

Regulatory Impact Statement

PROPOSAL TO INTRODUCE A MINIMUM ENERGY PERFORMANCE STANDARD FOR COMPACT FLUORESCENT LAMPS

AGENCY DISCLOSURE STATEMENT

This Regulatory Impact Statement has been prepared by the Ministry of Economic Development, with input from the Energy Efficiency and Conservation Authority (EECA). It provides analysis of options to improve the performance of compact fluorescent lamps (CFLs) through application of standards in order to encourage voluntary uptake of CFLs as replacements for less energy efficient light bulbs.

The recommended option is to incorporate existing Australia/New Zealand standards into New Zealand regulation. These standards were incorporated into Australian regulation in 2009. Aligning regulations for this product between the two countries will contribute to the objectives of the Trans-Tasman Mutual Recognition Arrangement (TTMRA) and the Closer Economic Relations (CER) Agreement.

The analysis identifies:

- Barriers to consumers purchasing more efficient lamps;
- Trends in the New Zealand lighting market under status quo;
- The impact on consumers of purchasing more efficient models; and
- The impact on suppliers and manufacturers of supplying models that comply with the proposed standards.

The recommended option will impose minimal costs on industry and is not expected to restrict competition. Suppliers have indicated that they can source compliant products. Many suppliers to the New Zealand market also supply to Australia; therefore their products already comply with the proposed regulation. Products will not need to comply if they have been imported before the date the standards are incorporated into regulation.

Industry will incur administration costs to register their products (but no registration fee) and may incur costs to test their product (if it has not already been tested to the standard or an equivalent standard). The main negative issue raised by manufacturers during consultation is the cost and time required to test products that are not already supplied to the Australian market. However, most manufacturers have indicated that either their models are already registered or they will be able to comply in time.

I have considered the analysis and advice, as summarised in the attached Regulatory Impact Statement and I am satisfied that, aside from the risks, uncertainties and caveats already noted in this Cabinet paper, the regulatory proposals recommended in this paper:

- are required in the public interest
- will deliver the highest net benefits of the practical options available, and
- are consistent with our commitments in the Government statement “Better Regulation, Less Regulation.”

Richard Hawke

[Signature of person]

[Date]

STATUS QUO AND PROBLEM DEFINITION

Status Quo

Household lighting consumes an estimated 1,500 GWh of electricity per year, which is about 10-12 percent of the overall residential demand.¹ Traditional light bulbs (with a tungsten filament) are the most popular but the least energy efficient lighting option currently available on the market. Although they cost more to purchase, compact fluorescent lamps (CFLs) typically use up to 80% less energy than tungsten filament lamps and last up to six times longer.² As a result, their running and replacement costs are significantly lower. By 2025, under business as usual, it is estimated that CFLs will perform 19% of the lighting tasks now performed by tungsten filament lamps, based on sales trends to date.

Problem Definition

However, many New Zealand households and businesses lack confidence in CFLs, due to:

- Problems with quality and performance: for example, slow start up times, a short lifespan, and light colour and quality;
- A perception that potential energy and cost savings are not sufficient to warrant switching to CFLs;
- Concerns about the mercury content of CFLs, and whether they present a risk to human health or the environment; and
- Limited, inconsistent and unreliable information to allow consumers to compare the performance and energy use of the various lighting products available for sale.

Relevant decisions already taken:

Equipment Energy Efficiency (E3) forward work plan: Cabinet endorsed the E3 forward work plan in August 2009 [Cab Min (09) 30/6 refers]. This is a joint work plan for Australia and New Zealand to develop/adopt common energy efficiency standards for products sold on both markets. It includes investigation of minimum energy performance standards (MEPS) for compact fluorescent lamps (CFLs).

Consultation: In December 2010 Cabinet approved consultation on the proposal to incorporate MEPS for CFLs into New Zealand regulation, consistent with Australia. The consultation ended in February 2010.

Energy Efficiency (Energy Using Products) Regulations 2002 (the Regulations): The Regulations list products subject to MEPS, and the relevant standards, under Schedule 1. The Regulations are administered by the Ministry of Economic Development and enforced by the Energy Efficiency and Conservation Authority (EECA). MEPS currently apply to a range of products including linear fluorescent lamps.

Regulation of CFLs in Australia:

Australia introduced minimum energy performance standards (MEPS) for compact fluorescent lamps in late 2009. While New Zealand does not currently supply large volumes of CFLs to the Australian market, there is a potential risk to Australia that lighting products imported from New Zealand could fail to meet Australian standards and yet still be legal for sale under the Trans-Tasman Mutual Recognition Arrangement (TTMRA). Under this scenario, Australia could seek an exemption from the TTMRA for CFLs. This would prevent New Zealand manufacturers/suppliers from accessing the Australian market.

¹ New Zealand Electric Energy-Efficiency Potential Study Volume 1 (KEMA Study), p16. Published by the Electricity Commission, 2007.

² Discussion document on Proposed Minimum Energy Performance Standards for Compact Fluorescent Lamps, December 2010.

Existing energy efficiency measures that relate to compact fluorescent lamps in New Zealand:

There are initiatives in place to promote the use of high-performing CFLs and address information barriers, including the 'RightLight' information campaign (launched in June 2009) and the ENERGY STAR® endorsement mark for CFLs (launched in October 2009). The Government has previously subsidised the cost of CFLs. While the subsidies are no longer operating, they are discussed in this section, as they have impacted on status quo. As a broader initiative that puts a price on greenhouse gas emissions, and therefore energy, the New Zealand Emissions Trading Scheme is also discussed.

RightLight information campaign: RightLight is an information campaign designed to provide consumers with information, tips and tools about efficient lighting to help them make more informed lighting choices. While information campaigns like Rightlight are an effective way to educate consumers about lighting options and costs and to promote the use of efficient lighting products, they cannot provide independent verification of manufacturers' claims about their lighting products. Consumer confidence in compact fluorescent lamps can still be undermined by unsubstantiated performance claims.³

ENERGY STAR® endorsement labelling: EECA launched a New Zealand ENERGY STAR® specification for CFLs in October 2009. ENERGY STAR is a voluntary endorsement mark used globally to promote highly energy efficient products (usually the top 25%). The ENERGY STAR mark does provide independent verification of performance claims, but as a voluntary scheme, does not apply to all models available on the market place, and has had limited uptake.⁴

CFL subsidies: Previously, New Zealand's Electricity Commission directly subsidised the installation of up to 5 million CFLs that met selection criteria including performance specifications. The subsidy scheme was an effective short-term measure to stimulate the uptake of CFLs and help to create a market for them. The problem now is not one of availability, consumer choice or pricing but of product performance and consumer confidence in the product. A subsidy scheme can only address this through applying selection criteria, which would apply only to participating models, and only for the duration of the subsidy scheme. Compliance activities (such as independent testing to verify claims) would still be needed to verify claims about performance.

New Zealand Emissions Trading Scheme (NZETS): The NZETS provides a pricing mechanism for greenhouse gas emissions. As a proportion of New Zealand's electricity is produced from fossil fuels, the NZETS is expected to lead to increased electricity prices, which will be passed down from energy suppliers to consumers. This may encourage consumers to seek more energy efficient electricity-using products, in order to reduce their electricity bills. However, while price signals alone may encourage consumers to change their purchasing behaviour, they will not directly lead to improvements in the performance of compact fluorescent lamps (CFLs) or enable consumers to verify the performance of the products they are purchasing.

OBJECTIVES

The primary objectives of this proposal are to:

- Reduce the energy used to light New Zealand's homes and businesses – thereby reducing energy costs, national energy demand and greenhouse gas emissions.
- Extend minimum energy performance standards coverage to include compact fluorescent lamps (CFLs) in order to remain in line with Australia, one of our major trading partners;

³ See www.rightlight.govt.nz

⁴ See www.energystar.govt.nz/products/listing/225

Related and secondary objectives are to:

- Improve the quality and energy efficiency of commercially available CFLs, and boost confidence in their safety;
- Encourage increased uptake of CFLs to replace less efficient traditional lighting technologies; and
- Ensure that New Zealand does not become a dumping ground for compact fluorescent lamps (CFLs) that do not meet energy efficiency standards specified elsewhere (including Australia);
- Provide consistent information on energy performance and other aspects of CFL quality on CFL packaging to help consumers make informed purchase decisions;
- Complement existing measures to promote the uptake of efficient lighting; and
- Improve the energy efficiency of the least efficient CFLs.

REGULATORY IMPACT ANALYSIS

Alternative Options

Several alternative options were considered to address the stated problems and objectives. These include maintaining status quo (as discussed above); comparative energy labelling; and dis-endorsement labelling for underperforming compact fluorescent lamps.

Comparative energy labelling

Comparative energy labelling shows merit as a way to overcome information barriers to the increased uptake of CFLs. The most effective option would not be limited to CFLs, but would apply a single grading system (such as the one used in Europe) across the most commonly used lighting technologies: compact fluorescent lamps, tungsten filament lamps, and newer tungsten halogen lamps. However, comparative energy labelling alone would not guarantee improvements to overall performance of CFLs, as poorly performing products could still be offered for sale. It would make more sense to ensure CFLs perform to a consistently adequate standard (under a range of performance criteria) before introducing further measures to promote their uptake. Australia and New Zealand have signalled intentions to investigate options for comparative lamp labelling under the Equipment Energy Efficiency (E3) work programme at a later stage. The recommended option discussed below does include a requirement that certain performance criteria be listed on CFL packaging, which will provide some basis for consumers to compare the performance of CFLs.

Dis-endorsement labelling

A dis-endorsement (or warning) label could be used to warn consumers that a compact fluorescent lamp does not meet quality criteria. This would allow a consumer to purchase a poor-performing CFL but also warn them about its performance. However the risk with using dis-endorsement labelling on poor-performing CFLs is that consumers may come to identify the label with the technology overall, rather than with the specific products that carry the label. This may discourage consumers from using compact fluorescent lamps altogether. Major suppliers have strongly resisted dis-endorsement labelling, stating it could damage the reputation of their brands and reduce the value of goodwill with their suppliers. Overall, this approach is not favoured by industry and it is unlikely to be successful in achieving the stated objectives.

Preferred Option

The preferred option is to incorporate existing minimum energy performance standards (MEPS) for compact fluorescent lamps (CFLs) into the Energy Efficiency (Energy Using Products) Regulations 2002. The introduction of MEPS would require CFL manufacturers and suppliers to register their products before they are made available for sale and to declare that their products have been tested to, and comply with, the Australia/New Zealand

standards specified in the Regulations. The relevant standards are AS/NZS 4847.1:2010 and AS/ NZS 4847.2:2010. The standards set out a test method and requirements: for light quality, energy performance, how the lamp performs with controls (switches, dimmers, etc.), durability and lifespan, and mercury levels and cover both reflector and non reflector CFL's.

Costs and Benefits

Notes on cost-benefit analysis

- Total costs include costs to consumers, industry and taxpayers.
- Benefits are expressed as avoided energy costs attributed to a higher uptake of compact fluorescent lamps under MEPS than expected under business as usual and a corresponding decrease in the use of incandescent lamps.
- Avoided greenhouse gas emissions shown are not factored into the financial analysis.
- Costs and benefits have been discounted by 5 per cent to represent their present value, taking into account the value of long term environmental and social benefits associated with energy efficiency, and as previously agreed with Treasury.
- The base case assumes that the market share of CFLs will increase to 42% and sensitivity analysis has been done at 30% and 50% uptake.⁵
- As costs are only \$900,000, and estimated benefits are \$226 million, the actual benefits realised could be only \$900,000, (a 99.6% reduction) and still provide a neutral benefit to cost ratio.

Cost-benefit summary

	Total benefit (\$M) excluding CO ₂ savings	Emissions saved (kt CO ₂ -e)	Energy saved (GWh)	Business compliance cost (\$M)		Total cost (\$M)	Net benefit (\$M)	Benefit-to-cost ratio
				total (\$M)	p.a. (\$M)			
Base case Scenario	226	0.87	2,151	0.4	0.04	0.9	225.1	251:1
Lower case scenario	106	0.41	1,018	0.4	0.04	0.9	105.1	118:1

Impacts on business

Product availability: An estimated 80% of CFL models currently on the market meet the proposed new MEPS requirements.⁶ Industry members have indicated that they should be able to source compliant stock where necessary and that the main impacts will arise from testing products or changing supply chains to meet MEPS. Stock that has been imported before the MEPS are introduced will be exempt from MEPS requirements. Industry affected is estimated at 20 companies, including large retailers such as supermarkets, New Zealand based importers and subsidiaries of multinational companies. There are no manufacturers of CFL's located in New Zealand.

Compliance costs: These will include administrative costs of registering products and record keeping; costs associated with regulatory awareness (e.g. training); and costs to test products or source readily compliant products. To help minimise the costs, businesses will be able to register their products online at no charge and information and support will be available to help them complete registrations. Suppliers to the Australian market will already be registered to MEPS and will incur no additional compliance costs, other than to report

⁵ Lamp uptake and cost benefit estimates were adapted from cost benefit analysis done for E3 programme. Estimates of additional uptake were based on conservative estimates by Peter Dempster.

⁶ Based on research by Roy Speed, *Energy Star NZ CFL's*, March 2009.

annual sales data to EECA⁷. The incremental costs for suppliers operating in both countries (which includes all major suppliers) have been estimated at \$281,000 in total, about \$14,050 per supplier in present value terms. Allowing for additional costs of \$100,000 for other potential suppliers, total compliance costs are estimated to have a present value of \$381,000 out to 2025⁸.

Impacts on trade and competition: The proposed MEPS are consistent with New Zealand's international obligations under the General Agreement on Tariffs and Trade (GATT) and the World Trade Organisation's Technical Barriers to Trade (WTO/TBT) Agreement as they will apply to all products, whether locally manufactured and imported, and irrespective of country of origin. Standards have been harmonised as closely as possible with international/other country standards, through Australia and New Zealand's participation in the International CFL Harmonisation Initiative, with the aim of minimising costs to industry and facilitating trade in compact fluorescent lamps. The proposed MEPS will not significantly affect competition. We understand that there is a competitive supply of compliant products from overseas, particularly China. New Zealand suppliers can contract freely with manufactures to supply the New Zealand market.

Tax payer costs

The cost to taxpayers to implement CFL MEPS is estimated at \$50,000 per annum in total. This comprises about \$30,000 per annum in pro-rata contributions to the Equipment Energy Efficiency (E3) programme (jointly funded by Australia and New Zealand) and additional direct costs of about \$NZ 20,000 per annum for local administration. This is an indicative figure and represents a portion of the total government overhead. No increase in overall costs is expected.

Impacts on consumers and households

Savings from switching from a non-compliant CFL to a compliant CFL are not assessed because the most significant gains will accrue from consumers switching voluntarily from tungsten filament lamps. Overall it is expected that there will be a reduction in operating costs of lamps (including capital costs) of \$226 million⁹ out to 2025. Financial impacts have been modelled for households that voluntarily respond to the proposed measures by choosing to replace tungsten filament lamps with CFLs that produce the same light output. The modelling included various combinations of lamp type, lamp size and duty hours and showed cost reductions for all scenarios, ranging from 58 cents per lamp to \$101.13 per lamp, as shown in the table below.

Voluntary replacement of tungsten filament lamps with CFLs in residential sector: change in annual lamp operating costs (\$NZ/lamp)

Power of lamp replaced	Duty hours/day					
	< 1 hour	1-2 hours	2-4 hours	4-8 hours	8-12 hours	> 12 hours
<u>Replacement of non-reflector type of tungsten filament lamp</u>						
25 watts	-\$0.58	-\$2.11	-\$4.35	-\$8.84	-\$14.82	-\$19.31
40 watts	-\$1.02	-\$3.41	-\$6.97	-\$14.07	-\$23.54	-\$30.64
60 watts	-\$1.60	-\$5.17	-\$10.47	-\$21.08	-\$35.22	-\$45.83
75 watts	-\$2.04	-\$6.48	-\$13.10	-\$26.33	-\$43.97	-\$57.20
100 watts	-\$2.77	-\$8.66	-\$17.47	-\$35.06	-\$58.53	-\$76.12

⁷ This is a requirement under the regulations into which the MEPS standard will be incorporated

⁸ A discount rate of 5%, as agreed with Treasury, has been used. Benefits have been assessed over the period 2010 – 2025.

⁹ A discount rate of 5%, as agreed with Treasury, has been used. Benefits have been assessed over the period 2010 – 2025.

<u>Replacement of reflector type of tungsten filament lamp</u>						
35 watts	-\$1.31	-\$4.19	-\$8.48	-\$17.06	-\$28.49	-\$37.06
60 watts	-\$2.03	-\$6.36	-\$12.83	-\$25.74	-\$42.96	-\$55.88
80 watts	-\$2.61	-\$8.11	-\$16.32	-\$32.74	-\$54.62	-\$71.03
100 watts	-\$3.19	-\$9.85	-\$19.80	-\$39.70	-\$66.22	-\$86.12
120 watts	-\$3.77	-\$11.58	-\$23.27	-\$46.63	-\$77.77	-\$101.13

Commercial and industrial sectors

In the commercial and industrial sectors, lower electricity tariffs reduce the value of savings by 10-70%. However, we still estimate cost reductions for this sector from switching to CFL technology. Only a couple of scenarios, featuring unlikely combinations of low wattage lamps or low duty hours, would result in cost increases¹⁰.

Health, safety and environmental impacts

Some consumers have raised concerns that proposals to increase the uptake of CFLs will have adverse health, safety and environmental impacts. CFLs (like other fluorescent lighting technologies) are associated with certain health conditions, and carry health and environmental risks due to their mercury content and perceived concerns about electrical safety. However, a study commissioned by the Ministry of Health to assess the risk from mercury exposure following CFLs breakage¹¹ found adverse health effects to be unlikely because of the very small quantity of mercury contained in a CFL. The proposed limitation on mercury content under MEPS would reduce this risk further.

Power quality and impacts on electricity networks

The Energy Safety Service has previously expressed concerns about large numbers of CFLs impacting on the operation of electricity networks. CFLs (like other types of electronic equipment) may create harmonic distortion (or network interference) which can compromise the operation of other appliances drawing power from the network and interfere with load control systems for off-peak hot water. However measures to address these potential impacts have been incorporated into AS/NZS 610003.2, a standard for total harmonic distortion (THD). Concerns have also been expressed that the relatively low power factor¹² of CFLs will increase the load on electricity networks. However the proposed standards include minimum power factor requirements, so the lower power factor of CFLs is not expected to compromise electricity networks.

CONSULTATION

Proposals to regulate CFLs were originally notified in 2007, and a stakeholder meeting was held in Wellington in 2008. At that time, MEPS were also proposed for traditional incandescent lamps, and stakeholders expressed concerns about the impacts that would result from a mass uptake of CFLs. This revised proposal relates to CFLs only and was released for consultation in January 2011. During consultation, the lighting industry indicated that it was quite possible to meet the MEPS requirements provided sufficient lead-in time was allowed to test products and manage supply chains. Two stakeholders also questioned the size of the benefits identified in cost-benefit analysis; however, it was noted that sensitivity analysis based on a much lower CFL uptake still demonstrates a clear net benefit. Two submissions argued in support of MEPS for incandescent lamps. This is outside the scope of this proposal and is not Government policy. Submissions were received from two private citizens, expressing concerns about the mercury content and the quality of CFLs,

¹⁰ The commercial and industrial sectors typically use more powerful lamps for longer periods than in residential applications.

¹¹ Screening Level Risk Characterization for Mercury Exposure from Compact Fluorescent lamps by Toxicology Excellence for Risk Assessment, December 2008

¹² "Power factor" describes the relation between the current supplied to an electrical appliance and the current it uses to operate.

both of which are addressed by the MEPS. A number of industry stakeholders have also been involved in setting MEPS standards through participation in the Standards committee and consultation on the draft standards.

CONCLUSIONS AND RECOMMENDATIONS

The recommendation is to adopt minimum energy performance standards (MEPS) for compact fluorescent lamps (CFLs). This will result in an estimated net benefit of \$225 million to New Zealand, energy savings of 2,151 GWh (8 petajoules) and a reduction in greenhouse gas emissions of 0.87 million tonnes in the period to 2025. The MEPS will provide quality assurance and information to consumers purchasing CFLs, which is expected to lead to an increase in the rate at which CFLs replace less efficient lighting technologies. Aligning with Australian standards will facilitate trans-Tasman trade and reduce business compliance costs, thereby upholding the principles of the Australia New Zealand Closer Economic Relations Trade Agreement and the trans-Tasman Mutual Recognition Arrangement (TTMRA).

IMPLEMENTATION

An amendment will be made to the Energy Efficiency (Energy Using Products) Regulations 2002 to incorporate the relevant Australia/New Zealand Standards by listing them under Schedule 1 of the Regulations. Industry stakeholders will be notified well in advance of the introduction date to allow them to prepare for the MEPS and register their products in advance. From the introduction date, businesses will be required to register products that are not already registered to MEPS in Australia. Registrations will be made to an existing database shared with Australia and support and information will be available to help businesses complete their registrations. Applicants will need to certify that the product has been tested correctly, disclose its energy performance, and be capable of supplying a test reports.

Compliance activities: Compliance will be achieved primarily through raising awareness of the regulations, helping industry members understand their obligations and working cooperatively with business to achieve compliance. Businesses that repeatedly fail to meet their obligations could incur penalties of up to \$10,000 for each instance of non-compliance under the Regulations. This would be pursued as a last resort, and publicised to create a disincentive for further non-compliance and to instil public confidence that the Regulations are effectively policed. Independent testing will be carried out by accredited laboratories on selected models to verify their performance claims. Selection will be based on factors such as past performance, high performance claims, market share, and complaints received.

MONITORING, EVALUATION AND REVIEW

Sales data for CFLs will be collected annually and used to compare actual and forecast energy savings under MEPS. An annual report on the impacts of MEPS and will be made the Energy Efficiency and Conservation Authority Board and shared with stakeholders. The relevant standards will be reviewed every three to five years. Independent testing will be used to determine the rate of compliance with MEPS.