Australian Energy Efficiency and Demand-Side Management Activities

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"DSM – Most Desirable Policy Option of the Future"
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Overview

- Energy supply and demand
- Reducing greenhouse gases
- Key directions for energy efficiency
  - National Framework for Energy Efficiency
  - Energy Efficiency Opportunities Act
  - Minimum Energy Performance Standards
    - Domestic air-conditioning
    - Stand-by power
  - Phase-out of incandescent lamps
- Key directions for demand-side management
  - Continued electricity and gas market reform
  - Smart metering, including interval metering
- Conclusions

Energy Supply and Demand (1)

- Apart from liquid fuels, Australia is an energy rich country with an abundance of cheap coal, gas (including coal seam gas) and uranium
- More than two-thirds of Australia's energy resources are exported, including AUD25 billion of coal
- Australia has recently become a net importer of liquid fuels with significant implications for balance of payment issues
- Coal to liquids remains a viable future option
- Australia's low-cost electricity supply is coal dominated (around 84%)

Energy Supply and Demand (2)

- Gas is widely reticulated and enables fuel substitution, particularly for industrial processes, water and space heating and increasingly for (more costly) power generation
- Australia's greenhouse gas emissions are small by global standards (about 1.3% of net global emissions) but are high on a per capita basis, reflecting the energy-intensive, trade-focussed nature of the economy
- Electricity and gas end-use continues to grow at about 2% per annum, dominated by peak electricity growth (partly due to domestic air-conditioning growth)

Reducing Greenhouse Gases (1)

- Actions to reduce greenhouse gas emissions from energy use have significant implications for the shape and directions of the Australian economy
- Australia is on track to meet its Kyoto Protocol target of 108%, but 2020 projections are for 129%
- 2010 electricity emissions projections were reduced from 245 Mt to 209 Mt due to supply and end-use programs

Reducing Greenhouse Gases (2)

- A broad range of approaches are in place:
  - Mandating the use of gas for electricity generation growth
  - Mandating renewable energy for electricity supply
  - Improving energy supply and use efficiency
  - Mandating energy audits and reporting for business
  - Energy efficiency standards for buildings, homes, appliances, plant and equipment

Key Directions for Energy Efficiency (1)

– National Framework for Energy Efficiency

- A nationally integrated program that covers:
  - Residential buildings
  - Commercial buildings
  - Commercial/industrial energy efficiency
  - Government energy efficiency
  - Appliance & equipment energy efficiency
  - Trade and professional training & accreditation
  - Commercial/industrial sector capacity building
  - General consumer awareness
  - Finance sector awareness

Key Directions for Energy Efficiency (2)

– Energy Efficiency Opportunities Act (Federal)

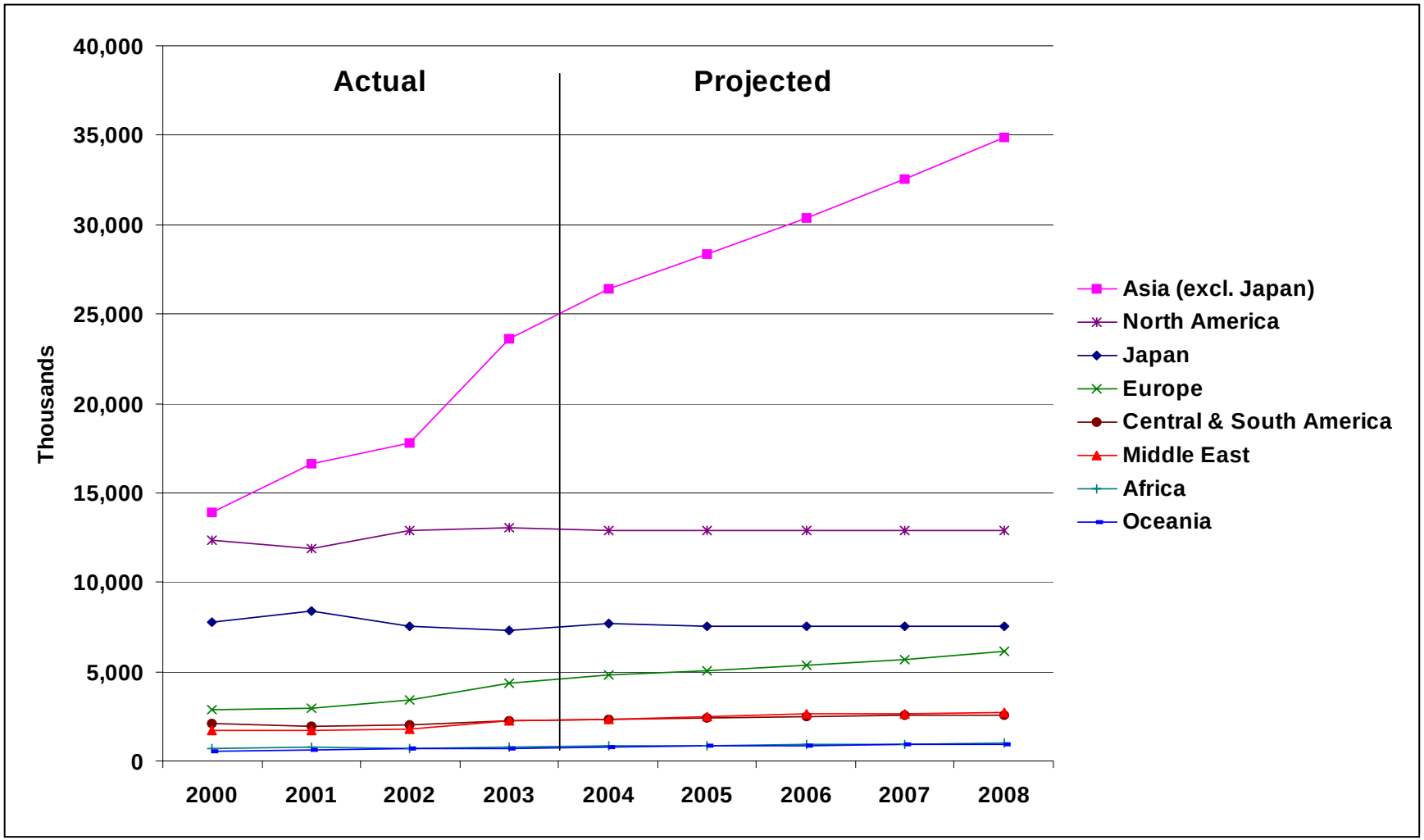
- Key features:
  - Corporations using more than 0.5 PJ per annum must make assessments to identify cost-effective energy saving opportunities with paybacks of up to 4 years
  - Assessments must be made every 5 years
  - Reports on the assessment outcomes and the corporation's response must be made to the corporation's board, to the public and to government
  - Public register will detail all assessments and reports
- Hopefully, corporations will implement energy savings!
- Similar schemes have been established by some States; some of these schemes require corporations to implement energy saving actions

Key Directions for Energy Efficiency (3)

– Minimum Energy Performance Standards (MEPS)

- MEPS cover refrigerators and freezers, water heaters, electric motors, air conditioners, fluorescent lights and ballasts, distribution transformers, commercial refrigeration
- Current focus on:
  - further improvements in air conditioning standards, including two way communication
  - stand-by power (1 watt or less)
    - stand-by power approaching 75 watt per household in Australia
    - 200 to 400 TWh annually on a global basis

Growth in Air Conditioners



Stand-by Power Project

In Consultation with APEC and Other Nations (including Korea)

Basket of Core Products (14)

Major Appliances (2)

- clothes washers
- microwave ovens – electronic

Home Entertainment Products (6)

- televisions – CRT (conventional)
- televisions – LCD
- televisions – plasma
- portable stereos
- integrated stereos
- Digital Video Disc players (DVDs)

Office Equipment (5)

- computer monitors – CRT
- computer monitors – LCD
- computer printers – laser black and white
- computer printers – inkjet
- multi-function devices (MFDs – combination scanner, printer and fax)

Other Equipment (1)

- external power supplies (no load in addition to equipment powered)

Key Directions for Energy Efficiency (4)

– Phase-out of Incandescent Lamps

- In Australia, residential lighting accounts for 12% of household greenhouse gas emissions and 35% of commercial sector emissions
- In February, the Australian federal government announced that all standard (new) incandescent lamps will be phased out by 2010
- This will be done by imposing MEPS which cannot be met by incandescent lamps
- This will save 0.8 Mt per annum of greenhouse gas emissions between 2008 and 2012 and 4 Mt per annum by 2015

Key Directions for DSM (1)

– Continued Electricity and Gas Market Reform

- Australia has the world's most open and competitive electricity and gas markets:
  - All electricity must be sold and bought through a pool
  - More than 40 private and public generators and retailers and more than 12 network (monopoly and hence regulated) businesses
  - All consumer classes are able to buy electricity, including green power products, from any retailer or any bulk supplier
  - Industrial and large commercial users have time-varying tariffs
  - Domestic and small business consumers are about to face time-varying tariffs; this will enable a range of innovative supply and demand side products, with some focus on domestic air-conditioning
- But will innovation advance energy efficiency?

Key Directions for DSM (2)

— Smart Metering, Including Interval Metering (1)

- A smart meter is:
  - capable of measuring and recording consumption in short intervals, in line with wholesale market settlement periods (half-hourly in the Australian market)
  - capable of two-way communication
  - can facilitate participation by electricity consumers, suppliers and service providers in time-varying pricing or price-based demand response programs
  - may provide other functions that help provide better electricity service, link to in-home displays, or support direct load control programs
- Most interval meters are not particularly smart!

Some Key Directions for DSM (3)

– Smart Metering, Including Interval Metering (2)

- Compulsory roll-out of smart meters in some States and nationally from 2008
- Decision last week by federal and State governments to carry out a further study of a national roll-out of smart meters
- BUT – will government and regulators allow innovative tariffs to take advantage of metering advances?
- Maybe not !

Conclusions

- Australia is an energy rich country with low cost electricity and gas for domestic use
- Australia's comparatively high (per capita) greenhouse gas emissions requires a wide range of supply and demand measures urgently
- Australia is on track in meeting its Kyoto Protocol target of 108%, but 2020 emissions are projected at 129%
- Key programs are in place to reduce emissions from electricity supply and use by 36 Mt by 2010 (about 15%)
- More DSM, energy efficiency and fuel switching are needed to curb national emissions beyond 2010
- Other fast growing sectors will need to be covered, mainly transport