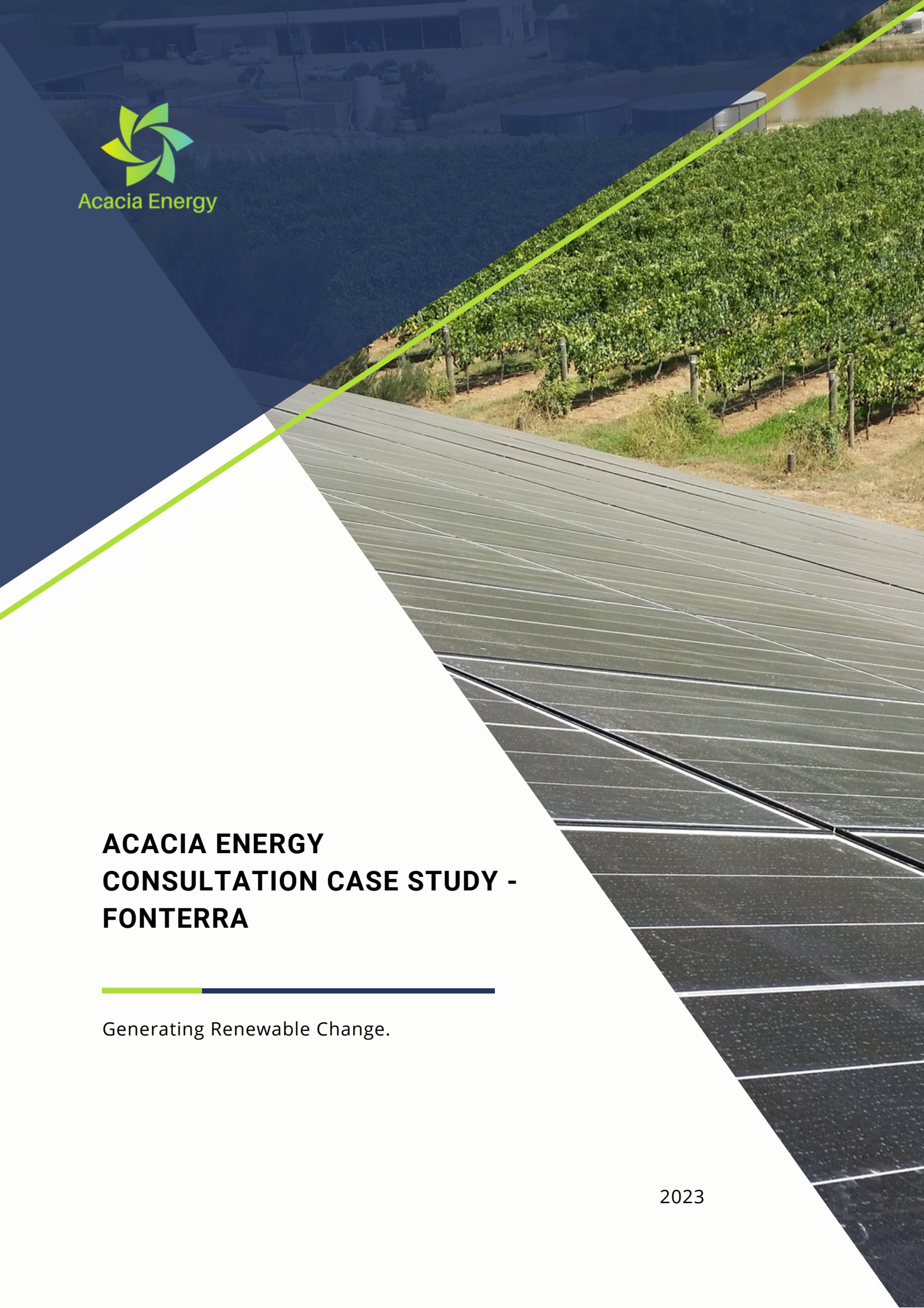
Acacia Energy



ACACIA ENERGY CONSULTATION CASE STUDY - FONTERRA

Generating Renewable Change.

2023

THE CHALLENGE

Fonterra, one of the biggest dairy processors in both Australia and New Zealand, engage Acacia in 2023 for consultation on how to meet their 2030 carbon emissions target. Fonterra Australia had set a carbon emissions target of 30% below their 2017/18 levels and aspired of achieving past that goal. Fonterra was seeking to reduce these emissions through renewable energy solutions at their four largest Victorian sites, Stanhope, Cobden, Darnum Park and Campbellfield.

Fonterra's carbon emissions in 2017/18 were roughly comprised of 50% gas and 50% electricity. Acacia Energy was engaged to consult on how to reduce the emissions through electricity related emissions, so Acacia had to get creative with reducing as much of Fonterra's total emissions through solely electricity.

THE SOLUTION

After visiting all four sites, Acacia Energy began simulating what varying renewable energy solutions would do for both the carbon emissions and power bill at each site. Acacia Energy explored solar options of varying sizes, tilts, orientations and types (e.g. single axis tracker), as well as battery and on grid renewable energy options. Acacia Energy worked in close collaboration with Fonterra to best understand their needs and to help develop the best recommendations for them. Ultimately, after extensive consideration, Acacia Energy recommended the following systems:

- Darnum - 10MW solar system
- Stanhope main plant - 4.8MW
- Stanhope aeration pond - 800kW
- Campbellfield - 500kW
- Cobden Main Plant - 3MW
- Cobden Beverage Plant - 1.5MW
- Cobden Irrigation Farm - 200kW

Furthermore, Acacia Energy was able to look further down Fonterra's supply chain, creating an innovative solution to get solar panels on the roofs of the dairy farmers that supply their milk, creating savings for the farmers and carbon abatement for Fonterra. Through this service, Fonterra will incentivize farmers within their supply chain to move their off-peak electricity consumption, such as heating hot water, to during the day to be able to soak up as much electricity consumption as possible through solar generation.

Through this scheme, Fonterra will finance the installation of solar systems for the farmers, and the farmers will pay Fonterra back with the savings from their electricity bill over x number of years, meaning farmers will not be out of pocket at any point during the payback period and will get to profit from the savings once the system is paid off. Meanwhile, Fonterra will claim the carbon abatement from the solar generation. This is a win-win for both processor and farmer!

THE BENEFIT

These solutions took Fonterra to well past their 30% carbon abatement target, reaching to 38% carbon reduction from their 2017/18 levels. The solutions also provided economic incentive, with the solar systems producing a net lifetime savings average of 25% across each site. The breakdown of the projects can be seen in the table below.

Site	Proposed System	Solar Self Consumption	Lifetime Savings[1]	Lifetime IRR	Carbon Reduction	$/TCO$_2$
Darnum	10MW Solar	89%	33.9%	6.8%	31.6%	$89
Campbellfield	500kW Solar	90%	28.0%	16.1%	22.7%	$79
Stanhope						
Main Plant	4.8MW Solar	99%	21.0%	10.8%	18.6%	$75
Aeration Pond	800kW Solar	91%	27.4%	11.3%	25.5%	$78
Cobden						
Main Plant	3MW Solar	91%	17.4%	7.3%	16.3%	$90
Irrigation Farm	200kW Solar	91%	20.3%	7.7%	22.3%	$88
Beverage Plant	1.5MW Solar	88%	27.6%	7.7%	26.1%	$86
Total	20,800kW					

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