

Opportunities for Low Carbon Growth in Toowoomba

2012



Toowoomba's businesses and households can save around \$43 million a year by reducing emissions by 2020:

- ▶ Industry could save around \$13 million annually by 2020 through improved industrial energy efficiency, increasing the fuel efficiency of large articulated and rigid trucks and other improvements.
- ▶ Commercial building owners in the region stand to save around \$17 million annually by 2020 and could reduce emissions through building retrofits to improve efficiency, reducing energy waste and buying more energy efficient vehicles.
- ▶ Householders in the region could save around \$13 million annually by 2020 by improving energy efficiency at home and purchasing more fuel efficient cars.

In addition, the agricultural sector in Toowoomba can reduce its emissions by over 390,000 tonnes by increasing carbon stored in the soil, improving energy conversion in livestock, tree planting and other measures. See inside for details.

Toowoomba is a diverse region with prominent agriculture and manufacturing sectors that can benefit from reducing emissions.

Toowoomba is rich in natural resources and boasts several strong economic sectors. The region produces \$7.7 billion in gross regional product¹. It covers an area of 12,973 square kilometres and is home to around 160,000 people (3.6% of Queensland's population)².

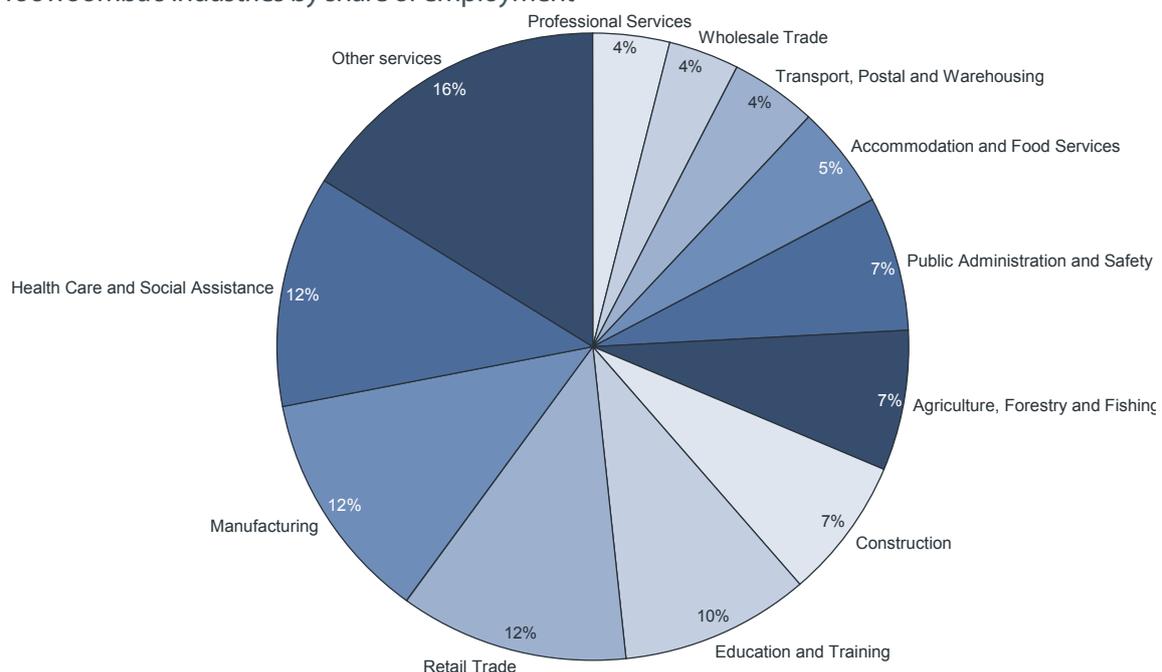
Toowoomba's economy is supported by core industries in agriculture, manufacturing, retail, health and education. The largest sector is manufacturing that produces food, machinery and equipment, textile, leather, clothing, footwear, fabricated and primary metal, wood and other products. The sector produced \$945.2 million in gross regional product in 2009; 12.3% of the total gross regional product for the area¹. The agricultural sector is also a key contributor to the region's economy, with over 3000 businesses; 22% of all businesses in Toowoomba³. Toowoomba's agricultural sector primarily produces grain, cotton, beef, dairy products and pork, and has a growing horticulture industry.

The analysis in this fact sheet focuses on costs and savings 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.

ECONOMIC PROFILE³

GROSS REGIONAL PRODUCT	\$7.7 billion per annum	PEOPLE EMPLOYED⁴	63,937 people
CORE INDUSTRIES	Manufacturing, Retail Trade, Health Care and Social Assistance, Education and Training, Agriculture, Forestry and Fishing	BUSINESSES WITH 100+ EMPLOYEES	48
		SMALL BUSINESSES	12,681
TOTAL POPULATION	159,098	TOTAL BUSINESSES	13,155

Exhibit 1: Toowoomba's industries by share of employment



1. Toowoomba Regional Council, Economic Brief, August 2011 (based on 2009/2010 figures)

2. ABS Census data Estimated Resident Population for 2009 (based on 2006 Census data)

3. Toowoomba Regional Council - Economic Brief August 2011 and Toowoomba Regional Profile February 2011, estimation for 2009/2010 based on 2006 ABS Census data unless otherwise indicated

4. Toowoomba Regional Council - Economic Brief August 2011, ABS Census data 2006

The manufacturing, freight and commercial sectors could save around \$30 million each year by improving energy efficiency and reducing fuel use.

THE OPPORTUNITIES FOR BUSINESSES AND FARMERS

By 2020 Toowoomba can save around \$30 million annually across its manufacturing, commercial and transport sectors whilst reducing about 367,000 tonnes of carbon dioxide equivalent annually by 2020. The agricultural sector can contribute by reducing emissions by about 390,000 tonnes which currently comes at an average cost of \$26 per tonne. Carbon Farming Initiative credits or other support may help to make some of these opportunities financially attractive. Carbon emissions in the region are mostly generated through electricity use in the commercial and manufacturing sector, fuel used in transport, and emissions from agricultural activities.

Industry can save around \$13 million annually by 2020 through activities such as:

▶ **Industrial Energy Efficiency**

Businesses can save up to 13% of energy used through energy efficiency, including improving control systems and processes, reducing duplicate or oversized equipment, upgrading motor systems, and decreasing energy losses in boilers and heat. These measures would allow manufacturers from the food processing and other industries to save about \$8 million annually by 2020 and reduce emissions by over 145,000 tonnes.

▶ **Transport (Freight)**

Increasing the fuel efficiency of large articulated and rigid trucks can save the region around 14,000 tonnes of emissions and save over \$4 million per annum by 2020. Improvements include upgrading to trucks that are more fuel efficient and improving route optimisation.

The agricultural sector in Toowoomba can reduce its emissions by around 390,000 tonnes⁵:

▶ **Increased carbon can be stored in the soil**

Farmers can save 100,000 tonnes of carbon emissions per year through reduced tillage, improved nutrient management and optimising grazing intensity and timing to increase productivity. Revegetation, 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 through better feed quality and animal management. Anti-methanogenic treatments such as dietary additives, injections, water medication and vaccines also reduce livestock emissions by reducing the amount of methane produced during the digestive process. These measures can reduce emissions by around 39,000 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 252,000 tonnes per year.

Commercial building owners in the region stand to save around \$17 million annually by 2020:

▶ **Retrofits can improve building efficiency**

Commercial buildings owners can save money and emissions through commercial retrofits. This includes upgrading to more energy efficient appliances and equipment. Building insulation can also be improved; control systems for lighting and heating, ventilation and air condition (HVAC) systems can be upgraded; and water heaters can be replaced with gas or solar powered systems. These opportunities could save the region around \$10 million annually by 2020 and reduce emissions by around 130,000 tonnes.

▶ **Energy waste can be reduced**

One of the cheapest opportunities for commercial building owners and occupiers is to reduce energy waste. Getting rid of oversized or unnecessary equipment and better managing existing control systems can save up to 10% of energy consumed in any given building. This could save Toowoomba over \$6 million annually by 2020 and reduce emissions by around 43,000 tonnes a year.

▶ **Building more energy efficient buildings**

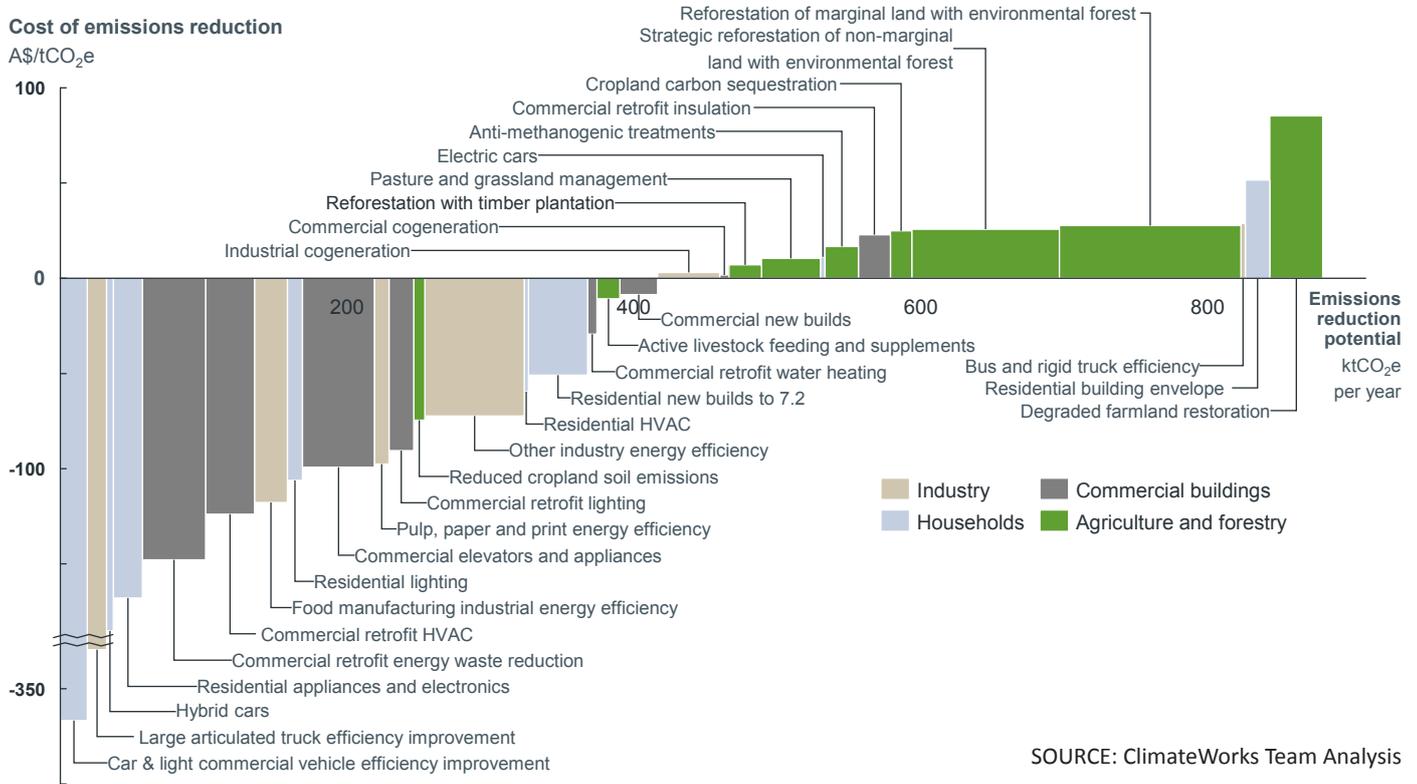
The commercial sector can reduce emissions by ensuring that new buildings are more energy efficient. The design and orientation of new buildings can be improved, and insulation and air-tightness maximised. Other opportunities include using materials that deliver increased thermal efficiency and installing more efficient HVAC and water heating systems. This could save around \$200,000 a year by 2020 and reduce emissions by around 26,000 tonnes per annum.

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

Householders could save around \$13 million annually by 2020 by improving energy efficiency at home and purchasing more fuel efficient vehicles.

TOTAL OPPORTUNITIES AVAILABLE IN TOOWOOMBA

Exhibit 2: Toowoomba Emissions Reduction Cost Curve (2020)



THE OPPORTUNITY FOR HOUSEHOLDERS

Low cost opportunities for the region include: upgrading appliances and electronics to a higher-star rating; upgrading lighting such as replacing compact fluorescent lamps (CFLs) with light emitting diodes (LEDs), and increasing insulation in existing homes. Upgrading lighting could save the region around \$1 million and about 10,000 tonnes of emissions annually. Upgrading appliances and electronics to the most energy efficient of their type can generate net savings of over \$3 million annually by 2020 and reduce the region’s emissions by around 20,000 tonnes per annum.

Building new homes to higher efficiency standards also makes good economic sense as the investment will pay itself off over the life of the home and save money.

Householders also stand to gain by purchasing more fuel efficient vehicles. This can significantly reduce the cost of ownership over the life of the vehicle, potentially saving householders in the region around \$7 million annually by 2020 and reducing emissions by around 26,000 tonnes per annum.

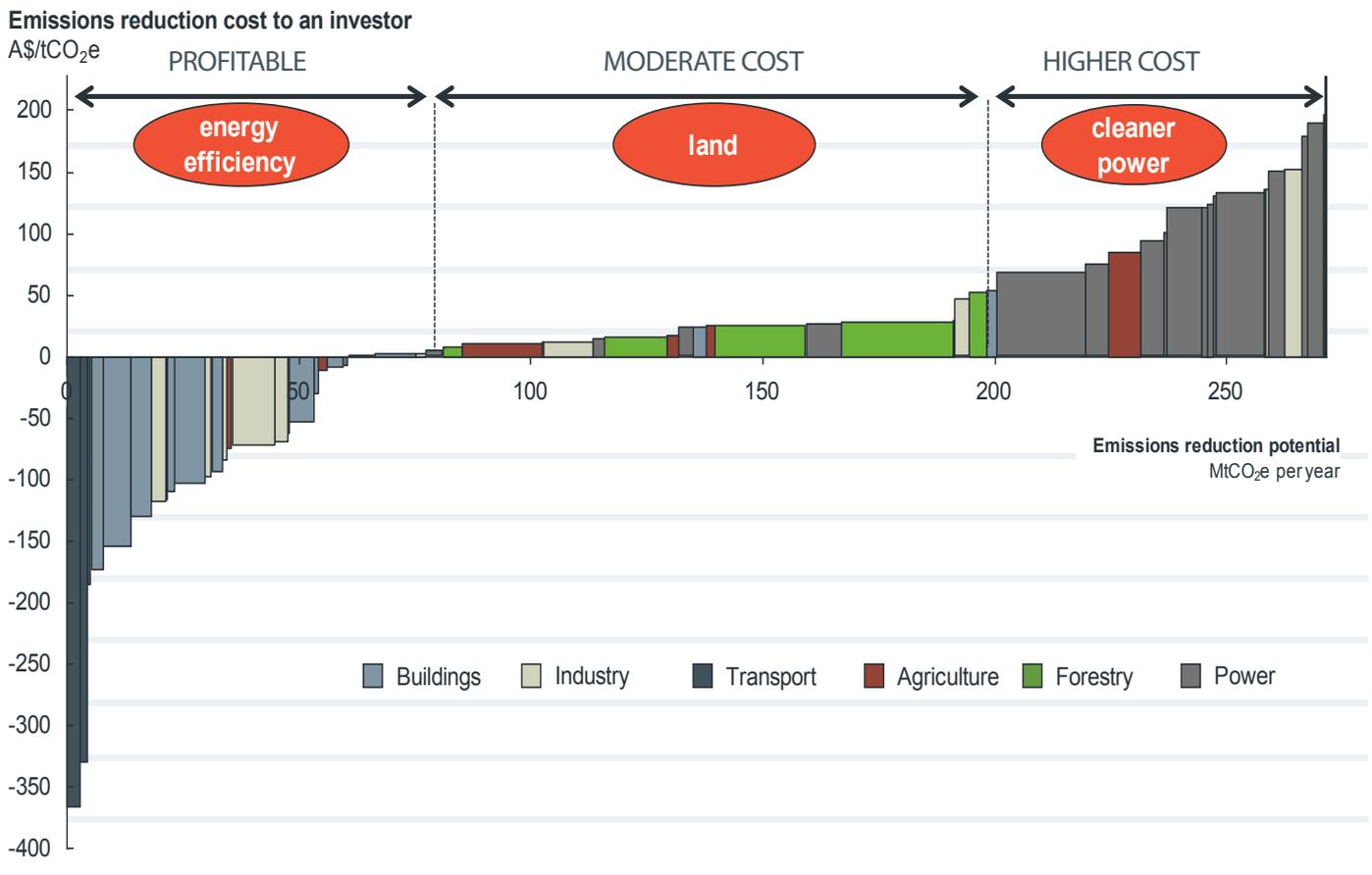
THE LOW CARBON GROWTH PLAN FOR AUSTRALIA

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 CO₂e (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 National 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)

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.

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 gas 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.