Setting and meeting energy productivity goals

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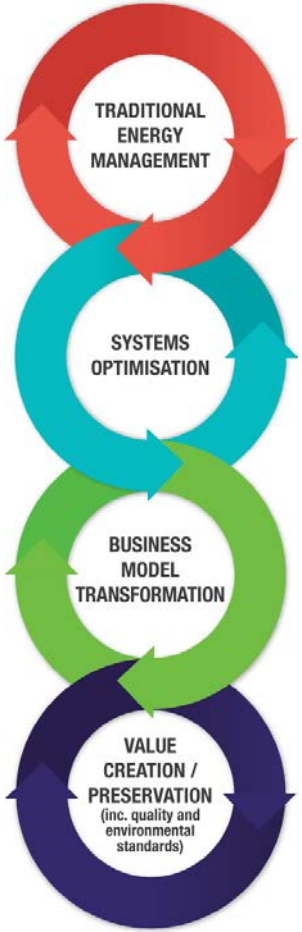
Australian Alliance to Save Energy

Summer Study on Energy Productivity
24 February 2016, Manly

Energy *productivity* ranges well beyond energy *efficiency*



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Doing more. Using less.

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Metrics and measures

$$\text{energy productivity} = \frac{\text{economic output}}{\text{energy used}} = \frac{\text{GDP}}{\text{PJ}_{\text{primary}}}$$

In passenger transport, for example:

$$\textit{Energy Productivity} = (\textit{Real GDP} - 2010\$bn) \div \frac{\textit{Units of primary energy (PJ)}}{\textit{Passenger kilometres travelled (bn)}}$$

$$= \frac{\textit{Real GDP \$bn}}{\textit{PJ} - \textit{duty}}$$

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Productivity: Not [only] energy savings

Doing more. Using less.

Yield!

Target is doubling across economy

Varies sector by sector

and possibly by sub-sector

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2xEP: Doubling energy productivity by 2030
The energy productivity roadmap - By sector and across

- Agriculture
- Built environment
- Manufacturing
- Mining
- Transport – Passenger

- Transport – Freight *
- Information and communications technology *

- Innovation
- Finance
- Measures, metrics, data
- Communications

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2xEP: Doubling energy productivity by 2030
The energy productivity roadmap - By sector and across

- not isolated
- interdependent
- but particular

- demand-side focus
- supply-side is [still] critical
- role of renewables

- thinkers and researchers
- policy-makers
- technologies
- suppliers

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2xEP: Doubling energy productivity by 2030
The energy productivity roadmap - By sector and across

- current state and trends
- opportunities
- barriers
- measures and initiatives
- benefits and costs
- priorities
- implementation
- monitoring and reporting

- dynamic environment
- pop-ups
- policy and programs
- links with other developments

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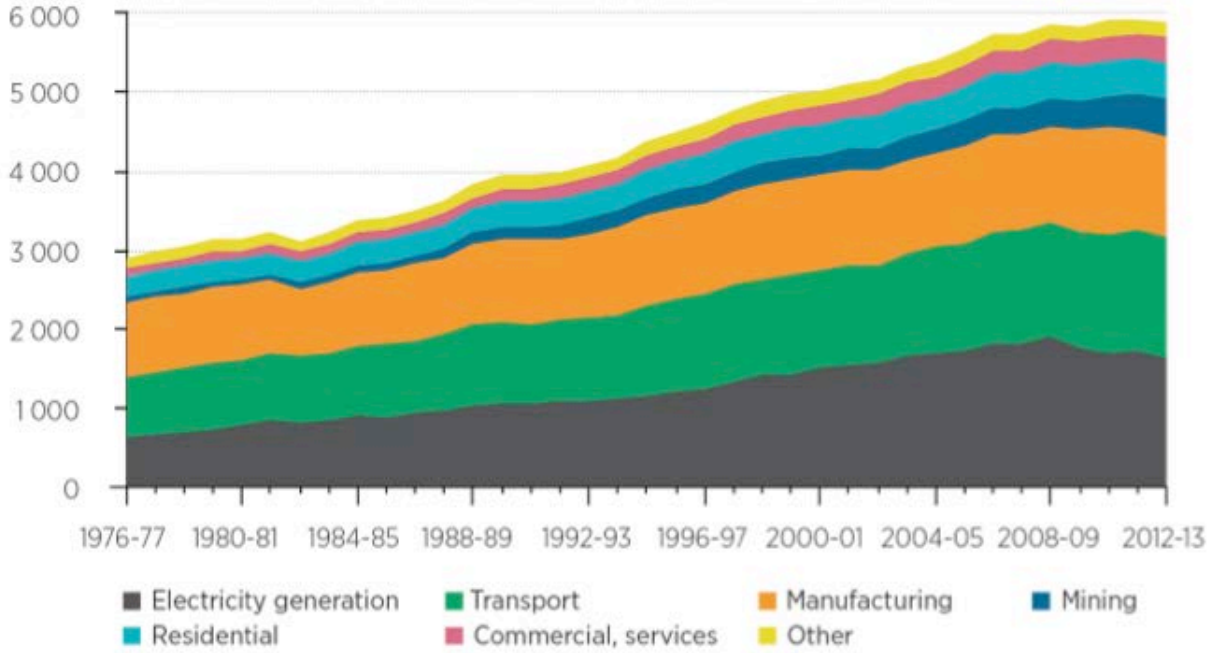
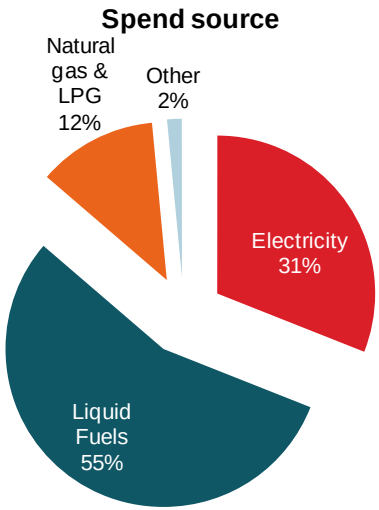
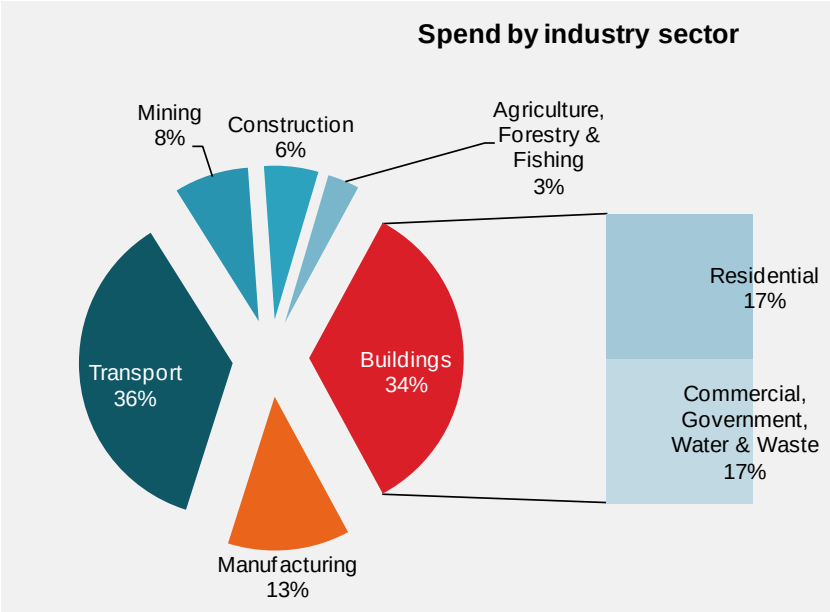
National primary energy consumption by sector



Source: BREE 2014

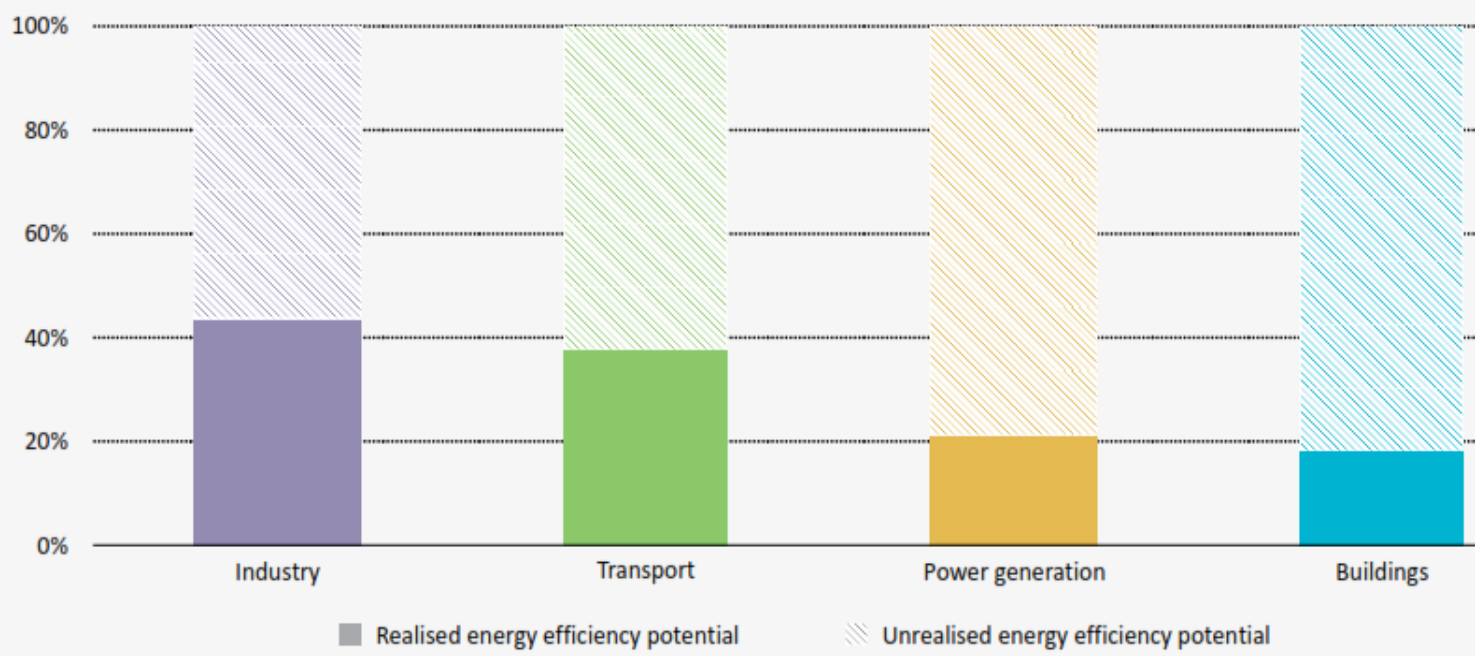
National primary energy spend by sector





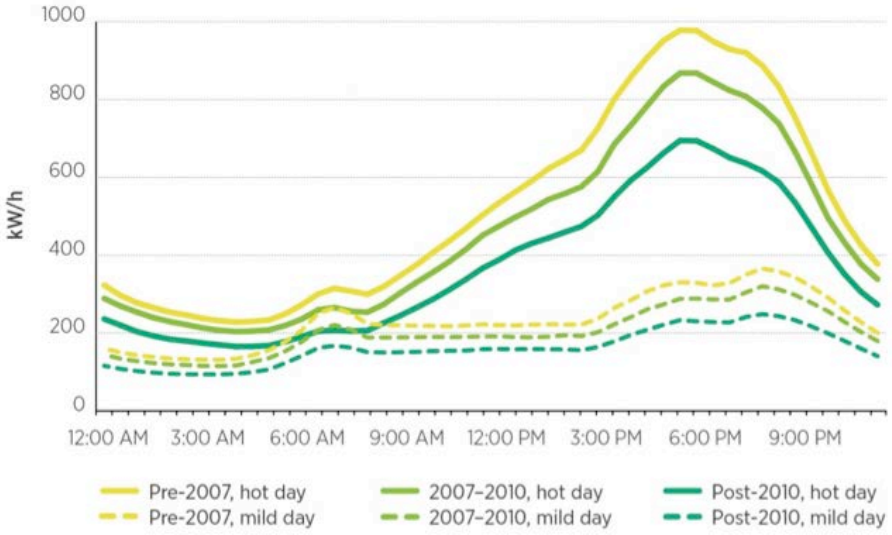
Although energy consumption in Australia is concentrated, with the 300 largest businesses consuming 56% of primary energy, the residential sector, which accounts for only 17% of primary energy consumption, picks up 39% of Australia's combined transport and stationary energy bill
Source: Department of Industry, 2013; ABS, 2013

Long term energy efficiency economic *potential*



Source: IEA, 2014

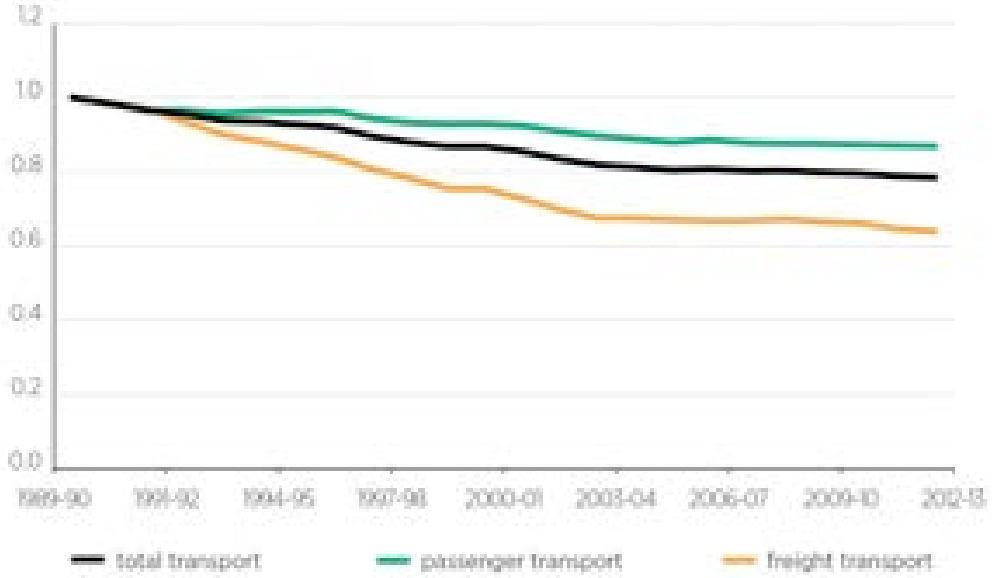
Energy consumption in the residential sector



Effects of more energy efficient houses and appliances

Energy White Paper, 2015
Source BREE, 2014

Trends in energy intensity - transport

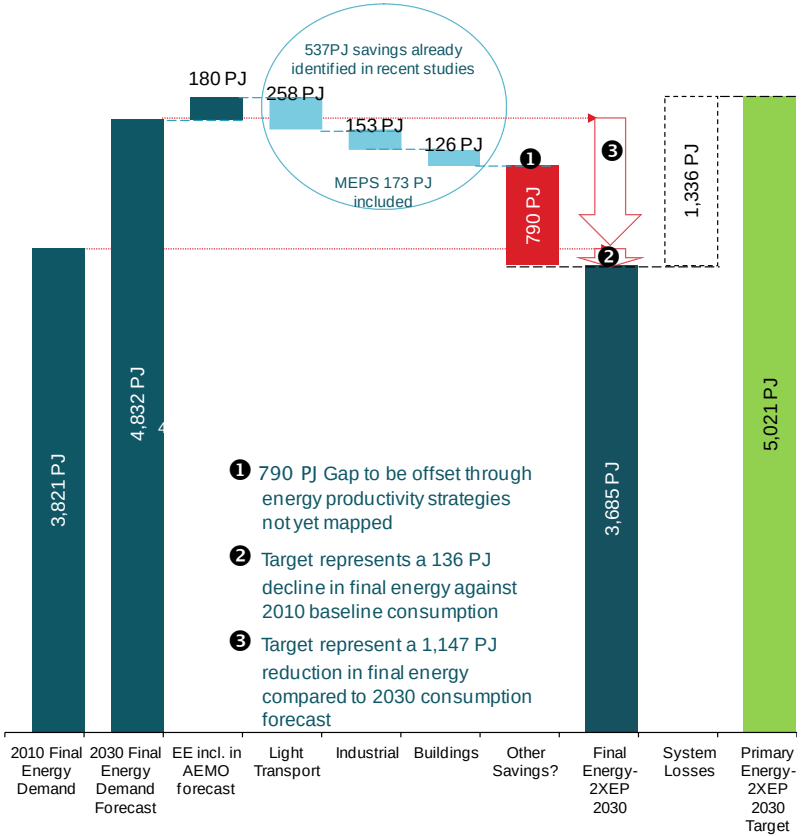


Trends in composite energy intensity indicators in the the transport sector

Index 1989-90 = 100

Energy White Paper, 2015
Source: Department of Industry and BITRE, 2014

Energy consumption targets and savings opportunities



Australian Alliance to Save Energy, 2xEP Framing Paper, 2014

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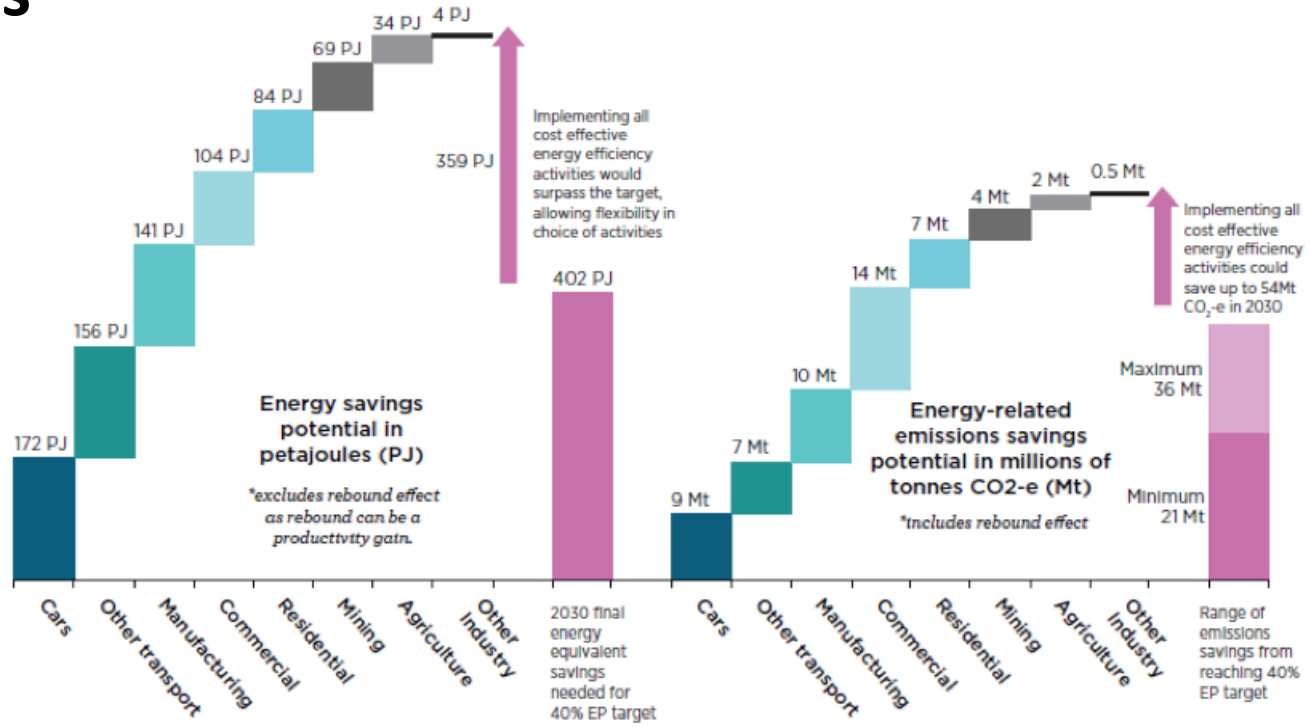
Opportunities by sector

Requirement for a 40% target included for comparison



National Energy Productivity Plan, CimateWorks Australia for Department of Industry, Innovation and Science, 2015

2xEP Steering Committee – Priorities for business

Across the economy

- *energy markets including renewables*
- *information, communication and engagement*
- *government as leader, as consumer*

Sector-specific: priorities PLUS detail by sector

- *Agriculture*
- *Built environment*
- *Transport*

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National Energy Productivity Plan – Measures headlines

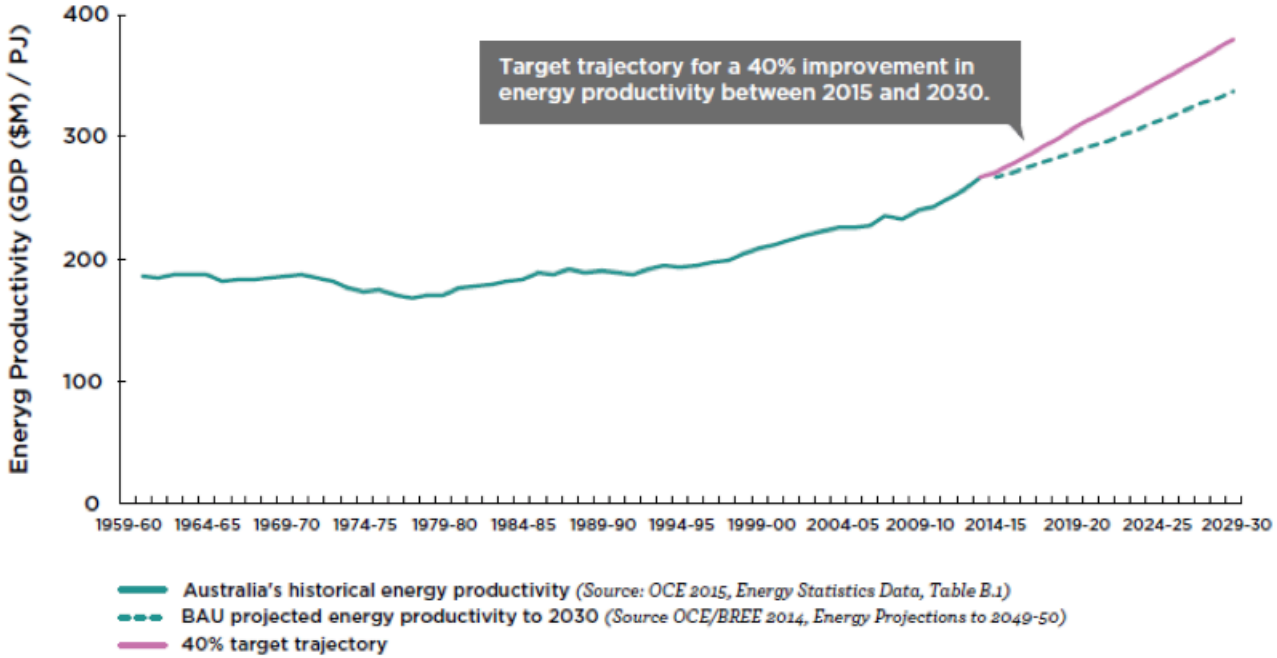
Encouraging more productive consumer choices

- *efficient incentives*
- *empowering consumers*
- *helping businesses compete*

Promoting more productive energy services

- *innovation support*
- *competitive modern markets*
- *consumer protections*

NEPP: Accelerating energy productivity improvement



Target trajectory is estimated using 2013-14 data. The target will be finalised in mid-2016 when the OCE energy statistics data for 2014-15 become available.

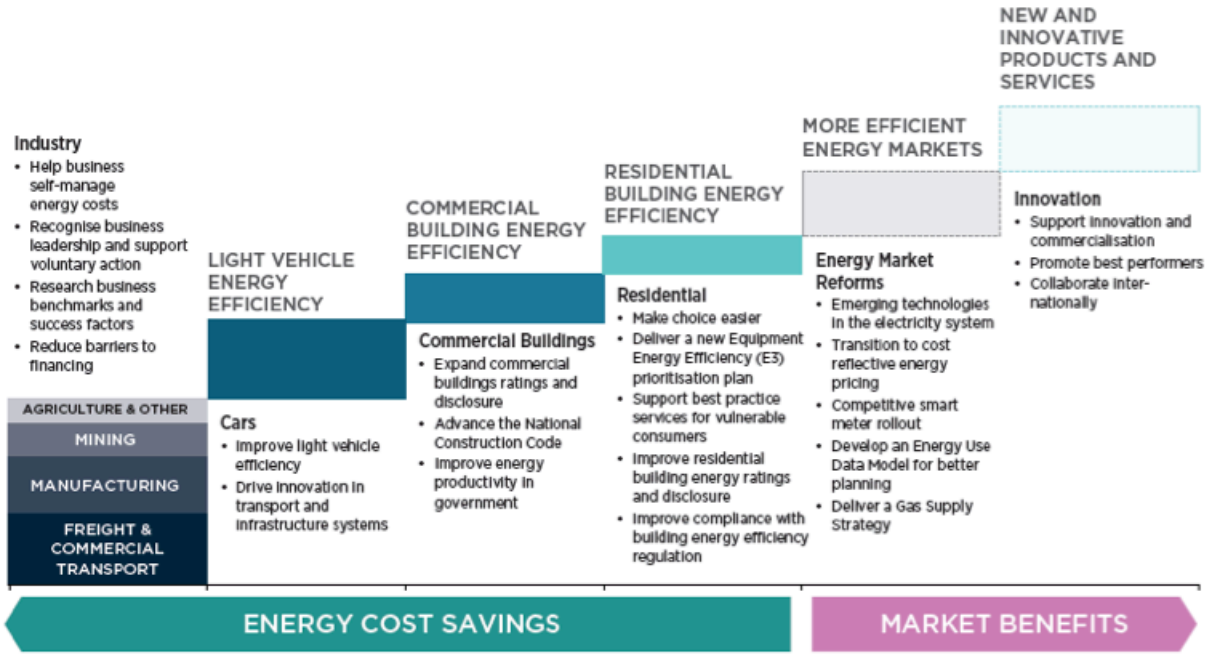
In accordance with OCE/BREE (2014) Australian Energy Projections, all projections in this chart assume GDP grows at an average of 2.7% per year between 2015 and 2030. GDP growth of more or less than this will have an impact on the resulting trajectory.

National Energy Productivity Plan – Measures by sector

Of 34 proposed measures, 9 are sector specific

- *5 for buildings and cities*
- *3 for transport*
- *1 for appliances and equipment*

National Energy Productivity Plan - Measures



National Energy Productivity Plan, Department of Industry, Innovation and Science, 2015

National Energy Productivity Plan – By sector

#10 – Improve fuel efficiency in aviation and maritime sectors

The aviation and marine sectors operate internationally, making for a complex environment in which to negotiate energy productivity. The Commonwealth will continue to work with these sectors on a range of specific measures.

National Energy Productivity Plan – By sector

#11 – Reduce barriers to financing

There remain a range of barriers which can limit efficient private sector investment in energy productivity improvements. A range of measures are addressing these issues including existing projects under the Clean Energy Finance Corporation…

Energy-water-waste nexus in the food manufacturing industry

Finance: CEFC & Bioenergy
ICT: Cisco & GE

Source: Australian Food and Grocery Council, 2013

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Aligning opportunities

- energy market reform
- energy market investment
- regulation and incentives

- policy and programs
  - Renewable Energy Target
  - Emissions Reduction Fund
  - Australian Renewable Energy Agency
  - Clean Energy Finance Corporation

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Aligning forces within and across sectors

- *technology and practice*
- *markets and consumers*
- *regulation and incentives*
- *data and analytics*

- *governments (federal, state and territory, local)*
- *context – political and economic*

- *sectors, communities of interest, peers and competitors*
- *culture*

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A2SE.org.au and 2xEP.org.au