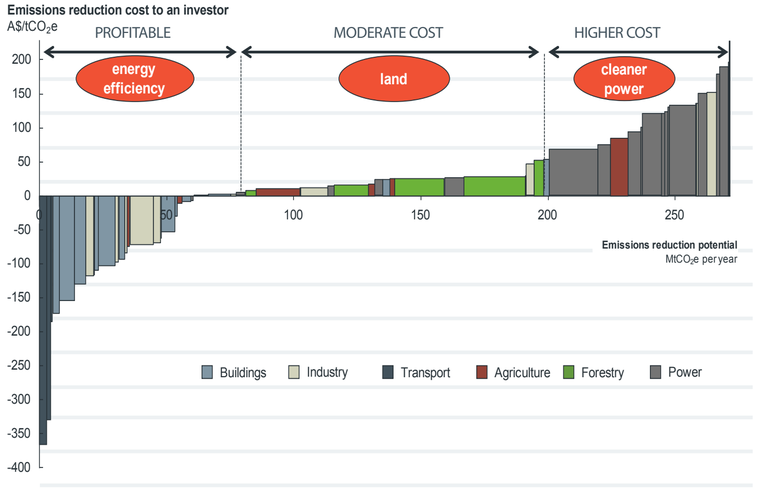
## THE LOW CARBON GROWTH PLAN FOR AUSTRALIA

Scientists advise that to avoid the worst impacts of climate change, Australia needs to reduce its emissions by at least 25% below 2000 levels by 2020. The Low Carbon Growth Plan for Australia, released in 2010, identifies exactly how we can do that while still growing Australia's low-carbon economy.

The Plan identifies 62 different opportunities to reduce greenhouse emissions across the Australian economy. When added up, these solutions get us to the minimum 25% reduction scientists say we need.

The Plan uses the "emissions reduction cost curve" tool to rank the opportunities identified in order of cost. Each opportunity is measured by how much it will cost and the level of greenhouse gas emissions it is estimated to save.

Exhibit 3: Low Carbon Growth Plan for Australia - 2020 Emissions Reduction Cost Curve




### HOW TO READ AN EMISSIONS REDUCTION COST CURVE

The width of each box represents how many tonnes of emissions can be reduced if there is reasonable uptake of the opportunities across the economy. The height represents the average cost of abating one tonne of $CO_2e$ (carbon dioxide equivalent) in 2020 by implementing that opportunity. Opportunities that fall below the horizontal axis in the cost curve offer financial savings to businesses and households - even after factoring in the upfront capital costs over the life of the new equipment.

The methodology used to develop the Low Carbon Growth Plan includes only opportunities for which technology is commercially available or expected to be by 2020. It excludes opportunities that would occur under business-as-usual (measured just before the introduction of the Federal Government's carbon price policy package).

## TAKE THE NEXT STEP

There are many support programs available for those who want to capitalise on the opportunities available to save money and reduce emissions:

### Funding under the Clean Energy Future Package

- Carbon Farming Initiative (non-Kyoto compliant)
- Carbon Farming Skills
- Clean Technology Investment Program
- Clean Technology Focus for Supply Chains
- Community Energy Efficiency Program
- Tax Breaks for Green Buildings

### Other Funding Programs

- Carbon Farming Initiative (Kyoto Compliant)
- Low Carbon Australia
- Enterprise Connect
- CitySwitch Green Office Program
- National Australia Built Environment Rating System (NABERS - the star rating system for buildings)
- Energy Technology Innovation Strategy (ETIS)
- The Latrobe Valley Advantage Fund
- Latrobe Valley Industry and Infrastructure Fund (LVIIF)

### Programs for Householders

- Small-scale Renewable Energy Scheme
- Household Energy and Finance Sustainability Scheme
- LPG Vehicle Scheme

**For more information on the above programs and to download a Low Carbon Growth Plan training pack, visit www.climateworksaustralia.org/empower.**

**For more details on the opportunities available in Gippsland, download the full Low Carbon Growth Plan for Gippsland at www.climateworksaustralia.org/publications.html.**


**ABOUT CLIMATEWORKS AUSTRALIA**
ClimateWorks Australia is an independent not-for-profit organisation, founded by The Myer Foundation and Monash University. Our mission is to catalyse action to substantially reduce Australia's greenhouse emissions.

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**ABOUT THIS PROGRAM**
This fact sheet has been produced as part of the Empower Program, which is funded by the Department of Climate Change and Energy Efficiency. The program aims to raise awareness and inspire Australia's business community and households to capitalise on the opportunities available in the Low Carbon Growth Plan for Australia.


*This fact sheet is based on the Low Carbon Growth Plan for Australia and has been developed using supplemental desktop research. The figures in this document are indicative only.*

ClimateWorks AUSTRALIA

# Opportunities for Low Carbon Growth in Gippsland

2012

**Gippsland can save almost $100 million annually by 2020, while reducing emissions by 1.5 million tonnes per year.**

- The region could reduce emissions by 10% below 2000 levels with actions that often deliver financial savings.
- Businesses could save around $82 million each year by improving energy efficiency and reducing fuel use.
  - The manufacturing, mining and freight sectors could save around $44 million a year by 2020.
  - The commercial and services sector could save around $38 million a year by 2020.
- Householders in the region could save almost $23 million annually by 2020 by improving energy efficiency at home and purchasing more fuel efficient vehicles.
- Farmers can contribute 400,300 tonnes of emissions reductions per year through agricultural and forestry activities.

# Each year Gippsland can save almost $100 million while reducing emissions by 1.5 million tonnes by 2020

# The manufacturing, mining, freight and commercial sectors could save around $82 million each year by improving energy efficiency and reducing fuel use.

# Householders in the region could save around $23 million annually by 2020 by improving energy efficiency at home and purchasing more fuel efficient vehicles.

Gippsland's abundant natural resources drive its economy. Dairy and livestock farming and horticulture benefit from plentiful water and fertile soil. Food and fibre processing are situated in proximity to key agricultural and forestry inputs.

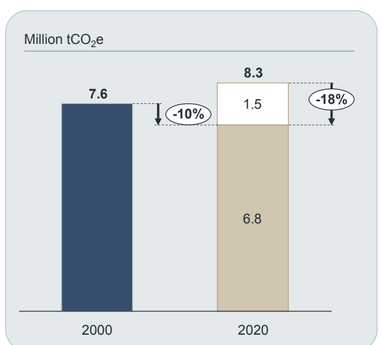
Oil and natural gas extracted from Bass Strait are refined and distributed across Australia. A rapidly expanding tourism industry benefits from Gippsland's superb natural beauty. And considerable brown coal reserves currently supply the majority of Victoria's electricity generation.

Many of these sectors are expected to continue to expand over time, and by 2020 Gippsland's population will increase by 11% from today to reach 288,000[1]. So Gippsland faces a unique challenge in transitioning to a low carbon future.

Under business-as-usual the region's emissions are expected to rise from 7.6 to 8.3 million tonnes of carbon dioxide equivalent per year by 2020, or 9% above 2000 levels[2].

**The region could reduce emissions by 18% compared to business-as-usual by implementing the opportunities identified in the Low Carbon Growth Plan for Gippsland. That's equivalent to reducing emissions by 10% below 2000 levels.**

Exhibit 1: Gippsland's Potential to Reduce Emissions Compared to Business-As-Usual




This analysis focuses on the emissions associated with activities within the Gippsland region and excludes emissions from energy consumed outside the region. As shown in this report, all sectors have a role to play in the transition to a low carbon economy.

Costs and savings are estimated before the impact of the carbon price (part of the Clean Energy Future package). Once this legislation takes effect, savings are expected to increase and some unprofitable opportunities are expected to become financially attractive.

This is because as energy prices rise, it becomes more profitable to save energy. Government grants will also be available for energy efficient equipment and actions making it cheaper for businesses and households to make changes.

1. Gippsland Regional Plan, 2010, available at www.rdv.vic.gov.au/__data/assets/pdf_file/0011/67844/GRP_V10.4.1_pp1-111.pdf
2. All estimates of emissions reductions in this document are based on ClimateWorks Australia's Low Carbon Growth Plan for Gippsland, October 2011, available at www.climateworksaustralia.org



## THE OPPORTUNITIES FOR BUSINESS

Gippsland's manufacturing and mining sector employs just over one tenth of the regional workforce yet generates one third of regional economic output . Much of this is focused on processing meat, dairy and other food products, and manufacture of paper products from timber. Land-based activities are also a key economic driver in Gippsland. Agriculture, Forestry and Fishing is the fourth largest sector in terms of regional output and the third largest in terms of employment, producing 1.3 million tonnes of emissions each year. Businesses and farmers in the region can capitalise on several opportunities for reducing their emissions, as outlined below:

### The manufacturing, mining and freight sectors could save around $44 million a year by 2020:

- **Energy Efficiency**
  Gippsland's manufacturing and mining sectors (including brown coal) could reduce energy use by 280 GWh (373,300 tonnes) each year through improving control systems and processes, reducing duplicated or oversized equipment, upgrading motor systems, decreasing energy losses in boilers and steam distribution systems and improving building utilities. This saves more than $25 million per year through reduced energy bills.

- **Freight**
  Choosing more efficient new trucks (at time of natural replacement), freight optimisation and eco-driving could save freight movers almost $13 million annually and reduce annual emissions by 34,500 tonnes.

- **Distributed Energy**
  Cogeneration and utilising waste to create energy (bioenergy) could reduce emissions by 165,700 tonnes a year and save almost $7 million in reduced energy costs.

### Land-based industries can reduce emissions by 400,300 tonnes per year[3] including:

- **Increased carbon can be stored in the soil**
  Farmers can save 73,600 tonnes of carbon emissions per year through reduced tillage, improved nutrient management and optimising grazing intensity and timing to increase productivity. Revegetation, destocking, improving fertility via nutrient application and applying organic substrates will also increase the soil's ability to support vegetation and store carbon.

- **Energy conversion in livestock can be improved**
  Livestock enteric emissions can be reduced by implementing better feed quality and animal management practises. Anti-methanogenic treatments such as dietary additives, injections, water medication and vaccines also reduce emissions. Implementing these actions can reduce emissions by 81,100 tonnes.

- **Reforestation**
  Environmental planting on less productive agricultural land for biodiversity benefits, establishing timber plantation on less productive lands, strategic reforestation on prime agricultural land in line with best practice (for instance wind breaks and livestock shade islands), and improved forest management can save the region 217,000 tonnes per year.

### The commercial sector can save around $38 million each year by 2020:

- **Retrofits can improve building efficiency**
  Improving the energy efficiency of Gippsland's existing commercial buildings can save almost $28 million and reduce the region's emissions by 266,500 tonnes each year. This is achieved by replacing inefficient light bulbs; improving the efficiency of appliances and equipment, upgrading control systems for lighting and HVAC (heating, ventilation and air-conditioning); improving building insulation; and replacing electric water heaters with gas or solar powered systems.

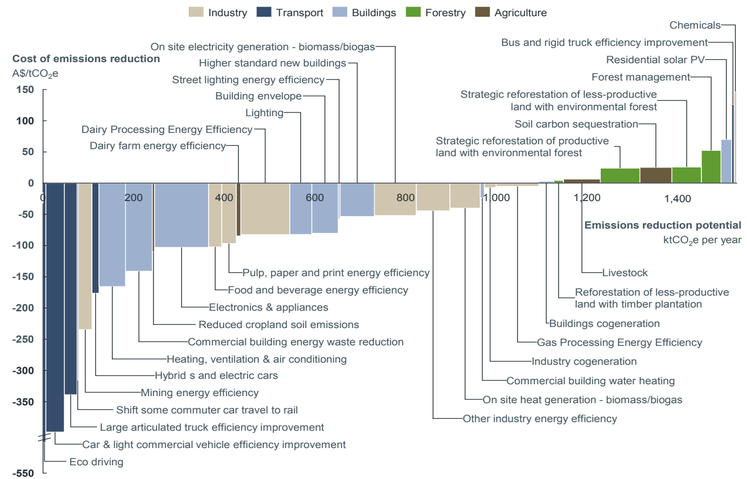
- **Reducing energy waste can save money**
  This is one of the cheapest opportunities for commercial building owners and occupiers to implement. Getting rid of oversized or unnecessary equipment and managing existing control systems better on an average can save up to 10% of energy consumed in any given building. This opportunity alone could save around $8 million across Gippsland per year by 2020.

- **Building more energy efficient buildings**
  At the time of building, design and orientation of new buildings can be improved and insulation and air-tightness maximised. Other improvements include using materials that deliver increased thermal efficiency and installing more efficient HVAC and water heating systems. These actions could deliver energy savings of around 40% compared to business-as-usual and reduce Gippsland's emissions by 41,500 tonnes per year by 2020.

3. Currently, these activities come at a moderate cost, however some may be eligible for Carbon Farming Initiative credits or other support.

## TOTAL OPPORTUNITIES AVAILABLE IN GIPPSLAND

Exhibit 2: 2020 Gippsland Emissions Reduction Cost Curve




## THE OPPORTUNITY FOR HOUSEHOLDERS

By 2020 it is estimated that there will be 110,000 households in Gippsland, an increase of 16% over this decade. Gippsland's households have the potential to reduce the energy used in their homes and the fuel used in their cars, which could reduce the region's greenhouse gas emissions by around 177,600 million tonnes per year and save around $23 million per annum by 2020.

**Improving energy efficiency in homes** - choosing appliances and electronics with above-standard efficiency at time of natural replacement (such as air conditioners), and upgrading lighting to LEDs can significantly reduce energy usage in existing homes. Combining these with improvements to the building envelope of existing homes (to reduce the energy required for heating and cooling) could reduce Gippsland's emissions by 880,00 tonnes per year.

**Building new homes to a higher efficiency standard –** improving the efficiency of new homes built from 2015 from 6 stars to at least 7 stars (in the HERS rating system[4]) will save 30% more energy, reducing energy bills by $2.6 million and the region's greenhouse gas emissions by 34,600 tonnes per year.

**Reducing fuel consumption in vehicles** - purchasing a more fuel efficient vehicle (at the time of natural replacement) can significantly reduce the total cost of ownership over its life. Gippsland's households could save an average of $398 per tonne of emissions reduced whilst also reducing emissions in the region by 20,200 tonnes per year.

4. House Energy Rating Schemes, such as the National House Energy Rating Scheme (NatHERS), used to assess the thermal performance of residential buildings.