

Commercial Lighting in the NSW Energy Savings Scheme

Response to "NSW Energy Savings Scheme:
Review of Commercial Lighting" Report prepared
by Beletich Associates,
February 2013

NSW Energy Savings Scheme - Issues Paper
March 2013

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Invitation for submissions

IPART, as Administrator for the NSW Energy Savings Scheme, invites written comment on this document and encourages all interested parties to provide submissions addressing the matters discussed.

Submissions are due by 19 May 2013.

We would prefer to receive them electronically to ess@ipart.nsw.gov.au.

You can also send comments by fax to (02) 9290 2061, or by mail to:

The Scheme Administrator
Energy Savings Scheme
Independent Pricing and Regulatory Tribunal
PO Box Q290
QVB Post Office NSW 1230

Our normal practice is to make submissions publicly available on our website www.ess.nsw.gov.au. If you wish to view copies of submissions but do not have access to the website, you can make alternative arrangements by telephoning one of the staff members listed on the previous page.

We may choose not to publish a submission—for example, if it contains confidential or commercially sensitive information. If your submission contains information that you do not wish to be publicly disclosed, please indicate this clearly at the time of making the submission. IPART will then make every effort to protect that information, but it could be disclosed under the *Government Information (Public Access) Act 2009* (NSW) or the *Independent Pricing and Regulatory Tribunal Act 1992* (NSW), or where otherwise required by law.

If you would like further information on making a submission, IPART's submission policy is available on the www.ipart.nsw.gov.au website.

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1 Introduction

The NSW Energy Savings Scheme (ESS) is administered by IPART. Energy savings activities that are eligible in the ESS are defined by the *Energy Savings Scheme Rule of 2009*¹ (the Rule). One of the most significant activities in the ESS involves upgrades to commercial lighting. Energy Savings Certificates (ESCs) are created for accredited commercial lighting programs under the Commercial Lighting Energy Savings Formula which is part of the Deemed Energy Savings Method of the Rule.

Over 2.15 million ESCs have been created from commercial lighting upgrades (approximately 53% of all ESCs created). During 2012 the number and scale of projects carrying out commercial lighting has expanded so that around 80% of all ESCs created have come from commercial lighting upgrades.

1.1 Why did we commission this report?

We commissioned this report to improve our administration and understanding of commercial lighting activities in the ESS. The report was prepared by Beletich Associates (the consultant), working with lighting consultants Light Naturally, and it explores a wide range of commercial lighting issues. The detailed scope of works asked the consultant to:

1. Recommend a process and framework to efficiently administer commercial lighting activities conducted under the Rule, as amended on 22 December 2011, to ensure that:
 - a) installed lighting meets or exceeds the requirements of the Australian Standard AS/NZS 1680 – Interior and workplace lighting series (AS/NZS 1680)
 - b) lighting upgrades are performed by appropriately trained persons, and
 - c) an appropriate process is in place for assessment and acceptance of ‘emerging lighting technologies’, as defined by the Rule.
2. Provide guidance for the Scheme Administrator regarding the requirements of AS/NZS 1680, and how these requirements can be consistently adopted and applied by Accredited Certificate Providers and assessed by Auditors.

¹ A copy of the *Energy Savings Scheme Rule of 2009* can be found on the ESS website, http://www.ess.nsw.gov.au/How_the_scheme_works/Framework_and_Rules

1.2 Who provided input to the report

We invited the Victorian Essential Services Commission, now administering the Victorian Energy Efficiency Target Scheme (VEET), to participate in this study in recognition of our efforts to harmonise both schemes wherever practicable. The NSW policy agencies, the Office of Environment and Heritage (OEH) and the Department of Trade and Investment, Regional Infrastructure and Services (DTIRIS), have also contributed to the development and review of the consultant's findings.

The consultant submitted the *NSW Energy Savings Scheme: Review of Commercial Lighting* (the Report) in February 2013.

We now invite all interested parties to make written submissions in response to this Issues Paper by **19 May 2013**. You may comment on some or all of the matters raised in this Issues paper or the consultant's Report. These will be considered as part of the review of our administration of commercial lighting activities in the ESS.

1.3 What does this issues paper cover?

The Report recommends several changes to the way we manage commercial lighting activities under the Energy Saving Scheme. This Issues Paper identifies and discusses these and focuses attention on those we particularly seek stakeholder comment. These issues are addressed in the following sections:

- ▼ Lighting standards and compliance with the Rule
- ▼ Appropriate training
- ▼ Performance of lighting equipment, and
- ▼ Safety and Electromagnetic Compatibility requirements.

Our objective is to achieve real energy savings without reducing overall lighting quality or safety levels. In doing so, we strive to contain administration or compliance costs to no more than is necessary to achieve this objective.

The purpose of this issues paper is to focus on the key recommendations of the report and how they may affect the Energy Savings Scheme and to gather stakeholders' views on those recommendations.

A number of the consultant's recommendations would require a change to the Rule, while others only require administrative changes. Where possible, IPART will implement administrative actions, whereas those requiring a change to the Rule will require further consultation by OEH and DTIRIS as the policy agencies.

1.4 List of issues on which we seek comment

The questions to which we are seeking initial stakeholder feedback are listed below. They are discussed in more detail in the subsequent sections of this Issues Paper. We recommend that they be read in conjunction with the Rule and the consultant's Report *NSW Energy Savings Scheme: Review of Commercial Lighting* (the Report).

- 1 Should the requirements for compliance with AS/NZS 1680 focus on average maintained illuminance, uniformity of illuminance and disability glare? 5
- 2 Should IPART specify minimum lighting requirements where the AS/NZS 1680 Standard does not apply? How could IPART do this? Is the general VEET approach reasonable? 5
- 3 Where AS/NZS1680 does not apply, what other standards could be applied in addition to AS/NZS 1680 in order to ensure the quality of lighting upgrades? 5
- 4 Should Accredited Certificate Providers be required to use lighting industry standard modelling software to ensure lighting installations comply with relevant lighting standards, in particular AS/NZS 1680? 6
- 5 Should Accredited Certificate Providers be required to use lighting industry professionals to confirm compliance with relevant lighting standards? 6
- 6 What other options are there to ensure that lighting upgrades comply with AS/NZS 1680, while minimising compliance costs, especially for smaller projects? 6
- 7 Should Accredited Certificate Providers be required to demonstrate an understanding of lighting design to ensure lighting installations are of a similar standard to those typically carried out by lighting professionals? 7
- 8 What level of training should be required for persons carrying out commercial lighting upgrades? 7
- 9 What level of training would be appropriate to ensure that a lighting upgrade meets AS/NZS 1680 (eg, is training required for taking illuminance measurements using a light meter)? 7
- 10 Is there a preference for IPART to require either absolute specifications or evidence of claimed performance to support emerging lighting technologies? 8
- 11 What evidence of product lifetime and lumen depreciation should be required to support emerging technologies? 8
- 12 Should T5 Adaptors, LED Tubes and Voltage Reduction Units be removed as eligible products in the ESS? 8

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| 13 | Should persons other than Accredited Certificate Providers, for example, product manufacturers, be able to apply to have an Emerging Lighting Technology accepted for use in the Energy Savings Scheme, if nominated by an ACP? | 9 |
| 14 | Should a list of accepted Emerging Lighting Technologies be collected and published by IPART, with only one acceptance per product? | 9 |
| 15 | Would Accredited Certificate Providers support out-sourced product acceptance, if it resulted in a more streamlined Emerging Lighting Technologies acceptance process? Would Accredited Certificate Providers be prepared to pay a fee for this? | 9 |
| 16 | Is it feasible for Accredited Certificate Providers to collect the Certificate of Compliance for each lighting upgrade where the electrical works require the certificate to be created? | 10 |
| 17 | If T5 Adaptors and/or LED Tubes are retained in the scheme, what further steps can IPART take to manage the risks of potential safety issues relating to those products? | 11 |

2 Issues for discussion

2.1 Lighting standards and compliance with the Rule

Clause 9.4 of the Rule requires that lighting upgrades exceed the recommendations of the *Australian Standard AS/NZS 1680 – Interior and workplace lighting series* (AS/NZS 1680, the Standard), or another benchmark approved by the Scheme Administrator. To meet this requirement, Accredited Certificate Providers (ACPs) typically assess minimum illuminance (lighting) levels through post-installation light meter readings.

The requirements under the Standard cover many aspects of lighting and are quite complex. The Report states that our current requirements do not consider the full complexity of the Standard, including factors such as glare and the uniformity of lighting. The consultant has also highlighted issues with the use of light meters for assessing illuminance levels where the measurements are carried out by untrained persons.

The consultant states that compliance with the key requirements of the Standard could be achieved by targeting:

- ▼ average maintained illuminance
- ▼ uniformity of illuminance, and
- ▼ disability glare (also referred to as cut-off angle).

This would simplify the compliance requirements and provide a practical, cost-effective means of ensuring compliance with the Standard. Implementation of this is best suited to a Rule change. However, IPART could require ACPs to provide further information on lighting quality to confirm that these aspects of the Standard are being met.

Where the Standard does not specifically apply, ACPs could be required to identify the applicable lighting standards and to demonstrate how the requirements of those standards will be met on each occasion. At a minimum, lighting levels for safe movement should be applied.

The VEET scheme in Victoria provides an example of an approach to manage compliance with lighting standards. Under the VEET scheme, Accredited Parties² are required to sign a declaration for each site where lighting upgrades have been performed, detailing how the relevant lighting standards have been met on each occasion³.

IPART seeks comments on the following

- 1 Should the requirements for compliance with AS/NZS 1680 focus on average maintained illuminance, uniformity of illuminance and disability glare?
- 2 Should IPART specify minimum lighting requirements where the AS/NZS 1680 Standard does not apply? How could IPART do this? Is the general VEET approach reasonable?
- 3 Where AS/NZS1680 does not apply, what other standards could be applied in addition to AS/NZS 1680 in order to ensure the quality of lighting upgrades?

2.1.1 Tiered approach to compliance with lighting standards

The Report proposes using a 'tiered approach' to demonstrate compliance with lighting standards. This involves subjecting larger, more complex lighting upgrades to more stringent requirements, including mandatory use of lighting design software and the use of specifically trained lighting professionals to assess lighting outcomes against lighting standards. For small lighting upgrades, the Report recommends a 'like for like' replacement model, with set performance criteria applied to specific types of lights.

² Equivalent to an Accredited Certificate Provider in the ESS.

³ Essential Services Commission, 'Presentation from VEET Commercial Lighting Workshop 01/02/13', <https://www.veet.vic.gov.au/Public/Pub.aspx?id=305>

The consultant's position is that commercial lighting upgrades should be of a similar standard to those performed by lighting industry professionals operating outside the ESS. The consultants propose the use of software modelling to determine the lighting design requirements and lighting outcomes for sites, in line with standard lighting industry practice. They also suggest the increased involvement of lighting professionals in the validation of lighting outcomes.

A more rigorous approach to compliance with the Standard may require some ACPs to invest in further training, or to adjust their current business practices. However, greater reliance on the use of lighting design professionals and software modelling will better align ESS lighting outcomes with standard lighting industry practice.

IPART seeks comments on the following

- 4 Should Accredited Certificate Providers be required to use lighting industry standard modelling software to ensure lighting installations comply with relevant lighting standards, in particular AS/NZS 1680?
- 5 Should Accredited Certificate Providers be required to use lighting industry professionals to confirm compliance with relevant lighting standards?
- 6 What other options are there to ensure that lighting upgrades comply with AS/NZS 1680, while minimising compliance costs, especially for smaller projects?

2.2 Appropriate training

The Report suggests that ACPs should have a minimum level of competence in lighting design.

Clause 9.4(b) of the Rule states that ACPs may create ESCs provided that 'the Lighting Upgrade is performed by appropriately trained persons'. For commercial lighting, ACPs must use electricians for the replacement of electrical fittings. However, we currently do not require training in lighting technology or lighting design.

The Report recommends that the specific requirements of the ESS could be incorporated into an existing lighting course to provide comprehensive training for ACPs. This will involve an extra cost to ACPs, while ensuring better lighting outcomes for customers.

IPART seeks comments on the following

- 7 Should Accredited Certificate Providers be required to demonstrate an understanding of lighting design to ensure lighting installations are of a similar standard to those typically carried out by lighting professionals?
- 8 What level of training should be required for persons carrying out commercial lighting upgrades?
- 9 What level of training would be appropriate to ensure that a lighting upgrade meets AS/NZS 1680 (eg, is training required for taking illuminance measurements using a light meter)?

2.3 Performance of lighting equipment

2.3.1 Requirements for Emerging Technologies

The Rule requires that the Scheme Administrator determine the Lamp Circuit Power (LCP) of 'LED, induction lighting or other Emerging Technology'⁴. In order to accept products designated as 'emerging technologies' we currently require data on the power consumption of lamps (and their associated control gear), and specific information to ensure that equipment meets appropriate safety requirements.

This information includes regulatory approvals for 'Declared Articles' and additional measures such as the Certificate of Suitability for 'Non-Declared Articles' issued by the NSW Department of Fair Trading where no regulated safety requirements are in place⁵.

In addition to our current practice, the Report suggests that we consider product performance when accepting products for use in the ESS. This would be either based on 'absolute criteria' that sets minimum requirements for products; or through testing the 'product performance' claims of manufacturers.

Setting absolute criteria would involve the Scheme Administrator certifying products and setting minimum standards, which are normally the responsibility of other regulatory bodies.

⁴ Table 9 of Schedule 1 of the *Energy Savings Scheme Rule of 2009*.

⁵ More information on Declared and Non-Declared Articles is available on the Department of Fair Trading website: Approval of electrical articles, http://www.fairtrading.nsw.gov.au/Businesses/Product_safety/Electrical_articles/Approval_of_electrical_articles.html

Product performance claims would involve the Scheme Administrator validating evidence from accredited independent testing laboratories. Testing should be based on appropriate sample sizes and should follow established international standards and lighting industry norms. For instance, IPART expects that data files used in lighting design software for lighting products should be available and supported by appropriate evidence.

The consultant contends that Lamp lifetime is a good proxy for quality, especially in the case of LEDs where the results from lifetime testing are used to identify reductions in light output over time. As savings are often deemed to occur for up to 10 years, proving lamp lifetime is essential to ensuring those savings are delivered to consumers.

The VEET scheme requires evidence of lamp lifetime and lumen depreciation as a key input to demonstrate that production and service levels will be maintained over time⁶.

For T5 adaptor kits, we also propose to align our information requirements with the VEET, to require evidence of Minimum Energy Performance Standards registration for the lamps used in T5 adaptor kits.

We note the consultant's recommendation to require installations to be permanent, effectively removing the eligibility of T5 adaptor kits and LED tubes. The consultant has also questioned the validity of savings from Voltage Reduction Units and recommends their removal. Each of these recommendations would require a change to the Rule, and consequently will be referred to the policy agencies.

IPART seeks comments on the following

- 10 Is there a preference for IPART to require either absolute specifications or evidence of claimed performance to support emerging lighting technologies?
- 11 What evidence of product lifetime and lumen depreciation should be required to support emerging technologies?
- 12 Should T5 Adaptors, LED Tubes and Voltage Reduction Units be removed as eligible products in the ESS?

⁶ Essential Services Commission, 'Presentation from VEET Commercial Lighting Workshop 01/02/13', <https://www.veet.vic.gov.au/Public/Pub.aspx?id=305>

2.3.2 Process for accepting emerging technologies

The report recommends that IPART's process to accept Emerging Lighting Technologies (ELTs) could be streamlined. ACPs are currently required to provide a full application for acceptance of each ELT product they propose to use in their accredited activities. This is regardless of whether the product has been accepted for use by another party. We do not consider applications of ELT acceptance made by anyone other than an ACP.

To help streamline the product acceptance process, the Report recommends the publication of a list of accepted Emerging Lighting Technologies (ELTs) and a single acceptance per product. The out-sourcing of product acceptance is also proposed. This would mean that IPART would not be required to interrogate and interpret laboratory test results

To help manage the volume of applications received, it may be necessary to consider charging a fee for each product acceptance. IPART also needs to better understand the costs associated with outsourced product acceptance. This includes the costs of a single organisation being contracted to conduct the assessments and the costs of having independent laboratories confirm or certify the information being presented to satisfy our requirements. We may also consider other suggestions

IPART has recently launched an internet portal for ACPs to use when applying for ELT product acceptances. This will ensure that all required information is provided with each application and will help to streamline the process. This also adds a layer of transparency to the ELT acceptance process.

IPART seeks comments on the following

- 13 Should persons other than Accredited Certificate Providers, for example, product manufacturers, be able to apply to have an Emerging Lighting Technology accepted for use in the Energy Savings Scheme, if nominated by an ACP?
- 14 Should a list of accepted Emerging Lighting Technologies be collected and published by IPART, with only one acceptance per product?
- 15 Would Accredited Certificate Providers support out-sourced product acceptance, if it resulted in a more streamlined Emerging Lighting Technologies acceptance process? Would Accredited Certificate Providers be prepared to pay a fee for this?

2.4 Safety and EMC Requirements

We note that the consultant has taken a positive view of IPART's current approach to electrical safety and Electromagnetic Compatibility ("EMC") issues.

2.4.1 Electrical compliance

Currently, a *Certificate of Compliance Electrical Work* (the Compliance Certificate) is acceptable evidence to show that existing equipment has been removed and new End-User Equipment installed.

The Compliance Certificate is described on the Department of Fair Trading (DFT) website as “a uniquely numbered form to be completed by an electrical contractor every time the contractor adds, alters, disconnects, reconnects or replaces an electrical installation”⁷.

This definition has particular relevance when considered in the context of the Electrical Regulatory Authorities Council (ERAC) Information Bulletin, *Safety of T8 Lamp Replacement Tubes and Modified Luminaires*⁸ (the ERAC Bulletin), which identifies that modified luminaires become the responsibility of those who undertake the modifications.

The consultant recommends that the Compliance Certificate must be collected by ACPs whenever one is issued for work undertaken as part of a RESA. Implementation of this recommendation would be verified through the audit process.

IPART seeks comments on the following

- 16 Is it feasible for Accredited Certificate Providers to collect the Certificate of Compliance for each lighting upgrade where the electrical works require the certificate to be created?

2.4.2 Luminaire retrofits

IPART has implemented an approach to managing the electrical safety of T5 Adaptors and LED Tubes used in the ESS, since becoming aware of potential issues relating to LED Tube Safety and publication of the ERAC Information Bulletin referenced above.

We require a Certificate of Suitability from NSW Department of Fair Trading to confirm the electrical safety of ‘Non-Declared Articles’. These include: LED lamps and LED tubes with integrated ballast; Induction Lamps; and Voltage Reduction Units.

⁷ Department of Fair Trading NSW, Electrical compliance requirements, http://www.fairtrading.nsw.gov.au/Tradespeople/Electricians/Electrical_compliance_requirements.html

⁸ Electrical Regulatory Authorities Council, Information Bulletin November 2011#0001, Safety of T8 Lamp Replacement Tubes and Modified Luminaires, <http://www.erac.gov.au/images/Downloads/0001%20-%20T8-T5%20flourescent%20lamp%20adaptor%20retrofits.pdf>

In a Notice issued in March 2012⁹, we also broadcast to all ACPs that they should familiarise themselves with the recommendations of the ERAC Information Bulletin.

The consultants recommended the removal of T5 Adaptors and LED tubes from the Rule for safety reasons, or that a more thorough investigation of their safety should be undertaken if these products are retained in the scheme.

IPART seeks comments on the following

- 17 If T5 Adaptors and/or LED Tubes are retained in the scheme, what further steps can IPART take to manage the risks of potential safety issues relating to those products?

3 Further Action

Following the acceptance of the Report, IPART, acting as the Scheme Administrator for the ESS, will consult where required.

In this respect, our intention is to seek submissions on the Report and our response to it, by **19 May 2013**.

Following the receipt of submissions, we propose to advise ACPs of any recommended changes and implement these for commercial lighting activities as appropriate.

The ESS website and relevant documentation will be updated to reflect any changes to our administration of commercial lighting activities.

Where the consultant's recommendations require changes to the *Energy Savings Scheme Rule of 2009*, responses will be forwarded to the relevant policy agency for their consideration.

⁹ IPART (2012) "ESS Notice 02/2012: Changes and Clarifications to the treatment of 'Lamp Only' Replacements and T5 Adaptor Kits, Table 10, ESS Rule", http://www.ess.nsw.gov.au/files/640b9716-260f-438e-8f3a-a01201003852/ESS_Notice_02_of_2012_-_Commercial_Lighting_-_Lamp_only_replacements_and_T5_Adaptors.pdf

