



Bioenergy Roadmap Program Summary

2016 - 2021



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Acknowledgement of Country

The Department for Energy and Mining acknowledges Aboriginal people as the First Nations Peoples of South Australia. We recognise and respect the cultural connections as the traditional owners and occupants of the land and waters of South Australia, and that they continue to make a unique and irreplaceable contribution to the state.

Date:	Comment:
02/09/2021	Prepared by Colby Phillips Advisory



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1 Program Name

Bioenergy Roadmap Program

2 Funding Period

2016 – 2021

3 Funding Provided*

\$175,000 over Funding Period

** Excluding in-kind support (estimated at around \$300,000 over Funding Period) from Partner agencies (see below)*

4 Partner Agencies

- Regional Development Australia (RDA) – Limestone Coast
- Green Industries SA
- Primary Industries and Regions SA
- Other South Australian RDAs

5 Program Overview

In 2015, the South Australian Government prepared a Bioenergy Roadmap for the State. It outlined the future opportunity for bioenergy to provide new economic growth opportunities and contribute to uptake of renewable energy, particularly in regional areas and for agricultural businesses.

The Bioenergy Roadmap Program was subsequently established to assist local government, businesses, and industry groups across the State to identify and develop bioenergy projects.

The Program comprised three components:

1. **Bioenergy Planner** – utilising existing Government resources from the Partner Agencies to provide a first point of contact and facilitation.
2. **Bioenergy Connect** – Offering grants of up to \$2,000 per applicant to help them undertake a (desktop) pre-feasibility assessment of their bioenergy idea.
3. **Bioenergy Feasibility Fund** – Providing matching grants of up to \$25,000 per applicant to further develop and investigate the feasibility of a bioenergy project.

The Program was administered for the South Australian Government by Regional Development Australia – Limestone Coast, in collaboration with other partner Government Agencies.



6 Key Outcomes

- Grant funding investment of \$175,000 supported assessment of 29 potential bioenergy projects across the State.
- The Program resulted in two actual bioenergy project investments totalling \$6-8M – a 30 to 40-fold return on the grant funding investment.
- It significantly improved awareness of bioenergy across regional business and communities.
- Investment paybacks identified for bioenergy projects suggest bioenergy is on the cusp of becoming commercially viable with future reductions expected in project costs as the technology becomes more widespread and used.
- It was found that bioenergy could successfully reduce / mitigate carbon emissions by Grid electricity and/or fossil fuel gas substitution, landfill gas emission avoidance and/or carbon sequestration.
- There was positive feedback from participants towards continuing or extending the program.
- The Program re-iterates Bioenergy Roadmap recommendations that bioenergy could be a major future economic driver for investment and jobs across the State if further encouraged and supported.
- Moreover, future investment in bioenergy can help the South Australia achieve its Waste Strategy 2021-2025 Circular Economy goals and Climate Change Action Plan 2021-2025 objectives.

7 Expenditure*

Total – \$175,000	<ul style="list-style-type: none"> • Administration Costs <ul style="list-style-type: none"> ○ \$19,000 to Regional Development Australia – Limestone Coast
	<ul style="list-style-type: none"> • Bioenergy Connect Component – <ul style="list-style-type: none"> ○ Per Grantee – Up to \$2,500 ○ Total – \$68,000 (over Funding Period) ○ 29 Grants
	<ul style="list-style-type: none"> • Bioenergy Feasibility Component – <ul style="list-style-type: none"> ○ Per Applicant – Up to \$25,000 ○ Total - \$95,000 (over Funding Period) ○ 5 Grants

* Excludes in-kind staff time and expenses of Growth and Low Carbon Division and other partner organisations.

8 Program Participation & Outcomes

Over the Funding Period:

1. Bioenergy Planner –



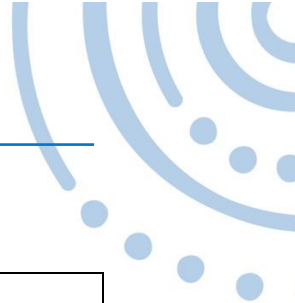
- 100+ Program inquiries
 - Bioenergy opportunity advocacy, promotion, and facilitation events in regional areas, including (but not limited to):
 - 4 Bioenergy Forums in Regional Areas (2 in Mount Gambier, Loxton, Balaclava)
 - 1 Bioenergy Hub Workshop (Green Triangle Area of Limestone Coast)
 - List of recommended Bioenergy Advisors to support businesses with pre-feasibility and feasibility assessments
2. Bioenergy Connect – 34 applications with 29 grants approved for Bioenergy Pre-feasibility assessments, and
 3. Bioenergy Feasibility Fund – 6 applications with 5 grants approved for Bio-energy Feasibility assessments.
- Bioenergy Program / Investment Outcomes – 2 Feasibility assessments led to \$6-8M of investment in Actual (completed) Project with another Feasibility assessment still being considered by applicant for \$10-15M Project investment

1. Bioenergy Planner	<ul style="list-style-type: none"> • 100+ Inquiries • 5 Advocacy, Promotion, and Facilitation events • Identification and List of recommended Bioenergy Advisors (to support businesses)
2. Bioenergy Connect	<ul style="list-style-type: none"> • 34 Applications • 29 Pre-feasibility Grants (85% success)
3. Bioenergy Feasibility	<ul style="list-style-type: none"> • 6 Applications • 5 Feasibility Grants (83% Success)
Bioenergy Project / Investment Outcomes	<ul style="list-style-type: none"> • 2 Actual (\$6-8M Capital Investment) • 1 Potential (\$10-15M Capital Investment)

9 Bioenergy Connect

9.1 Grant award by Location

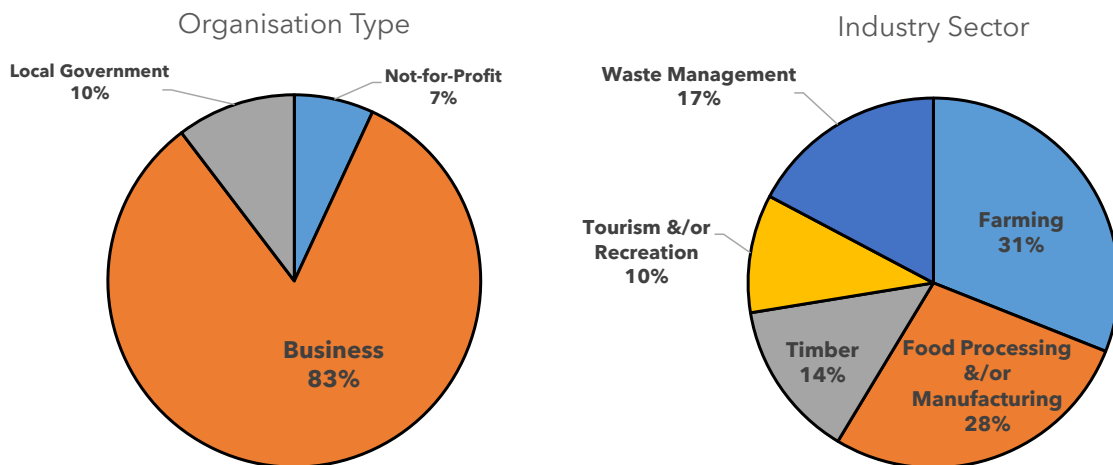
- Grant awards were made across all Regional Development Australia (RDA) regions in the State except for one (Eyre Peninsula)
- Most Grant recipients were in Southern and Central areas of the State where the Bioenergy Roadmap report identified greater availability of biomass resources and (thus) bioenergy opportunities.



Regional Development Australia region	No. Grants
Adelaide Metro	7
Hills and Coasts	4
Limestone Coast	8
Murraylands & Riverland	6
Barossa	1
Yorke and Mid North	2
Far North	1
Eyre Peninsula	0
TOTAL	29

9.2 Grant award by Industry Sector & Organisation Type

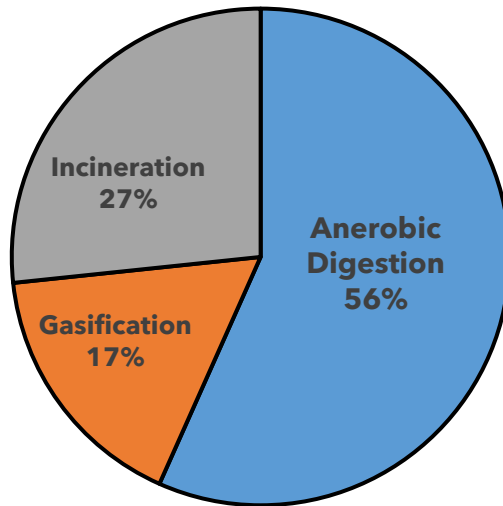
- Farming, Food Processing, Waste Management and Timber industry sectors received the most Bioenergy Connect Grants.
- Several regional councils obtained grants to investigate if bioenergy technologies could help them better manage their municipal waste disposal.



9.3 Technologies Assessed

- Anaerobic Digestion was the most proposed bioenergy technology (at 56%), followed by Incineration (27%) and Gasification / Pyrolysis (17%)

Technology





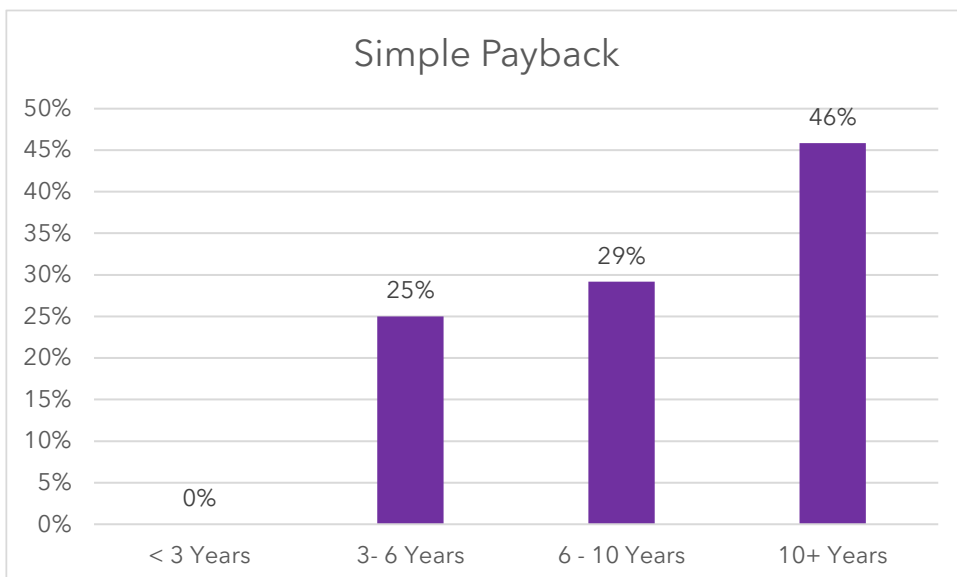
9.4 Resource, Bioenergy Value & Investment Overview

- The Bioenergy Connect projects proposed would have utilised more than 300,000 tonnes of bioresource feedstock material (including agricultural and municipal waste and industry processing residues), containing up to 3 PJ of energy.
- The Total investment amount across all Bioenergy Connect projects proposed was \$390M.
- These Bioenergy Projects could have reduced / avoided an estimated of 80,000 tonnes CO₂-eq / year from Grid electricity and/or fossil fuel gas substitution, landfill gas emission avoidance and/or carbon sequestration.

Program Metric	Total across all Projects
Bioresource feedstock	340,000+ tonnes / Year
Bioresource energy value	3 Petajoules (PJ) / Year
Investment proposed	\$390M
Potential CO ₂ -eq emissions avoided / saved	80,000 tonnes CO ₂ -eq / Year

9.5 Investment Payback outcomes

- The (Simple) Payback for cost savings and revenue on (or to recover) the Capital Investment for proposed Bioenergy Connect projects ranged from as low as 3-4 years up to 20 years.
- But most projects had > 6 Year Payback periods.





10 Bioenergy Feasibility Grants

10.1 Grant awards

- 5 Grant awards from 6 application were made, totalling \$94,500

Business	Location	Bioresource	Funding
Blue Lake Milling	Limestone Coast	Grain dust / residue	\$25,000.00
Whitehead Timber Sale	Limestone Coast	Timber residue	\$7,500.00
AAM Investment	Riverlands & Murraylands	Poultry Litter	\$7,000.00
Southern Cross Poultry Fund Operations	Riverlands & Murraylands	Poultry Litter	\$30,000.00
Peat Soils	Adelaide Metro	Municipal Waste	\$25,000.00
TOTAL			\$94,500.00

10.2 Project Outcomes

- 2 of the Funded Projects have successfully proceeded to completion resulting in \$6-8M in economic investment
- Another project is still under consideration (pending pilot plant testing)
- The remaining two projects were found able to deliver attractive enough investment returns after more detailed feasibility and investment analysis

Business	Technology	Bioenergy Product(s)	Investment	Project Status
Blue Lake Milling	Anaerobic Digestion	Electricity	\$4.5M	Completed / Built
Whitehead Timber Sale	Incineration	Thermal	\$1-2M	Completed / Built
AAM Investment	Gasification	Thermal	\$4-5M	Still Under Consideration
Southern Cross Poultry Fund Operations	Anaerobic Digestion	Electricity	\$15-20M	Investment return not viable
Peat Soils	Incineration	Electricity & Thermal	\$30M	Investment return not viable

11 Participant Feedback (Optional – see suggested question)

A survey of Bioenergy Connect program participants found that:

- 100% agreed that the program helped them better understand whether bioenergy could help their organisation or business.
- 100% agreed that the program made them more likely to consider bioenergy as a future option.
- 100% agreed that the program was valuable, and consideration should be given to continuing or extending it.
- 85% have a more positive view of the potential for bioenergy to supply renewable energy or fuels and/or support new economic investment in your region or community
- 92% agreed that if the costs of plant become lower or additional financial incentives were available, this would bring forward future investment in a bioenergy solution for the business or organisation.

12 Acknowledgements

- The contribution of the Partner Agencies is acknowledged, particularly the important role played by Regional Development Australia – Limestone Coast in administering the Bioenergy Connect and Feasibility funding components.
- The support of other State Regional Development Australia agencies in promoting the Bioenergy Roadmap Program and identifying potential participants is recognised.
- The assistance of bioenergy consultants and/or equipment suppliers that assisted participants in undertaking pre-feasibility and feasibility assessments is appreciated.



Bioenergy Roadmap Program Survey

1. Did the Bioenergy Roadmap program help you understand whether bioenergy could help your organisation or business?
 - Strongly Disagree
 - Disagree
 - No opinion
 - Agree 46% of surveyed respondents
 - Strongly Agree 54% of surveyed respondents
2. Did the Bioenergy Roadmap program encourage you to consider bioenergy as a future option for your organisation or business?
 - Strongly Disagree
 - Disagree
 - No opinion
 - Agree 14% of surveyed respondents
 - Strongly Agree 86% of surveyed respondents
3. Do you think the Bioenergy Roadmap program is valuable and should be continued?
 - Strongly Disagree
 - Disagree
 - No opinion
 - Agree 14% of surveyed respondents
 - Strongly Agree 86% of surveyed respondents
4. Based on your experiences with the Bioenergy Roadmap program, how has this changed your view or outlook for how bioenergy could supply renewable energy or fuels and/or support new economic investment in your region or community?
 - More negative
 - Negative
 - No change 15% of surveyed respondents
 - Positive 31% of surveyed respondents
 - More positive 54% of surveyed respondents
5. If costs of bioenergy plant become lower and/or there was additional revenue from a 'Green Gas' certificate, carbon credits and/or Biochar/digestate product, would this bring forward a future investment in bioenergy for your business or organisation?
 - Strongly Disagree 8% of surveyed respondents
 - Disagree
 - No opinion
 - Agree 31% of surveyed respondents
 - Strongly Agree 61% of surveyed respondents

Further information

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