

Wood a winner for heating Dunedin

Dunedin is leading the way in demonstrating how key players in a region can work together to make wood a viable source of energy for heating facilities ranging from schools and hostels to factories and commercial buildings.

A growing number of organisations, including big businesses, in Dunedin are replacing coal, diesel and LPG with wood pellets or wood residue as fuels to fire their boilers.

One driver behind conversion is more stringent Otago Regional Council controls around particulated emissions to improve Dunedin's air quality. As resource consents come up for renewal, many organisations are finding their coal-fired boilers need expensive modifications, such as installing baghouse filters, to comply with emissions standards.

For many, this presents an opportunity to replace their boiler with one that runs on cleaner, carbon-neutral and renewable sources of energy.

In Dunedin, the confidence to convert comes from having a local supply of suitable raw material and businesses that have invested in providing equipment and producing and delivering wood fuels.

There are currently three wood fuel suppliers in the city and nine (and counting) commercial or industrial wood energy users.

Together, they form the Dunedin Wood Energy Cluster. Key players in the cluster include:

Forest owners – primarily City Forests Limited, a Dunedin City Council owned company that manages 16,000 hectares of plantation forest within a 70 kilometre radius of Dunedin city and supplies wood that was once left to rot on the forest floor.

Wood fuel producers – who turn waste wood into chips and pellets.

Boiler suppliers – who install and maintain wood-fuelled boilers for commercial and domestic clients.

Heat users – including schools, hostels, tertiary education facilities, hospitals, community facilities and businesses that are opting to use wood energy.

Engineering consultants – who provide the information and costings needed to encourage organisations to convert.

EECA has been supporting the growth of wood energy in Dunedin since 2007. Initiatives have ranged from feasibility studies and on-the-ground advice to funding for converting and buying equipment and follow up monitoring to measure efficiency, savings and recommend improvements.

Providing help at all points in the supply chain has been critical to the development of a thriving wood energy cluster says EECA's Shaun Bowler. "It's vital when an industry is young and relatively unknown. It helps to de-risk investment."

Local government shows leadership

Leadership has also been pivotal. In 2009, for example, the Dunedin City Council led a study into wood energy supply options which resulted in the council-owned company City Forests Limited supplying the poorer quality logs to companies that turn the wood into chips and pellets.

Currently, only a fraction of the wood waste in City Forests' plantations is being used for fuel so there is significant capacity to meet Dunedin's future energy demands.

A Renewable Heating in Schools pilot programme, run by EECA and supported by the Ministry of Education, has made an important contribution. Between 2007 and 2010, four schools in Dunedin converted their old coal boilers to run on wood pellets and one – Tahuna Normal Intermediate – bought a new wood chip boiler.



Dunedin's wood energy cluster provides the region a carbon neutral energy source that enhances security of supply and will be cheaper than coal over the long-term as carbon prices climb.

✓ Key features

- A growing number of conversions to wood fuel for heating
- Wood that was once left to rot is being turned into fuel
- A supply chain has been established
- Getting large businesses on board creates critical mass
- Dunedin offers a blueprint for developing a regional wood energy industry

✓ Key benefits

- Lower heating bills – wood chips and pellets are cheaper than diesel, LPG or electricity
- Lower maintenance costs
- More jobs and growth in the regional economy
- A reduced carbon footprint
- Greater energy self-sufficiency for Dunedin



Energy to burn: Murray Cowan, Operations Manager, Wood Energy New Zealand stands atop a wood-pile with delivery truck in background

Business on board

An energy company has also been at the forefront of cluster development. Energy for Industry (EFI), owns the Dunedin Energy Centre which has four boilers providing steam and hot water to a range of customers including Cadburys, commercial laundry AlSCO, the University of Otago and the Southern District Health Board.

One boiler has been converted entirely on wood chips and as a result, the centre's customers find the reduction in CO₂ emissions critical to their sustainability strategies and reporting.

Having some of Dunedin's large businesses on board has been crucial in creating critical mass around the use of wood fuel.

Growing demand

Demand from early adopters has resulted in new businesses getting off the ground. EFI established Wood Energy New Zealand to supply wood chip fuel while Timber Direct Otago makes wood pellets for domestic burners. Other businesses, such as Spark Energy and Living Energy, have experienced growing demand to supply and install high-efficiency wood-fired boilers and the fuel they run on, while transport providers in the region are benefitting from demand for deliveries of wood fuel.

There are clear financial benefits to conversion. Wood chips and pellets are significantly cheaper than diesel, LPG or electricity, and being carbon-neutral fuels, will be cheaper than coal in the long run as carbon prices increase.

Savings realised

The University of Otago will save \$270,000 next year through moving to boilers that run on wood chips and pellets while AgResearch Invermay saved \$30,000 a year in maintenance costs when it switched to wood boilers.

At Knox College, a residential hall in Dunedin, installing a new 540 kW wood chip boiler is saving around \$1,300 per month on the previous bill for coal. In addition, boiler cleaning time has been cut from more than 10 hours a week to around three.

Creating jobs

Building a wood energy industry also creates local jobs.

An EECA study (www.eecabusiness.govt.nz/node/10890) has shown that a small plant which converts wood residue into wood pellets for heating has potential to provide four full time jobs a year.

Fuelling economic growth

In Dunedin, the wood energy cluster is stimulating the local economy both through employment and new business activity says Neville Auton, Energy Manager for the Dunedin City Council.

"We're reducing the dollars being exported out of the city to buy energy. Keeping that money here builds economic buoyancy."

Environmental benefits include a reduced carbon footprint, as wood sourced from sustainable plantations is carbon neutral, which provides security in a market where there is increasing uncertainty around the price of carbon. Turning wood and forest residues into fuel also means less material going into landfills.

Security of supply

It's also about energy security and resilience says EECA's Shaun Bowler. "For Dunedin, using wood from local forests means less reliance on energy coming in from other areas, meaning the city will not be affected by price fluctuations for coal, diesel or LPG. In real terms, the cost of wood energy has stayed the same for 30 years. And the city won't be affected by escalating prices for coal, diesel or LPG."

Neville Auton says one of the best things about using wood as a fuel is that the technology is well proven overseas.

"It's not rocket science – they've been relying on it in Europe for years. As long as you have a supply of wood on your doorstep, engineering skills in your community and the motivation to switch, it's a winner all round."

To find out about how to become part of a wood energy cluster in your region contact us now.

Key personnel

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