

Welcome

Enhar Blue Business Launch and Office Warming

Renewable Energy – Status in Victoria

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Overview

- Energy – the big picture
- The Sustainable Energy Challenge
- What forms of Renewable Energy?
- What has Victoria achieved?
- Where is Victoria headed?
- Enhar Blue - serving the industry

Energy and Environment – The Big Picture

What we need energy for - early Society

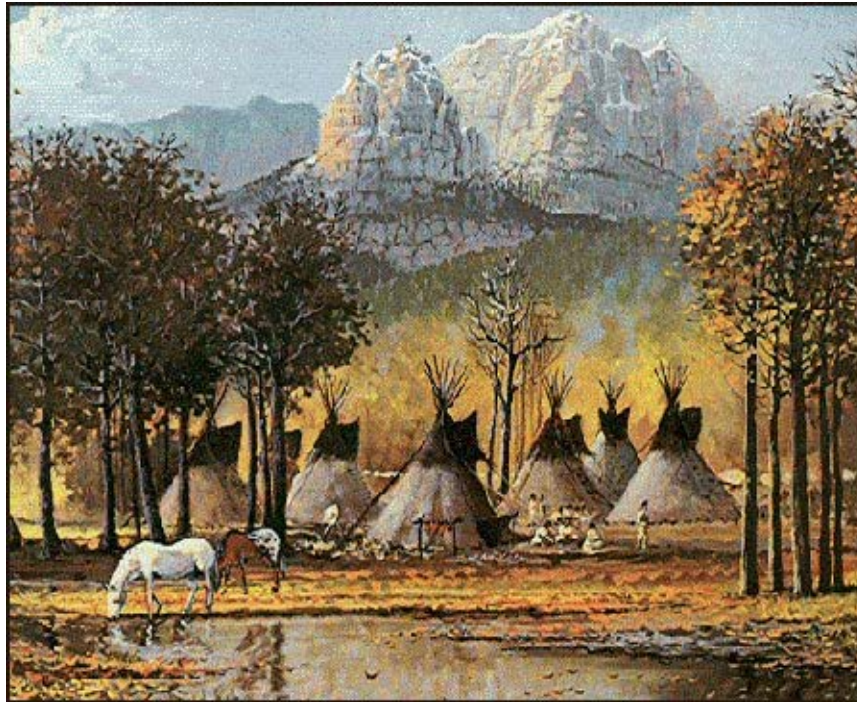
Uses:

Warmth

Cooling

Transport

Muscle-
Power



Fuels:

Trees (wood)

Grass (feed)

Energy and Environment – The Big Picture

Modern Society has same uses but had found more fuel sources

Uses:

Warmth

Cooling

Transport

**Muscle-
Power for
industry**



Fuels:

Coal

Gas

Oil

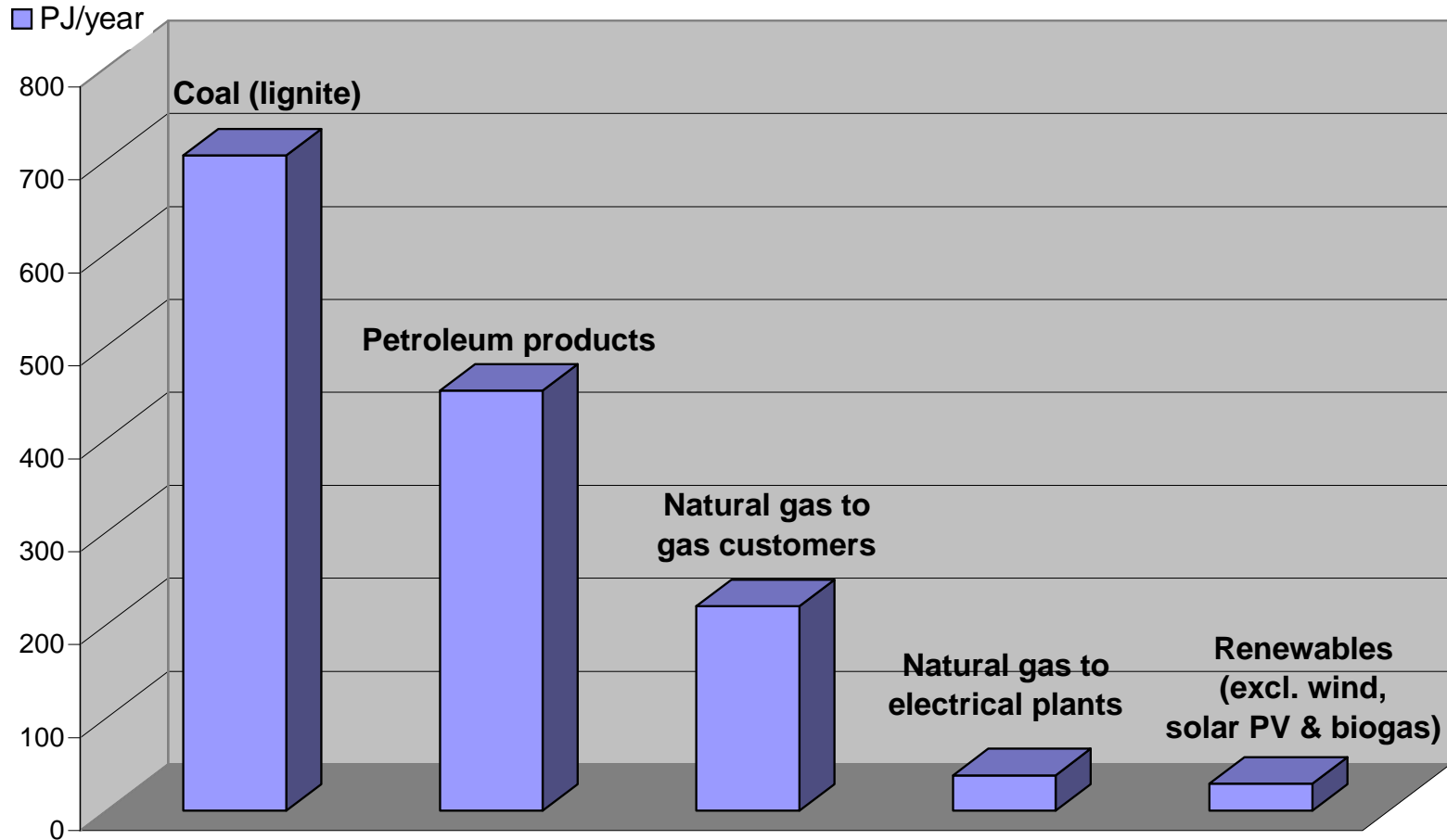
Nuclear

Renewables



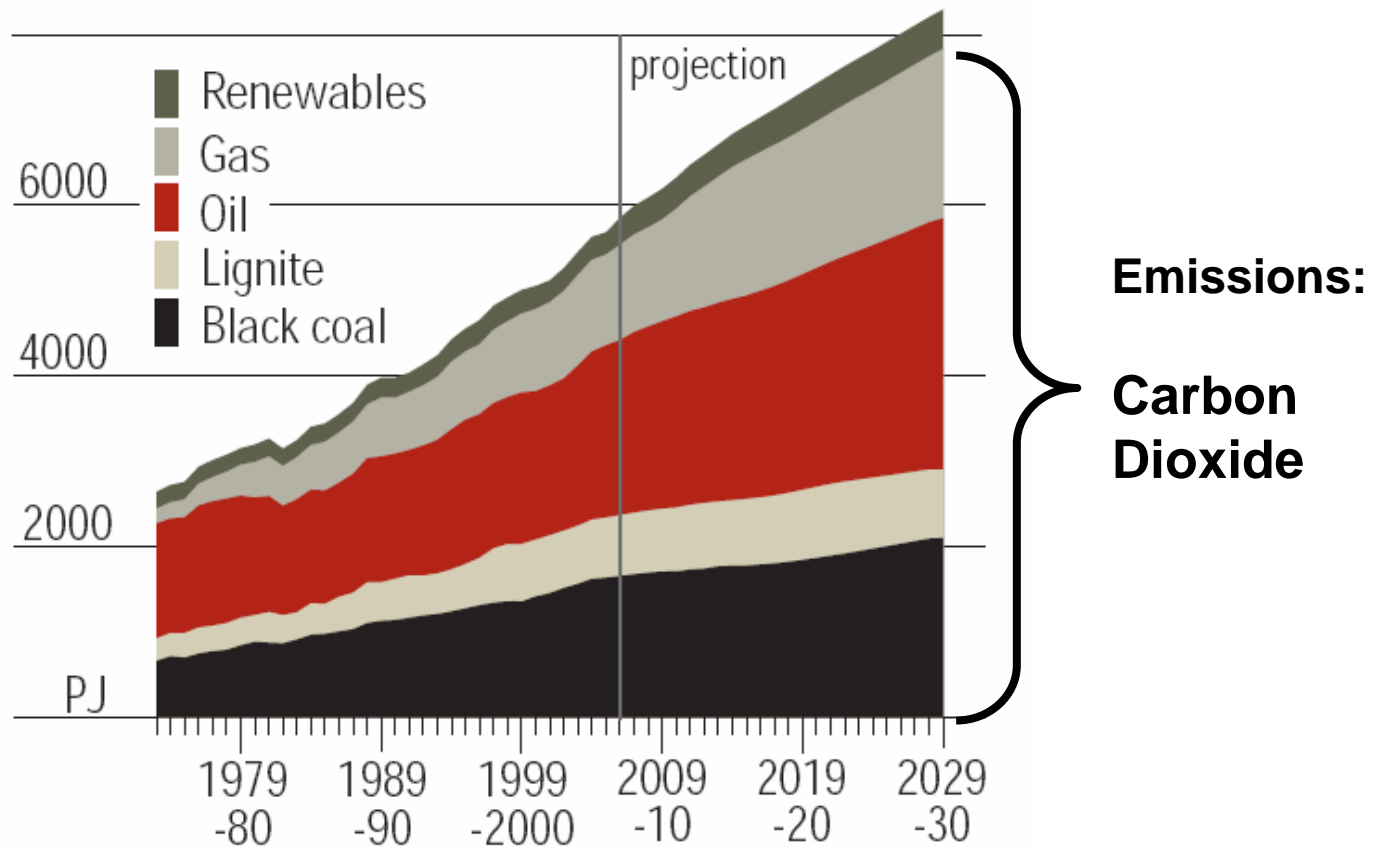
Energy in Victoria

Gross energy consumption in Victoria - PJ/year [ABARE 2008]



Energy in Australia – Business as usual

Projected primary energy consumption in Australia by fuel



Source: ABARE Energy in Australia 2008

The Energy Challenge

- Global Warming
 - Climate Change
 - Extremes of temperature
 - Melting ice caps
 - Sea level rise
- Diminishing reserves of conventional fuels
 - Peak Oil
- Security of supply
 - Military conflicts over conventional fuels

The Solution: 40-40-20

- 40% reduction in energy consumption
- 40% met by renewable energy
- 20% from conventional sources

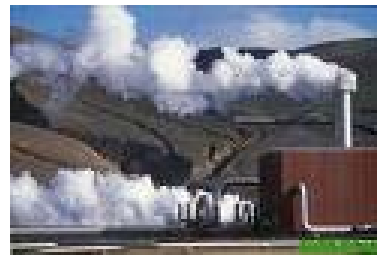
Result : *We can* achieve at least 60% cuts in CO₂ emissions in our lifetimes

The 40-40-20 scenario was presented by John Andrews at the RMIT Renewable Energy open day June '08

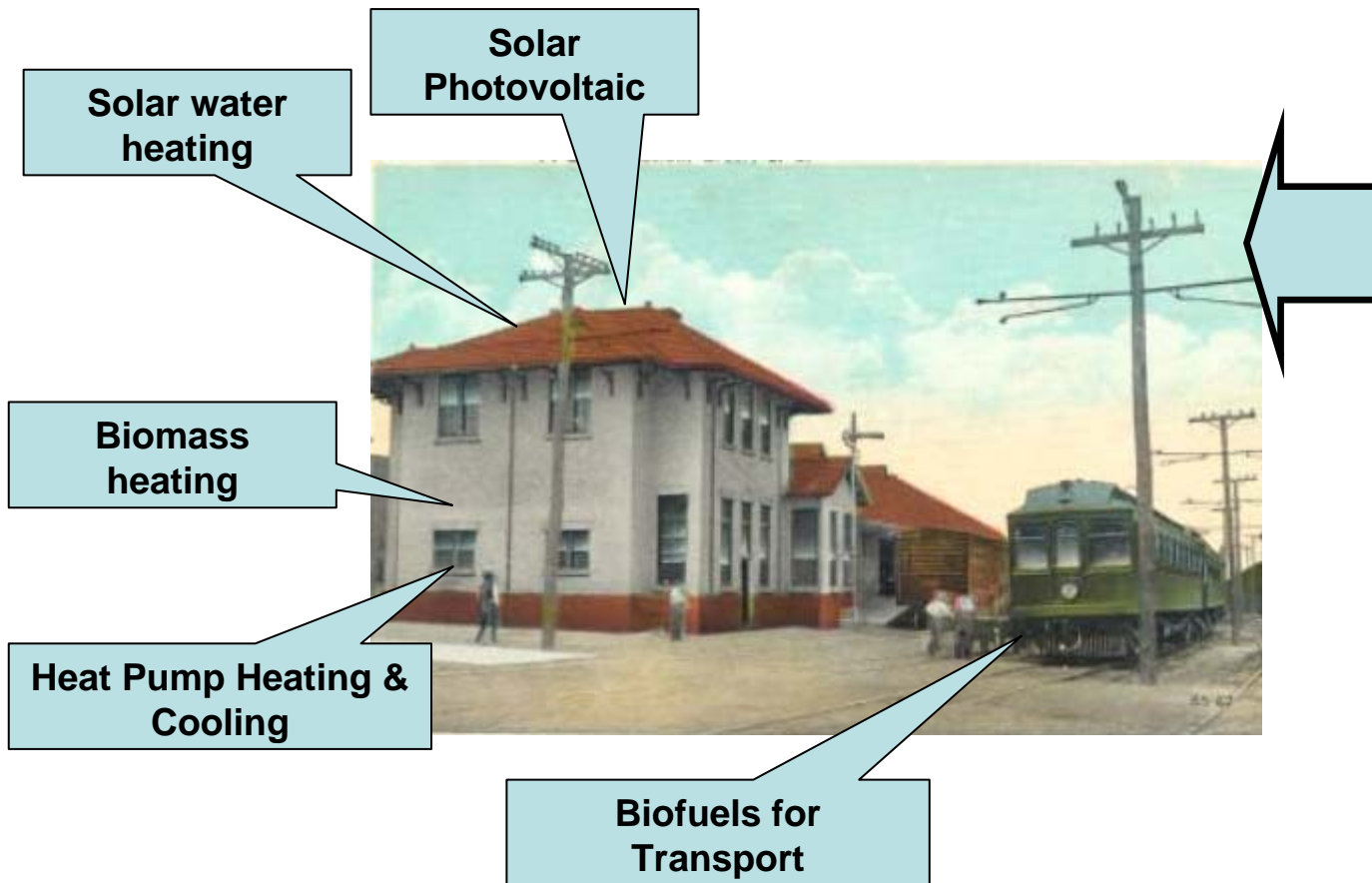
What action is required?

- Energy savings while maintaining living standards
- Replacement of fossil fuel usage with renewable energy usage
- An industrious sustainable energy sector!
- Transport: Increased efficiencies and renewable fuels, hydrogen?
- Training and education

Renewables - smorgasbord



Renewables - Applications



Power generation:

- Hydro
- Wind
- Solar PV
- Geothermal
- Biomass
- Wave
- Tidal

Support mechanisms

- Mandatory Renewable Energy Target
 - 20% of electricity in Australia to come from Renewable sources by 2020
- Victorian Renewable Energy Target
 - 10% of electricity in Victoria to come from renewable sources by 2016

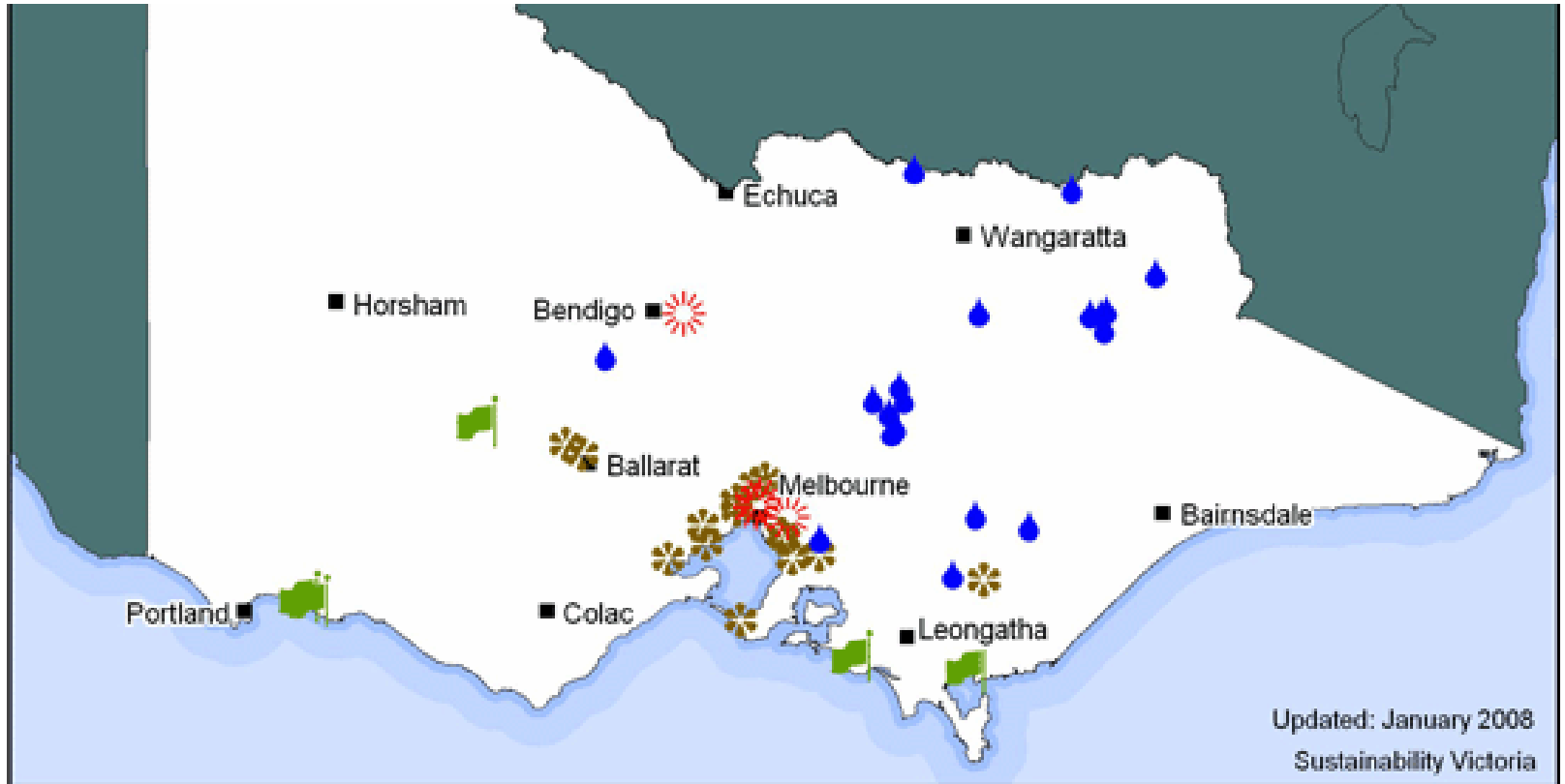
Renewable Energy in Victoria

- ★ Bagasse
- ★ Landfill Methane
- Solar
- ▲ Water
- Wind
- ▲ Sewage Methane
- Other
- State boundaries
- Highways



Source: Office of the Renewable Energy Regulator
<http://www.ga.gov.au/map/orer/>

Renewable Energy in Victoria

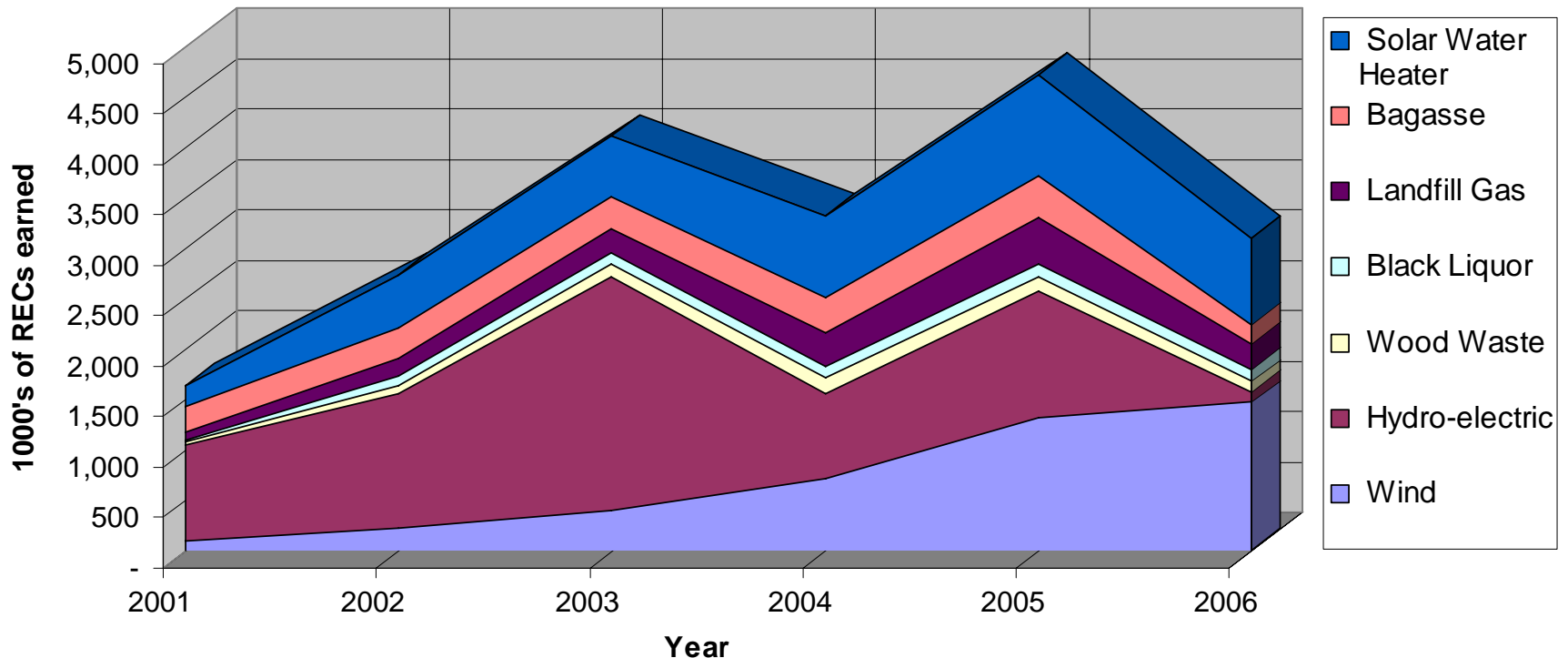


 Wind Generators  Hydro Generators  Biomass Generators  Solar Electric Generators

Source: Sustainability Victoria <http://www.sustainability.vic.gov.au>

Achievements to Date

MRET Renewable Energy Credits registered by technology, 2001-2006



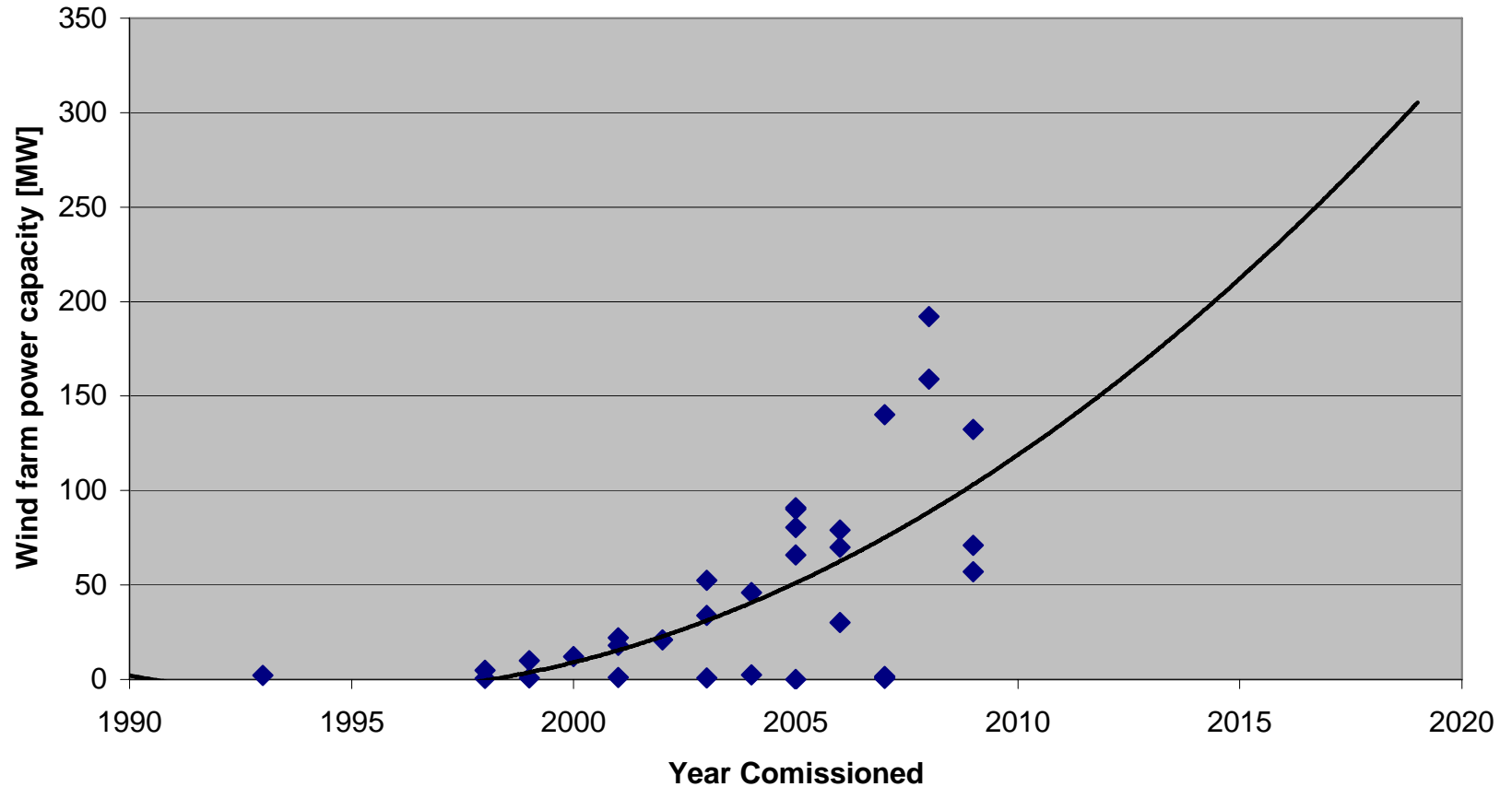
Source: ORER statistics, analysed by McLennan Magansanik Associates,

Focus on Wind Energy

- To provide 1/3 of Victoria's electricity needs from wind energy:
 - 6,000 MW of additional wind turbine capacity (134MW currently operating wind in Victoria)
 - 20km by 30km total required land area
 - Spread over maybe 20 new wind farms of a range of sizes, average size 300MW
- Enhar Blue research project: Wind Energy in Victoria

The Scale of Wind Farms

Australian Wind Farms - Operating and Under Construction



The Wind Industry

Developers



Turbine suppliers



Enhar Blue

- Consultant = independent and informed
- We deliver our knowledge to benefit people who are making sustainable energy happen

www.enhar.com.au