



MARCHMENT
HILL *consulting*

Meeting electricity needs in 2050

Young Leaders Snapshot High Energy Session

Energy21C

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Introduction

Overview

1. The demand for Electricity is growing

2. Why is this an issue?

3. How do we best meet this demand?

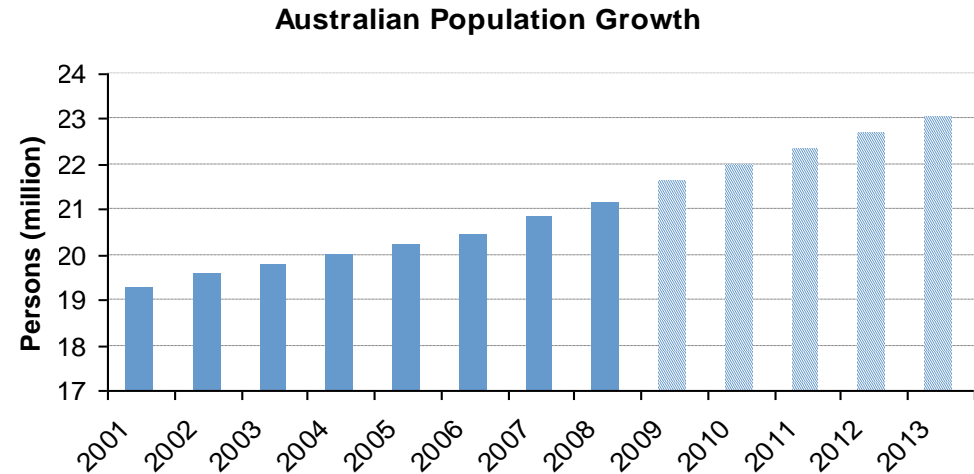
4. Motivation for young leaders

The electricity network in 2050

The demand for electricity is growing

1. Population Growth

- Will increase the demand for services and products, and thus electricity.



Source: Australian Bureau of Statistics

2. Higher standards of living

- Today's population that are living in sub-standard living conditions will move towards a higher standard of living.

Forecast Energy Growth

Region	10-year Scheduled Energy Growth Rate (% - yr)
Queensland	3.6%
New South Wales	1.6%
Victoria	1.0%
South Australia	1.5%
Tasmania	1.6%

Source: NEMMCO 2007 Energy and Demand Projections

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The demand for electricity is growing cont.

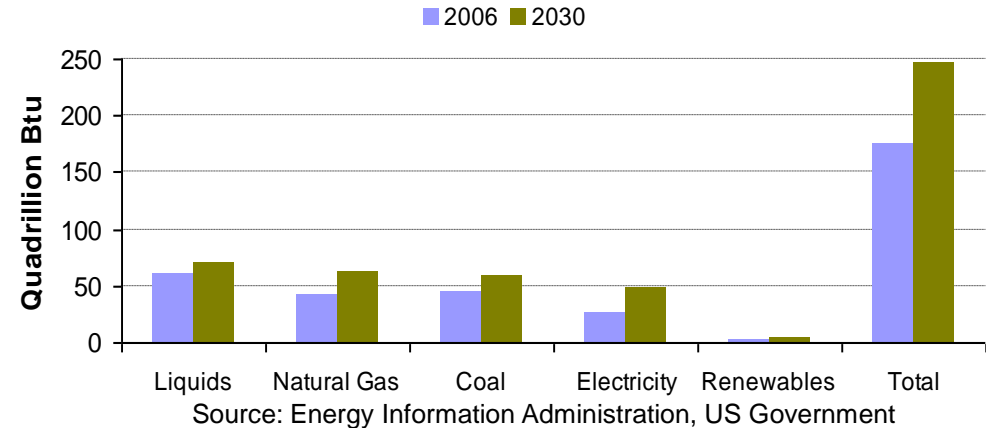
3. Substituting oil and petrol

- Increasing oil prices and the scarcity of oil is making electricity increasingly attractive.

4. Increasing reliance on electricity

- Resources that were previously not entirely dependent on electricity are now becoming reliant on electricity.

World Industrial Sector Energy Consumption by Fuel



Melbourne's desalination plant will use approximately 90 megawatts of electricity from the Victorian energy grid.

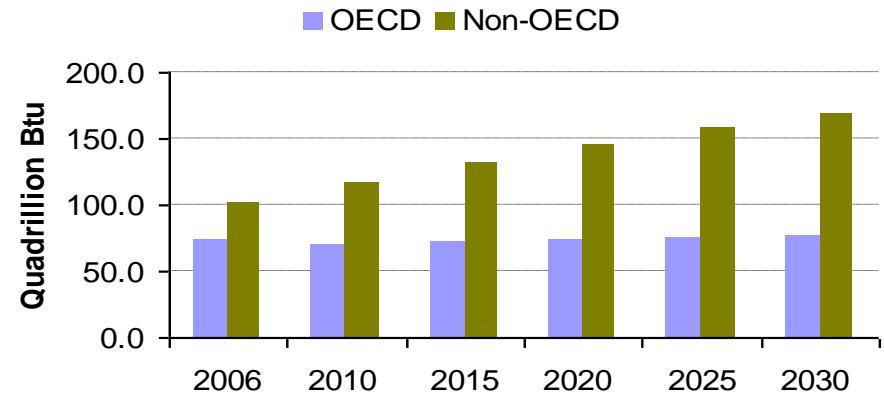
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5. Industrialisation of emerging economies

- Growing economies will lead to increased electricity usage

So, electricity demand will increase substantially by 2050.

OECD and Non-OECD Industrial Sector Energy Consumption 2006-2030



Source: Energy Information Administration, Official Energy Statistics from the US Government

Why is THIS increase in electricity demand an issue?

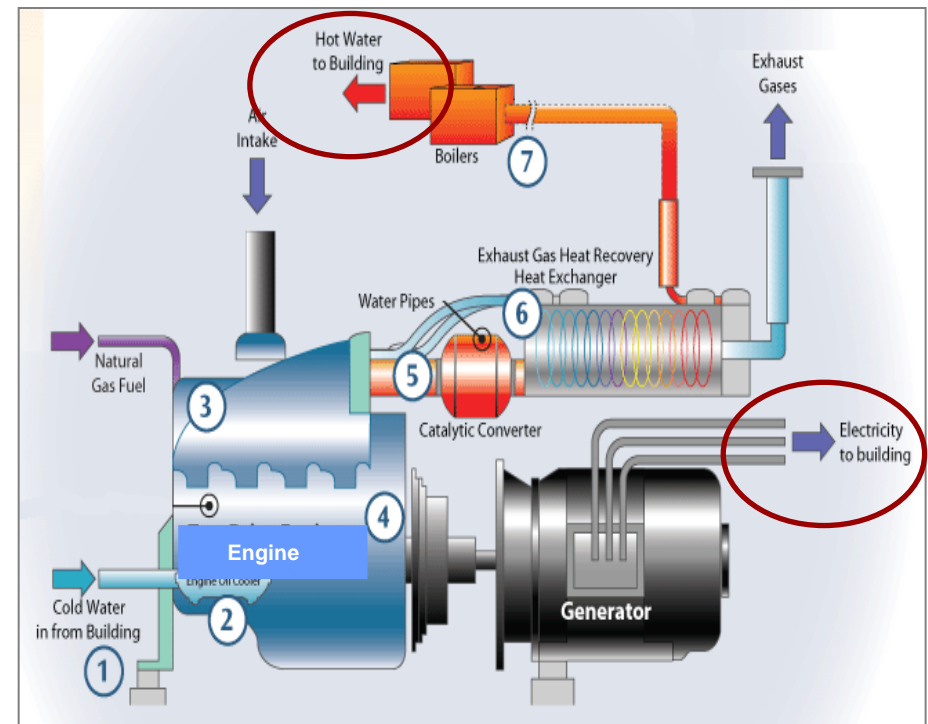
- Consumers are becoming increasingly environmentally conscious or are forced to be green
- Current way of doing things is not efficient and effective
- New technology and new thinking?

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THE CHALLENGE: How do we best meet this electricity demand with low carbon emissions?

Generating electricity more efficiently

- Fuel cell technology
- Co-generation
- Improvements in capture and storage



Co-generation

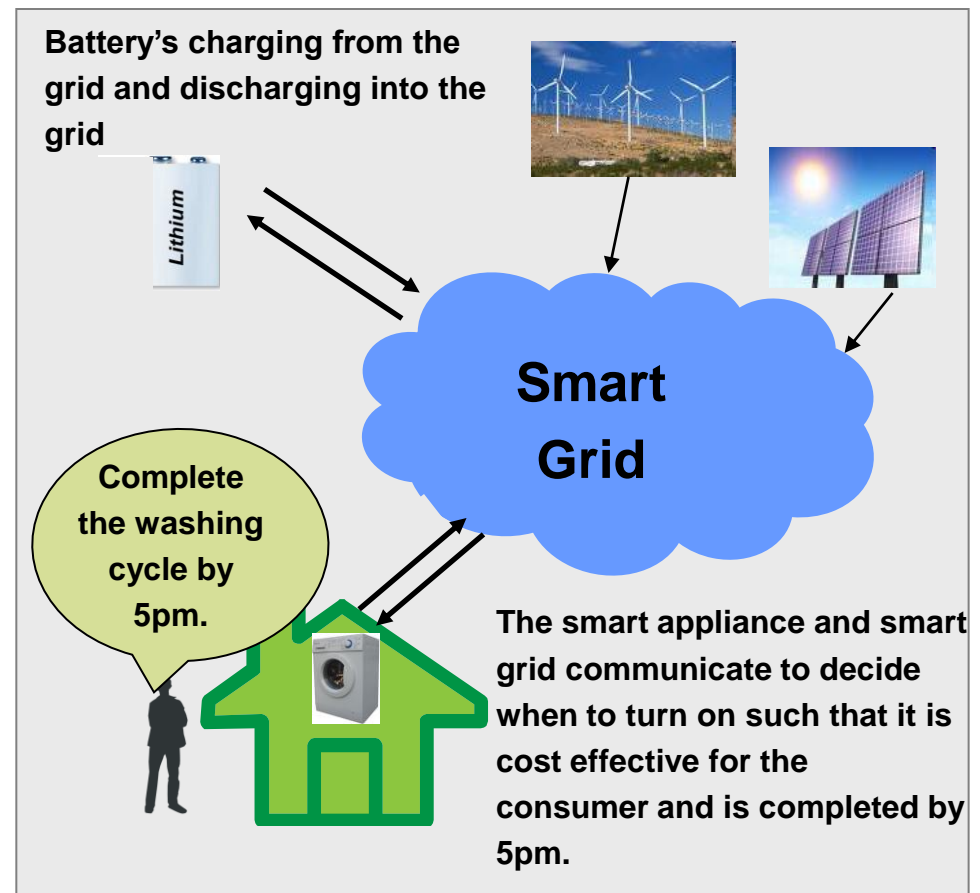
<http://www.cogenpowertech.com/images>

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Distributing electricity more efficiently

The smart grid

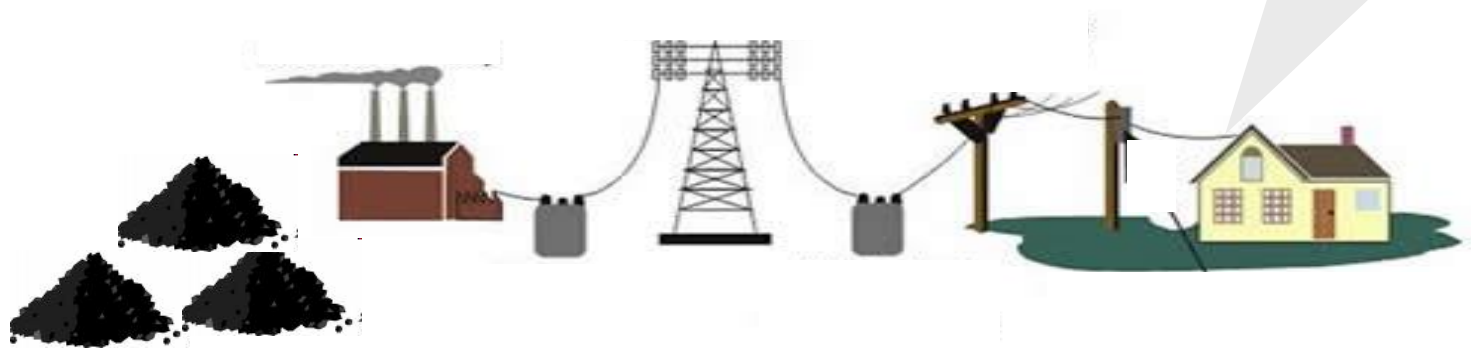
- Predict the energy needs and communicate information to ensure that power is available at the time of need.
- Smart appliances will be developed
- It can dynamically predict its future power needs to optimise power generation and distribution.



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Pricing the true value of electricity

- Currently, the cost of electricity does not consider the real cost of producing electricity.
- An increase in electricity price that reflects the cost of carbon emissions will:
 - Reduce the demand for electricity
 - Encourage innovation



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Government leadership and initiatives

- The Australian Government wants to raise awareness of and deal with climate change.
- Ratification of the Kyoto Protocol
- 20% renewable energy target by 2020
- G8 wants to cut its emissions by 80% by 2050

Government initiatives and packages

- Energy Efficient Homes (EEH) Package
- National Energy Efficiency Initiative
- Clean Energy Initiative
- The Carbon Pollution Reduction Scheme (CPRS)

Motivation for young leaders

Motivation

- The issues resulting from climate change
- The need to identify and establish mechanisms to achieve efficiency in energy production, distribution and consumption
- Research advancements

Experience

- Advanced Metering Infrastructure Program Office
- The Department of Sustainability and Environment Smart Water Metering Cost Benefit Study