

# Biofuels & Bioenergy in NZ



Presented by

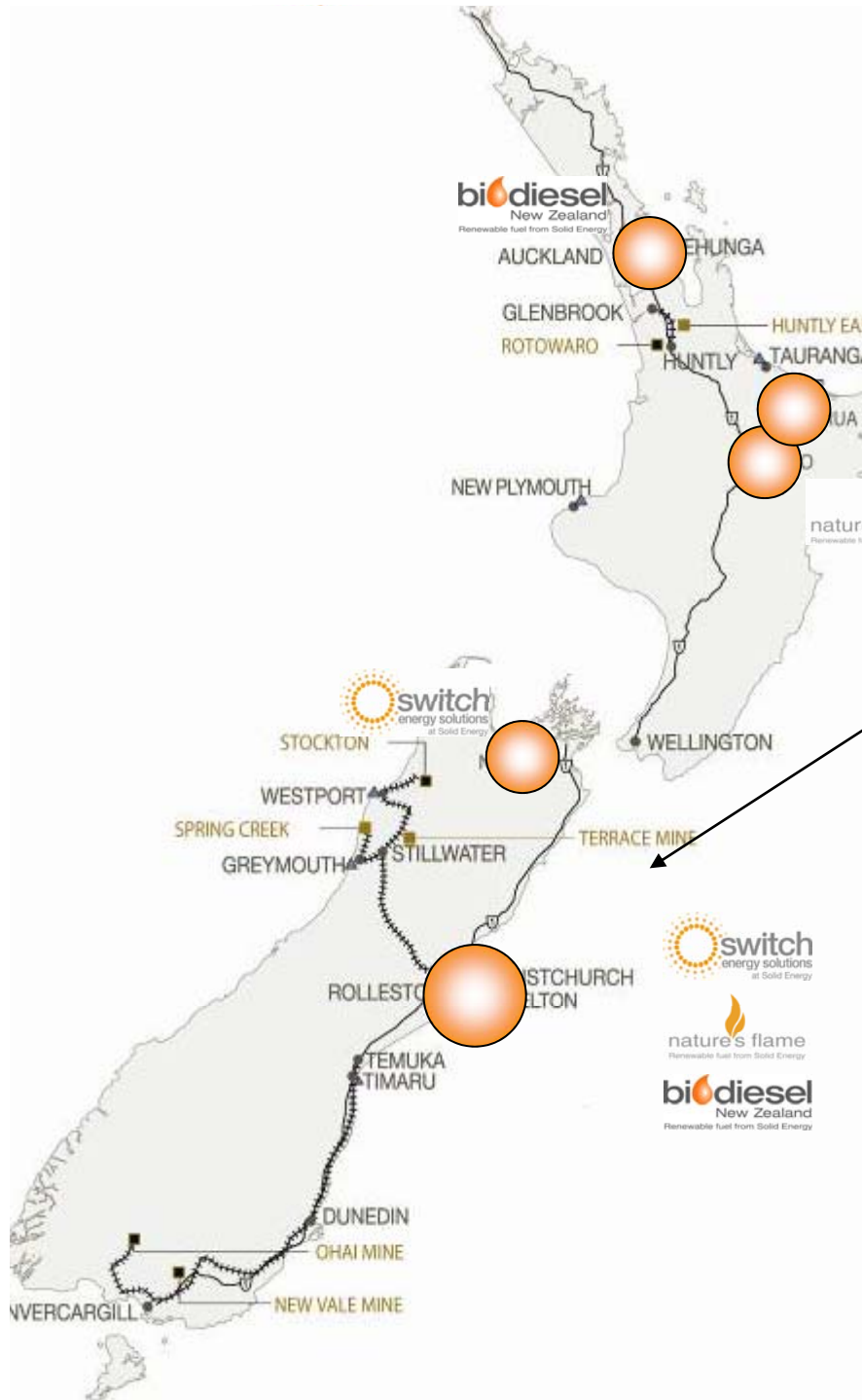
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# Overview

- Solid Energy
- Renewable Energy business
- Nature's Flame (wood pellets)
  - History, Current Projects, Future Plans
- Biodiesel (fuel)
  - History, Current Projects, Future Plans
- Switch (renewable energy hardware)



## Renewable Business Sites

**SOLID ENERGY OVERVIEW**

- State Owned Enterprise
- NZ's largest coal producer
- 772 employees/800 contractors
- 2007/08 Coal production 4.5 million tonnes pa
- Sales turnover around \$1 billion pa, 50% export
- Exports 1.9 million tonnes pa
- 5 coal mines, 3 open cast (surface), 2 underground
- Owns 3 renewable energy businesses
- Has a number of other "new ventures" ie coal seam gas, lignite gasification project



# Renewable Energy Division

## Renewable Energy Business

\* 75-90 staff

\* approx. \$100m investment

\* 3 Year Revenues \$75m



## Wood pellets



## Biodiesel



## Solar Appliances Renewable energy Equipment importer





## Nature's Flame – Rolleston & Rotorua

- 2 Regional plants for bagged and commercial markets in NZ
- Established in '00 and '06
- Exports
- Production capacity 40-50Ktpa

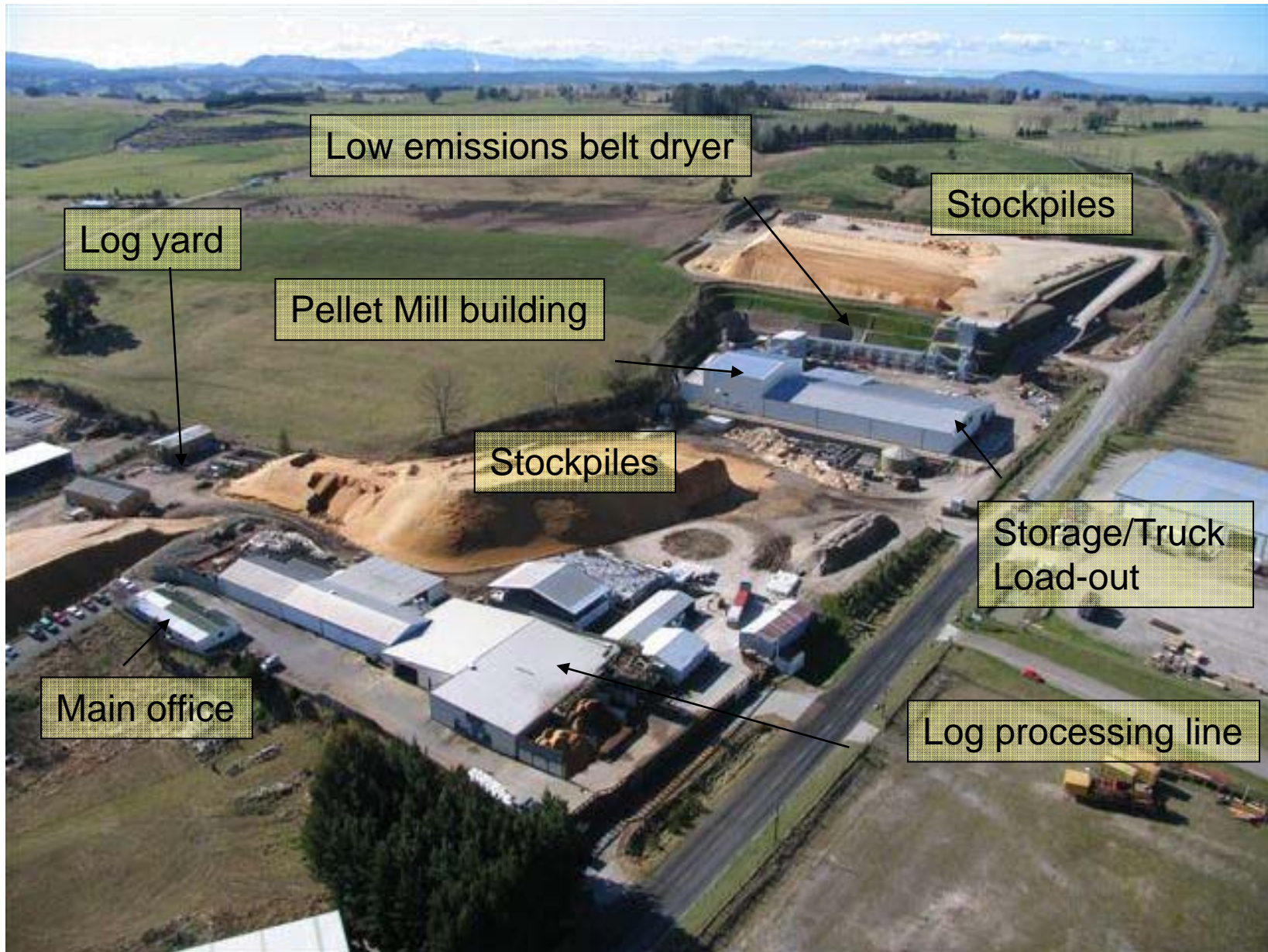


# New Taupo Plant

- **Key Production Statistics**

- 40Ktpa in 2010, moving to 300ktpa;
- Commissioning currently
- Automation – 2-3 staff
- Full log processing facility built
- Close to Ports & feedstock
- Geothermal resource







## Taupo Plant



Andritz Pellet Presses - 4t/hr each



Stela Low emissions belt dryer - 12t/hr



# Pellet Quality

- 7 year consistent production history
- FSC wood supply
- Low GHG's in production
- Ultra low ash pellets
- Pinus Radiata ideal feed stock – good ash composition
- DIN Plus certification (highest spec) underway
- BioGrow ash certification as a fertiliser



## Example 150kW Commercial Heat Plant: Nature's Flame & Radford Yarn



***“The new boiler cut electricity usage in half, slashed the energy bill by 25% and reduced the time needed to dry yarn by between three and six hours.”***

Around 50 Commercial conversions – EECA support acknowledged

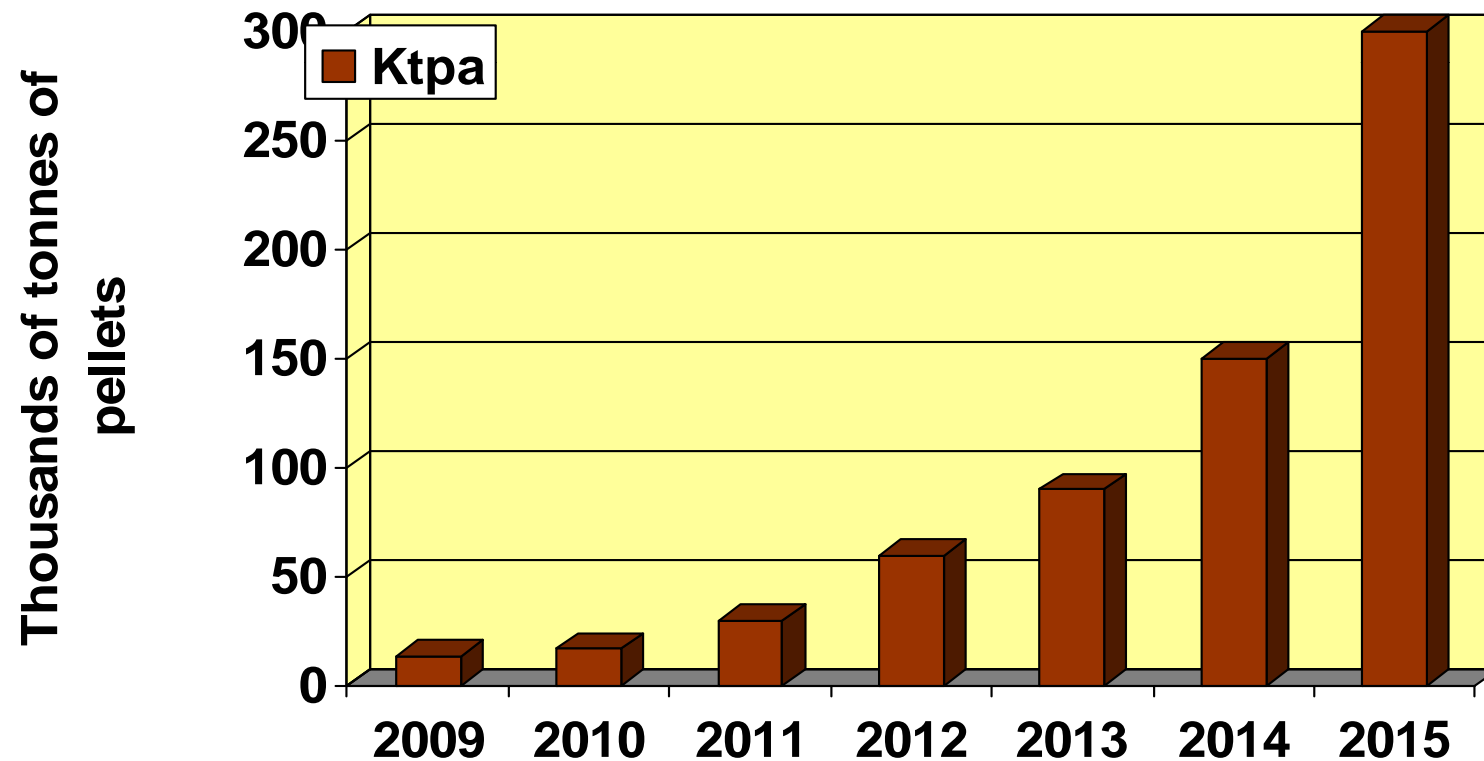


What the judges said...

*“...This is a terrific example of an innovative, renewable energy project using new technology on an industrial scale. This has excellent potential for replication across other organisations and industries. It also contributes towards developing New Zealand's wood energy industry by creating ongoing demand...”*



# Actual & Projected Pellet Production





# Biodiesel Business

- Vegetable oil (OSR) conversion to Biodiesel
- Existing process plant at Addington, Christchurch
- Capable of 4-5m litres per year
- Processing Used Cooking Oil + OSR
- New facility for processing OSR at Rolleston
- Consented expansion site to 70m litres pa
- Also producing nutrient rich cake for the livestock feed industry

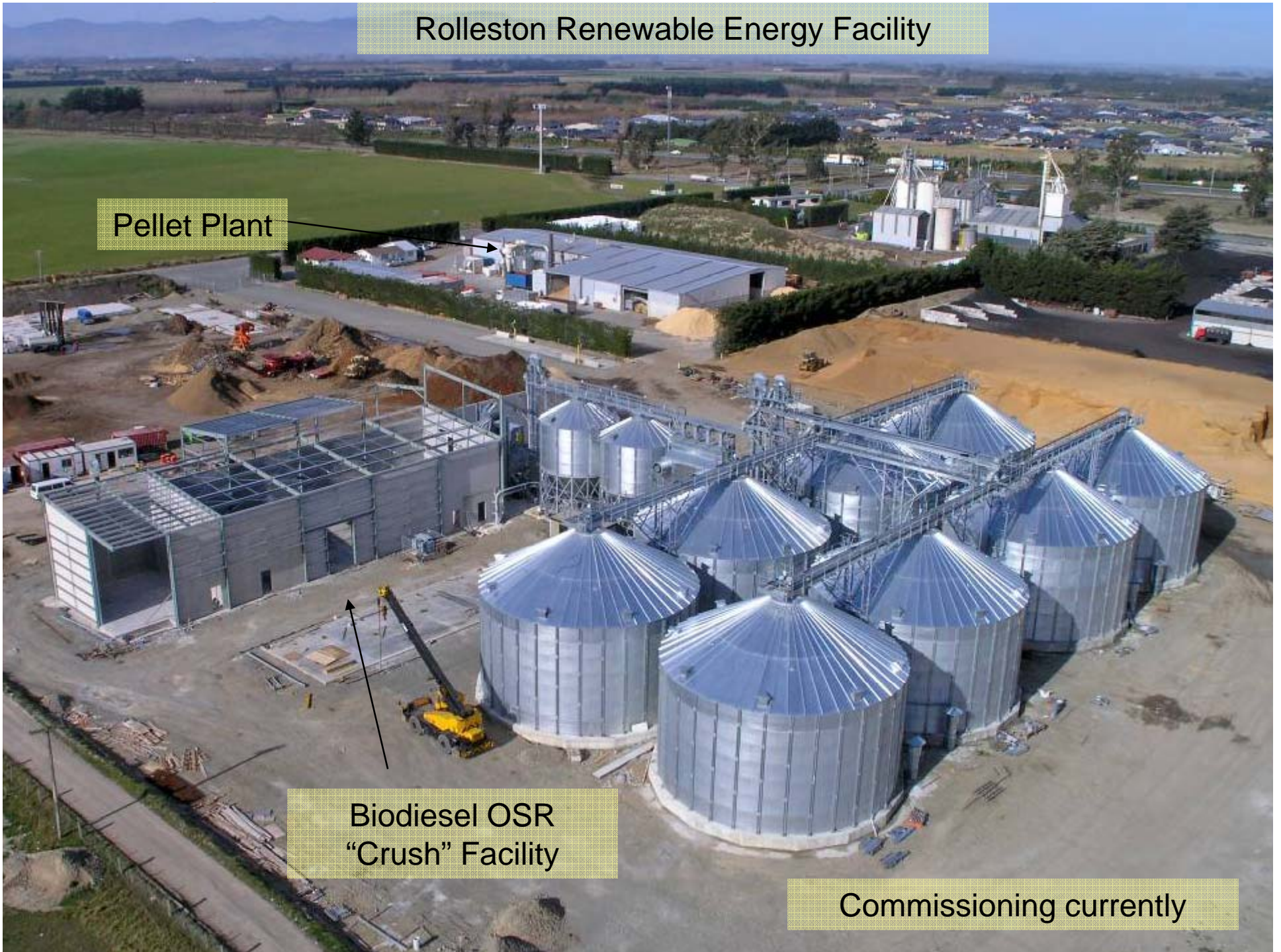


# Rolleston Renewable Energy Facility

Pellet Plant

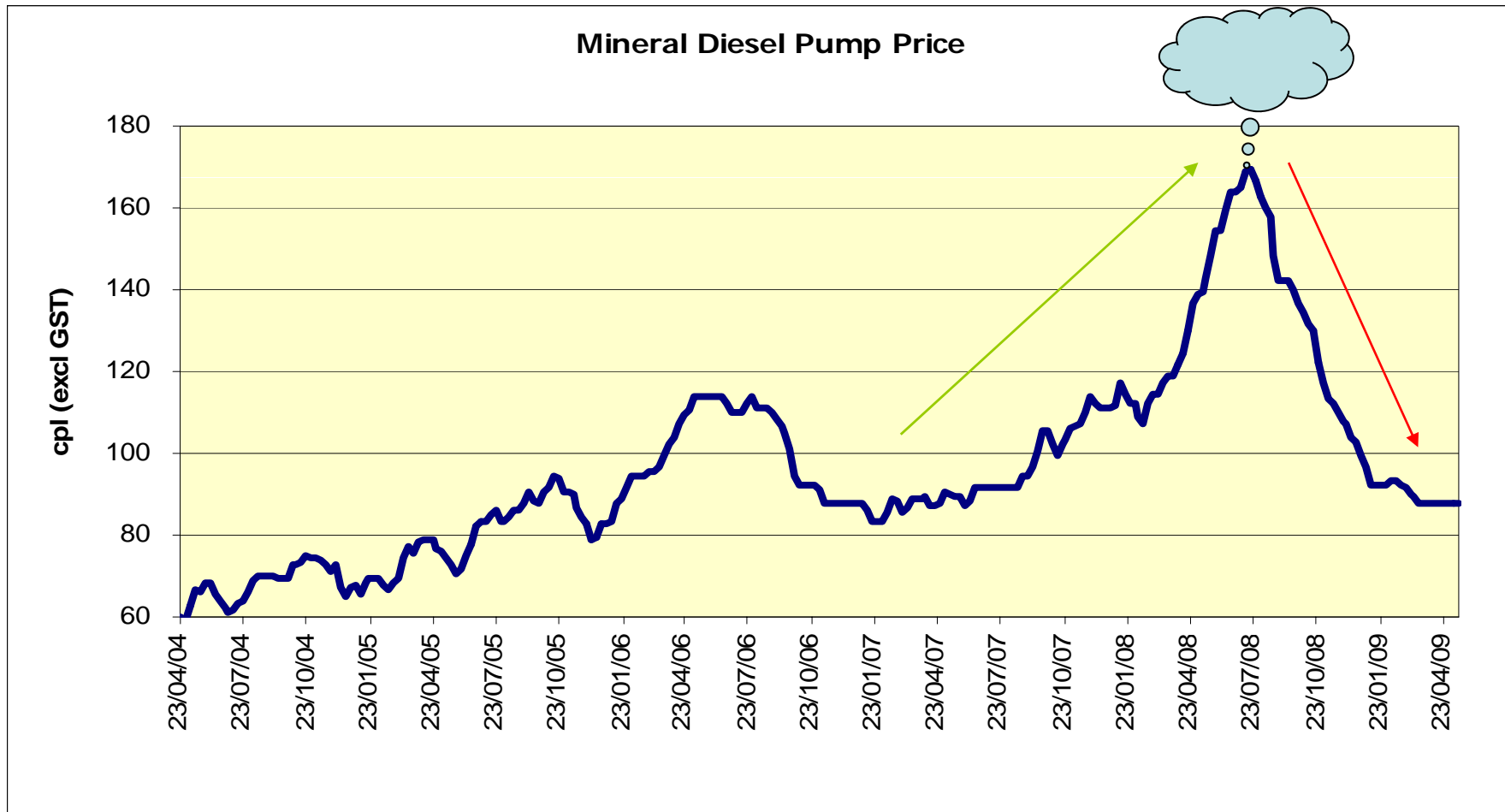
Biodiesel OSR  
"Crush" Facility

Commissioning currently





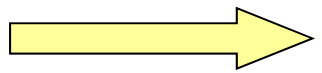
# Price Challenges...



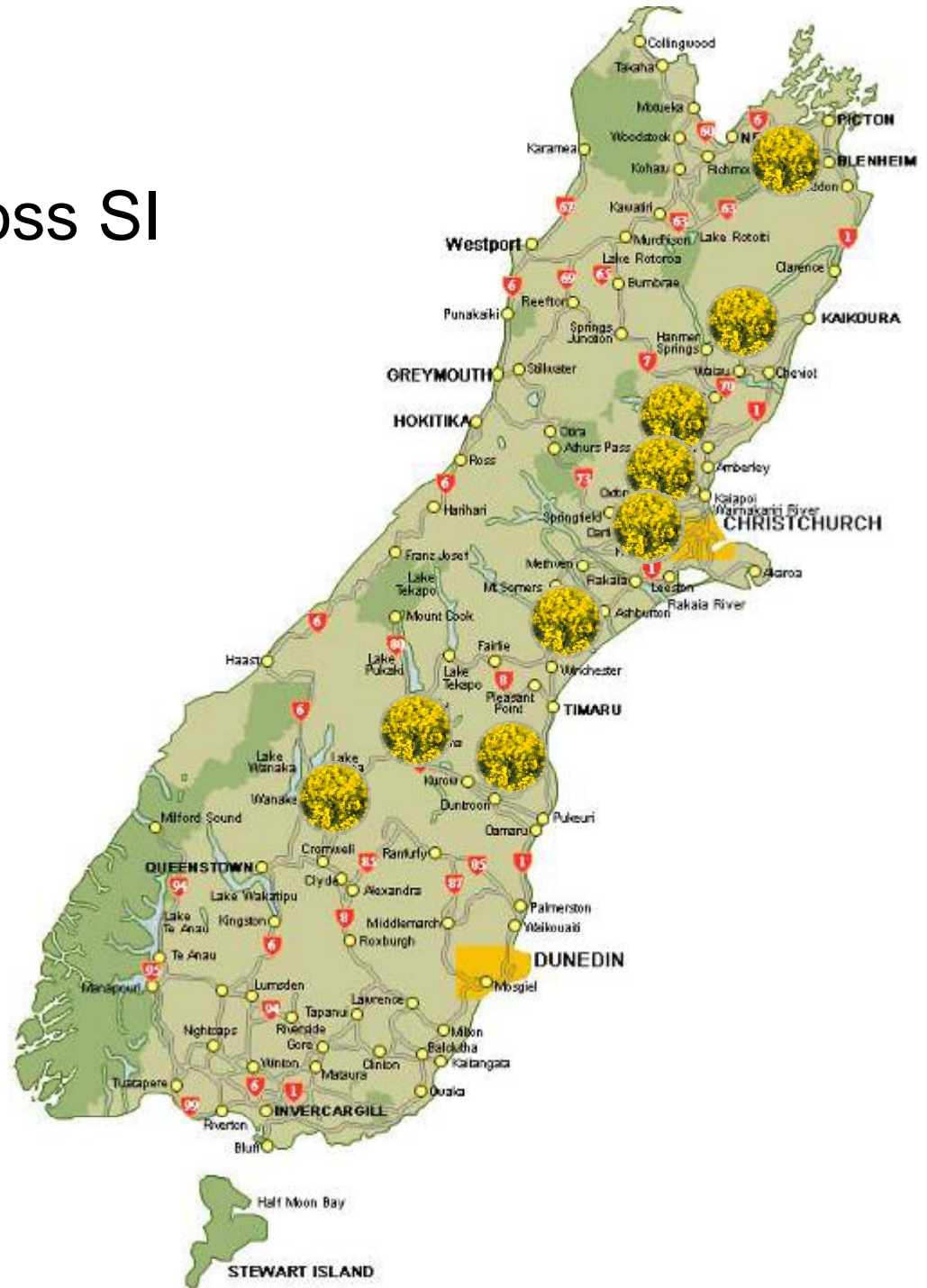
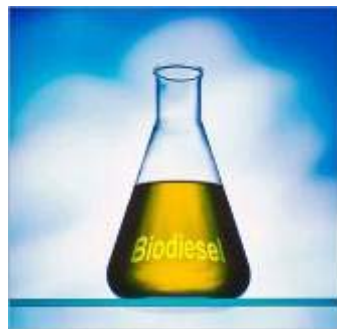
Crops established across SI  
4000ha, 17 varieties:

- rotation crop
- cake production
- Yield improvement

3-5t/ha

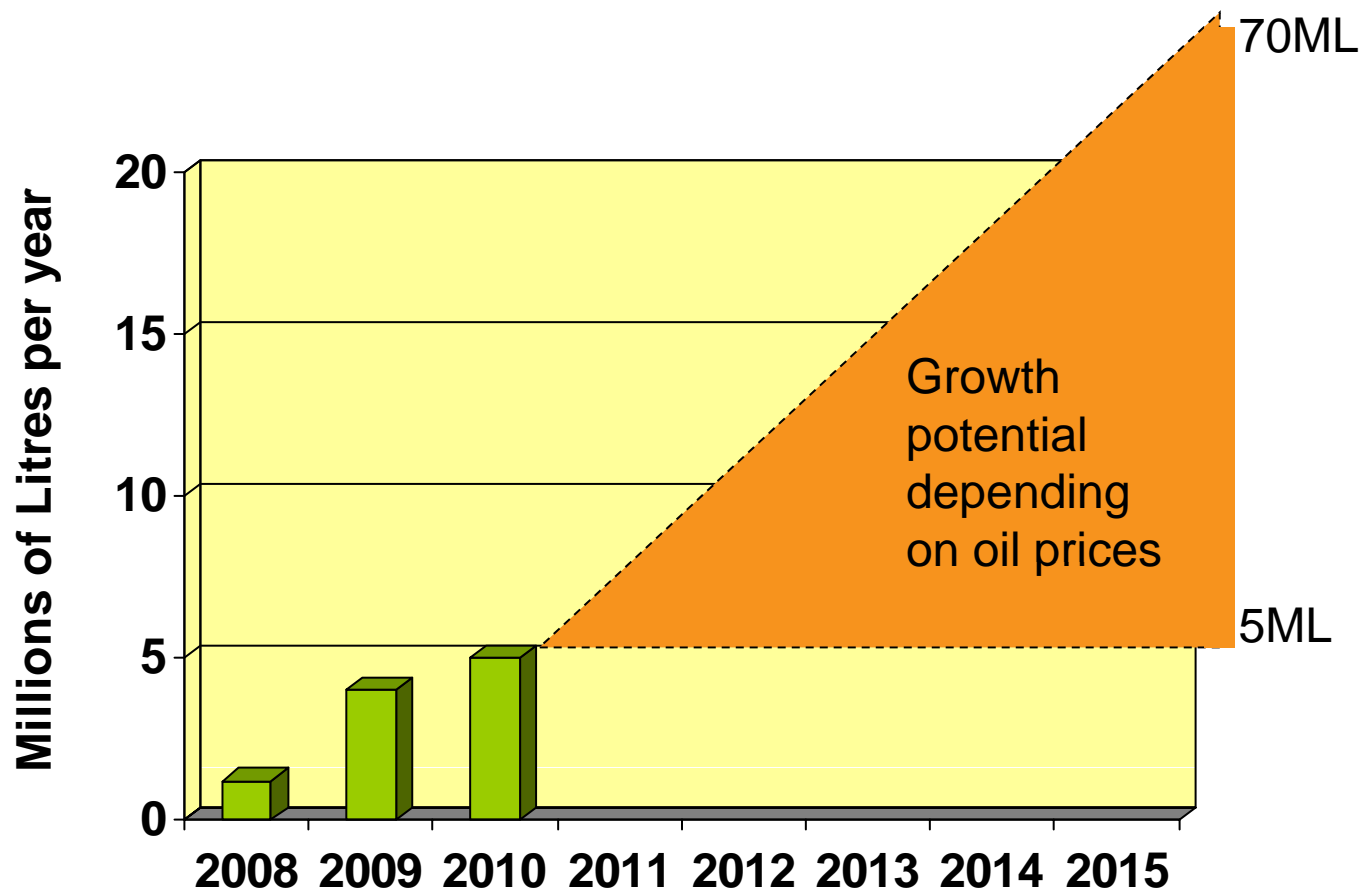


360l/t





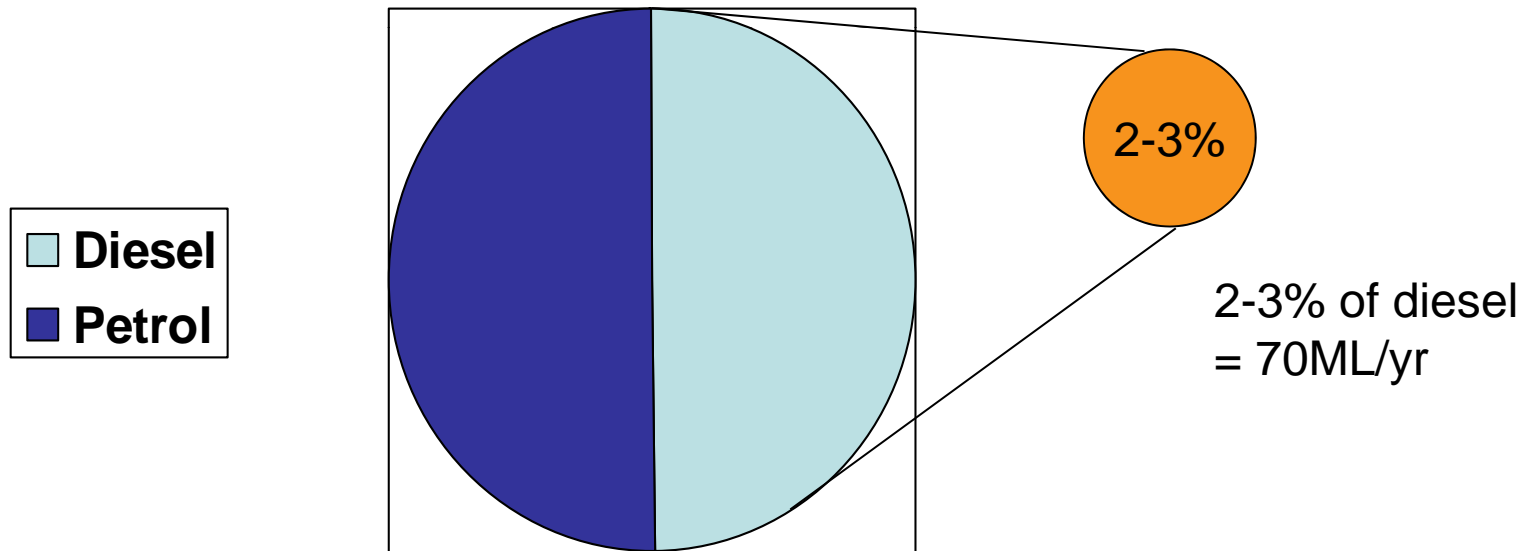
# Actual & Potential Biodiesel Production – can replace 3% of diesel use





# Biodiesel Potential

## Transport Fuels



- Domestic sourced fuel
- Alternative option for fuel
- Low emission, low sulphur



# Benefits

- Biodiesel is easy on the environment: any spills quickly biodegrade compared with mineral diesel
- Can be used in virtually any blend proportion with mineral diesel:
  - millions of vehicles using B5 in Europe
  - thousands of vehicles using B20 or higher blends
  - Biodiesel-New Zealand experience:

**B60 to B80, many up to three years**

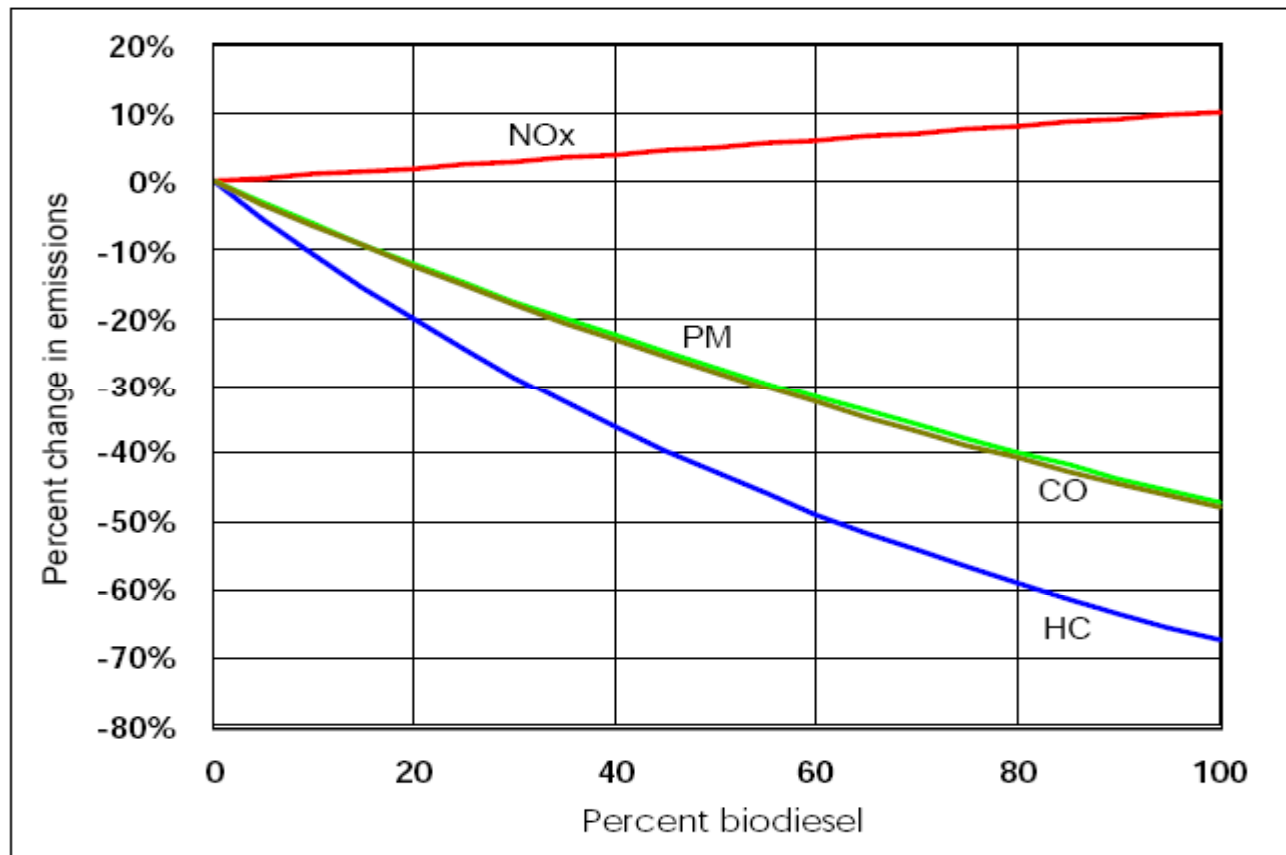


**B100**





# Biodiesel-conventional diesel emissions comparison



From: *A Comprehensive Analysis of Biodiesel Impacts on Exhaust Emissions, Draft Technical Report*  
US EPA, EPA420-P-02-001, October 2002,



# Switch

- Renewable Energy Equipment Business
  - » ENERGY SOLUTIONS
    - ✓ Schools
    - ✓ Commercial
    - ✓ Industrial
- Pellet Fires
- Solar Water Heating (Apricus)
- Boiler Systems



## Integrated Energy Solutions

- ☑ Fuel
- ☑ Back-Up
- ☑ Installation
- ☑ Hardware



# Conclusions

- We need new energy sources:
  - Secure
  - Affordable
  - Environmentally sustainable
- NZ has a competitive advantage – agriculture/forestry (+ water)
- SE's renewable options can play their part and create a major new industry for NZ.