



Energy Efficiency and
Conservation Authority
Te Tari Tiaki Pūngao

Energy Efficiency and Conservation Authority (EECA)

Briefing to the incoming Minister

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Overview

Three of the biggest challenges facing the world today are the current international financial crisis, climate change and oil price instability. Here in New Zealand, they have an impact on the affordability of energy, security of energy supply and the competitiveness of our economy.

Maximising energy efficiency and conservation and generating more energy from renewable sources can help us respond to these issues.

The current international financial crisis raises the importance of investing in areas that will strengthen New Zealand's international competitiveness and infrastructure, provide jobs and keep the economy developing. Energy efficiency is one of these areas.

Locking in energy efficiency will deliver energy and emissions savings worth billions to our economy. Investing in large and small scale renewable energy will help meet our climate change objectives.

EECA works with businesses, government, local government, communities and individuals to embed energy efficiency and renewable energy into their day to day activities.

We work with partners to design and deliver practical programmes that address specific barriers and support greater consumer choice by providing information and incentives to encourage action.

We are focused on tangible results - both energy savings and emissions reductions from energy efficiency and conservation, or encouraging more renewable energy. We measure energy savings in Petajoules (PJ).

For example, we anticipate 3 PJ of energy efficiency and conservation savings from our 2008/09 work programme. 3 PJs is about the amount of electricity used by all the houses in Southland and Otago in a year and will avoid about 467 kilotonnes of CO₂-e. Last year we supported 22 PJ of renewable energy.

There are many opportunities for investing in energy efficiency that cost significantly less than building new generation.

EECA's programmes deliver energy savings at an effective rate of 6.2c/kWh (including both public and private costs). This is compared to average retail charges of 22.0c/kWh for residential, 14.3c/kWh for commercial, and 9.3c/kWh for industrial customers, and the long-run marginal cost of new generation at 7.6c/kWh.

In addition to the energy savings, EECA's programmes deliver significant co-benefits: increased productivity and greater international competitive advantage for our businesses, a more secure energy system, healthier communities that live in warmer and drier homes, cleaner air, stimulating local industry, and climate change mitigation.

We take account of these wider benefits when designing and evaluating our programmes. We believe there are significant opportunities for energy efficiency and renewable energy to contribute towards New Zealand's economic and environmental development.

Who we are and what we do

EECA is a Crown entity. Under its legislation, EECA reports directly to the Minister of Energy. EECA is monitored by the Ministry of Economic Development which advises the Minister of EECA's performance.

EECA is the Government's primary delivery agency for energy efficiency initiatives and works with Ministry of Economic Development to advance renewable energy.

Our goal is to maximise cost-effective energy savings and the co-benefits for all New Zealanders, and stimulate the uptake of both large and small-scale renewable energy.

We work to exceed the targets we have responsibility for, set out in the New Zealand Energy Efficiency and Conservation Strategy (NZECS), launched in October 2007.

Focus on delivery

We are a delivery agency with a strong focus on action.

Our core business is determined by assessing the potential for cost-effective energy savings and emissions reductions.

We also go for PJs that cost more to deliver where there are significant co-benefits such as health improvements, on the basis that there is a total net benefit to the nation. We use these benefits to leverage significant co-funding from businesses, community trusts and consumers.

Our programmes are delivered through partnerships, with the private sector, community groups, industry associations and central and local government. We re-evaluate our programmes to ensure they are aligned with current circumstances and stakeholder needs.

We recognise that simple programme design is the key to success, and we work to review and simplify our programmes wherever possible.

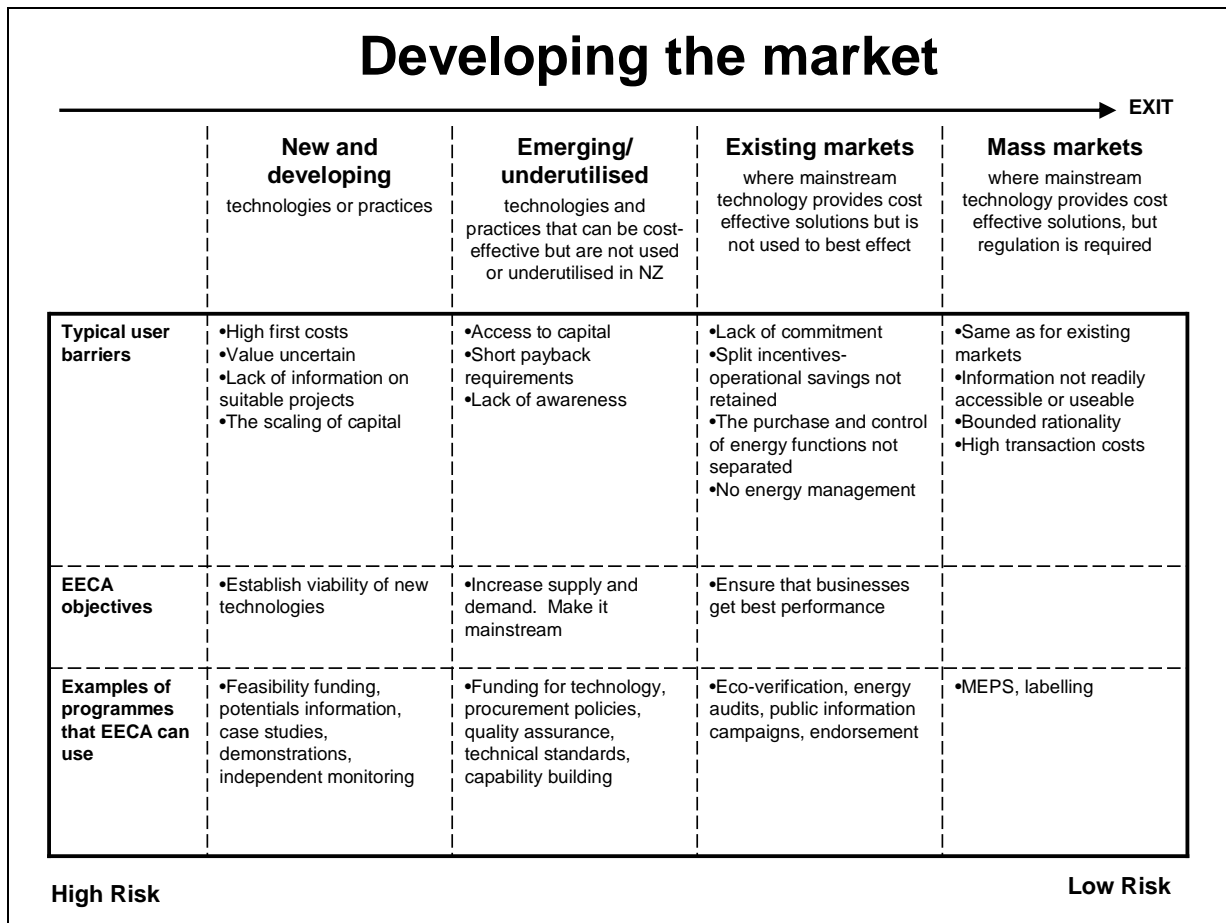
Developing the market

EECA's business is about assisting market transformation. We use a combination of incentives, information or, where necessary, regulation, to ensure we address the barriers with the minimal level of government intervention in the market. We step back where others can deliver outcomes effectively.

Our aim is to enable partners to build energy efficiency and renewable energy into their strategies and operations.

Figure 1 shows the mix of actions that are required to develop a particular market, technology or practice, depending on its current state. The further along the curve, the more mainstream energy efficiency has become, meaning there is less need for direct government assistance, and EECA can consider exit strategies from that sector.

Figure 1



Why energy efficiency and renewable energy are important

Internationally, energy efficiency is cited as one of the most cost effective solutions to our climate change problems. G8, EU and APEC leaders are prioritising energy efficiency.

Generating more energy from renewable sources reduces emissions and also maintains our international competitive advantage and strengthening our 'clean green' international brand.

Using the energy we have as efficiently as possible as we look to new sources of generation makes good financial and environmental sense, particularly during recession. Energy efficiency is one of the cheapest ways for New Zealand to balance supply and demand. The cost of building new generation and transmission infrastructure, the impact on the environment and the local opposition to many major generation projects reinforce the need to look to efficiency first.

The potential savings

The combined impacts of the NZEECS in the stationary energy sector (non transport) are forecast to be 30 PJ per year in 2025. This would require an annual reduction of around 1.8 PJ per year, equalling an energy efficiency improvement of 0.7% per year, compared with 0.5% per year in the period 2001 to 2005.

An additional 9.5 PJ per year of direct use renewable energy is forecast by 2025.

Together these lead to a 5,000 – 6,000 kilotonne reduction in CO₂ emissions per year in 2025.

In addition, in the light vehicle fleet, the NZEECS identified potential cumulative savings to 2025 of 175 PJ¹ and 11,800 kilotonnes of CO₂ emissions that could be realised depending on future policy decisions.

Co-benefits

As well as significant reductions in greenhouse gas emissions, energy efficiency and renewable energy deliver many co-benefits: energy is more affordable for businesses and families; businesses are more productive with better international competitiveness; we have a more secure electricity system; people are healthier from living in houses that are warmer and drier; and more jobs are created.

Progress to date

After the first National Energy Efficiency and Conservation Strategy (NEECS) released in 2001, New Zealand was sitting at an energy efficiency improvement rate of between 0.5 -1%.

The latest data (see Fig 2) shows that New Zealand's energy efficiency has been improving at 0.8% per annum over the medium term (includes transport sector and is similar to other OECD economies).

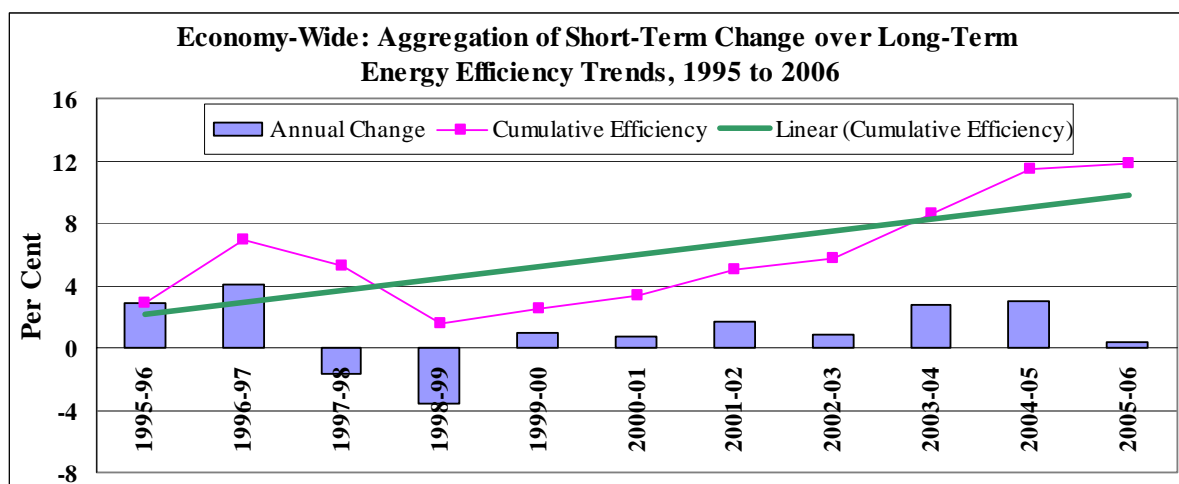
Improved energy efficiency has reduced energy demand growth by 42 PJ since 2001, which equals an average rate of about 8 PJ a year, worth about \$280 million². Government energy efficiency programmes are contributing about half of this.

The energy efficiency improvement has effectively offset energy demand growth, reducing it from 97 PJ down to 57 PJ from 2001 to 2006. Nearly two thirds of the efficiency gains came from the industrial sector; the balance is spread across the commercial, residential and passenger transport sectors.

¹ Cumulative savings. Figure provided by the Ministry of Transport

² Value based on cost savings across a range of energy types

Figure 2 – Energy Efficiency Trend to 2006



The blue bars show annual energy efficiency change for the past 10 year period. The cumulative effect is shown in the thin red line but year to year data variability means that a medium term trend (the green line) is a more useful expression of change.

Progress in renewable energy

In Figures 3A and 3B the blue bars show renewable energy with hydro normalised for “inflow” variations and the red bars the non-renewable energy provided to consumers in each year. This renewable energy normalised for hydro variability is a more accurate representation of the medium term output from renewable energy resources.

Figure 3A renewable and non-renewable energy trends to 2006

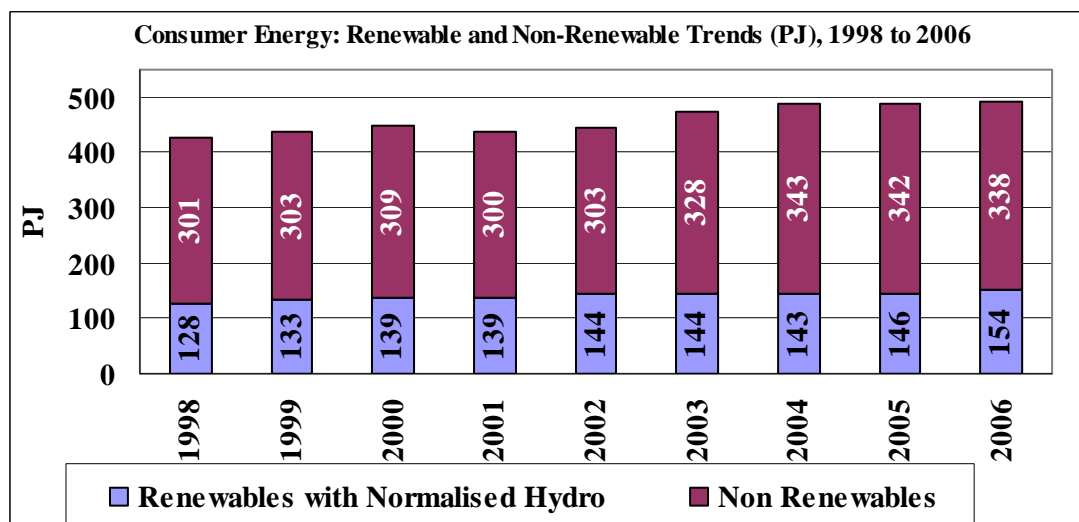


Figure 3A illustrates that there has been a steady increase in renewable energy when annual hydro inflow variability is accounted for. Renewable energy used by consumers has increased from 139 PJ in 2001 to 154 PJ in 2006, a 2.5 PJ increase per year.

Figure 3B renewable and non-renewable energy share (%) to 2006

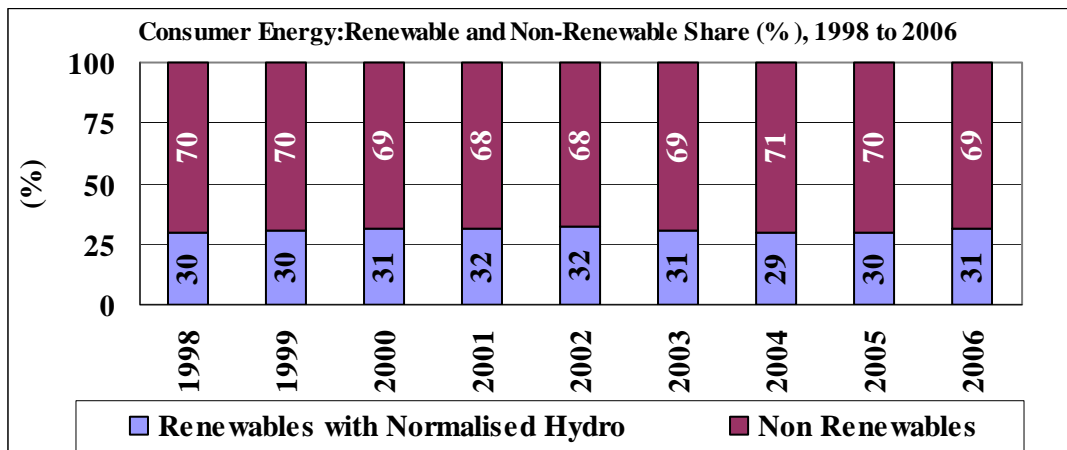


Figure 3B shows that the hydro adjusted share of renewable in total consumer energy has been static for the past 10 years. This trend is due to relatively rapid increases in fossil fuel use (in transport and electricity generation). The NZEECS 90% renewable electricity target to 2025 aims at increasing renewable share in total electricity/energy used in New Zealand.

The immediate opportunities

Targeting the significant savings in business

There are over 346,000 businesses that use about 353 PJs per year, or 68% of New Zealand's total energy consumption. There is a significant opportunity for productivity improvements and energy reductions from more energy efficiency and renewable energy in the business sector.

Uptake of energy efficiency is variable by size, nature of industry and individual companies operating within these industries. Apart from major users, energy efficiency is not a strategic business issue for many, and lack of information or high investment hurdle rates can be barriers.

Energy efficiency is the easiest and cheapest way for most businesses to deal with rising energy costs and reduce their emissions. On average, for every \$1 spent on an EECA energy audit, \$26 of energy savings are identified and \$10 realised. Many energy efficiency projects offer a two year or less pay back period, making investment an attractive option.

There will be a continued need, and increasing demand, for good information, advice and demonstrations of best practice to address the barriers and realise the potential that is available for both large businesses and small to medium enterprises (SMEs).

Our businesses have a real opportunity to gain international competitive advantage from good energy practices. A collective commitment from New Zealand's businesses strengthen our overall 'clean, green' brand which is vital for our export and tourism sectors.

Making the most of the cost effective products programme

EECA's products programme covers a number of domestic and commercial appliances.

The potential for savings in this area is significant. The products programme is currently projected to save 11.6 PJ per year by 2020. This will save consumers \$825 million per year in reduced energy costs by 2020.

In the products area, the biggest gains are made through combining regulation (minimum energy performance standards) and information (energy performance labelling and ENERGY STAR) with aggressive marketing from appliance suppliers.

New Zealand has obligations with Australia under the Trans Tasman Mutual Recognition Agreement (TTMRA) to introduce and maintain joint minimum energy performance standards and mandatory energy performance labelling on an agreed range of product categories.

Cabinet has given in-principle agreement to implement the trans-Tasman products work programme. It is critical to ensure New Zealand maintains parity with international product regulations. If we fall behind our partners we risk becoming a dumping ground for cheap and poor performing products. The Australian government in particular has moved quickly to increase the range of products included in this programme.

In the case of lighting, Australia is moving, along with much of the developed world, to using minimum energy performance standards to remove the least efficient general service lighting product class. Consistent with the TTMRA relationship, New Zealand is proposing to follow suit, which would result in cumulative energy savings and environmental benefits of nearly \$500 million by 2020. The proposed minimum energy performance standards were widely and negatively reported in the media. The lesson in this instance is to ensure consumer information simultaneously provides the public confidence in the reasons for change and generates an understanding that regulation will still allow choice between technologies.

Household energy efficiency

There are around 860,000 houses (about two-thirds) in New Zealand with insufficient or no insulation, and our indoor temperatures fall well below World Health Organisation recommended limits. This results in cold, damp homes that waste energy.

As energy prices continue to rise, there is a risk that without support to make fundamental changes to their homes, many people, especially the old, very young, and sick, will be colder, less healthy and unable to meet their energy bills. And without good information people who can afford to make changes themselves may not make the investment.

Investing in upgrades of insulation has a fundamental effect on the cost of providing health care. Research from the Wellington School of Medicine indicates that for every dollar spent on insulating cold houses, there is a two dollar return in energy and health savings. One night in hospital costs the same as insulating a whole house and locking the benefits in for decades to come.

The research also indicated that children in warmer, drier homes have less time off school and adults have less time off work.

Investing in insulation programmes in the regions also creates an industry and jobs for local people, often long term unemployed.

EECA believes that a substantial investment is required to improve household energy efficiency in New Zealand. The cost to bring the insulation in our houses up to standard is conservatively estimated at \$2.5 billion. If clean, low-emission heating costs are added, this rises to well over \$5 billion.

Overcoming the barriers to renewable energy generation

Generating more energy from renewable sources reduces our emissions. It is also key to maintaining our international competitive advantage and strengthening our 'clean green' international brand. We already are among the world leaders in renewable energy generation, but there is potential for much more.

Meeting the 90% renewable electricity target by 2025 is a significant but achievable challenge, but we believe it can be done without sacrificing security of supply. Feedback from renewable generators indicate that issues around the grid, the costs of some renewable energy infrastructure, and the length of time it takes to get through the RMA consenting process are the main reasons impacting on new renewable generation being built in New Zealand.

Working with local government and Maori to design and deliver excellent programmes

Local government plays a crucial role in translating central governments energy policies and making them work for their regions. They are the experts on the ground and in direct contact with their communities. Local government implements the Building Code and plans regional transport use, land-use, urban planning, air quality and community wellbeing. They have a major influence in these areas and are big energy users themselves. Regional energy strategies and regional policy statements are vital to ensuring central government policy works on a local level.

EECA relies heavily on local coordination and commitment to implement its residential, transport, business and renewable energy programmes.

Some councils are already leading by example and are making significant energy efficiency gains.

There is an opportunity to work more closely with local government to develop a series of solid regional energy strategies that learn from those councils who have already had success, and have buy-in from all local stakeholders and contain clear actions and regional targets.

The more involved and committed local government are the better the outcomes.

EECA has also been working with Maori to identify energy efficiency and renewable energy opportunities, particularly focussed on building social and economic wellbeing. Opportunities include building sustainable energy business, establishing Maori owned operations to retrofit houses and developing sustainable Marae. EECA is currently working with Nga Rauaru on a pilot project to identify the opportunities, and is in the process of developing similar relationships with other Iwi.

Encouraging energy efficiency

Government can allocate significant funding to energy efficiency and renewable energy initiatives, but if people don't understand the benefits, don't feel motivated to act, or simply don't know what is available to them, then we will not see the kind of savings that are available to us. One of the main barriers is the lack of information. Our strategy is to inform consumers on the choices that are available to them.

Widespread public awareness and acceptance requires a significant and ongoing investment in information strategies. At one end of the scale is good information, at the other regulation, for people to make an informed choice. Most programmes require a balance.

All of our work streams, across all sectors need to be supported by information strategies of some kind. The size of the campaign and the commitment needs to be matched to the size of the barrier we need to overcome.

Widespread public awareness and acceptance that results in people taking action, requires a significant and ongoing investment, and a co-ordinated approach across government.

Transport

The transport sector consumes around 45% of all New Zealand's consumer energy and by international comparison our vehicle fleet is inefficient. New Zealand lags behind other OECD countries in terms of policies and measures to improve the energy efficiency of the fleet.

Presently there is no policy measure to give effect to the NZEECS target of lowering the average carbon intensity of the light vehicle fleet to 170grams CO2 per km by 2015 (which would save 175 PJ of transport energy by 2025 and have other significant environmental and health benefits). There are opportunities to develop measures appropriate to New Zealand, including incentive based measures.

Successful delivery of the New Zealand Energy Efficiency and Conservation Strategy

Achieving the targets in the NZEECS would lock in energy and emissions savings worth billions to our economy. The first Strategy, launched in 2001, was on track to achieve its renewable energy goals, but fell short on energy efficiency. The Strategy made some good progress in energy efficiency, but our 2006 review showed that we needed more specific, sector based actions, clear targets and accountabilities and, above all, the resources to do the job.

The NZEECS addressed these issues. In most sectors we now have clear targets, clear accountabilities and we are making good progress towards these targets. Investing in energy efficiency pays for itself over time and adequate funding is needed to make sure we realise all the potential benefits. EECA has a memorandum of understanding with the Electricity Commission to support a co-ordinated approach to programme delivery.

The value of our programmes

EECA has estimated the net benefits delivered to the economy of its main programmes. The analysis includes an estimation of some of the most significant co-benefits (some smaller benefits such as additional environmental benefits are excluded as they are harder to compare and attribute.) The analysis shows the overall energy impact of EECA's programmes over a 30 year period is around 762 PJ or the equivalent of New Zealand's total energy use for over 18 months³.

All current programmes are estimated to have a net benefit to the economy. Those programmes with a track record of delivery have more certain future costs and benefits than those in the development phase. Those programmes providing the greatest net benefits address a market failure or barrier, sometimes through minimum standards or mandatory information disclosure.

Programme description	Forecast PJ savings (2008 – 2038)	Forecast cost to Government (\$million, 2008-2038) ⁴	Forecast national net benefit (\$million, 2008-2038)
Minimum Energy Performance Standards and Energy Star voluntary endorsement of high efficiency products	209	21.9	9,382
Vehicle Fuel Economy Labelling	11.7	3	356
EECA business energy management programme	14.6	25	239
Energy Intensive Business (CO2 reduction demonstration projects)	60.6	5.1	852
Sustainable transport biofuels	241	167	3,009
ENERGYWISE™ Home Grants and interest subsidy schemes	41.8	383	406
Solar hot water heating promotion and grants	18.9	15.8	124
Wood energy programme	120	8.6	650
Home Energy Rating Scheme	39.7	15.2	138
Renewable electricity promotion and support, including Marine Energy Fund and industry association support	74	10.4	227
All programmes	832	655	15,383

³ EECA programme evaluation tool

⁴ Assumes continuation of programmes with a discount rate of 5% applying for 2008-2038

More detail on our programmes

Better business

NZEECS target	11.5 PJ or over 3100 GWh pa by 2025
Key benefits	Significant energy savings; significant emissions reduction; increased profitability; international competitive advantage; underpins New Zealand's 'clean, green' image
Highlight in 07 /08	1.3 PJs energy (\$26 million) saved 0.6 PJ increase in renewable energy (60,000 tonnes of wood fuel replacing coal and gas)

There are over 346,000 businesses that use about 353 PJs of energy per year, 68% of New Zealand's total energy consumption. This includes both stationary energy, approximately 225 PJs or 43% of the total, and 127 PJs of transport energy or 25% of New Zealand's total consumer energy demand.

Fossil fuels (oil, gas and coal) account for the largest share (45%) of the business sector's energy consumption (including transport). This is followed by electricity at 38%. There are significant opportunities for energy and emissions savings across business.

The price on carbon emissions and the global attention on improving sustainability within business provide the right setting for EECA's programmes, but there are still some barriers.

Uptake of energy efficiency is variable by size, nature of industry and individual companies operating within these industries. Apart from major users, energy efficiency is not a strategic business issue for many, and lack of information or high investment hurdle rates can be barriers.

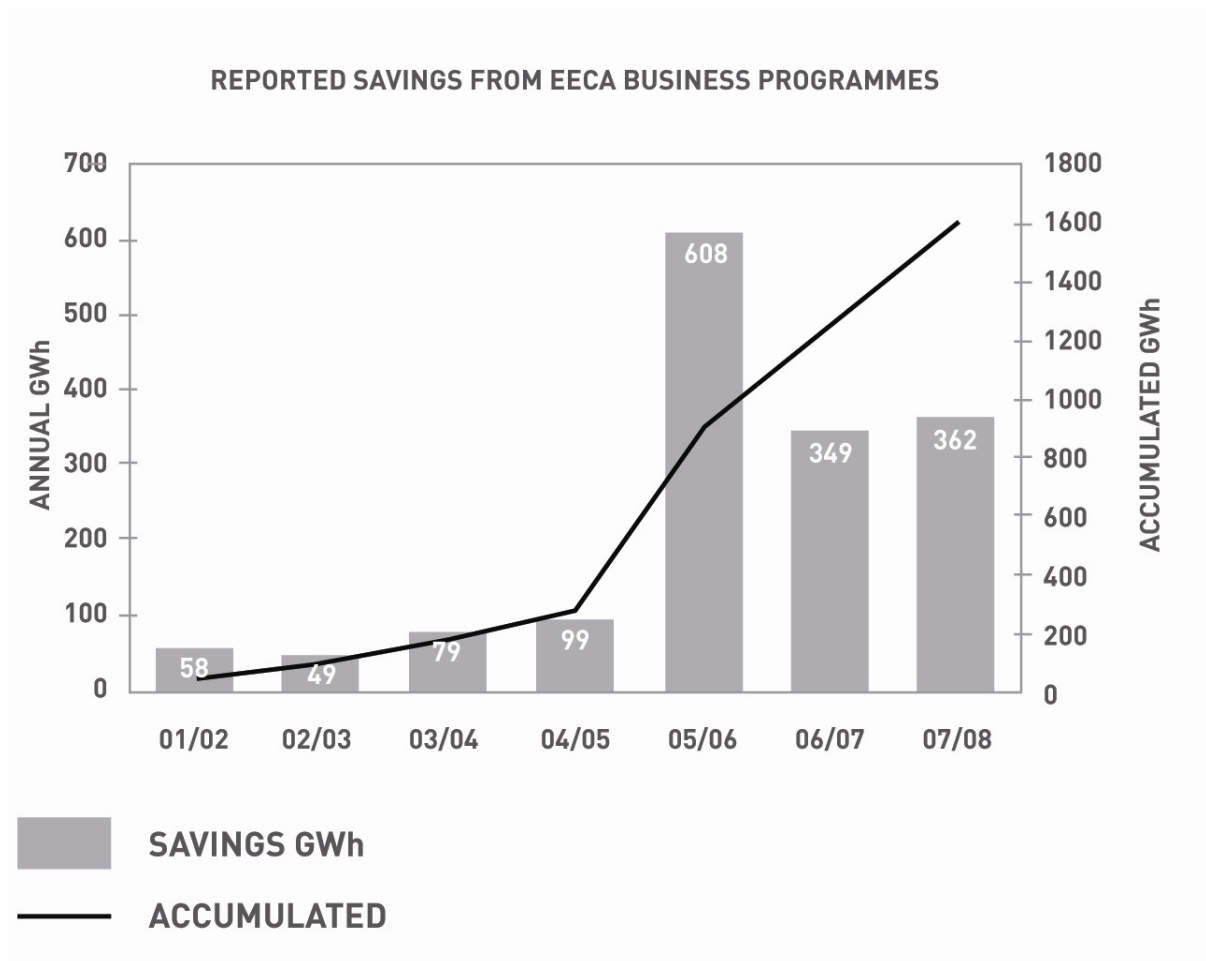
EECA works with a broad range of businesses and industry sectors encouraging them to invest in energy efficiency and renewable energy. Our role is to share information and encourage replication of best practice and energy-saving technology. We share risks with business by providing financial assistance for new or underutilised energy technologies. We speed up the use of renewable energy within business by providing financial assistance for investments in cost effective supply and demand side infrastructure.

Our work with Tourism Industry Association, Plastics NZ, Seafood Council, and Cold Store Association energy efficiency programmes are showing that targeting industry groups is a cost-effective way to get good savings. Savings of up to 15% across the sector are possible.

EECA's key activities in this sector:

- Funding for energy audits
- Energy management sessions
- Account manager support for large energy users
- Staff training; financial assistance to encourage energy efficient technologies
- Information sharing to encourage replication of successful projects
- Funding of infrastructure and information to encourage the use of wood energy
- Working with industry groups on industry specific action plans.

Progress to date



* 05/06 reflects Fonterra energy efficiency programme

At home - warmer, healthier more energy efficient homes

NZEECS target	65,000 grants for insulation retrofits for low-income homeowners by 2012 70,000 subsidies or grants for middle-income homeowners by 2015 4,000 clean heating upgrades by 2012
Key benefits	Energy savings; emissions reductions; significant health benefits for families; reduction in pressure on health care system; benefits to business through less absenteeism; regional economic benefits through creation of local jobs; applies to all New Zealanders; raises awareness of sustainability issues
Highlight in 07 /08	insulation and energy efficiency improvements in 11,000 homes delivering energy savings of \$1.5 million and health savings of \$2.3 million

The residential sector accounts for approximately 64 PJ (excluding domestic transport) of energy consumption each year, or around 13% of the nation's energy use. Electricity provides 73% of residential energy consumption (47 PJ p.a.) to approximately 1.6 million houses.

EECA's residential programmes, under the brand ENERGYWISE™ homes, are our most visible. Compared with other programmes, such as Business or Products, the energy savings are relatively small. However the significant co-benefits make this a valuable initiative. We have a legacy of cold, old homes in this country and the statistics prove that this has a significant impact on people's health.

Investing in insulation projects in the regions also stimulates the local economy. Insulating houses in a labour intensive process and as the projects ramp up, more local people are employed.

860,000 homes in New Zealand have either no or insufficient insulation. 235,000 of these poorly insulated homes are occupied by people on low incomes and 375,000 are occupied by people on a moderate income.

The ENERGYWISE™ homes programme funds insulation and clean heat (low emission heating such as heat pumps or efficient wood burners which significantly reduce air pollution). The amount of financial assistance depends on the income level and need of the householder.

Our longest running programme in this sector targets low-income homeowners, offering insulation and other energy efficiency measures for little or no cost. This programme relies on financial contributions from regional government organisations, businesses and community groups. Currently EECA pays 60% and 40% comes from other funders.

40% of low-income families live in rented accommodation. The ENERGYWISE™ programme also targets landlords with low-income tenants who can qualify for a government subsidy to insulate their properties. There has been low uptake of this programme to date, partly due to the economic climate and partly due to the split incentive – the landlords pay, but it is the tenants that benefit. We are reviewing this programme to try to improve the uptake.

A new programme added this year targets middle-income New Zealanders offering a one off grant or loan to encourage them to install insulation or clean heating. This programme has been slow to take off; again due to the economic situation and the time it took to get delivery partners up and running. We have reviewed this programme and made improvements, including offering a larger grant and we expect the programme to gain momentum.

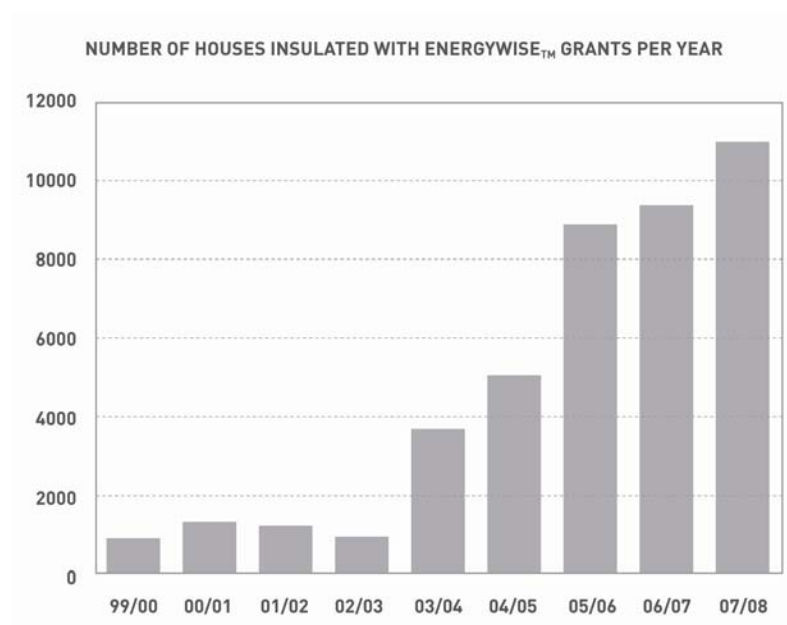
The ENERGYWISE™ homes programme is delivered through partners throughout the country. The funding is supported by a nationwide information campaign that raises awareness of the issues associated with cold, damp homes, points people to available government funding, and encourages those who can afford it, to make their own improvements and consider energy efficiency when making purchasing decisions.

EECA has been operating a voluntary Home Energy Rating Scheme (HERS) since December 2007 and are currently investigating future options for this programme.

EECA’s key activities in this sector:

- Funding for insulation and other energy efficiency measures for low income households, landlords with low income tenants, and middle-income households
- Funding to replace high emissions heating with ‘clean’ alternatives
- An energy rating scheme for houses
- A bounty to remove inefficient fridges
- An information and social marketing campaign.

Progress to date



Better products

NZEECS target	14.5 PJ or over 4000 GWh pa by 2025 17 new product classes to be added by 2012
Key benefits	Significant energy savings; emissions reduction
Highlight in 07 /08	1.8 PJ energy saved, worth NPV 5% = \$137million

The products programme delivers significant energy savings and is one of EECA's most cost effective programmes. Appliance standards are recognised internationally as being particularly effective at reducing greenhouse gas emissions and generating energy savings.

Many common types of energy-using products (including appliances, whiteware and vehicles) in New Zealand consume more energy to perform their function than they need to.

The products programme focuses on providing consumer choice among the most efficient products and eliminating the worst energy performers through regulation. Together they provide an incentive for manufacturers to constantly improve the energy efficiency of products.

Minimum energy performance standards – known in the industry as MEPS –eliminate the worst performers from the market. Once a minimum energy performance standard is enacted in the regulations, it becomes unlawful to sell a product that doesn't meet it. These regulations go on 'behind-the-scenes' and are largely invisible to the consumer.

As a result of these standards being introduced in 2002, New Zealand households and businesses have accumulated savings of over \$220 million on their power bills. These savings will continue to accumulate over the lifetime of the products.

New products are planned to be added to the list already subject to MEPS. The total savings as a result of the MEPS programme is estimated to be \$5.87 billion by 2020.

We work in partnership with Australia to develop and implement MEPS.

The introduction of MEPS is usually non-contentious. However, the current proposal to introduce MEPS for lighting from November 2009 has divided public opinion, largely due to the incorrect perception that people will be forced to use CFLs and that CFLs come with many problems.

The proposed MEPS are in alignment with worldwide moves to improve lighting efficiency. The Australian government is going a step further and introducing an import ban as well. EECA has worked closely with Australian officials and industry to support the introduction of a range of lighting technologies, in addition to CFLs, that are more energy efficient than incandescent bulbs but that look and perform the same way.

The lighting MEPS are expected to result in energy savings and environmental benefits of nearly \$500 million by 2020.

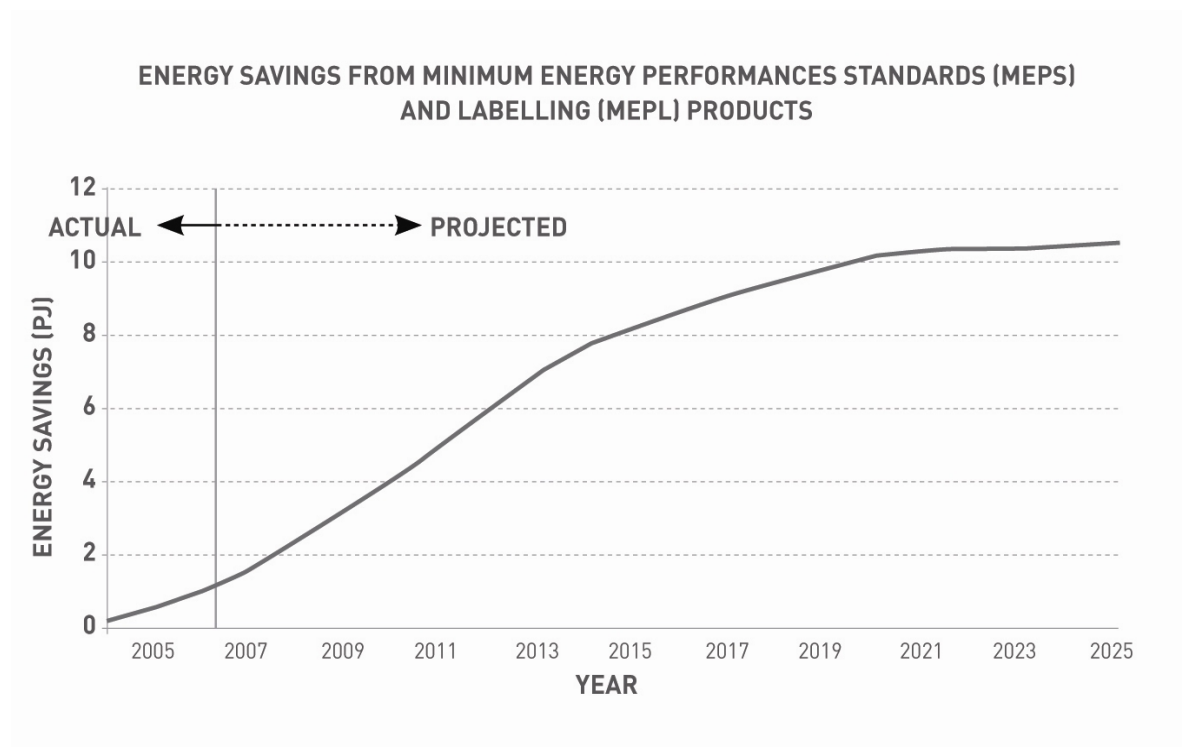
It is crucial, however, to support the introduction of any MEPS with good, credible information on the benefits of efficient lighting and the range and functionality of alternative technologies available. This will result in greater consumer confidence and acceptance of efficient lighting.

As with all MEPS, a discussion document is scheduled to go out for consultation to the lighting industry and other stakeholders. The discussion document will propose an appropriate MEPS level and seek feedback on the impact of this level before any final decisions are made.

EECA's key activities in this sector:

- Minimum energy performance standards
- Mandatory energy performance labels
- ENERGY STAR label
- Partnerships with major electrical retail chains
- Checking and enforcing compliance
- Information programme.

Progress to date



On the road - more efficient vehicle travel

NZEECS target	5PJs a year of renewable transport fuel by 2012. Halve per capita transport emissions by 2040 Fuel efficiency standards for new and used vehicle imports – 25% improvement by 2015
Key benefits	Energy savings; significant emissions reduction
Highlight in 07/08	world-leading fuel economy labelling programme rolled out, predicted to save 6.2 million litres per year by 2013

The lead responsibility for transport energy efficiency lies with the Ministry of Transport.

Transport accounts for 44% of our total energy and 43% of our energy related CO 2 emissions.

Unless action is taken, emissions from this sector are set to grow by 35% by 2030. The NZEECS contains a target of a reduction of greenhouse gas emissions from the transport sector by 50 % (from 2007 levels) by 2040. This is an enormous task.

Vehicle fuel economy labels

EECA's work in transport includes introducing world-leading vehicle fuel economy labels so that New Zealanders can choose cars that use less fuel, emit less carbon dioxide and are cheaper to run.

The vehicle fuel economy labelling programme requires motor vehicle traders to display a label for cars for sale, where the information is available. The label shows a star rating out of six (for the most efficient) and an indicative cost of running the car for a year.

The programme is a world first – while other countries, including Australia, require labels on new cars, no other country requires them on used cars.

We have given technical support to the introduction of sustainable biofuels and lead the public information in this area.

Biofuels

We have given technical support to the introduction of sustainable biofuels and lead the public information in this area. The programmes include hosting a leading industry conference, providing information to the motor trade and consumers, industry consultation, technical advice and reports on biofuel sustainability.

EECA has supported the early introduction of biofuels by Gull and Mobil with over 450,000 litres (.01 PJ) of biofuels sold in the July-September quarter alone – ahead of the Biofuels Sales Obligation.

Some initial work on helping pave the way for electric vehicles is also underway.

For example, EECA's industry leading annual biofuels conference now also covers electric vehicles as well as biofuels, as the use of electric vehicles have the potential to substantially increase both energy efficiency and the use of renewable energy.

EECA's key activities in this sector:

- Vehicle fuel economy labelling
- Compliance checking
- Contributing to policy work around biofuels
- Leading the biofuels information campaign
- Efficient driving information campaign
- Biofuels and electric vehicles conference.

Energy supply and renewable energy

NZEECS target	support 90% renewable electricity by 2025 15,000 – 20,000 solar water heat units by 2010
Key benefits	Supports faster uptake of renewable energy; emissions reduction in energy generation including transport; consumer awareness of environmental issues; diversity of supply; and renewable energy industry development
Highlight in 07 /08	Awarded the first grant from the marine energy fund - \$1.85 m Supported 22 PJ of renewable energy projects supported in the consenting process.

Investment in renewable energy is critical to safeguard New Zealand's international competitiveness. Developers are already in the process of making significant investments in New Zealand's renewable energy resources, a strong indication that they regard renewable generation as an economically attractive option.

Reaching the 90% renewable electricity target will be a challenge, but it is achievable. There are some low cost, renewable generation opportunities available to us at the moment. However, to achieve the target, recent modelling indicates that a carbon price of approximately \$50 (per tonne of CO₂) will be needed.

Renewable generation capable of meeting the target has already been identified.

Electricity security of supply is paramount, but integration of wind generation, non-intermittent renewables such as geothermal generation, and demand-side participation measures can result in an increase in the proportion of renewable energy generation without compromising security of supply.

Feedback from developers indicate that there are still major challenges to bring renewable generation projects to fruition with issues around RMA consenting, the relative costs of some renewables, and adequate grid access.

Public support for renewable energy is high. EECA's regular survey into consumer attitudes to a range of energy related issues indicated that wind energy was the most preferred (88%) followed by marine (75%) and geothermal (65%).

Renewable energy

EECA supports renewable energy by ensuring that the national benefits of renewable energy projects are given appropriate consideration in resource consent hearings.

We raise awareness of the benefits and opportunities for renewable energy among local government, businesses and the general public.

We work with renewable energy industry associations, such as the New Zealand Wind Energy Association, to identify and overcome particular barriers to uptake. This includes technologies in their infancy such as marine energy.

EECA administers the new Marine Energy Deployment Fund. Round one of the fund was fully allocated. Round two opened for applications on 31 July 2008. This fund promotes the commercialisation of marine energy projects in New Zealand waters. More than 14 projects are currently in differing stages of development around New Zealand.

Solar water heating

The cost effectiveness of this programme is comparatively low compared to many other energy efficiency technologies. \$1,000 spent on solar water heating produces national benefits of \$1,200. As a comparison, \$1,000 spent on the products programme produces \$5,300.

However, solar water heating is an attractive proposition for more residential, commercial and government uses, particularly following a range of activities to boost the quality of products and installation (e.g. performance testing and industry training). Now eighteen months into a three year programme, the demand for solar water heating is increasing following industry re-organisation, development and simplification of solar water heating incentives. Consumers in all sectors expect financial incentives, which are commonly available overseas, to kick start industry development. Two thirds of the funding is targeted at grants and although 07/08 saw a decline in overall sales, sales in 2008 are showing signs of growth.

The challenge for us now is to meet the growing demand for government grants and to ensure that energy performance of solar systems meet consumers' expectations.

EECA offers information and grants to householders, government and commercial organisations, and has undertaken an industry development programme looking at improving Standards, increasing training, improving information and growing the industry.

Recently steps have been taken to reduce the criteria around attaining a grant and increasing the grant from \$500 to \$1,000. The programme also includes a constantly oversubscribed innovation fund and a new pilot fund for hot water heat pumps.

Distributed generation

We have recently established a pilot feasibility fund for distributed generation projects - projects where electricity is generated from small scale renewable generation plant and used on site or injected into the local grid. The fund was established to assist project developers undertake feasibility studies to assess whether their project is likely to be commercially viable. We had over 100 applications and awarded funding to 16 projects with a total installed capacity of 35 MW with a generation potential of 0.4 PJ. This indicates that there is much potential and interest in this area.

EECA's key activities in this sector:

- Addressing barriers to renewable energy generation via information provision to the public and councils
- Funding for industry associations
- Financial assistance
- Technical advice
- Industry development
- Communication and marketing.

Government leading the way

NZEECS target	To lead by example in energy efficiency and emissions reductions A 10% reduction in energy use per employee in core public service buildings by 2012.
Key benefits	Leadership; establishing national and local level policies; significant energy savings; emissions reduction.
Highlight in 07 /08	7% energy savings over winter 2008

Government and local government have the most significant impact on energy efficiency and renewable energy. Both set the policy environment which influences how energy is used. Central government policies include the emissions trading scheme, electricity governance rules, RMA, and national policy statements.

Local government also establishes regional level policies and implements government policy at the local level. Regional policy plans, city/district plans, implementation of the RMA and building regulations, transport planning and policy, air quality and urban planning are all examples of the considerable influence local government exerts on energy. Many regions are now specifically looking at energy efficiency and renewable energy and developing regional energy strategies to bring actions together across the region.

As the developers of policy, central and local government also have a responsibility, and opportunity, to show leadership in their own operations. It is estimated that around 10-15 PJ per year are used in the government/local government sector. Specific sectors, such as health, tertiary education, schools, defence, and local government infrastructure, use the bulk of energy. We target these sectors to showcase innovative energy efficiency and renewable energy projects that can be replicated across the private sector.

There is an opportunity to work closely with more local government bodies to develop a series of solid regional energy strategies that learn from those Councils who have already had success, have buy-in from all local stakeholders and contain clear actions and regional targets.

There is also an opportunity to focus attention on energy use by encouraging government departments to report energy use in their annual reports, and to set strong energy efficiency targets in their statement of intents.

EECA's key activities in this sector:

- Crown loans
- Regional energy strategy development
- RMA plans and policies.

Encouraging energy efficiency

A key part of EECA's role in delivering the NZEECS is promoting public awareness. All of our work streams, across all sectors need to be supported by promotional strategies of some kind. The size of the campaign and the commitment needs to be matched to the size of the barrier we need to overcome.

One of the main barriers to the widespread uptake of energy efficiency is the lack of information. Consumers are often unaware of the benefits and how to realise them. We promote consumer choice.

Our responsibilities, as defined under the EECA Act, are:

- Promoting public awareness in New Zealand of the importance of energy efficiency and conservation and the use of renewable sources of energy;
- Promoting practices and technologies to further energy efficiency, energy conservation and the use of renewable sources of energy; and
- Publicising relevant information, research and other material.

Our promotional activities aim to achieve increased awareness and uptake of energy efficient choices and behaviours across all sectors in the New Zealand economy, over time.

This is necessarily a long term programme of activity that will evolve as the market understanding and acceptance increases.

Additional activities

Strategic development

EECA's strategic group monitors changes in New Zealand's energy use, energy efficiency and conservation and renewable energy including progress towards the NZEECS targets. It monitors the impacts of EECA's programmes and manages internal research priorities to ensure programmes have a sound analytical basis.

For example, EECA is currently leading the Household Energy Affordability Research Programme in conjunction with the Ministry of Social Development and other government agencies. The Programme will establish a baseline for understanding household energy use and poverty in New Zealand, including standard measures for assessing household energy affordability and an in-depth understanding of the decision-making processes and priorities people use around expenditure on household energy (i.e. energy used for space heating, hot water heating and appliances). The results will be used to inform future programme design.

The team work with the Ministry of Research, Science and Technology, and the Foundation for Research, Science and Technology, Statistics NZ and other departments to co-ordinate energy use data, maintain energy use databases, and develop strategic research in sustainable energy. The group coordinates business development and business planning activities to ensure investments in EECA programmes provide the best returns and manages knowledge development and assurance to underpin EECA's role as an Authority.

Key activities:

- Developing new analysis of the potential for energy savings
- Monitoring and research
- Business planning
- Business development
- Knowledge management.

Actions for immediate consideration

Funding levels for household energy efficiency programmes

In September the government announced \$1 billion dollars will be invested into energy efficient homes over the next 15 years, starting from 1 July 2009, to offset the predicted increase in power costs that will come as a result of electricity being included in the Emissions Trading Scheme. This funding is over and above EECA's existing residential programme funding. EECA was asked to develop this programme and has designed the first year of the programme. The Climate Change (Emissions Trading) Amendment Act requires EECA to agree criteria with the Minister of Energy.

EECA is interested in clarifying your position on funding for household energy efficiency so that we can continue to develop an appropriate programme.

Minimum energy performance standards for lighting – releasing consultation document

The Australian government has released its discussion document on energy efficient lighting. If New Zealand is to maintain parity with Australia it is important that decisions on the release of the New Zealand discussion document for public consultation are agreed by Cabinet prior to April 2008. EECA requests the opportunity to brief you on the benefits and risks of introducing the lighting Standards.

Legislation under consideration

Energy Efficiency and Conservation Amendment Bill. It was introduced on 8 August by Minister Parker but had not yet had its first reading. The Bill enables EECA to issue infringement notices for breaches of product regulations, adds houses to the products that can be regulated and fixes a drafting error around incorporation of standards by reference. This matter is also addressed in the Ministry of Economic Development briefing.

EECA at a glance

EECA is a Crown entity, established under the Energy Efficiency and Conservation Act 2000 and subject to the Crown Entities Act 2004.

It is governed by a Board of up to eight members with experience in energy, the environment, community services, commerce, the public sector and science and technology. The Board is appointed by, and reports to, the Minister responsible for administering the Energy Efficiency and Conservation Act 2000. Board members hold office for a term of three years and may be reappointed. The Board is guided by a Charter.

Chairman - Roger Sutton - Appointed May 2007. Remuneration Committee Chair. Currently Chief Executive, Orion New Zealand Limited. Director of 4RF Communications Ltd and Electricity Networks Association. Chairman of Connectics Ltd.

Board members:

- Deputy Chair - Alastair Patrick - Appointed June 2005 and Deputy Chair October 2007. Formerly with Ministry of Transport (1991-2003), latterly as Manager of Infrastructure Services. Currently consultant for Beacon Consulting predominantly working for government agencies across transport, education and biosecurity.
- Penny Hulse - Appointed October 2007. Deputy Mayor Waitakere City Council and has been a Councillor for 12 years – special focus on sustainable housing.
- Toni Owen - Appointed October 2007. Risk & Audit Committee Chair. Director of Focus Chartered Accountants Ltd, Whakatane, specializing in business and financial planning.
- Andy Pearce - Appointed October 2007. A professional director with specialist governance expertise. Was CEO of Landcare New Zealand (1992-2005). Currently Chairman of Wool Equities Ltd, Keratec Ltd, Director, Bank of New Zealand.
- Greg Sise - Appointed October 2007. Director of Ellsoft Ltd and EnergyLink Ltd, Dunedin – two energy modelling and analysis companies he founded in 1996.
- Joel Cayford - Appointed August 2008. Auckland Regional Councillor. Specialist knowledge of waste and recycling industries, network utility economics and function, and urban planning and development processes.
- David Caygill - Appointed August 2008. Chair of the Electricity Commission

Chief Executive - Mike Underhill - Appointed May 2007. Mike was formerly Chief Executive of WEL Networks, and has spent many years in the gas and electricity sector in New Zealand and overseas.

Staff - Total 109 FTE (112 people): Wellington 97, Auckland 12, Christchurch 3

Annual budget - \$23m operational, \$30m grants (excludes 2009 contingency money).