Tomorrow's megawatts and negawatts

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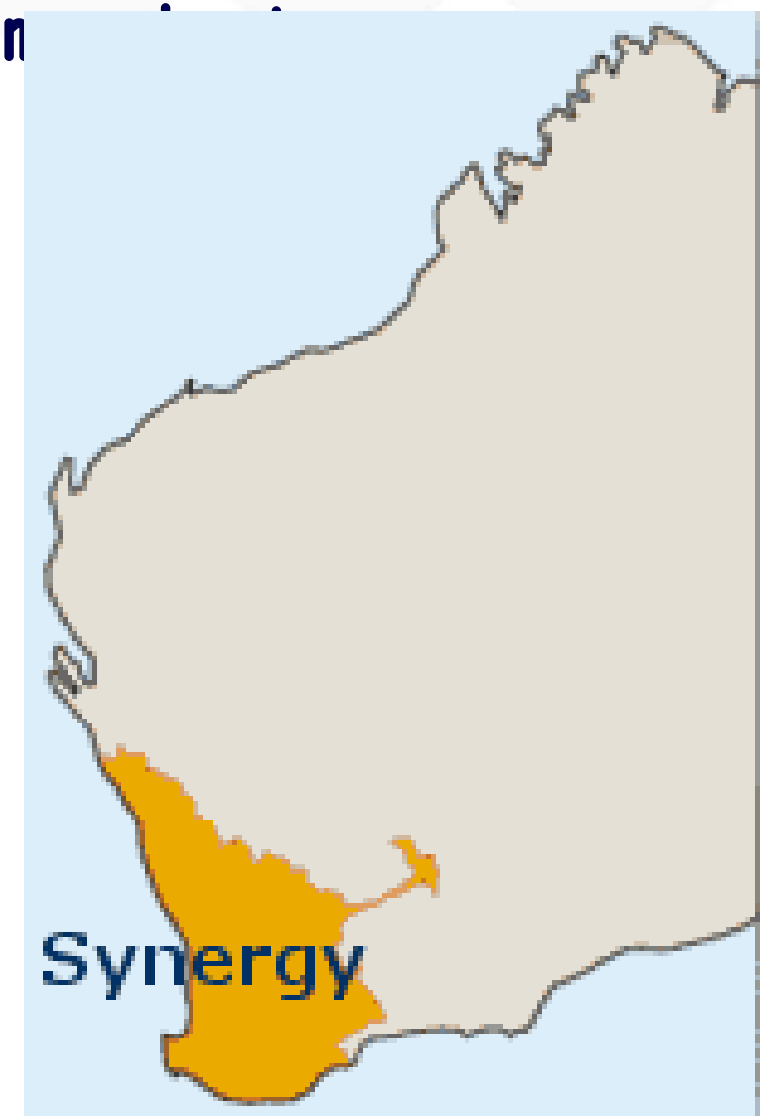
Megawatts

…what we need today

Western Australia's energy m



- Isolated network
- Approximately one million customers
- Small, ugly, lumpy load
- Fuel mix - 60% gas, 35% coal, 5% renewables

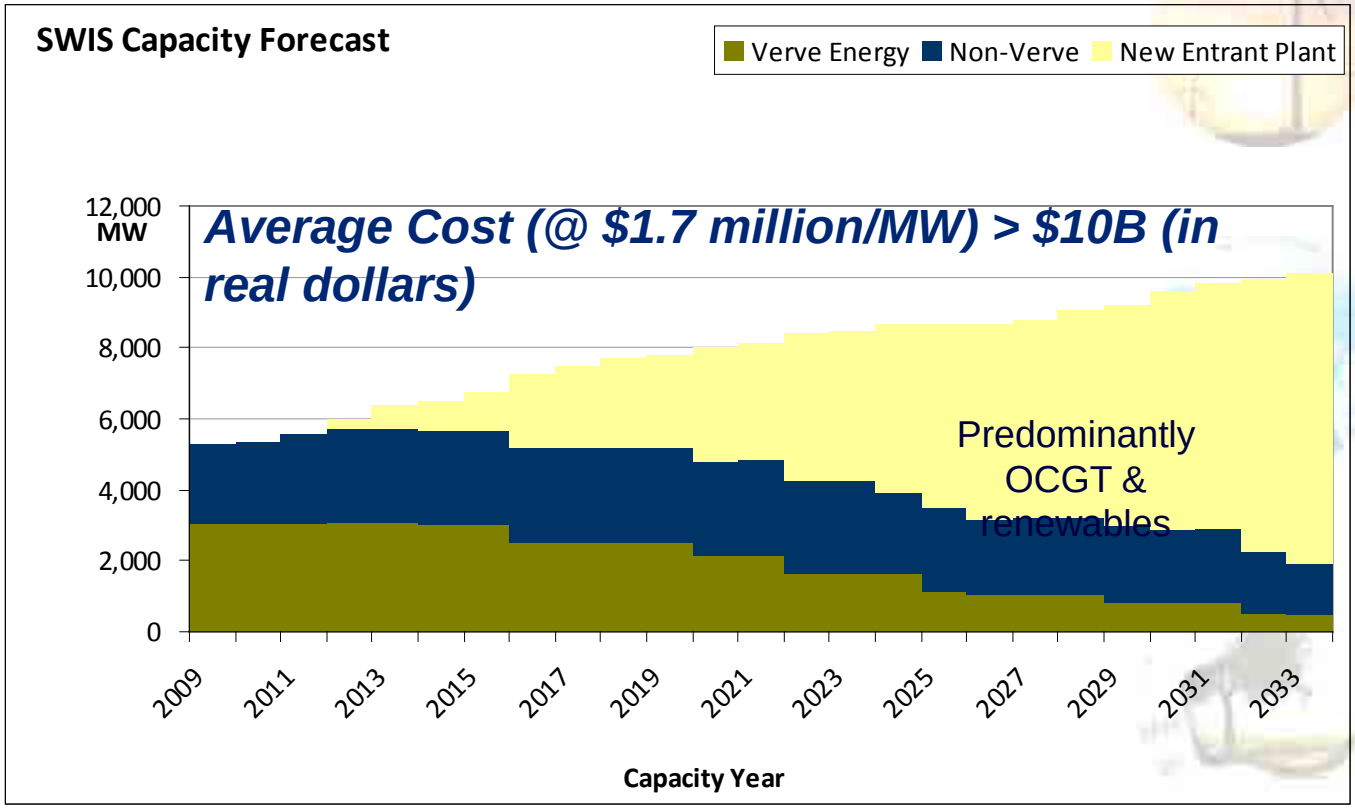
Electricity Generation

6000MW of new capacity will be needed in the SWIS by 2030

Drivers:

Growing demand

Plant retirement



Electricity Generation

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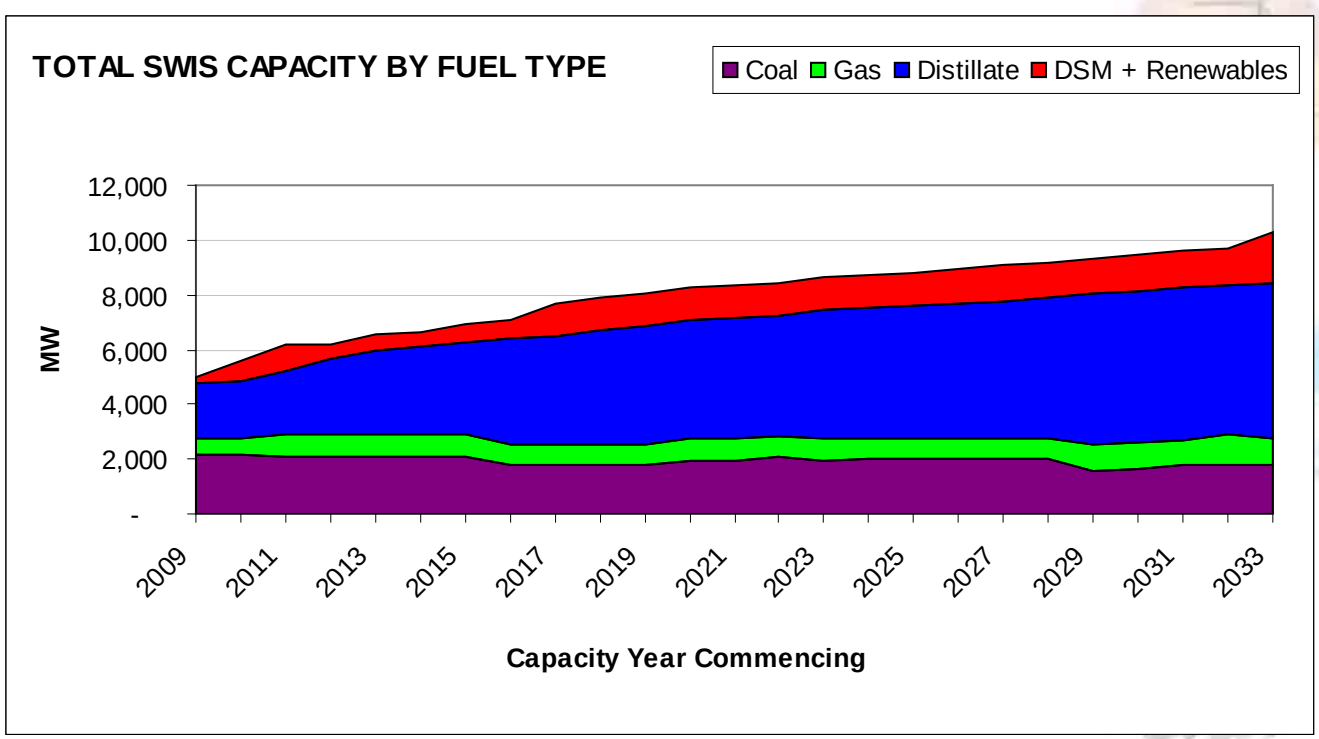
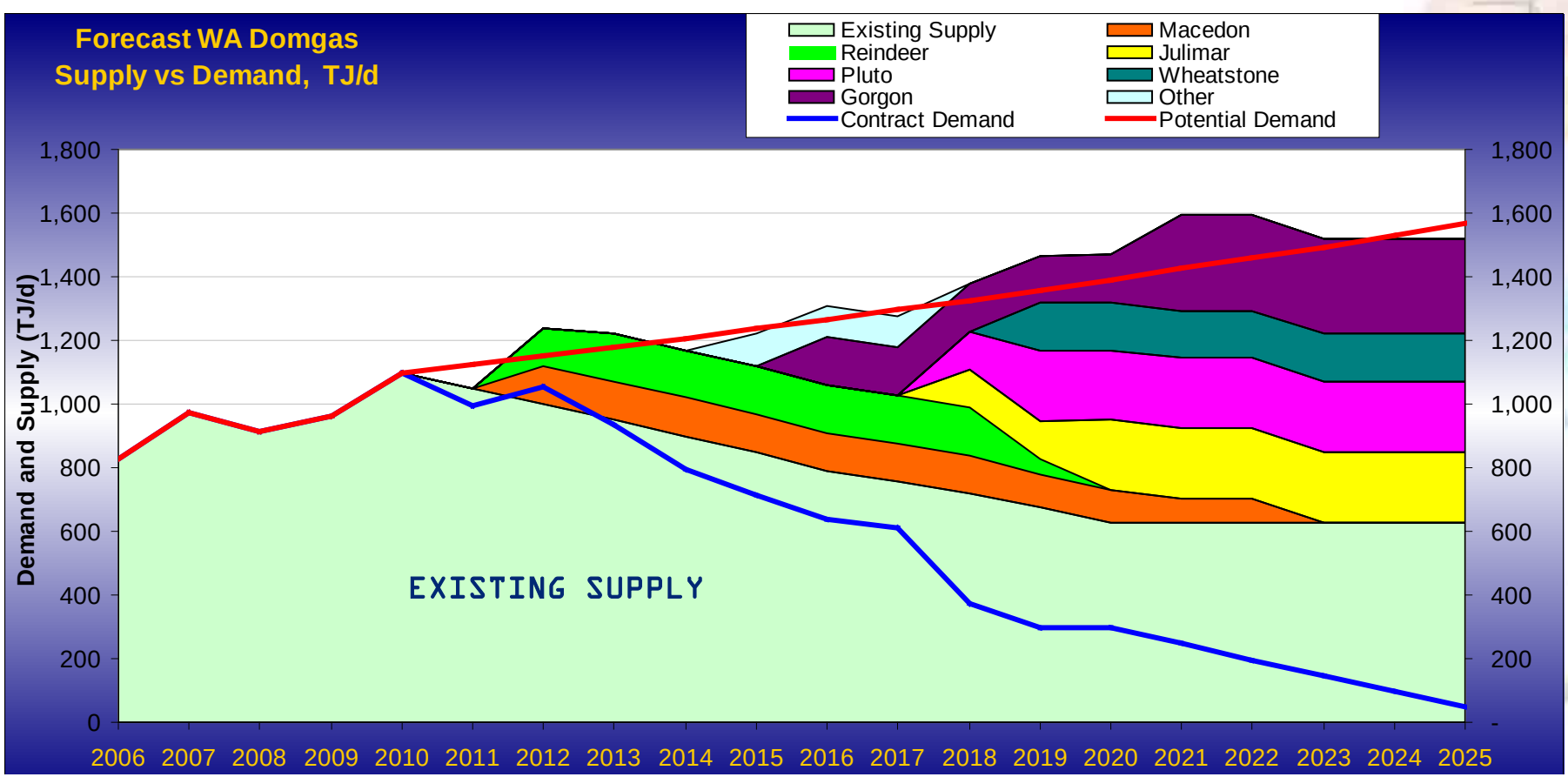


RECS requirement

Domestic Gas Supply & Demand Forecasts

WA Domestic Supply Position



Potential Mid - West Demand

Mines

- Karara Iron Ore (375MW)
- Extension Hill (120MW)
- Jack's Hill (60MW)
- Other miscellaneous mines (>300MW)

N.B. It is not expected that all will proceed to operational status

Infrastructure

- Okajee Port
- Rail lines

Town and industry expansion

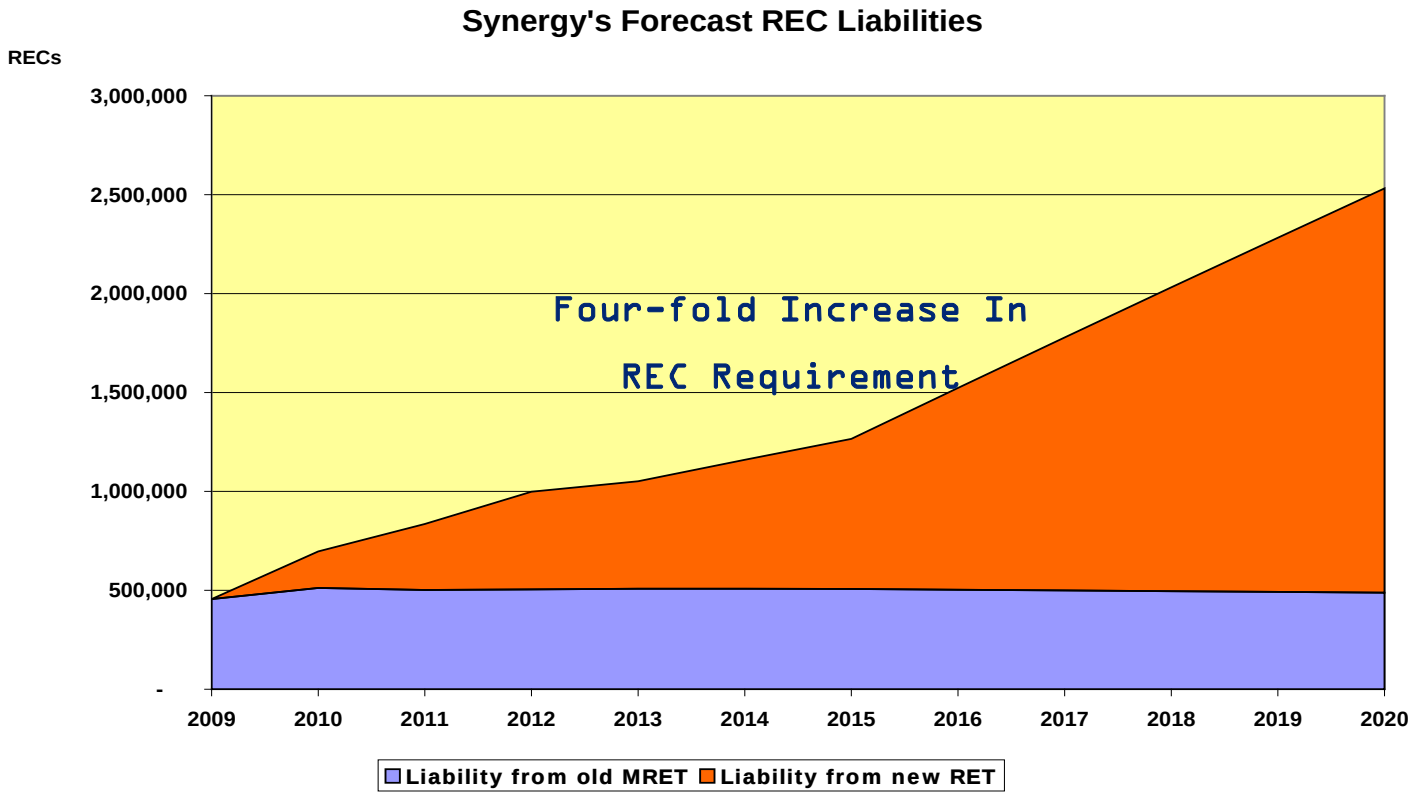
- Demand from all segments of the market forecast to grow - will require an additional 39MW

TOTAL POTENTIAL REGIONAL DEMAND FORECAST: 861MW

Renewables

Renewable Energy

Expanded Renewable Energy Target: 20% by 2020



Number of GWh Australia originally needed to meet MRET target

Number of GWh Australia now needs to meet under RET target introduced August 2009

Indicative Additional Costs of Renewable Energy

Renewable energy creates broader costs than simply the headline cost of generation

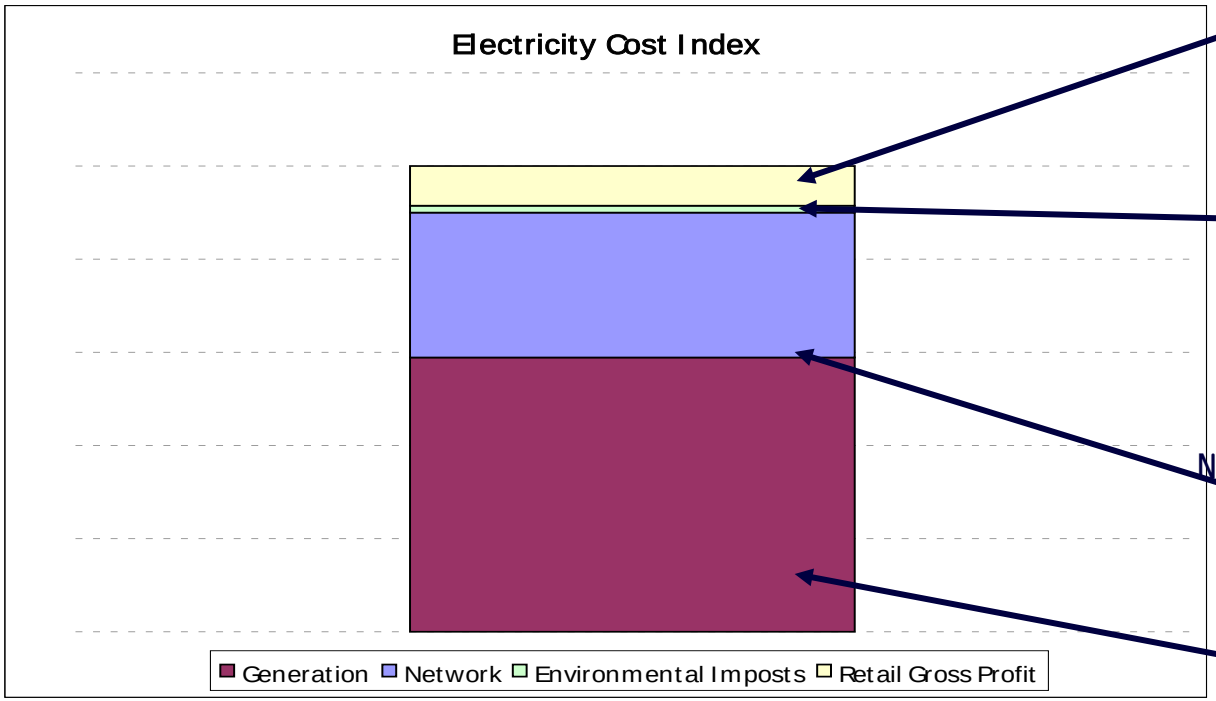
Additional capex cost of renewables in SWIS	
Additional REC requirement by 2020	2,800,000 RECs
MW of wind equivalent	1065 MW
Capex @ $2.5 m per MW	$ 2,664 m
Capex cost of balancing at 40% OCGT per MW wind	$ 511 m
Network spend @ 1/3 rd capex	$ 1,048 m
Total	$ 4,223 m

Notes -

- 2020 requirement vs present announced contracts
- Assumes new build to meet requirement

Source: Strategy & Growth 2009

Cost stack



Retail Costs

RET& Climate Change will increase environmental imposts

Network costs will increase

Fuel costs will Increase generation costs

Climate Change

Customers demanding more green

Renewables

- Federal Renewable energy target of 20% by 2020
- Synergy utilising wind and biomass
- Collgar Wind Farm (206MW facility, 111 Turbines)
- MOUs signed for wave & geothermal
- EOI for solar

CPRS

- No national consensus…but it will come
- Carbon offsets - 6.5 million trees planted

Generation Challenges

- Locating suitable sites for new generation

- Environmental & Zoning Approval

- Near Load Demand Centres

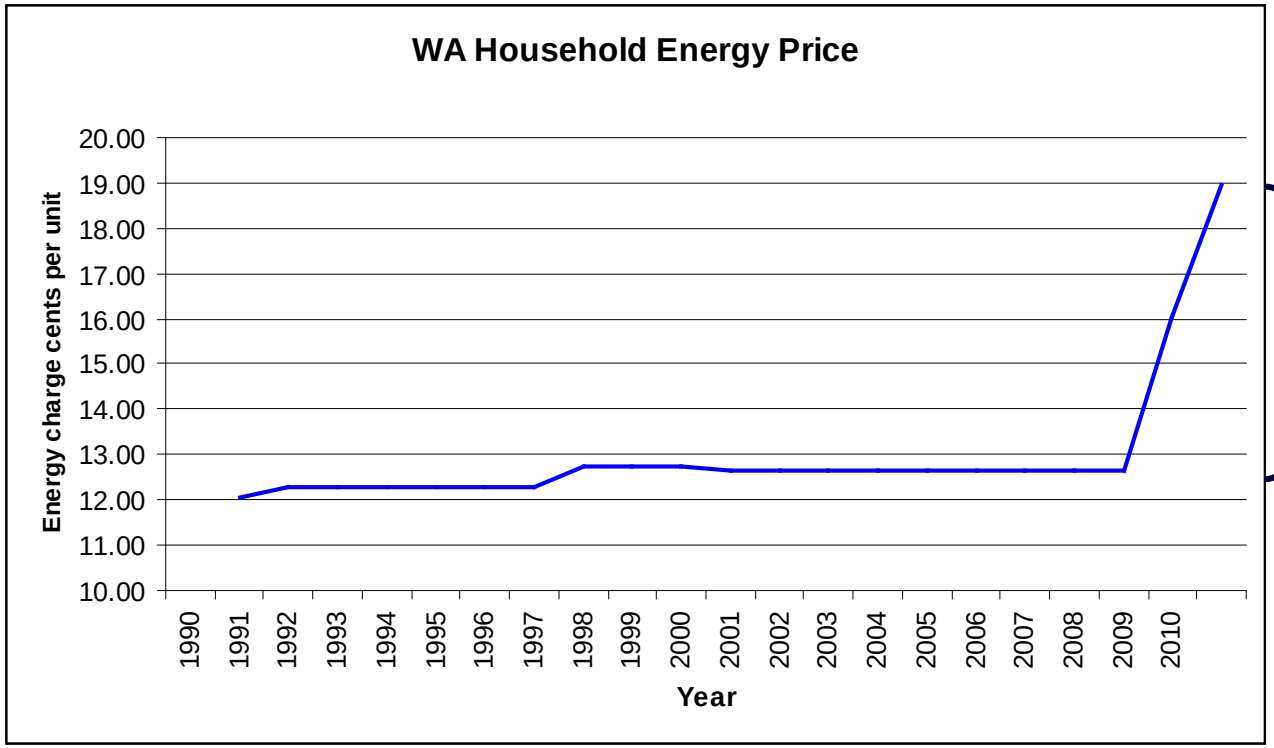
- Access to Water

- Access to Fuel

- Transmission

Conclusion - Wholesale power prices increasing

Household Power Prices Increasing



- Customers ambivalent about energy use - no price signals
- 49.6% increase in 15 months

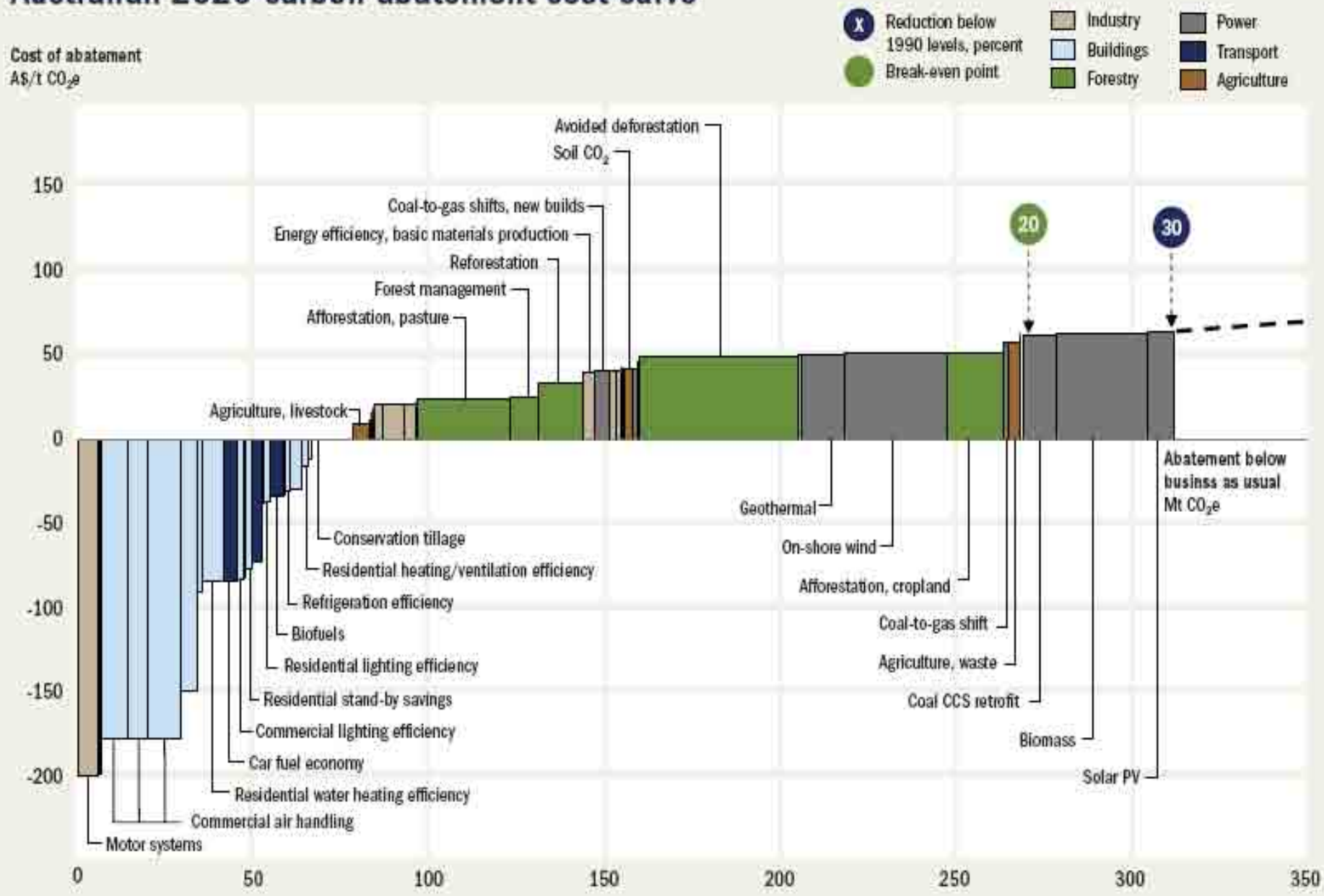
Negawatts

…what we don’t need today

The cheapest tonne of abatement is the tonne you do not emit

…and the cheapest megawatt is the one you don’t use!

Australian 2020 carbon abatement cost curve



Note: Abatement opportunities are not additive to those of previous years

Source: McKinsey Australia Climate Change Initiative

Synergy believes a substantial change in energy consumption can only be achieved through a change in customer behaviour

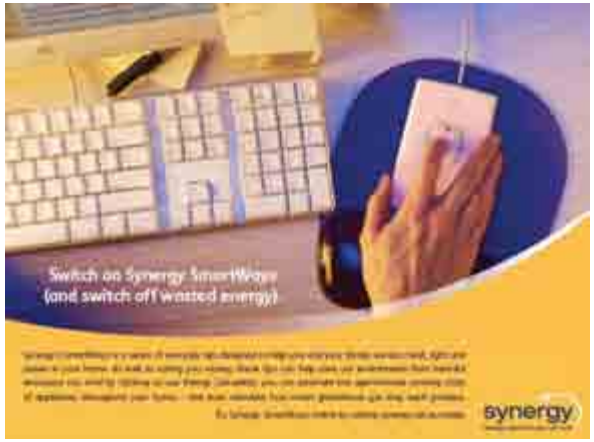
Behavioural change

- Fundamental to achieving long term efficiency benefits
- Energy efficiency

Enablers:

- **Perth Solar City trial** - 106,000 homes involved
- **Synergy trialling:**
  - Time of use pricing (6,000 customers)
  - In-home display devices (2,200 customers)
  - Demand management product
  - Direct load control (700 customers)
- **Synergy's new billing and CRM system** provides market segmentation

Synergy's Switch Campaign

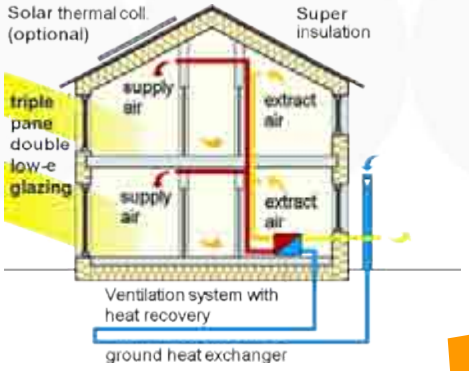


Campaign effectiveness - Results exceeded targets in all areas

- Awareness of 52% vs 20% target
- 33% cut through vs 7% target
- 51% ad empathy vs 35% target
- 88% understood energy conservation message
- 41% likely to change behaviour as a result of campaign

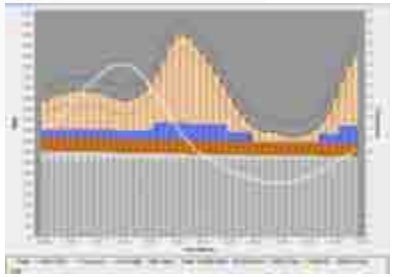
Energy Efficiency

…beyond the Switch Off



WEATHERISATION

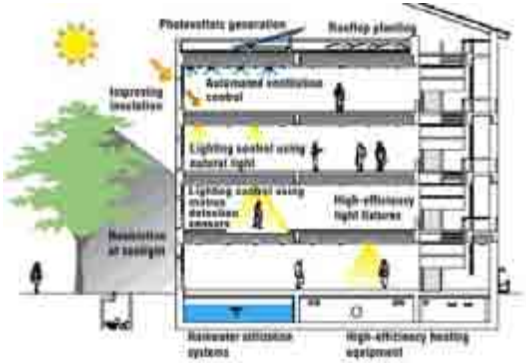
STANDARDS & EFFICIENT APPLIANCES



CUSTOMER DATA INTERFACE

ENERGY AUDITS

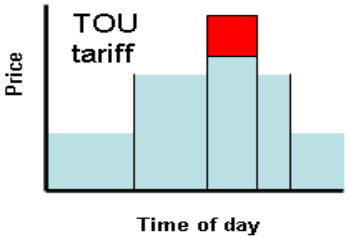
ENERGY EFFICIENCY



BUILDING STANDARDS

ENERGY LOANS

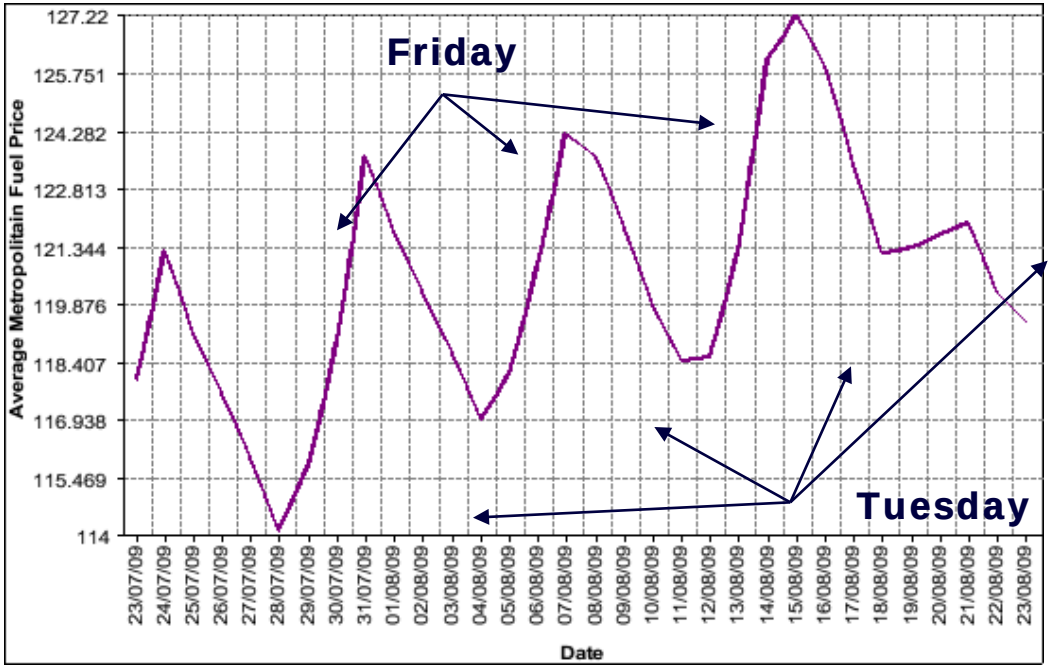
EMBEDDED GENERATION



PRICING REGIME

LOAD CONTROL

Visible Signals Important



Fuel Watch

Brought to you by Consumer Protection

Benefits of Energy Efficiency

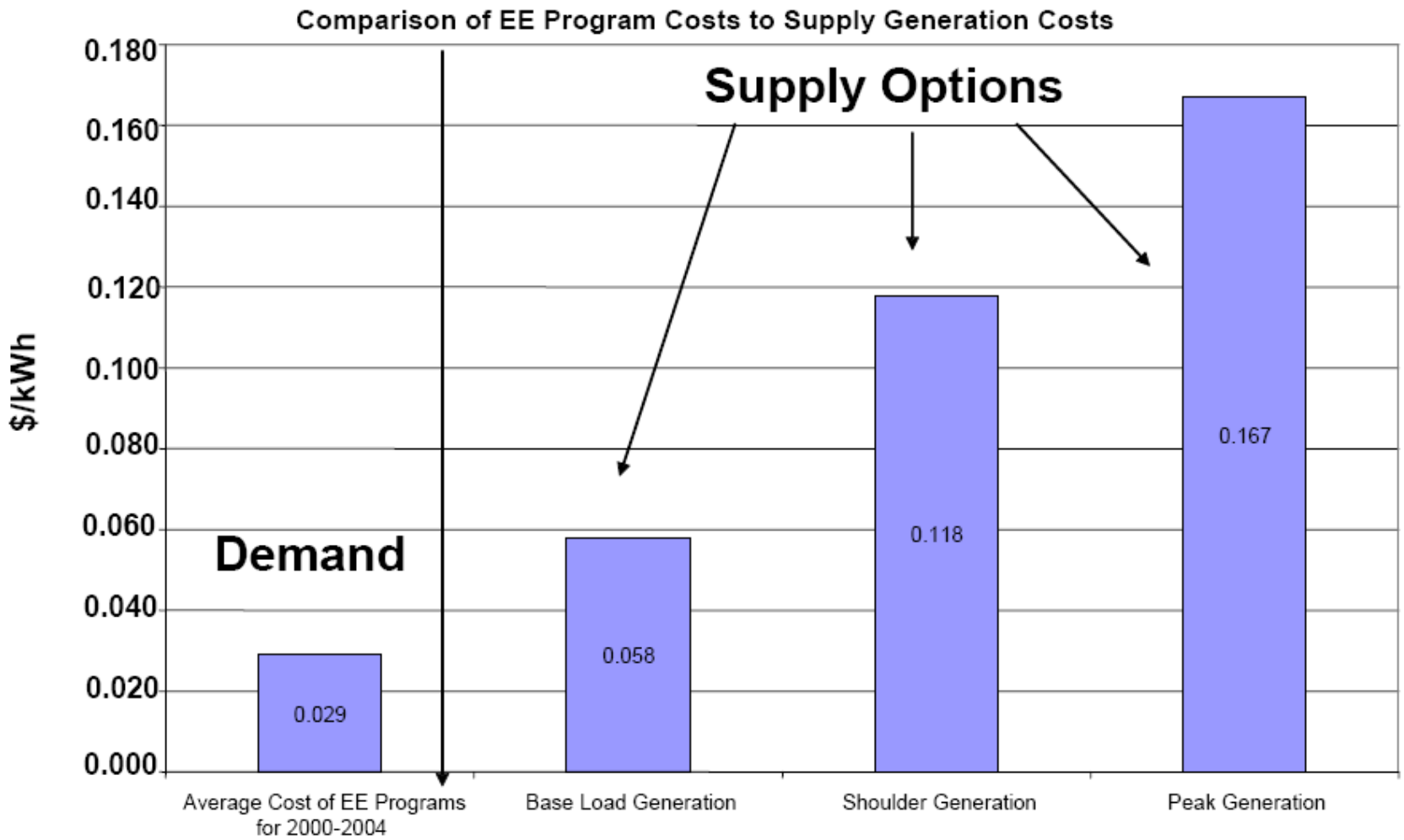
Energy efficiency changes customers usage behaviour through a change to customer load profile. This leads to;

- less investment needed in generation
- less investment needed in transmission
- mitigate future fuel needs

& therefore lower cost of electricity to consumers and less investment cost to government

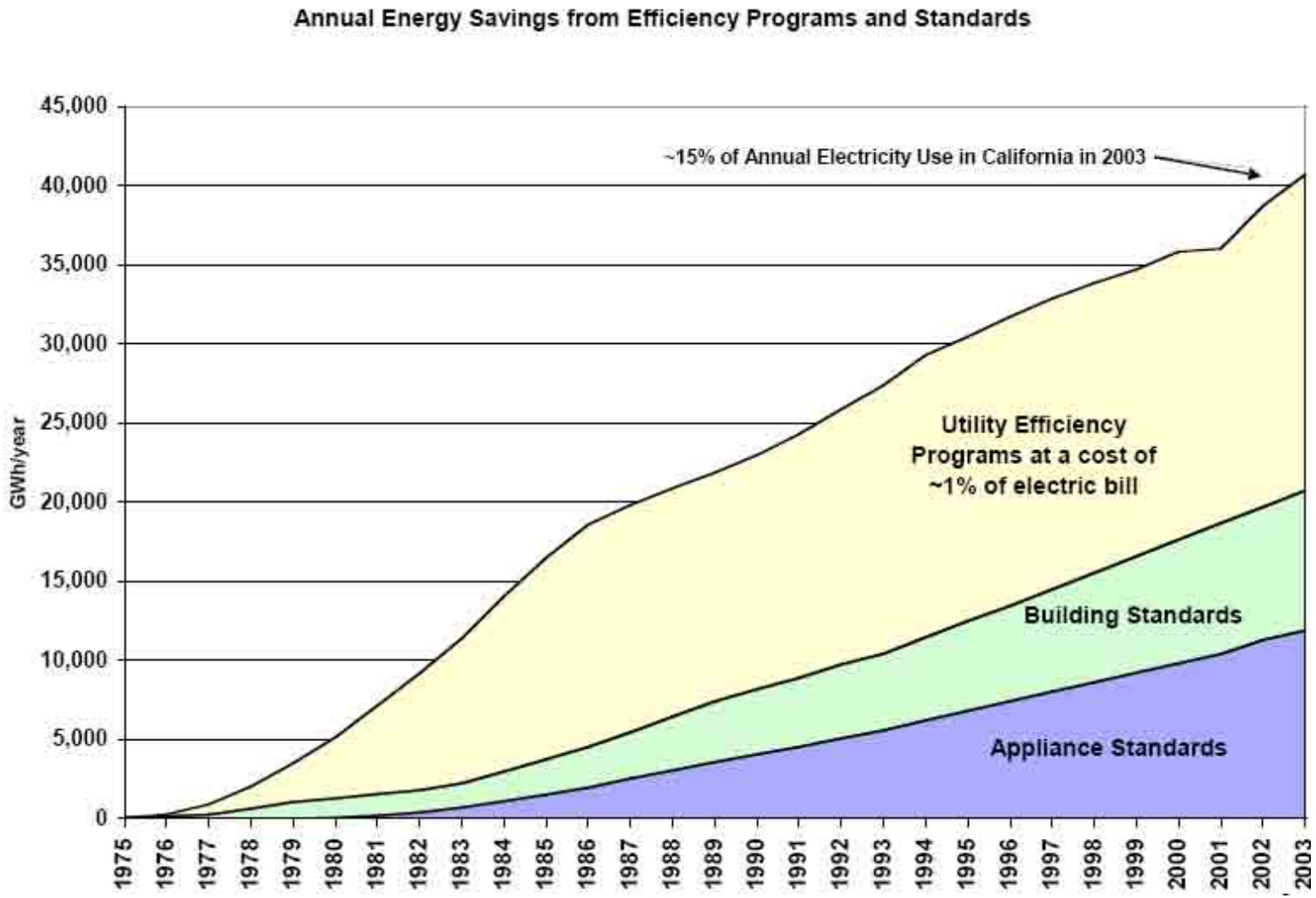
California Energy Efficiency

California Energy Efficiency



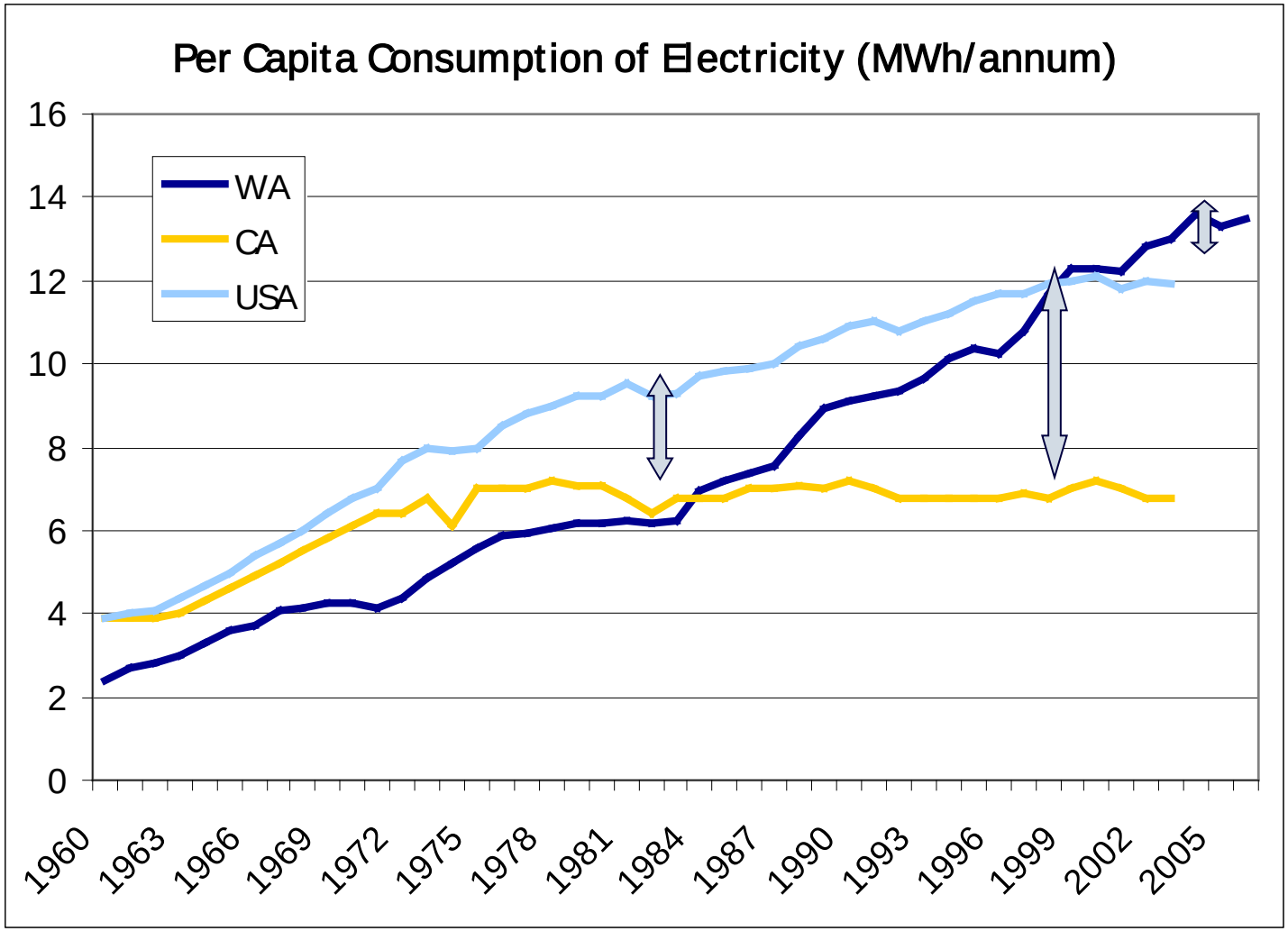
Source: California Energy Commission

California Energy Efficiency



Source: California Energy Commission

Energy Efficiency Trends California Situation Analysis



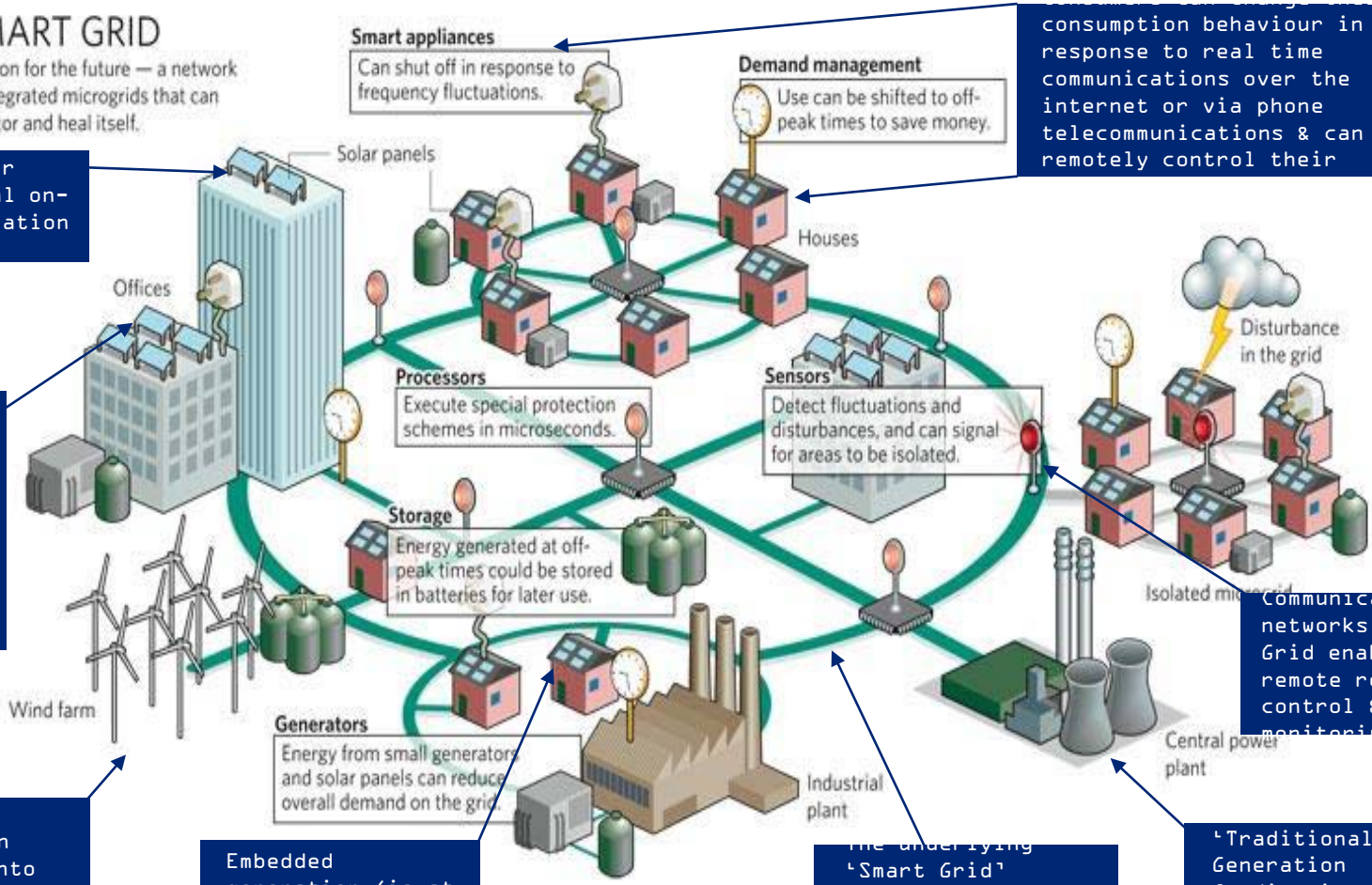
Energy Saving Potential

- Value of EE is assessed in terms of avoided costs. Avoided costs reflect the benefits associated with deferred generation, transmission, and distribution as well as mitigation of externalities such as carbon emissions
- Value of EE is used to derive both economic (or cost-effective) and technical market potential
- EE market potential studies analyse market saturation by identifying appliance saturation, building stock, economic growth conditions, customer demographics, and technology assessments

Lighting	56%
HVAC	17%
Refrigeration	13%
Pumps	6%
Fans	2%
Drives	2%
Comp Air	2%
Misc/Other	2%

Smart Grid

The Smart Grid Concept



consumption behaviour in response to real time communications over the internet or via phone telecommunications & can remotely control their

Business or Residential on-site generation is viable

generation that produces energy at off-peak times can be battery stored for use at high peak demand times

Communication networks in the Grid enable remote repair, control & monitoring

Renewable Generation feeding into the Smart Grid

Embedded generation (ie at consumer's site) can help reduce demand on the whole grid.

The underlying 'Smart Grid' distribution network that links generators &

'Traditional' Generation feeding into the Smart Grid

Benefits of Smart Grid

- Optimisation of generation and network and reduced spend relative to a non smart grid scenario
- Smart Gris is one of the enablers to extend energy efficiency and increased supply reliability
- Lower costs to supply of electricity

Thank You