

INDEPENDENT REVIEW
OF THE GREENHOUSE AND ENERGY MINIMUM
STANDARDS (GEMS) ACT 2012
DRAFT REPORT NOVEMBER 2018

Disclaimer

While reasonable efforts have been made to ensure that the contents of this publication are factually correct, the Commonwealth does not accept responsibility for the accuracy or completeness of the contents, and shall not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance on, the contents of this publication.

© Copyright Commonwealth of Australia, 2018.



The Independent Review of the GEMS Act 2012 Draft Report is licensed by the Commonwealth of Australia for use under a Creative Commons By Attribution 3.0 Australia licence with the exception of the Coat of Arms of the Commonwealth of Australia, the logo of the agency responsible for publishing the report, content supplied by third parties, and any images depicting people. For licence conditions see: <http://creativecommons.org/licenses/by/3.0/au/>

This draft report has been produced by the Australian Government Department of the Environment and Energy for the Independent Review of the GEMS Act 2012.

This document should be attributed as 'The Independent Review of the GEMS Act 2012 Draft Report, Commonwealth of Australia 2018.'

The Commonwealth of Australia has made all reasonable efforts to identify content supplied by third parties using the following format '© Copyright, [name of third party]'.

Making a submission

The GEMS Review Team invites written submissions on the Draft Report.

Submissions are due by **5:00pm AEDT, Friday, 21 December 2018**. Any submissions received after this date will be considered at the Government's discretion.

Submission instructions

Where possible, submissions should be sent electronically, preferably in Microsoft Word or other text-based formats, to the email address listed below. Submissions may be sent to the postal address below.

All submissions must include a cover sheet, available at:

www.energy.gov.au/government-priorities/energy-productivity-and-energy-efficiency/gems-act-review

Submissions can be forwarded to:

Email: GEMSreview@environment.gov.au

Postal: Independent Review of the *GEMS Act 2012*– Discussion Paper submissions
Appliance and Building Energy Efficiency Branch
Department of the Environment and Energy
GPO Box 787
CANBERRA ACT 2601

Public consultation sessions

Public consultation sessions will allow stakeholders an opportunity to discuss their input and raise any questions. Details will be available soon at: www.energy.gov.au/government-priorities/energy-productivity-and-energy-efficiency/gems-act-review. If you wish to be notified about these sessions, please email GEMSReview@environment.gov.au.

Confidentiality statement

All submissions will be treated as public documents, unless the author of the submission clearly indicates the contrary by marking all or part of the submission as 'confidential.' Where a submission is marked 'confidential' it will only be provided to the GEMS Review Team and members of the COAG Energy Council's Energy Efficiency Advisory Team.

Public submissions, including any personal information of the author(s) and/or other third parties contained in the submission, may be published in full on the Department's website and/or energyrating.gov.au.

If a submission contains the personal information of any third party individuals, please indicate in the submission whether they have provided consent to the publication of their information.

Any request made under the *Freedom of Information Act 1982* for access to a submission marked confidential will be determined in accordance with that Act.

CONTENTS

EXECUTIVE SUMMARY	8
DRAFT RECOMMENDATIONS	10
1. Introduction.....	15
1.1 Purpose of the review	15
1.2 Independent reviewer.....	15
1.3 Scope.....	15
1.4 Methodology.....	16
1.5 Consultation	16
1.6 Out-of-scope stakeholder issues.....	17
2. Summary of provisions, and operation of, the GEMS Act	17
2.1 Purpose of the legislation	17
2.2 Governance and administration	19
2.3 2015 GEMS Review	19
2.4 Products regulated under the GEMS Act	21
2.5 E3 prioritisation plan.....	22
2.6 Current reporting	22
3. Context.....	23
3.1 Key points	23
3.2 Broader energy policy	23
3.3 Product regulation within an international market.....	24
3.4 Interaction with other energy efficiency policies and programs	24
4. Effectiveness of the GEMS Act	27
4.1 Key points	27
4.2 Streamlined nationally consistent approach.....	27
4.3 Saving energy and reducing greenhouse gas emissions	29
4.3.1 Illustrated impact of GEMS regulations.....	31
5. Opportunities to improve the operation of the GEMS Act	34
5.1 Key points	34
5.2 GEMS determinations	35
5.2.1 Introduction.....	35
5.2.2 Regulatory framework and innovation	36
5.2.3 Determinations process	37
5.2.4 Removing GEMS determinations	42

5.3	Registrations	43
5.3.1	Introduction.....	43
5.3.2	Large number of models.....	44
5.3.2	GEMS product unique identifiers	46
5.3.3	Registration obligation for customised products	47
5.3.4	Multiple registration requirements.....	48
5.3.5	'Grandfathering' and the registration of newly regulated products.....	50
5.4	GEMS compliance	51
5.4.1	Introduction.....	51
5.4.2	GEMS compliance resourcing	53
5.4.3	Compliance monitoring approach	54
5.4.4	Penalties and reporting.....	55
5.4.5	Two stage check testing	57
5.5	Managing the GEMS program.....	58
5.5.1	Mandatory or voluntary standards and labelling	58
5.5.2	Data.....	60
5.6	Consumer behaviour.....	63
5.6.1	Energy rating label.....	63
5.6.2	Education.....	66
5.7	Ensuring the Act remains relevant	68
5.7.1	Establishing a trajectory for energy efficiency standards	68
5.7.2	Expand and align with international regulations.....	70
5.8	Pushing the boundaries of the Act	74
5.8.1	Integrated products.....	74
5.8.2	Demand response	77
5.8.3	Potential to expand to energy systems	78
	Appendix A: Terms of Reference.....	82
	Appendix B: 2015 GEMS Review Recommendations.....	84
	Appendix C: Jurisdiction Energy Efficiency Programs	87
	Appendix D: E3 Program Impact Analysis: Refrigerators and Freezers, June 2017	94

List of abbreviations

4E	Energy Efficient End-Use Equipment
ACT	Australian Capital Territory
APEC	Asia-Pacific Economic Cooperation
AS	Australian Standard
AS/NZ	Australian and New Zealand Standard
ASBEC	Australian Sustainable Built Environment Council
AiGroup	Australian Industry Group
AREMA	Air Conditioning and Refrigeration Equipment Manufacturers Association
CBD	Commercial Building Disclosure
CEM	Clean Energy Ministerial
CESA	Consumer Electronic Suppliers Association
COAG	Council of Australian Governments
E3	Equipment Energy Efficiency
EEAT	Energy Efficiency Advisory Team
EECA	Energy Efficiency and Conservation Authority
EESS	Equipment Electrical Safety System
ERL	Energy Rating Label
The Finkel Review	The Independent Review into the Future Security of the National Electricity Market
GEMS	Greenhouse and Energy Minimum Standards
The GEMS Act	Greenhouse and Energy Minimum Standards Act 2012
IEA	International Energy Agency
IEC	International Electrotechnical Commission
IPEEC	International Partnership on Energy Efficiency Cooperation
ISO	International Organisation for Standardisation
Kg	Kilogram
Kwh	Kilowatt hour
L	Litre
LCA	Lighting Council of Australia
LED	Light Emitting Diode
MEPS	Minimum Energy Performance Standards
MW	Megawatt

NatHERS	Nationwide House Energy Rating Scheme
NSW	New South Wales
OPSGG	Ozone Protection and Synthetic Greenhouse Gases
PV	Photovoltaic
RBS	Residential Baseline Study
RIS	Regulatory Impact Statement
SEAD	Super-Efficient Equipment and Appliance Deployment
TV	Television
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
VERLP	Voluntary Energy Rating Labelling Program
WELS	Water Efficiency Labelling and Standards

EXECUTIVE SUMMARY

The *Greenhouse and Energy Minimum Standards Act 2012* (GEMS Act) came into effect on 1 October 2012, creating a national framework for product energy efficiency in Australia. The legislation requires that a review of the GEMS Act take place as soon as possible after five years of its operation. This report provides the draft findings and recommendations of this independent review. These have been informed by submissions to the March 2018 discussion paper as well as group and one-on-one meetings between the independent reviewer and stakeholders. Submissions are also welcomed on this report (**see Making a Submission, p.3**).

The draft report finds that the GEMS Act is achieving its purpose of providing a streamlined nationally-consistent approach to appliance energy efficiency while effectively reducing energy use, power bills and greenhouse gas emissions.

It also finds that, for the GEMS Act to continue to meet its objectives, and reduce costs of living for Australian households, its operation will need to adapt to changing market conditions and requirements. Potential ways the GEMS Act could deliver additional benefits include:

- **Updating energy efficiency standards for products that are already regulated.** Any such updates would need to take into account technological advances and international best practice.
- **Expanding to new high energy using products that are not currently regulated in Australia.** The “low hanging fruit” of standardised consumer goods have already been captured under the GEMS Act. To facilitate coverage of further high energy products, updates to some registration and compliance arrangements, to make them more flexible, would be required.
- **Expediting development and implementation of regulations.** When considering this improvement, it is extremely important that a balance be found between expedience and adequate consultation with stakeholders.
- **Improving the effectiveness of the energy rating label.** This would enhance customer understanding of the choices available to them and, together with broader education and awareness activities, assist customers to better engage with energy efficiency.

When considering improvements to the operation of the GEMS Act, the draft report proposes three implementation time horizons.

- **Horizon 1** covers short term improvements that will not require legislative change, to be completed within 12 months. These improvements are for products that are already regulated.

- **Horizon 2** covers medium term improvements, with those not requiring legislative change to be completed by June 2020, and those requiring legislative change to be completed by November 2020. Most of these improvements facilitate expansion to a greater range of products.
- **Horizon 3** covers long term improvements, which will require further consideration. These improvements facilitate better coordination with other policies, programs and legislation. This horizon recognises that there is a limit to what the GEMS Act can achieve on its own, and that there are opportunities to move to a more holistic approach to regulating energy efficiency. This is crucial to maximising energy efficiency gains in the long term.

These improvements are reflected in the draft recommendations and discussed in detail in **Section 5** of this report.

DRAFT RECOMMENDATIONS

Implementation and transition

The draft recommendations are grouped under three implementation time horizons. A phased approach to implementation will ensure that more straightforward improvements are realised as soon as possible. The actual implementation dates of all changes will be affected by their complexity and potential impact. More detail on specific actions are provided in **Section 5** of this report.

The transition to an amended GEMS Act will require appropriate consultation with all affected stakeholders.

Additionally, section 176 of the GEMS Act specifies that the next review of the operation of the Act be commenced as soon as possible after October 2027.

Horizon 1

Short term improvements will not require legislative change, to be completed within 12 months

Strategic direction

- 2.¹ The Commonwealth Government continue to include appliance and equipment energy efficiency as part of any future broader suite of energy policies.

Determinations

3. The Commonwealth Government maintain the current flexibility within the regulatory framework to provide an appropriate balance between certainty and the flexibility to allow for product innovation.
4. The Commonwealth Government request that the COAG Energy Council consult with industry, on a product-by-product basis, before specifying how GEMS determinations will be developed.
7. The Commonwealth Government identify additional opportunities to streamline the process for developing GEMS determinations, while maintaining genuine consultation.
8. The Commonwealth Government consult with affected stakeholders before specifying the implementation date of GEMS determinations.
9. The Commonwealth Government request that the COAG Energy Council maintain a work plan to review and renew GEMS determinations as appropriate.

Registration

11. The GEMS Regulator engage with industry stakeholders to improve the usability of unique identifiers for industry and GEMS compliance officers.

¹ Recommendation numbers correspond to the order they appear in this report.

15. The GEMS Regulator identify opportunities to further streamline, and co-ordinate, registration processes to ease the regulatory burden on industry.

Compliance

17. The GEMS Regulator continue to identify further efficiencies and opportunities to allocate additional resources to GEMS compliance functions.
19. The GEMS Regulator continue to explore new ways to target compliance activities, including through collaboration with industry stakeholders.

Managing the GEMS Program

22. The Commonwealth Government request that the COAG Energy Council considers voluntary and mandatory measures when developing new or enhanced regulations.
25. The Commonwealth Government commission an independent assessment of the benefits delivered by current GEMS regulations.
26. The Commonwealth Government commission an independent audit of the methodology and model used in the calculation of the cost and benefits of equipment and appliance energy efficiency regulations.

Consumer behaviour

27. The Commonwealth Government request that the COAG Energy Council continues to examine the costs and benefits associated with mandatory disclosure of energy rating information online and in print advertising.
28. The Commonwealth Government request that the COAG Energy Council pursues potential enhancements to the ERL.
29. The Commonwealth Government request that the COAG Energy Council continues to engage in education, energy rating labelling and other efforts to promote energy efficient behaviours.

Ensuring the GEMS Act remains relevant

30. The Commonwealth Government request that the COAG Energy Council continues to update its work plan annually to ensure policy development remains focused on regulations that will deliver the greatest energy reductions.
33. The GEMS Regulator determine how GEMS regulations apply to new multifunctional products on a case-by-case basis and in consultation with the affected party.

Pushing the boundaries of the GEMS Act

34. The Commonwealth Government request that the COAG Energy Council monitors the emerging trends in relation to multifunctional products and ensures they are adequately reflected in the E3 prioritisation plan.
35. The Commonwealth Government request that the COAG Energy Council addresses the challenges associated with regulated products inside other products on a case-by-case basis.

Horizon 2

Medium term improvements not requiring legislative change, to be completed by June 2020

Strategic direction

1. The Commonwealth Government develop a long term strategic plan for energy efficiency. This strategic plan should include the complementary programs listed in **Section 3.4**.

Determinations

6. The Commonwealth Government work closely with Standards Australia on how the GEMS determinations and Standards Australia processes could be mutually improved.

Registration

10. The Commonwealth Government examine the appropriate use of supplier level registration.
13. The Commonwealth Government examine the joint registration arrangements with the Equipment Electrical Safety System for other products covered under the GEMS Act.

Compliance

18. The Commonwealth Government allocate additional resources to further strengthen GEMS compliance activities.

Ensuring the GEMS Act remains relevant

31. The Commonwealth Government request that the COAG Energy Council continues to monitor international standards and select those appropriate for adoption in Australia.
32. The Commonwealth Government request that the COAG Energy Council examines the cost and benefits of supporting Standards Australia's participation in international standards development.

Pushing the boundaries of the GEMS Act

36. The Commonwealth Government should continue to work with the COAG Energy Council to further encourage the realisation of demand response. (Also applies to Horizon 3)
38. The Commonwealth Government should continue to work with the COAG Energy Council to ensure consistency and harmonisation between appliance and building energy efficiency regulations. (Also applies to Horizon 3)

Medium term improvements requiring legislative change, completed by November 2020

Determinations

5. The Commonwealth Government amend the GEMS Act to require the Minister to release an exposure draft of each proposed GEMS determination.

Registration

12. The Commonwealth Government amend the GEMS Act to allow registration 'at the point a sale is confirmed' for clearly defined customised products.
16. The Commonwealth Government amend the GEMS Act to extend the grandfathering provisions that currently apply for non-compliant products to the registration obligation for compliant products.

Compliance

20. The GEMS Regulator engage with industry stakeholders on alternative check testing methods that ensure fairness, transparency, and integrity. (Also applies to Horizon 3)
21. Based on the outcomes of Recommendation 20, the Commonwealth Government amend the GEMS Act to allow a flexible approach to compliance and enforcement that maintains adequate protection for registrants. (Also applies to Horizon 3)

Managing the GEMS Program

23. The Commonwealth Government reviews its information and data requirements and examines the most appropriate means to realise those data needs.
24. Based on the outcomes of Recommendation 23, the Commonwealth Government amend the GEMS Act to allow the GEMS Regulator to collect further data to improve its evidence base.

Horizon 3

Long term improvements requiring further consideration

Registration

14. The Commonwealth Government consider the development of a single entry point / central government portal to serve all government product registration obligations.

Pushing the boundaries of the GEMS Act

37. The Commonwealth Government request the COAG Energy Council investigate the potential of a systems approach to energy efficiency regulation.

- Page left intentionally blank -

1. Introduction

1.1 Purpose of the review

The *Greenhouse and Energy Minimum Standards Act 2012* (the GEMS Act) came into effect on 1 October 2012. Section 176 of the GEMS Act specifies a review of the operation of the Act be commenced as soon as possible after the fifth anniversary of its commencement date. This statutory requirement provides an opportunity to review the legislation at an early stage and ensure its effectiveness. As a program that is expected to continue well into the future and face changing market conditions and technology advancements, the operation of the GEMS Act must also be reviewed every ten years after the first review.

1.2 Independent reviewer

The Minister for the Environment and Energy appointed Ms Anna Collyer, a partner at law firm Allens, to undertake the review. Ms Collyer is supported by the GEMS review team in the Department of the Environment and Energy. The findings from this review will be presented to the COAG Energy Council.

1.3 Scope

The terms of reference (see **Appendix A**) require the independent reviewer to evaluate, advise and report on the following:

1. The extent to which the framework (including systems and procedures) established by the GEMS Act is achieving its purpose.
2. Improvements that could be made to the operation of the GEMS Act, including any costs and impacts on stakeholders.
 - a. Particular attention is given to improvements that will lead to an increased reduction in greenhouse gas emissions.
3. Implementation and transition actions to facilitate improvements to the GEMS Act identified at point 2.
4. Any other matters including environmental, cost, technical and regulatory issues relevant to the operation of the GEMS Act.

The terms of reference specifically require the independent reviewer to consider the following issues in relation to the GEMS Act:

- The level of actual and required agility of the GEMS Act to respond to changing dynamics (for example, technological changes, increasing proportion of online sales, integrated products, less specific product categories).

- The ability of the GEMS Act to provide for adequate compliance arrangements for new and bespoke products.
- Administrative challenges (current and anticipated) faced by businesses and the GEMS Regulator.
- Whether there is a role for guidance about when mandatory standards are more useful and when other approaches might be more suitable.

1.4 Methodology

This review assesses the performance of the GEMS Act in terms of its:

- efficacy compared with the previous state based regimes.
- ability to reduce energy use and emissions.
- ability to reduce power bills for consumers and minimise regulatory costs on industry.

In doing so, the review considers the problems identified in the Regulation Impact Statement (RIS) referred to in the explanatory memorandum that the GEMS Act was intended to address. These problems include those related to:

- the governance and administration of the program.
- scope of the program and appropriate targeting of products.
- associated environmental impacts.
- monitoring.
- targeting information to purchasers.

The assessment will focus primarily on standards and labelling interventions implemented through the GEMS Act. It will not review the Inter-Governmental Agreement for GEMS, as this was undertaken in the 2015 GEMS Review.

1.5 Consultation

Stakeholder feedback is important to this initial assessment and the outcomes of this review. A diverse range of views have been provided through written submissions on the review discussion paper, released on 1 March 2018.

In addition, following release of the discussion paper, the independent reviewer provided a briefing to state and territory governments on 19 March 2018 and industry stakeholders on 20 March 2018.

Following receipt of written submissions, the independent reviewer held an industry round table with representatives from industry associations on 21 May 2018 and one-on-one meetings with interested stakeholders (who had previously provided submissions) throughout June, July and early August 2018.

Further feedback is invited via written submission on the draft report (this report). Public consultation sessions on the draft report will also be conducted to further inform the development of a final report.

1.6 Out-of-scope stakeholder issues

Stakeholders have raised several issues that are beyond the scope of this review, including:

- Broader government regulatory policies:
 - i. The Australian Government’s cost recovery policy, as stated in the Australian Government Cost Recovery Guidelines.
 - ii. The key principle for Australian Government policy makers that, “The cost burden of new regulation must be fully offset by reductions in existing regulatory burden”.²
- Determination of the fees associated with the delivery of registration and compliance services under the GEMS Act:
 - The Department of the Environment and Energy is undertaking a separate registration fee review.³

The review does, however, consider issues which are relevant to fees including the approach to registration and the balance of activities for which costs are recovered through the fees.

2. Summary of provisions, and operation of, the GEMS Act

2.1 Purpose of the legislation

The GEMS Act implemented a commitment by the Australian Government and the Council of Australian Governments (COAG) to establish national legislation to regulate energy efficiency and labelling standards for appliances and equipment. The national framework replaced seven separate state and territory legislative frameworks. The national legislation permits the Australian Government to set mandatory minimum efficiency requirements for products, which help drive greater

² The Australian Government Guide to Regulation, 2014.

³ <http://www.energyrating.gov.au/consultation/gems-fee-review-supplementary-paper>

energy efficiency and exclude the poorest performing products from the market. The GEMS Act also allows the Australian Government to set nationally-consistent labelling requirements to increase consumers' awareness of options to improve energy efficiency and reduce energy consumption, energy costs and greenhouse gas emissions.

The GEMS Act is the underpinning legislation for COAG's Equipment Energy Efficiency (E3) Program. Commenced in 1992, E3 is a cross-jurisdictional program through which the Australian Government, state and territory governments and the New Zealand Government collaborate to deliver a single, integrated program on energy efficiency standards and energy labelling for equipment and appliances.⁴ The program currently regulates 22 products by way of Minimum Energy Performance Standards (MEPS) and the Energy Rating Label (ERL) (see **Section 2.4**).

The GEMS Act also gave effect to certain commitments under the United Nations Framework Convention on Climate Change (UNFCCC) to adopt national policies and measures to mitigate climate change and limit Australia's emissions of greenhouse gases.

The GEMS Act is available at <https://www.legislation.gov.au/Details/C2012A00132>.

Box 1: Rationale for transition to national legislation

The evolving expansion of E3 under separate state and territory laws resulted in inconsistencies which increased the regulatory burden for businesses and government agencies. These included:

- a lack of coordination of the implementation date for agreed regulations
- some jurisdictions implementing requirements that were more stringent than nationally agreed MEPS levels
- differences in how registration, compliance and enforcement were dealt with between jurisdictions.

These issues resulted in delays in implementation, increased costs to industry and reduced benefits expected to flow to consumers. In response to these problems, a Regulatory Impact Statement (RIS) process examined options to improve the regulatory framework. The RIS explored several framework options and concluded that the most cost-effective option was to establish a streamlined nationally-consistent regulatory framework.

⁴ New Zealand participates under the *Energy Efficiency (Energy Using Products) Regulations 2002*, which is not part of this review.

2.2 Governance and administration

An Inter-Governmental Agreement provides the framework for national cooperation on E3.⁵ A similar arrangement has also been developed to ensure alignment with New Zealand.

The GEMS Regulator

The GEMS Regulator is based in the Australian Government Department of the Environment and Energy and is responsible for administering the GEMS Act, maintaining the GEMS register, and monitoring and enforcing compliance with the Act. Performance of the GEMS Regulator is evaluated through an annual stakeholder survey, the Regulator Performance Framework⁶ and ongoing feedback from industry and consumer stakeholders.

Energy Efficiency Advisory Team

E3 is managed by the COAG Energy Council's Energy Efficiency Advisory Team (EEAT). The EEAT is made up of representatives of Australian, state and territory governments and the New Zealand Government. The EEAT recommends actions through the Senior Committee of Officials to the COAG Energy Council for decision. The EEAT oversees the E3 Committee and the E3 work program.

E3 Review Committee

Industry and consumer groups participate through the E3 Review Committee and product specific working groups, such as the Air-Conditioner and Commercial Refrigeration Advisory Committee. The E3 Review Committee is a formal advisory group that consults with E3 on issues that affect industry and consumers.

2.3 2015 GEMS Review

In 2014-15, the COAG Energy Council commissioned an independent review of the Inter-Governmental Agreement and GEMS legislative scheme and the GEMS Act (the 2015 GEMS Review).⁷ The 2015 GEMS Review concluded that:

- The GEMS Act supports the delivery of significant economic and environmental benefits in a cost-effective manner by increasing the energy efficiency of a range of energy using equipment sold in Australia.
- The Inter-Governmental Agreement provides a strong framework for national cooperation in implementing GEMS and E3.

⁵ <http://energyrating.gov.au/document/gems-iga-signed>

⁶ <https://www.cuttingredtape.gov.au/resources/rpf>

⁷ <http://www.energyrating.gov.au/news/gems-review-released>

- The program is being delivered effectively.
- There was a strong case for continued mandatory appliance standards and labelling to address market failures which led to consumers and businesses purchasing energy inefficient products.

Following the 2015 GEMS Review, the Commonwealth worked with state, territory and New Zealand governments and the E3 Review Committee to implement the report recommendations agreed by the COAG Energy Council.

An outline of actions taken to address the key recommendations of the 2015 GEMS Review is at **Appendix B**.

2.4 Products regulated under the GEMS Act

Table 1: GEMS regulated products (as at August 2018)

Regulated Product	MEPS	ERL
Air conditioners – single phase	Yes	Yes
Air conditioners – three phase	Yes	Yes (Voluntary)
Ballasts for fluorescent lamps	Yes	Other*
Close control air conditioners	Yes	No
Clothes dryers	Yes	Yes
Clothes washing machines [^]	No	Yes [^]
Commercial chillers	Yes	No
Compact fluorescent lamps	Yes	Other*
Computers	Yes	No
Computer monitors	Yes	Yes
Dishwashers [^]	No	Yes [^]
Distribution transformers	Yes	No
Electric motors (three phase)	Yes	Other*
Electric storage water heaters	Yes	No
External power supplies	Yes	No
Gas storage water heaters	Yes	No
Incandescent lamps	Yes	Other*
Instantaneous gas water heaters	Yes	No
Linear fluorescent lamps	Yes	No
Refrigerated display cabinets	Yes	No
Refrigerators and freezers	Yes	Yes
Set top boxes	Yes	No
Street and public lighting	Yes (Voluntary)	No
Swimming pool pumps	No	Yes (Voluntary) [#]
Televisions	Yes	Yes
Transformers and converters for halogens	Yes	Other*

* While no ERL is required, GEMS labelling requirements do apply - see relevant GEMS determination

[^] The ERL has proven to be an effective and appropriate mechanism to ensure increased efficiency. E3 has undertaken several reviews and the application of MEPS would not be cost effective at this time.

[#] The Voluntary Energy Rating Labelling Program (VERLP) is an E3 program, currently outside of GEMS regulations

2.5 E3 prioritisation plan

Setting priorities for E3 is critical to ensuring that opportunities to save energy, lower energy costs for households and business, and reduce greenhouse gas emissions, are realised as soon as possible. Evidence-based prioritisation of opportunities provides a basis for planning of future regulatory work and allocation of resources. The development of the E3 prioritisation plan was one of the key recommendations of the 2015 GEMS Review (see **Section 2.3** and **Appendix B**).

In the short to medium-term, prioritisation means focusing resources on a smaller number of higher-value policies so they can be delivered earlier than they would be otherwise. In 2016, the E3 prioritisation plan identified six priority areas with a further three added in 2017.

Table 2: 2017-18 E3 prioritisation plan high priority products

High priority product category	Proposed actions
Air conditioners	New climate zoned labelling and enhanced MEPS
Domestic refrigerators and freezers	Enhanced MEPS
Hot water systems	Under investigation for future opportunities
Industrial products	Under investigation for future opportunities
Lighting	Phasing out halogen light bulbs and introducing MEPS for LED lightbulbs in line with European Union standards
Non-domestic fans	New regulations
Refrigerated display and storage cabinets	Enhanced MEPS and new regulations
Swimming pool pumps	New regulations
Televisions	Under investigation for future opportunities

2.6 Current reporting

The GEMS Regulator reports on the operation of the GEMS Act each financial year. The report as part of the Department of the Environment and Energy's Annual Report is tabled in Parliament and circulated to participating jurisdictions.

E3 is required to report its progress in the development and implementation of new and enhanced regulations to the COAG Energy Council. E3 also provides a newsletter and annual achievement report to broader stakeholders.

3. Context

3.1 Key points

- The GEMS Act is part of a complex framework of regulation and programs.
 - The GEMS Act makes a significant contribution to the broader energy and climate policy objectives of the Commonwealth Government.
 - Other regulatory regimes, both international and local, need to be taken into account when considering the impact the GEMS Act has on industry.
 - To be fully effective, government energy efficiency measures, including the GEMS Act, should be coordinated.

3.2 Broader energy policy

Australia is experiencing a major shift in its energy system. This is a result of new technologies and services and changing consumer demands. In response, governments are focused on building a secure, reliable and affordable new energy system that will also allow Australia to achieve its emissions reductions objectives.

The *Independent Review into the Future Security of the National Electricity Market* (the Finkel Review) found that “energy efficiency can contribute to improving reliability and affordability and reducing emissions”. The Finkel Review recommended that, “governments should accelerate the roll out of broader energy efficiency measures to complement the reforms recommended in this Review”.⁸ Considerations of achieving the most cost-efficient benefits through the GEMS Act must take into account broader energy goals and the wider suite of COAG, Australian Government, and state and territory energy policies (see **Figure 1**).

The GEMS Act is also one of the Australian Government’s policies to reduce domestic greenhouse gas emissions and support effective international efforts (see **Figure 1**). In 2017, the Australian Government undertook a review of its climate change policies and found that, “Measures that improve energy productivity for households and small businesses can provide a large volume of low cost emissions reductions alongside other benefits such as reduced energy bills, job creation, improved health, and regional benefits”.⁹

⁸ <https://www.energy.gov.au/publications/independent-review-future-security-national-electricity-market-blueprint-future>

⁹ <http://www.environment.gov.au/climate-change/review-climate-change-policies>

3.3 Product regulation within an international market

In response to the discussion paper, stakeholders highlighted the need to consider GEMS regulations in an international context. A number of submissions suggested that Australia should better align MEPS with international standards, and some further suggested that Australia should take more of a lead on international standards. Other submissions expressly argued against this position.

The majority of the products covered by GEMS regulations are imported into Australia as part of a broader international market. Australia has retained manufacturing capability for very few products covered by GEMS regulations, notably hot water systems.

Furthermore, Australia is a relatively small market for appliances and equipment compared to markets such as the United States of America and the European Union. In most cases, it is important that Australia seeks to harmonise with world's best practice regulations rather than seeking to overstep or lead on product energy efficiency. It is unlikely that multinational companies would produce a specific product line to meet Australian specific regulatory requirements.

Accordingly, GEMS regulations are examined on a product-by-product basis, including the appropriateness of the adoption of international regulations to the Australian market, in line with broader government policy. These issues are considered as part of a consultation RIS.

Where it is preferable to adopt international standards, it is important to ensure that the new or revised international standards are implemented as soon as possible to maximise the potential benefits, (see **Figure 1** and **Section 5.7.2**).

As highlighted by industry submissions, GEMS products may also be subject to other regulatory schemes including electrical safety, water efficiency, building codes, and ozone and synthetic greenhouse gases. Other regulatory schemes have been considered in the context of streamlining regulatory burden for industry (see **Figure 1** and **Section 5.3.4**).

3.4 Interaction with other energy efficiency policies and programs

Improving Australia's equipment energy efficiency is a key objective of the COAG Energy Council.¹⁰ Its National Energy Productivity Plan (2015–2030) acts to better coordinate, and advance, activities that impact on energy productivity, including the E3 prioritisation plan and the policies and programs mentioned below.

E3 operates alongside Australian, state and territory government building energy efficiency policies, programs, and information disseminating activities (see **Figure 1**).

¹⁰ <http://www.coagenergycouncil.gov.au/about-us/our-role>

These include the Commercial Building Disclosure Program, the Nationwide House Energy Rating Scheme (NatHERS), and work to advance the National Construction Code. Information activities includes the Your Energy Savings website and Your Home guide to building, buying or renovating environmentally sustainable homes.¹¹ State and territory governments also operate a number of their own policies and programs designed to improve the energy efficiency of households, businesses, schools and government. These include grants, information, finance, rebate programs and white certificate schemes (see **Appendix C**).

In submissions to the discussion paper, stakeholders noted that the ability of the GEMS Act to meet its objectives is affected by factors outside of current GEMS regulations. These include how appliances and equipment are installed and operated and how they interact with energy systems and other new technologies. However, the GEMS Act is not necessarily the most appropriate place to address these factors.

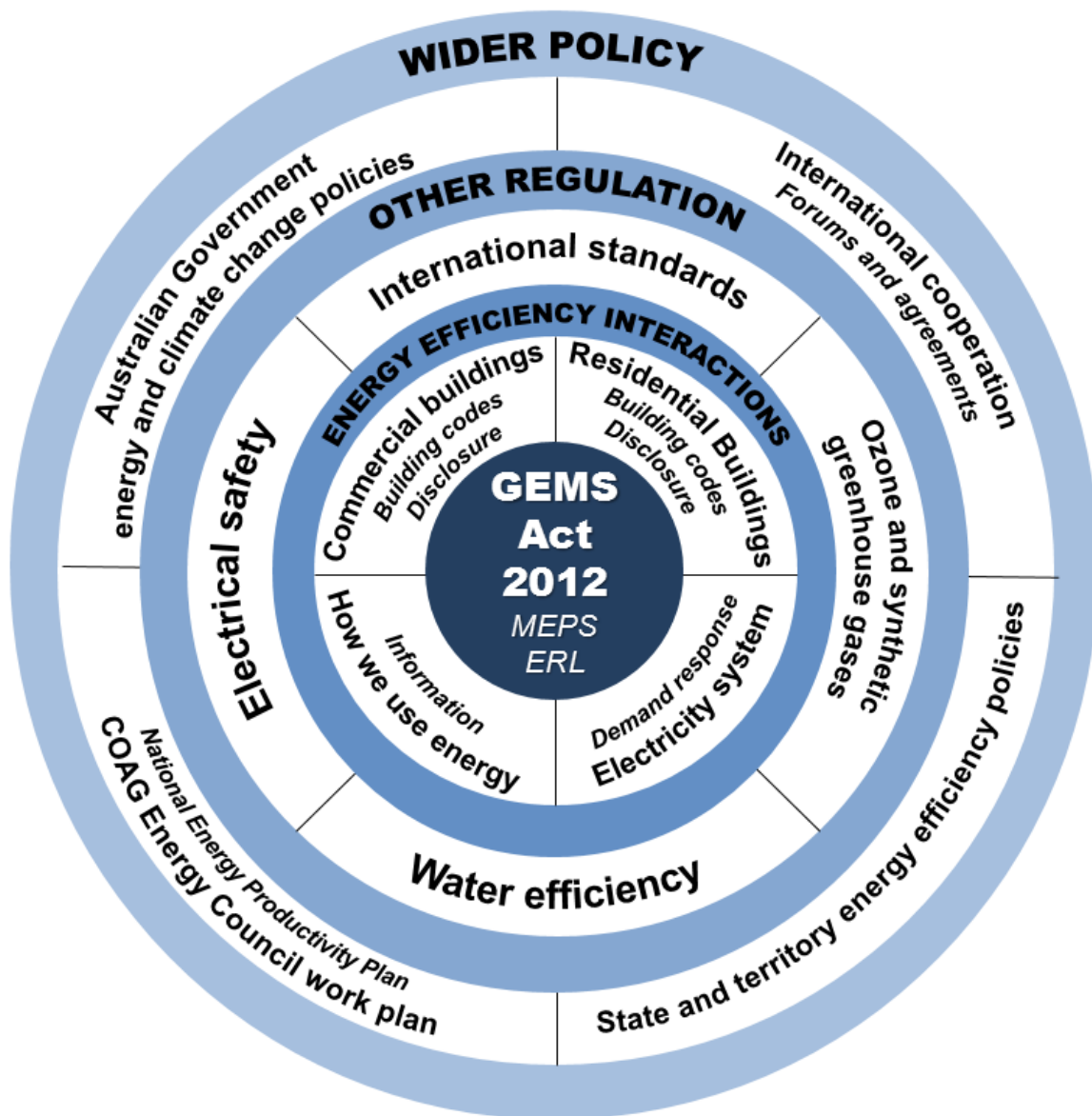
Coordination with other policies, programs and legislation is crucial to maximising energy efficiency gains, especially as the GEMS Act moves beyond the current E3 work program (see **Figure 1** and **Section 3.2**).

RECOMMENDATION 1

The Commonwealth Government develop a long term strategic plan for energy efficiency. This strategic plan should include the complementary programs listed above and throughout this draft report.

¹¹ <https://www.energy.gov.au/government-priorities/energy-productivity-and-energy-efficiency>.

Figure 1: Wider policy context of the GEMS Act and interactions with other regulations, and energy efficiency policies and programs.



4. Effectiveness of the GEMS Act

The review has considered the extent to which the GEMS regulatory framework, systems and procedures are achieving their purpose. This section examines the GEMS Act's successful provision of a streamlined nationally consistent approach to appliance energy efficiency and its contribution to energy savings, reduced greenhouse gas emissions and lower power bills.

4.1 Key points

- The GEMS Act provides a nationally consistent approach to appliance energy efficiency.
- The GEMS Act has proven effective at reducing energy use and emissions.
- A range of improvements can be made to the operation of the GEMS Act. These improvements could include:
 - Updating energy efficiency standards for products that are already regulated, subject to technological advances and international considerations.
 - Expanding regulations to include new high energy using products that are not currently regulated in Australia.
 - Developing and implementing regulations more quickly, while maintaining adequate consultation with affected stakeholders.
 - Improving the effectiveness of energy rating labels and other customer engagement/education activities.
- These suggestions are considered in more detail in **Section 5**.

4.2 Streamlined nationally consistent approach

In terms of streamlining, the GEMS Act was designed to address:

- a lack of coordination of the implementation date for agreed regulations.
- jurisdictions implementing requirements that were more stringent than nationally agreed MEPS levels.
- differences in how registration, compliance and enforcement were dealt with between jurisdictions.

The 2015 Review found that:

...in general, stakeholders felt that the GEMS scheme, as a national program compared to the previous multi-jurisdictional scheme, provides consistency within the

market; is more economical to comply with, mainly due to reduced uncertainty and administrative burden; and is less confusing for consumers.

2015 GEMS Review

Coordination of implementation dates for agreed regulations, and consistent stringency of MEPS levels, were addressed by the introduction of national legislation. The establishment of the GEMS Act also removed differences in how registration, compliance, and enforcement were treated between jurisdictions. However, to what extent these outcomes have led to an overall reduced regulatory burden on industry has not been formally assessed.

It is difficult to determine the cost savings to industry as a result of the establishment of the GEMS Act. This is partly due to unavailability of data on the regulatory costs under the multi-jurisdictional scheme. However, the third annual survey of users of GEMS registration and enquiry services, conducted at the beginning of May 2018, showed an overall satisfaction with GEMS registration and/or enquiries of 82 per cent.

When asked about product registration and/or the enquiry process... respondents consistently recorded higher satisfaction scores than 2016-17 with 12 per cent more respondents agreeing the product registration process was improving over time and communication with the enquiry team was clear, accurate and relevant (up from 64 to 76 per cent and 76 to 87 per cent respectively). Ease of use of the registration system, enquiry resolution time and enquiry handling professionalism were all up nine per cent. A new question, agreement with the statement 'The time it takes to complete a registration application is reasonable', recorded a satisfaction level of 77 per cent.

GEMS Stakeholder Satisfaction Survey – 2017-18

The survey also showed an increase in satisfaction with compliance and monitoring.

An average of 64 per cent of respondents agreed with positive statements about compliance and monitoring activities, up from 58 per cent. There were improvements in all measures with the exception of levels of education and engagement being appropriate. The greatest improvement, 10 per cent, was recorded for compliance activities taking into consideration the operational needs of regulated businesses.

GEMS Stakeholder Satisfaction Survey – 2017-18

Submissions to this review have generally expressed support for a national scheme over the previous scheme.

Given that the Act replaced a series of state and territory Acts and regulations then its great strength is the national harmonisation of energy policy implementation in Australia.

The Australian Industry Group (AiGroup), 2018

The nationally-consistent approach of the GEMS Act aids Australia's partnership with New Zealand on E3, facilitating trade and achieving administrative efficiencies for both governments.

We see the ongoing trans-Tasman cooperation and regulatory alignment that we can achieve through the E3 programme as being mutually beneficial to New Zealand and Australia as it facilitates trade, reduces business costs, and achieves administrative efficiencies for both governments.

Energy Efficiency and Conservation Authority (EECA), New Zealand, 2018

The 2015 GEMS Review contained key recommendations to further streamline the operation of the GEMS Act and to minimise regulatory costs on industry. E3 has led many actions to address these recommendations. These include updating the registration system to simplify the process, and moves to increase international harmonisation (for both test methods and energy efficiency standards) (see **Appendix B**).

4.3 Saving energy and reducing greenhouse gas emissions

Along with establishing national legislation to regulate energy efficiency standards for appliances and other products, the purpose of the GEMS Act is to help Australians save energy and thereby reduce energy bills and greenhouse gas emissions.

Minimum standards also improve the security and affordability of energy systems, as energy efficiency is generally the cost form of ‘capacity’ in energy markets. For example, minimum standards for fridges reduce Australia’s electricity demand by over 500 MW, 24 hours a day, 365 days a year.¹² This ‘baseload’ capacity is the equivalent of half of the output of the now retired Hazelwood coal-fired generator and has a negative cost to consumers.¹³

Energy Efficiency Council, 2018

GEMS regulations save the average Australian household between \$140 and \$220 on their electricity bill each year (about 10 to 15 per cent of the average annual bill). The bulk of the benefits of GEMS regulations for households are delivered through appliances such as air conditioners, lighting and refrigerators. See **Box 2** for examples of the type of household savings on energy bills resulting from GEMS regulations.

The GEMS Act is key to helping Australian consumers make informed choices concerning their energy usage... The implementation of a recognisable star rating system has been important for raising awareness of energy usage more broadly.

Choice, 2018

¹² The Department of the Environment and Energy’s estimate of the impact Australian fridge and freezer MEPS had on demand in 2017 was 360MW. This figure takes into consideration the impact international regulations had on the Australian market.

¹³ Energy Efficiency Council submission to GEMS Review Discussion Paper.

The Department of the Environment and Energy has calculated the benefits to date and the benefits projected to be delivered by E3:

- Between 2000 and 2014, E3 delivered a net benefit to consumers of between \$4.3 and \$7.8 billion. The program also reduced Australia's greenhouse gas emissions by between 23 and 35 million tonnes.
- From 2015 to 2020, current GEMS regulations are projected to deliver a further net benefit of between \$5.1 and \$11 billion. In this same period, the program is projected to deliver between 27 and 44 million tonnes of greenhouse gas emissions savings.
- In 2017, the net savings of GEMS regulations to the Australian economy ranged between \$862 million to \$1.64 billion with greenhouse gas emissions savings of between 4.6 and 7.4 million tonnes. That is the equivalent of half of Queensland's annual household emissions.
- Over the 2020 emissions reduction period, current GEMS regulations are expected to deliver between 50 and 79 million tonnes of greenhouse gas emissions savings, which equates to 9 to 15 per cent of Australia's 2020 emissions reduction target.

Box 2: Examples of potential household savings using GEMS information

Purchasing appliances that are more energy efficient may cost more upfront but they can save consumers money in the long term. For example:

- For an upfront cost of an additional \$366, a family using an 8kg clothes dryer twice a week could save \$1150 over 10 years by using a 7 star dryer (e.g. a heat pump dryer) over a 2 star dryer (e.g. a condenser dryer).
- Purchasing an 8 star swimming pool pump, will likely cost an additional \$360 compared a 2 star pump. However, the 2 star pump would use more electricity to run compared to an 8 star pump, costing an additional \$540 per year.
- A 4 star 600L fridge, on average, could save a household \$260 over its lifetime compared to a 3 star fridge.
- A household which transitions from halogen lights to LEDs is likely to save over \$2,300 over 10 years.

The discussion paper contained a high level description of how these net benefits are determined (see **Box 6**). For a more detailed example of how the impact of GEMS regulations are calculated for specific products, see **Appendix D**. This analysis was undertaken by the Department of the Environment and Energy as part of an internal review of the impact of E3.

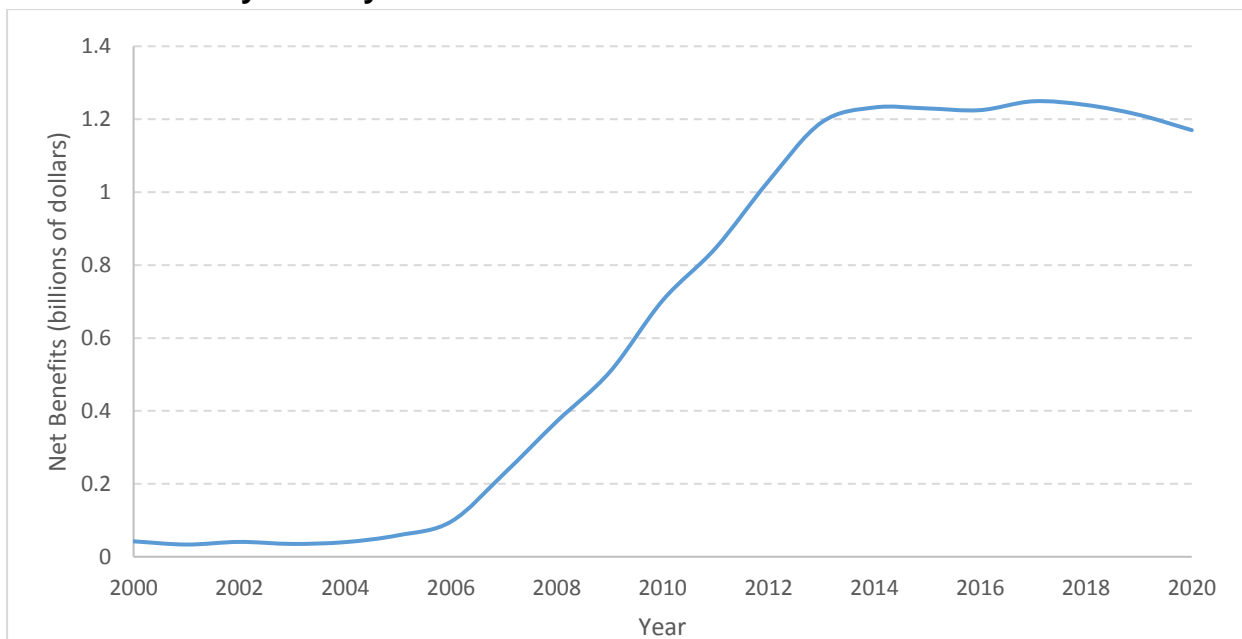
A number of stakeholders have noted that it would be of benefit to have an independent review of the data and analysis used to evaluate the impact of GEMS regulations. This issue is addressed in **Section 5.5.2**.

4.3.1 Illustrated impact of GEMS regulations

Chart 1 demonstrates the net financial benefits to consumers of current GEMS regulations. These include the value of energy savings less the additional cost that consumers pay to purchase more energy efficient equipment and appliances. The analysis shows the reduction in cost of living for each year against a baseline year but it is not cumulative over the period.

The GEMS program analysis works on a 'stock and flow' basis. When a new MEPS is put in place, the savings do not immediately come into effect. This is because most homes will still have and operate their old appliance. However, as newer MEPS compliant appliances replace older models, the savings start to accumulate. For an individual household, any additional costs, if any, are up front, whereas the benefits occur for the life of the appliance.

Chart 1: GEMS year on year net benefits



The large ramp up starting from 2006, shown on **Chart 1**, is largely due to regulations that E3 developed in the early 2000's and implemented between 2005 to 2007. As more household appliances like refrigerators, lights and air conditioners were replaced by newer products compliant with higher MEPS levels, more households started to see greater benefits and the total benefit continued to rise.

Further regulations, such as the enhanced air conditioner MEPS in 2010 and 2011, kept the trend in benefits rising. On the introduction of the GEMS Act in 2012, there had already been a large amount of work done to introduce regulations under the previous state regimes that captured the low hanging fruit. Since 2012, those

regulations have been incrementally improved, but the overall benefits have begun to plateau. The current work under the E3 prioritisation plan will lead to further benefits and a rise in the curve beyond 2020.

MEPS levels can become less effective, and even redundant, as industry continues to innovate and increase the energy efficiency of the products they sell due to technology change, international regulations, or other drivers. When this occurs, the regulatory burden of the program remains fairly constant, so the net benefit of the program starts to reduce. The small reduction in estimated net benefits in 2020 is the result of this effect.

In order for the GEMS Act to continue to fulfil its objectives and continue to reduce costs of living for Australian households, it will be necessary to consider the ways in which additional benefits can continue to be delivered, which may include:

- Updating energy efficiency standards for products that are already regulated, subject to technological advances and international considerations.
- Expanding regulations to include new high energy using products that are not currently regulated in Australia.
- Developing and implementing regulations more quickly, while maintaining adequate consultation with affected stakeholders.
- Improving the effectiveness of energy rating labels and other customer engagement/education activities.

Chart 2: GEMS year on year emissions abatement

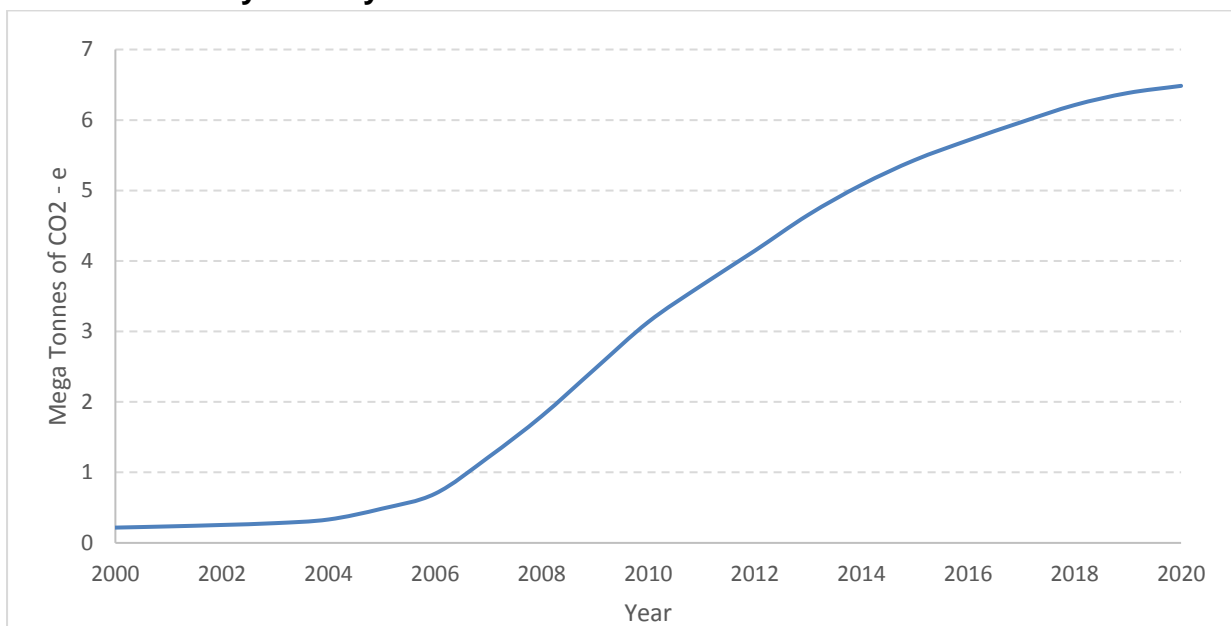
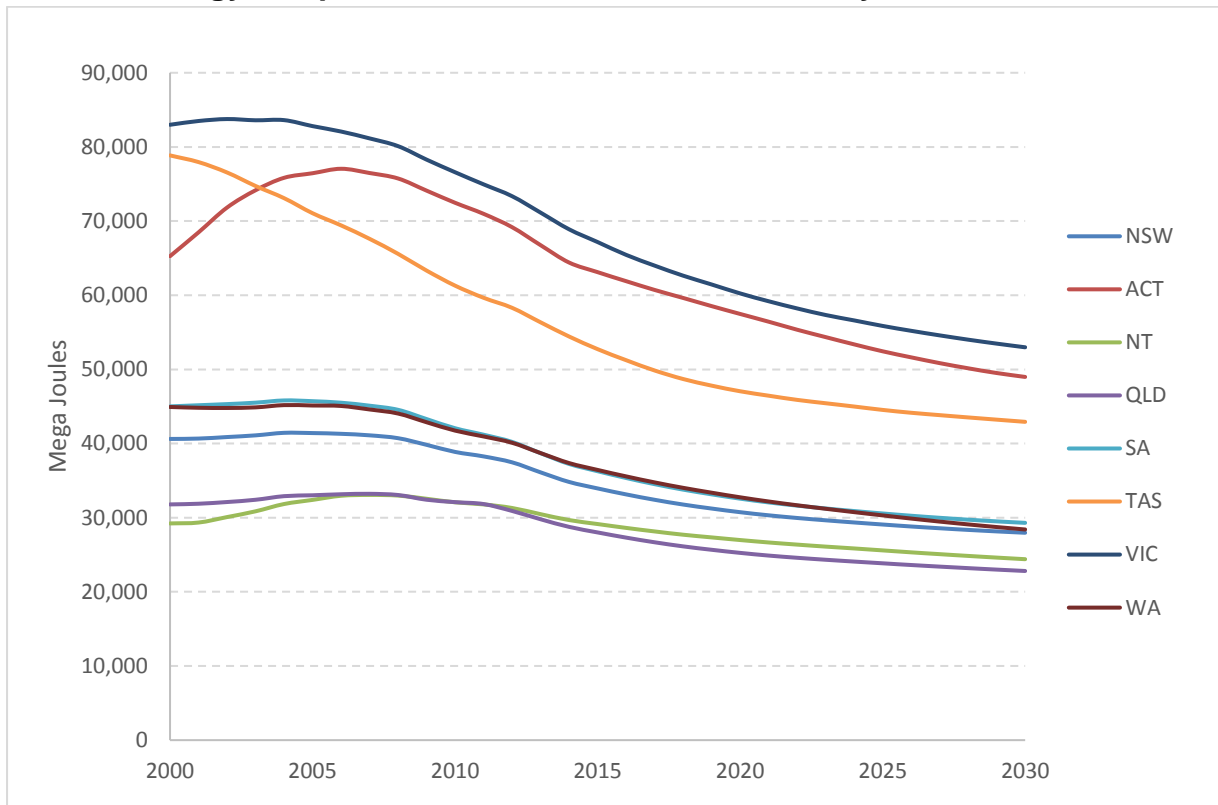


Chart 2, shows the emissions savings over time. These are savings for each year alone and are not cumulative.

Chart 3 shows the actual and predicted energy use per Australian home by state and territory to 2030. This shows a general downward trend, which is a result of GEMS regulations along with other market and regulatory forces. These additional forces include: new building regulations, state-based white certificate schemes, the effect of the international energy efficiency regulations, and industry innovation.

Chart 3: Energy use per home for each state and territory



While energy prices increased between 2008 - 2013 and again more recently, these energy efficiency measures had already been working to reduce the energy use of homes, while maintaining and/or increasing the standard of living within the home. As an example, the energy use per home in NSW has reduced from 40,000 mega joules per year to 30,000 mega joules over the past 18 years, which is a 1.4 per cent reduction each year.

The effect of rising energy prices would have been felt even more had it not been for energy efficiency measures, MEPS and the GEMS Act.

RECOMMENDATION 2

The Commonwealth Government continue to include appliance and equipment energy efficiency as part of any future broader suite of energy policies.

5. Opportunities to improve the operation of the GEMS Act

This section considers the ability of the GEMS Act to respond to rapidly changing dynamics (policy, market, technology) and to provide for adequate compliance arrangements for new and bespoke products. It also examines the role of mandatory standards compared to other approaches.

5.1 Key points

- There are a range of opportunities to enhance the GEMS Act and provide the flexibility to continue to deliver significant benefits in an increasingly dynamic environment.
- The issues and recommendations for improvements to the operation of the GEMS Act have been considered in **three horizons**.
- **Horizon 1** covers short term improvements that will not require legislative change, to be completed within 12 months. These improvements are for products that are already regulated, and include:
 - Improving the approach to unique identifiers on products to assist industry and GEMS compliance officers.
 - Increasing the sharing of resources between GEMS registration and compliance functions.
 - Collaborating with industry, together with other measures, to assist targeting the intelligence-led compliance program.
 - Examining the costs and benefits associated with mandatory disclosure of energy rating information online and in print advertising (also applies to Horizon 2).
 - Continuing to engage in education, energy rating labelling and other efforts to promote energy efficient behaviours (also applies to Horizon 2).
- **Horizon 2** covers medium term improvements, with those not requiring legislative change to be completed by June 2020, and those requiring legislative change to be completed by November 2020. Most of these improvements facilitate expansion to a greater range of products, and include:
 - Amending the GEMS Act to require the release of an exposure draft of a proposed GEMS determination.
 - Continuing to work closely with industry and Standards Australia on the process for developing GEMS determinations.

- Amending the grandfathering provisions in the GEMS Act to reduce regulatory burden.
 - Amending the GEMS Act to facilitate the registration of clearly defined customised products.
 - Examining the appropriate use of supplier level registration.
 - Considering joint registration arrangements and other opportunities to streamline the registration process.
 - Consulting with industry on acceptable alternatives to the two stage check testing process (also applies to Horizon 3).
 - Monitoring the emerging trends in relation to product development, emerging technologies and international standards and their possible application with Australia.
 - Working with the COAG Energy Council to further encourage the realisation of demand response (also applies to Horizon 3).
 - Ensuring consistency and harmonisation between appliance and building energy efficiency regulations (also applies to Horizon 3).
- **Horizon 3** covers long term improvements, which will require further consideration. These improvements facilitate better coordination with other policies, programs and legislation. This horizon recognises that there is a limit to what the GEMS Act can achieve on its own, and that there are opportunities to move to a more holistic approach to regulating energy efficiency. This is crucial to maximising energy efficiency gains in the long term. Improvements include:
 - Considering the development of a ‘one stop shop’ government registration data base.
 - Investigating the potential of a systems-based approach to energy efficiency regulation.

5.2 GEMS determinations

5.2.1 Introduction

Under the GEMS Act, specific product requirements are set out in legislative instruments called GEMS determinations. Product requirements are set out either directly in the determination, or the determination refers to the applicable clause in the standard. The determination also establishes which version of the relevant standard is applicable – usually the version that existed at the time the determination was made.

This section considers the policy development process (in which products are considered for regulation) as well as the formal process for making GEMS determinations. These are the foundation for the GEMS Act to achieve its objectives. Issues considered in the section include:

- the ability of the GEMS Act to deal with product innovation, and the need to balance competing objectives of certainty and flexibility (see **Section 5.2.2**).
- stakeholder concerns regarding consultation, timelines and the transition period between the publication and implementation of a new or revised determination (see **Section 5.2.3**).
 - This discussion reflects the need to balance competing objectives of expedience and adequate consultation.
- the potential to revoke GEMS determinations if the costs of regulation begin to outweigh the benefits (see **Section 5.2.4**).

Further consideration is given to additional stakeholder issues concerning policy development and GEMS determination processes in **Section 5.7 Ensuring the Act remains relevant**.

5.2.2 Regulatory framework and innovation

A common challenge for regulation is that it takes time to develop standards while innovations may progress rapidly. By the time GEMS regulations are established, industry may have developed product innovations that regulators did not consider in the drafting process. This would be a problem under any regulatory framework.

Some stakeholders, such as Choice, suggest that MEPS regulations also *drive* innovation, by encouraging research and development to find cost-effective ways to improve efficiency.

The GEMS framework seeks to address the problem of standards lagging behind innovations by regulating through determinations made under the GEMS Act. GEMS determinations allow the flexibility to design product-specific approaches to regulation, as well as the ability to introduce new regulations without amending the legislation. Additionally, the GEMS Act allows the GEMS Regulator to grant exemptions where it is considered appropriate, which provides some further flexibility for managing new products that do not fit neatly within the existing framework (see **Table 4**).

Some industry stakeholders have suggested that there should be greater flexibility for the GEMS Regulator, and have noted the use of regulatory rulings under the previous state based arrangements.

... there needs to be a mechanism where the GEMS Regulator or relevant Minister are able to introduce a ruling or similar document that allows alternative means of complying with a determination so that products may continue to be tested and supplied until such time as a replacement determination is made.

Consumer Electronic Suppliers Association (CESA), 2018

However these regulatory rulings were not legally binding or enforceable.

The GEMS Act does allow the GEMS Regulator to issue guidance notes on particular issues to help stakeholders understand their responsibilities under the GEMS regulatory framework. Similar to the previous regulatory rulings, these guidance notes do not constitute legal advice, and are not legally binding, but do serve to provide clarity and certainty. Effectively, the current guidance notes and the previous regulatory rulings provide the same flexibility.

It is necessary to balance the ongoing challenge of delivering a regulatory regime with the necessary flexibility to accommodate innovation and technology changes within a compliance framework that requires repeatable, consistent and defensible outcomes. The GEMS Regulator can best manage these competing pressures by regularly reviewing the regulatory requirements to make sure they are still appropriate, relevant, and delivering the intended outcomes. See **Section 5.8.1** for further discussion on emerging products.

RECOMMENDATION 3

The Commonwealth Government maintain the current flexibility within the regulatory framework to provide an appropriate balance between certainty and the flexibility to allow for product innovation.

5.2.3 Determinations process

Three main issues have been considered with regard to the process for developing new or revised GEMS determinations:

- i. the consultation process;
- ii. the timeline for making determinations; and
- iii. the transition period between the publication and implementation of a new or revised determination.

Consultation process

Submissions from industry stakeholders highlighted concerns about the potential lack of clear obligations for consultation where regulation is progressed through a GEMS Determination directly, rather than through the standards process.

The GEMS Act allows for the use of alternative regulatory standards and this is potentially problematic for industry stakeholders because the regulatory processes to develop an alternative regulatory standard do not contain the same pillars of consensus, transparency and balance as contained within the Standards Australia process.

Lighting Council of Australia (LCA), 2018

CESA strongly prefers the use of the standards approach instead of the use of determinations, in particular because the department is not required to reach consensus under the determination approach...

Consumer Electronic Suppliers Association (CESA), 2018

Others acknowledged that, sometimes, the direct determination approach may be beneficial.

AREMA supports the current standards-based mechanism for establishing determinations as it ensure sufficient industry engagement. We do recognize, however, that there are times when an alternative approach may be beneficial.

The Air Conditioning and Refrigeration Equipment Manufacturers Association (AREMA), 2018

Standards Australia also acknowledges that, sometimes, the GEMS determination pathway is the most appropriate policy approach to delivering the desired outcome to the market.

Standards Australia, 2018

AREMA's submission outlines two main areas that it believes need to be addressed:

- i. the process of determining whether the standards-based approach or alternative approach should be followed; and
- ii. where an alternative approach is used, that there be sufficient detail and robustness with regard to the consultation process.

The need to draft a new determination or revise an existing determination, usually follows extensive consultation as part of the COAG RIS process. Once COAG Energy Council has made a decision, it is desirable for that decision to be implemented to ensure the benefits are delivered to Australian households and business as soon as possible. As such, it is prudent that the GEMS Act provide the flexibility to use the approach that will deliver the most desirable outcome given the circumstances. However, it is also important that industry and other stakeholders have sufficient confidence regarding the implementation process.

Appropriate consultation is a requirement of the COAG RIS process, and government officials would be expected to ensure that adequate and genuine consultation was undertaken. **Box 3** outlines the COAG principles for best practice consultation.

Additionally, the *Commonwealth Legislation Act 2003* sets an expectation that, before making a legislative instrument, the rule-maker (the Minister in relation to

GEMS determinations) must be satisfied that appropriate and reasonably practicable consultation has been undertaken. Section 17 of the Legislation Act, provides guidance on what the rule-maker should consider in assessing whether the consultation has been appropriate, which includes the extent to which the knowledge of experts in the field has been drawn on, and the extent to which those likely to be affected by the instrument have had an opportunity to provide comment.

Furthermore, the explanatory statement for the instrument, which accompanies the determination when it is tabled for Parliamentary scrutiny, is required to contain a description of the consultation undertaken, or provide an explanation for the absence of consultation where none was undertaken.

Box 3: COAG Principles for best practice consultation

Continuity:	Consultation should be a continuous process that starts early in the policy development process.
Targeting:	Consultation should be widely based to ensure it captures the diversity of stakeholders affected by the proposed changes. This includes Commonwealth, state, territory and local governments, as appropriate.
Appropriate timeliness:	Consultation should start when policy objectives and options are being identified. Throughout the consultation process stakeholders should be given sufficient time to provide considered responses.
Accessibility:	Stakeholder groups should be informed of proposed consultation, and be provided with information about proposals, via a range of means appropriate to those groups.
Transparency:	Ministerial Councils need to explain clearly the objectives of the consultation process, the regulation policy framework within which consultations will take place and provide feedback on how they have taken consultation responses into consideration.
Consistency and flexibility:	Consistent consultation procedures can make it easier for stakeholders to participate. However, this must be balanced with the need for consultation arrangements to be designed to suit the circumstances of the particular proposal under consideration.
Evaluation and review:	Policy agencies should evaluate consultation processes and continue to examine ways of making them more effective.

In addition to these general principles and requirements, it is also recommended that E3 consult with industry before determining what approach should be followed on a product by product basis. If the direct determinations approach is taken, there should be sufficient detail on the consultation process to provide industry with confidence in that process.

It is also recommended that the GEMS Act is amended to require that the Minister release an exposure draft of a proposed GEMS determination before it is formally made. To ensure that such a requirement would not cause undue delays where a quick process was to everyone's benefit, the amendment should provide sufficient flexibility to allow exceptions in circumstances where more targeted or no further consultation was appropriate, such as where the determination is only making minor changes or addressing inconsistencies, or where the changes have already been agreed to by stakeholders.

RECOMMENDATION 4

The Commonwealth Government request that the COAG Energy Council consult with industry, on a product-by-product basis, before specifying how GEMS determinations will be developed.

RECOMMENDATION 5

The Commonwealth Government amend the GEMS Act to require the Minister to release an exposure draft of each proposed GEMS determination.

Development Timeline

A number of submissions called for a shorter or more streamlined process for policy and determination development.

To assist with accelerating processes, Standards Australia's submission noted there are further opportunities to partner with the GEMS Regulator to create greater efficiencies and synergies between the standards and the determinations development processes. It suggested there should be consideration of the extent to which these two processes can be run in parallel. Additionally, Standards Australia recently undertook a technical governance review.¹⁴ Standards Australia is using this technical governance review as an opportunity to work closely with government and industry to improve their strategic engagement and processes. Discussions are ongoing between Standards Australia, the GEMS Regulator, and E3.

Since the 2015 Review, E3 has been endeavouring to streamline processes and an important step has been the introduction of the E3 prioritisation plan (see **Section 2.5**). This has been a positive step to ensure cost and energy savings can

¹⁴ <https://www.standards.org.au/news/technical-governance-review>

be achieved more quickly than in the past. **Table 3**, demonstrates the improved timeliness of the development of new and enhanced regulations as a result of the E3 prioritisation plan.

RECOMMENDATION 6

The Commonwealth Government work closely with Standards Australia on how the GEMS determinations and Standards Australia processes could be mutually improved.

RECOMMENDATION 7

The Commonwealth Government identify additional opportunities to streamline the process for developing GEMS determinations, while maintaining genuine consultation.

Table 3: Development of regulation under the E3 prioritisation plan

Product	Consultation RIS	Decision RIS
Air conditioners	4 February 2016	Developed
Chillers	4 February 2016	In development
Commercial Refrigeration	15 July 2016	24 November 2017
Fridges and Freezers	13 Apr 2017	24 November 2017
Lighting	24 November 2016	20 April 2018
Non Domestic Fans	3 May 2017	In development
Swimming pool pumps	14 November 2016	In development

Implementation Transition

A number of submissions outlined that allocated time between determination publication and implementation may actually require a longer lead time than currently provided for in the GEMS Act. The Act currently includes a default 12 months for implementation of the regulations contained in the determination, however it also provides the flexibility for a new determination to specify the day the regulations will come into force.¹⁵

Although, the provision of a 12 month default is contained in the GEMS Act, it has not been exercised. To date the implementation date for new and revised regulations has been specified in the GEMS determination, following consultation with affected stakeholders. The GEMS Regulator must ensure that industry has sufficient time to

¹⁵ Section 34 of the Act outlines that a GEMS determination comes into force (a) 12 months after the day it is made; or (b) if the determination specifies that it comes into force on another day that is after the day the determination is made – on that other day.

prepare for the changes while ensuring that the benefits as a result of the new or revised determination are realised as soon as possible.

RECOMMENDATION 8

The Commonwealth Government consult with affected stakeholders before specifying the implementation date of GEMS determinations.

5.2.4 Removing GEMS determinations

To date, no GEMS determinations have been revoked or removed. E3 undertakes analysis to review the impacts that GEMS regulations are having in terms of net benefits and reducing energy use. If the costs of regulation were outweighing the benefits, a policy decision should be taken to remove a GEMS determination.

The review has invited stakeholders to identify issues that would need to be taken into account when considering such decisions. While submissions focussed on GEMS expanding to more products rather than removal of determinations, industry stakeholders have noted that appropriate consultation prior to the removal of a determination would be essential.

Revoking a GEMS Determination would require a COAG RIS to ensure the implications were fully explored and considered (though it would not need to be as extensive as a RIS proposing new regulation).

Some industry stakeholders also suggested timeframes under which determinations should sunset.

Ai Group believes that Determinations should automatically expire after a period of five years unless a case can be made by policy makers that the original cost/benefit is still valid.

The Australian Industry Group (AiGroup), 2018

... all Determinations ought to be subject to mandatory first-principles reviews periodically and subject to sunset clauses bringing about the expiry of an instrument after 24 to 36 months.

Lighting Council of Australia (LCA), 2018

Other stakeholders, including AREMA, have expressed the view that even where the existing MEPS regulations are no longer driving improvements in efficiency, it is important to keep them in place as a baseline, to ensure that inefficient products removed by the regulations do not have an opportunity to re-enter the market.

GEMS determinations are covered by the government's default sunset provisions which apply to Commonwealth legislative instruments. As such, GEMS determinations will sunset or cease to have effect after a 10 year period unless action is taken to update and renew the determinations. E3 should develop a work plan to review the cost benefit analysis of determinations within that 10 year period and assess whether there is value in replacing the determinations with revised

requirements, or allowing them to sunset without action or potentially be revoked earlier if warranted.

Given the balance of the issues, the Commonwealth's default sunset provision of 10 years would seem appropriate. However, if the E3 routine analysis of the impacts of GEMS regulations identifies a determination that should be revoked prior to the 10 year period, the flexibility should remain to allow an early removal.

RECOMMENDATION 9

The Commonwealth Government request that the COAG Energy Council maintain a work plan to review and renew GEMS determinations as appropriate.

5.3 Registrations

5.3.1 Introduction

Products regulated for energy efficiency in Australia must be registered, and meet a number of legal requirements, before they can be sold or offered for supply. Registration and the registration system is fundamentally important to the effectiveness of the GEMS Act as it is the first element in the broader monitoring and enforcing compliance regime. Data collected through the registration process also provides information for consumers and underpins information tools, such as the registration database and the Energy Rating Calculator.

This section of the draft report discusses registration issues for two categories of products which were highlighted in the discussion paper. Products with a large number of models (**Section 5.3.2**), customised products (**Section 5.3.4**), and considers whether the GEMS Act has sufficient flexibility to deal with these product types. It also considers a number of other issues raised in the discussion paper which apply across all product types, including suggestions for both increasing the effectiveness of the registration system from a compliance perspective (**Section 5.3.3**) and reducing regulatory burden (**Section 5.3.5** and **Section 5.3.6**).

Stakeholders commented on the interplay between the registration and compliance regimes in the GEMS Act and the way in which they are administered. These issues are considered further in **Section 5.4.3**.

Australia's registration system and the GEMS registration database are highly regarded within the international community. The European Union is currently developing a registration database and is moving towards requiring registration of all products and all models for sale within the European Union. This is expected to provide a useful tool for consumers, allowing alternative ways for product dealers to receive product information sheets, facilitating the monitoring of compliance and providing data for regulatory processes. The modelled impact of having a registration

database is estimated to improve compliance rates by six per cent and reduce energy savings losses as a result of non-compliance by three per cent.¹⁶

5.3.2 Large number of models

The registration for products with a very large number of models per supplier within the GEMS regulatory framework is complex and varies depending on the product. However, there are a number of ways in which the GEMS Act can provide flexibility in regard to these concerns (see **Table 4**). Greater use of these mechanisms could assist in achieving that balance, or further amendments to increase flexibility may need to be considered.

The discussion paper sought feedback on the balance between flexibility and risk associated with family registrations where a large number of models are allowed in a single family registration. Some stakeholders saw the current arrangements as striking the appropriate balance, while others argued that families with a large number of models were too risky given that if one model was non-compliant, all models in the family could be removed from the market.¹⁷

The GEMS Regulator does have discretion in determining the enforcement response appropriate to the circumstances and this may mean that cancelling a registration is not pursued in all cases. The GEMS Regulator also has the ability to consider fee relief in situations where re-registration is sought and where compliance can be demonstrated for the remaining models in the cancelled family. There is also the capacity for registrants to mitigate some of the risk by registering smaller groups of models across a number of family registrations, even where they could all be covered by one family registration.

While the existing arrangements appear to be working well for the current range of regulated products, some new product types may stretch the family registration provisions past the point where they make sense. Where such issues are known, there is value in exploring other options. For example, the Department of the Environment and Energy has agreed to work towards supplier level registration for LED lighting products, providing a test case for assessing the merits of extending such an approach to other regulated products. The Department's current work on supplier level registration should be used to evaluate merits of extending such an approach to other regulated products for which it would be appropriate. The model level approach should be retained for products for which it is working well and where

¹⁶ Commission Staff Working Document Impact Assessment Accompanying the document Proposal for a Regulation of the European Parliament and of the Council setting a framework for energy efficiency labelling and repealing Directive 2010/30/EU <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A52015SC0139>

¹⁷ Due to the fact there is only one registration to be cancelled, and models cannot be individually removed from within a registration.

product registration continues to provide consumers with important additional information.

RECOMMENDATION 10

The Commonwealth Government examine the appropriate use of supplier level registration.

Table 4: Flexible arrangements currently within the Act

Feature	Scope of determination
Description	Setting out the classes of products that are covered and not covered (or excluded) by the determination.
Criteria	Done in all cases. The interaction between the covered and excluded product classes ensures that only the products for which regulation is deemed appropriate are captured. The approach can be either broad/high-level coverage statements with a detailed set of exclusions, or a relatively targeted list of covered product classes with fewer exclusions.
Feature	Registration exemption
Description	A determination can specify that models in a product class are exempt from the obligation to register.
Criteria	Generally intended for circumstances where there is a large variety of covered products (and/or large numbers within a product class) and only a small number (one or two) of regulated parameters. For example, was intended for use with the proposal to regulate stand-by power for a wide range of appliance types. This would have seen a significant increase in the number products captured by the regulations, with most having no requirements other than stand-by. Registration would be a large burden on both industry and the GEMS Regulator in those circumstances.
Feature	Family of models
Description	Traditionally an arrangement where products with different model numbers and minor cosmetic differences, but with the same core technical specifications and energy performance, can be covered by the same registration. More recently, variations in energy performance within certain bounds have been allowed within a family.
Criteria	Generally makes sense for fairly standardised products sold in reasonable volumes. An example is domestic refrigerators, where different models with the same core specifications and efficiency, but with cosmetic differences such as colour or left and right-opening doors which don't affect performance, can be covered in a family registration. In this example, if the variants were all supplied under the same model number they could be covered by a single model registration.

Feature	Exemption power
Description	The GEMS Regulator has the power under Section 39 of the Act to grant exemptions to specified models from some or all of the requirements of a Determination, either for all or specified supplies.
Criteria	Generally considered to be for use in unusual or unique circumstances, such as where a MEPS-compliant alternative is not available. Major mining companies have previously applied to the GEMS Regulator for an exemption relating to the importation of specialised equipment which would have been covered by the electric motors determination.
Feature	Deemed to comply
Description	An alternative arrangement for demonstrating compliance, where if a product has certain specified features, it is taken to be compliant without having to undertake the full range of testing.
Criteria	Generally suitable for low volume or bespoke products. An example is the arrangement for computers – a model is deemed to comply if annual sales are less than 200 units, and it uses a power supply above a specified efficiency. Demonstrating compliance with the full range of MEPS requirements, as part of the registration process, is not required unless the sales volume goes above 200 in a given year. It is proposed, a similar approach will be implemented for low volume and bespoke refrigerated display and storage cabinets when the current GEMS determination is replaced.
Feature	Fee reduction/waiver
Description	The GEMS Regulator has the power under Section 64 of the Act to reduce or waive a registration fee that would otherwise be payable, either in a particular case or in a particular class of cases.
Criteria	This power has been used to maintain a concessional arrangement for electric motors that existed under state and territory arrangements in the transition to the GEMS framework. It has also been used to waive the registration fee for deemed-to-comply computers, on the basis that the nature of the deemed-to-comply arrangement means that it adds little to the cost of regulating the program

5.3.2 GEMS product unique identifiers

Some GEMS products are not offered to the market with a readily identifiable model number (most commonly electric motors and lighting products). The GEMS Act does not specifically require a model number, the Act requires a single unique identifier (model identifier). This unique identifier may be a model number used in supplying

the product, but may also be an identifier used in manufacture of the product, such as a part number or an internal stock number. Some suppliers create a model number solely for GEMS registration purposes, often from a combination of the technical features of the product (e.g. for lamps, wattage, shape, cap size/type, beam angle etc.) but there is no consistent or uniform approach across suppliers. This can make it difficult for compliance officers conducting desktop or store surveys to establish a connection between a physical example of a product on the shelf, or models offered in product literature, and the actual GEMS registration.

Submissions in response to the discussion paper suggest that rather than seeking to impose particular formats, the GEMS registration system should be able to accommodate industry practice, and that effective post-market compliance and enforcement activity should be the focus, rather than additional compliance costs. However, where a clear and unique identifier cannot be readily located, GEMS compliance officers must spend additional resources in simply determining whether or not a product is registered. This unnecessary delay means compliance resources have to be diverted from other, higher-value activities.

Improvements and clarity relating to the unique identifier requirements of the GEMS Act would present benefits for all parties. The inclusion of this issue as part of the GEMS Regulator's continuing stakeholder outreach would assist both sides in appreciating the importance and challenges relating to determining the most appropriate identifier. Recognising that the majority of GEMS products are internationally traded goods, setting GEMS labelling and marking requirements for products that require a model identifier for registration could be problematic, costly and unnecessary.

RECOMMENDATION 11

The GEMS Regulator engage with industry stakeholders to improve the usability of unique identifiers for industry and GEMS compliance officers.

5.3.3 Registration obligation for customised products

Under the GEMS Act, the registration obligation for regulated products comes into force at the point the product is first offered for supply. This works well for standardised products sold in reasonable volumes, but can be problematic for customised products, where a supplier may make an offer that never turns into an actual supply.

It can be argued registration at the time an offer is first made is not as relevant for customised products as it is for more standardised products, as the cooperative process of developing the specifications of a customised product between the customer and the supplier means that the customer is in a position to ensure that what they want in terms of energy efficiency is factored into the design process. On

this basis, a different point of registration may be appropriate, such as when a sale is confirmed.

The GEMS Act could be amended to provide for registration at the point a sale is confirmed for customised products, however it would need to consider:

- clear parameters for identifying which arrangement applied to what products.
- how product classes that contained both customised and standardised products would be addressed.
- identifying at what point a sale is considered to be confirmed.
- the existing arrangement should be maintained for standardised products.

RECOMMENDATION 12

The Commonwealth Government amend the Act to allow registration ‘at the point a sale is confirmed’ for clearly defined customised products.

5.3.4 Multiple registration requirements

Products regulated under the GEMS Act often have compliance obligations and registration requirements for other Commonwealth and State legislative programs, such as electrical safety, ozone protection and water efficiency. There is a clear and unnecessary regulatory burden being placed on suppliers by requiring them to interact with multiple registration systems and/or reporting databases for a single product.

A number of stakeholders have proposed streamlining and coordination of requirements, so that a single registration application would fulfil the requirements of multiple government regulations and/or agencies. For example, it was suggested that the Equipment Electrical Safety System (EESS) could be used to capture all the relevant information needed for a GEMS registration. However, at least one major industry association has indicated that its members would not support this approach at this time, noting that there are benefits of the current approach for some products.

Any efforts to streamline administrative arrangement would result in a significant reduction in the regulatory burden being placed on industry. However, there are challenges and impediments that would need to be addressed which may affect the cost effectiveness or ability to implement any improvements. Some of the issues that would need to be addressed include:

- incompatibilities in legislative frameworks.
- database compatibility issues.
- data protection.

- cost (including cross-subsidisation issues).
- multiple requirements for some products, for example:
 - electrical safety, GEMS, and ozone protection for air conditioners and refrigeration products.
 - electrical safety, GEMS, Water Efficiency Labelling and Standards (WELS) for wet whitegoods (clothes washers and dishwashers).
 - gas safety and GEMS for gas water heaters.

The Department of the Environment and Energy has an ongoing work program to review and improve the ease of use of the existing registration system, and according to the recent GEMS stakeholder satisfaction survey, 12 per cent of respondents had noticed an improvement to the product registration process.

Additionally, the Department is currently working with the EESS, examining the potential of a joint registration submission process for the implementation of regulations for LED lamps. Suppliers of LED lamps would then be able to fulfil their electrical safety and GEMS obligations through a single portal.

In 2014-2016, the Ozone Protection and Synthetic Greenhouse Gas (OPSGG) Program undertook a review of the *Ozone Protection and Synthetic Greenhouse Gas Act 1989*. The program is currently developing its second round of amendments which are likely to include changes allowing the sharing of information with a wider range of parties, including the GEMS Regulator. This may provide opportunities for streamlining for air conditioners and other refrigeration products, though further work will be required to identify those opportunities and any practical impediments.

RECOMMENDATION 13

The Commonwealth Government examine the joint registration arrangements with the EESS for other GEMS products covered under the Act.

RECOMMENDATION 14

The Commonwealth Government consider the development of a single entry point / central government portal to serve all government product registration obligations.

RECOMMENDATION 15

The GEMS Regulator identify opportunities to further streamline and co-ordinate registration processes to ease the regulatory burden on industry.

5.3.5 'Grandfathering' and the registration of newly regulated products

A number of industry associations raised a concern with the current grandfathering provisions of the GEMS Act. The Act requires that all products covered by a GEMS determination be registered prior to being offered for sale. The grandfathering provisions, will allow products that cannot meet the MEPS requirements to continue to be sold if they were imported into, or manufactured in, Australia before the regulation took effect. For newly regulated products, this means that compliant stock would need to be registered when the regulation comes into effect and not when new stock is then imported or manufactured afterward.

A grandfathering period is to give suppliers time to sell out non-compliant stock, or stock which may be compliant but the model is not continuing so will not be registered. In most cases the determination has not limited the grandfathering period, as allowed by the Act, because of the unlikely prospect of stockpiling models prior to a determination application date, stockpiling being uneconomical in the majority of cases.

Consumer Electronic Suppliers Association (CESA), 2018

The current grandfathering provision does not accommodate products that are imported before a determination is implemented but are also compliant at the time of importation. In that case, those products need to be registered when the determination is implemented, raising cost and complexity for suppliers.

Lighting Council of Australia (LCA), 2018

For product types that are supplied on a seasonal basis, which have short product lifecycles, or are made to order, the practical impact of this issue should be minimal, particularly where the statutory notice period is long enough to ensure that suppliers have sufficient time to meet the new obligations.

For product types with longer shelf lives or for which higher stock levels are typically maintained, the impact on registrants may be greater. To date, the GEMS Regulator has undertaken to take a common sense approach and work with affected registrants to provide assistance on a case-by-case basis where the impacts are greater. However, a solution that applies more generally, rather than on an ad-hoc product-by-product basis, would be beneficial in terms of certainty and reducing burden on industry.

As such, there seems to be little risk to extending the grandfathering arrangements that currently apply for non-compliant products (GEMS Act sections 16 and 18) to the registration obligation for compliant products (GEMS Act sections 17 and 19).

RECOMMENDATION 16

The Commonwealth Government amend the GEMS Act to extend the grandfathering provisions that currently apply for non-compliant products to the registration obligation for compliant products.

5.4 GEMS compliance

5.4.1 Introduction

The majority of stakeholders acknowledged the importance of a robust compliance regime to ensure the GEMS Act is achieving its objectives.

The GEMS Regulator and GEMS inspectors monitor and enforce compliance with the GEMS Act through four distinct but inter-related activities:

- Engagement and education activities to assist regulated entities to voluntarily comply.
- Market surveillance activities to ensure adherence of registration and labelling requirements.
- Check testing models of GEMS products to ensure energy efficiency requirements and claims are met.
- Assessing and investigating allegations of non-compliance received by the GEMS Regulator.

Additional detail regarding these activities is provided in **Box 4**.

The discussion paper raised issues relating to whether the compliance regime has the necessary flexibility to deal with two categories of products, short market life products and unique or bespoke products. These issues are discussed in **Section 5.4.5**. Stakeholders also raised a range of suggestions in relation to possible enhancement of the efficiency and effectiveness of GEMS compliance activities, including:

- resourcing commitments (**Section 5.4.2**)
- industry engagement and particular approaches to compliance monitoring (**Section 5.4.3**)
- enforcement responses and penalties (**Section 5.4.4**).

Box 4: GEMS compliance activities

Engagement and Education

Purpose Compliance begins with engagement and education. The GEMS Regulator and GEMS inspectors provide information and resources to assist regulated entities to comply with their obligations under the Act and specific GEMS determinations.

Nature of activities For example:

- GEMS inspectors attend and present at industry and consumer fora.
- The GEMS Regulator publicises the results of, and responses to, GEMS compliance monitoring activities.
- GEMS inspectors, conducting surveillance activities, ensure suppliers are provided with immediate and post inspection feedback.

GEMS Inspector Market Surveillance

Purpose Market surveillance is conducted by GEMS inspectors during visits to retailers, suppliers, importers, and manufacturers to ensure registration and labelling requirements are met. Market surveillance is also conducted to ensure that GEMS products offered for supply on-line meet GEMS registration requirements.

Nature of activities The average number of models inspected each year is around 3,500. Recent market surveillance has focussed on ‘consumer’ GEMS products and lighting. Industrial and commercial GEMS products require a more targeted and unique approach for detecting non-compliance as they are rarely supplied in traditional retail environments.

Check Testing

Purpose Check testing ensures that models of GEMS products meet the relevant GEMS level requirements (or MEPS) and the energy efficiency claims of the supplier.

Nature of activities During 2017–2018, the GEMS Regulator completed check tests for 102 models of 13 GEMS products, 95 (93 per cent) met GEMS requirements and seven (13 per cent) failed.

In response to the seven failed check tests, the GEMS Regulator:

- Cancelled the registration of five models
- Referred the non-compliance of one model to another regulator
- Took alternative enforcement action for one model.

The GEMS Regulator also accepted two enforceable undertakings where registrants agreed to take specific remedial actions in relation to the non-compliance.

5.4.2 GEMS compliance resourcing

GEMS compliance activities are subject to the same constraints and resource pressures faced by other areas across government and businesses. The GEMS Regulator's compliance team currently has 8.5 permanent staff, located within the Department of the Environment and Energy in Canberra. In addition, nine officers from various state governments in Western Australia, Victoria and South Australia are contracted as GEMS inspectors to undertake inspections on a monthly basis and as directed by the GEMS Market Surveillance Annual Plan.¹⁸ These GEMS inspectors are not considered Australian government staff, however they supplement the resources available to the GEMS Regulator for market surveillance.

Several submissions suggested the GEMS Regulator should focus more on compliance monitoring and enforcement (post-market activities) and less on registration (pre-market activities).

The Consumer Electronics Suppliers Association (CESA) is concerned about the lack of overall market place surveillance and enforcement activities relative to the number of registered products. We acknowledge that the Act needs to follow government full cost recovery policy, but as submitted in the CESA response to the GEMS Fees Review, we believe more funds should be directed towards enforcement by further reducing registration administration costs.

Consumer Electronics Suppliers Association (CESA), 2018

As discussed in **Section 5.3.1**, registration requirements are an essential and effective part of a holistic compliance regime. Registration requires suppliers to acknowledge that it may be an offence to provide false or misleading information, along with the provision of model data and test data. Sanctions include suspending or cancelling a model's registration, publicising the suspension or cancellation, and/or criminal charges.¹⁹ While registration requirements on their own do not guarantee compliance, they do increase the likelihood regulated entities will comply. A number of steps are already being or could be considered in relation to the resources available for post market compliance, including:

- Given the importance of engagement and education activities, additional resources are being reallocated from registration to compliance to develop educational materials and improve the public profile of compliance.
- As part of the GEMS Fees Review, the GEMS Regulator undertook staff time and work surveys in both the registration and compliance functions. Efficiencies identified in the delivery of registrations services were applied as part of the GEMS Fees Review and could also be extended and considered in regards to compliance functions.

¹⁸ <http://www.energyrating.gov.au/document/gems-compliance-monitoring-program-20172018>

¹⁹ Section 137.1 False or misleading information, *Criminal Code Act 1995*

Submissions also suggested resources should be redirected to enable and support a more comprehensive post-market compliance regime.

AREMA strongly supports robust and active compliance and enforcement action... We would propose that there is a significant ramping up of compliance efforts going forward...

Air Conditioning and Refrigeration Equipment Manufacturers Association (AREMA), 2018

...the enforcement team do a great job with the limited funding provided to them...

Consumer Electronics Suppliers Association (CESA), 2018

The team currently working on the range of compliance activities is relatively small given the breadth of the products covered and the range of activities which are undertaken. As the GEMS Program is expanded to include more products with greater diversity, and therefore increased complexity, the demands on the compliance team are likely to increase. In order to maintain and further develop a robust compliance regime, consideration should be given to the appropriate level of resourcing.

Robust and effective compliance underpins the success of the GEMS Act. In order to continue the current success of the GEMS regulatory framework, compliance will need to be an ongoing priority.

RECOMMENDATION 17

The GEMS Regulator to identify further efficiencies and opportunities to allocate additional resources to GEMS compliance functions.

RECOMMENDATION 18

The Commonwealth Government allocate additional resources to further strengthen GEMS compliance activities.

5.4.3 Compliance monitoring approach

While the requirements of the GEMS Act apply to all regulated entities, it is impossible to ensure every model of every GEMS product is compliant. As such, the GEMS Regulator uses an intelligence-led, risk-based approach to target GEMS products and models more likely to fail to meet GEMS requirements. The GEMS Regulator recognises the importance of maintaining a 'level playing field' and ensuring those entities suspected of intentionally contravening the GEMS Act are monitored and appropriately sanctioned.

Industry Involvement in GEMS Compliance Activities

Several submissions suggested industry should be more involved in GEMS compliance monitoring activities. Information provided by industry participants already contributes to the intelligence-led, risk-based approach. The GEMS

Regulator has already responded to this industry suggestion. Several meetings with industry bodies and participants have been convened to discuss how this collaboration should proceed and further meetings are planned.

Preliminary Testing

Some industry submissions suggested that greater use could be made of preliminary inexpensive testing methods to increase the overall number of check tests.

...indicative testing of lighting products should be undertaken using inexpensive testing apparatus. Where a product fails to meet a requirement by a clear margin, say 20 per cent, then it may be appropriate to impose an obligation on the supplier to fund independent testing of that product.

Lighting Council Australia (LCA), 2018

Undertaking a higher number of tests on light products could be achieved with the relatively inexpensive LightSpion light testing suitcase. The LightSpion could be used by the GEMS Regulator to assist in identifying potential models to target for the check testing process as a further means of providing greater focus to compliance activities.

Further use of preliminary testing, including the use of the LightSpion, as part of Stage 1 check testing would be outside current industry accepted practices and would require consultation with industry as discussed in **Section 5.4.5** below.

Use of External Data

Industry also suggested the GEMS Regulator collect and analyse data related to the importation of GEMS products to assist with streamlining compliance monitoring and enforcement activities. This approach has been used to identify three phase cage induction motors contained in imported equipment and machinery. The use of importation data should continue and the GEMS Regulator should continue to work with government and industry on ways to improve the correlation of import codes with GEMS products.

RECOMMENDATION 19

The GEMS Regulator continue to explore new ways to target compliance activities including through collaboration with industry stakeholders.

5.4.4 Penalties and reporting

The GEMS Act provides the GEMS Regulator with educative, administrative, civil, and criminal enforcement response options. In determining the appropriate response, the GEMS Regulator considers a regulated entity's compliance history, behaviour, motivation, and intention; and, is proportionate to the risk posed by the non-compliance. Responses under the GEMS Act include:

- suspending a model's registration.
- cancelling a model's registration.
- enforceable undertakings.
- infringement notices.
- civil penalty orders.
- injunctions.

The GEMS Act also allows the GEMS Regulator to publicise details relating to enforcement responses including the names of registrants and the model numbers of GEMS products.

Stakeholders have suggested the penalties imposed by the GEMS Regulator to date are insufficient to deter non-compliance.

Currently, the GEMS Act allows for significant monetary penalties. For example, the penalty for contravention of Section 17, supplying an unregistered model, is 60 penalty units. One penalty unit equates to \$210, as such, 60 units would result in a \$12,600 penalty. Section 142(2) of the Act also allows a separate contravention for each day the contravention occurs. As a result the penalties could rapidly multiply if the contravention is not rectified immediately.

Additionally, by cancelling or suspending a model's GEMS registration and requiring the cessation of supply, the GEMS Act imposes significant commercial penalties via lost revenue and disposal costs.

The GEMS Regulator is committed to assisting regulated entities to understand the requirements of the GEMS Act, monitoring compliance with the requirements and actively pursuing those who opportunistically or deliberately contravene the Act.

While stakeholders have suggested the penalties imposed by the GEMS Regulator have been insufficient to deter non-compliance, all enforcement responses have considered a regulated entity's history, behaviour, motivation, and intention and have been proportionate to the risk posed by the non-compliance.

Following the efforts of the GEMS Regulator and the GEMS compliance team, systems are in place to facilitate the range of compliance activities allowed under the GEMS Act. As such, resources previously dedicated to the development of systems and processes are likely to be reallocated to focus on enforcement.

5.4.5 Two stage check testing

The discussion paper set out the two stage check testing process undertaken by the GEMS Regulator and outlined the difficulty in applying this approach in two particular instances:

- i. short market life products; and
- ii. unique and bespoke products.

The two stage check testing process is used to assist in determining whether a registered model of a GEMS product meets the requirements of the relevant GEMS determination. From a legislative perspective, the GEMS Regulator is permitted to require a registrant to either apply to cancel the registration of the model or arrange for further testing and examination of products if the GEMS Regulator considers, that the model in question does not comply with the relevant determination. The Stage 1 check test provides a robust basis to inform the GEMS Regulator and the justification to require the registrant to apply to cancel the registration or conduct the Stage 2 check test.

The two stage testing process aims to achieve the appropriate balance between timely enforcement action, the ensuring decisions are defensible and made on a sound basis through a rigorous process, and ensuring procedural fairness.

Short market life products

The issue for short market life GEMS products is that the two stage check testing process can be lengthy. Acquiring products, testing the requirements mandated in determinations and standards, liaising with registrants, and ensuring procedural fairness can take between 21 and 480 days, depending on the product and the Stage 1 outcome.

This issue has been raised in relation to lighting products. For example, self-ballasted compact fluorescent lamps have a minimum lumen maintenance measured at 2,000 hours (83 days) and 5,000 hours (206 days), and a minimum life is measured at 6,000 hours (250 days).

Using the intelligence led, risk based approach, the GEMS Regulator already prioritises the testing of compliance requirements where there is a history of non-compliance. Where this does not include minimum life testing, the targeted approach already reduces the time required for check testing.

Unique and bespoke products

Industry also suggests that the two stage check testing process does not work for unique and bespoke GEMS products and suggested the GEMS Regulator work closer with industry to develop a workable and effective solution.

In lieu of the two stage process, industry suggestions included a one stage formal, expert energy performance assessment comprising, for example, a visual inspection and a review of product literature, certifications, and registration information. The results of the assessment would be provided to and discussed with the registrant with agreement reached before any compliance action taken.

However, any changes to the Stage 1 and Stage 2 check testing process to accommodate short market life or bespoke products must be developed in consultation with the relevant industry participants.

RECOMMENDATION 20

The GEMS Regulator engage with industry stakeholders on alternative check testing methods that ensure fairness, transparency, and integrity.

RECOMMENDATION 21

Based on the outcomes of Recommendation 20. The Commonwealth Government amend the Act to allow a flexible approach to compliance and enforcement that maintains adequate protection for registrants.

5.5 Managing the GEMS program

5.5.1 Mandatory or voluntary standards and labelling

The Terms of Reference asked the review to consider whether there is a role for guidance about when standards and labelling should be mandatory and when other approaches might be more suitable.

The 2015 GEMS Review examined the case for mandatory energy performance standards and energy labelling for equipment and appliances, and whether these government interventions should be voluntary. It found that there was a strong case for intervention and that:

MEPS are generally mandatory because regulation, with good compliance, delivers certainty and consistent outcomes for businesses and consumers. Voluntary agreements... appear successful only in specific circumstances, such as when markets are dominated by a limited number of domestic manufacturers, with similar (high) technical competency and incentives to develop energy efficient product. These circumstances do not apply to the Australian and New Zealand markets.

Mandatory comparison labels provide authoritative and trusted information for consumers and for this reason the large majority of stakeholders support their use.
2015 GEMS Review

In 2017, research commissioned by the International Energy Agency's (IEA) Energy Efficient End-use Equipment (4E) Technology Collaboration Programme analysed 51 voluntary agreements. The study found that these agreements are best applied when policy action is desirable but regulation currently not feasible, for example,

when there are regulatory hurdles, unusual markets, lack of information or lack of government resources.²⁰

Almost all products currently regulated under the GEMS Act have mandatory standards and labelling regulations (see **Table 1**) and submissions suggest broad support for mandatory standards and labelling as they effectively deliver energy and cost savings and keep the least energy efficient products off the market.

Notwithstanding support for mandatory approaches, E3 routinely investigates both voluntary and mandatory policy options that may be used to improve energy efficiency standards and labelling for equipment and appliances. This is a necessary step of the process of examining potential new regulations (see **Section 5.2.2**). See **Box 5** for an example of the examination of voluntary labelling through a policy development process.

Additionally, E3 has a voluntary Energy Rating Icon for online and print advertising and a voluntary standard for demand response interfaces for some equipment and appliances. These specific cases are considered further in **Sections 5.6.1**.

Box 5: Voluntary Energy Rating Labelling Program (VERLP) for swimming pool pumps

The VERLP began in April 2010 and is administered by the Commonwealth Department of the Environment and Energy on behalf of the E3 Program. The program was intended as a transitional step leading to the introduction of mandatory labelling and MEPS requirements, which were expected to come into force in 2012.

The consultation regulation impact statement for swimming pool pumps (released November 2016), highlighted limitations of the program. Some of these limitations are:

- Only the most efficient pumps are registered under the program and therefore it has limited benefits for advising consumers of energy efficiency information.
- After eight years of operation, most pumps sold in Australia are not registered with the program and are not labelled with energy performance information.
- Although the VERLP provides some information to consumers and there are some broader community benefits, the primary effect of the program is supporting industry advertising and marketing.
- There is no evidence that the VERLP has increased the uptake of energy efficient pumps in Australia.
- Administrative arrangements for the program do not align with broader GEMS legislation and program arrangements.

²⁰ Effectiveness of Energy Efficiency Voluntary Agreements, final report, IEA 4E Technology Collaboration Programme, 6 December 2017

RECOMMENDATION 22

The Commonwealth Government request the COAG Energy Council consider voluntary and mandatory measures when developing new or enhanced regulations.

5.5.2 Data

Stakeholder submissions and consultations have raised two issues concerning data used to calculate the impact of GEMS regulations²¹ and to determine which products to regulate:

- i. The first issue concerns the availability and quality of data critical to ensuring GEMS regulations are as effective as possible; and
- ii. The second concerns how the available data is analysed.

Evidence base

The Queensland Government and the Green Building Council of Australia have highlighted the need to improve the evidence base to evaluate the effectiveness of GEMS regulations. This was also a recommendation of the 2015 GEMS Review:

(The E3 program should) undertake further outcome evaluation studies to improve the evidence on program savings and cost effectiveness. In particular, this should continue to focus on actual market impacts rather than projections and isolating the impact of the program from other factors. Furthermore, it would be useful to better understand the impacts of labelling through further research in order to help understand the costs and benefits of labelling vs. MEPS.

2015 GEMS Review

Following the 2015 GEMS Review, the Department of the Environment and Energy and E3 have worked to improve its gathering and analysis of data. Examples of this work include:

- The Residential Baseline Study (RBS), a bottom up model of household energy use. It connects appliance sales data with surveys of hours of use, climate data and product life time to produce a stock model of appliance energy use within the home. The energy use estimations have been compared with both gas and electricity distribution data and have shown to be robust.
- The wide scoping study, which examines Australian energy use through to the end use equipment and identifies where there are potential energy savings opportunities at the system level.

²¹ see **Box 6** for an explanation of how the Department of the Environment and Energy calculates GEMS impacts

Section 56 of GEMS Act, provides the GEMS Regulator the power to collect data relating to the import and manufacture of regulated products. To date, the GEMS Regulator has not used this power and instead E3 has relied on purchased sales data to inform the development of new and enhanced regulations. However the major supplier of this sales data has recently announced it would no longer include sales data from two major retailers. To replace or supplement this data, it may be necessary for the GEMS Regulator to consider using the information gathering powers under Section 56.

RECOMMENDATION 23

The Commonwealth Government reviews its information and data requirements and examines the most appropriate means to realise those data needs.

RECOMMENDATION 24

Based on the outcomes of Recommendation 23. The Commonwealth Government amend the GEMS Act to allow the GEMS Regulator to collect further data to improve its evidence base.

Data analysis

The Lighting Council of Australia has suggested the benefits of GEMS regulations may currently be overstated. It argues that the data assumptions should be updated regularly to ensure the most accurate analysis.

A number of reports have considered the potential benefits delivered by energy efficiency regulations, including:

- Impacts of the E3 program 2014, *George Wilkenfeld*²²
Net benefit of \$10.3 billion from 2000 to 2013
Net benefit of \$43.3 billion from 2014 to 2030
- 2015 Independent GEMS review, *Data Build*²³
Net benefit of between \$3.3 billion and \$7.3 billion from 2014 to 2020
- Department of the Environment and Energy, Internal Analysis
Net benefit of between \$4.2 billion and \$8.1 billion from 2000 to 2014
Net benefit of between \$4.9 billion and \$9.1 billion from 2015 to 2020

²²<http://www.energyrating.gov.au/sites/new.energyrating/files/documents/Impacts-of-the-E3-Program.pdf>

²³http://www.energyrating.gov.au/sites/new.energyrating/files/documents/GEMS_Review_2015_Final_Report_0.pdf

Any assessment of the benefits of the GEMS Program necessarily involves assumptions as it is not possible to physically measure the impact of the Program. However, such variation in the estimated or projected benefits can undermine stakeholder confidence in the determination of those benefits.

Box 6: GEMS impact calculations

Data

The costs and benefits estimates for GEMS have been calculated using historical data on regulated appliances. The sales of white goods and consumer electronics have been recorded since 2000. Every product that is regulated under GEMS and sold in Australia has submitted a test report on efficiency. Matching these two data sets provides very detailed data on the efficiency, cost and sales number of almost every product regulated by GEMS. In some cases, sales data is not available and in these cases biannual surveys of over 1000 sales are used to estimate sales trends.

Efficiency calculations

Using this data, the department builds up stock models of previous years. The Department then overlays information about the regulations that were put in place so it can be seen which products the regulations removed and how suppliers reacted to the regulation. For example, did they all manufacture products that just met the new efficiency standard or did they make significant improvements? The trends over time are investigated to see how long it took suppliers to substantially improve to the point at which the regulation no longer had an effect. This will often correspond to a technology change or moves internationally to increase efficiency levels which have flow on effects domestically. The difference in cost between the old and new products is taken as the cost to the consumer of the regulations. Often there is no noticeable cost to the consumer from a regulation, however in some cases the costs can be significant.

Labelling

The impact of how consumers are responding to information provided on energy rating labels is estimated by comparing the average efficiency of products manufacturers place on the market, with the sales weighted efficiency in any one year. The theory being, manufacturers will put a range of products out to the market, and if the label is having an impact, then consumers will purchase more of the higher star products.

Range of estimates

The net benefits are always described as a high and low figure, this includes all the statistical errors that are inherent to the data being used. The high and low figures, represent around an 80 per cent confidence interval. Without the ability to meter every appliance in every home before and after a regulation the Department could not provide a single point estimate of the costs and benefits.

A robust independent assessment of the impact of GEMS regulations utilising the most recent data, assumptions and modelling tools would give stakeholders greater

confidence in E3's stated benefits. Additionally, the Department of the Environment and Energy should secure an independent review and audit of their cost benefit model to provide stakeholder additional assurance that regulations are based on sound analysis.

RECOMMENDATION 25

The Commonwealth Government commission an independent assessment of the benefits delivered by current GEMS regulations.

RECOMMENDATION 26

The Commonwealth Government commission an independent audit of the methodology and model used in the calculation of the cost and benefits of equipment and appliance energy efficiency regulations.

5.6 Consumer behaviour

5.6.1 Energy rating label

Two main issues in relation to energy rating labels were raised in submissions to this review:

- i. online labelling and print advertising; and
- ii. possible changes to the current ERL.

Online labelling and print advertising

While the GEMS Act mandates the display of the ERL in stores on relevant regulated products, the use of the Energy Rating Icon (a simpler version of the ERL for use online and in print advertising) is voluntary. Some stakeholders have raised concerns about this approach.

Figure 2: Example of a 10 Star Energy Rating Icon for use online.



Increasing numbers of buyers now shop on-line or via catalogues. But labelling is not mandated in these media. This means the label is becoming less useful over time.

Alan Pears, 2018

The COAG Energy Council considered mandatory online labelling and print advertising during the development of the GEMS Act and determined that further work was required with regard to the costs and benefits before introducing mandatory regulation.

Recent work commissioned by E3, examined if, and to what extent, the presence of energy rating information at the online point-of-purchase, influenced the energy efficiency of consumers' purchase decisions. Research conducted on refrigerator purchases online found that:

- customers who are exposed to energy rating information choose more energy efficient products.
- the Energy Rating Icon is more effective than text only information, especially when shown at both consideration and choice stages.²⁴
- the simplified version of the ERL (the Energy Rating Icon) is generally understood.

E3 has flagged the potential of testing if the same effect occurs for other appliances, to quantify the benefits of mandating display of energy rating information online. Additionally, further work is being undertaken to further understand the costs that would be imposed by mandating the display of energy rating information online and the compliance resources needed to enforce this. E3 is also working to understand

²⁴ The 'consideration' stage is one in which people narrow down the product alternatives to a few options. This is followed by the purchasing (or 'choice') stage where they make their final decision.

the costs and benefits of mandating the display of energy rating information in print advertising.

No legislative changes to the GEMS Act are required in order to mandate the use of the Energy Rating Icon.

RECOMMENDATION 27

The Commonwealth Government request that the COAG Energy Council continue to examine the costs and benefits associated with mandatory disclosure of energy rating information online and in print advertising.

Possible changes to the current ERL

The ERL is used to inform customers of the relative energy efficiency of appliances. It was first introduced in New South Wales in 1986, and has remained relatively unchanged. Evidence suggests that consumer understanding and interpretation of the ERL could be enhanced. In recognition of this potential for improvement, a range of possible changes to labelling were suggested in stakeholder submissions.

It would be worth considering the use of a dollar value indicator (based on a conservative average of national energy pricing) in the ERL to give consumers an idea of what long term impacts this will have on their electricity bill.

Choice, 2018

To make competing energy cost and emissions information more salient can GEMS labels possibly state in dollar terms the payback time and ultimate gains, in dollars, a device choice offers? Could a form of GEMS labelling (or supplemental label) simply state total financial benefit and total environmental benefit?

Generation Shared, 2018

Other suggestions included the development of a much broader label covering embedded energy²⁵ and the challenges for consumers in understanding the star rating scale when technologies for some appliances are changing much faster than others.

The effectiveness and enhancement of the ERL is part of an ongoing work program for E3. Recently, the Department of the Environment and Energy partnered with the Department of the Prime Minister and Cabinet and Appliances Online to assess whether consumers could be encouraged to buy more energy efficient appliances, helping them to save money, through changes to the ERL.

A randomised control trial was conducted that presented no energy efficiency information, the Energy Rating Icon or a modified Energy Rating Icon that presented the energy use figure in dollars rather than kilo-watt hours (kWh). The trial found that

²⁵ Different high efficiency appliances can have a varying total carbon debt based on the materials and processes used in their construction and disposal.

energy labels have positive effects on consumer behaviour compared to no labels. However, the trial did not find any difference between the impact of the existing label and the alternative label that was tested.

The findings of this trial are available from the Prime Minister and Cabinet website.²⁶

RECOMMENDATION 28

The Commonwealth Government request that the COAG Energy Council pursue potential enhancements to the ERL.

5.6.2 Education

A common theme during consultation was the challenge associated with shifting behaviour regarding energy use. This observation is supported by a range of research and is one of the main reasons for energy efficiency regulation such as GEMS.

Every sector has unique challenges in engaging and enabling demand side action. It is noted, that the water sector has achieved very successful outcomes in terms of behaviour change around conservation. Generation Shared highlighted this in its submission:

Consumers can respond to signals and substantially conserve. Melbourne is the international poster child for water conservation with demand having halved during the 03-09 drought and it has stayed down ever since. This is attributed to the Yarra Water Target 155 campaign which used innovative group signals to bring about behaviour change in whole streets at once.

Generation Shared, 2018

In addition to considering innovative ideas from the water sector, stakeholders offered a range of other suggestions relating to education and behaviour change they believed could be applied to product energy efficiency. These are summarised in **Table 5**.

The Australian Government and E3 are progressing a range of work streams in relation to education and behaviour change. Labelling is an important tool here, and is discussed in **Section 5.6.1**. Other examples include:

- Wide ranging improvements to the energyrating.gov.au website that were made following the 2015 GEMS review (see **Appendix B**), including tailored content with clear entry points for suppliers, retailers and tradespeople and consumers.
- Trialing paid digital marketing to actively promote content to consumers.

²⁶http://behaviouraleconomics.pmc.gov.au/sites/default/files/projects/beta_report_energy_labels_that_make_cents.pdf

- Continued efforts to make the Energy Rating Calculator easier and more intuitive for consumers to use, improving both its interface and functionality. Further enhancements were also made to the Calculator App and the Light Bulb Saver App.
- The addition of GEMS Regulator and Energy Rating YouTube channels to provide more interactive communication methods with industry and consumers.
- New video content promoting the Light Bulb Saver App and the ERL.
- The National Retailer Engagement Strategy, developed in conjunction with Sustainability Victoria and the New South Wales Office of Environment and Heritage. The strategy aims to increase uptake of voluntary resources such as the Energy Rating Icon, the Energy Rating Calculator and online retailer training modules. These resources are designed to assist retail staff in encouraging their customers to purchase energy efficient appliances.
- An updated engagement and education work program to further improve communication with the regulated community.

Table 5: Stakeholder suggestions relating to education and behaviour change

Stakeholder suggestions ²⁷
<p>Labelling</p> <ul style="list-style-type: none"> • Mandate online labelling (including linking to additional helpful resources online). • Display different information on the Energy Rating Label, for example: <ul style="list-style-type: none"> ○ running costs rather than energy use. ○ payback time. ○ embedded energy (as different high efficiency appliances can have varying total carbon debts based on the materials used). ○ an additional label to display total financial and environmental benefit. • Education to ensure the label is not misunderstood.
<p>Energylab.gov.au website and Energy Rating Calculator</p> <ul style="list-style-type: none"> • Include real life stories on the website, to make it more engaging. • Improve the usability and clarity of the website and calculator by providing additional flexibility to undertake product comparisons.
<p>Targeted engagement with stakeholders such as tradespeople and retailers</p> <ul style="list-style-type: none"> • Tradespeople, suppliers and installers have practical and economic concerns that compete with efficiency. There is an opportunity to educate these parties on the ongoing benefits that more efficient equipment and appliances deliver to the customer and the environment. • Retailers often play an important role in advising consumers on their purchase, and can assist consumers understand the benefits of more efficient options.
<p>Finance for energy efficient products</p> <ul style="list-style-type: none"> • Support to purchase more energy efficient appliances for vulnerable consumers. • Discounted debt could be offered for an efficient purchase (rather than cash rebates) and recouped through regular payments.
<p>Data</p> <ul style="list-style-type: none"> • Greater access to energy data would assist consumers in managing their energy and becoming more conscious of energy efficient products.

5.7 Ensuring the Act remains relevant

5.7.1 Establishing a trajectory for energy efficiency standards

Forward trajectories can be effective in enabling energy efficiency improvements and are used internationally by several jurisdictions. Some stakeholders have suggested that Australia should set its own forward trajectory for progressively raising mandatory minimum standards.

²⁷ Further information is available in individual submissions at <https://www.energy.gov.au/publications/gems-act-review-discussion-paper-submissions>

The GEMS Act is critically important for transitioning to a low carbon built environment sector in Australia; however, the standards are currently lagging behind world's best practices and need a forward trajectory to be set to enable an agreed and orderly transition.

ClimateWorks Australia, 2018

The Australian Sustainable Built Environment Council (ASBEC) and the Green Building Council of Australia have also advocated for the establishment of a forward trajectory. However, such energy efficiency trajectories typically cover buildings, appliances and equipment (see **Section 5.8.3**), whereby a portfolio approach can be taken to achieving the target by better utilisation of existing technology.

In contrast, the GEMS Act regulates the energy efficiency of individual products. Industry stakeholders have noted that there is a limit to the improvements to be gained by increasing stringency on products already covered by GEMS regulations.

As products develop, they naturally get more efficient over time. Naturally, the largest improvements occur in the initial years when the technology is new and not yet fine-tuned. Over time the capacity for improvements diminishes as the technology matures and improves.

Air Conditioning and Refrigeration Equipment Manufacturers Association (AREMA), 2018

To achieve greater improvements in appliance and equipment efficiency overall in addition to considering more stringent standards for existing products, GEMS regulations may need to cover a wider range of products and/or take a different approach, such as system level regulation (see **Section 5.8.3**).

While there is no trajectory specifically for the raising of mandatory minimum standards for appliances and equipment in Australia, there are other policies and processes in place to accelerate action. As outlined in **Section 2.5**, following the 2015 GEMS Review, the COAG Energy Council developed an E3 prioritisation plan to set out plans for potential new regulations that will have the greatest impact in terms of reducing energy use and yielding financial benefits to the Australian economy. The work plan, which is updated annually, also provides a degree of certainty to stakeholders in relation to the government's direction for future energy efficiency regulations.

The E3 prioritisation plan is itself part of the COAG Energy Council's National Energy Productivity Plan, a package of measures to improve Australia's energy productivity by 40 per cent between 2015 and 2030. GEMS regulations also play an important role in achieving Australia's 2030 target and Paris Agreement commitments.

These existing priority setting policies can offer the same impact of establishing a forward trajectory for progressively raising mandatory minimum standards of appliances and equipment. As they include consideration of broader product coverage, and of potentially expanding to include energy systems, these policies also

address concerns about the diminishing returns on targeting products already covered by GEMS.

RECOMMENDATION 30

The Commonwealth Government request that the COAG Energy Council continues to update its work plan annually to ensure policy development remains focused on regulations that will deliver the greatest energy reductions.

5.7.2 Expand and align with international regulations

In submissions to this review, a number of stakeholders expressed support for expanding the product coverage of GEMS standards along with harmonising current product standards with leading economies.

(The Australian Sustainable Built Environment Council), strongly supports the implementation of the recommendations of the (2015) GEMS Review to expand, strengthen and accelerate future improvements in minimum equipment and appliance standards.

Australian Sustainable Built Environment Council, 2018

The Green Building Council of Australia supports actions to harmonise standards with leading economies such as the United States and the European Union:

...not only would this reduce red tape and accelerate the benefits of energy efficiency for businesses, it also enables Australian product manufacturers and exporters to benefit from larger overseas markets”.

Green Building Council of Australia, 2018

ClimateWorks Australia argued that Australian standards were lagging behind other countries and the pace of development of new technologies.

These submissions raise a number of separate, albeit closely related, issues:

- Does Australia regulate the same type of products as other jurisdictions?
- Does Australia impose similarly stringent standards as other jurisdictions?
- How is Australia participating in international forums to both learn from and contribute to international policy development on energy efficiency regulation?

It is important to note that E3 includes New Zealand as a vital and active partner.²⁸ Working together enables Australia and New Zealand to share the cost of regulation

²⁸ New Zealand participates in E3 through a trans-Tasman Policy Framework and Funding Arrangement

development and significantly reduces the regulatory burden of companies operating within both countries.

Expanding GEMS coverage

There are many products regulated overseas that are not currently regulated in Australia. These include products that are relatively uncommon in our market, such as kimchi refrigerators and heated toilet seats, but also include products that may be cost-effective to regulate in Australia.

As noted in **Section 2.5** and **Section 3.3**, the E3 prioritisation plan examines potential new regulations to determine those that will best reduce energy use while yielding financial benefits to the Australian economy. In developing the prioritisation plan, E3 considers the developments in international policies and regulations relating to equipment and appliance energy efficiency and their possible application in Australia. The prioritisation plan has set the expansion of the program in the short and medium terms. In considering the longer term effectiveness of GEMS regulations, E3 has also been investigating new opportunities for expanding into residential, transport, industrial and agricultural sectors, which is discussed further in **Section 5.8.3**. **Table 7** shows these priorities in the 2017-18 prioritisation plan.

Through this work, E3 has been actively considering options for expanding product coverage under the GEMS Act. This has helped the program to focus strategically to ensure that the most appropriate products are targeted in the future for new or updated regulations.

RECOMMENDATION 31

The Commonwealth Government request that the COAG Energy Council continue to monitor international standards and select those appropriate for adoption in Australia.

Aligning with international regulation

As discussed in **Section 3**, in general, Australia is highly dependent on imports for the supply of the majority of products covered by GEMS regulations. However, Australia is also a small market when compared to the European Union and the United States, as such, in most cases, it is not be practical to lead on product energy efficiency. Appropriately, Australia tends to be an early adopter (rather than a leader or a laggard) with regard to appliance energy efficiency regulations. The question of whether Australia is lagging on particular products may come down to how quickly new regulations are considered and adopted.

Table 7: E3 prioritisation plan

High Priority	
E3's immediate attention will be focussed on the work streams for these products	<ul style="list-style-type: none"> • Air conditioners • Domestic refrigerators and freezers • Hot water systems • Industrial products • Lighting • Non domestic fans • Refrigerated storage and display cabinets • Swimming pool pumps • Televisions
Lower priority	
E3 remains committed to reviewing and assessing these products as it develops future work plans Engagement with industry stakeholders will be ongoing	These products will continue to be regulated or considered for future regulation: <ul style="list-style-type: none"> • Clothes dryers • Clothes washing machines • Computers • Computer monitors and other flat screen technology (excluding televisions) • Dishwashers • Distribution transformers • Electric motors • External power supplies • Set-top boxes • Standby power

It is important to recognise that there are difficulties associated with undertaking like-for-like international comparisons. Energy consumption information often differs between regions as test methods and calculations used to determine these figures can vary substantially. For example, the introduction of a MEPS for portable air conditioners in Australia is currently under consideration. The proposed MEPS of 2.50 is slightly lower than the European Union level of 2.60 to account for the larger testing tolerances allowed in the European Union. In other words, the proposed lower MEPS would in effect achieve a similar outcome.

The Energy Efficiency Council suggested reversing the onus of proof when “major trading partners” propose new regulations. Stakeholders would then need to argue why standards should *not* be adopted and harmonised. However, it is unclear how much time and regulatory cost this would actually save in the long run.

RECOMMENDATION 31

The Commonwealth Government request that the COAG Energy Council continue to monitor international standards and select those appropriate for adoption in Australia.

International engagement

Consultation with international stakeholders and alignment to existing international standards is a key outcome for E3. Even though we are a small market for appliances and equipment, Australia does have influence on worldwide standards through bilateral and multilateral international engagement.

Australia engages internationally with the following organisations on appliance energy efficiency:

- [Clean Energy Ministerial \(CEM\)](#)
 - [Super-Efficient Equipment and Appliance Deployment Initiative \(SEAD\)](#)
- [International Partnership on Energy Efficiency Cooperation \(IPEEC\)](#)
- [International Energy Agency \(IEA\)](#)
 - [Energy Efficient End-Use Equipment \(4E\)](#)
(Australia takes a leading role by chairing this committee)
- [Asia-Pacific Economic Cooperation \(APEC\) Expert Group on Energy Efficiency and Conservation](#)
- [International Electrotechnical Commission \(IEC – SG1\)](#)
- [International Organisation for Standardisation \(ISO\)](#)
- [United Nations Environment Programme \(UNEP\)](#).

Choice has suggested that international standards could be developed with an addendum that takes into consideration the regional requirements of Australia and similar countries. Choice suggests this would make it more straightforward process to adopt international standards. Standards Australia may be able to facilitate this approach by representing Australia on international standards committees (see **Section 5.2.2**). Although willing, Standards Australia indicate that it would need financial assistance to undertake such a role. The benefits of representation during international standards development would need to be examined against the additional cost involved.

RECOMMENDATION 32

The Commonwealth Government request that the COAG Energy Council examine the cost and benefits of supporting Standards Australia's participation in international standards development.

5.8 Pushing the boundaries of the Act

5.8.1 Integrated products

Integrated products are products that incorporate other products. There are two types with implications for regulations under the GEMS Act:

- i. new products that are multi-functional; and
- ii. regulated products with (or potentially with) components that are separately regulated.

New products that are multi-functional

Products with multiple functions are increasingly entering the equipment and appliance market. These include intelligent lighting products that can connect to networks (via Wi-Fi or Bluetooth) and provide a range of secondary functions, such as providing security (using microphones and cameras), playing music, and sensing temperatures. Other examples include dual drum washing machines and fridges that incorporate large display screens. (**Section 5.2.1** discusses the issue of the regulatory regime keeping up with product innovation such as this).

New multifunction products need careful consideration in determining whether current GEMS regulations apply and, if so, how those regulations should be applied. For example, in the case of a combination clothes washer dryer where both the washer and dryer fall within the scope of the respective GEMS determinations, then both GEMS requirements apply (i.e. two ERLs are required to be displayed and the clothes drying component must also meet MEPS). The registration of a combination washer and dryer requires two separate registrations from two separate applications. The emergence of dual drum washing machines is another example, where both washing units must satisfy the GEMS level requirements.

Multifunctional products may also require additional power and/or may require the product to continually remain on standby (or on standby for longer than they would otherwise).

the smart home environment presents new challenges for consumers. While many new, innovative devices are designed to make efficiency improvements including energy, their 'always on' nature can come at a cost to consumers... When considering the cumulative cost of 'always on' devices, including LEDs, thermometers and smoke alarms, the costs to consumers will add up.

Choice, 2018

The emerging area of multifunctional products is not only an issue for Australia's regulatory framework, many international jurisdictions are experiencing the same challenges. For example, through the IEA 4E's Electronic Devices and Networks Annex, the Australian Government has been working with a number of other countries to examine standby power for a variety of products and consider technology and policy pathways towards "network zero" connected devices.²⁹

RECOMMENDATION 33

The GEMS Regulator determine how GEMS regulations apply to new multifunctional products on a case by case basis and in consultation with the affected party.

RECOMMENDATION 34

The Commonwealth Government request that the COAG Energy Council monitor the emerging trends in relation to multifunctional products and ensure they are adequately reflected in the E3 prioritisation plan.

Regulated products within other products.

Energy consumed by industrial and commercial equipment is a major source of energy consumption. A common characteristic of some of these larger industrial products or equipment that are regulated (or being considered for future regulation) is they may form part of a larger product. This can create challenges, such as potential double regulation, unnecessarily complex compliance activities and level playing field issues.

Three phase electric motors are an example of this kind of product. The GEMS regulations apply to both motors sold separately and motors that are incorporated into machines or equipment. Industry stakeholders have anecdotally reported that up to 50 per cent of all motors imported into Australia may be bypassing the GEMS scheme as they arrive as part of a system that is difficult to track and audit. They suggest the GEMS regime increase the resources made available for surveillance and check testing of motors in machines so there is a level playing field between the motor supplier and machinery sectors. This issue is particularly relevant to three phase motors that are incorporated into machines that that are not currently covered by GEMS regulation.

In cases where a machine is covered by GEMS regulation (e.g. a refrigeration appliance that incorporates a three phase motor), the energy efficiency of the system is regulated, and therefore the motor's contribution to the system's efficiency, is implicitly considered. However, under the current regulation, a three phase motor

²⁹ More information on the work of this collaboration can be found at <https://edna.iea-4e.org/tasks/>

that is within the scope of the relevant determination and is supplied as a spare part for such a system would need to meet GEMS level requirements.

Non-domestic fans are being considered for regulation under the GEMS Act, however submissions to this review have highlighted the potential for double regulation and level playing field issues associated with this product:

Many fans are used within heating and air conditioning and refrigeration equipment that is already covered by MEPS. Manufacturers of such equipment have expressed concern about the potential administrative and cost burden of registering a component of their equipment. If a self-certification process was enabled this would lead to a possible solution.

Fan Manufacturers Association of Australia and New Zealand, 2018

The scenario where a component failed a MEPS check test but the equipment met its requirement would be difficult to resolve. The air conditioning company would accurately claim it had met its overall obligation. However, excluding fans included as components within air conditioning would create an uneven playing field in the market and would be significantly disruptive to fan manufacturers. It is unclear whether one could, or should, design a policy approach that only covers half of the market.

Air Conditioning and Refrigeration Equipment Manufacturers Association (AREMA), 2018

As noted above, this issue is further complicated if the analysis is extended to spare parts suppliers that provide identical component products for use in both GEMS products and other products. While this issue may not currently be a problem for three phase motors, there are unregulated product groups under consideration for GEMS regulations (including fan units) where the spare parts issue would need to be addressed prior to the introduction of any regulation.

Amending the GEMS Act to regulate based on use does not appear to be an appropriate solution as it would seem to raise inevitable level playing field issues. To date, the GEMS Regulator and E3 have sought to address the challenges associated with regulated products inside other products on a case by case basis

In relation to integrated products with a very large number of models per supplier, **Section 5.3.1** of this report notes that the Department of the Environment and Energy is undertaking work on supplier level registration with LED lighting products as test case. This work may find there are merits of extending such an approach to other regulated products, which could also be useful in relation to address the issues arising with these types of products.

RECOMMENDATION 35

The Commonwealth Government request that the COAG Energy Council to address the challenges associated with regulated products inside other products on a case by case basis.

5.8.2 Demand response

Household appliances with demand response interfaces (smart appliances) give consumers the choice to allow a third party to remotely control their appliances (normally during peak periods). The Finkel Review found that demand response can improve reliability and reduce wholesale prices.

Using demand response to incentivise consumers to reduce their demand at peak times is often cheaper and significantly faster, than building new generation or network capacity to meet the peak. Demand response can be encouraged in a number of ways. Customers can be encouraged to change how they use electricity using price signals such as time-of-use and demand tariffs. More active demand response can be supported by appliances that include capabilities for their operation to be controlled remotely, for example air conditioners that can reduce their consumption for a period of time. This allows electricity retailers, networks and other companies to respond to issues like high prices in the wholesale market and network congestion and reward customers for participating in a demand response program.

Currently, no products regulated under the GEMS Act are required to include a demand response capability. However, some stakeholders have advocated for mandatory demand response capability for air conditioners in order to gain the benefits outlined above.

We consider a Demand Response Interface GEMS Determination, mandating compliance with (Australian Standard) 4755 (AS 4755), should be re-considered to realise the significant network cost savings potential from demand response initiatives. While recognising that other aspects of the energy market regulatory framework may also be important drivers of these initiatives, an E3 Determination could provide the necessary national impetus towards more efficient, secure network management for the benefit of all consumers.

South Australian Department of the Premier and Cabinet, 2018.

A mandatory compliance for demand response technology should be adopted, as long as there is the option for consumers to opt-out of this technology for medical, age and other special requirements.

Choice, 2018.

E3, in conjunction with industry, developed the AS/NZ 4755 suite of standards for demand response interfaces.³⁰ The standard was developed prior to the introduction of the GEMS Act (and published in April 2007) and was led by E3 as a result of electricity system events at the time. AS/NZS 4755 is intended to enable the large scale introduction of smart appliances by ensuring that the appliances will be able to operate reliably with any communications protocol and any metering.

³⁰ It is also a registration requirement to declare whether a device is demand response capable.

Demand management programs in Queensland have led to voluntary compliance with AS 4755 which has resulted in demand response capability being consistently available in air conditioners since 2014. This has allowed significant market uptake of demand response capability in air conditioning units and will provide a good platform for electricity retailers, networks and other businesses to develop demand response programs if driven by electricity market forces.

The Department of the Environment and Energy analysis has shown that about 20 per cent of room air conditioners installed in homes today are capable of having their demand remotely controlled by third party operators. This is equivalent to the current capacity of the Liddell power station. The GEMS registration database also indicates that more than 65 per cent of air conditioners available on the market today are demand response capable.

The issue appears not to be the availability of demand response appliances, rather the utilisation of that technology. As part of a \$35.7 million demand response initiative the Australian Renewable Energy Agency and the Australian Energy Market Operator awarded funding to ten pilot projects to manage electricity supply during extreme peaks. Several of the pilot projects have engaged large scale industrial and commercial businesses, while some of the pilot projects have targeted household and small business customers. Tens of thousands of households are expected to voluntarily sign up to participate in exchange for incentives.

The GEMS Act is primarily focussed on the energy efficiency of products which it regulates and not the demand response capability. Inclusion of this additional role to the GEMS Program would be a significant shift and is unlikely to be the most effective approach to increasing demand response initiatives within the National Energy Market.

RECOMMENDATION 36

The Commonwealth Government should continue to work with the COAG Energy Council to further encourage the realisation of demand response.

5.8.3 Potential to expand to energy systems³¹

In considering future opportunities for the GEMS Act to further its impact, a number of submissions noted that most appliance energy efficiency “low hanging fruit” has already been captured. These submissions suggest that significant cost-effective future energy savings can only come from a widening array of product categories (see in **Section 5.8**) or from a different approach to regulating energy efficiency.

³¹ “Energy systems” in the general sense refer to all aspects of the production, conversion, delivery, and use of energy. For this report it is intended to refer to how appliances and equipment are installed, the built environment in which they are located, and how they are used in a factory or home (including how they interact with other technologies).

The current E3 work program will extend coverage of the program to most of the major (appliance) energy users in the residential sector by 2022. As such, it is important to consider strategic future directions for the program beyond the current suite of products, including expansion into the commercial and industrial sectors, bespoke products and energy systems.

South Australian Department of Premier and Cabinet, 2018.

There is significant potential to save energy from taking a holistic or systems-based approach to regulation. Opportunities to save energy are greater when considering the system as a whole, because savings can be achieved through better installation, more appropriate control systems, more accurate design, and more efficient appliances or equipment.

The potential benefit from government intervention in ensuring that the right equipment is chosen for the job and it is installed well is massive.

Air Conditioning and Refrigeration Equipment Manufacturers Association (AREMA), 2018

Governments have typically regulated appliances or equipment as standalone items as testing and verification of the energy efficiency is much easier and repeatable within a technical laboratory. Regulating the system can be more difficult because the installation of a product can be bespoke or requires assessment of a combination of separate elements operating together.

Wide scoping of systems opportunities

E3 recently undertook research to identify the potential for energy savings at the system level. This study focused on heavy industry, transport, commercial buildings, and residential buildings. This study recommended that most of the systems level opportunities would result from regulations targeted at the facility level (for example the 'whole of house' approach outlined in **Box 7**).

Box 7: Whole of house system

Australia currently regulates new buildings for the thermal performance of their construction (under the Building Code of Australia) and some services and appliances within a building.

However, Australian governments are now looking into opportunities to move to a whole-of-house system approach that could include greater consideration of how the thermal performance and fixed appliances operate together, along with rooftop solar photovoltaic, and account for plugin loads, so that all household energy use is covered.

This approach could allow for trade-offs to some degree between different elements in the building, to achieve the most cost-effective outcome. Modelling and industry examples has shown that it is generally cost-effective today to achieve zero energy or zero carbon homes for many detached homes and there are opportunities to strengthen building code requirements in line with these findings.

Australia engages actively in international fora (see **Section 5.7.2**) and is contributing to the IEA 4E's examination of systems based regulation to gain a better understanding of possible regulatory approaches.

Appliance regulation to support policy measures at the systems level

In considering a shift to policy measures at the systems level, it is important to recognise that systems and appliance regulations are complementary and it may not be practical to do one without the other. For example, a whole of house system regulatory approach (**Box 7**) still relies on continuing appliance regulations to ensure that existing homes are also reducing their energy costs. Additionally, 10-15 years into the life of the new home, many of the appliances will need to be replaced. Appliance regulations will be necessary to prevent inefficient fixed appliances entering the new home.

Interaction between building and appliance energy efficiency

A particular concern that has been raised by industry is the potential for overlapping and inconsistent regulation. Industry argues that policy instruments should be aligned and streamlined to increase efficiencies but, if there is a need for multiple instruments, they should be consistent. E3 support this regulatory principle and in the case of chillers recently noted that in the longer term the MEPS and the National Construction Code requirements for chillers should be harmonised. However it was noted that this cannot be achieved within the current review cycle of the National Construction Code.³²

The COAG Energy Council is advancing the energy performance of residential and commercial buildings through the development of a trajectory for low energy homes and commercial buildings. This will also consider possible changes to the National Construction Code in 2022 and a whole-of-house approach (see **Box 7**) to energy use for homes. Any requirements added to the National Construction Code will not include minimum regulations for specific appliances but may consider minimum regulations for the building as a system, which would include interactions with appliances. Minimum regulations for specific appliances will continue through GEMS.

RECOMMENDATION 37

The Commonwealth Government request that the COAG Energy Council investigates the potential of a systems approach to energy efficiency regulation.

³² <http://energyrating.gov.au/document/consultation-chillers-2018>

RECOMMENDATION 38

The Commonwealth Government continue to work with the COAG Energy Council to ensure consistency and harmonisation between appliance and building energy efficiency regulations.

Appendix A Terms of Reference

Introduction

The *Greenhouse and Energy Minimum Standards Act 2012* (GEMS Act) implements the commitments of the Australian Government and the Council of Australian Governments (COAG) to establish national legislation to regulate energy efficiency and labelling standards for appliances and other products. The national legislation permits the Australian Government to set mandatory minimum efficiency requirements for products to drive greater energy efficiency. The Act also allows the Australian Government to set nationally-consistent labelling requirements, to increase Australians' awareness of options to improve energy efficiency and reduce energy consumption, energy costs and greenhouse gas emissions.

Clause 176 of the GEMS Act requires a review of the operation of the Act as soon as possible after the fifth anniversary of its commencement date (1 October 2012). As a program that is expected to continue well into the future, and face changing requirements necessary to meet the significant challenge of reducing Australia's energy consumption and greenhouse gas emissions, the operation of the Act also must be reviewed every ten years after the first review.

Scope

The independent review will fulfil the requirements of Clause 176 of the GEMS Act. The review will evaluate, advise and report on the items listed below:

1. The extent to which the framework (including systems and procedures) established by the GEMS Act is achieving its purpose.
2. Improvements that could be made to the operation of the GEMS Act, including any costs and impacts on stakeholders.
 - a. Particular attention should be given to improvements that will lead to an increased reduction in greenhouse gas emissions.
3. Implementation and transition actions to facilitate improvements to the Act identified at point 2.
4. Any other matters including environmental, cost, technical and regulatory issues relevant to the operation of the Act.

The reviewer will be assisted by considering the following issues in relation to the GEMS Act:

- The level of actual and required agility of the Act to respond to changing dynamics (for example, technological changes, increasing proportion of online sales, integrated products, less specific product categories).
- The ability of the GEMS Act to provide for adequate compliance arrangements for new and bespoke products.
- Administrative challenges (current and anticipated) faced by businesses and the GEMS Regulator.
- Whether there is a role for guidance about when mandatory standards are more useful and when other approaches might be more suitable.

As far as possible, the review will meet the requirements of a RIS-like process and as such, will answer the questions as per the guidance note on Independent Reviews, RIS-like Processes and the Regulation Impact Statement requirements:

<http://www.dpmc.gov.au/resource-centre/regulation/independent-reviews-and-ris-process-guidance-note>.

Governance and Deliverables

The review will be undertaken by an independent reviewer contracted by the Department of the Environment and Energy. The independent reviewer will be supported by a secretariat in the Department and will provide regular updates to the COAG Energy Council's Energy Efficiency Advisory Team.

A written report of the review will be given to the Minister.

Timeframe and Methodology

The independent review will commence as soon as possible after 1 October 2017, and provide a written report to the Minister by mid-2018.

The independent review will, as relevant, consider:

- submissions from, and consultations with, business, consumer groups, the community and relevant Commonwealth, New Zealand, state and territory agencies;
- the reports and outcomes of recent reviews in relation to GEMS, such as the *2014-15 Review of the Inter-Governmental Agreement for the GEMS Legislative Scheme* and the *2016-17 GEMS Fees Review*.

The independent review will meet the requirements of the COAG Best Practice Regulation Guidelines and Australian Government Guide to Regulation.

Appendix B 2015 GEMS Review Recommendations

Key recommendation	Action since release of 2015 review						
<p>Program design</p> <p>In future, both MEPS and labelling schemes should be retained as national government measures.</p>							
<p>Delivering Inter-Governmental Agreement (IGA), GEMS and E3 objectives</p> <p>The program should implement MEPS and labelling for planned product groups and consider further broadening coverage of product groups.</p>							
<p>Opportunities to reduce burden and improve outcomes</p> <table border="0"> <tr> <td data-bbox="193 913 778 976"> <p>1. The IGA should be retained in its current form.</p> </td> <td data-bbox="778 913 1445 1070"> <p>1. The form of the IGA remains fundamentally unchanged. However, it was amended to clarify funding arrangements between the Commonwealth and the states and territories for Regulator and policy activities.</p> </td> </tr> <tr> <td data-bbox="193 1084 778 1330"> <p>2. The GEMS Act should not be fundamentally changed. To do so would risk adverse outcomes such as reduced opportunity available for implementing energy efficiency measures and/or significantly increased risks to effective delivery and/or compromising equitable markets.</p> </td> <td data-bbox="778 1084 1445 1146"> <p>2. The Act has not been amended since the 2015 GEMS Review.</p> </td> </tr> <tr> <td data-bbox="193 1344 778 1464"> <p>3. The program should consider and progress identified opportunities to reduce regulatory burden and improve outcomes.</p> </td> <td data-bbox="778 1344 1445 1527"> <p>3. Opportunities to reduce regulatory burden have been made through improvements to the GEMS registration system (see Program Administration below) and are being considered in the Fee Review (see Program Funding below).</p> </td> </tr> </table>		<p>1. The IGA should be retained in its current form.</p>	<p>1. The form of the IGA remains fundamentally unchanged. However, it was amended to clarify funding arrangements between the Commonwealth and the states and territories for Regulator and policy activities.</p>	<p>2. The GEMS Act should not be fundamentally changed. To do so would risk adverse outcomes such as reduced opportunity available for implementing energy efficiency measures and/or significantly increased risks to effective delivery and/or compromising equitable markets.</p>	<p>2. The Act has not been amended since the 2015 GEMS Review.</p>	<p>3. The program should consider and progress identified opportunities to reduce regulatory burden and improve outcomes.</p>	<p>3. Opportunities to reduce regulatory burden have been made through improvements to the GEMS registration system (see Program Administration below) and are being considered in the Fee Review (see Program Funding below).</p>
<p>1. The IGA should be retained in its current form.</p>	<p>1. The form of the IGA remains fundamentally unchanged. However, it was amended to clarify funding arrangements between the Commonwealth and the states and territories for Regulator and policy activities.</p>						
<p>2. The GEMS Act should not be fundamentally changed. To do so would risk adverse outcomes such as reduced opportunity available for implementing energy efficiency measures and/or significantly increased risks to effective delivery and/or compromising equitable markets.</p>	<p>2. The Act has not been amended since the 2015 GEMS Review.</p>						
<p>3. The program should consider and progress identified opportunities to reduce regulatory burden and improve outcomes.</p>	<p>3. Opportunities to reduce regulatory burden have been made through improvements to the GEMS registration system (see Program Administration below) and are being considered in the Fee Review (see Program Funding below).</p>						
<p>Program funding</p> <p>Take account of stakeholder feedback in relation to cost recovery levels when reviewing registration fees in October 2015.</p>							
<p>The Department of the Environment and Energy is undertaking a review of the fees associated with the delivery of registration and compliance services under the <i>Greenhouse and Minimum Standards Act 2012</i> (GEMS Act).</p> <p>In November 2017, the department released a supplementary paper to respond to issues raised by stakeholders following the release of the GEMS Fee Review 2016–2017 Consultation paper.</p> <p>The department is now seeking final feedback from industry in relation to the GEMS fees.</p>							

Key recommendation	Action since release of 2015 review
Program Administration	
<p>1. GEMS determinations – the overall GEMS determinations process should be maintained and opportunities for improvements identified within this review explored. This includes continuing the focus on international harmonisation, implementing a set timetable for development, and greater cooperation between the program and the Office of Best Practice Regulation (OBPR).</p> <p>2. Product registration – practical issues with registration should be addressed as a priority to reduce administrative burden. A change in registration requirements for particular product categories, could be considered in order to make the fees more equitable.</p> <p>3. Communication with stakeholders and strategic planning – the Department should continue its efforts to extend and formalise stakeholder engagement and strategic planning for GEMS.</p>	<p>1. Work to streamline processes has included trialling a new approach to developing GEMS determinations and working actively with the Office of Best Practice Regulation.</p> <p>The COAG Energy Council continues to examine opportunities to harmonise with international test methods and international efficiency standards. For example, on 24 November 2017, COAG Energy Ministers approved an E3 Decision RIS for household refrigerators and freezers that recommended: (a) Australian MEPS levels be tightened and aligned to those adopted in the United States, and (b) an Australian/New Zealand test standard be replaced with an International Electrotechnical Committee test standard.</p> <p>2. Improvements to the GEMS registration system include:</p> <ul style="list-style-type: none"> – A bulk application process that allows multiple applications to be submitted through excel spreadsheets. – “Copy to new” functionality that allows registrants to create a pre-populated application based on an existing, similar approved registration. Only fields where details are different need be edited. – A supplier dashboard to provide registrants with a management tool to assist with their registrations. – Removal of non-mandatory questions. – New payment options, including American Express and debit cards. <p>3. The E3 Prioritisation Plan is updated and communicated to stakeholders annually to promote certainty on E3 policy development. Formal performance assessment and feedback mechanisms (such as the GEMS Stakeholder Satisfaction Survey) are now used to identify and make improvements for stakeholders. Improvements were also made to energyrating.gov.au shortly after the 2015 review, including:</p> <ul style="list-style-type: none"> – Tailored content for the diverse range of stakeholders with clear entry points for suppliers, retailers and tradespeople and consumers – Inclusion of videos and infographics to provide diversity in how information is communicated – Inclusion of an Energy Rating Calculator

Key recommendation	Action since release of 2015 review
<p>4. Compliance and enforcement – delivering compliance and enforcement effectively should remain a top priority.</p>	<p>– New content management system, significantly reducing hosting and ongoing maintenance costs.</p> <p>4. GEMS compliance activities remain a priority, with inspectors conducting market surveillance activities throughout Australia.</p> <p>Following the 2015 review, the visibility of these activities was enhanced on the energyrating.gov.au website, by providing an overview of GEMS Act compliance, explanations of compliance monitoring activities, and links to key documents.</p> <p>Publication of the outcomes of GEMS compliance monitoring activities, both market surveillance and check testing, are also available at energyrating.gov.au. This includes publication of products failing check tests and having registrations suspended or cancelled.</p>
<p>5. Other initiatives – innovations such as climate zone labelling and supporting policy initiatives such as the website and mobile application should continue to be developed.</p>	<p>5. The E3 Program has developed a Zoned Energy Rating Label (ZERL) for air conditioners to reflect how performance and energy efficiency are significantly affected by the climate in which they are installed.</p> <p>The E3 Program website, energyrating.gov.au, has been updated and improved (see points above).</p> <p>The Program released a Light Bulb Saver app in May 2016. The app shows how choosing energy efficient lights can help consumers save on their electricity bill.</p>

Appendix C: Jurisdiction Energy Efficiency Programs

Australian Capital Territory

<p>ACT Carbon Neutral Government by 2020 Program</p> <p>The ACT Government is working to improve energy efficiency and reduce emissions to achieve net carbon neutrality in its own operations by 2020. The Carbon Neutral Government Fund provides interest free loans to agencies to support approved energy efficiency and renewable energy upgrade projects.</p>
<p>ActewAGL Fridge Buyback Program</p> <p>The ActewAGL Fridge Buyback program rewards ACT households and businesses that have their old fridge or freezer removed. Fridges or freezers are collected and recycled for free. ActewAGL electricity account holders also receive a \$30 rebate on their next electricity bill.</p>
<p>Actsmart Business Energy and Water Program</p> <p>The Actsmart Business Energy and Water Program has assisted over 600 eligible small businesses in the ACT to reduce energy and water use, while lowering operating costs and reducing greenhouse gas emissions.</p>
<p>Actsmart Low Income Household Energy Efficiency Program</p> <p>The program offers practical ways for low-income households in the ACT to reduce energy and water bills with advice, draught proofing and appliance upgrades.</p>
<p>Actsmart Schools</p> <p>The ACT Government has a target to achieve carbon neutrality in government schools by 2017. The Actsmart Schools program provides support and resources to help all schools transition to more sustainable management of energy, and to reduce greenhouse gas emissions.</p>
<p>Actsmart Sustainable Home Advice</p> <p>Free independent advice and information available to all ACT residents to help them save greenhouse gas emissions and save money.</p>
<p>Actsmart web portal</p> <p>ACT Government's Sustainability Hub delivers information and advice on how Canberra business, households, schools and community can take action on energy efficiency and sustainability.</p>
<p>Energy Efficiency Improvement Scheme</p> <p>The Energy Efficiency Improvement Scheme requires electricity retailers to achieve energy and greenhouse gas emission savings in households and small-to-medium enterprises. The Scheme also provides assistance to low income households through a 20 per cent Priority Household Target.</p>
<p>Home energy ratings - mandatory disclosure</p> <p>The Civil Law Act 2003 requires all homes being sold in the ACT to carry an energy rating. When advertising to rent a dwelling, owners or investors must also disclose the existing energy rating.</p>

The Commonwealth and COAG

Australian Renewable Energy Agency Improving energy productivity: helping reduce energy cost and emissions in transport, building and industry sectors, is one of ARENA's new investment priorities (announced May 2017).
Clean Energy Finance Corporation The Clean Energy Finance Corporation invests commercially to increase the flow of funds into renewable energy, energy efficiency and low emissions technologies
Commercial Building Disclosure Program The Commercial Building Disclosure (CBD) Program requires energy efficiency information to be provided in most cases when commercial office space of 1000 square metres or more is offered for sale or lease.
Equipment Energy Efficiency (E3) Program The E3 program is a cross-jurisdictional integrated program on energy efficiency standards and energy labelling for equipment and appliances.
National Energy Efficiency Building Project The National Energy Efficiency Building Project aims to support consumers, government and industry to achieve better energy efficiency in new buildings, renovations and additions.
Nationwide House Energy Rating Scheme The Nationwide House Energy Rating Scheme (NatHERS) is a star rating system (out of ten) that rates the energy efficiency of a home, based on its design.
No Interest Loan Scheme The No Interest Loan Scheme offers people on low incomes safe, fair and affordable loans for fridges, washing machines and furniture, as well as education and medical expenses. Supported by the Commonwealth Government and National Australia Bank.
Smart Cities Plan The aim is to accelerate the deployment of clean energy, renewable energy and energy efficiency technology in cities. (includes the \$100 million a year Sustainable Cities Investment Fund)

New South Wales

The 2013 NSW Energy Efficiency Action Plan

The 2013 NSW Energy Efficiency Action Plan is intended to place downward pressure on the cost of living for households, unlock energy productivity for business.

Energy Savings Scheme

The Energy Savings Scheme reduces electricity consumption in NSW by creating financial incentives for organisations to invest in energy savings activities such as installing, improving or replacing energy savings equipment.

Energy Saver / Energy Efficient Business

Energy Saver and Energy Efficient Business has been assisting NSW businesses to unlock productivity gains and reduce emissions by targeting, prioritising and implementing the best energy efficiency opportunities in priority industry sectors.

Gas Efficiency Improvement Program

The purpose of the Gas Efficiency Improvement Program is to build the market for gas monitoring and efficiency products and services in NSW. The program also provided training and guidance material to industry to help them control gas use and access ongoing incentives under the Energy Savings Scheme.

Home Energy Action Program

The Home Energy Action Program is a NSW Government initiative designed to help low income households reduce energy costs by replacing old appliances with new energy efficient models.

NSW Government Resource Efficiency Policy

The aim of the Government Resource Efficiency Policy is to reduce the NSW Government's operating costs and lead by example in increasing the efficiency of the resources it uses. NSW Government agencies are able to access the Government Finance Facility to fund their energy efficiency projects.

Smarter Choice Program

The Smarter Choice program is designed to help households make more informed purchasing decisions on appliances. As well as helping choose energy-efficient appliances, the Smarter Choice program also gives guidance on disposing of your old whitegoods and TVs and computers.

Queensland

ecoBiz The ecoBiz program helps Queensland companies measure their current energy, water and waste use, identify opportunities, and plan and implement efficient business practices. ecoBiz incorporates a number of programs including ecoBiz webinars, face to face coaching sessions, tools and resources.
Energex Hot Water Rewards Scheme The Energex Hot Water Rewards scheme provides rebates of \$100 or \$200 to eligible South East Queensland households that connect an electric hot water system to an economy electricity tariff.
Energex PeakSmart Air-conditioning Program A program for replacing or purchasing a new air-conditioner to help manage peak demand by installing a PeakSmart air-conditioner.
Energex Positive Payback Program The Positive Payback program is about rewarding homes and businesses for using energy efficiently. Excessive demand on the electricity network impacts reliability and costs.
Energex Pool Pump Tariff Incentives The Energex Pool Rewards Program provides eligible South East Queensland households with a financial incentive of \$200 to connect a pool pump to an economy tariff.
Energy efficient appliance rebate The energy efficient appliance rebate was an initiative under the Affordable Energy Plan to help Queensland households improve their energy efficiency, lower their energy usage and gain greater control over their energy costs.
Energy Savers Plus Program The Energy Savers Plus Program is designed to help farmers identify where they can make significant savings for their on-farm energy usage. The program provides farmers with personalised audits that identify opportunities to cut costs in areas such as on-farm heating, pumping, cooling, lighting, processing and household energy use. The program also provides helpful information on financing options to help with energy efficiency upgrades.
Energy Savvy Families The Energy Savvy Families program will provide digital meters to eligible low-income families in regional Queensland to help them gain a greater understanding and have greater control over their energy usage.

South Australia

Building Upgrade Finance <p>The Building Upgrade Finance mechanism is designed to tackle market barriers that often impede commercial building upgrades. These barriers include access to the capital to fund upgrade projects, and the split incentive between landlords and tenants in leased buildings.</p>
Business Sustainability Program <p>Support for South Australian business and industry in recognising and implementing resource efficiency and improved waste management practices as a way to boost productivity, profitability and environmental performance.</p>
Energy Advisory Service <p>The Government's Energy Advisory Service provides free, independent information on a range of energy topics, including: saving energy at home, understanding bills and meters, calculating appliance running costs and renewable energy technology.</p>
Energy Partners Program <p>The Energy Partners Program works with over 100 organisations across the state to help South Australians manage their energy use and costs.</p>
Energy Productivity Program <p>The South Australian government provided \$31 million over two years to help large businesses manage their electricity costs. The Program is available to assist businesses using more than 160 MWh of electricity each year to assess and invest in energy-saving measures.</p>
Home Energy Toolkits <p>The Home Energy Toolkits contain tools and a comprehensive home energy auditing manual, which lets householders explore their home energy use in detail and learn what they can do to make savings.</p>
Retailer Energy Efficiency Scheme <p>The Retailer Energy Efficiency Scheme is a South Australian government initiative that requires energy retailers to help households and businesses save on energy use and costs, and lower their greenhouse gas emissions.</p>
South Australia's Strategic Plan <p>South Australia's Strategic Plan includes targets of improving energy efficiency of government buildings dwellings.</p>
The Sustainability Incentive Scheme <p>A partnership program with Adelaide City Council and the Government of South Australia, the scheme provides financial rebates for a range of initiatives including solar PV, energy storage, electric vehicle charging points, solar hot water, energy monitoring and LED lighting.</p>

Tasmania

Building Upgrade Finance feasibility study

The Tasmanian Government is conducting a feasibility study into building upgrade financing mechanisms, including Environmental Upgrade Agreements, to incentivise capital upgrades in non-residential building stock in Tasmania.

Tasmanian Energy Efficiency Loan Scheme

The Tasmanian Energy Efficiency Loan Scheme is a joint initiative of the Tasmanian Government, Aurora Energy and the Westpac Group. The Scheme provides interest-free finance for the purchase of energy efficient products for Tasmanian households and small businesses.

Victoria

<p>Better Commercial Buildings</p> <p>The Better Commercial Buildings program is supporting the implementation of energy efficiency improvements in 50 poorly performing commercial buildings. Targeted buildings will be those larger than 1,000 square metres and rated at 3 Star and below using the National Australian Built Environment Rating System Energy rating.</p>
<p>Boosting Business Productivity</p> <p>Boosting Business Productivity is a \$6.1 million Victorian Government initiative which will help 1,000 businesses reduce their energy costs through energy efficiency assessments and upgrades, and support manufacturers in cutting their waste and business costs.</p>
<p>Environmental Upgrade Agreements</p> <p>Environmental Upgrade Agreements are a council-based financing mechanism to help businesses access funding for building works to improve energy efficiency, reduce waste and cut water use.</p>
<p>Greener Government Buildings</p> <p>The Greener Government Buildings program has delivered cost-effective energy efficiency improvements to nearly 400 government buildings. The program provides finance for energy performance contracts that enable lighting upgrades, HVAC upgrades, solar panels and building automation and control improvements to be implemented in existing government buildings.</p>
<p>Home Energy Assist Program</p> <p>Package of policies for low income households to minimise energy bills. The Home Energy Assist program will assist more than 3,300 Victorian homes to become more energy efficient with a long-term aim to improve the wellbeing of Victorians on low incomes and lower energy bills. Also includes: Victorian Healthy Homes Program; EnergySmart Public Housing Program; and the Affordable Retrofits Program.</p>
<p>Residential Efficiency Scorecard</p> <p>The Residential Efficiency Scorecard is a home energy rating program that provides practical information to householders on how to improve the energy and hot weather performance of their homes.</p>
<p>Smarter Choice Retail Program</p> <p>The Smarter Choice retail program exists to help households make better choices when buying new appliances, hardware and lighting. The program has information available in over 400 partnering stores to help you compare the running costs and environmental performance of the products.</p>
<p>Victorian Energy Upgrades</p> <p>Victorian Energy Upgrades is designed to make energy efficiency improvements more affordable, contribute to the reduction of greenhouse gases, and encourage investment, employment and innovation in industries that supply energy efficiency goods and services.</p>
<p>Victorian Energy Saver Website</p> <p>A website that provides information on how to reduce energy consumption and save money at the same time.</p>

Appendix D: E3 Program Impact Analysis: Refrigerators and Freezers, June 2017

Background

Refrigerator and freezer MEPS levels relate to 10 separate categories set out in the AS/NZS 4474.1-2007. MEPS was introduced in 1999 (MEPS1), with the requirements set out in AS/NZS4474.2 in 1997. MEPS was made significantly more stringent in 2005 (MEPS2) to align with US 2001 regulations. The Department of the Environment and Energy is currently developing a Regulation Impact Statement to harmonise testing with international test standards for refrigerators and freezers.³³ As part of this harmonisation process, new US MEPS levels for domestic refrigerators and freezers are being considered for adoption in Australia.

Data and Methods

The Greenhouse and Energy Minimum Standards (GEMS) registration data from 2003 through to 2014 was used together with GfK sales data from 1997 through to 2014 in order to analyse the effectiveness of MEPS for refrigerators and freezers. Energy savings delivered by MEPS1 (1999) and MEPS2 (2005) as well as savings delivered by industry improvement have been calculated. Limited freezer sales data from 1997 to 1999 meant that the MEPS1 analysis was restricted to refrigerators only. Industry savings were calculated from 1998-2014 for refrigerators and from 2001 to 2014 for freezers. Energy savings were converted to net financial costs or benefits in 2014 terms.

Background

Product efficiency before and after MEPS

Figure 1 and **Figure 2** show the distance that each registered product was from MEPS2 for the years 2003 and 2004. Negative values represent those products that would have failed MEPS2. Positive values represent products that would have passed MEPS2.

An analysis of the proportion of products that had or would have passed MEPS2 compared to those that would have failed gives an indication of how industry was preparing for MEPS2. In 2004, 79 per cent of products were equal to or exceeded MEPS2, showing that industry had already done much to prepare itself for the upcoming regulatory change. Contrastingly in 2003, only 33 per cent of products equalled or exceeded MEPS2. These years preceding the introduction of more stringent regulation demonstrate the impact of MEPS2, by displaying improvement of the overall efficiency of products registered prior to the regulation being brought in. Additionally, the data shows the proportion of products that MEPS2 would have removed from the market, how that changed and so informs an assessment of the ongoing impact of MEPS2.

³³ Specifically with International Electrotechnical Committee (IEC) 62552 1.0b (published February 2015).

Figure 1 Refrigerators and Freezers registrations in 2003 and their distance from MEPS1

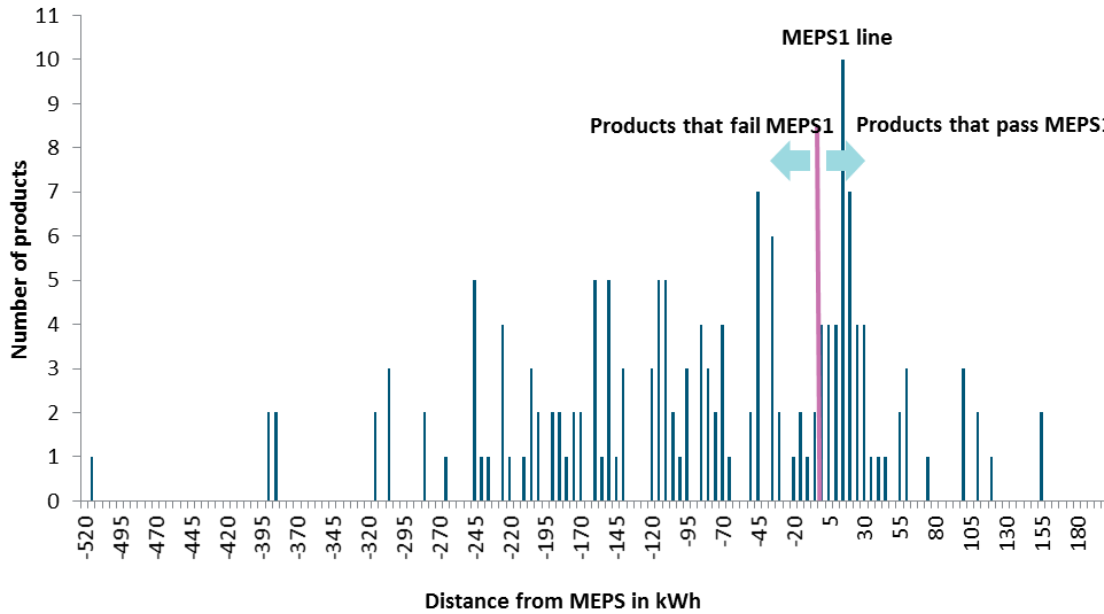


Figure 2 Refrigerators and Freezers registrations in 2004 and their distance from MEPS1

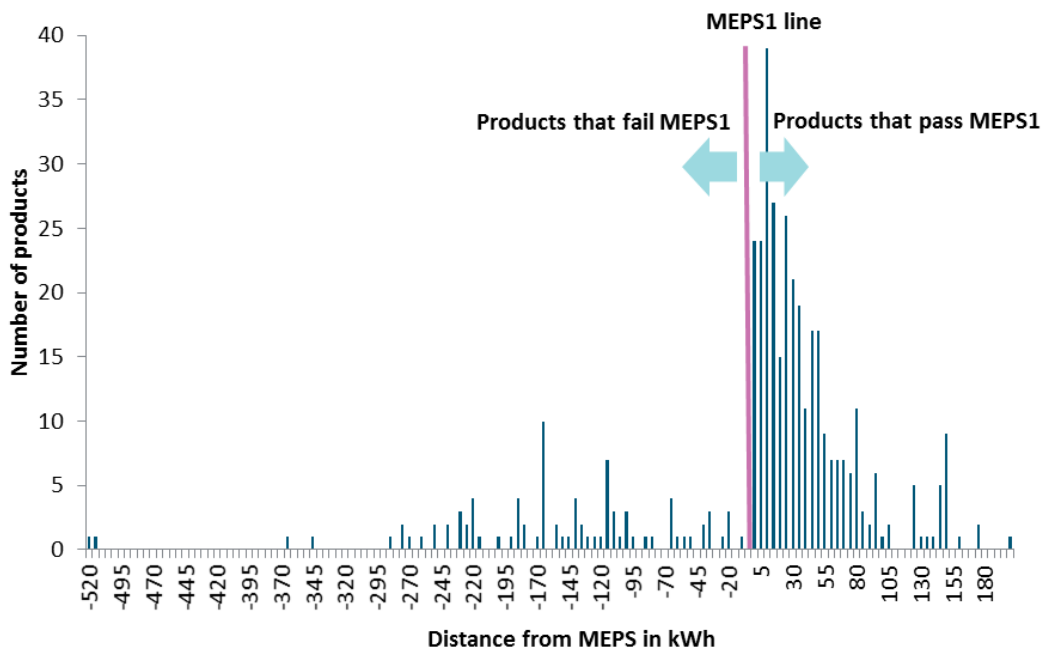
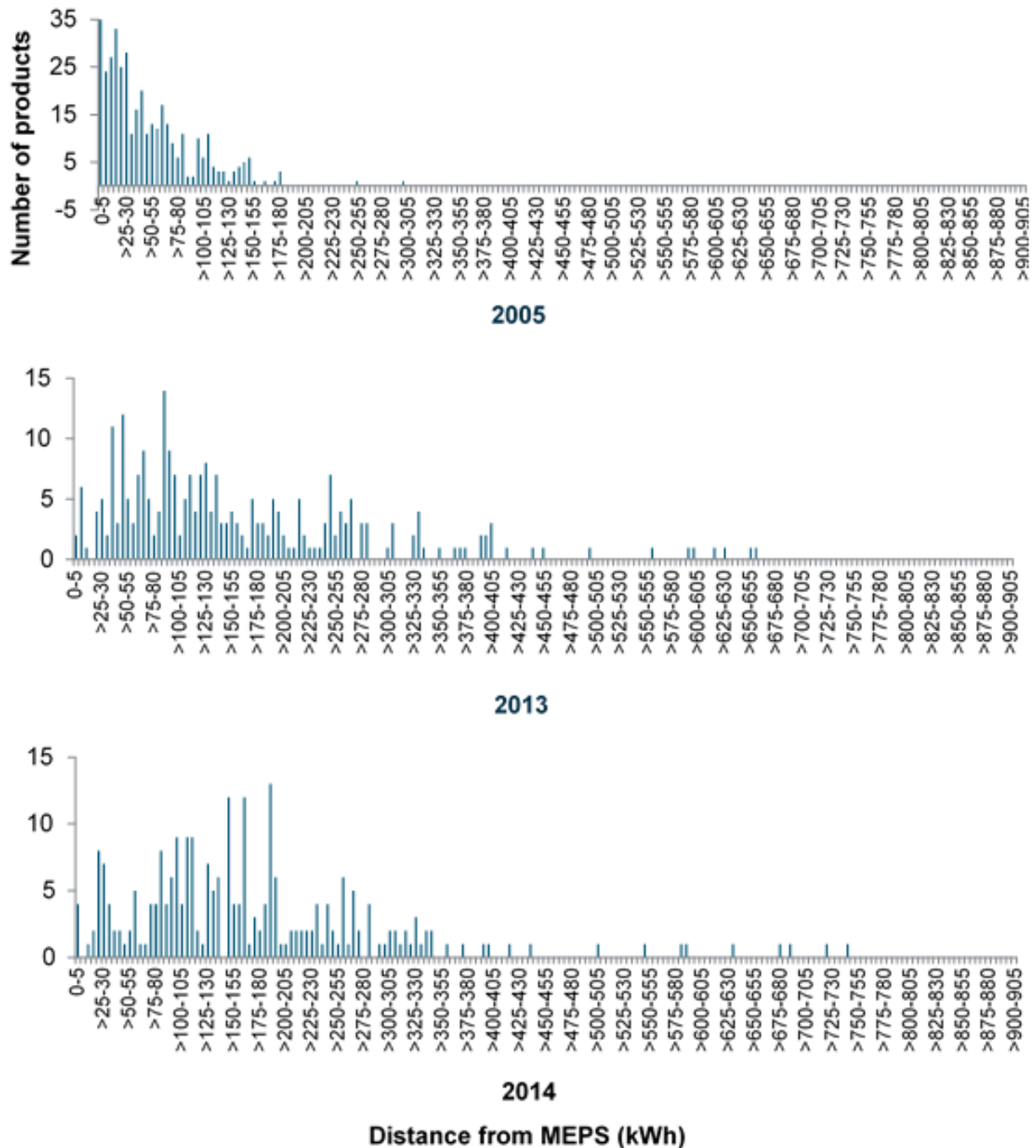


Figure 3 shows refrigerator and freezer registrations in 2005, 2013 and 2014 and their distance from MEPS2. **Figure 3** shows that when MEPS2 was introduced, most registered products were close to the MEPS line. However, by 2013 and 2014, the majority of new products registered had moved considerably beyond the standard specified by MEPS2, with a greater spread of products with higher efficiencies. This suggest that industry continued to improve energy efficiency beyond MEPS2 since 2005. By 2014, 80 percent of products were at least 80 kWh per year more efficient than MEPS2, with only 1.5 per cent of products

registered within five kWh of MEPS2. This compares to 90 per cent of products registered within five kWh of MEPS2 in 2005. This is a strong indication that industry has made significant energy efficiency improvement during this period and is now comfortably surpassing the current MEPS.

Figure 3 Refrigerator and Freezer registrations in 2005, 2013 and 2014 and their distance from MEPS2



Energy savings and costs

Figure 4 and **Figure 5** give the net costs and benefits of increasing energy efficiency for refrigerators and freezers respectively.

Figure 4 – Energy savings due to efficiency improvements for refrigerators

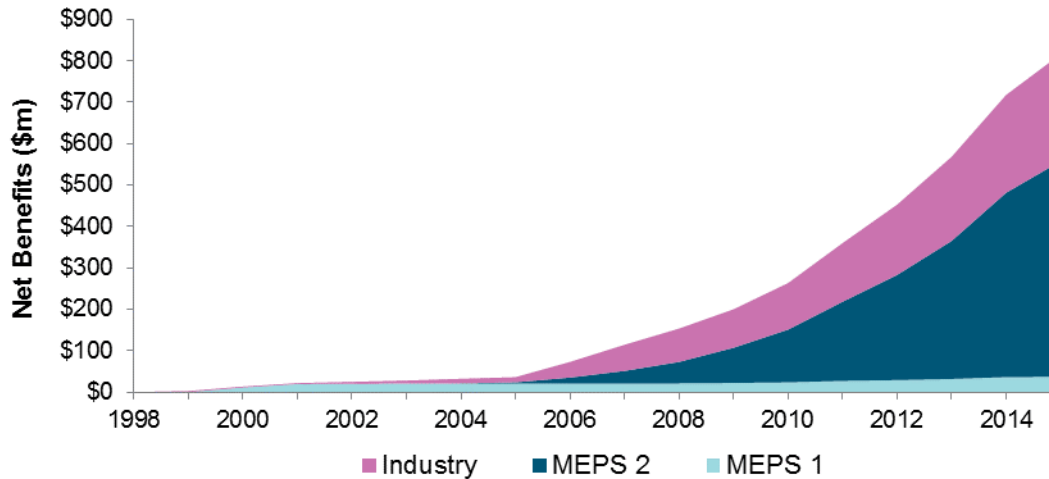
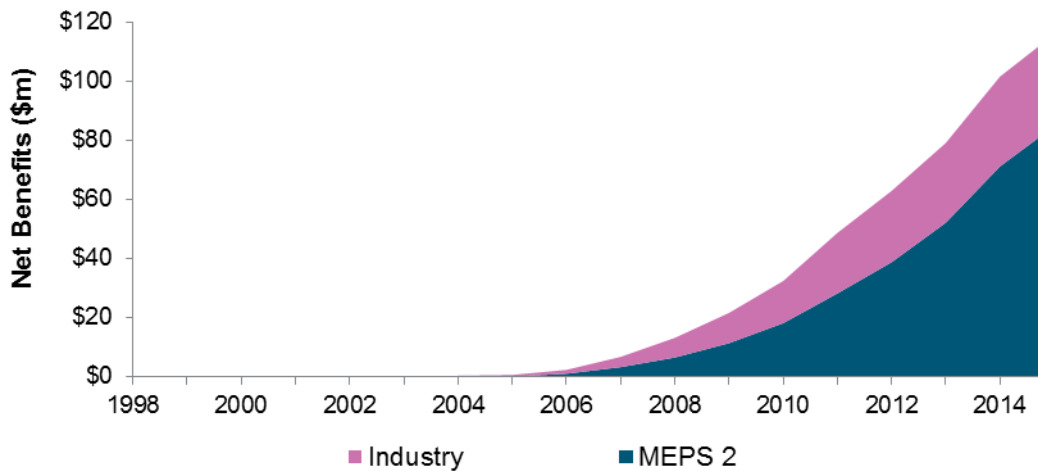


Figure 5 – Energy savings due to efficiency improvements for freezers



Overall, improvement in energy efficiency in refrigerators from 1998 to 2014 resulted in a cumulative average estimated saving of \$816 million. MEPS1 and MEPS2 account for the majority of the savings over most years. MEPS1 resulted in a cumulative average estimate saving of \$37 million by 2014. MEPS2 made the most significant contribution and resulted in a cumulative average estimate saving of \$521 million by 2014. Industry improvement over the same period totalled an average estimate of \$259 million. Energy efficiency improvements in freezers resulted in a cumulative saving of \$116 million from 2001 to 2014. MEPS2 made the most significant contribution, resulting in a cumulative average estimate saving of \$85 million by 2014. Industry contributed a saving of \$31 million by 2014.

Figures 6 and **Figure 7** give a high and low range on the cumulative financial savings of refrigerators and freezers due to MEPS2 between 2004 and 2020.

Figure 6 – Net financial benefits of refrigerators due to MEPS2 2004 – 2020

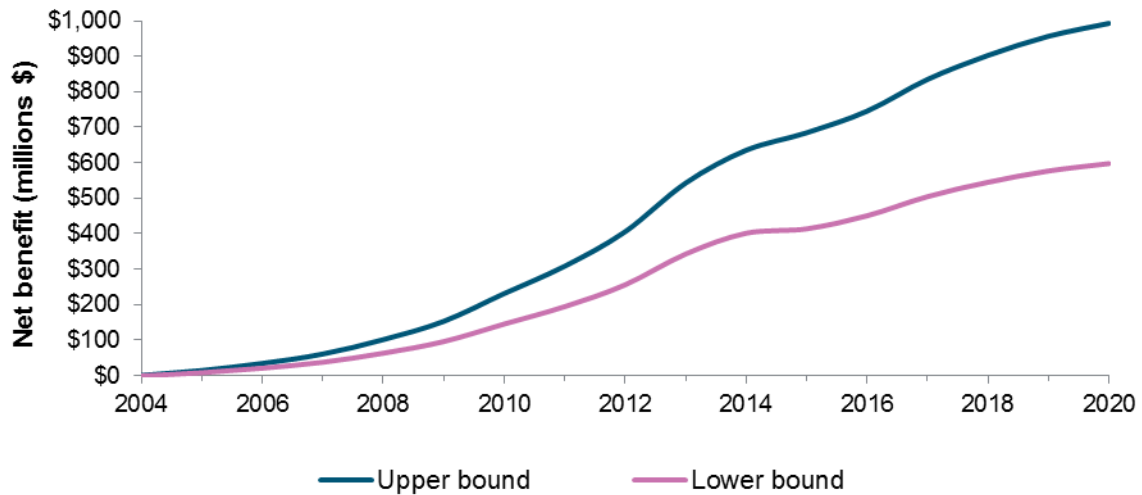
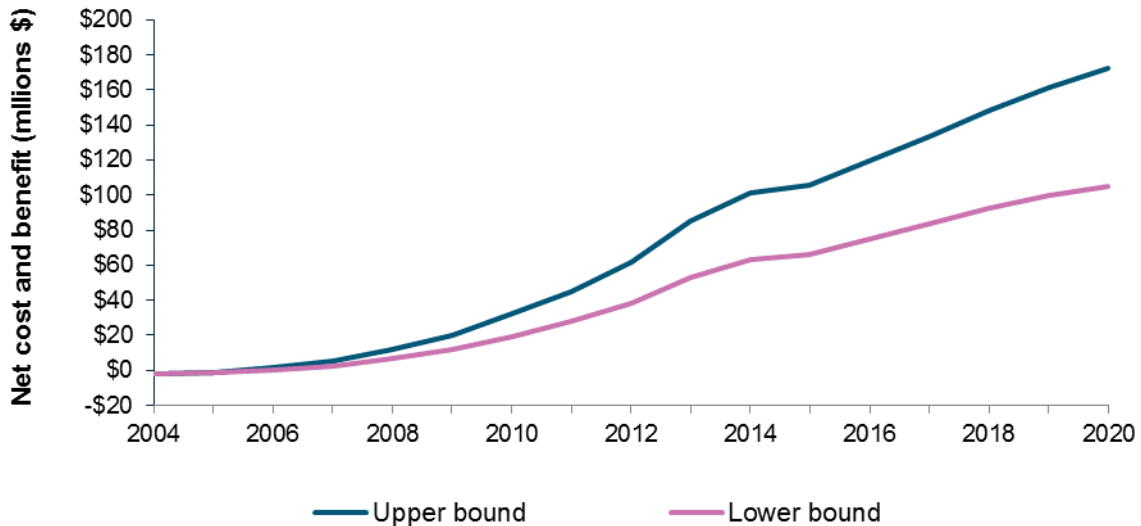


Figure 7 – Net financial costs and benefits of freezers due to MEPS2 2004 – 2020



For both refrigerators and freezers, the introduction of MEPS2 has resulted in significant financial savings. For refrigerators, MEPS2 has achieved financial savings between the range of \$1.86 to \$2.93 billion between 2005 and 2014. Further projected savings between 2015 and 2020 are between \$2.5 and \$4 billion. For freezers, MEPS2 achieved financial savings of between \$246 and \$410 million from 2005 to 2014. Further projected savings between 2015 and 2020 are between \$407 and \$656 million.

MEPS Conclusions

Adopting MEPS1 and MEPS2 for both refrigerators and freezers have resulted in significant financial savings. MEPS2 continues to produce financial savings that exceed regulatory costs through to 2020. The continued increase in the energy efficiency of these appliances suggests that industry is continuing to improve energy efficiency in the absence of any new introduced MEPS since 2005, with international regulations largely driving this trend. The cost of delay in adopting stringent international standards is significant.

For refrigerators, the introduction of MEPS2 in 2005 has resulted in financial savings in the range of \$1.85 to \$2.93 billion between 2005 and 2014. Further projected savings between 2015 and 2020 are between \$2.49 and \$3.94 billion. For freezers, MEPS2 achieved financial savings between \$264.8 and \$428.7 million from 2005 to 2014. Further projected savings between 2015 and 2020 are estimated to be between \$409.9 and \$658.8 million. A further estimated average saving of \$37 million was produced by MEPS1 through to 2014.

- Page left intentionally blank -