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Peak Demand Management, Planning for the Future

Terry McConnell

November 2010

“What will you get for your extra money”

Where there is a need for new capacity in the grid, distributors can invest in augmentation or invest in energy efficiency and demand management.

Nationally the Australian Electricity Network operators are planning to spend over \$40 billion over the next five years on the grid.

There has to be a better more sustainable way.



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Topics to be covered

Customer demand growth in South East Queensland

ENERGEX response - program of work

What is possible - options for managing demand

Summary



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Electricity distributor SEQ

\$8.8B+ assets

1.3M customers

36,000 km overhead lines

16,500 km underground cables

600,000+ poles

249 zone & bulk supply substations

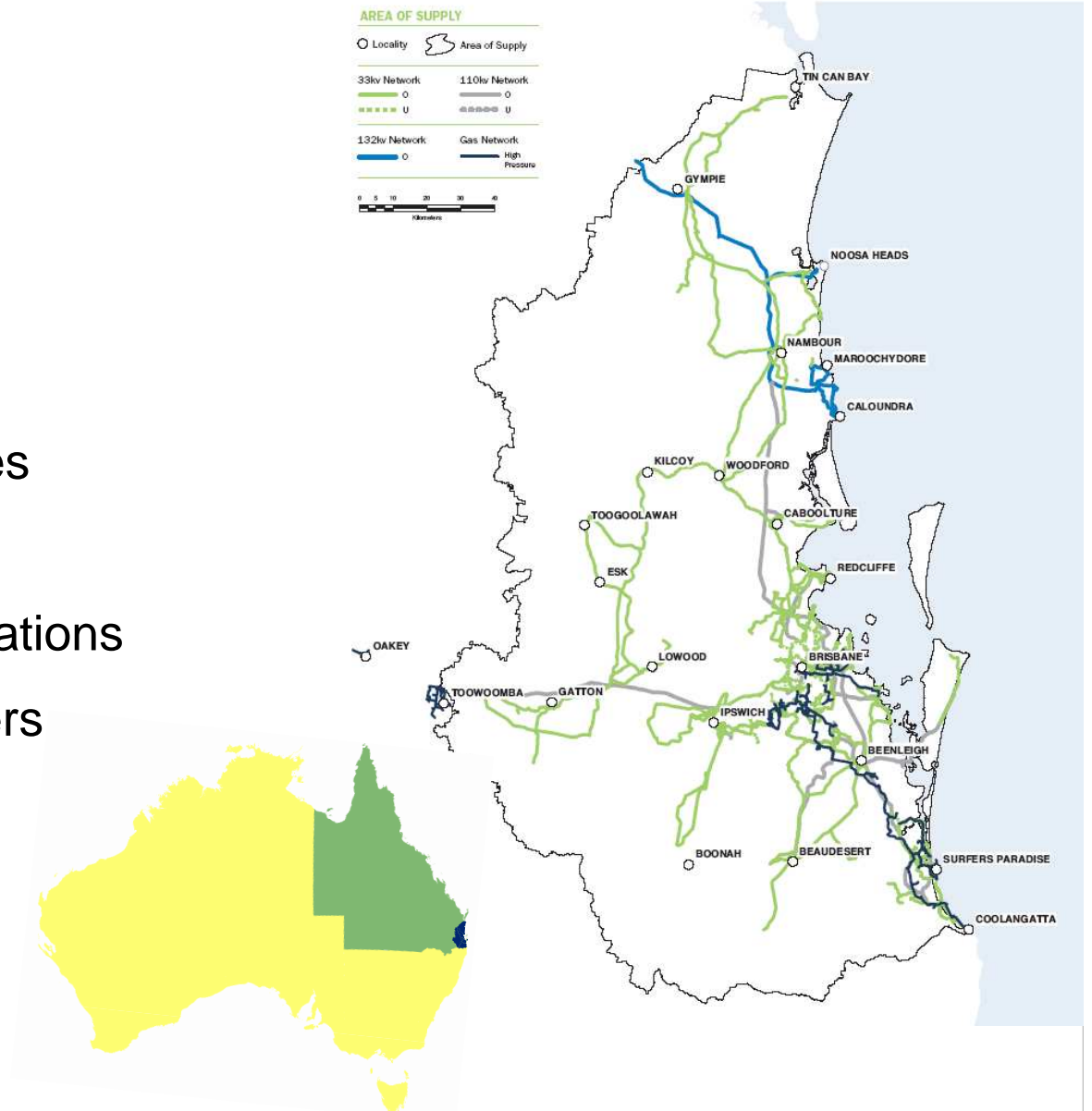
43,000 distribution transformers

300,000 street lights

3,800+ staff



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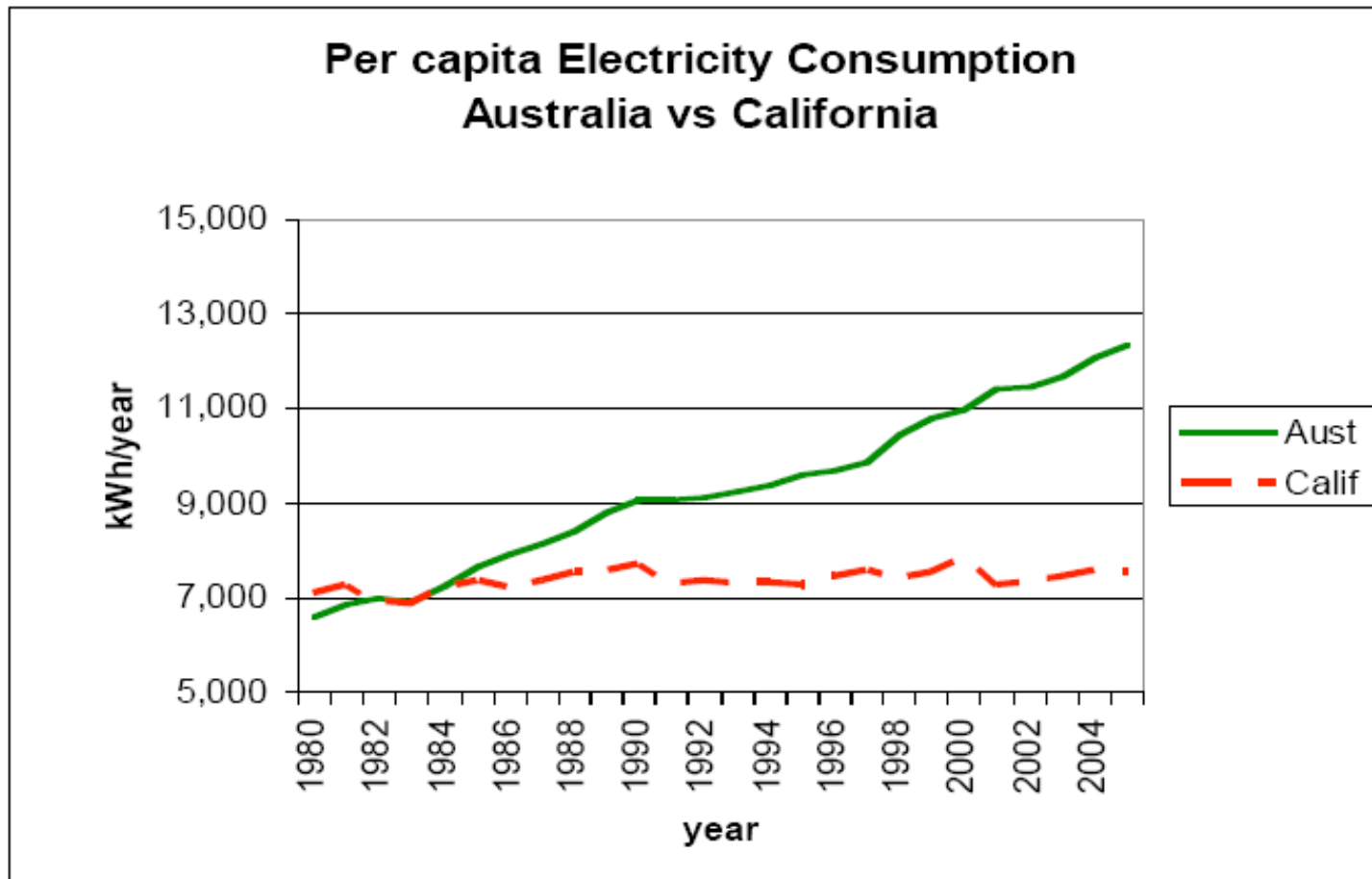


"Today, in much of the world we take energy for granted... We treat it as a right and we're careless in its use... In order to reliably meet that greater energy need, power companies have to invest in additional capacity which is unused for much of the day."

- Russell Caplan, Chairman of Shell companies in Australia



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Sources: Australian Bureau of Statistics n.d.; California Energy Commission 2006; Real Estate Center 2006; Australian Bureau of Agricultural and Resource Economics 2006.



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The changing South East Queensland Home

<u>Appliances</u>	<u>1999</u>	<u>2009</u>
SEQ homes with A/C	23%	72% (34% with 2 or more)
Homes with at least one PC	48%	98%
Number of TV's in avg SEQ family	1.0	3.0 (25% are high energy use)
SEQ homes with a dishwasher	31%	50%
Microwave ovens (less than 30% in 1989)	72%	97%

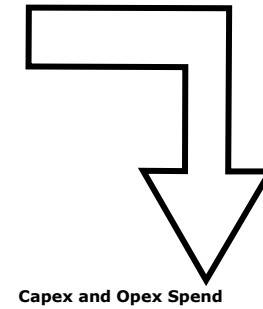
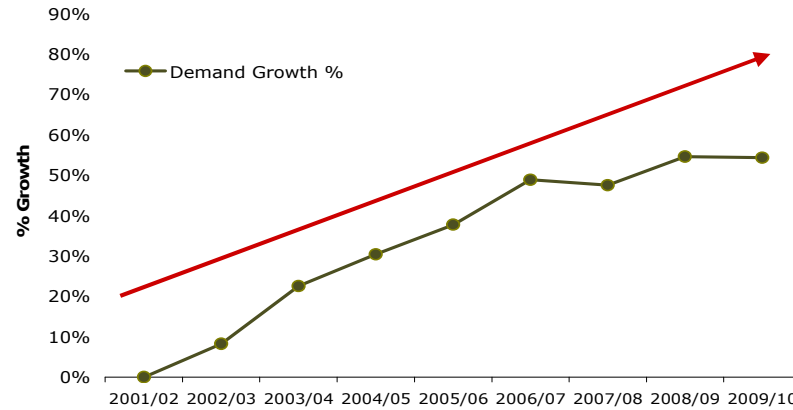


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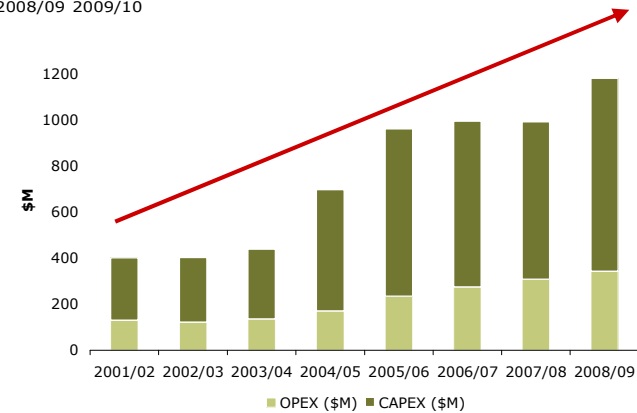
Customer demand drives prices - a vicious cycle



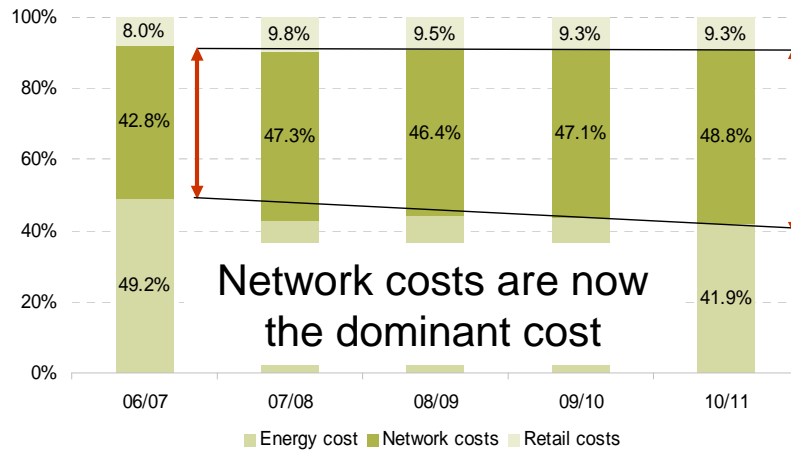
Peak Demand Growth



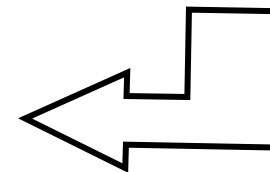
Capex and Opex Spend



BRCI



Network costs are now the dominant cost



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Growth in South East Queensland

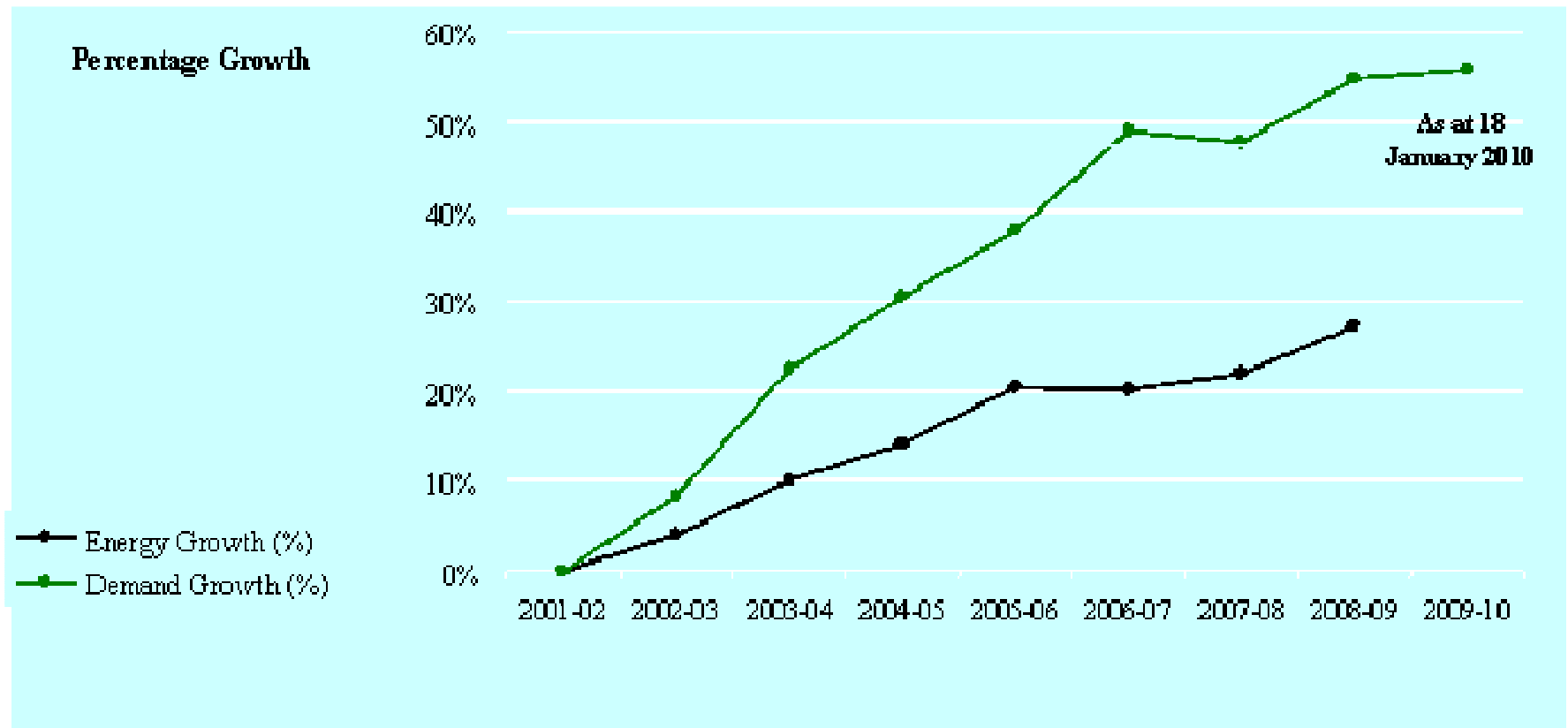
Every working day 120 new, additional homes and businesses connect to the south east Queensland electricity grid – that's a new connection every four or five minutes

	1996/97	2009/10	% increase
Customer numbers	960,000	1,300,000	35%
System maximum demand	2308MW	4713MW	104%



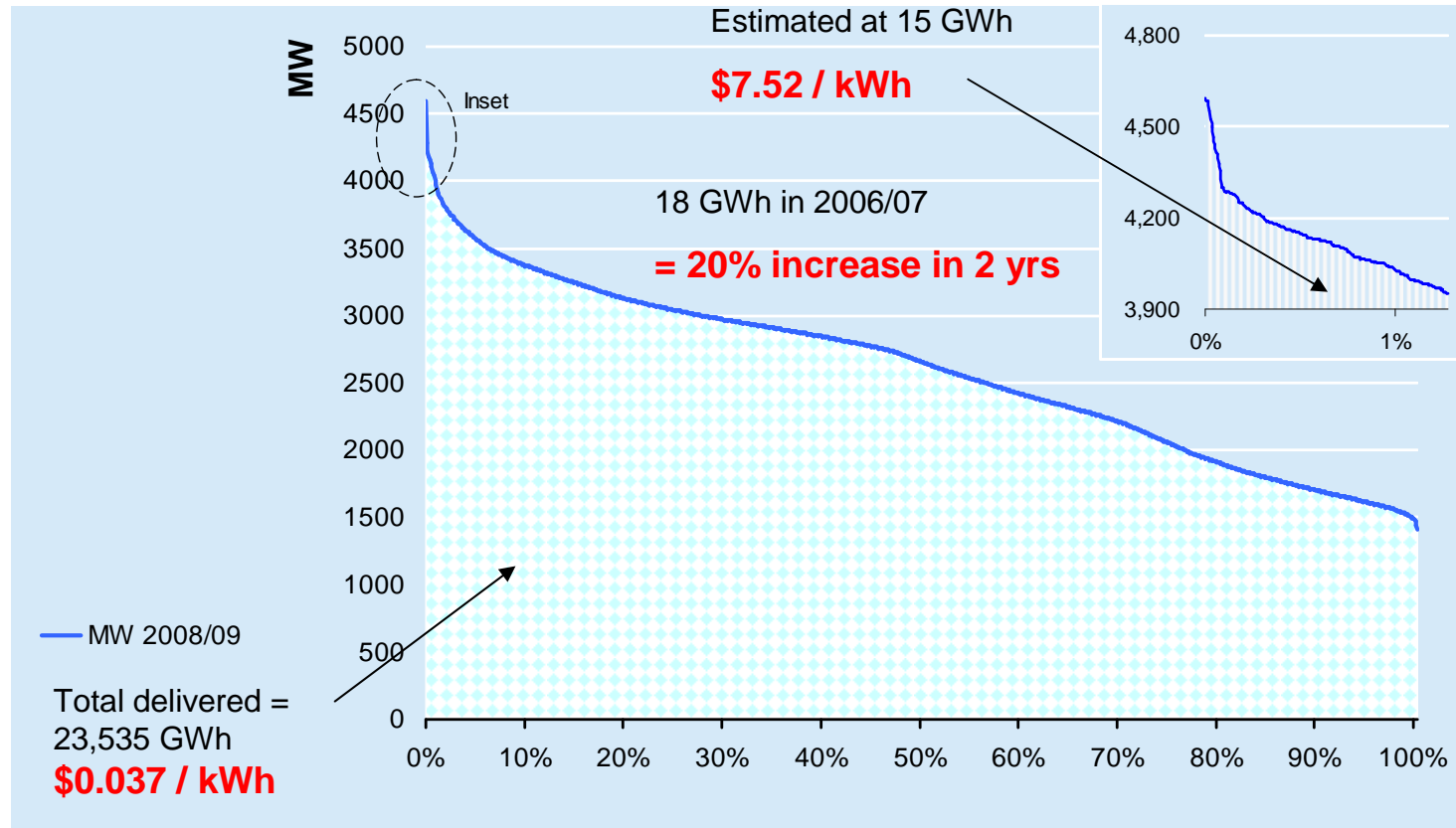
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Energy & Demand growth in South East Queensland



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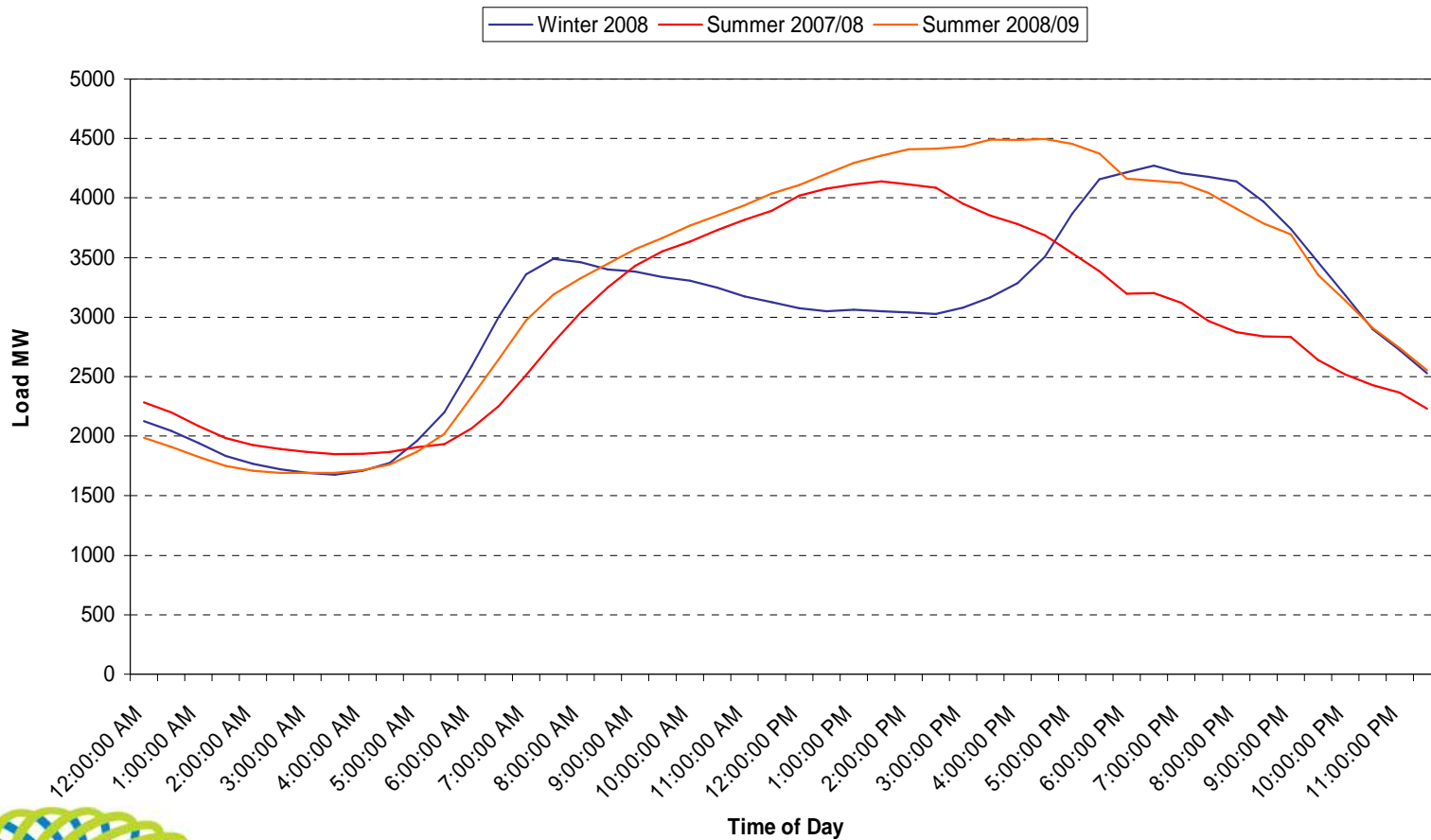
Load duration curve 2008/09



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Customers in SE QLD have also moved from winter night to summer day peak

ENERGEX Demand Curves - Winter Monday 28 July 2008, Summer Saturday 23 February 2008, Summer 9 February 2009



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Northern Corridor Mango Hill



Mango Hill - 1995

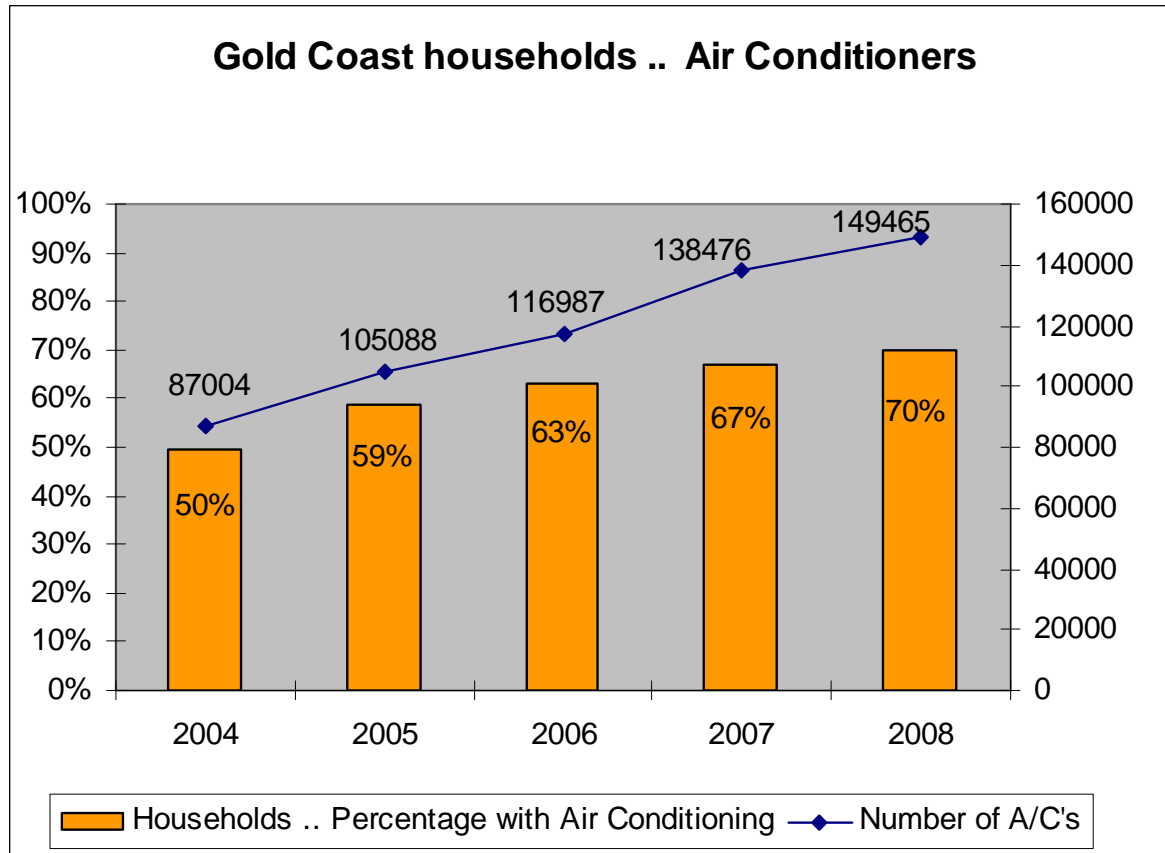


Mango Hill - 2009



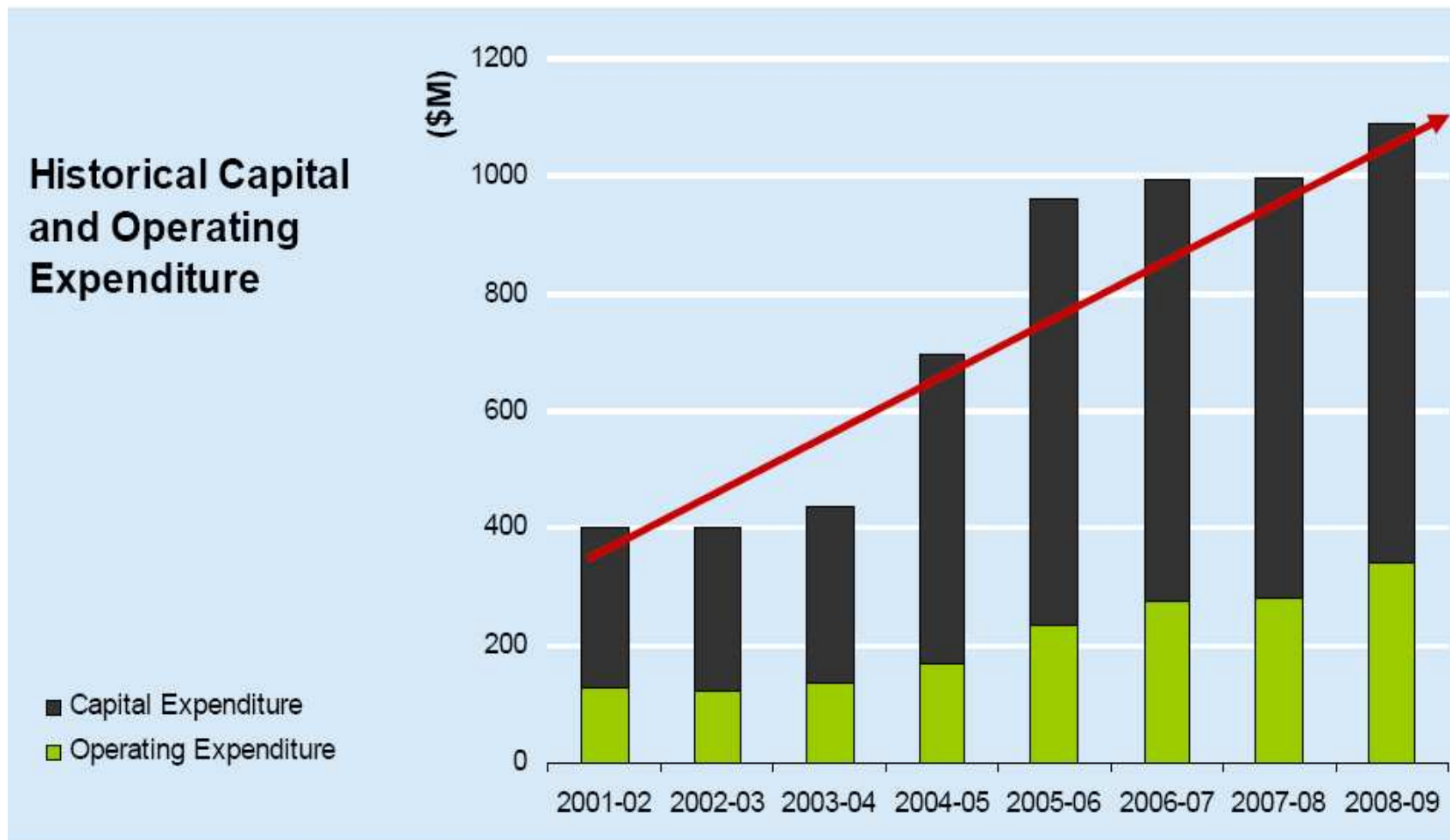
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Air Conditioning - Growth



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Traditional approach to managing growth



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Issues with traditional approach

Network reinforcement is expensive for relatively short duration demand peaks – is this the optimal use of scarce capital?

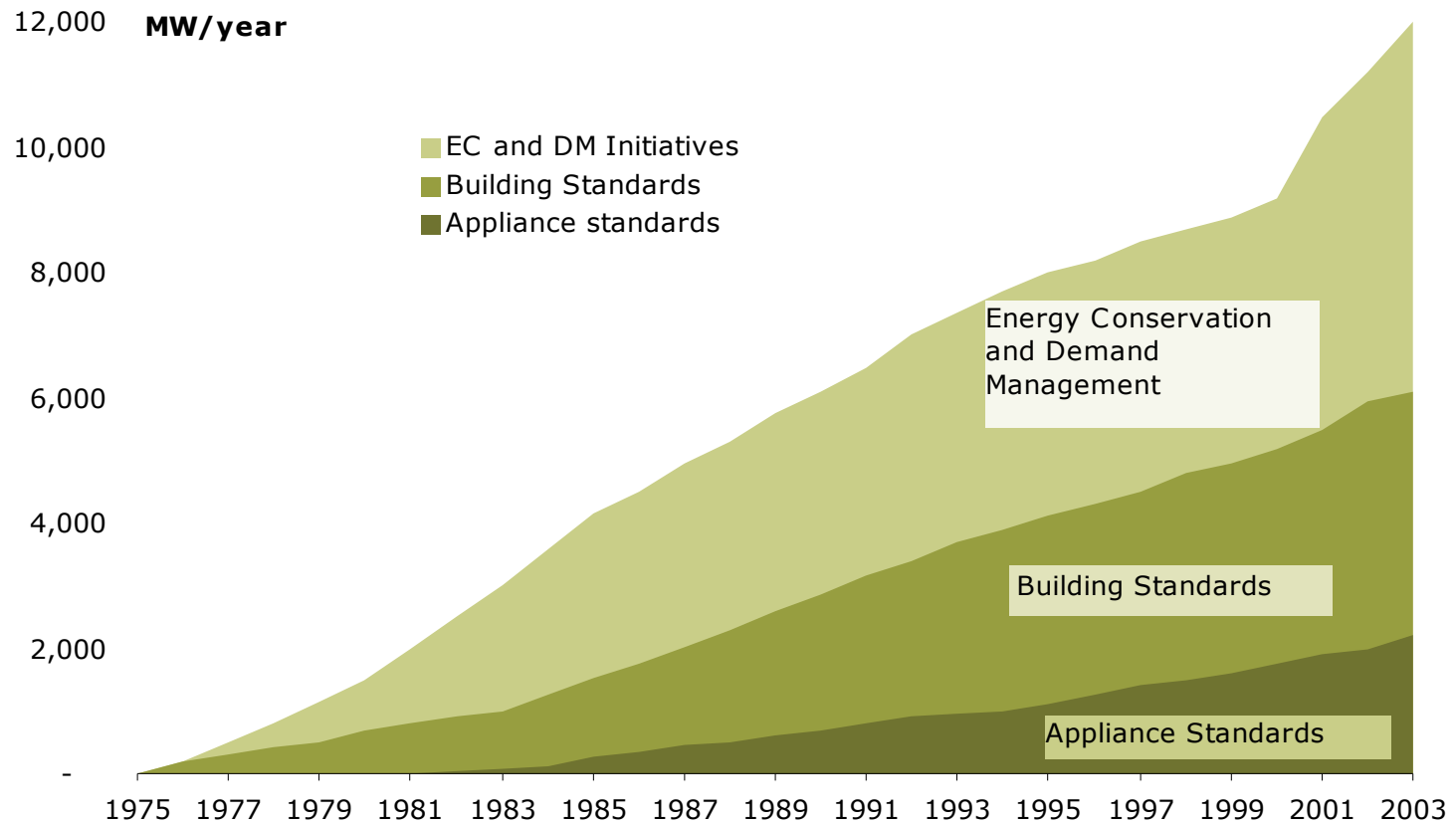
Customers pay an average price for electricity and do not see the impacts of peak demand

Environmental sustainability of supply side solutions all the way along the supply chain



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There is another way...



Annual Peak Savings from Efficiency Programs and Standards: California

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Business Drivers for Changing BAU

structural changes to the **primary fuel markets** driving higher costs;

customers demanding improved service and greater choice / participation in managing their energy needs/costs;

aged assets coupled with **high summer growth** rates requiring significant capital investments;

the emergence of the **digital economy** with a heavy reliance on an “interruption free” electricity supply;

the drive to a **lower carbon** world and a greater emphasis on renewables and broader environmental stewardship; and

an **emerging technological** shift that will offer economic alternatives and distribution energy resources (DER).








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What will these choices mean for customers?





Option 1 - If the current situation continues:

Customers will have:

-  Energy bills
-  Cost of living
-  Pollution & emissions
-  No ability to manage their energy bill
-  **Loss of personal control**
...who to blame??

Option 2 - If we start now to develop customer choices:

Assist customers to:

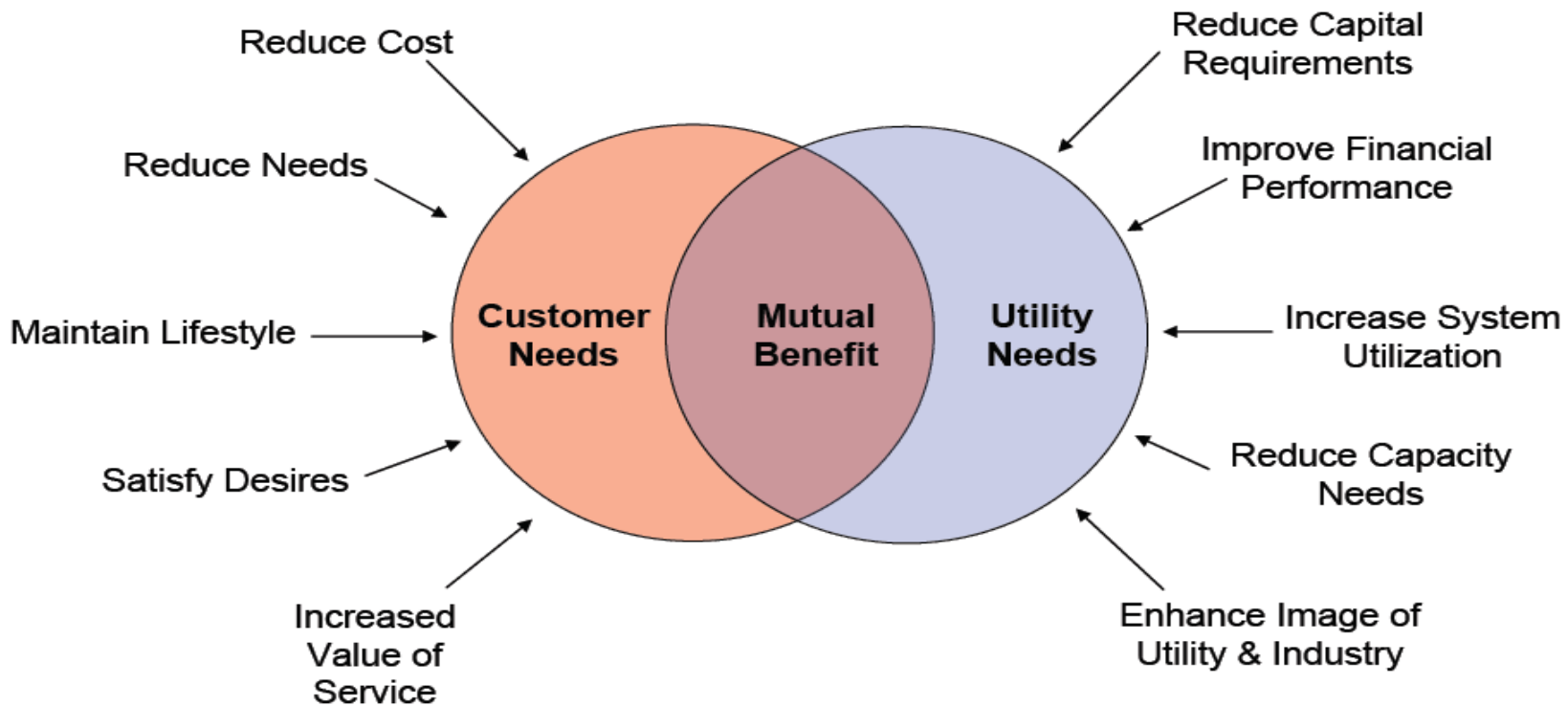
-  Reduce their energy consumption
-  Better manage their energy bill
-  Manage their impact on environment
-  **More choice and greater personal control**



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Design Program to Meet Customer and Utility Needs

The Right Program Will Have Substantial Mutual Benefit



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Demand & Risk Management Group

\$170M
AER FUNDING
2010/2015

Network Demand Management

\$27m
OCE FUNDING
2009/2012

Residential Targeted Initiatives

WHAT	HOW
Air Conditioning Pool Filtration Hot Water Systems	Technology Customer Awareness & Engagement Market Channel

Energy Conservation Communities

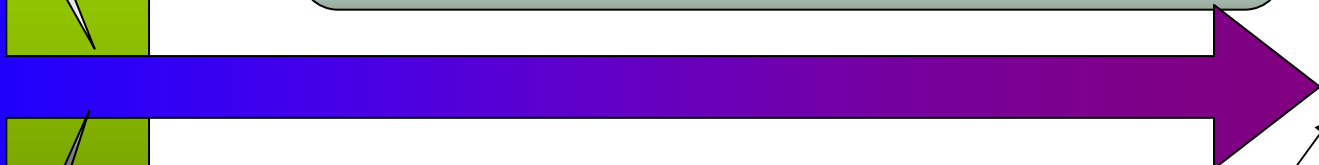
WHAT	HOW
Delivery Area 1 Delivery Area 2 Delivery Area 3	Customer Awareness & Engagement Market Channel

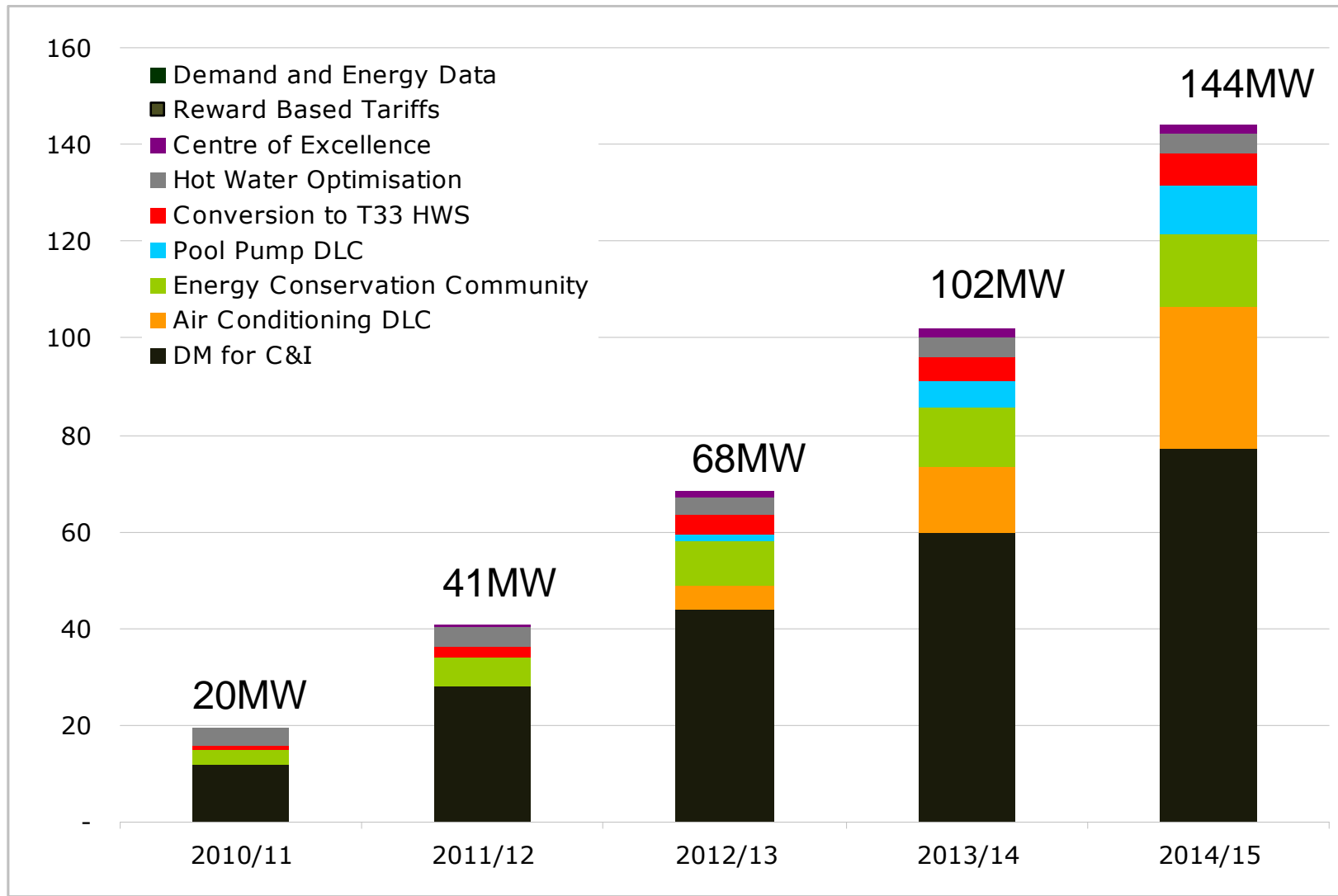
Rewards Based Tariff

WHAT	HOW
ToU Trials Tariff Policy development Load Limiter research	Tariff Hypothesis Tariff Development Tariff Trials Customer Awareness & Engagement

Demand Management for Commercial & Industrial

WHAT	HOW
Direct Supplier "Early Mover" Supplier "BAU"	Lighting Load Curtailment HVAC Customer Awareness & Engagement





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Its all about peak demand reduction

ENERGEX is willing to financially assist customers with energy conservation and demand management projects that reduce peak demand on our network



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Summary

Long term least cost will be achieved by the optimum mix of conventional supply-side solution integrated with Energy Conservation and Demand-side initiatives

Demand-side initiatives are not a silver bullet and will only have marginal impacts in the short-term

Distributors can play a part in influencing customers to modify their energy use behaviour

Reducing peak demand has favourable climate change impacts through reduced capital infrastructure requirements

Effective price signals will be a key element in encouraging the right sort of response by customers



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Key Messages

The greenest kWh is the one we don't use – energy conservation is the starting point.

ENERGEX is significantly expanding its EC & DM programs via its 2010-2015 regulatory submission.

The integration of renewables whilst a challenge for distributors will be part of the mix

Customer enablement and participation are key.



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