Low-carbon vision for Canterbury campus

Energy News, Felicity Wolfe - Tue, 04 Aug 2015

Bio-mass fuel could replace coal heating in the University of Canterbury's plans to build a new campus energy scheme, but new options must be realistic.
The university currently uses coal-fired boilers to heat its buildings and wants to move to renewable heating and cooling as part of a sustainability strategy for its two campuses in Christchurch.

Energy manager Tony Sellin says the current boiler systems are well maintained plant and thermally efficient.

"But obviously we do burn coal."

There is growing interest in using wood fuels as a replacement for industrial-scale coal heating systems, particularly in the South Island where there is no reticulated gas.

Last month the Bioenergy Association and the Energy Efficiency and Conservation Authority announced they are collaborating on new initiatives to provide businesses with the confidence to replace coal with wood fuels and support the nascent industry.

The university says it is looking for implementable technology, not "theoretical proposals for low-carbon solutions that cannot subsequently be taken forward".

Sellin says there is great potential for bio-mass in New Zealand, but the university needs to check there will be reliable fuel available. If the university cannot get the certainty of supply required to meet its needs it may have to remain with coal for the time-being.

"We need to get security of supply," Sellin says.

Long-term solutions

The university is currently seeking consultants able to carry out a full feasibility study to review and present space heating and cooling systems for the main Ilam campus and nearby Dovedale site.

The scheme is part of the "considerable" amount of remediation and large capital work needed on the campus following the 2010 and 2011 earthquakes.

This includes a number of new buildings which will have improved thermal envelopes and lower temperature requirements. But the university says due consideration must be given for legacy buildings, some of which date back to the 1960's, are not as thermally efficient as new builds and are currently heated using the high-temperature coal boiler-plant.

It suggests the proposal may need to consider a mixed strategy which utilises the existing plant and decentralised plant from renewable low-carbon energy sources.

Sellin says the amount of work needed on campus actually provides a "unique opportunity" to make sure the in-built heating and cooling systems are implemented efficiently around the campuses.

The request for proposals says the study must consider "new, locally maintainable and viable technology". It should also consider the medium- to long-term needs of the university and its focus on teaching and research.

The university is also keen to explore potential investment and ownership models for any future district energy scheme it implements.

This could include a university-owned and operated scheme. Alternatively a third-party specialist may be a better option to "own, run and maintain a suitably low-risk, metered service".

When considering outsourced ownership models, the university says it needs to identify and quantify possible risks and the corresponding implications for potential partners and on-campus organisations.

International experience, local knowledge

The university is looking to work with firms which have experience in implementing district heating schemes internationally, but which also have a good grounding in what is happening in New Zealand.

District heating and energy schemes are being incorporated into the wider Christchurch rebuild. Pioneer Generation and international partners Cofely-GDF Suez are scoping an initial $70 million health precinct scheme utilising Christchurch Hospital's boilers.

Sellin says there has already been a considerable amount of interest in the university's proposal request, which closes on August 17.

Following the request period, the university will consider the low-carbon benefits and other “non-priced attributes” of the proposals.

“The non-priced attributes are of major consideration to us – perhaps more so than price, because what we need to get from this is a good outcome.”

“We do want the best in terms of knowledge, capability and experience out there.”

Sellin says as well as upgrading its heating and cooling plant, the university needs to meet the expectations of future students.

“It is essentially asking what we can do to provide ourselves with a convergent strategy so we can provide for the university, provide for the infrastructure and the built environment, and provide the service to our customers, which is obviously the students