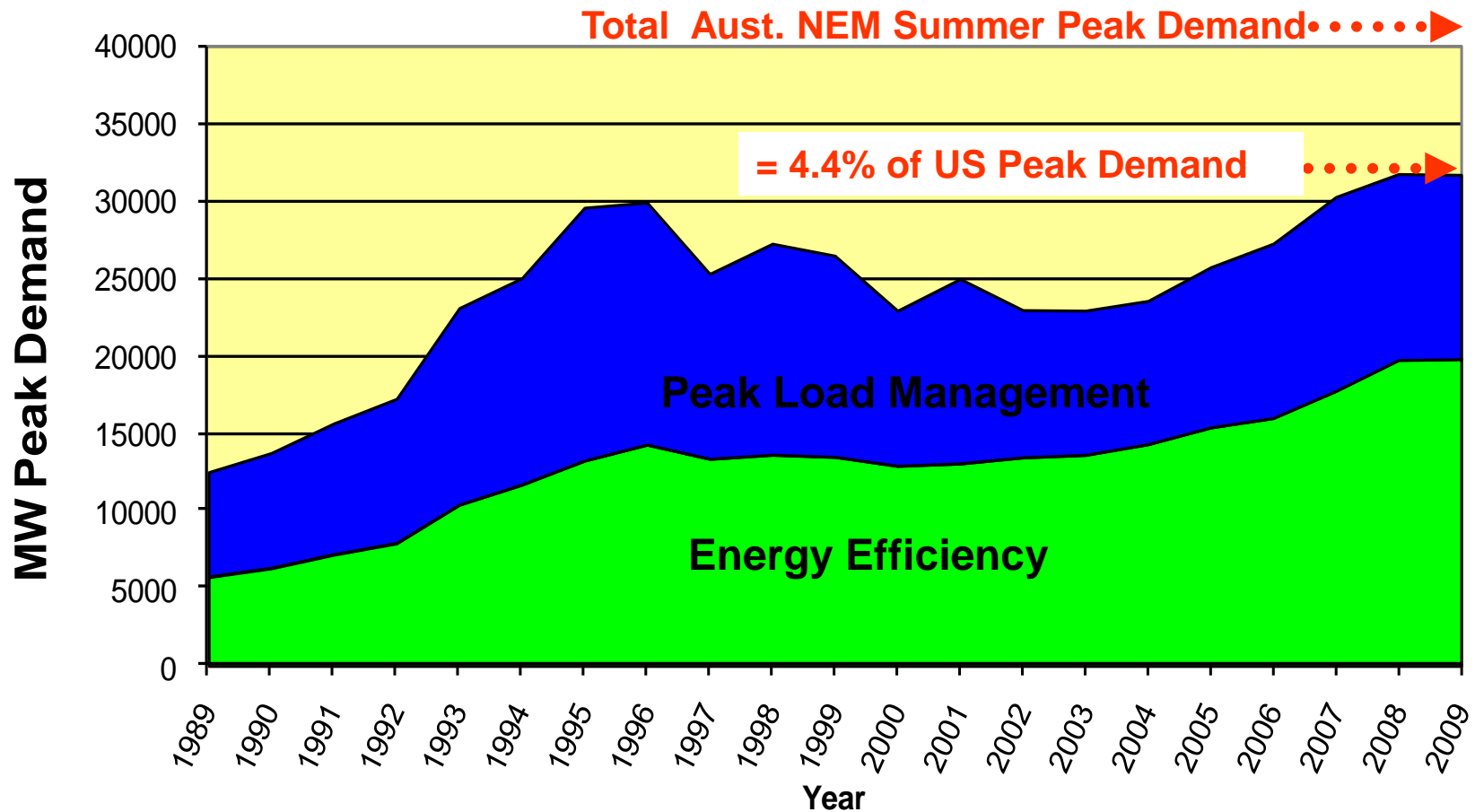


Network Infrastructure Spending

- > This is an unprecedented level of spending
 - The biggest driver for rising prices and bills
- > Once spent, this investment will need to be recovered, obstructing energy savings and lower bills
- > Networks are *not obliged to spend* their budgets on network infrastructure
- > But, current market rules and regulation and policy generally encourage network infrastructure spending and discourage networks from investing in Demand Management

How much network capital investment could be cost effectively avoided through Demand Management?

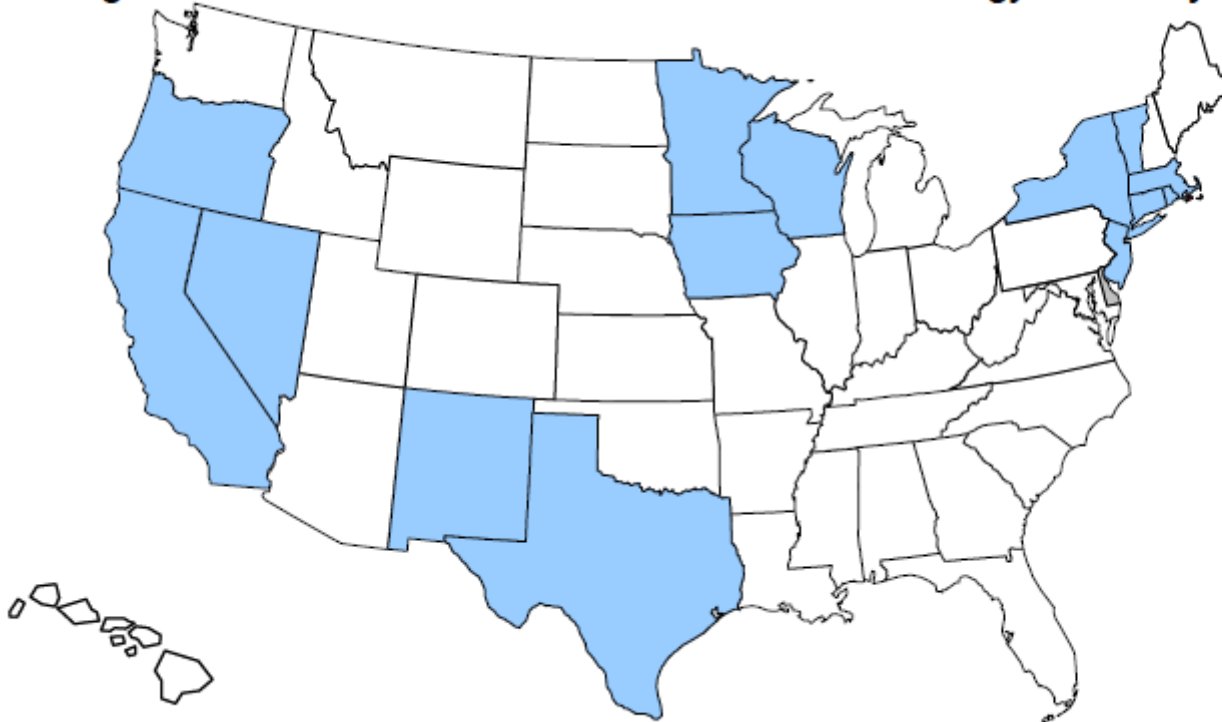
US Utility Demand Management (DM) - Actual Peak Load Reductions



(Sources: US Energy Information Administration & AEMO)

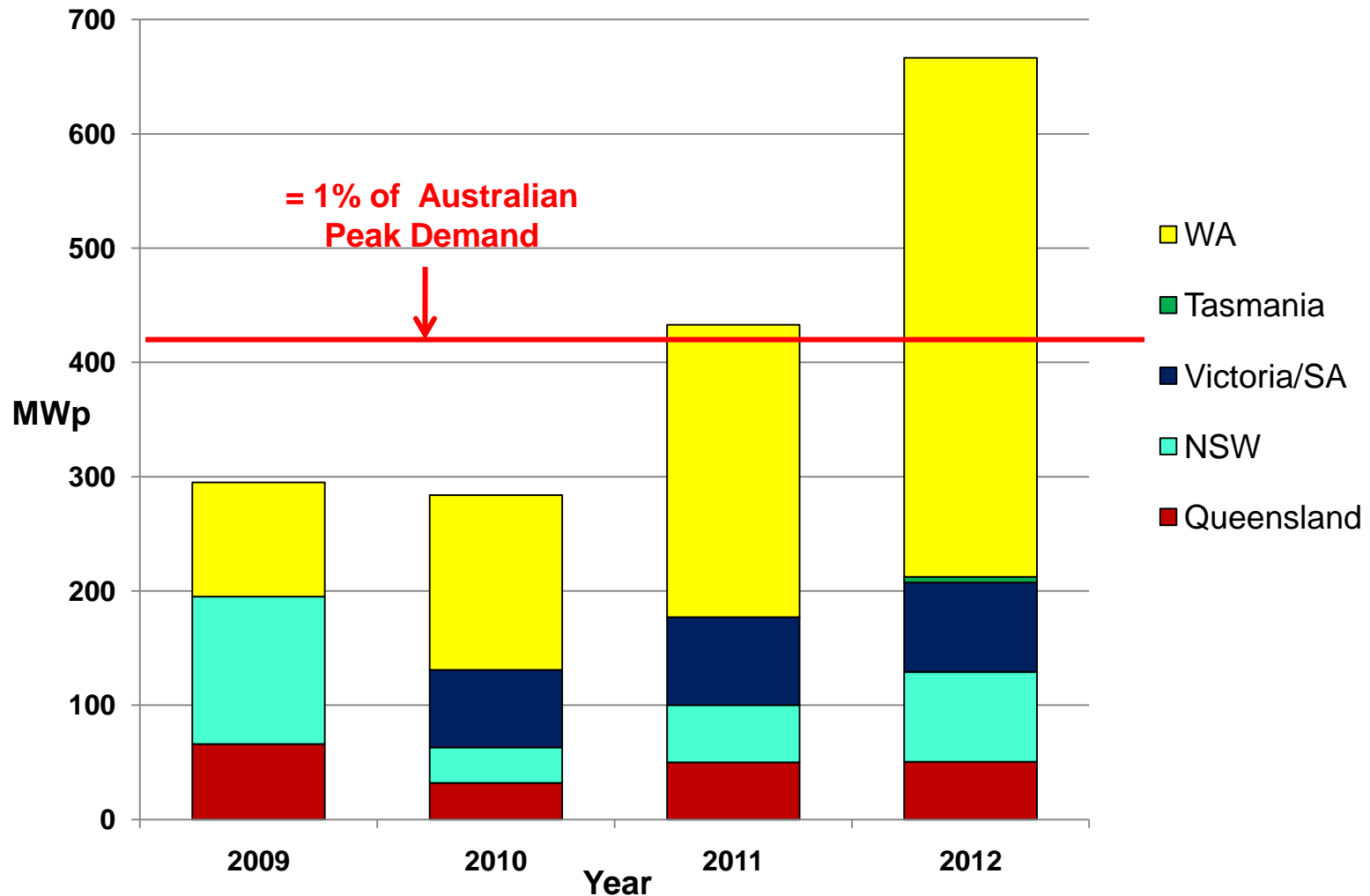
Average cost of utility energy savings programs: US 2.5 cents/kWh

Figure 1. States Examined in National Review of Energy Efficiency Program Costs



Source: ACEEE , Saving Energy Cost-Effectively: A National Review, 2009
<http://www.aceee.org/sites/default/files/publications/researchreports/U092.pdf>



Australian Electricity Market Demand Side Management/ Participation (DSM/ DSP)



(Sources: AEMO, IMOWA,)

Survey of Electricity Network Demand Management in Australia

*You can't manage what you
don't measure.*



AUSTRALIAN
ALLIANCE TO
SAVE ENERGY
Creating an Energy-Efficient Australia

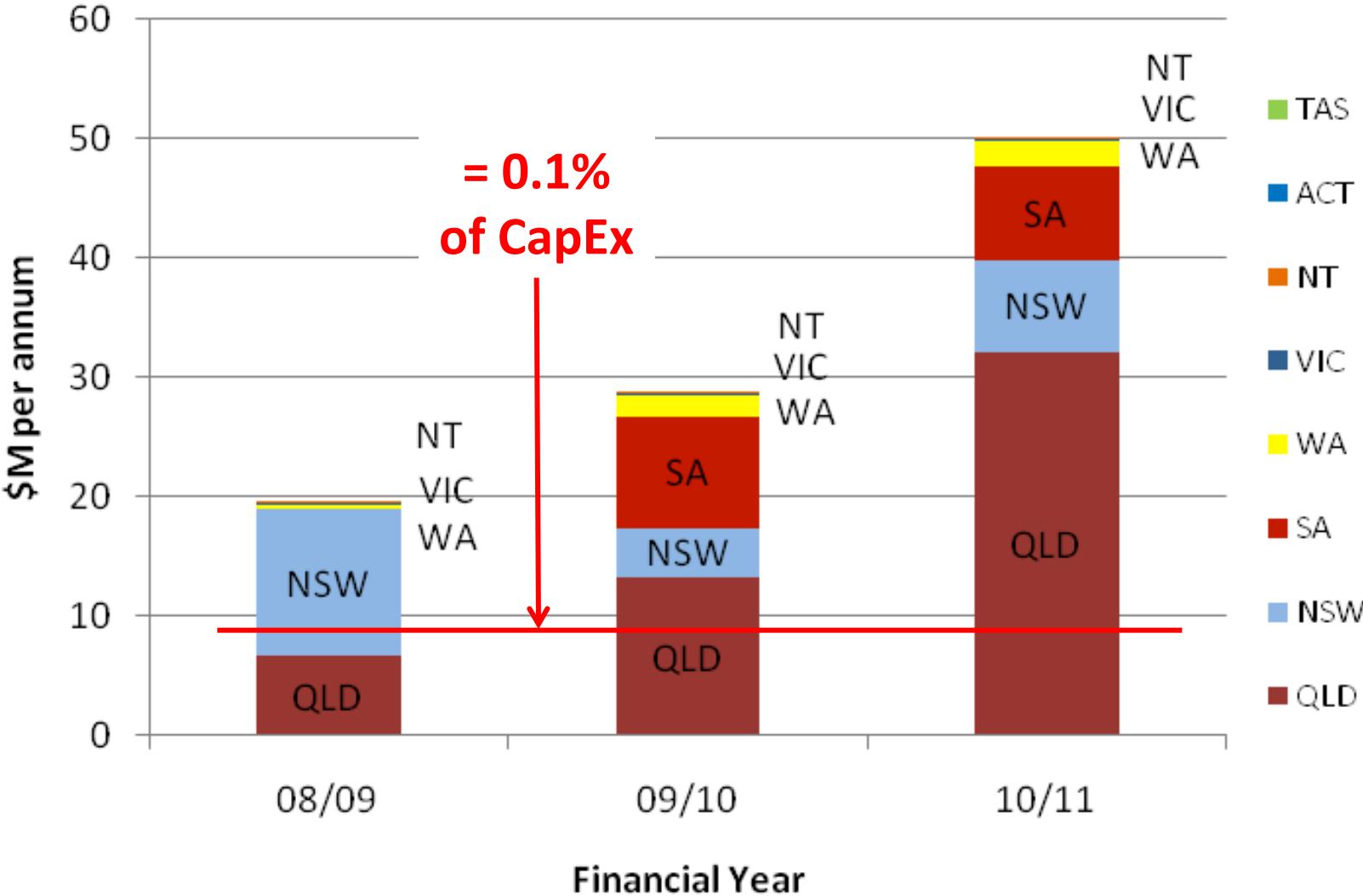
**REPORT OF THE 2010 SURVEY
OF ELECTRICITY NETWORK
DEMAND MANAGEMENT IN
AUSTRALIA**

Chris Dunstan, Nicole Ghiotto, Katie Ross

Report #1 of the Australian Alliance
to Save Energy Research Project
**Scaling the Peaks:
Demand Management and
Electricity Networks**

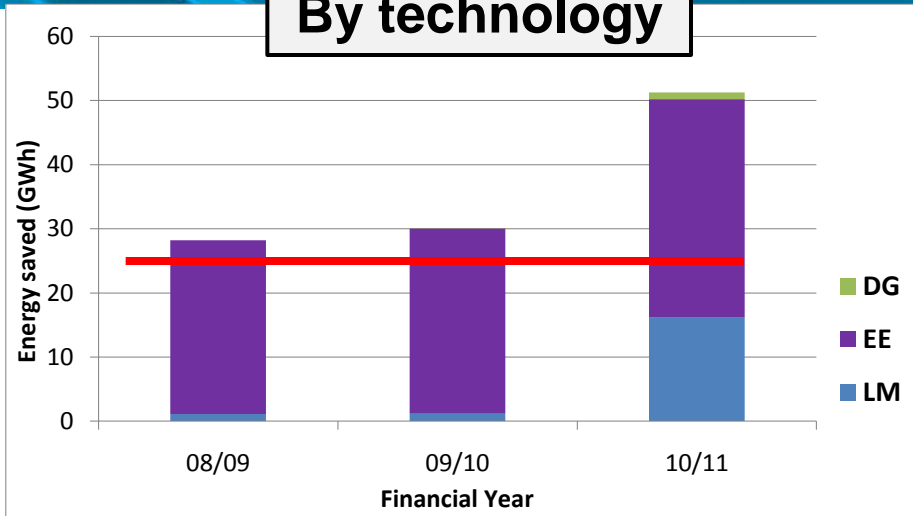
June 2011

DM Spending by electricity networks

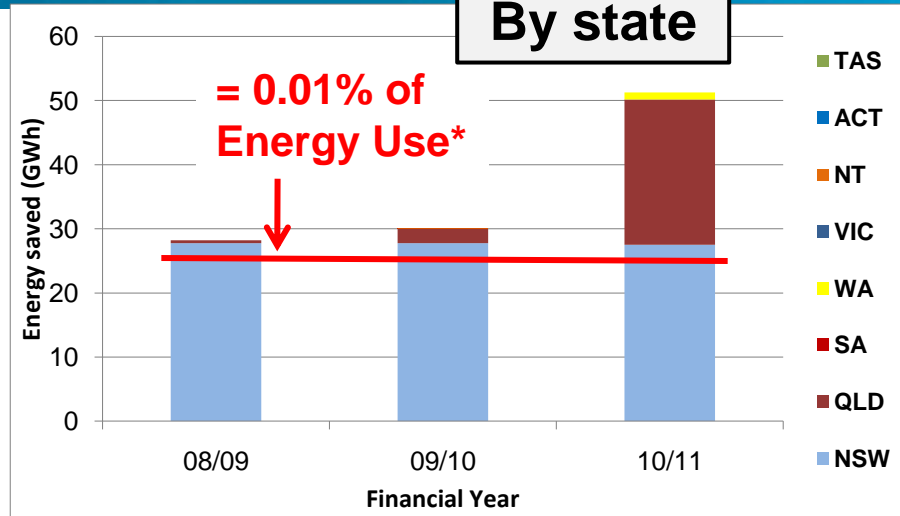


Energy Savings (and Distributed Generation)

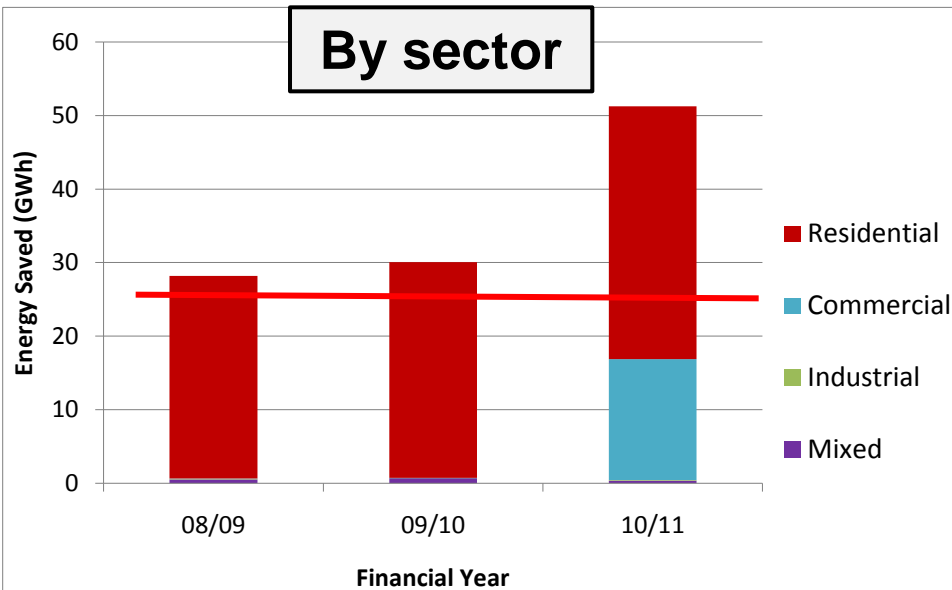
By technology



By state



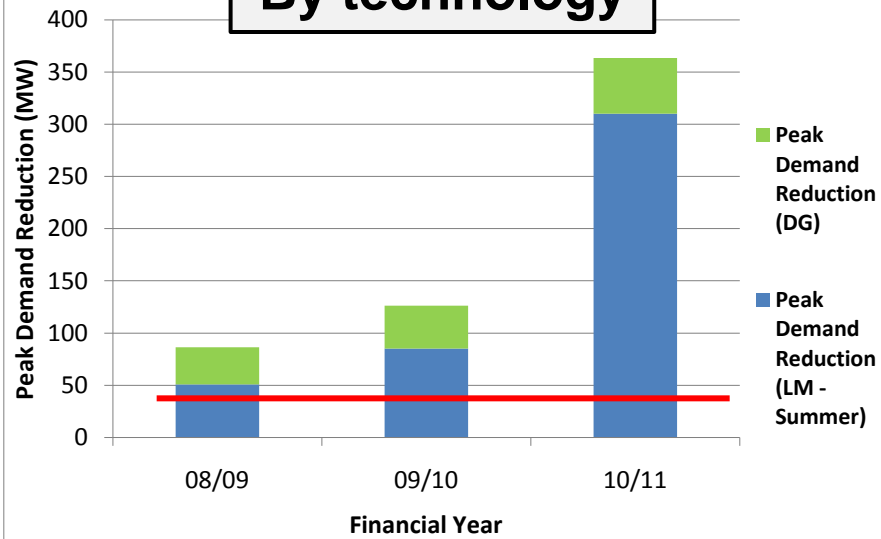
By sector



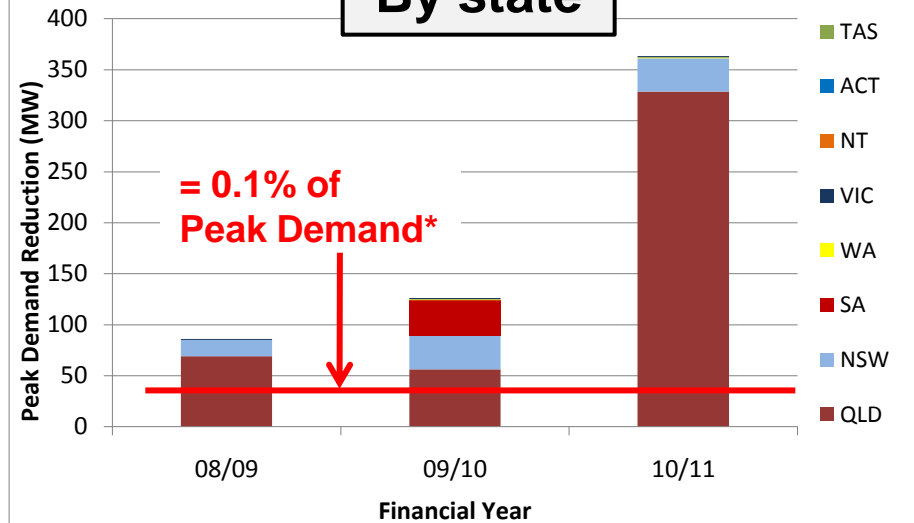
N.B. Graphs exclude data for one large Country Energy distributed generation project (300 GWh) reported for NSW in 08/09, but not in subsequent years.

Peak Demand Reduction

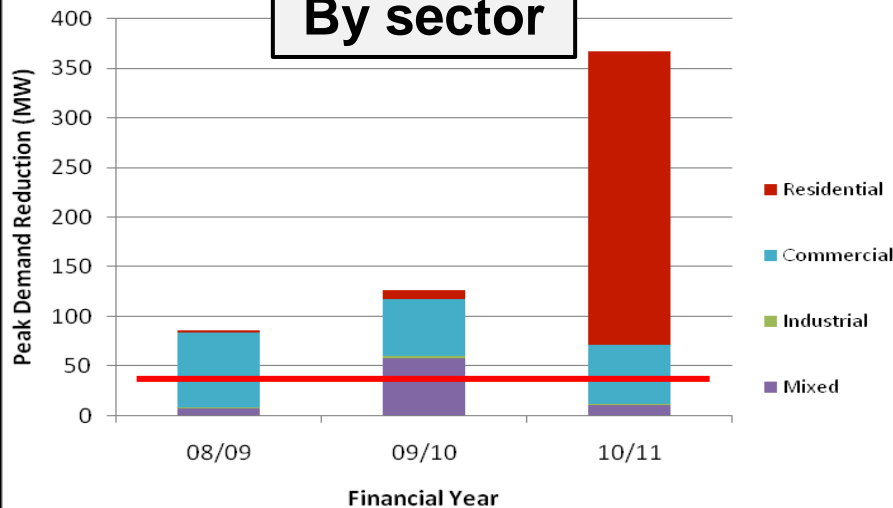
By technology



By state



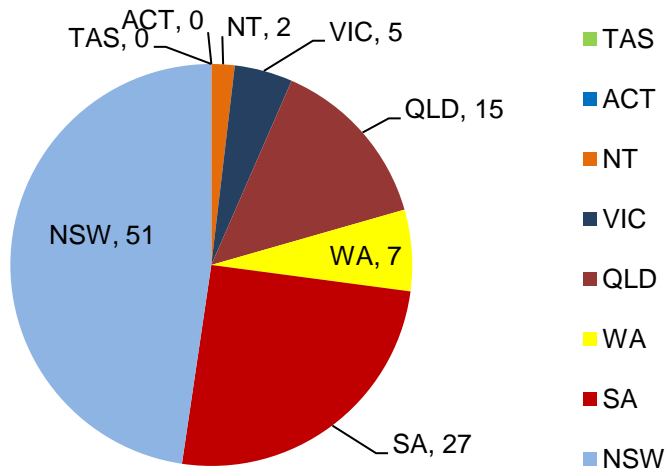
By sector



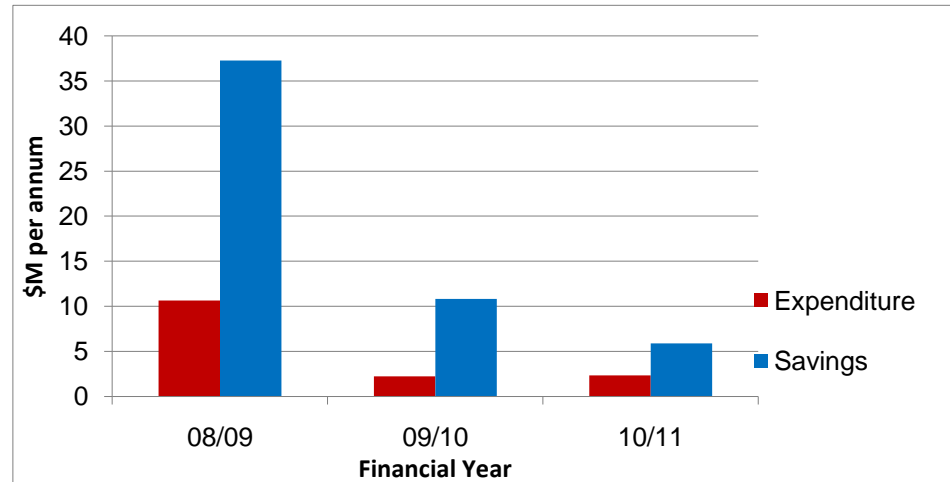
*Source: Energy Supply Association of Australia, Electricity Gas Australia 2010

Projects Summary

Number of projects by state



Expenditure vs. savings



Why so little DM in Australia?

Survey of Perceived Barriers to DM

- > To assess perceived relative importance of barriers.
- > To improve understanding of different stakeholders perspectives

www.igrid.net.au
www.a2se.org.au



iGrid
intelligent grid
an Australian research collaboration



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National Research
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OF UNIVERSITIES

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University of Technology

QUT Queensland University
of Technology
Brisbane Australia

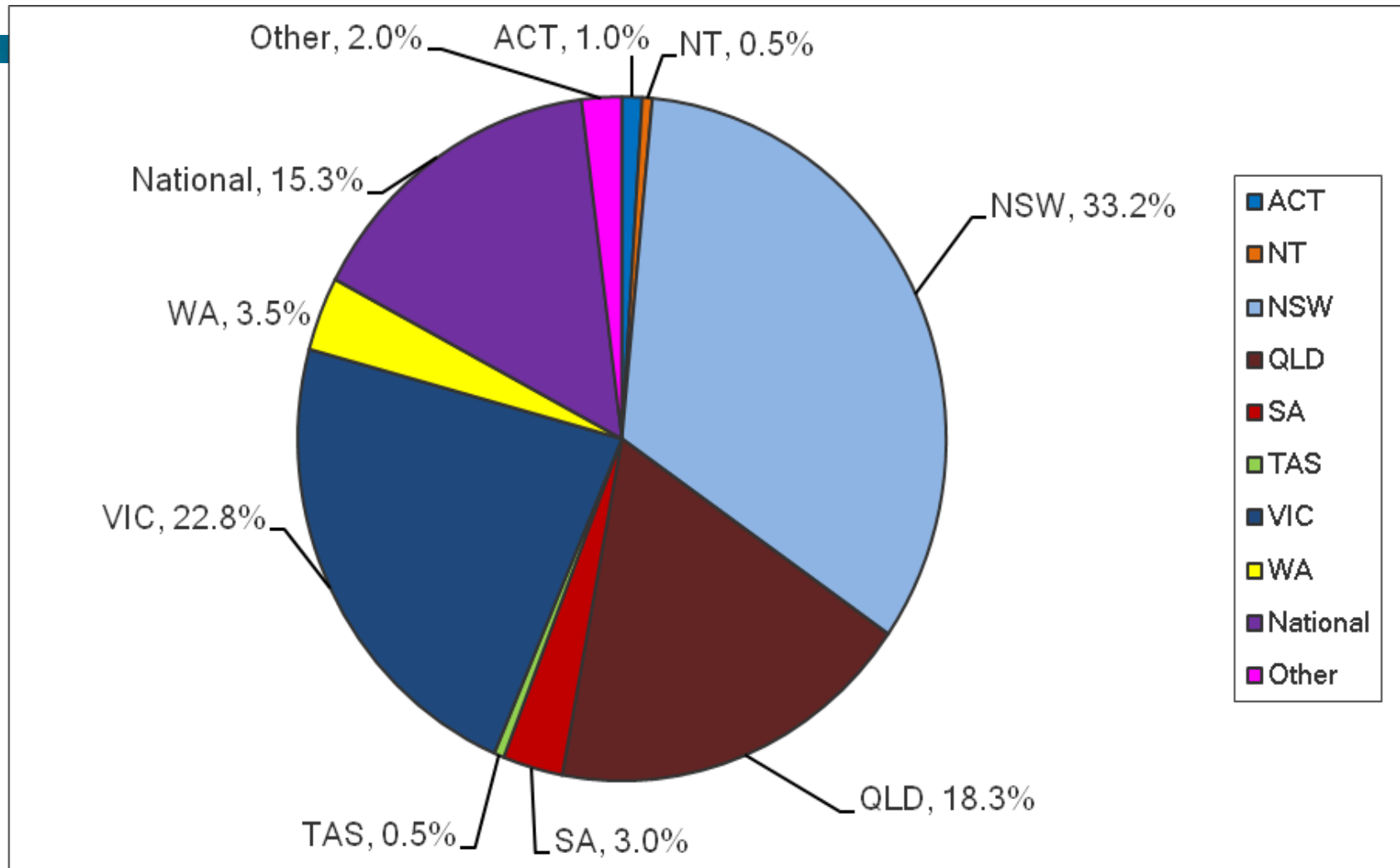
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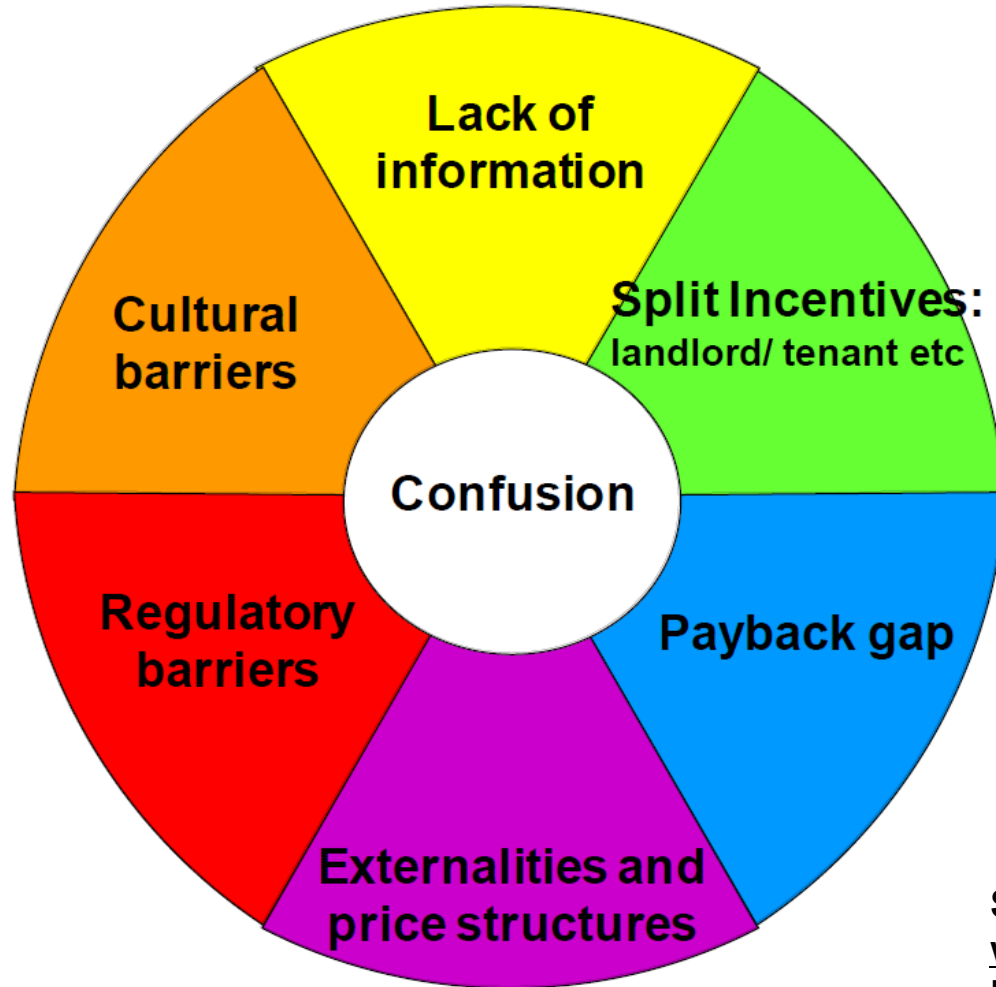
Survey Respondents



Survey Respondents

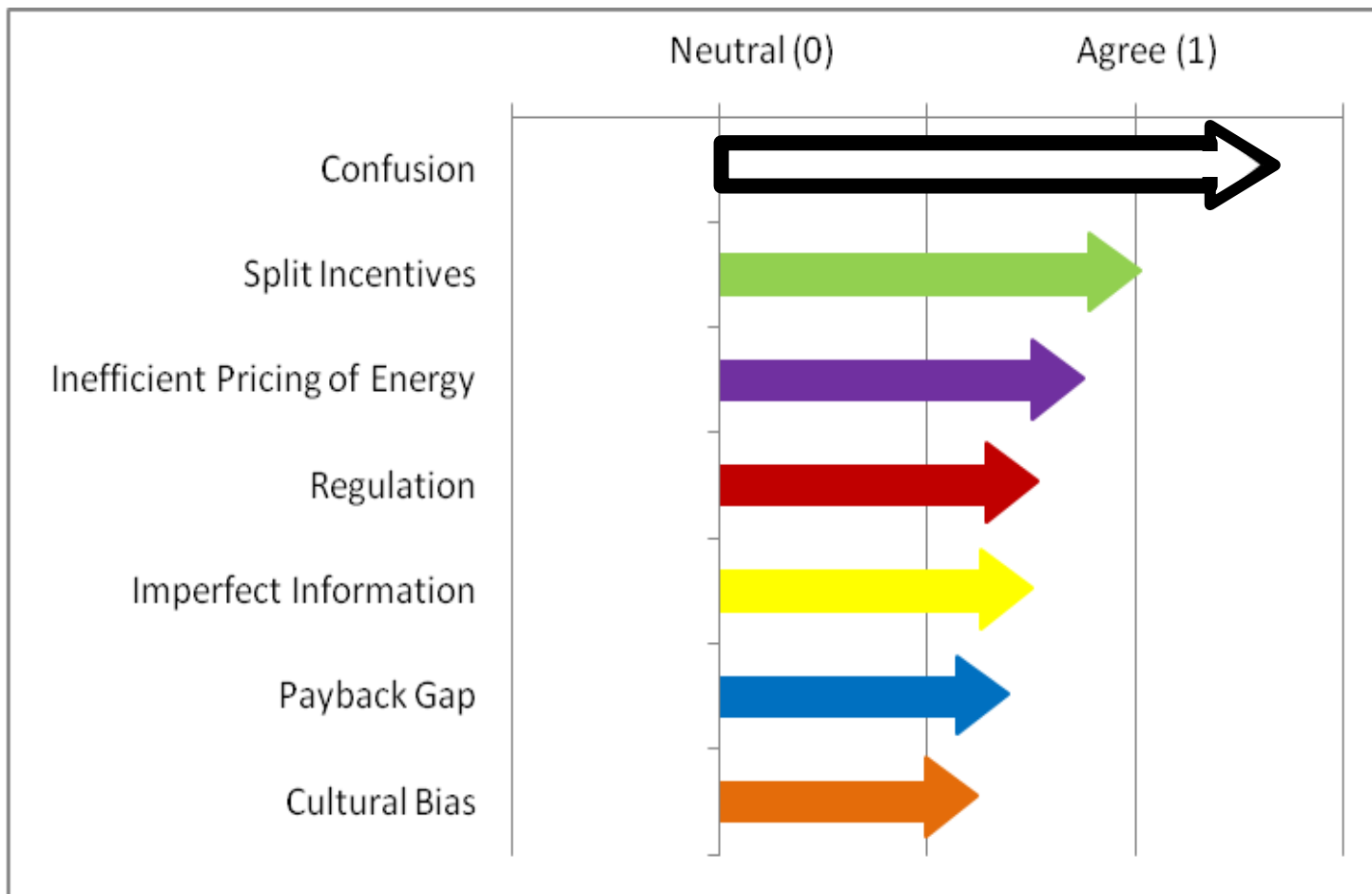
Category	Respondents	# Respondents
Utilities	Energy Utility – Network	29
	Energy Utility – Retailer	5
	Energy Utility – Generator	1
Government	Government Agency – Federal	2
	Government Agency – State	20
	Government Agency – Local	8
End User	Energy Consumer – Commercial	12
	Energy Consumer – Industrial	2
DM Provider	Demand Management Provider	8
	Demand Management Consultancy	17
	Energy Supply Consultancy	14
Other	Environmental organisation	16
	Consumer organisation	8
	Industry organisation	3
	Regulator	2
	Research Institution	26
	Other	28

Institutional barriers to Demand Management



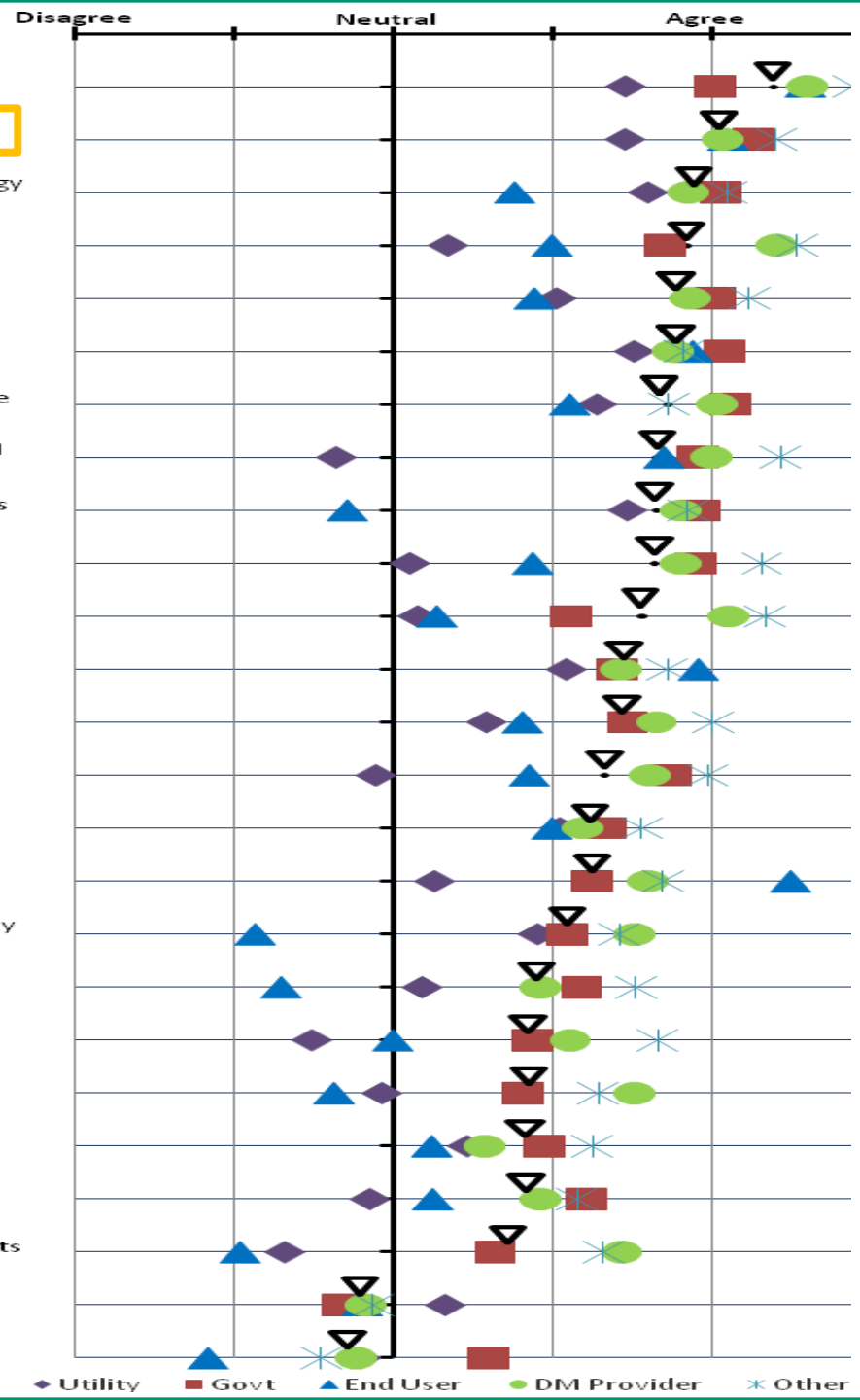
Source:
www.igrd.net.au
Project 4

Extent of Agreement



C25. Lack of coordination at state / national level

B21. No DM / environmental objective in National Electricity Law



P10. Lack of carbon price

B20. Electricity suppliers lack expertise / experience with DM

B24. Electricity suppliers prefer CAPEX to OPEX, DM is OPEX

I1. Limited experienced / skilled DM service providers

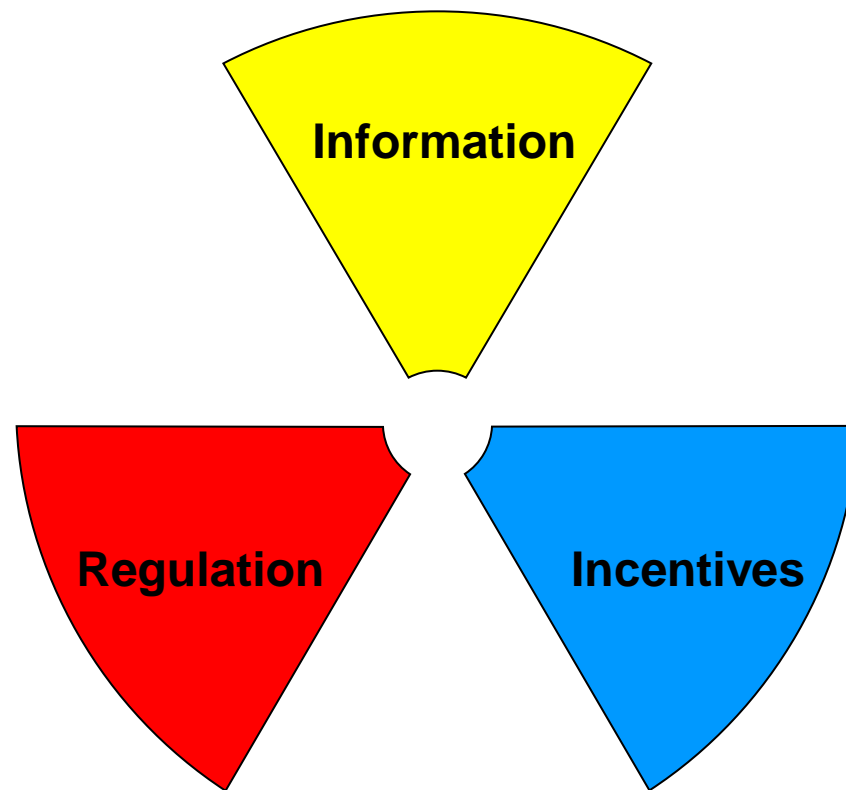
G7. Lack of capital, financiers, funds for DM project proponents

R13. Electricity suppliers profit from electricity sold, DM cuts profits

B23. Consumers want to use power when & how they choose

B22. Electricity consumers lack interest in saving energy

Overcoming Barriers - The Policy Palette

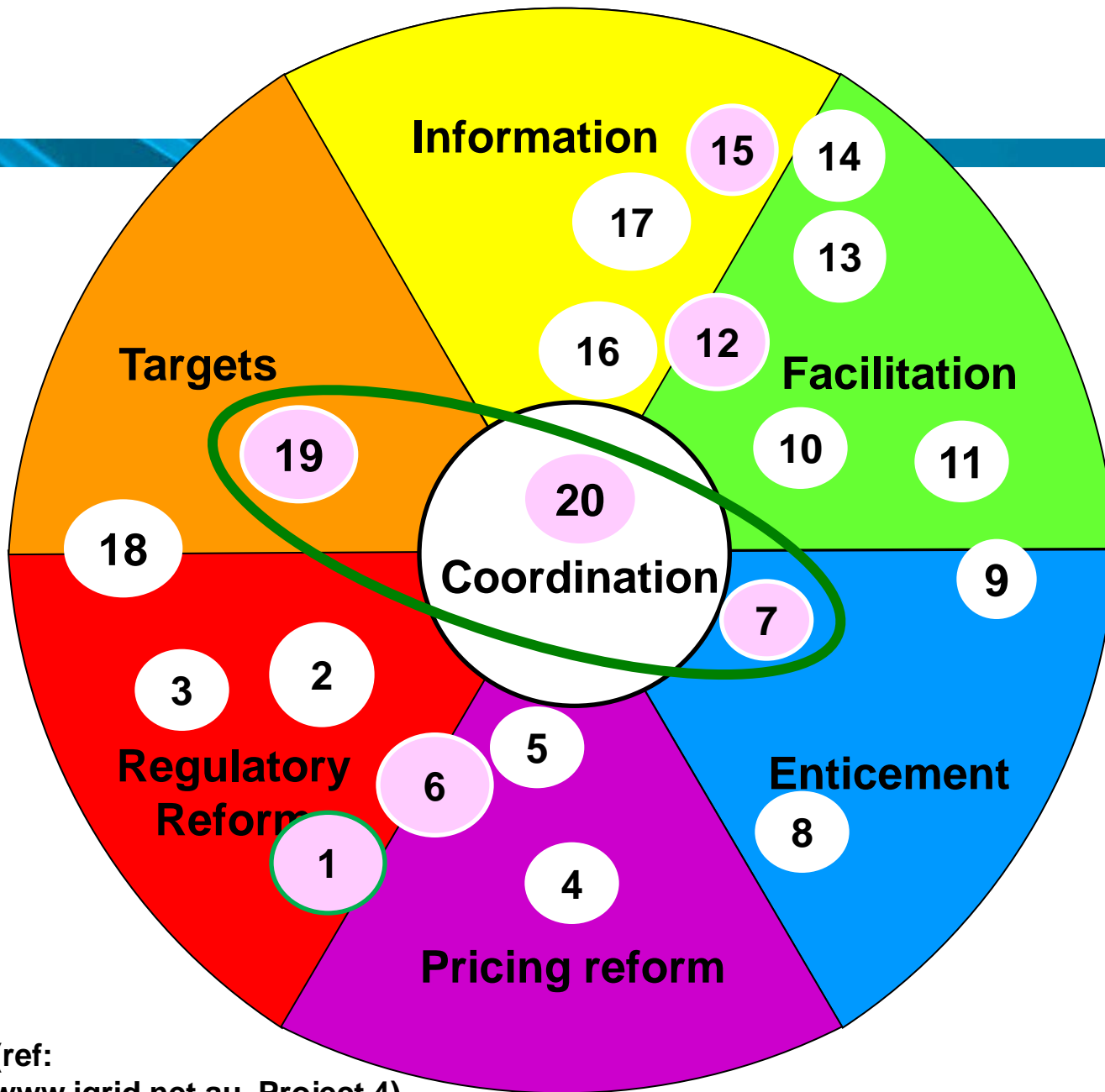


Primary Instruments

The Policy Palette - “PERFICT”



20 Policy Tools for Distributed Energy (and DM)



- 1: **Decouple electricity sales from network profits**
- 2: Reform National Electricity Rules
- 3: Streamline DG Licensing
- 4: Carbon Price
- 5: Cost reflective pricing
- 6: **Network support payments**
- 7: **Distributed Energy Fund**
- 8: Reform feed-in tariffs
- 9: Public recognition & awards
- 10: Streamline network negotiation process
- 11: DE Ombudsman
- 12: **Annual DE Review**
- 13: Training & skills development
- 14: Energy audits & technical support
- 15: **Network planning info**
- 16: DE handbook & advisory service
- 17: Resource assessments & case studies
- 18: Retailer En Eff targets
- 19: **DE targets & reporting**
- 20: **DE Coordination Agency**

Towards an *National Energy Savings Partnership*

- > Focus on collaboration (rule change impacts will take too long)
- > Focus on reducing both peak demand **and** consumption
- > Set ambitious collaborative **targets** with electricity networks
 - e.g. \$1billion p.a. in avoided capex and consumers savings
- > Regular performance **reporting** by each network
- > Savings Partnership **Fund** to drive quick action
 - c.f. UK £500 Low Carbon Networks Fund, Qld, Ontario, etc
- > Unallocated funds offered to other savings providers
- > Build into business as usual through economic regulation (AER)

Conclusion

Focus on:

1. Peak demand *and* consumption
2. Network investment
3. Engaging with current policy opportunities
 - (Clean Energy Future Package, Energy White Paper, AEMC DSP3 Review, etc)
4. What will make a difference soon
 - 2015 is too late for the climate and consumers
5. What you can do
 - not which review to respond to
6. Collaboration more than rules
 - Current trends are unsustainable for climate, customers AND networks

Thank you

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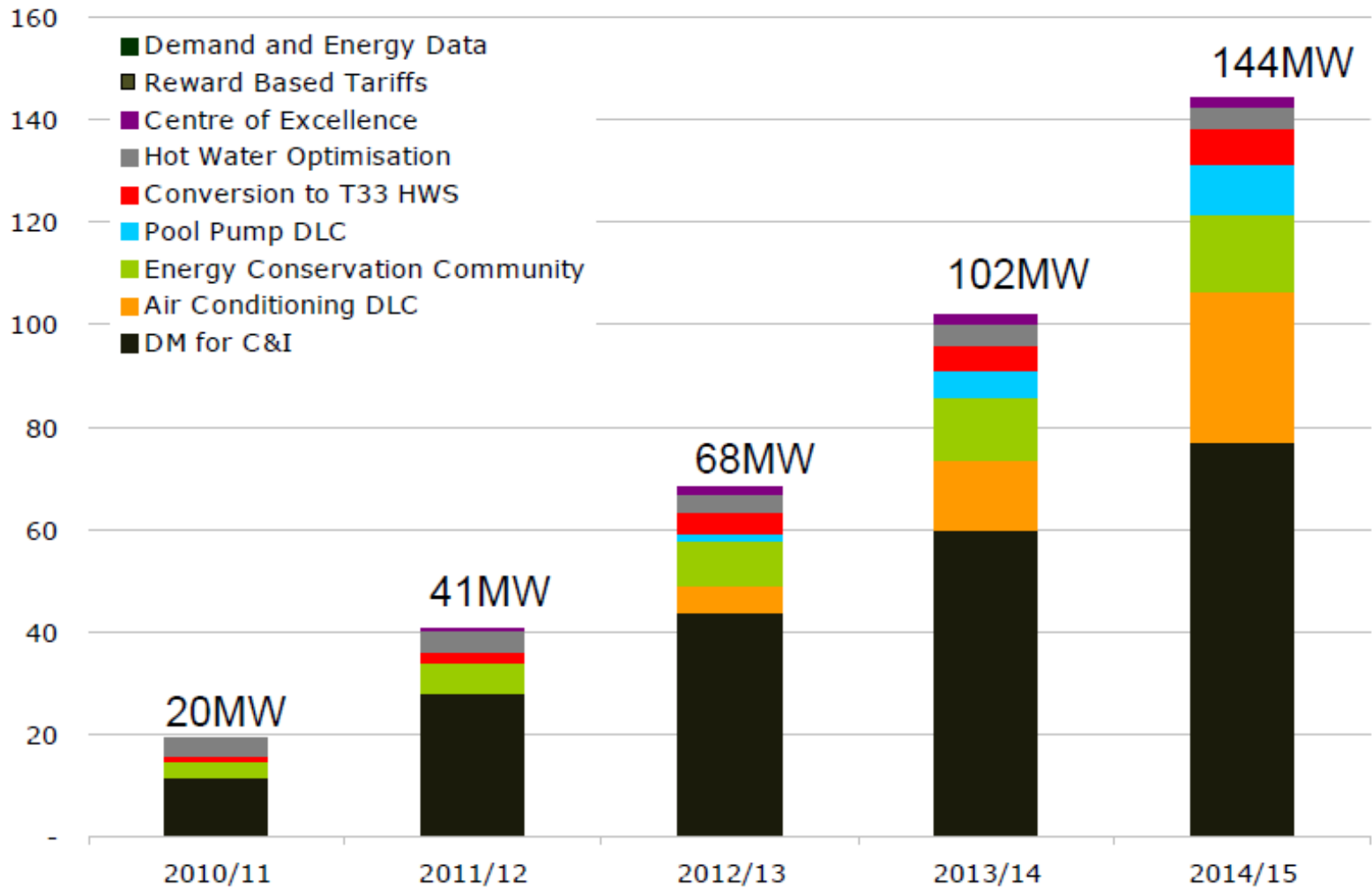
(Additional slides below)

Queensland Energy Conservation and Demand Management Program

- > In 2009/10, Qld Govt allocated \$47 million for demonstration projects
- > In 2010, Energex and Ergon sought and were allocated ~\$220 million for Demand Management programs from the Australian Energy Regulator
- > Energex and Ergon now have extensive plans, teams, budgets and targets in place to reduce demand growth and reduce costs.

MW targets for 2010-2015

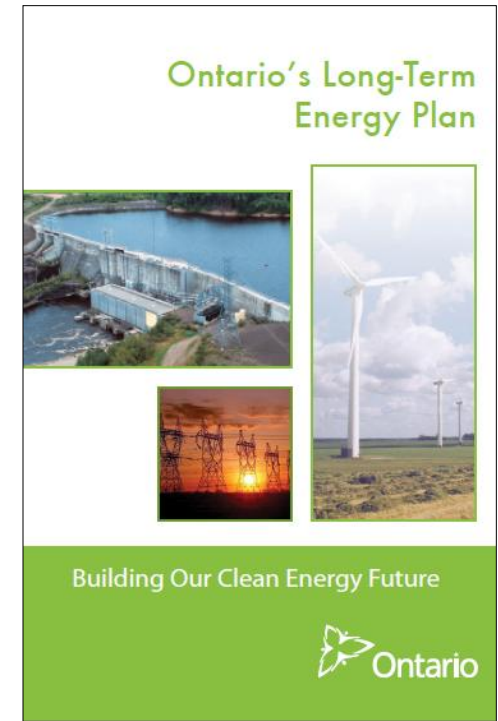
positive energy



Ontario Electricity Conservation and Demand Management Program

“Ontario invested about \$1.7 billion in conservation programs from 2006 to 2010. This will save ratepayers \$3.8 billion in avoided costs.”

“new conservation programs ... will require an investment of about \$3 billion over the next five years. The results will be ... an avoided lifetime supply cost of \$10 billion”



Energy Saving Targets for Local Distribution Companies (LDCs) in Ontario

Total Targets 2010-14:
1,330 MW peak
6,000 GWh

LDCs received incentive payments for achieving over 80% of their targets.

LDC CDM Targets

#	License Name	2014 Net Annual Peak Demand Savings Target (MW)	2011-2014 Net Cumulative Energy Savings Target (GWh)
1	Algoma Power Inc.	1.280	7.370
2	Atikokan Hydro Inc.	0.200	1.160
3	Attawapiskat Power Corporation	0.070	0.290
4	Bluewater Power Distribution Corporation	10.650	53.730
5	Brant County Power Inc.	3.300	9.850
6	Brantford Power Inc.	11.380	48.920
7	Burlington Hydro Inc.	21.950	82.370
8	COLLUS Power Corporation	3.140	14.970
9	Cambridge and North Dumfries Hydro Inc.	17.680	73.660
10	Canadian Niagara Power Inc.	4.070	15.810
11	Centre Wellington Hydro Ltd.	1.640	7.810
12	Chapleau Public Utilities Corporation	0.170	1.210
13	Chatham-Kent Hydro Inc.	9.670	37.280
14	Clinton Power Corporation	0.320	1.380
15	Cooperative Hydro Embrun Inc.	0.340	1.120
16	E.L.K. Energy Inc.	2.690	8.250
17	ENWIN Utilities Ltd.	26.810	117.890
18	Enersource Hydro Mississauga Inc.	92.980	417.220
19	Erie Thames Powerlines Corporation	4.280	18.600
20	Espanola Regional Hydro Distribution Corporation	0.520	2.760
21	Essex Powerlines Corporation	7.190	21.540
22	Festival Hydro Inc.	6.230	29.250
23	Fort Albany Power Corporation	0.050	0.240
24	Fort Frances Power Corporation	0.610	3.640
25	Greater Sudbury Hydro Inc.	8.220	43.710
26	Grimsby Power Inc.	2.060	7.760
27	Guelph Hydro Electric Systems Inc.	16.710	79.530
28	Haldimand County Hydro Inc.	2.850	13.300
29	Halton Hills Hydro Inc.	6.150	22.480
30	Hearst Power Distribution Company Limited	0.680	3.910
31	Horizon Utilities Corporation	60.360	281.420
32	Hydro 2000 Inc.	0.190	1.040
33	Hydro Hawkesbury Inc.	1.820	9.280
34	Hydro One Brampton Networks Inc.	45.610	189.540
35	Hydro One Networks Inc.	213.660	1,130.210
36	Hydro Ottawa Limited	85.260	374.730



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HOW TO PLAY
You have to be in it to win it

LEARN HOW TO SAVE ENERGY
Get ahead of your competition

CHECK THE SCORE
Track your progress against other teams



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***In 2010 trial program:
150 families average energy
saving of > 8%***

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School League Scoreboard

Rank	Team	Score
1	Manly	1.8
2	Blacktown	0.6
3	Marrickville	-0.1

RANK	TEAM	NUMBER OF PLAYERS	AVERAGE ELECTRICITY USAGE (KWH PER DAY)	SAVINGS POINTS (= LAST YEAR'S USAGE MINUS THIS YEAR'S)	EST. BILL SAVINGS	EST. EMISSIONS REDUCTION (KG CARBON DIOXIDE)	SCORE
1	Manly	152	21.6	1.8	\$1,470	7,351	1.8
2	Blacktown	158	20.5	0.6	\$64	319	0.6
3	Marrickville	179	14.7	-0.1	-\$102	-509	-0.1

Thank you

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