

BRCT CONTRIBUTION TO AN ENERGY PLAN for DUNEDIN

Executive Summary

The Dunedin Energy Plan, as a road-map for the next ten years, aims to set out how we will as a city:

- Save costs and enhance quality of life resulting from energy efficiency improvements *and increased energy productivity?*
- Boost the city's energy security and ability to adapt to change
- Reduce Dunedin's climate change and environmental effects
- Take advantage of economic opportunities in a changing energy context.

We agree that these 'themes' are essential. We suggest that these four areas be confirmed as key **themes**, allowing actions to be evaluated against them throughout the 10 year plan. To achieve that, the collection of baseline information that has already begun will have to be completed, but can be done so even while actions are initiated.

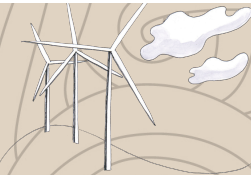
We have suggested **five key action areas** that we believe will deliver in the **themes**. There are:

1. **Renewable Electricity Generation embedded in local networks**
2. **Cosy Homes for all Dunedin**
3. **Effective Low Carbon Transport linking our communities**
4. **Food and Consumables**
5. **Evaluation, Monitoring, Information and Research.**

What we are suggesting is not substantially different from the Energy Plan Discussion document prepared by Council. It is more of a re-tightening of focus that we believe will help the city meet the government's targets for renewable generation and to lower carbon emissions while building greater resilience and ensuring Dunedin becomes "one of the world's great small cities"¹. We are aware that more recent work since the launch of the discussion paper refers to four envelopes: Energy Supply; Transport; Buildings; Food and Consumables which more or less agrees with our suggested 5 action areas.

There is a weighting in our contribution towards electricity generation and residential benefit. While we believe business and commercial activity can achieve great benefits in terms of energy efficiency and renewable generation, we anticipate that as the Dunedin energy 'culture' shifts and the energy market changes, business and commercial enterprise will make rational decisions in the marketplace, aided by information and experience, and will follow the market to substantially align with the goals set out in the Energy Plan. In other words, the Energy Plan will anticipate, but not lead transformations in

¹ "Dunedin is one of the world's great small cities" is the city vision as set out in the Energy Plan discussion paper, page 1.



the energy 'culture' of commercial building owners – those transformations will be led by the business sector instead. We also recognise that transport offers both challenges and opportunities, and our focus is on electrification.

BRCT approves the road-map approach. We value the Council clearly demonstrating where we are heading and demonstrating how we will get there. We approve of the ten-year timeframe that clearly allows evaluation and appraisal of actions. We strongly support the guardianship provided by the DCC and the strategic linking with other city strategies while applying the principles of: engagement with Maori/Treaty of Waitangi; partnership; leadership; affordability; and sustainability. In our contribution, we also underline two drivers that should sit behind the road-map: 'Low Carbon Transition'; and 'Emergency Planning'. These drivers come from the government, the community, energy research, and more, as well as being themselves a reaction to the challenges of achieving energy security in a period of climate change.

With a good road-map in place it will be possible to ensure that we are firmly on the path to ensuring every home in Dunedin is warm and cosy by 2025; that we secure a greater proportion of our energy needs from within city boundaries with a reduced carbon footprint; that the local economy is reinforced through actions to achieve low carbon energy resilience; that we understand where we've come from and where we're going.

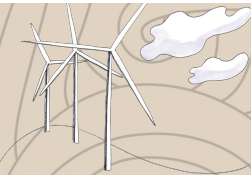
In our contribution we go into detail in each of these **five Action Areas**, and we anticipate each Action Area will help deliver other strategic goals such as Economic Resilience and Social Wellbeing. We have

included Councils original action point suggestions where we agree with them and added to them or given greater detail where we think it is required. Scattered through our contribution are a number of examples of energy innovation that demonstrate the entrepreneurial spirit is alive and well in Dunedin. We conclude our contribution by commenting on the drivers we argue reinforce the pivotal role the Energy Plan will have in helping us achieve Dunedin's vision and on other contributions we think add value. While the timeframe to engage, consult, participate and confirm the Dunedin Energy Plan is short, what is refreshing is the innovation and openness with which the Council has approached this important strategic task, all of which demonstrates that the city means business!

A). Five Action Areas

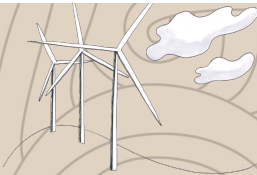
1. *Renewable Electricity Generation embedded in local networks*

By focusing on increasing the quantity of renewable electricity generation embedded in local electricity networks the Energy Plan can measurably reduce Dunedin's climate change and environmental effects while also boosting security of supply. Such a focus has the additional benefits of increasing jobs in energy related work, building local skills and assisting the development of social business. The government requires us to reduce our carbon emissions and to boost the amount of renewable generation and by focusing on these areas of action we can accomplish just that and measure it in the 10-year timeframe.



Areas of focus	Actions	To be achieved by
Local Power Procurement Policy (The Council desires to support the growth of renewable electricity generation within the city).	<ul style="list-style-type: none"> The Council commits to a local power procurement policy to ensure the city can be supplied with a minimum of 20% of its current electricity demand from within city limits in a cost neutral way and makes this policy a part of its energy supply contracts. 	2014
Boost Micro Generation to build energy resilience and increase energy literacy	<ul style="list-style-type: none"> The Council streamlines micro-generation installation processes and cuts red-tape. Council considers a targeted rate to boost micro-generation installations. Council facilitates a multi-stakeholder agreement with utilities, network owners, business, and community to provide a solar and micro-wind plan to power the whole city. 	2014 2014 2018
Public Buildings become showcase 'mini power-stations'	<ul style="list-style-type: none"> The Council works with stakeholders to secure tagged concessionary kW's for public buildings from providers as investment increases in private REG installations facilitated by Council. The Council works to ensure 80% of public buildings generate electricity and/or heat on location². 	2018 2023
Smart meter trial zone	<ul style="list-style-type: none"> The Council works with researchers, utilities and community to measure the social effects of energy innovation and energy literacy in one or more specific city zones 	2013-23
Local Power Procurement	<ul style="list-style-type: none"> A minimum of 20% of Council electricity demand is procured from renewable generation within Dunedin city 	2018
Ensure energy projects minimize and mitigate adverse environmental, social and economic affects	<ul style="list-style-type: none"> Support small scale, local renewable energy projects 	2013-23
Increase jobs and businesses in energy-related activities	<ul style="list-style-type: none"> Create sustainable employment through the development of local renewable resources Develop local energy supply chains, with a focus on job creation 	2013-23 2013-23

² See Byrd, H., et al., Measuring the solar potential of a city and its implications for energy policy. Energy Policy 2013, <http://dx.doi.org/10.1016/j.enpol.2013.06.042>

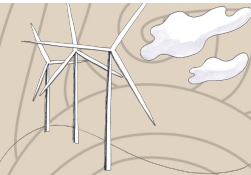


2. *Cosy Homes for All Dunedin*

It is estimated that 'fuel poverty' is affecting between 10% and 47% of households in Dunedin, with temperatures ranging from 8 - 10°C, far below the World Health Organisation standard of 18 - 21°. ³ Our climate requires attention to energy. BRCT strongly supports efforts to save costs and enhance quality of life resulting from energy efficiency improvements and we have been working to achieve this in many communities since 2009. To boost our economic performance, our social wellbeing outcomes and our environmental care, we need to do much more to ensure we all have access to cosy homes.

Areas of focus	Actions	To be achieved by
Reduce Fuel Poverty in Dunedin	<ul style="list-style-type: none"> Support developing a city-wide multi-stakeholder consensus on tackling fuel poverty. Become a keystone contributor in any multi-stakeholder 'Cosy Homes' group sharing ownership of the vision that "Every home in Dunedin is warm and cosy by 2025". Support the development of financial mechanisms to address fuel poverty in a serious and accelerated way to address the fuel poverty crisis 	2013 2013-14 2014-23
Facilitate access to affordable energy	<ul style="list-style-type: none"> Facilitate access to cheap firewood for community organisations working on addressing fuel poverty. Assess the benefits of promoting intermediary group electricity purchase arrangements (i.e. the utility warehouse) and promote if beneficial. Provide a targeted rate to encourage solar and micro-wind installations. 	2014 2015 2016
Waste to warmth	<ul style="list-style-type: none"> The Council completes a feasibility study on turning low value waste (cellulose) into insulation for low quality housing. 	2018
Problem Solving	<ul style="list-style-type: none"> The Council works with social agencies and community groups to establish teams of 'problem solvers', i.e. volunteer groups who can help with 'problem' homes such as those with difficult to insulate lean-to rooves. 	2015-23
Advocate for Dunedin/Otago/Southland special status	<ul style="list-style-type: none"> Represent Dunedin and the South's exception in terms of fuel poverty in national forums and seek recognition of this exception in government programmes (i.e. EECA programmes). 	2014-23
Rental Property WOF	<ul style="list-style-type: none"> Follow through on the drafting of a local bill to enforce a WOF for rental properties and submit. 	2014

³ Research: Professor Philippa Howden-Chapman, Department of Public Health, University of Otago is quoted as giving the higher figure of 47% while the 10% figure comes from the Fuel Poverty in New Zealand 2010 report from the University of Otago.

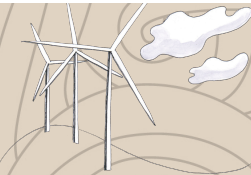


3. Effective, Low Carbon Transport Linking our Communities

Transport is one of the most challenging areas to address with the goal of increasing energy efficiency, with not only a diversity of stakeholders but also a powerful fossil fuel culture and lobby. Consumption of fossil fuels not only contributes to our increasing carbon emissions but also sends money out of the local economy at a time when fuel poverty is growing. We must be ambitious and adventurous in approaching the low carbon transport challenge and turn it into opportunity.

Areas of focus	Actions	To be achieved by
Improve the energy efficiency of transport in Dunedin	• Support work to increase the availability and uptake of low-carbon transport options, including public transport (with trains), cycling and walking.	2013-23
	• Reduce the trip needs of Dunedin residents through smart urban development and planning for resilient townships.	2013-14
	• Support increased use of rail for commuting, freight and inland ports and work with key stakeholders, i.e. Port Otago, Kiwirail, Taieri Gorge Rail and the Commuter Rail group ⁴ .	2014-23
	• Support the development of financial mechanisms to address fuel poverty.	2014
Become a 'champion' of low carbon transport	• Commission the retrofit of two Council vehicles from the Council fleet as EV's (i.e. via Hagen Bruggeman's EV retrofit business).	2014
	• Explore the viability of REVs (retrofitted electric vehicles) and alternative fuels for the city.	2018
Boost the Low Carbon Transport 'circulatory system' not just the 'heart line' (i.e. connections between settlements, not just from settlements/suburbs to the centre city).	• Work with community groups, landowners and local businesses to develop paper roads as low carbon transport links between settlements.	2014-23
	• Work with stakeholders to establish safe connections to the 'Ocean to Alps', Otago Central Rail Trail' and the 'Clutha Gold trail'.	2015-23
	• Continue to develop the city cycle network.	2013-23
Promote solutions	• Offer an R&D prize to Dunedin low carbon transport entrepreneurs and select the most promising.	2017
Second Generation District Plan	• Continue with development of the Second Generation District plan that focuses on smart urban development, resilient townships and enables a low carbon transport system	2013-14

⁴ See: <http://www.blueskinpower.co.nz/info.php?page=12>



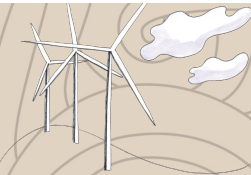
4. Food and Consumables

As explained in the discussion document, rising fuel prices (and long costly 'fossil food chains') place a drain on residents and leave the city vulnerable to price shocks and natural disaster. Our modern food and consumables are all energy dense and we can simply reduce our energy dependency in the area of food & consumables in a technical way, but the social changes will take longer and can be greatly assisted by Council facilitation and leadership to build greater resilience, and will boost not just social wellbeing, but economic resilience as well while reducing energy demand. All consumables, even those not so strategically important as food, are vulnerable to long costly supply chains. Focus on Food & Consumables does have a place in the Dunedin Energy Plan, and with all the activity currently underway, Council can act in a support capacity to boost existing initiatives and provide good planning for new initiatives.

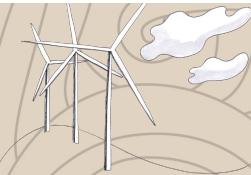
Areas of focus	Actions	To be achieved by
Food Sovereignty Working Group	<ul style="list-style-type: none"> Commit staff time to participating in community led Food Sovereignty initiatives and to provide liaison between community action and appropriate Council departments and strategies. 	2014
Local Food Initiatives	<ul style="list-style-type: none"> The Council cuts red-tape for small local food markets. Council works intensely with community groups to develop greater collective food production (i.e. community gardens and/or allotments on public or private land). Council provides clear guidelines for 'urban poultry' to assist residents to manage waste and raise poultry in the city. Support food-orientated community networks and initiatives 	2014 2014-23 2016 2014-23
Reduce and Reuse	<ul style="list-style-type: none"> Support community initiatives working on managing food waste. Examine the feasibility of bio-gas generation from food waste within distinct collection zones (settlements/suburbs). 	2016 2019
Champion local food provisioning	<ul style="list-style-type: none"> Publically advocate for local food provisioning in all public institutions both to retain economic value within the city and increase food sovereignty. 	2013-23

5. Evaluation, Monitoring, Information and Research

As Bill Currie of Powerhouse Wind points out in his contribution to the Energy Plan, the development of a "learning and change process [...] will support moving from the heavily carbon fuel dependent economy we live in now, to a social and technical framework based on renewable energy, and sustainably grown food". We need to understand where we are coming from (baseline) and what we aim to achieve (goals) with the actions required to get there (action plan). However, the process must also include a flexible approach and recognize that iteration is often necessary to bed in actions or make small adaptations to ensure success. Council is the guardian of the Energy Plan and the process.



Areas of focus	Actions	To be achieved by
Support better energy choices through better information and education	<ul style="list-style-type: none"> Support community energy literacy initiatives, i.e. independent expert energy advice and workshops. Encourage the community, particularly business and local government to examine operating as well as capital costs when investing in energy-related assets. Provide an annual competitive scholarship (value \$600) to community groups seeking to sponsor an individual to become a certified 'Energy Practitioner'. Employ an 'Eco-Design Advisor' to assist the building consents team and the community make good building choices to stem the rate of fuel poverty. Encourage business leaders to champion energy efficiency good practice within the city's business community. 	<p>2014-23</p> <p>2013-23</p> <p>2014-23</p> <p>2014</p> <p>2015-18</p>
Encourage the public sector to champion energy efficiency	<ul style="list-style-type: none"> Support high profile, visible and well-publicised energy efficiency improvements to public sector buildings. 80% of Public Buildings become showcase 'mini power-stations' 	<p>2014-23</p> <p>2023</p>
Reduce energy-related greenhouse gas emissions	<ul style="list-style-type: none"> Establish ongoing reporting of Greenhouse Gas Emissions (GGE), with a focus on energy-related GGE and make an annual public report on these. Partner with energy supply stakeholders to develop energy information methodology to enable a clear picture of Dunedin's energy situation to be established Set goals for energy-related emission reductions 	<p>2014-23</p> <p>2014-15</p> <p>2014</p>
Big Picture strategic energy evaluation	<ul style="list-style-type: none"> Develop a framework for assessing the sustainability of any proposed energy projects and their contribution to the targets. 	<p>2014-15</p>
Make more of the tertiary expertise in energy in Dunedin	<ul style="list-style-type: none"> Encourage knowledge transfer from the tertiary sector about energy issues. Support work to bring more energy-related research (research that aligns with targets) funding to the city. Support the development of practically-focussed tertiary training around energy Support the tertiary sector to develop energy-related research that attracts funding to the city. 	<p>2014-23</p> <p>2015-23</p> <p>2015-23</p> <p>2014-23</p>
Make more of the renewable energy expertise within the city.	<ul style="list-style-type: none"> Support and promote entrepreneurial sustainable energy businesses in the city in line with targets. Build multi-stakeholder consensus on collective energy opportunities, i.e. inner city biomass boilers. 	<p>2013-23</p>
Emergency Energy Planning	<ul style="list-style-type: none"> Develop an energy emergency plan for the City that provides an understanding of the roles and responsibilities of emergency response agencies, energy providers and distributors, and the community in partnership with Civil Defence. Include an Improvement Plan with recommendations to guide next steps in addressing the city's dependency on energy before, during and after an emergency. 	<p>2020-23</p> <p>2020-23</p>



B). Energy Entrepreneurialism in Dunedin

We have incredible renewable energy capacity in Dunedin, a strong sense of community and participation in energy issues and growing communication pathways between various stakeholders including business, academia, community and council. Dunedin could easily become a shining example of a city making a wildly successful renewable energy transition for all New Zealand and internationally. The entrepreneurial spirit is already alive and well in Dunedin, and with the Council as a responsible guardian, we can grow this spirit into a brilliant example of collaborative success resulting in practical outcomes and ensuring we truly do become "one of the worlds great small cities".

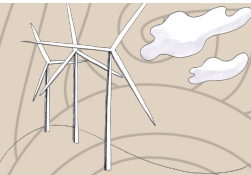
1. *Powerhouse Wind*

Powerhouse Wind is a small, dynamic Dunedin company that has designed, developed and commercialised the world's first commercial single blade domestic wind turbine right here in Dunedin, and has done so under great adversity yet with success. The idea the Powerhouse Wind team had was of a "wind turbine that could be as user-friendly as the best domestic appliances. They then used their experience in designing high-volume, mass-market consumer products to design and manufacture a wind turbine purpose-built for use in a domestic environment."

Powerhouse Wind is currently working in a workshop provided by the Otago Polytechnic, a profitable collaboration between sectors demonstrating a supportive energy community.



Tim Mepham, Richard Butler, William Early & Hans Scholz installing the Thinair 102 in Brighton, New Zealand

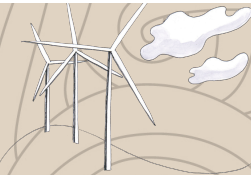


2. Retrofitted Electric Vehicles (REVs)

A Blueskin Energy Entrepreneur has self-funded and developed a successful EV retrofit kit to turn cars from our existing fossil fuel fleet into fully functional electric vehicles with currently a range of 160km without an additional charge. His design has wowed EV experts internationally and he is achieving significant international interest in the REV. His own REV is saving carbon entering the atmosphere and also functions as a backup energy source for his house which is almost energy neutral (with wind generation and solar thermal and solar PV generation in a grid connected system). The household system uses the REV's battery pack to balance out the household energy demand and reduce reliance on the grid. This intelligent system is all about managing energy use as producer and consumer (a prosumer) and is a simple example of how easy the energy transition is and the benefits it brings. The car's battery can be used as a household electricity storage system and when replaced as the car battery retains useful life as a domestic storage system. He has worked with Waikato University and Oxford University (UK) researchers and is currently helping retrofit a small number of REVs for cutting edge Dunedin residents and conversion of one commercial vehicle in Dunedin. Currently he is evaluating whether there is a local market for this product.



Under the bonnet of the Blueskin REV.

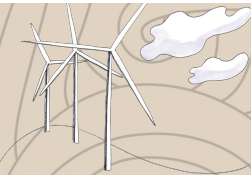


3. *Blueskin Solar*

In 2012 BRCT received strong community interest in solar energy and we began work to facilitate the uptake of solar in Blueskin. We learned residents' sought simple, cost effective options that the current market wasn't able to provide. BRCT worked with solar providers and was able to negotiate deals for Blueskin residents or people wanting to be part of a Blueskin scheme. Now residents have the options of A). an independent arrangement with a local supplier of solar kit; B). Solar solutions from national Solar provider 'Solarcity' which also delivers solar for public and community buildings as a bonus linked to dollars spent with Solarcity; and C). DIY options. An off-shoot of this work has been one new job created and several new jobs in development, with community-business collaboration on training and information sharing and the growth in expertise at BRCT to reinforce the BRCT energy advice service. At least 10 home solar installations have either occurred or are now underway since the project began.



BRCT Manager Scott Willis demonstrating the power of the sun outside the BRCT office.

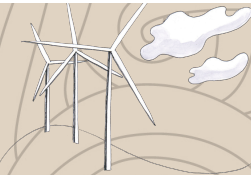


4. *Blueskin Wind*

The proposal to build a small community wind farm (with an installed capacity of approx. 2.55 MW) at Blueskin Bay continues Dunedin's reputation for taking 'ground-breaking steps when it comes to energy'. This is the largest renewable generation project Dunedin has seen since the opening of the Waipori Dam more than 100 years ago. Small scale wind is beginning to be developed in New Zealand, but never before has the community taken control and made decisions to manage the development of wind power and this project is leading the way not just in terms of community wind, but also in participation and community input into the RMA process. The project has the potential to generate the equivalent of 20% of Council electricity demand within only a few years. It will be developed as social business, providing social, environmental and financial benefit to the Blueskin community and investors, while bringing over a million dollars to the local economy, providing jobs, investment and attention to Dunedin. The 'Red Carpet, not Red Tape' promise made by the Council could easily lend wings to this significant Dunedin project and see Dunedin boost its green-energy credentials virtually overnight.



Surveying the site for the Blueskin wind development



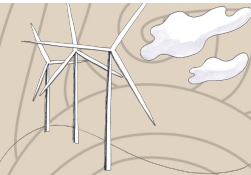
5. *Earth Batteries for local energy systems*

Callaghan Innovation Research Ltd⁵ has a successful and functioning earth battery functioning on Matiu/Somes Island in Wellington Harbour, charged from a small wind turbine and solar photovoltaic panels and providing energy for the island population. Callaghan Innovation has been in discussion with BRCT and Powerhouse Wind to establish a small pilot integrated renewable generation and energy storage system in Blueskin with the support of local residents in a suitable Blueskin location to demonstrate the practicality of earth battery storage in an integrated domestic scale trial. In April, Research Scientist Robert Holt visited Blueskin to discuss with members of the Trust and Bill Curry of Powerhouse Wind the proposed Blueskin pilot. This initiative, if successful, will bring profile to the city and support any plan and business that will show the rest of NZ and other small cities around the world the benefits of the integrated socio-technical energy laboratory approach.



Research Scientist Robert Holt (Callaghan Innovation) preparing a gas pipe to fuel a community barbeque from the earth battery on Matiu/Somes Island.

⁵ Callaghan Innovation Research Ltd is a Crown Research Institute, see: <http://www.irl.cri.nz/>



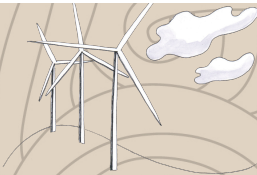
6. Reduction in Fuel Poverty

Information on improving home energy use in New Zealand is principally provided by the marketing and communications arms of the building products industry and providers of energy products. While the market may provide many good products, it is not concerned with social wellbeing, affordability, or non-market solutions. However, the challenge for non-market participants (like BRCT) who operate comfortably within the zone of social networks is how to deliver long-term results with little, or only short term funding. BRCT's independent expert energy advocacy service has grown in partnership or collaboration with other groups and agencies⁶. Despite resource constraints BRCT maintains online tools and a helpline while seeking to expand services and reach. A unified approach to addressing the challenge of making every home in Dunedin warm and cosy is now closer than ever before to becoming reality. BRCT remains committed to building relationships to grow a unified vision for the city and draws on its national partnerships to deliver local outcomes with the goal of making Dunedin "one of the worlds great small cities" where social wellbeing is enjoyed by all.



Transition Valley 473 member Alex King and resident Cassandra Thomas, with her nephew Hemi Birch (1) watch the new insulation go up into the ceiling of Ms Thomas' home. Photo by Dan Hutchinson (The Star)

⁶ We partnered with the 'Energy Cultures' research team to provide home energy audits and energy workshops in the communities of Blueskin, Brockville and North East Valley in 2012 and in 2013 we have been funded by Presbyterian Support Otago and the DCC to provide Energy Workshops and Training in Pine Hill, working with community volunteers and the TV473 Energy Group.



7. Business Innovation and Leadership

High Tech Dunedin based company ADInstruments are clocking up awards and accolades for their working environment ('best place to work'⁷), their heritage precinct revitalisation⁸, and their energy innovation to make their workplace more sustainable and productive in energy terms⁹. 'Buildings' is one the envelopes for action set out in a second draft of the Energy Plan discussion document. ADInstruments are demonstrating not only leadership on energy productivity in the business sector, but they are also making rational economic decisions which will help them improve their balance sheet while providing environmental and social benefits, through renovation of a heritage building. This type of outstanding business example aligns with the goals set out in the Energy Plan and many Council Strategies, and appears to have required only minor facilitation by the Council in the form of some rates relief. The Council, as guardian of the Energy Plan, can help bring the many stakeholders who want to contribute to making this city a great small city together, and begin to transform the 'energy culture' into something we can all be proud of and that business will aspire to achieve.



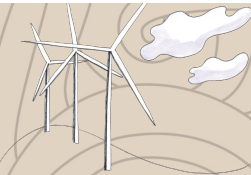
Winston Fenton (left) installs an LED light fitting in the Dunedin warehouse of ADInstruments owner Michael Macknight (right). Inset: The newly refurbished Donald Reid warehouse. Photo by Gerard O'Brien (ODT – copyright – all rights reserved)¹⁰

⁷ See: <http://www.odt.co.nz/news/business/213140/they-are-happy-and-they-know-it-adinstruments>

⁸ See: <http://www.odt.co.nz/news/dunedin/205416/high-tech-boost-heritage-precinct-plan> and <http://www.odt.co.nz/news/dunedin/255083/warehouse-renovation-shows-what-can-be-done>

⁹ See: <http://www.odt.co.nz/news/business/263917/energy-efficiency-goes-territory>

¹⁰ See: <http://www.odt.co.nz/news/business/263917/energy-efficiency-goes-territory>



C). Drivers

The Council has set out the drivers for this Energy Plan, including the 2010 "Peak Oil Vulnerability: Assessment for Dunedin" report by Susan Krumdieck, which indicated an obligatory transition in fossil fuel transport within the next few decades, creating the necessity for fundamental changes in the city's design, as well as the 2010 "Climate Change: Impacts on Dunedin" report prepared by Blair Fitzharris, which set out the very uncertain future we are entering. The Council working party the 'Community Resilience Forum' has also made recommendations for the city to develop an Energy Plan and join the many small cities around the world taking steps to manage the challenges and opportunities ahead. Both the Mayor and CEO have been very explicit in setting out government targets both for emissions (a 50% reduction carbon emissions by 2050¹¹) and renewables (NZ will have 90% renewable electricity generation by 2025) that the city must take note of. This is the correct approach.

Energy is the backbone of our society and affordable, reliable energy is essential to maintain the health of our city and its residents. Energy gives us cosy homes, makes transportation simple, powers the internet, makes business possible and keeps us connected. Without affordable, reliable energy, everything would be very different. However, much of the energy we use is driving us toward climate disaster and so we must change, not just because the government tells us to¹², but because we have a moral duty to future generations. Without a clear plan, we limit our choices.

There is a stark difference between making a transition to a low carbon energy future and developing an emergency plan to cope with future abrupt energy disruptions. An Energy Plan done well however can deliver both the required transition pathway as well as enabling us to prepare for emergency situations.

Powerful drivers we must consider as we construct the road map are:

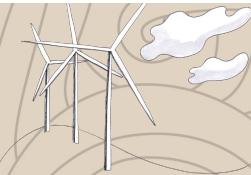
1. **Transition to a low carbon economy.** This transition imperative is required by the government as part of its carbon emissions target set in 2011. In parallel, the NZ Energy Strategy dictates that by 2025 NZ will generate 90% of its electricity from renewable generation¹³. Even if we did not have a moral urgency to act to reduce carbon emissions, we are required to work to achieve official government targets.
2. **Emergency Energy Planning.** As we have seen with the Christchurch earthquake, emergencies are part of the environment we live in. Yet as the climate becomes more chaotic, cities around the world are managing an increasing number of energy emergencies whether they've planned for them or not. Part of any emergency planning is an 'improvement plan' to assist developing steps to manage an energy disruption and managing Dunedin's energy 'risk' before, during and after an emergency¹⁴.

¹¹ As above

¹² In March 2011, the Government notified in the New Zealand Gazette a target for a 50 per cent reduction in New Zealand greenhouse gas emissions from 1990 levels by 2050. [<http://www.mfe.govt.nz/issues/climate/emissions-target-2020/>]

¹³ <http://www.med.govt.nz/sectors-industries/energy/pdf-docs-library/energy-strategies/nz-energy-strategy-lr.pdf>

¹⁴ See <http://www.portlandoregon.gov/pbem/53662>



None of us want the essential services we currently take for granted grind to a halt. None of us want a situation where supermarket shelves remain empty for weeks then months, where schools can't open, plastic money doesn't work and the lights dim, then go out. We are so reliant on energy that when the supply is disrupted, even for a short time, our society is unable to function as normal. Let us get the Dunedin Energy Plan underway and let us ensure that it contains good process. Once we have some successes under our belts and have understood the challenges more fully, we will be well placed to develop Emergency Energy Planning, such as that completed by the Portland Bureau of Emergency Management¹⁵ in the US.

The opportunities we have to build economic resilience, create jobs, strengthen our energy community, learn from our research and development institutions and to develop Dunedin as an exciting and world class 'energy laboratory' is something that should motivate us, and drive us to excel, not just in developing an smart energy city but also to design a deliberate, disciplined, and committed process, to ensure our city can become a beacon of sustainability.

D). Perspectives we support

We have either talked with, or worked with, or read the contributions of other groups and businesses who are contributing to the Energy Plan development. We wish to support these contributions. Contributions we support are:

- **Powerhouse Wind Ltd:** we support this contribution and particularly support the proposal to manage the plan in such as way as to develop Dunedin as a social and technical energy laboratory for the rest of NZ and other small cities, and to develop good process to do so.
- **Presbyterian Support Otago:** we support the focus in PSO's contribution on addressing fuel poverty and working towards the vision of "Every home in Dunedin being be warm and cosy by 2025".
- **Transition Valley 473 Energy Group:** we support TV473's focus on renewable energy solutions and community energy advice.
- **Generation Zero:** we support Gen Zero's focus on fuel poverty, renewable energy and determination to see Dunedin set a positive example for all NZ.

¹⁵ See: <http://www.portlandoregon.gov/pbem/53662>