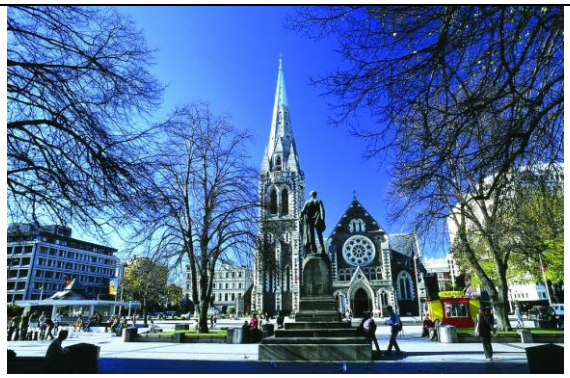
Renewable Energy Civic Building in Christchurch (NZ)

Keywords	**Trigeneration, Renewable Energy, Biogas**
Main photos	 
Objectives of the action	The project objective was to create an exemplary net zero carbon public building with the predominant use of renewable energy sources and advanced energy efficiency features.
Description of the action	The Civic Offices building is a home for Christchurch City Council. It has been developed by a joint venture between Ngai Tahu Property and the City Council. The building incorporates a broad range of energy efficiency features combined with the predominant use of renewable energy sources. The main feature of the building is its Trigeneration plant - the most efficient technology for energy generation. The trigeneration system provides most of electricity, heating and cooling requirements of the building. It operates on biogas coming from either the city landfill site or the waste water treatment plant via a 18-km pipeline. The building energy efficient features include: double-skin façade, automatic louvers, an energy efficient lighting system that adjusts light output in accordance with the level of natural light and room occupancy, an energy-efficient air distribution system that uses raised floor, LED lamps for outdoor lighting, lifts with re-generative breaking system for energy savings, escalators that activate on a motion sensor signal, rain water harvesting system that reduces the consumption of both water and energy, bicycle racks provided at 16% of staff numbers (which is above Green Star benchmark of 10%), solar collectors on the roof for hot water heating. In addition, significant energy savings resulted from the re-use of an existing structure of the building. This means that the energy embodied in thousands of tonnes of concrete was saved compared to new construction. The New Zealand Green Building Council awarded the design of the Civic building 6 Green Stars. It is the first 6-star building built in New Zealand.
Results / Achievements	Gains resulting from the project: - 4.2 GWh of non-renewable energy displaced (gas and electricity). - CO_2 savings in excess of 2,000 tonnes pa. - Energy cost savings in excess of NZ$700,000 (€ 350,000) pa. - Payback period for the investment 3.5 years. - Improved productivity resulting from improvements in staff engagement due to an enhanced sense of satisfaction and pride (working in a 6 Green Star rated building, renewable energy and sustainability - positive psychological factors). - Strengthened relationship between Council and community as a result of positive publicity with regards to this high-profile energy efficiency and renewable energy project.
Friendly advice for replication	Trigeneration can provide a better solution in terms of energy efficiency compared to a more conventional cogeneration. Christchurch's example shows how it can be successfully implemented in a public office building.

Online information	http://www.ccc.govt.nz//newcivicbuilding/ http://www.ccc.govt.nz/cityleisure/projectstoimprovechristchurch/newcivicbuilding/greenestbuilding.aspx http://www.nzgbc.org.nz/main/resources/articles/ChristchurchCivicBuilding http://www.ccc.govt.nz/thecouncil/howthecouncilworks/energyefficiencyatthecouncil/projects/wastetorenewableenergyburwoodlandfill.aspx Video clips are attached to the above web page.
Further information	**Contact person:** Name Leonid Itskovich Position Energy Manager Organisation Christchurch City Council Tel + 64 3 9418793 E-mail leonid.itskovich@ccc.govt.nz Website www.ccc.govt.nz