

Southland's Decarbonisation Pathway

Southland Murihiku Regional
Energy Hui

May 2023



Climate change Risk & Spatial Planning

Emissions Reduction

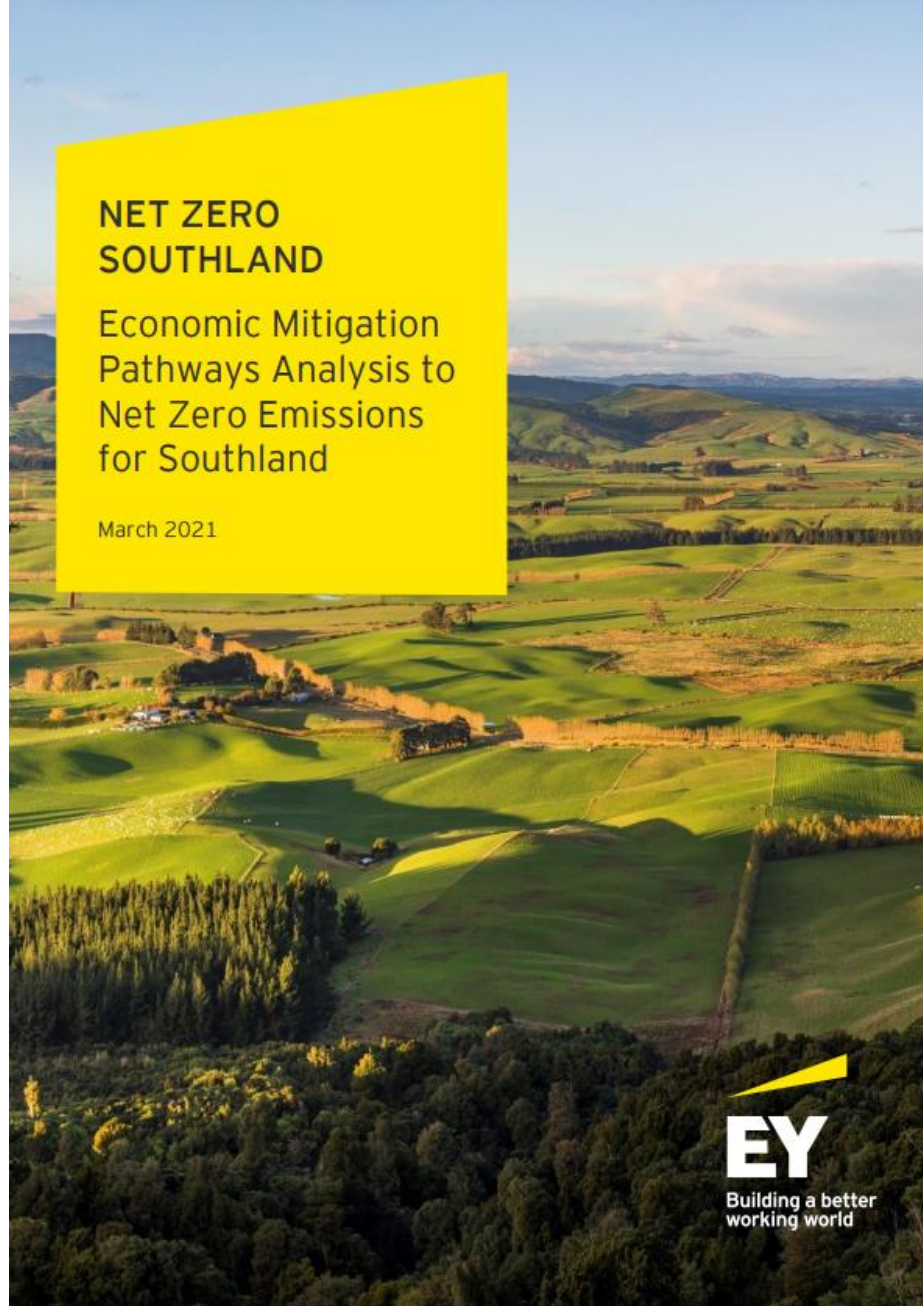
Net Zero Southland report - Aims

Aim to achieve 'carbon zero' by 2050 without economic and social shock

- In March 2021 Southland was not on track to reach net zero by 2050 but positive change is happening
- Southland can achieve net zero by 2050 with a positive net financial and environmental outcome.
- There are a range of options Southland can take.
- The pathway will require action across all sectors.

Southland produces:

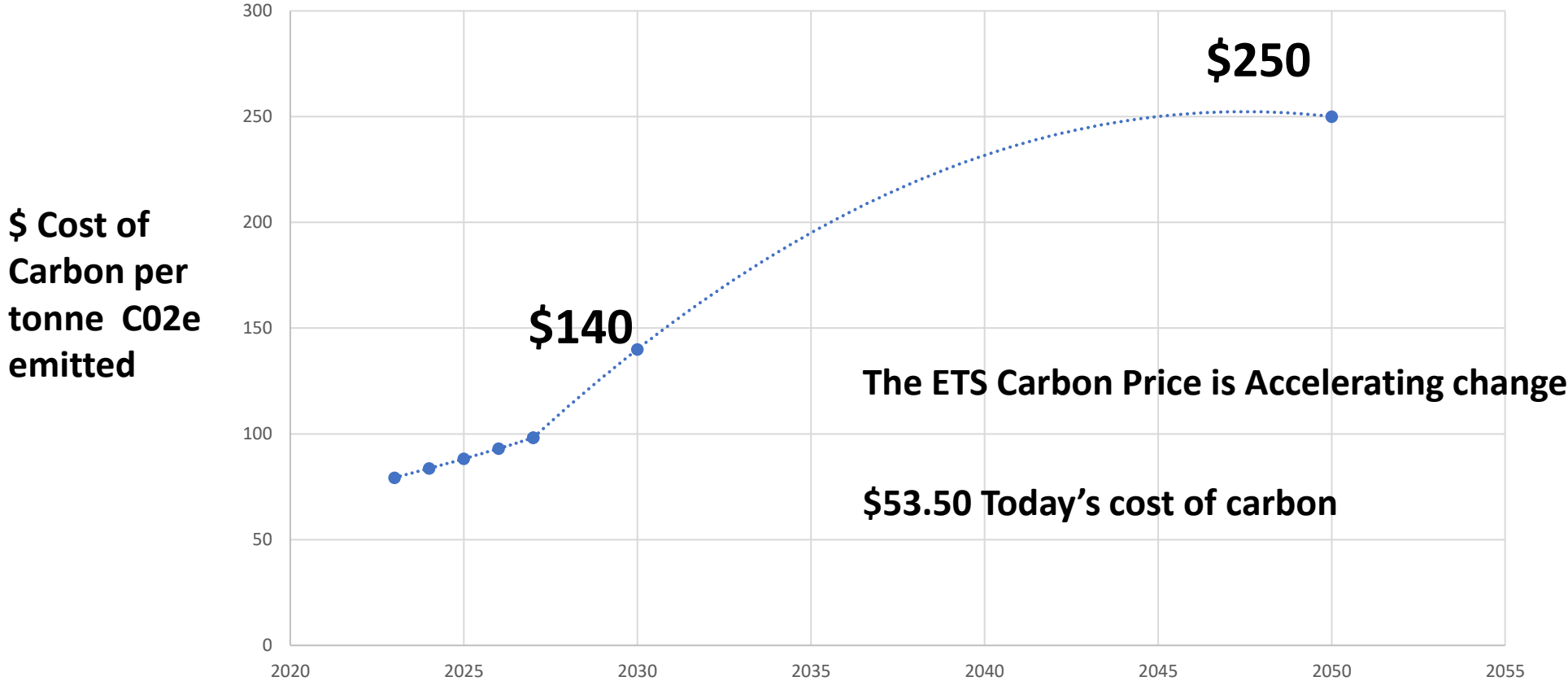
- 15% of all New Zealand's tradable exports & 70% of its \$7.3 b GDP is dedicated to exports.
- It is therefore essential that energy costs remain globally competitive in a New Zealand setting



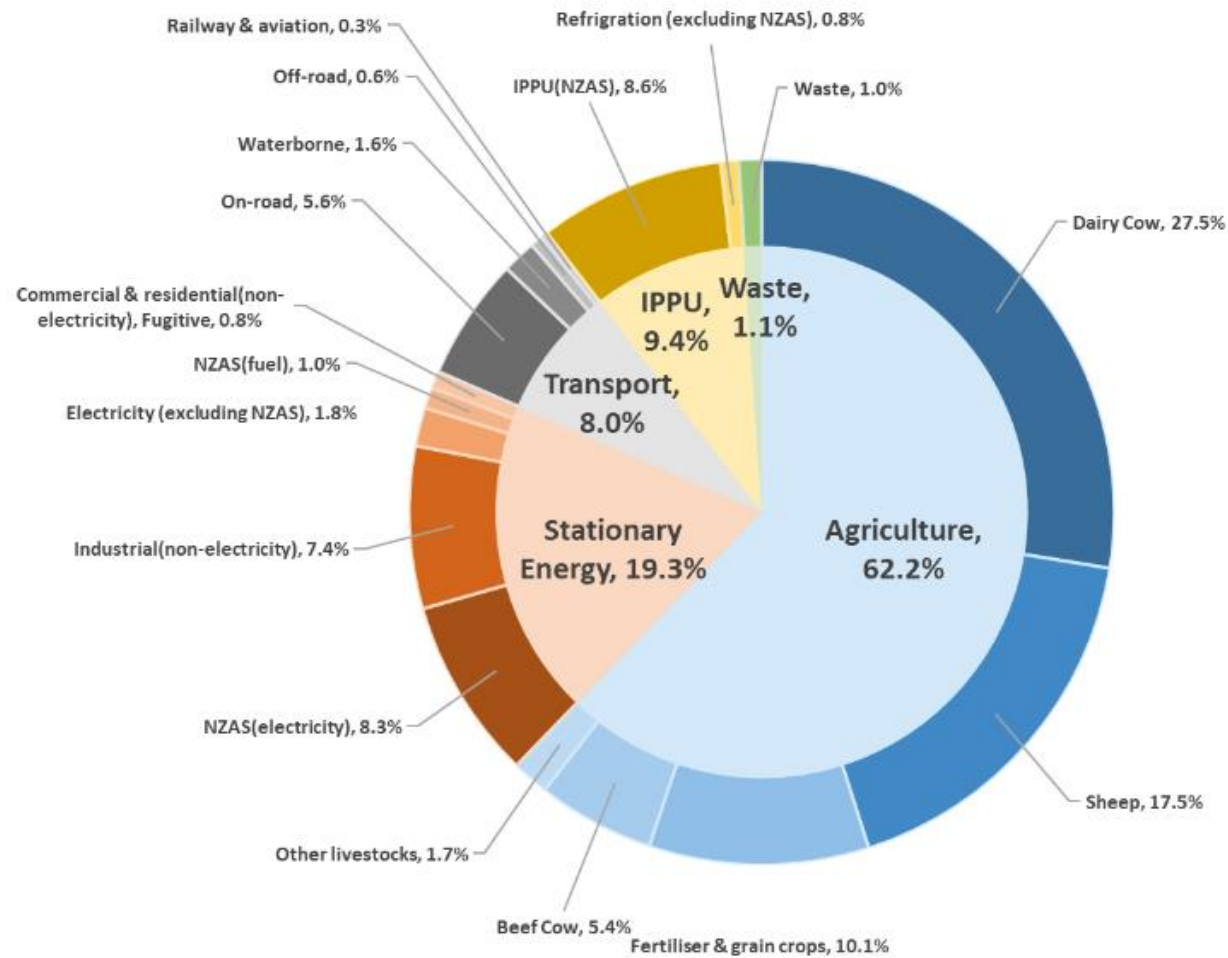
Market Development – Carbon Pricing Forecast

Climate Change Commission Carbon Price Forecast July 2021

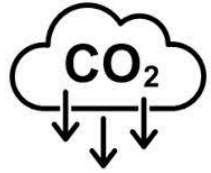
ETS Price forecast



Southland Murihiku Regional Emissions by Source



Carbon – Abatement (Thermal Energy Red)



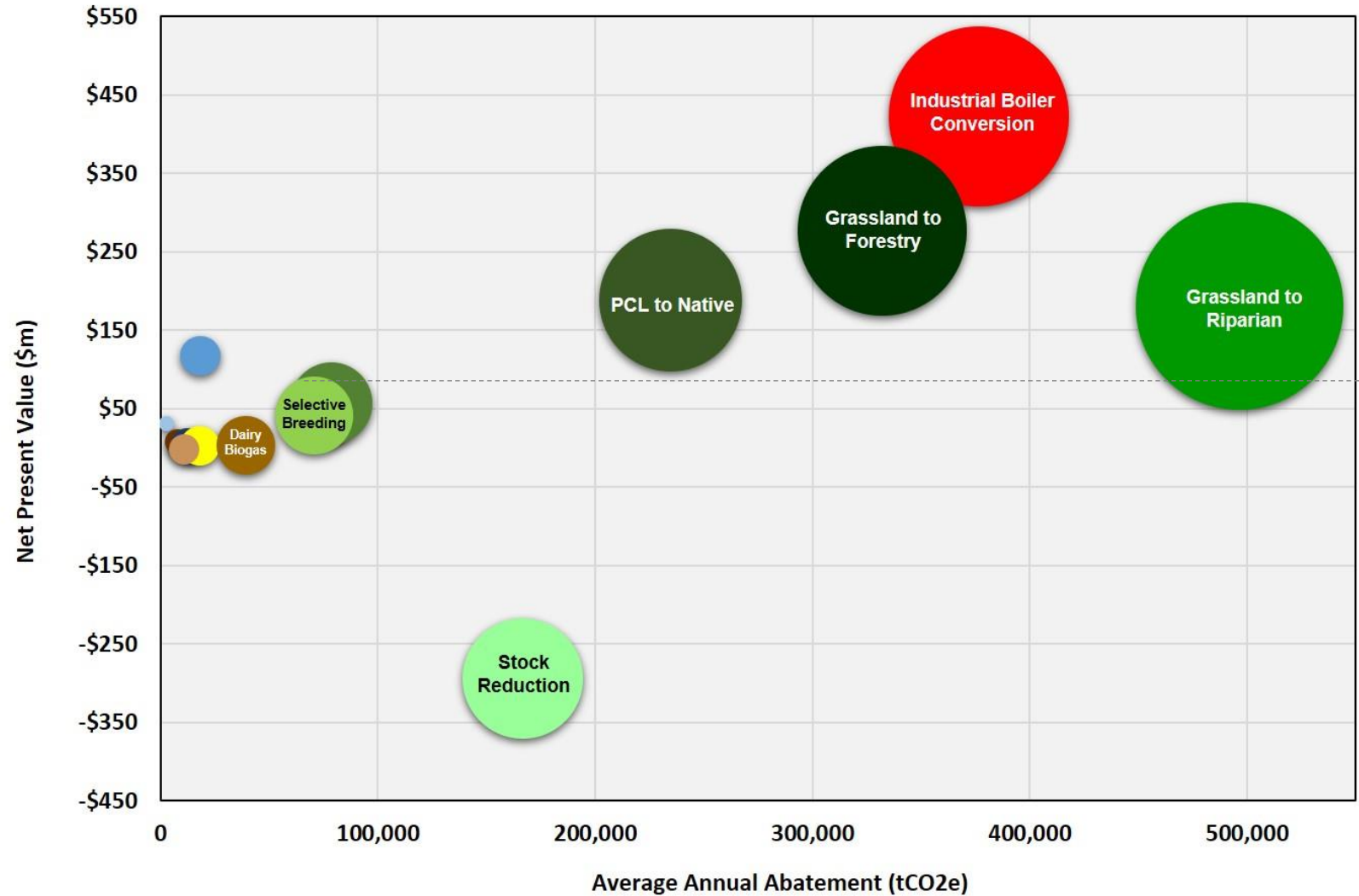
Baseline for carbon reduction established for Southland



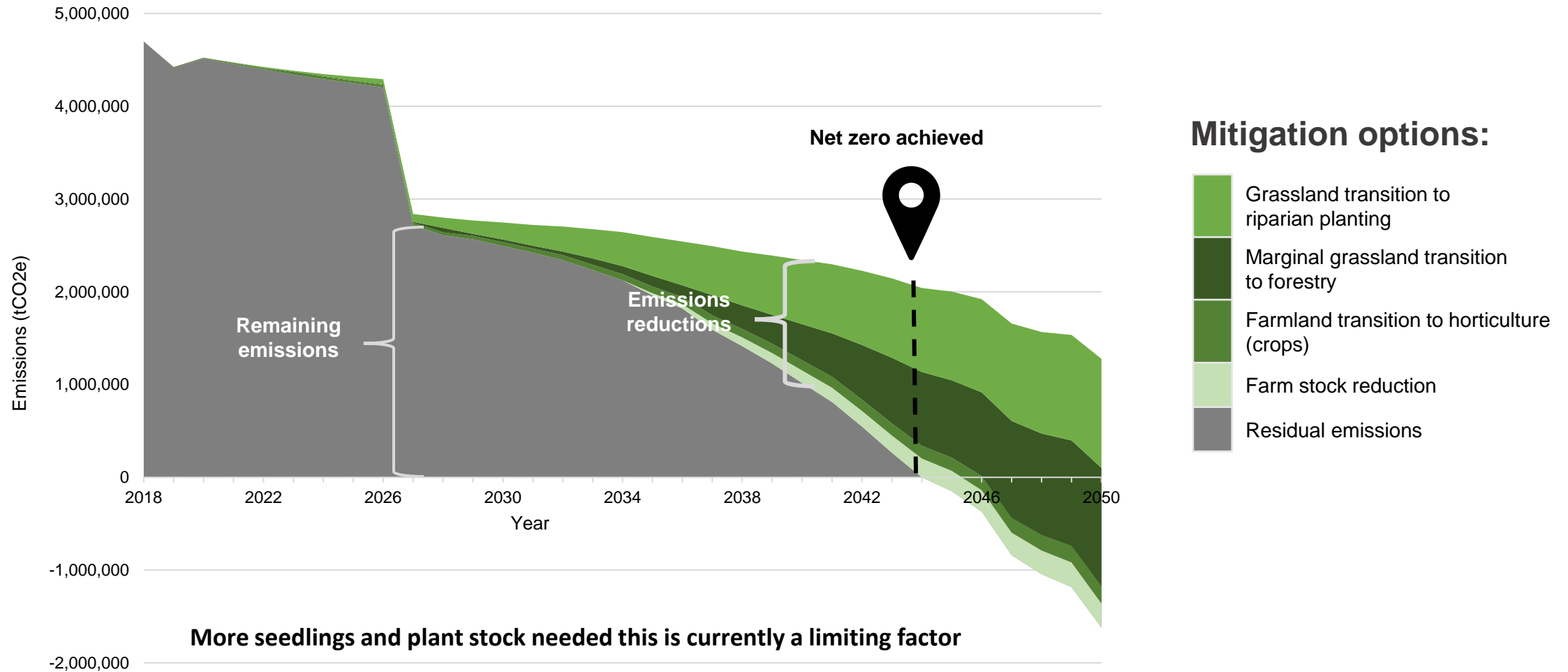
Economic impact quantified



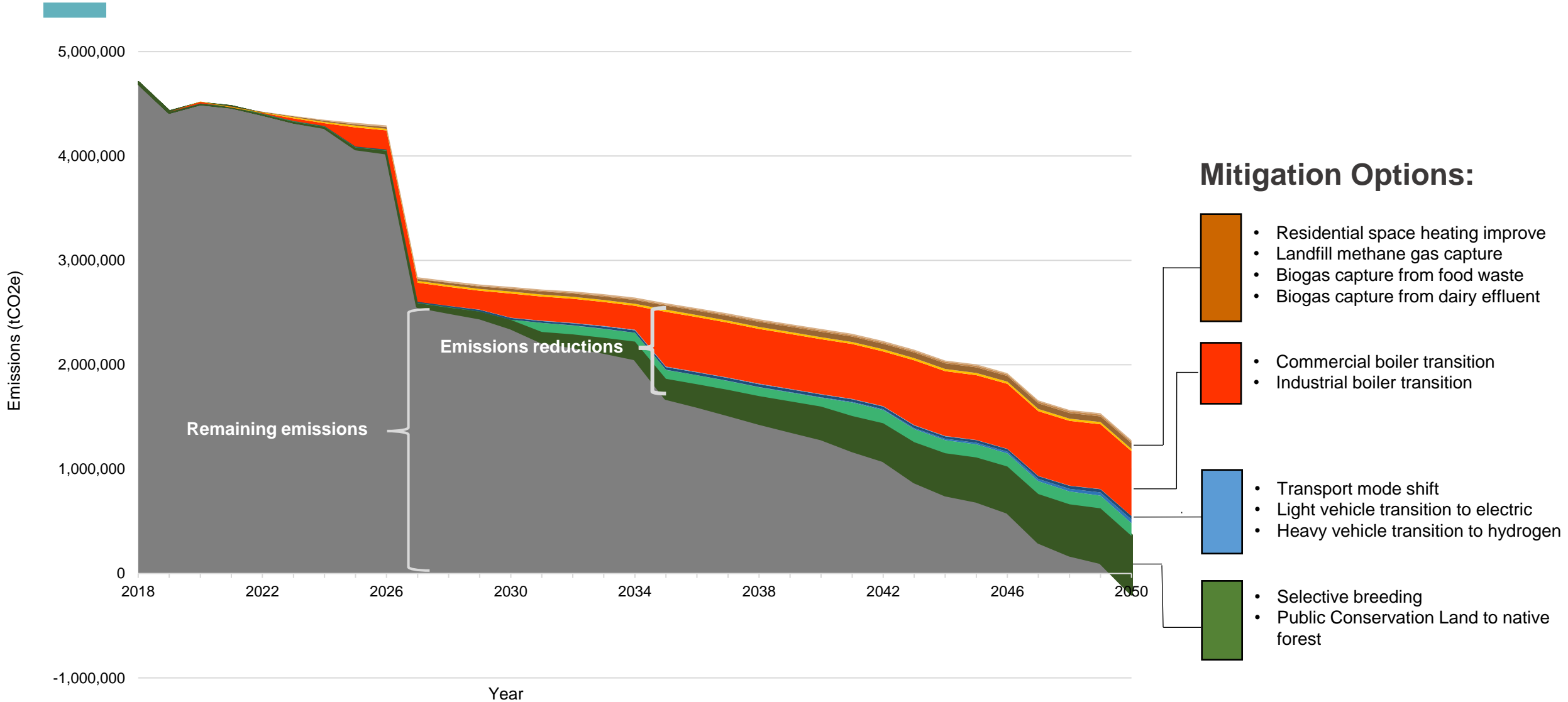
Potential options show how emissions can be reduced across all sectors



Modelled Options Agriculture Pathway 2



Modelled Options Technology Pathway 1



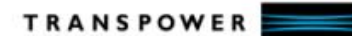


Southland Murihiku Regional Energy Strategy 2022-2050

Prepared for: GREAT SOUTH Southland Regional Development Agency
Prepared by: Beca Ltd
31 March 2023

make everyday better.

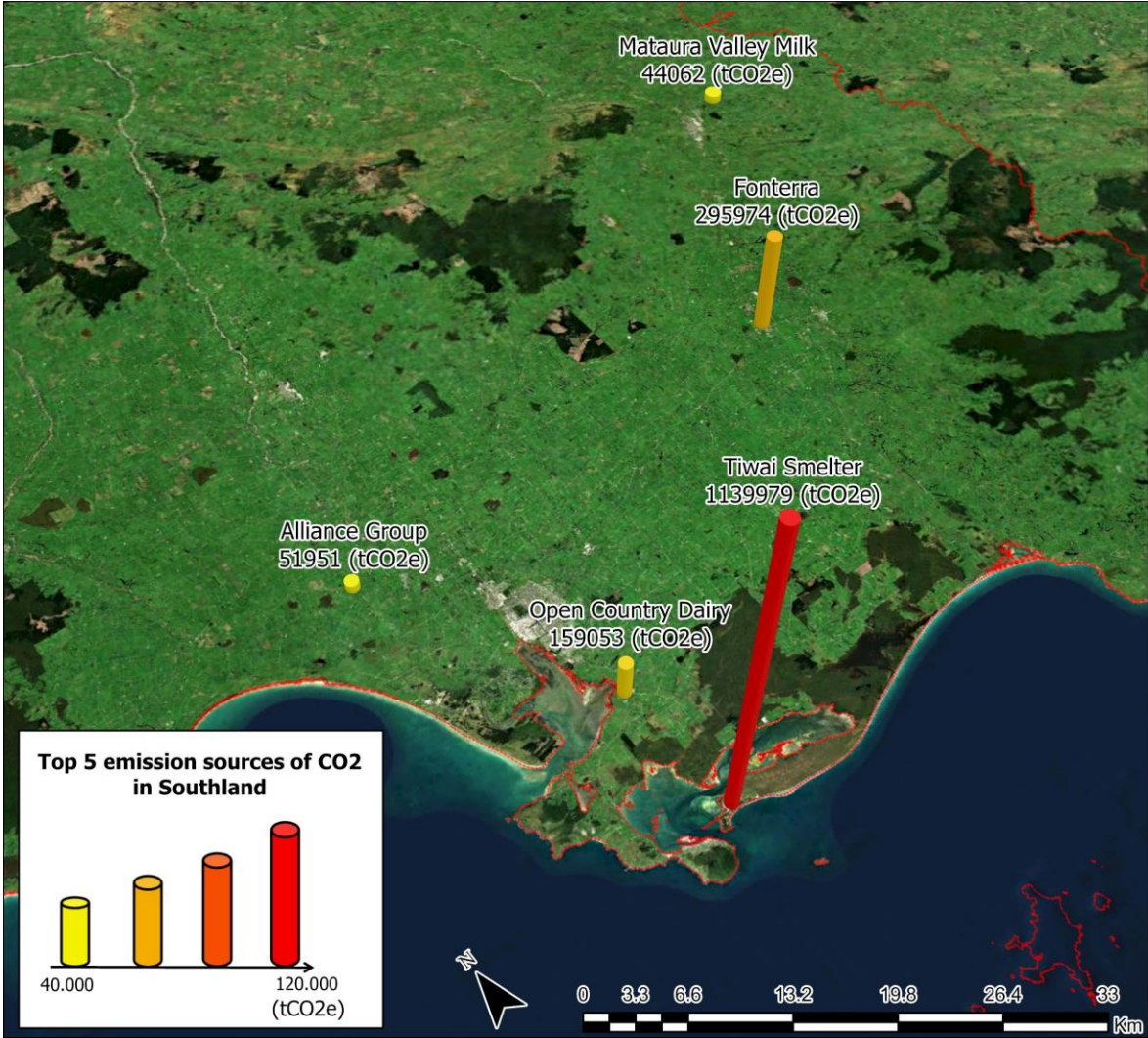
Image Credit: Videocaptar



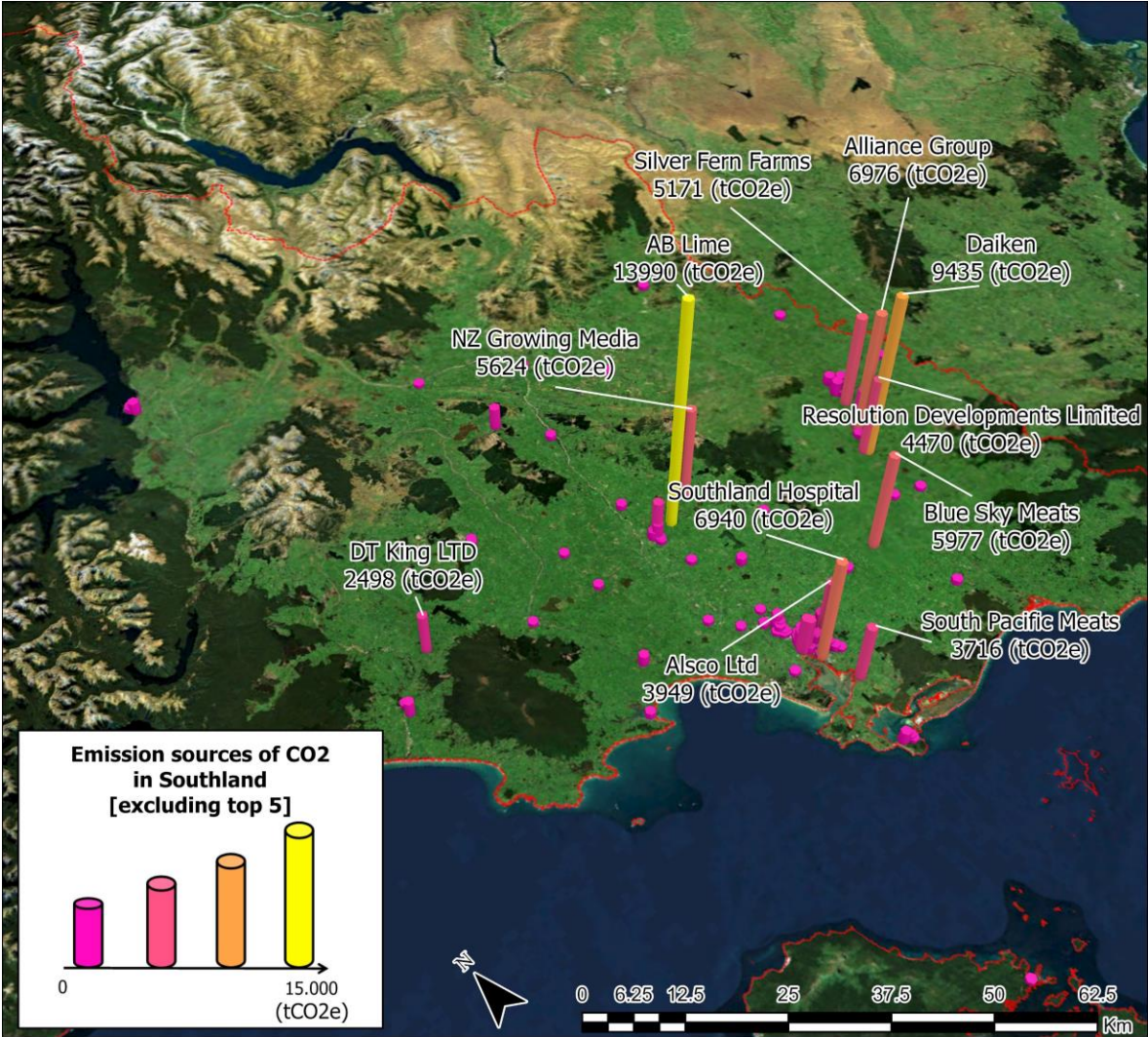
Southland Murihiku Regional Energy Strategy 2022-2050

- **Is the 4th Regional Energy Strategy 2002, 2005, 2011 Maps an energy pathway**
- **Unprecedented demand for Renewable Energy - Carbon reduction, electricity based transport & new industry investment**
- **Energy – Electricity, wood, biogenic methane, hydrogen**
- **Consider Energy affordability & reliability**
- **Explore energy efficiency, building, grid, and infrastructure investment, etc.**
- **Contemplate new generation opportunities**
- **Explore the roll of new technology**
- **Ensure that new investment is contemplated in RMA and Spatial Planning process**
- **Will be fed into the National Energy Strategy**
- **What are the priority actions driving decarbonisation?**

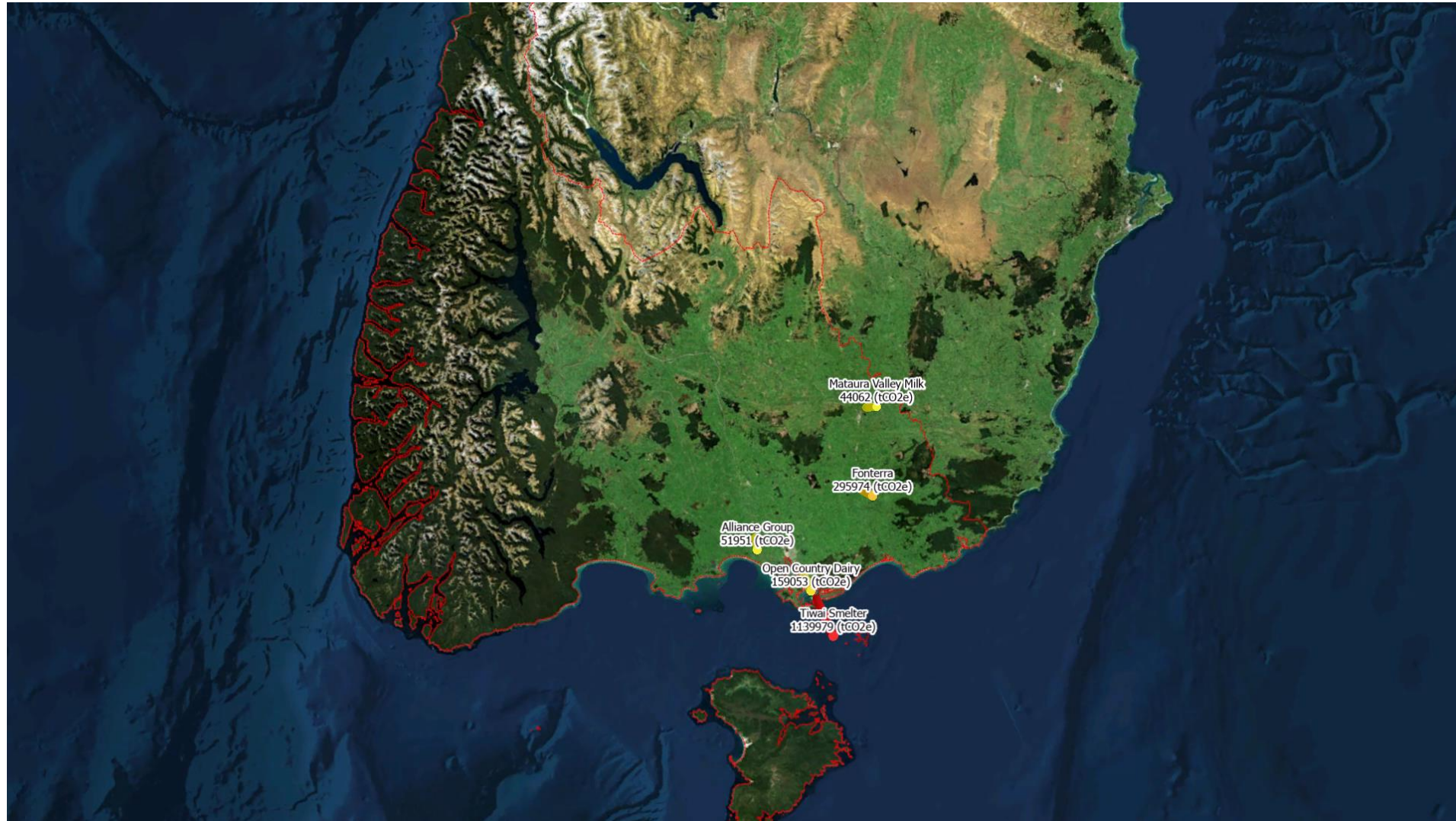
Southland Murihiku's Thermal and Process Emissions



Southland Murihiku's Thermal and Process Emissions



Southland Murihiku Regional Emissions



Status of boiler/heat conversions in Southland

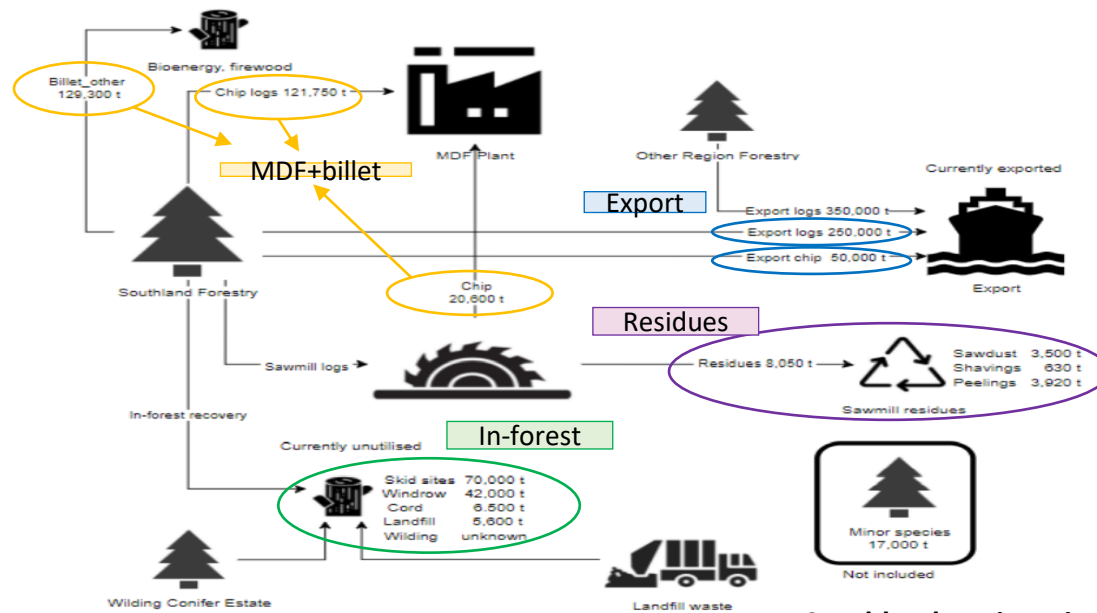
- **190 large boilers, 87 have or are being converted to renewable energy**
- **Conversion projects in progress or recently completed.**
Ascot Park Hotel, Bainfield Park Residential Care, Habitat for Humanity, Ibis Hotel, Railway Station, Southland Adventist Christian School, Mitre 10, Distinction Hotel, Great South, Menzies Building, SouthPort, Ravensdown (Dipton), Department of Corrections, Dipton School, Edendale School, Gore Main School, Invercargill Middle School, James Hargest Junior School, James Hargest Senior School, Newfield Park School, Pukerau Primary School, Southland Girls' High School, Southland Boys' High School, Te Anau School, Waikaka School, Windsor North School
- Plus the GIDI fund large Boiler Projects such as Alliance, Danone, Open Country, etc.

Fossil fuel boiler conversion

Applicant	From	To	Carbon savings (tCO ₂ e/year)	Current Project % complete
TPG - 33 Don	Diesel	Wood pellets	75	15%
TPG - Railway	Coal	Heat Pump	231	20%
Ascot Park Hotel	Coal	Wood chips	1,094	30%
Ibis Hotel	Diesel	Electric boiler	145	50%
Habitat for Humanity	Diesel	Wood pellets	38	50%
Bainfield Park Residential Care	Coal	Wood pellets	365	60%
Southland Adventist Christian School	Coal	Wood pellets	58	60%
Mitre 10 MEGA	LPG	Heat Pump	53	70%
South Port (Bluff)	Diesel	Heat Pump	70	90%
143 Spey Street	Diesel	Heat Pump	23	Completed
Total			2,152	

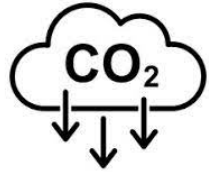


Southland Region Available Bioenergy



Note. Southland Region Bioenergy Availability Assessment. From Ahika Consulting Limited, 2022 for EECA

Total Thermal Energy Decarbonisation Load to achieve Net Zero in Southland by 2050



Biomass Fuel Market = (1 PJ) **130K tonnes**
Forward fuel commitment = (0.5 PJ) 65K tonnes
Total Committed Fuel 195,000 tonnes

Total est. Biomass Fuel Demand = **557,000 tonne/a**
delivered



Est. tonnes of biomass converted to fuel the market to meet demand.

Total potential from logs and residues **705,000 tonnes/a**



(Depends on what Fonterra Edendale decarbonisation pathway. Southland could be a net exporter of wood biofuels)

Existing Total Electricity Delivered (2020) = 6 TWh (21.6 PJ) Including Tiwai (5TWh)
New Generation required to meet Decarbonisation demand **1.7 TWh inc.**

600MW is required for Southern Green Hydrogen
Up to 500MW of New baseload generation required (up to 1250 MW of wind generation at 41% availability)

Net Zero Target Achieved

Status of boiler/heat conversions in Southland

- **190 total number boilers, 87 have or are being converted to renewable energy as part of the Wood Energy South, Ingill Decarbonisation, Government Decarb program & GIDI Funds (15 boilers were decarbonised prior to 2015).**
- **While saving costs isn't the reason for making decarbonisation investment financial benefits are significant**

Emissions Avoided	2024 @ \$87.60	2030 @ \$140	2050 @ \$250
Per annum - 155,141 tons	\$13.59m p.a.	\$21.16m p.a.	\$38.8m p.a.
Over life of investment 3.103m tons (assumed 20 year investment life)	\$272m	\$423.2m	\$776m



Impacts of Converting Pastoral Farmland to Carbon Forestry



What if 50% of farms convert to forest?

- Direct job losses:
 - 1,500 from farms
 - 2,300 from processing (milk & meat)
- Indirect job losses – agriculture support
- Induced job losses – teachers, doctors, retail
- Population reduction – rural communities
 - 9,000 jobs
 - 13,000 people lost



Policy Recommendations:

- National Policy Statement contemplating the social, economic, environmental & cultural aspects of carbon forestry
- Review of the Emissions Trading Scheme & the Overseas Investment Office decisions
- Enable planting of native forests in Conservation Estate
- RMA reforms consider carbon forestry impacts
- Give local councils & communities meaningful engagement and control



HYDROGEN
NEW ZEALAND

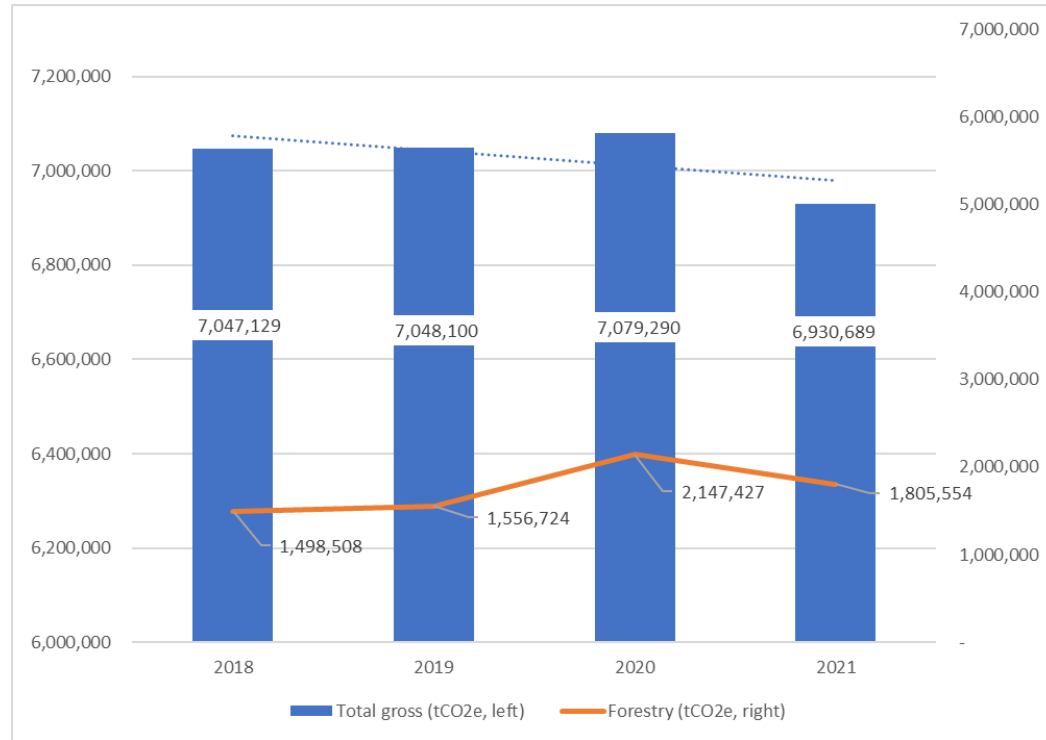
Advancing Southland's transition to a low emission economy

www.nzhydrogen.org

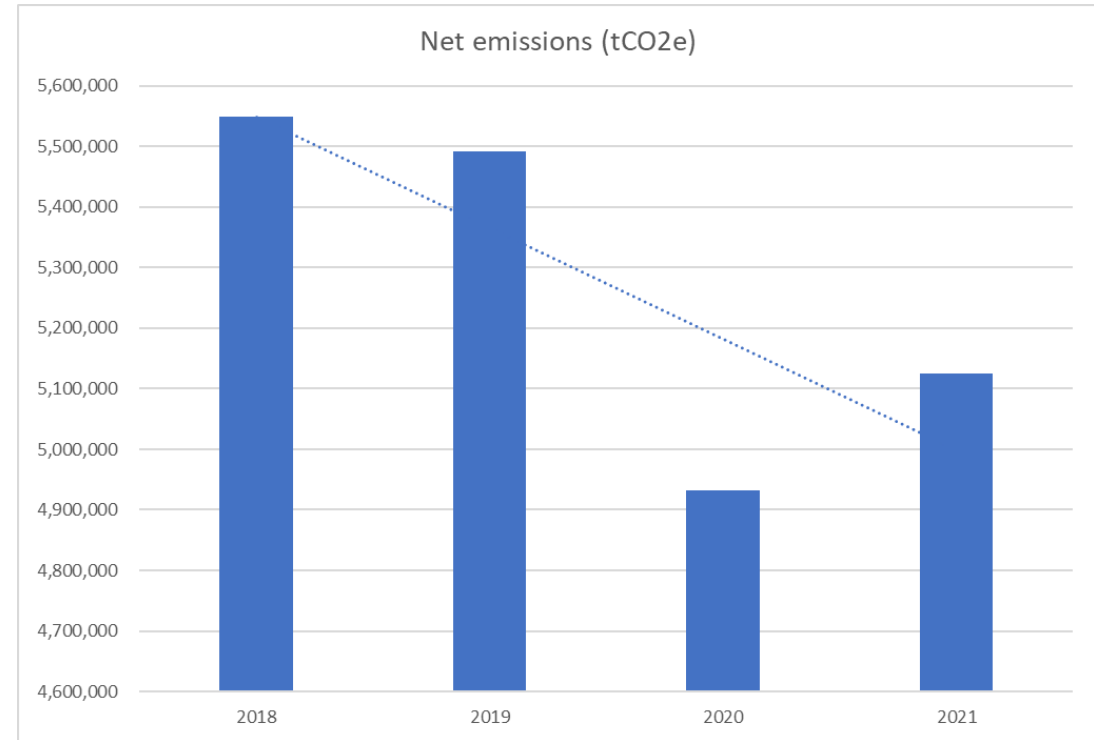
GREAT SOUTH 

Southland's Score Card on Emissions Reduction





Gross Emissions (tCO2e)



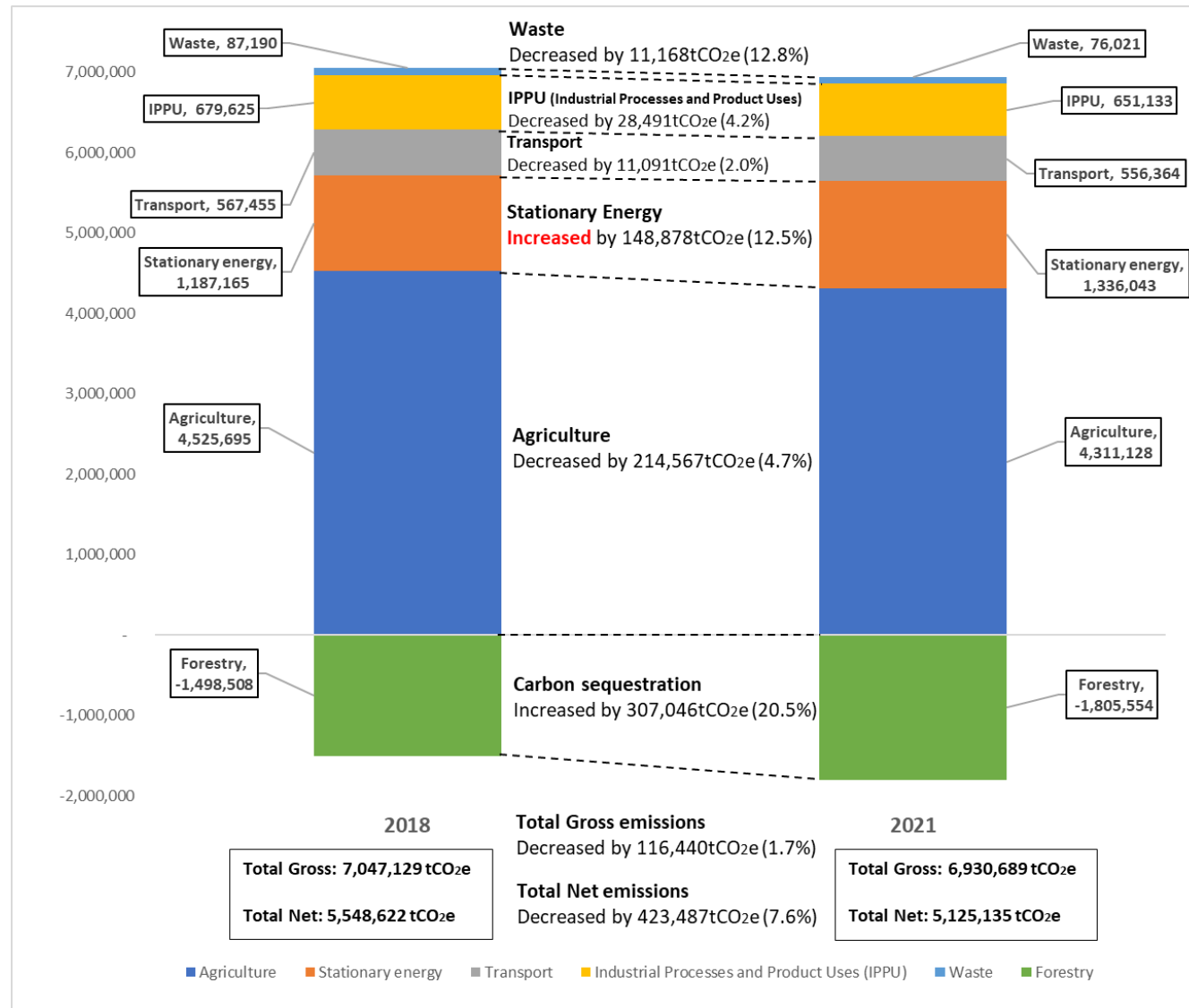
Net emissions (tCO2e)



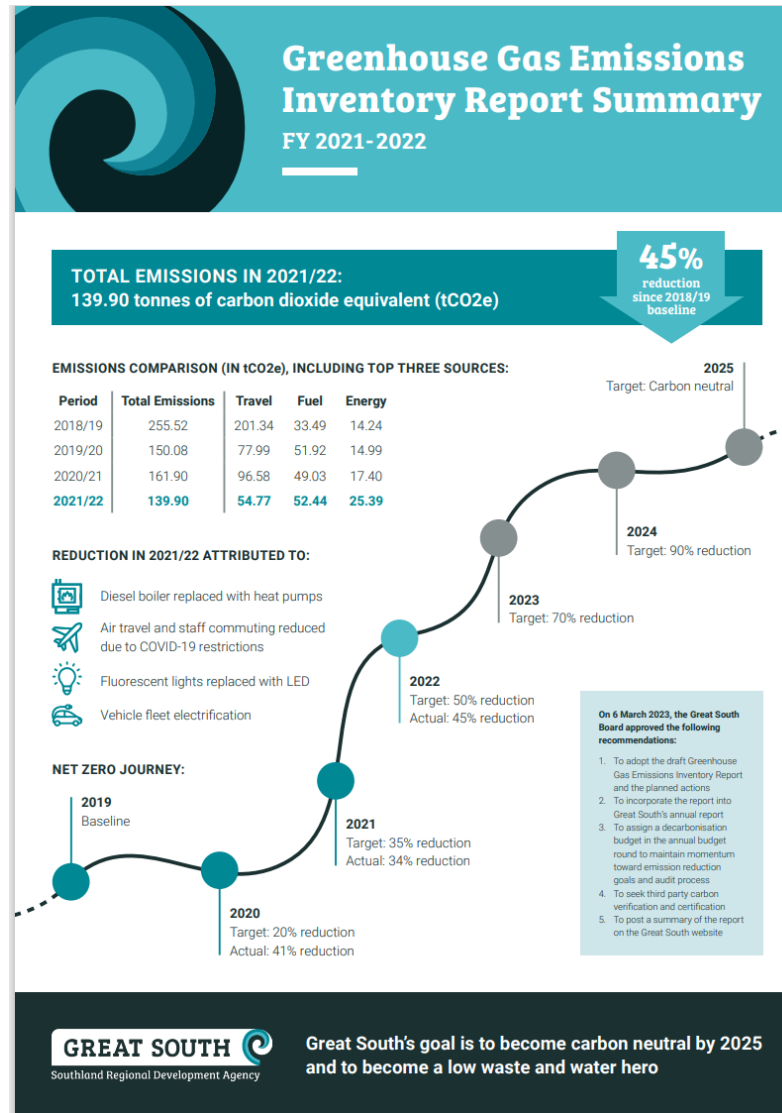
Southland Murihiku Regional Energy Strategy 2022-2050

	2018	2019	2020	2021	Total Change in stock numbers
 Livestock					
 Beef cattle	173,770	181,921	200,557	203,928	+30,158
 Dairy cattle	681,011	658,626	659,726	642,689	-38,322
 Sheep	3,737,512	3,407,144	3,350,354	3,395,747	-341,765

Southland Murihiku Regional Energy Strategy 2022-2050



Great South's Decarbonisation Pathway



Where to from here?

- **The need for a positive Climate Change response is a priority for Southland**
- **Carbon costs will continue to increase**
- **Southland can achieve carbon zero by 2050 without economic & social shock**
- **90% + of all investment in decarbonisation is NPV positive**
- **Fossil fuels availability will decline, reliability of supply will decrease & costs increase**
- **Unprecedented need for investment in new generation**
- **Energy efficiency will be a priority for housing, building, transport etc.**
- **A need for greater acceptance of new generation assets, windmill, solar systems, run-of-river hydro, methane capture and use, & wood biomass supplies maximised.**
- **Practical steps need to be taken to reduce exposure to energy costs particularly in housing –Insulation, double glazing, orientation of houses to the sun and so on....**
- **The Southland Energy Strategy is aimed at mapping a sound pathway forward**
- **Southland is ideally suited to development of new generation and Spatial planning will reflect this.**



Noho ora mai Stay well

For more information

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