



Energy Efficiency and
Conservation Authority
Te Tari Tiaki Pūngao



2014/15 Levy-Funded Appropriations, Electricity Authority Work Programme, and EECA Work Programme

Consultation Paper

Published on: 10 September 2013

Submissions close: 5 pm 22 October 2013

Executive summary

The Electricity Authority (Authority) and Energy Efficiency and Conservation Authority (EECA) receive funding from a levy on electricity industry participants. This funding covers all of the Authority's functions and the electricity efficiency functions for EECA.

This paper sets out the proposed annual appropriations for the Authority, and those activities of EECA that are funded by the levy on industry participants for the period 1 July 2014 to 30 June 2015.

A summary of the proposed appropriations is set out below. This paper also provides additional information on costs and proposed work programmes.

Key funding changes of note are:

- **Electricity industry governance and market operations appropriation:** The proposed appropriation is a \$2.105 million increase on the 2013/14 appropriation. This is largely due to increased system operator costs.
- **Customer switching.** The current promoting and facilitating customer switching appropriation ends on 30 April 2014. Reviews are being conducted to determine the future direction and scope of this Authority function and the programme for 2014/15 is therefore yet to be determined. An indicative range for consultation is \$1.0–\$2.5 million per annum for the next three years

Electricity Authority	(\$ million)		
	2012/13 actual	2013/14 appropriations	2014/15 appropriations proposal
Electricity industry governance and market operations appropriation	62.016	68.145	70.250
Security management appropriation		6.000 over five years (2012/13 to 2016/17)	
Promoting and facilitating customer switching appropriation	3.362	3.598	1.000–2.500
Electricity litigation fund appropriation	0.036	0.444	0.444
Energy Efficiency and Conservation Authority (EECA)	(\$ million)		
	2012/13 actual	2013/14 appropriations	2014/15 appropriations proposal
Electricity efficiency	13.000	13.000	13.000

Once consultation is complete the Authority and EECA provide separate reports to the responsible Minister recommending appropriations for 2014/15. The recommendations feed in to the Government's Budget process. The appropriations will be announced in the Budget, usually in mid-May. Further detail will be published in the Statements of Intent (SOI) of the Authority and EECA. The Authority will also publish a work programme for the 2014/15 year.

Glossary of abbreviations and terms

Act	Electricity Industry Act 2010
AOPOs	Asset owner performance obligations
AUFLS	Automatic under-frequency load shedding
Authority	Electricity Authority
Code	Electricity Industry Participation Code 2010
CRE	Competition, reliability and efficiency (components of the Authority's statutory objective)
EECA	Energy Efficiency and Conservation Authority
EIEP	Electronic Information Exchange Protocol
EMI	Electricity Market Information software
FTR	Financial transmission right
Impact	The contribution made to an outcome by a specified set of outputs, or actions, or both. (Definition from section 2(1) of the Public Finance Act 1989.)
MBIE	Ministry of Business, Innovation and Employment
Minister	Minister of Energy and Resources
MUoSA	Model use of systems agreement
NZEECS	New Zealand Energy Efficiency and Conservation Strategy
NZES	New Zealand Energy Strategy
POCP	Planning outage coordination protocol
RAG	Retail Advisory Group
Regulations	Electricity Industry (Enforcement) Regulations 2010
SME	Small and medium-size enterprise
SO	System operator
SOI	Statement of Intent
SOSPA	System operator service provider agreement
SPD	Scheduling, pricing and dispatch model
UTS	Undesirable trading situation
WAG	Wholesale Advisory Group
WITS	Wholesale information and trading system

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1. Introduction and purpose

- 1.1.1 Submissions are sought on the proposed 2014/15 annual appropriations for the Electricity Authority (Authority), and those activities of the Energy Efficiency and Conservation Authority (EECA) that are funded by the levy on industry participants. The appropriations cover the period 1 July 2014 to 30 June 2015.
- 1.1.2 The appropriation consultation period commences on 10 September 2013 and submissions are due by 22 October 2013.
- 1.1.3 Your input is requested as part of the process of the Authority and EECA in requesting funding from responsible ministers early in late 2013. Please refer to appendix A for the legal context for this consultation.
- 1.1.4 Your submission(s) should be sent individually to each of the Authority or EECA depending which appropriations and work programmes on which you are commenting. Please refer to appendix B for information about making a submission and for the timetable.
- 1.1.5 In addition to appropriations information, this consultation paper includes the following appendices:
- **Appendix C:** The proposed Authority work programme.
 - **Appendix D:** The proposed EECA levy-funded electricity efficiency programme priorities for 2014/15.
 - **Appendix E:** The *EECA 2012/13 Annual Report on the Levy-Funded Electricity Efficiency Appropriation*.
- 1.1.6 All Electricity Authority's appropriations are levy-funded. Its Annual Report covers all levy-funded appropriations and outputs. The Authority's Annual Reports are available at: <http://www.ea.govt.nz/about-us/documents-publications/annual-report/>.
- 1.1.7 It should be noted that:
- The Authority and EECA will use input from this consultation to develop their own reports on proposed appropriations to responsible Minister (targeting the end of the 2013 calendar year).
 - The results will be reflected in the Authority and EECA Statements of Intent (SOI) to be published after the Government's Budget is tabled in Parliament in 2014 (usually mid-May).
 - The Authority will publish its work programme, setting out its programmes and projects in more detail, in late June or early July 2014.

2. Appropriations proposal

2.1 Summary

2.1.1 Table 1 sets out the appropriations being sought by the Authority and EECA.

Table 1: Appropriations proposal

Electricity Authority	(\$ million)		
	2012/13 actual	2013/14 appropriations	2014/15 appropriations proposal
Electricity industry governance and market operations appropriation			
Subtotal – system operator costs*	35.138	38.137	39.596
Subtotal – other service providers*	8.565	11.169	11.816
Subtotal – Authority operations*	18.313	18.839	18.838
Total: Electricity industry governance and market operations appropriation	62.016	68.145	70.250
Security management appropriation		6.000 over five years (2012/13 to 2016/17)	
Promoting and facilitating customer switching appropriation	3.362	3.598	1.000–2.500
Electricity litigation fund appropriation**	0.036	0.444	0.444
Energy Efficiency and Conservation Authority (EECA)			
Energy Efficiency and Conservation Authority (EECA)	(\$ million)		
	2012/13 actual	2013/14 appropriations	2014/15 appropriations proposal
Electricity efficiency	13.000	13.000	13.000

Notes to table 1:

* See table 2 for a more detailed breakdown.

** The Electricity litigation fund appropriation is to provide funding to ensure that the Authority is able to participate in litigation effectively and without delay. This is a Crown expense appropriation, which is drawn on only for major litigation.

2.1.2 Key points to note in the proposed appropriations are:

- **Electricity industry governance and market operations appropriation:** The proposed appropriation is a \$2.105 million increase on the 2013/14 appropriation. This is largely due to increased system operator costs.

In 2013/14 the Government approved a budget increase to address ongoing increases in system operator costs and an increase in depreciation and amortisation on service provider software as a result of changes to implement Code amendments. The approval included increases in 2013/14 and out-years.

The increase sought for 2014/15 is \$0.649 million less than the forecast in the 2013–2016 Statement of Intent (see page 20). The reduction is largely due to the CPI adjustment on system operator costs being lower than previous forecast.

The Authority is seeking to hold its operational costs constant for 2014/15.

Forecast costs for market service providers involve assumptions about the remaining life of the software used by these providers and owned by the Authority. The Authority will carry out further assessments of the remaining life of the software during the finalisation of its appropriation proposal.

- **Security management appropriation.** No change is sought to the security management appropriation. The security management appropriation started on 1 July 2012. This is a multi-year appropriation for the period 2012/13 to 2016/17. This appropriation is limited to the management of emergency events by the system operator, if required, including increased monitoring and management responsibilities in the event of an emerging security situation and planning and running an official conservation campaign. In the normal course of events it is not expected that this appropriation would incur costs. Therefore it will not be included in indicative levy rates that are used for invoicing during a year.
- **Customer switching appropriation:** The current promoting and facilitating customer switching appropriation ends on 30 April 2014.¹ The Retail Advisory Group (RAG) is conducting a review of the Authority's customer switching functions beyond April 2014.² In

¹ A \$15 million fund was established covering the period from November 2010 to April 2014 to promote customer switching. Of this, \$10.5 million was administered by the Authority to encourage consumers to compare the benefits of switching retailers.

² A consultation has been completed. A report was considered at RAG on 17 July 2013 on the results of consultation and possible next steps. See: <http://www.ea.govt.nz/dmsdocument/15370>

addition, the Ministry of Business, Innovation and Employment (MBIE) is conducting an evaluation of the impact of projects funded from the customer switching fund. The programme for 2014/15 is yet to be determined, however, based on the options currently under consideration by the RAG, an indicative range for consultation is \$1.0–\$2.5 million per annum for the next three years.

This proposed funding compares with the 2012/13 actual spend of \$3.362 million.

For purposes of calculating the indicative levy, a figure of \$2 million has been used for promoting and facilitating customer switching.

- **Electricity litigation fund:** No change is sought to the electricity litigation fund.
- **EECA electricity efficiency appropriation:** At \$13 million, the EECA electricity efficiency appropriation proposal remains at the same level as 2013/14.

2.2 Breakdown of electricity industry governance and market operations costs

2.2.1 The **electricity industry governance and market operations** appropriation covers the Authority's costs of oversight of the operation and governance of New Zealand's electricity market under the Act, Code, and regulations. This covers the Authority's functions under the Electricity Industry Act 2010 (the Act). The appropriation covers the following outputs as specified in the 2013–2016 Statement of Intent (SOI):³

- market development
- monitoring, information and education
- operation of the electricity system and markets
- compliance.

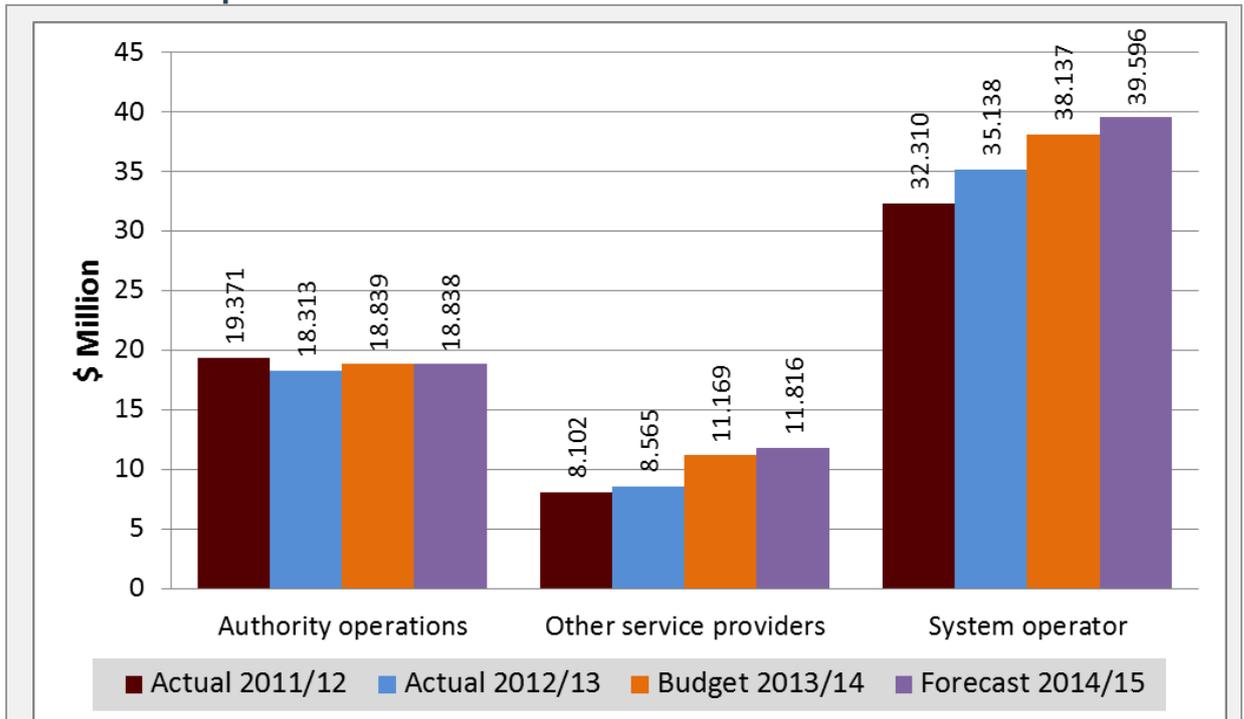
2.2.2 A key function of the Authority is that of market design and development, which may result in Code amendments or market facilitation measures. Costs associated with market development are difficult to quantify with certainty until the Code amendment process has been followed. Code amendments may require system and process changes for the Authority's service providers. These costs are met from within the Authority's appropriations. In some cases, eg the implementation of the FTR manager, there are capital related development costs and on-going operating costs. All such changes are subject to cost benefit analysis prior to Code amendments being made.

³ The SOI contains descriptions and performance measures for each of these outputs and is available from: <http://www.ea.govt.nz/our-work/plans-and-reports/2013-16/>

2.2.3 While a detailed budget has not yet been prepared for the 2014/15 year, Figure 1 shows the major categories for 2014/15 estimated costs within the **electricity industry governance and market operations** appropriation. Historical comparisons are also provided. Table 2 provides a more detailed indication of the forecast breakdown of major costs.

2.2.4 Figure 1 and Table 2 illustrate the Authority’s commitment to containing its own operating costs. We expect to contain our own operating costs in the medium term despite continuing a significant development programme as outlined in appendix C.

Figure 1: Breakdown of historic and forecast electricity industry governance and market operations costs



Note: the FTR manager started operation in June 2013, contributing to the rise of other service provider costs in budget 2013/14. Contract costs across the other service providers have reduced following the renewal of the agreements in 2012/13. The majority of the increase for other service providers relates to changes to service provider depreciation and amortisation costs over the period shown in this graph.

Table 2: Electricity industry governance and market operations appropriation: cost breakdown

All figures in \$million	Actual 2011/12	Actual 2012/13	Budget 2013/14	Forecast 2014/15
System operator—operating expenses	23.189	23.404	24.089	24.251
System operator—capital-related expenses	9.121	11.734	14.048	15.345
Sub total—System operator	32.310	35.138	38.137	39.596
Service provider—clearing manager	1.478	1.428	2.010	1.704
Service provider—wholesale information and trading system (WITS)	1.551	1.435	1.407	1.418
Service provider—pricing manager	1.666	1.578	1.592	1.606
Service provider—reconciliation manager	1.339	1.320	1.139	1.198
Service provider—registry	0.459	0.436	0.449	0.530
Service provider—FTR manager	-	0.082	0.852	0.788
Service provider—depreciation and amortisation	1.530	2.168	3.605	4.420
Service provider—IT costs	0.079	0.118	0.115	0.152
Sub total—Other service providers	8.102	8.565	11.169	11.816
Authority operations—external advice	7.745	6.675	6.108	5.742
Authority operations—personnel	7.961	8.258	9.149	9.313
Authority operations—other operating costs	3.665	3.380	3.582	3.783
Sub total—Authority operations	19.371	18.313	18.839	18.838
Total—Electricity industry governance and market operations appropriation	59.783	62.016	68.145	70.250

2.3 Electricity efficiency

- 2.3.1 Section 128(3)(c) of the Act lists, among those costs that should be met fully out of the levy, a portion of the costs of EECA in performing its functions and exercising its powers and duties under the Energy Efficiency and Conservation Act 2000 in relation to the encouragement, promotion, and support of electricity efficiency, where the size of the portion to be met by levies under this Act is determined by the Minister.
- 2.3.2 EECA proposes to request funding of \$13 million for electricity efficiency programmes aimed at improving the security of the electricity system, deferring investment in supply-side assets and achieving the Government's targets in the *New Zealand Energy Efficiency and Conservation Strategy* (NZECS) and the *New Zealand Energy Strategy* (NZES). More detail on EECA's priorities, targeted outcomes and their estimated economic value can be found in appendix D of this paper.
- 2.3.3 Projects eligible for funding will meet the underlying core principles:
- (a) Net economic value must be created.
 - (b) The 10 year total cost of the intervention must be less than the cost of the electricity supply side alternative.

3. Indicative levy rates

- 3.1.1 The Crown is reimbursed for the cost of the Authority and the EECA electricity efficiency appropriation by way of a levy on electricity industry participants in accordance with the Electricity Industry (Levy of Industry Participants) Regulations 2010. The levy is collected by the Authority on behalf of the Crown.
- 3.1.2 Prior to the start of the financial year the levy rates are set for invoicing based on the information available at that time. The final levy reconciliation, after the end of the financial year, takes account of any variations between levies collected and actual expenditure.
- 3.1.3 Table 3 provides indicative levy rates based on the proposed appropriations outlined above. Actual invoicing levy rates will be determined after the 2014/15 budget has been finalised.

Table 3: 2014/15 Indicative levy rates

Participant Class	Common Quality	Market	Registry & Consumer	Supply Security	Transmission	Electricity Efficiency	Customer Switching	Other Activities
<i>\$ per unit (MWh / ICP's)</i>								
Generators	0.1741	0.4572						0.0646
Purchasers	0.1741	0.4572		0.0060		0.3217		0.0646
Retailers			0.4341				0.9769	
Distributors (incl Transpower)	0.0964							0.0358
Distributors (excl Transpower)			0.4342					
Transpower					0.0613			

Note: For purposes of calculating the indicative levy, a figure of \$2 million has been used for funding for promoting and facilitating customer switching.

2013/14 Invoiced levy rates

Participant Class	Common Quality	Market	Registry & Consumer	Supply Security	Transmission	Electricity Efficiency	Customer Switching	Other Activities
<i>\$ per unit (MWh / ICP's)</i>								
Generators	0.1711	0.4548						0.0554
Purchasers	0.1711	0.4547		0.0069		0.3217		0.0554
Retailers			0.3786				1.2337	
Distributors (incl Transpower)	0.0949							0.0307
Distributors (excl Transpower)			0.3786					
Transpower					0.0561			

Appendix A Legal Context for this Consultation

A.1 Section 129 of the Electricity Industry Act 2010 (Act) requires the Authority and EECA to consult on proposed appropriations for the coming year. Section 129 states:

129 Consultation about request for appropriation

- (1) The Authority and the Energy Efficiency and Conservation Authority must, before submitting a request to the Minister seeking an appropriation of public money for the following year, or any change to an appropriation for the current year, that relates to costs that are intended to be recovered by way of levies under section 128, consult about that request with—
 - (a) those industry participants who are liable to pay a levy under that section; and
 - (b) any other representatives of persons whom the Authority believes to be significantly affected by a levy.
- (2) Each Authority must, at the time when the request is submitted, report to the Minister on the outcome of that consultation.
- (3) The Ministry must consult in a like manner in respect of a levy to recover costs referred to in section 128(3)(g).
- (4) This section applies to requests in respect of the financial year beginning 1 July 2011 and later financial years.

A.2 This consultation paper sets out appropriation proposals and the proposed work priorities for the full 2014/15 financial year (from 1 July 2014 to 30 June 2015). It covers:

- the Authority's proposals
- EECA's proposals for levy-funded electricity efficiency programmes.

Appendix B Making Submissions

- B.1 Submissions should be made separately to the Electricity Authority or EECA relating to the appropriations each agency administers, and the more detailed information provided about proposed work programmes.

Making submissions to the Authority

- B.2 Submissions about Authority appropriations and proposed work programme should be emailed to submissions@ea.govt.nz with **Consultation paper—2014/15 appropriations** in the subject line.
- B.3 The preferred format of submissions is electronic, in Microsoft Word if possible. It is not necessary to send hard copies of submissions sent electronically. A suggested submission format has been made available on the Authority website.
- B.4 Submissions should be received by 5pm on 22 October 2013. Please note that late submissions will not be considered.
- B.5 If you do not wish to send your submission electronically, you should send one hard copy of the submission to the address below.

<p><i>POST:</i> Submissions Electricity Authority PO Box 10041 Wellington 6143</p>	<p><i>COURIER:</i> Submissions Electricity Authority Level 7, ASB Bank Tower 2 Hunter Street Wellington</p>	<p><i>FAX:</i> 04-460 8879</p>
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- B.6 Your submission is likely to be made available to the general public on the Authority's website. Submitters should indicate any documents attached, in support of the submission, in a covering letter and clearly indicate any information that is provided to the Authority on a confidential basis. However, all information provided to the Authority is subject to the Official Information Act 1982.
- B.7 Information about the Authority and current projects are on the Authority's website at www.ea.govt.nz
- B.8 If you have questions about this consultation paper, please contact Androula Dometakis, General Manager Corporate Services, on (04) 460 8869 or androula.dometakis@ea.govt.nz

Making submissions to EECA

- B.9 Submissions should be made to EECA on the electricity efficiency appropriation and the proposed electricity efficiency work programme (appendix F).
- B.10 Submissions should be sent to: levyconsultation@eeca.govt.nz
- B.11 Submissions should be received 5pm on 22 October 2013. Please note that late submissions will not be considered.
- B.12 If you do not wish to send your submission electronically, you should send one hard copy of the submission to the address below.

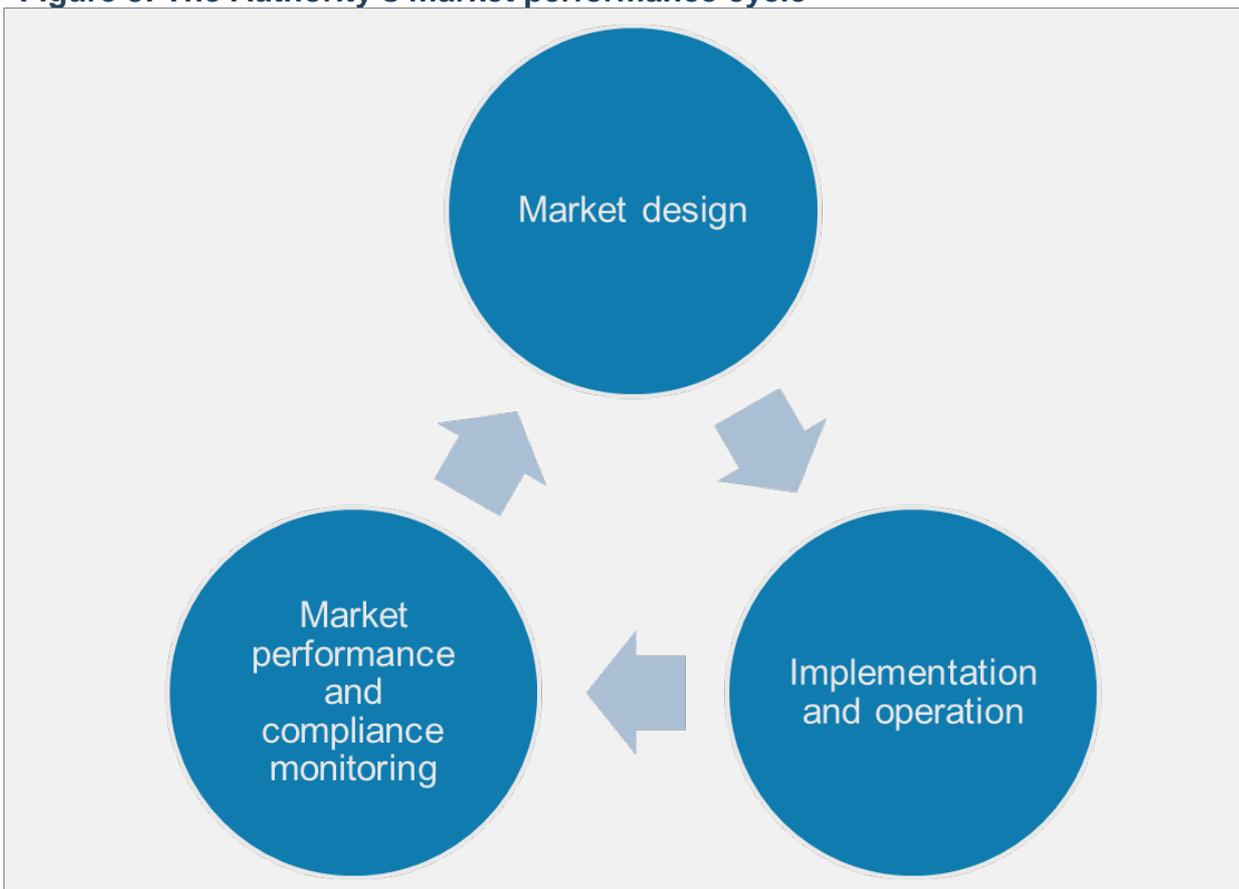
<i>POST:</i> EECA PO Box 388 Wellington 6140	<i>COURIER:</i> EECA Level 8, 44 The Terrace Wellington	<i>FAX:</i> 04 499 5330
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- B.13 Your submission will be published on EECA's website. Submitters should indicate any information that is provided to EECA on a confidential basis. All information provided to EECA is subject to the Official Information Act 1982.
- B.14 Information about EECA and current projects may be found on EECA's website: www.eeca.govt.nz
- B.15 If you have questions about the EECA component of this consultation paper, please contact Mike Candy, Senior Analyst - Statutory Documents, on (04) 470 2200 or mike.candy@eeca.govt.nz

Appendix C Proposed Authority Work Programme

- C.1 This appendix sets out the Authority’s proposals for its work programme for 2014/15 and out-years.
- C.2 The Authority has a significant project workload. We acknowledge that this also translates into a significant workload for our stakeholders. Feedback from stakeholders is a vital input to the long term effectiveness of initiatives, during the development and implementation stages and also during ongoing operations (eg cost of compliance). Therefore the impact of our workload on others is a key factor that we take into account in our planning process
- C.3 The Authority’s proposed work programme includes a significant commitment to market development and a continued emphasis on ongoing efficient operation of the electricity system and markets. The market performance and compliance monitoring roles will assist with identification of issues requiring further attention in the market design work programme (see the diagram below).

Figure 3: The Authority’s market performance cycle



- C.4 Themes that underlie the proposed programmes for 2014–2017 include:
- C.4.1 The Authority has published its *Strategic Directions for Market Development* in August 2013⁴:
- reducing barriers to entry, expansion and exit of parties in electricity markets
 - facilitating consumer participation
 - providing efficient price signals
 - promoting flexibility and resilience into the market and market systems.
- C.4.2 The strategic directions for market development are incorporated into the strategic framework in the 2013–2016 Statement of Intent (SOI)⁵, along with key operational impacts we are seeking of:
- fit-for-purpose market services
 - increasing compliance.
- C.4.3 The bulk of the initial projects assigned to the Authority under section 42 of the Electricity Industry Act 2010 (the Act) have been completed and implemented.
- C.4.4 The initial consumer switching fund appropriation is ending in 2013/14.
- C.4.5 The Authority is continuing to focus on wholesale and retail market competition. In 2013/14 significant emphasis is being placed on competition in the retail market.
- C.4.6 Competition initiatives will also drive reliability and efficiency gains.
- C.4.7 Strong progress has been made on reliability including through the Authority's s42 projects. The virtual asset swaps and transfer of Tekapo A and B to Genesis Energy have contributed to improved hydro storage management. Industry's responses to the changed policy settings, current policy, Code and market facilitation measures appear to be effective.
- C.4.8 Increasing emphasis is being placed on monitoring the result of the initiatives to date, compliance with the Code, investigating market events, and on general monitoring of market performance. Monitoring work will be actively used to consider further Code or market facilitation initiatives where warranted.
- C.4.9 A key operational focus in 2014/15 will be addressing any implications of the SOSPA review and the market service fit-for-purpose review being carried out in 2013/14.

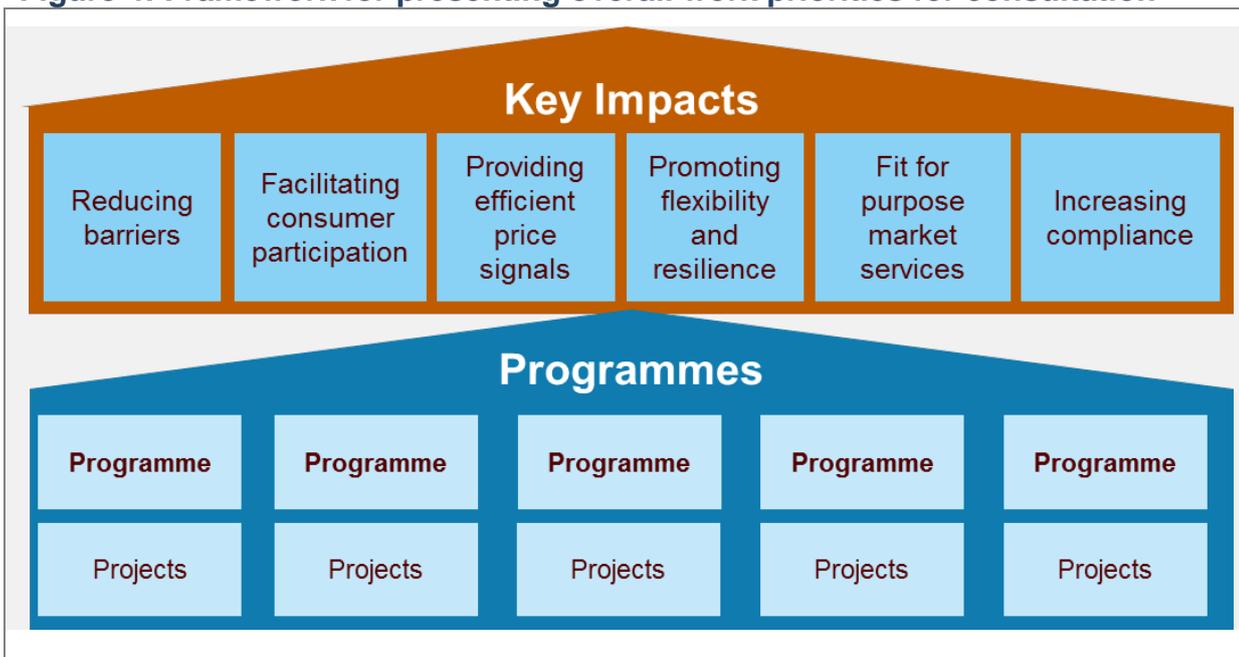
⁴ See: <http://www.ea.govt.nz/dmsdocument/15503>

⁵ See pages 9–10 of the SOI: <http://www.ea.govt.nz/about-us/documents-publications/soi/>

Strategy-based work programme

- C.5 The Authority’s strategic framework (published in the 2013–2016 SOI) and the strategic directions for market development have been applied to the development of this 2014/15 consultation on the work programme.
- C.6 This paper sets out high-level programmes (groups of related projects) and a summary of current and potential new and future projects. Our focus is to set out the rationale of our intended programmes of work in terms of the statutory objective, strategic priorities and the impacts we are seeking. Figure 4 illustrates this approach for the work priorities consultation.
- C.7 The programme outlined below includes cross references to the 2013/14 work programme, where detail about specific projects is available (including pending projects).⁶
- C.8 More detail on planned projects will be provided to stakeholders in the 2014/15 work programme, to be published in June 2014. At that stage we will have clearer specification of the projects, their timetables and deliverables.

Figure 4: Framework for presenting overall work priorities for consultation



⁶ See: <http://www.ea.govt.nz/about-us/documents-publications/work-programme/>

Coordination with the system operator

- C.9 Coordination is required with the system operator to manage progress across a range of projects. System operator input is required for both the development and implementation of the Code. The coordination effort spans a range of matters including the level of detail required for the system operator to initiate implementation planning, capacity, and timing of its own initiatives and those required through its being part of Transpower.
- C.10 Authority staff work closely with the system operator to develop an agreed timetable and process for managing these initiatives (joint development programme). The ongoing process of coordinating affected projects may impact the prioritisation and timing of Authority projects.
- C.11 Where possible, indicative dates are provided for projects involving system operator input. However, it should be noted that detailed planning is required by the Authority and system operator before more definitive timetables are completed. These will be advised in relation to specific projects, once available.

Notes to the programme information that follows

- C.12 These notes apply to all programmes outlined below:
- C.12.1 **Initial assessment of programme size**—this provides indicative information only on the estimated Authority resource requirements for 2014/15. The assessment gives an indication of the quantum of overall levy cost and does not include costs to others. More detailed planning will take place to develop more accurate cost information.
- C.12.2 **Initial assessment of net public benefit**—this provides indicative information only on the perceived net public benefit for the project. High level cost-benefit assessment is carried out as part of project initiation. More detailed cost-benefit assessments are developed during appropriate project stages.
- C.12.3 **Project numbers**—(eg B9) refer to the project numbers in the published 2013/14 work programme, available at <http://www.ea.govt.nz/dmsdocument/15241>.
- C.12.4 **Project stages**—the tables that follow include high level indicative information about the stages we expect the project to follow and the general timetable anticipated. These are estimates only at this stage and more detailed assessment and planning will take place as part of development of the work programme, due for publication in late June or early July 2014. Development of the work programme will include addressing feedback from this consultation.

Proposed programmes for 2014–2017

Market design

Programme: Competition in retail markets

Purpose

Develop initiatives to promote retail competition by providing consumers with information to make choices between retailers and by developing initiatives to allow participants to better manage price risk. There is a related programme: **Improving competition and efficiency in the wholesale energy and ancillary services markets** focussing on supply-side pro-competition initiatives that will enhance competition in the retail market.

Desired impacts

Greater consumer participation

- Greater consumer participation with more engaged consumers that have a greater willingness to shop around for their electricity service, and reduced barriers to entry, exit and expansion (and innovation) in retail markets.
- Improved electricity price risk management will incentivise consumers to take responsibility for their own risk management and better manage their resources.

Reducing barriers

- Improving the options available to retailers to manage their spot price risk will reduce barriers to entry in the retail market, and contribute to more robust competition between retailers.
- More stable prudential security requirements and improved integration between hedge instruments and the provision of prudential security should reduce a barrier to retail entry and expansion, and allow direct connect consumers to compete more effectively.

Providing efficient price signals

- An active market in exchange traded products (such as ASX derivatives) provides a transparent and robust forward price curve. This information assists parties to make informed risk management and investment decisions.

Promoting flexibility and resilience

- Ensuring that the electricity market arrangements keep pace with the evolution of the hedge market will promote further development of the risk management products.

Initial assessment of size: High

Initial assessment of net public benefit: High

Key projects	2014/15	2015/16	2016/17
(B9) Consumer switching programme – The <i>What's My Number</i> (WMN) campaign is the primary consumer switching fund (CSF) initiative. It promotes the benefits of comparing and switching retailers. The appropriation for the facilitating and promoting consumer switching ends on 30 April 2014. The Authority is assessing the costs and benefits of continuing the WMN campaign and alternatives for promoting to consumers the benefits of comparing and switching retailers. More information about the CSF and WMN campaign is available at: http://www.ea.govt.nz/consumer/csf/ .	Design / Implement	Implement	Implement
(C4) Improving transparency of consumer electricity charges – This project is to identify and recommend alternative measures that promote competition by ensuring consumers have timely access to sufficient information so they can understand their bills, see what is driving price changes and make choices about their retailer.	Implement	Ex-post review	–
(C8) Improving access to retail data – Improving access to retail data to enhance price comparison, product and service innovation, and retail market analysis and monitoring. This project has four parts: <ul style="list-style-type: none"> • enable collection of data through standardisation of formats (including Code amendment if required) • integration of existing market datasets (may include additional Registry fields) • development of a national retail price database for electricity and gas • enhanced retail market analysis, metrics and monitoring. A key outcome will be to provide consumers and the energy services industry with access to data.	Design / Implement	Implement	Review
(C19) Review of barriers to group switching and mass market aggregation – This project is to examine the benefits of consumers establishing buying groups and to investigate whether there are barriers inhibiting group switching.	Implement	Ex-post review	–
(D9) Review of retail competition on embedded and customer networks – This project is to examine barriers to retail competition on embedded and customer networks.	Design / Implement	Ex-post review	–
(C18) Review of barriers to retail competition in MUOSA – model use-of-system agreements were published in September 2012 with expectations that these MUOSAs would lead to significantly enhanced levels of commercial standardisation in agreements negotiated between retailers and distributors. We committed to examining the extent of alignment or departure from the MUOSA. This project is to examine whether variations away from the MUOSA adversely affect retail competition.	Ex-post review	–	–

Key projects	2014/15	2015/16	2016/17
(D2) Research project: effects of low fixed charges – This project is to examine the effects on efficiency and competition of the Electricity (Low Fixed Charge Tariff Option for Domestic Consumers) Regulations 2004 and to identify other means of achieving the objectives of the regulations. This project is under section 16(1) of the Electricity Industry Act 2010 which enables the Authority to carry out and make publicly available reviews, studies, and inquiries into any matter relating to the electricity industry.	Initial review	Report to Minister	–
(C17) Domestic contracting arrangements – This project is considering the potential for improving the arrangements for the consumer/distributor/retailer relationship, including for medically dependent and vulnerable consumers.	Implement	Ex-post review	–
(E2) Research project: efficiency of distribution company arrangements – This project is under section 16(1) of the Electricity Industry Act 2010 to undertake industry and market monitoring, and carry out and make publicly available reviews, studies, and inquiries into any matter relating to the electricity industry.	Investigation / CBA	TBD	TBD
(D1) Hedge Market Development – Monitoring industry progress and developing further market facilitation initiatives to improve the hedge market.	Design / Implement	Implement	Ex-post review
(B1) Settlement and prudential security review – Improvements to clearing and settlement parts of the Code to improve efficiency and competition.	Design / Implement	Implement	Ex-post review
(B5) Within-island basis risk (WIBR) – Introduction of a solution to assist parties to manage spot price risks within an island to enhance retail market competition.	Design / Implement	Ex-post review	–
(C2) Wholesale Market Information – Initiatives to improve access to wholesale market information, with a particular emphasis on information that influences the forward curve for electricity. <ul style="list-style-type: none"> • Implement Board decisions made in June 2013. • Improved access to the Wholesale information and trading system (WITS) and planning outage coordination protocol (POCP) for wider range of participants. Builds on initiatives recommended by WAG in 2012/13.	Implement	Ex-post review	–
(E7) Short-term hedge instruments – Consider the need for a short-term market for hedge instruments (e.g. day-ahead). Possible WAG project.	–	Design	Design / Implement

Programme: Competition in wholesale markets including ancillary services

Purpose

Improve the process for offer and dispatch in the wholesale energy (spot), instantaneous reserves, frequency keeping, extended reserves and potentially other ancillary service markets.

Desired impacts

Reducing barriers & facilitating consumer participation

- Introducing national markets for frequency and instantaneous reserves improves participation, especially for services in the South island.
- Removing technology specific references in the Code removes a barrier for increased demand-side participation in the provision of ancillary services.

Providing efficient price signals

- Introducing market concepts to a broader range of ancillary services (such as extended reserves) improves the efficiency of the resource allocation between these different services (for example allocation of demand response to either extended reserves or instantaneous reserves).
- Market innovations such as dispatchable demand improve the efficiency of price signals by allowing bids by purchasers to set final prices, an outcome that may often be lower cost than generation offers or forced load curtailment.

Promoting flexibility and resilience

- Introducing national markets for frequency and reserves allows a more diverse range of parties to provide these services.
- Improving the process for offer and dispatch, such as reducing the gate closure period, provides more flexibility for generators and purchasers to adjust their offers and bids in response to changing market conditions (such as varying wind generation output).

Increasing compliance

Further development of the offer and dispatch Code to take account of the different characteristics of demand and generation (such as co-generation, wind generation, base load generation, and industrial load) leads to improved compliance.

Initial assessment of size: High

Initial assessment of net public benefit: High

Key projects	2014/15	2015/16	2016/17
(B3) National market for frequency keeping – Initial consideration of a national market for frequency keeping to enhance wholesale market competition.	Design / Implement	Ex-post review	–
(B4) National market for instantaneous reserves – Provide for instantaneous reserves national market to enhance wholesale market competition. Update market design to enable the transfer of reserves from one island to the other via the HVDC. Implementation dependent on HVDC bi-pole control systems being fully in service. WAG project.	Implement	Ex-post review	–

Key projects	2014/15	2015/16	2016/17
(B8) Efficient procurement of extended reserves – Investigate options for a move over time towards developing a market for extended reserves (aka. AUFLS) to improve efficiency.	Design / Implement (may involve an interim solution)	Implement	Ex-post review
(C1) Dispatchable demand modified option (MODD) – Facilitating greater demand-side participation in the wholesale market	Implement / Review	–	–
(D4) Under-frequency management: reserves arrangements – Investigation into reserve arrangements.	Design / Implement	Ex-post review	–
(D8) Offer and dispatch Code development – Improve the offer and dispatch rules to improve operational efficiency, eg: <ul style="list-style-type: none"> • review of gate closure - potential further work (potential to delay if needed) • reserve offers • other areas where we are getting offer and dispatch Code amendment proposals - will need to be prioritised and progressed as resources permit. 	Design / Implement	Design / Implement	Design / Implement

Programme: Efficient pricing

Purpose

Improve the efficiency of spot market pricing in the wholesale market and develop appropriate arrangements for allocating the costs of transmission and distribution services.

Desired impacts

Reducing barriers to entry & providing efficient price signals

- More closely aligning forecast and settlement prices removes a significant barrier to demand-side participation.
- Addressing generator offer behaviour during pivotal supplier situations will address a source of price risk inhibiting retail competition.
- Improving confidence in forecast prices encourages parties to react to scarcity of supply situations.

Facilitating consumer participation

- More closely aligning forecast and settlement prices will encourage more consumers to become involved in demand-side participation.

More efficient transmission and distribution pricing

- The major expected benefits of the programme are more efficient price signals and improved investment decisions. The programme will give the expected benefits by examining market facilitation and Code amendment proposals that will result in more efficient transmission and distribution cost allocation methodologies.

Initial assessment of size: High

Initial assessment of net public benefit: High

Key projects	2014/15	2015/16	2016/17
(B7) Alignment of forecast and settlement prices – Review of options to align forecast and settlement prices, especially during periods of system stress, to improve efficiency and reliability. Wholesale Advisory Group (WAG) project.	Design	Design	Design / Implement
(B2) Pivotal pricing project – Consider options, and develop if appropriate, initiatives to bring more confidence that prices are efficient during pivotal generation situations. Wholesale Advisory Group (WAG) project.	Design / Implement	Ex-post review	–
(D6) Improvements to existing spot pricing process – Review the need for changes to the existing spot pricing process, potentially including: <ul style="list-style-type: none"> • improved modelling of constraints in the system operator' scheduling, pricing and dispatch model (SPD) for constraint softening • wind generation inputs into final pricing • infeasibility resolution improvement process • interim pricing period deadline changes. 	Design / Implement (work dependent upon progress of project B7)	Design / Implement	Design / Implement

Key projects	2014/15	2015/16	2016/17
(D7) Improved market modelling of losses – Improve the representation of losses in the scheduling, pricing and dispatch model (SPD) – provides for a lower cost market solution.	Ex-post review	–	–
(B10) Transmission pricing methodology (TPM) review – The Authority is developing a proposal for a new TPM that promotes overall efficiency of the electricity industry. We are seeking feedback on details of the proposal through a series of working papers and intend consulting on a revised proposal in mid-2014. More information about the TPM project and our functions is available at: http://www.ea.govt.nz/industry/transmission/ .	Design	Design	Implement
(C6) Distribution pricing review – Distributors are expected to align their pricing methodologies with voluntary pricing principles introduced in October 2010 to promote efficient distribution pricing and retail competition. The review is examining the extent of alignment and whether the Authority should take an alternative approach. More information about the distribution pricing project and our functions is available at: http://www.ea.govt.nz/our-work/programmes/transmission-work/principles-or-model-approaches-to-distribution-pricing/ .	Design	Design	Implement
(E1) Review of Part 6 (pricing principles) – A review of the pricing principles for distributed generation in Part 6 of the Code to ensure consistency and alignment with distribution pricing principles. This project may be incorporated into further work arising from the distribution pricing project (C6 above).	May be incorporated in to C6		
(E11) Review of Part 12 – Review of Part 12 of the Code to ensure it is fit for purpose. Includes benchmark agreement, connection Code, grid reliability standards.	Investigation / CBA	Design	Implement

Programme: Reliability

Purpose

A range of initiatives to improve the resilience (quality and reliability) of the national electricity system.

Desired impacts

Promoting flexibility and resilience

- Ensuring that key asset performance obligations and quality standards are fit for purpose given the changing mix of generation (such as increasing levels of wind and geothermal generation).
- Review and implement changes to improve the performance of extended reserves (AUFLS).

Fit for purpose market services

Improve market operation through appropriate system reliability and resilience.

Initial assessment of size Medium

Initial assessment of net public benefit High

Key projects	2014/15	2015/16	2016/17
(C9) AUFLS standard review – A project in which the system operator will determine what events AUFLS are actually covering (part of the security policy review).	Design	Implement	–
(C20) Asset owner performance obligations (AOPOs): fault ride-through – Review of low voltage fault ride-through AOPOs to determine if they are fit for purpose with the changing generation mix (ie significant wind generation).	Implement	–	–
(C22) Frequency regulation: review normal frequency band and AOPOs – Review of the frequency keeping Hz band, MW band and related AOPO's to determine if fit for purpose. Further system operator investigation may be required - implications for software.	Design / Implement	–	–
(D3) Under-frequency management including AUFLS technical review – Review of all under frequency management tools, including verifying modelling formats. Overall event management comment: Some components i.e. AUFLS block sizing and trigger points, will be progressed in conjunction with the AUFLS review work carried out by the system operator. Includes system operator consideration of dispensations and equivalence with respect to AUFLS exemptions.	Design / Implement	Implement	–

Monitoring, information and education

In addition to the business as usual monitoring, investigations and reports, the Authority is considering the following programme of work:

Programme: Provision of models and data

Purpose

Improve the transparency of industry processes by provision of data and models that enable replication of pricing calculation, counterfactual analysis, and rapid assessment of structure, conduct, and performance of the various markets that make up the electricity industry.

Desired impacts

Greater confidence in the industry arrangements, reduction of barriers to entry relating to difficulty obtaining information and undertaking technical analysis, a degree of self-censorship in regard to conduct which will be widely observable, better decision-making and consultation on Code changes. The electricity markets are highly structured technocratic creations. Provision of information and models which lift the lid on these arrangements ought to build confidence and reduce concentration of technical expertise and intellectual property that works against competition in the electricity markets, including markets for technical services.

Initial assessment of size: Medium

Initial assessment of net public benefit: High

Key projects	2014/15	2015/16	2016/17
(B15) Data warehouse: Web Portal redevelopment	Complete	–	–
Electricity Market Information (EMI) software redevelopment	Complete	–	–
RMT/SFT expansions to vSPD	Timing TBD	TBD	TBD
Market monitoring indices relating to structure, conduct and performance	Timing TBD	TBD	TBD
Review of hydrology data provision, fidelity, and modelling	Timing TBD	TBD	TBD
Review of hydrothermal optimisation techniques employed in the New Zealand industry.	Timing TBD	TBD	TBD

Operation of the electricity system and markets

In addition to the business as usual work in relation to operation of the electricity system and markets, the Authority is considering the following programmes of work:

Programme: Fit-for-purpose market services

Purpose

Market operations service providers (MOSPs) and the system operator provide systems and services that ensure effective market operation, increase market efficiency and facilitate market development.

Desired impacts

Systems and services that:

- Increase market efficiency through enabling interoperability of participant systems, adapting to changes in IT technology and automating transaction processes.
- Ensure effective market operation through appropriate system reliability and resilience.
- Facilitate market development through the use of flexible, scalable systems.

Initial assessment of size: Medium

Initial assessment of net public benefit: Medium

Key projects	2014/15	2015/16	2016/17
(B11) Service provider software review – A review of MOSP systems (excluding system operator and FTR manager) to ensure the technology remains current with performance and functionality requirements and the development of the electricity market.	Further steps following scoping study TBD	TBD	TBD
(B12) SOSPA Review – A wide-ranging review of the system operator service provider agreement (SOSPA) arrangements to improve efficiency.	Implementation of updated SOSPA as required	–	–
Both of the key current projects above are currently being undertaken at a strategic level, and are expected to result in the identification of a programme of work to improve MOSP operations and performance.	TBD	TBD	TBD

Programme: More efficient market operations

Purpose

Increasing the efficiency of electricity market operations through refining processes proscribed in the Code.

Desired impacts

Reduced costs for industry participants to complete market transactions and meet Code obligations, through refinement of operational processes.

Initial assessment of size: Low

Initial assessment of net public benefit: Medium

Key projects	2014/15	2015/16	2016/17
(B6) Review of half hour switching process – A comprehensive review of switching rules to improve efficiency.	Implement (as required)	–	–
(C28) Operational review of Part 6 – A review of the Code’s arrangements for the connection of distributed generation.	Implementation by industry	–	–
(D5) Electricity information exchange protocols (EIEPs) – Review and update of the EIEPs.	Implement	–	–
Participant education and information – Review of existing operational guidelines, identification and publishing of new guidelines and consideration of the need for other educational and training materials.	Ongoing	Ongoing	Ongoing
Review of participant audit requirements – Review of the audit framework to increase efficiency, especially for those participants with high levels of compliance, and ensure it aligns with recognised good practice.	Undertake review	TBD	–
Review of unmetered load (UML) arrangements – Review of Code arrangements for standard, shared and distributed UML to improve the transparency and accuracy of information.	–	Undertake review	TBD
Minor Code amendments – Ongoing review and amendment of the Code to improve operational efficiency and reduce transaction costs.	Ongoing	Ongoing	Ongoing

Compliance

No development programme identified at this stage. Ongoing business as usual activities continue.

Appendix D Proposed EECA Priorities

- D.1 This appendix provides information to assist stakeholders understand the rationale underlying the proposed levy-funded appropriation for the Energy Efficiency and Conservation Authority (EECA).

Background

- D.2 The Electricity Industry Act 2010 allows for the collection of a levy to part fund EECA to promote and facilitate the efficient use of electricity.
- D.3 In 2007, Cabinet approved an annual appropriation of up to \$17.5 million for the development of electricity efficiency programmes.
- D.4 From 1 November 2010, section 128(3)(c) of the Act provides for electricity levy funding of EECA in performing its functions and exercising its powers and duties in relation to the encouragement, promotion, and support of electricity efficiency.
- D.5 EECA is a Crown Entity, established under the Energy Efficiency and Conservation Act 2000. It is subject to the Crown Entities Act 2004. EECA's role is to encourage, support, and promote energy efficiency, energy conservation, and the use of renewable sources of energy in New Zealand. EECA is empowered to promote public awareness, promote practices and technologies, to arrange for the conduct of research, assessments demonstrations and studies, and to monitor and review the state of energy efficiency in New Zealand.
- D.6 This year EECA is proposing no increase to the levy, which will remain at \$13 million, while delivering increased significant electricity efficiency savings. EECA proposes funding a larger portion of the electrical products performance standards programme this year covering residential, commercial and industrial products. This work is very cost effective and is expected to result in a further improvement in the overall return on levy payers' funds.
- D.7 The Electricity Efficiency Appropriation Annual Report is attached to this document and details benefits achieved to date from levy funded activities.
- D.8 A consequence of providing greater funding to the electrical products programme is that funding will be reduced to electricity efficiency programmes in commercial and industrial sectors. In the 2013/14 year EECA will be re-focusing effort in the industrial and commercial programmes on developing longer term agreements with larger multi-site organisations. This will result in funding commitments spanning funding years as some project milestones are met in later years.
- D.9 The projected cost to the levy of the programmes proposed is summarised below:

Lighting efficiency	0.34 cents per kWh
Product standards and labelling	0.37 cents per kWh
Industrial electricity efficiency	1.0 cent per kWh
Commercial electricity efficiency	1.6 cents per kWh

New Zealand's Electricity Use

- D.10 At about 37,500 GWh⁷, electricity accounted for 26% of New Zealand's total energy usage in 2012. About 34% of this electricity is used in domestic applications – water heating, refrigeration, lighting, electronic appliances and space heating. About 24% is used in commercial applications – refrigeration, lighting, space heating and cooling, and water heating. The remaining 42% is used in industrial sectors – electric motors, metal manufacture and pump systems.
- D.11 Significant potential still exists in the areas identified above for efficiency gains to be made, and the work programme detailed below targets many of these areas for savings opportunities.
- D.12 Investment in cost-effective electricity efficiency measures benefits electricity consumers by directly reducing costs to businesses and homeowners.
- D.13 In aggregate, electricity efficiency also defers the timing of generation investment, which in turn places downward pressure on the forward wholesale price curve – a benefit to customers exposed to the wholesale market.
- D.14 For simplicity, EECA uses the reported industrial electricity price as a proxy for the marginal cost of new generation. In the Energy in New Zealand data set published by the Ministry of Business, Innovation and Employment, the reported price of industrial electricity for the 2012 calendar year was 11.04 cents per kWh, against 10.86 cents per kWh for the previous year.

Electricity efficiency programme design and performance

- D.15 Electricity efficiency programmes are designed to focus on economic and achievable savings across all sectors of the New Zealand economy. The programme design principles involve:
- (a) Identifying the sectors, technologies and practices across New Zealand where significant achievable electricity efficiency potential exists and can provide national economic benefit.
 - (b) Examining and understanding the barriers to investment that are inhibiting action by those expected to have the most interest in the savings opportunities identified.
 - (c) Bringing together the information from the first two steps, to develop cost effective electricity efficiency programmes that achieve measurable and sustainable electricity savings.
 - (d) Locking in savings by way of performance based contracting, improved product standards and labelling on electrical products.
- D.16 All programmes deliver national benefits at a total cost less than the marginal cost of new generation, and all are delivered at a cost to the levy of less than 2 cents per kWh saved.
- D.17 Residential consumer based programmes are designed around raising awareness of opportunities to make electricity savings at home and converting that awareness to action. EECA maintains a monitoring programme to measure

⁷ Source: *Energy in New Zealand 2013*, Ministry of Business, Innovation and Employment annual publication.

changing awareness and action in the consumer population, and compares its results against marketing industry measures for similar types of campaigns.

- D.18 With an investment of \$98 million since 2006, the levy-funded electricity efficiency programmes are estimated to have provided the following benefits (as at 30 June 2013):
- (a) electricity savings of 1,169 GWh per annum;
 - (b) peak demand reduction of 531 MW; and
 - (c) present value of savings estimated at \$635 million.
- D.19 For the 2012/13 year EECA reported 212 GWh of energy savings as a result of levy-funded activities. A total of \$12.1 million was spent in the 2012/13 year, which includes \$3.4 million of contracted commitments from the 2011/12 year. This equates to a 0.9 cent cost to the levy for each kWh saved⁸. A further \$4.3 million of levy-funded activity was contracted and has been carried forward to the 2013/15 year.

EECA electricity efficiency programme priorities

- D.20 The focus for 2014/15 will continue to be on those areas that demonstrate the highest economic and achievable potential and to target programmes to address the key barriers currently preventing realisation of those potentials, and will maintain focus on the potential available in the residential market.
- D.21 Targeted areas have been identified by way of both the Electricity Commission's KEMA Potentials Model and EECA's OPENZ Model and are as follows:
- (a) motorised systems in industry;
 - (b) heating, ventilation and air conditioning (HVAC), lighting and refrigeration in commercial buildings;
 - (c) residential lighting; and
 - (d) standards and labelling for electrical equipment and appliances.
- D.22 Programmes will be targeted to cost-effectively address market barriers, including:
- (a) access to information, leading to process efficiencies and behavioural changes;
 - (b) split incentives and intra-organisational blockages;
 - (c) technical expertise within and/or available to businesses; and
 - (d) budget constraints and investment capital prioritisation.
- D.23 EECA will also undertake research to ensure our potentials modelling suite is maintained with current information, and to address the market conditions we are facing.

⁸ For the sake of continuity, EECA has maintained the reporting convention used by the former Electricity Commission to calculate the cost to the levy. This involves using the annual savings to derive electricity savings based on a 10 year declining model.

D.24 The mix and quantum of programmes reflects the core objectives of the programmes – to maximise both the economic net present value generated by electricity savings and the value leveraged from the levy investment.

D.25 The priority programme areas for 2014/15 included in EECA's levy appropriation proposal are outlined in the following table.

Programme	Description	Proposed 2014/15 funding from levy (\$ million)
Commercial Sector – heating, ventilation, air conditioning, lighting and products.	<ol style="list-style-type: none"> 1. Providing information and building capability through building management training, the NABERSNZ building rating programme and commercial lighting efficiency information. 2. Training to improve electricity management and efficiency in the refrigeration, air-conditioning and heating services industry focusing on systems components, new technologies and activities within the industry. 3. Energy management advice programmes designed to encourage a strategic and long term approach to energy management. 4. Providing monitoring and targeting projects, continuous commissioning projects and audit and works projects. 5. Delivering, updating and enforcing standards and labelling programmes for products utilised in the commercial sector such as computer equipment including data servers and monitors, and lighting products. 	4.2
<p>Estimated PJ savings (annualised) Products programme 0.03 PJ Commercial programme 0.13 PJ</p>		<p>Estimated cost to the levy 0.37 c/kWh 1.6 c/kWh</p>
Industrial Sector – motors and motor systems and products.	<ol style="list-style-type: none"> 6. Building the capability of the motor repair industry to maintain motor stock efficiency, and of specialist technical service providers to identify and implement efficiency improvements. 7. Providing businesses with information to make economically sound policies for motor repair or replacement decision-making. 8. Facilitating uptake of motor systems (compressed air, pumps, fans and drives) efficiency improvements. 9. Technology demonstration projects where there is a large potential for replication. 10. Assist businesses importing regulated products for industrial and commercial use to meet product standards and ensure poorly performing products are not available in New Zealand. 11. Introducing and updating minimum energy performance standards for pumps and fans, distribution transformers and industrial air conditioning. 	3.2
<p>Estimated PJ savings (annualised) Products programme 0.04 PJ Industrial programme 0.15 PJ</p>		<p>Estimated cost to the levy 0.37 c/kWh 1.0 c/kWh</p>

Programme	Description	Proposed 2014/15 funding from levy (\$ million)
Residential Sector – lighting and products.	12. Providing information on lighting options, product efficiency labelling and other electricity efficiency opportunities such as hot water heating and space heating. 13. Developing and updating standards for identified products with potential for significant energy savings such as electric storage water heaters, heat pump water heaters, air conditioning units (including portable units), standby power in home appliances and white-ware efficiency. 14. Providing information and product labelling to improve consumer decision making when purchasing electrical appliances. 15. Implement product standards developed in 2013/14. Focus on education and information to ensure products newly brought into the programme meet required standards.	5.6
Estimated PJ savings (annualised) Lighting programme 0.32 PJ Products programme 0.53 PJ		Estimated cost to the levy 0.34 c/kWh 0.37 c/kWh
Total of all levy-funded efficiency activities		13.0
Total Estimated PJ savings (annualised) 1.2 PJ		Total Estimated cost to the levy 0.58 c/kWh

D.26 The programmes address barriers to natural uptake of efficiency improvements in order to provide immediate value to participants in the programme as well as help to diminish the scope or size of the barrier and, over time, remove the need for intervention.

D.27 Barriers and programme priorities may change over time, as a result of the emergence of specific (previously unrecognised) technology or market opportunities. Should such an event occur during the course of 2014/15, any change in priorities will be made with reference the objectives outlined above. That is, any changes to the programme content will be subject to economic cost-benefit analysis and prioritisation assessment to ensure that levy payers' funds are targeted to deliver cost-effective solutions.

Future levy funding options

D.28 With our focus on making the best investment with the appropriation in coming years we consider there are future options available to us that will provide a solid return to all levy payers.

D.29 The commercial and industrial sectors continue to present significant opportunities for energy savings. EECA is currently examining its operating model with a view to delivering greater benefits over a wider range of the commercial sector at a reduced cost to the government, while still delivering a positive national benefit.

- D.30 EECA has the mandate to recommend establishing and upgrading minimum energy standards and labelling for appliances and products. New Zealand consumers and businesses have made significant savings through the application of standards and labelling to domestic, commercial and industrial products, including electric water heaters, refrigerators, heat pumps, set top boxes, distribution transformers, electric motors, fluorescent lighting and computers. Savings from new and revised standards in domestic appliances are measured annually and contribute to significant energy savings in homes as well as the commercial sector.
- D.31 Clear opportunities also exist for domestic electricity users – water heating, electronics, refrigeration and space heating in residences fall into the top ten largest uses of electricity in New Zealand. With domestic consumers, a large number of users each use a small amount of energy, and our use of levy funds needs to be tailored with this in mind. Advertising, awareness raising and encouraging action are valid and important tools despite the difficulty in attributing actual energy savings.

Forecast performance from levy funded measures

- D.32 By the end of 2014/15, EECA is forecasting, since 2006:
- (a) cumulative annual savings of 1,836 GWh;
 - (b) 568 MW reduction in peak demand⁹;
 - (c) present value of savings of around \$1152 million; and
 - (d) at a cost to the levy of less than 2 c per kWh saved.

⁹ Until the Electricity Commission's electricity efficiency programme was merged into EECA, the average ratio of peak demand reduction to energy saved was estimated to be in the order of 0.44, reflecting the high contribution (about 80%) residential lighting made to total electricity savings arising from the EC efficiency programme. A similar ratio was determined for 2012-13. This ratio will be reviewed annually to reflect the mix of efficiency programmes undertaken.

Appendix E EECA 2012/13 Annual Report on the Levy-Funded Electricity Efficiency Appropriation

The Electricity Efficiency Appropriation

ANNUAL REPORT

2012/13 Financial Year



**Energy Efficiency and
Conservation Authority
Te Tari Tiaki Pūngao**

From the Chief Executive

I am pleased to report to you on the progress of the Electricity Efficiency programme run by EECA in the 2012/13 year.

Our electricity efficiency initiatives are allocated so as to deliver the highest national benefits for every dollar spent. This year we have delivered electricity savings in lighting efficiency (100 GWh), commercial buildings (60 GWh) and in industrial systems (52 GWh). Since 2006 the electricity efficiency programme has delivered cumulative annual savings of 1,169 GWh.

These savings have contributed to the deferral of investment in new generation capacity and have maintained downward pressure on electricity prices for all consumers.

EECA will continue to apply rigorous standards to the delivery of all of our programmes.

Details of the 2012/13 programme successes are included in this annual report.

The electricity efficiency measures funded through the levy enable all New Zealanders to be encouraged to adopt electricity efficiency. I would like to acknowledge how important a contribution the levy is to the overall operation and performance of EECA. I would like to thank the industry for the constructive manner in which the consultation was carried out last year with submissions and consultation from a range of industrial, manufacturing, product suppliers and residential customer groups.

We look forward to your support for our programmes.

Mike Underhill
Chief Executive

Introduction

Every year electricity users pay a levy that is in part appropriated to the Energy Efficiency and Conservation Authority (EECA) to deliver a range of electricity efficiency programmes. This report describes what was funded and delivered in the 2012/13 financial year.

The Electricity Industry Act allows for the levy to be collected and provides for EECA to deliver the electricity efficiency programme, thereby encouraging, promoting and supporting electricity efficiency. EECA is allocated funding at budget time to deliver the programme, and the Crown is reimbursed from levy monies collected.

In 2011 EECA consulted with electricity users on a proposed electricity efficiency delivery programme for the 2012/13 year. The process concluded with Ministerial approval for a \$13 million expenditure on electricity efficiency programmes in 2012/13.

Last year we carried \$3.4 million of contracted commitments forward from 2011/12 into the 2012/13 year. These commitments were met in the 2012/13 year. \$8.7 million of levy funded work was paid out, and a further \$4.3 million of commitments were contracted and have been carried over to the 2013/14 year.

Work committed represents contracted grant expenditure for eligible electricity efficiency programmes where completion and payment milestones fall after 30th June 2013.

The Electricity efficiency programme

EECA designs its programmes to focus on economic and achievable savings across all sectors of the New Zealand economy.

The key programmes focus on:

- commercial and residential sectors - efficient lighting products and controls
- the commercial building sector - information campaigns, building manager training and awareness raising, energy management system design and capital works grants, and
- the industrial sector - information campaigns, training and accrediting specialist experts, electricity efficiency audits and targeted capital works grants.

Programme outcomes in 2012/13

Since 2006, these programmes have resulted in, as at 30 June 2013:

- cumulative annual savings of 1,169 GWh (an increase of 212 GWh from 1 July 2012)
- 445 MW reduction in peak demand
- \$635 million worth of savings (at present value)

This has been achieved at a levy cost of less than 2 cents per kWh.

Programme benefits are delivered not only to those who are using electricity more efficiently via direct cost savings, but also to all consumers of electricity. This is because reduced demand both maintains downward pressure on wholesale electricity prices and reduces the need to build new generation capacity.

Funding re-allocation

The consultation for the 2012/13 year was undertaken early in the 2011/12 year. In the time between the consultation being undertaken and the budgets being set for the 2012/13 year several changes were made to the funds allocated to electricity efficiency programmes. In response to a reduced uptake of commercial lighting programmes, the allocated funds were reduced from \$5.5 million to \$5.1 million, and similarly the industrial programme allocation was reduced from \$3.0 million to \$1.8 million. This funding was allocated to the commercial buildings programme where a strong response was anticipated.

The electricity efficiency programme achievements

Programme	Description	Key achievements for 2011/12			
<p>Efficient lighting</p> <p>Energy savings for 2012/13</p> <p>100 GWh</p>	<p>Reducing barriers to installation of efficient lighting through the following:</p> <ul style="list-style-type: none"> • Training programmes for lighting engineers, electricians and retail staff. • Providing information and education (RightLight) and financial incentives to businesses and householders. 	<p>Information and capability</p>			
		<p>Training was provided to 83 lighting engineers, facilities managers and architects on options to reduce lighting expenses in commercial buildings. Work commenced on a lighting “best practice guide” which will support an improvement in retrofit lighting solutions and options for commercial buildings</p> <p>The RightLight marketing campaign targeted householders and retail sales staff to reinforce the message that compact fluorescent lamps (CFLs) use less electricity than their equivalent incandescent bulbs, and are a more cost effective choice in most situations. Sales growth of efficient bulbs for the year ending May 2013 was up by 15% on the previous year, with a sales volume of 1.7 million efficient light bulbs.</p>			
		<p>Financial incentives to overcome cost barriers</p>			
		<p>EECA continued the efficient lighting controls programme, saving electricity when spaces are unoccupied or have sufficient daylight (using occupation sensors, daylight harvesting and similar emergent technologies).</p>			
<p>Consultation</p>	<p>Allocation</p>		<p>Expenditure</p>		
<p>Proposed 2012/13 funding from levy consultation (\$ m)</p>	<p>Committed funds from the 2011/12 year (\$m)</p>	<p>Allocated in 2012/13 (\$m)</p>	<p>Funds spent in 2012/13 year (\$m)</p>	<p>Funds committed for future years (\$m)</p>	
<p>5.5</p>	<p>0.0</p>	<p>5.1</p>	<p>4.2</p>	<p>0.9</p>	

Programme	Description	Key achievements for 2011/12			
Commercial Buildings — heating, ventilation, air conditioning and refrigeration systems Energy savings for 2012/13 60 GWh	Reducing barriers to efficiency improvements in commercial buildings and businesses by: <ul style="list-style-type: none"> Building the capability of energy specialists, facilities managers, real estate agents and valuers to recognise, advise on, and implement improvements. Providing information and financial incentives to the commercial building sector to uptake economic opportunities. 	<p>Information and capability</p> <p>Industry training organisations were supported to deliver high quality training to 155 commercial building energy specialists and facilities managers who will go on to recognise, advise on, and implement improvements in commercial buildings.</p> <p>In conjunction with the New Zealand Green Building Council the building energy rating scheme, NABERSNZ was launched in June with 11 ratings underway by year-end. This scheme is based on the highly successful scheme which has been running in Australia for some years.</p> <p>Financial incentives to overcome cost barriers</p> <p>The Energy Management Advice programme helped organisations design and implement their own energy management systems, including developing savings-funded internal energy management strategies and implementation plans.</p> <p><i>Design First</i> is a programme which provides design advice for improving the energy efficiency of new builds, and was rolled out initially in Christchurch.</p> <p>Co-investment is available for three types of projects:</p> <ul style="list-style-type: none"> monitoring and targeting projects continuous commissioning projects audit and works projects. <p>Committed projects are contracted and will be paid out in subsequent years pending the delivery of the contract milestones.</p>			
	Consultation	Allocation		Expenditure	
	Proposed 2012/13 funding from levy consultation (\$ m)	Committed funds from the 2011/12 year (\$m)	Allocated in 2012/13 (\$m)	Funds spent in 2012/13 year (\$m)	Funds committed for future years (\$m)
	4.5	2.9	6.1	6.8	2.2

Programme	Description	Key achievements for 2011/12				
Industrial Energy savings for 2012/13 52 GWh	The programme aims to reduce market barriers to electricity efficiency improvements in industry, with particular emphasis on motors and motorised systems (pumping, fan and compressed air systems) The principal barriers to uptake are: <ul style="list-style-type: none"> • lack of information • service provider capability • financial constraints or inefficient capital rationing. 	Information and capability Information on electricity saving opportunities was provided large industrial energy users. Training courses were provided to 541 attendees to assist with their identification of electricity efficiency opportunities. Capability-building of energy efficiency service providers to industry continued, with professional development courses and webinars being delivered by the University of Waikato.				
		Financial incentives to overcome cost barriers Co-investments were made in energy audits for industrial sites with a combined annual energy spend of \$183 million. Co-investment was allocated to projects to improve the efficiencies of motorised systems (pumps, fans and compressed air systems) and dairy sheds for industrial consumers.				
		Consultation	Allocation		Expenditure	
		Proposed 2012/13 funding from levy consultation (\$ m)	Committed funds from the 2011/12 year (\$m)	Allocated in 2012/13 (\$m)	Funds spent in 2012/13 year (\$m)	Funds committed for future years (\$m)
3.0	0.5	1.8	1.1	1.2		

Consultation	Allocation		Expenditure	
Proposed 2012/13 funding from levy consultation (\$ m)	Committed funds from the 2011/12 year (\$m)	Allocated in 2012/13 (\$m)	Funds spent in 2012/13 year (\$m)	Funds committed for future years (\$m)
13.0	3.4	13.0	12.1	4.3

Funding for the 2013/14 Year

In 2012/13 we consulted with levy payers on the 2013/14 levy programme. It was subsequently agreed with the Minister to retain a \$13 million programme focussed on commercial and industrial opportunities, lighting opportunities in the residential sector and to partially fund the product standards programme.

Case Studies

EECA produces case studies to illustrate how our programmes benefit different sectors of the economy. Two such case studies are included below. The first details significant energy savings made at The Dowse museum in Lower Hutt as a result of taking part in EECA's commercial building programme. The second illustrates the evolution of our lighting efficiency focus.

Case Study 1 – Saving electricity at The Dowse.

A carefully regulated environment is essential for maintaining artwork. But running a system 24/7 can mean large energy waste when it's not controlled correctly. Information and support from EECA's commercial building programme has reduced electricity use at The Dowse in Lower Hutt where continuous commissioning is helping cut the annual energy bill by \$40,000 – creating a safe environment for art and a pleasant space for visitors.

When ECOsystems undertook an energy audit of The Dowse in 2011, they discovered issues with the Building Management System (BMS) which controls heating, ventilation and air conditioning (HVAC). Piecemeal changes to controls over time meant that both boilers and a chiller ran all year, resulting in huge energy waste. At times the system was even heating and cooling the same spaces simultaneously. Further inspection revealed numerous faults.

As a priority, ECOsystems re-wrote parts of the BMS logic to eliminate wastage, improve environmental control and make the system as energy efficient as possible. They also promoted improved maintenance to keep equipment in good running condition.

This vastly improved HVAC operation reduced energy costs, improved temperature and humidity control, and meant the museum could function effectively in accordance with its design.

Sizeable energy savings achieved through the BMS revision gave The Dowse management confidence to proceed with wider changes. In November 2012 ECOsystems project managed a retrofit including:

- installing variable-speed drives (VSDs) across all fans in the HVAC system, enabling them to operate at low speeds when possible.
- calibrating existing CO₂ sensors and installing new ones (these measure CO₂ levels and adjust air conditioning).
- replacing leaking heating control valves.
- installing a set of doors between the café and museum. The lack of a barrier between the café's outdoor area and the museum itself was placing extra strain on heating and cooling systems.

At the outset, ECOsystems guaranteed energy savings of 30%. Six months after the retrofit, this had been exceeded with 43% savings compared to the baseline year.

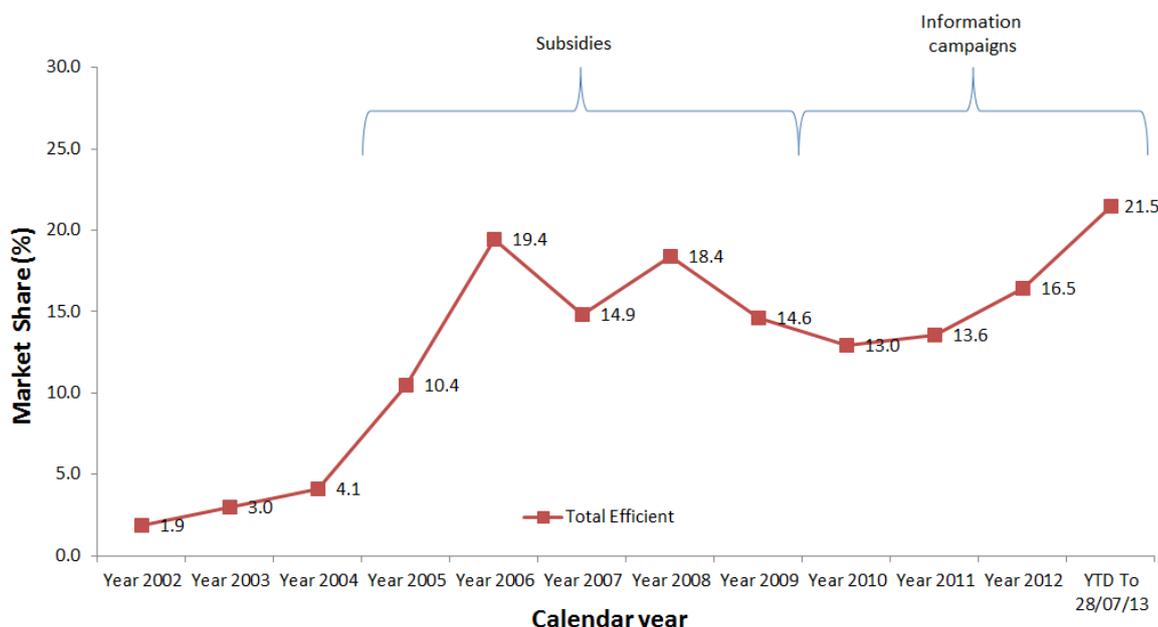
Courtney Johnston, Director of Hutt City Museums, says "savings on energy are very valuable in a time when we're being encouraged to do more with less. The Dowse has a reputation for being innovative and involved with our local community – values that mesh well with this energy efficiency project. Energy efficiency not only makes economic sense; it aligns with our desire to embrace new technology and developments that enable us to do our work better."

Case Study 2 – The RightLight campaign evolution

The Electricity Commission and subsequently EECA have undertaken a number of initiatives to increase the uptake of efficient lighting in the residential market. From 2005 – 2009 the Electricity Commission ran subsidy programmes encouraging consumers to trial efficient lighting options. These subsidies reduced the major barrier facing consumers - the upfront cost difference between incandescent and compact fluorescent lamps (CFLs) and efficient halogens. During the subsidy period the share of the efficient light bulb market in supermarkets peaked at 19.4 % (calendar year average market share by volume*) in 2006.

The graph below illustrates changes in market share across lighting campaigns.

Market Share of Efficient Light Bulbs
 Calendar year average market share by volume



In 2009 the efficient lighting programme was revised and re-launched as part of RightLight, an information and capability building programme to provide residential, commercial and industrial consumers with credible, accurate and useful information on energy efficient lighting. In 2011 the RightLight programme was transferred to EECA, and final integration into EECA’s ENERGYWISE™ campaign was completed in time for the 2013 lighting season.

The RightLight 2013 campaign has seen energy efficient bulbs achieve 24.3% market share in the quarter to the end of July 2013, up from 14.6% in the previous May-July quarter. This is the highest quarterly market share since November 2006 and indicates the programme is on track to achieve our target of 2.2 million supermarket sales of efficient light bulbs this year.

EECA’s efficient lighting programme addresses the key information and capability barriers through two main channels:

1. Information: A high-profile, integrated advertising campaign focusing on savings and quality (MEPS and ENERGYSTAR®). This is supported by website tools to aid the purchase decision process, as well as in-store activities to convert purchasers at point of sale.
2. Capability: an on-going retail sales training programme for staff in electrical wholesalers, DIY stores and specialist lighting stores.

The key challenge for RightLight in 2014-15 and beyond is the consolidation of these gains and encouraging supermarkets and other retailers to widen their range of efficient bulbs, including LED's. A focus on quality will be important to improve the customer experience of energy efficient bulbs.

In countries where incandescent bulbs are no longer available, communications as well as packaging, have shifted from 'shopping for watts' to 'shopping for lumens.' Product with this new packaging is also being imported into New Zealand, resulting in a flow-on effect where lumens will increasingly become the standard Kiwis shop by. To support this 'conversion to lumens' EECA has produced a new ENERGY SPOT episode about buying by lumens.

EECA will continue to work with key partners at distributor level for improved product messaging and the use of the ENERGY STAR quality mark, and with key retailers Progressive Enterprises Limited (Countdown supermarkets), Foodstuffs (New World and Pak 'n Save Supermarkets), Mitre 10 and the Warehouse to improve the presentation of efficient lighting in-store, and increasing the percentage of shelving dedicated to efficient lighting.

After the 2014/15 season EECA expects to begin exiting the promotion of efficient lighting. The market will have gained enough momentum and consumer understanding will have increased to a level that means EECA can reduce its support for efficient lighting. LED light bulbs will also have been integrated into the residential market without the negative consumer experiences that occurred with CFLs.

**Sales Data provided by Aztec NZ Scan Data, Total Supermarkets, Volume to 28/07/13*

Further case studies are available on the EECA Business website [here](#).

Or go to this page - <http://www.eecabusiness.govt.nz/case-studies>