



Australian Government
**Department of Climate Change
and Energy Efficiency**

Australian Appliance Energy Efficiency Program - Lighting Monitoring and Compliance

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thinkchange



Background

- Australian Government announced Phase-out of Inefficient Incandescent Lamps in February 2007.
- Phase-out commenced 2009.
- Import restriction on tungsten filament GLS incandescent lamps <150W.
- Point of sale Minimum Energy Performance Standards put in place in a staged approach as effective and efficient alternatives were available.

Current Position

Lighting MEPS specify efficacy levels for lamps in lumens/watt, + performance requirements:

- Incandescent lamps (tungsten filament and halogen)
- Compact Fluorescent Lamps (integrated)
- Linear Fluorescent Lamps
- Ballasts for Linear Fluorescent Lamps
- Transformers and Converters for Halogen Lamps



Incandescent Lamps – Minimum Requirements

- Requirements include:
 - Efficacy
 - Lumen Maintenance; and,
 - Minimum Lamp Life
- Package Marking Requirements:
 - Light output (lumens)
 - Wattage (watts)
 - Lamp Lifetime



Compact Fluorescent Lamps

- CFLs have a broader range of performance requirements
 - Starting time
 - Run-up time
 - Luminous flux, efficacy and lumen maintenance
 - Power, power factor and harmonics
 - Premature lamp failure rate
 - Low temperature starting
 - Switching withstand
 - Lamp life
 - Colour attributes
 - Mercury content
- The intention of MEPS for CFLs is to ensure the performance of CFLs to ensure that they remain a viable alternative for inefficient incandescent lamps



Australian Regulatory Context

- Policy on electrical appliance energy efficiency in Australia is developed cooperatively amongst State, Territory and the Commonwealth Governments (also cooperation with New Zealand) through the Equipment Energy Efficiency Program (E3 Program).
- Greenhouse and Energy Minimum Standards (GEMS) Act 2012 came into effect on 1 October 2012.
- The GEMS legislation will create a national framework for the E3 Program in Australia by replacing seven overlapping pieces of state legislation.

Monitoring Implementation - Information Sources

- Product Registration – required before a regulated product can be sold in Australia
 - Number of products
 - Number of suppliers
 - Test data on parameters
- Import Data (*Australia is not a lighting manufacturer so this is a good snapshot*)
- New requirements for registrants in Australian to submit annual data on sales and import/export of each registered model to regulator (*new requirement, data not yet available*)

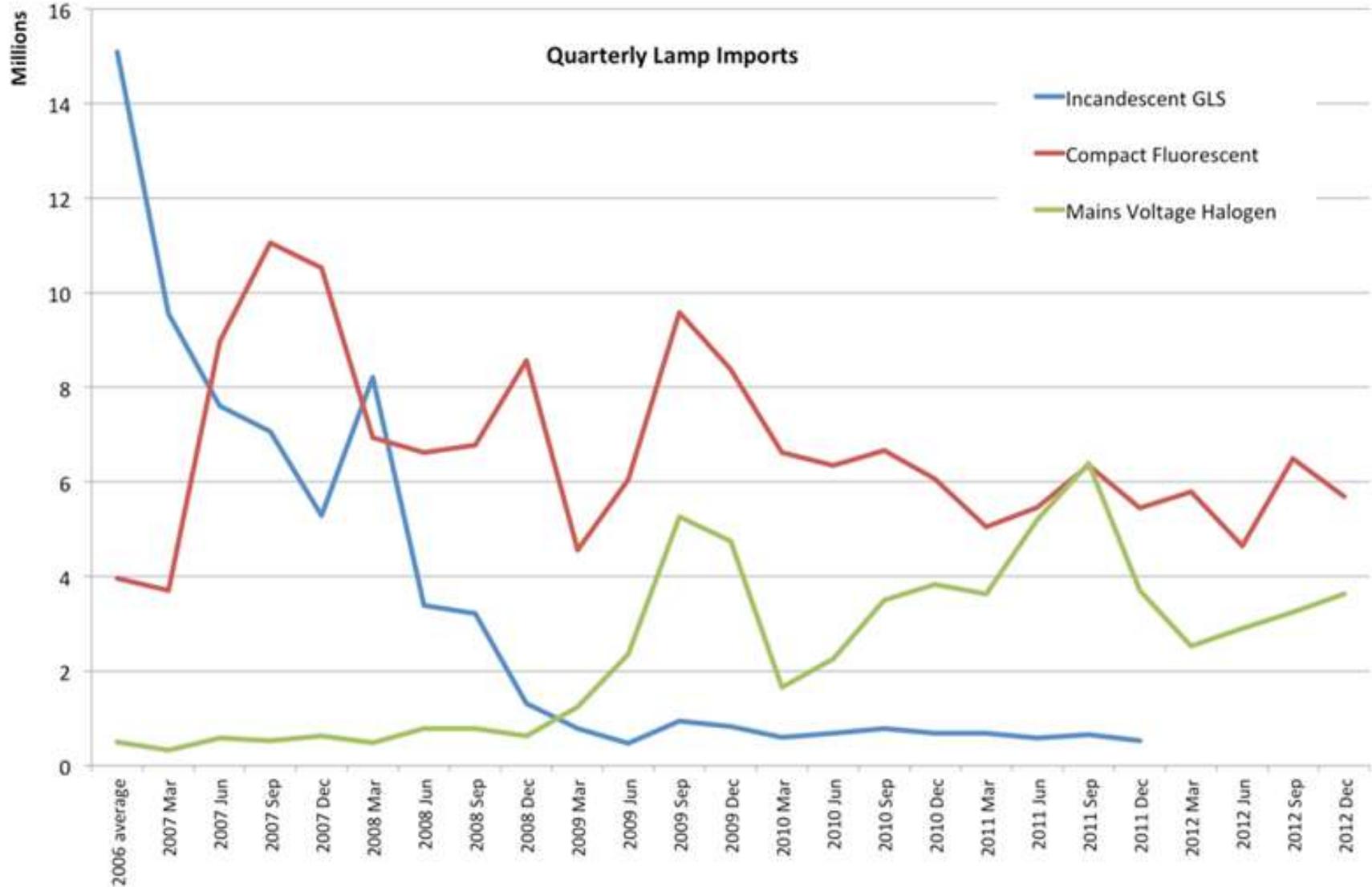
Monitoring Implementation – Information Sources

- Retail Sales Data – *not available for lighting in Australia, but available for other appliances*
- 2011 Household Intrusive Survey – 150 homes, 7,200 lamps
 - Provides an understanding of how the lighting purchased is being used in homes
 - Counted lamps in sockets – number and type, room
 - Hours of use – householder questionnaire
- Benchmarking / compliance testing results

Why Monitoring and Compliance?

- A rigorous monitoring and compliance regime will:
 - Act as a disincentive for the supply and sale of non-complaint products (especially if registration with test data required);
 - Give good manufacturers and suppliers the confidence to bring quality products into your market, confident that they will not have to compete against non-compliant products;
 - Increases consumer confidence in the promoted energy efficient lamps.
 - Monitoring data will facilitate the establishment of future revised MEPS levels and labelling algorithms and enable reporting and evaluation of the program.
 - In the future manufacturers may accept more stringent requirements if they are confident the levels will be monitored and enforced.

Australian Phase-out results



Phase-out Results

- Analysis of lamp import data and a household survey.
- Preliminary analysis indicate that, since the announcement of the phase-out until the end of June 2011, the residential stock of CFLs has increased by more than 60 million lamps.
- Greenhouse gas savings from this transition, as well as from the installation of higher efficiency halogen replacement lamps, are estimated to be approximately 2 million tonnes per annum, with total consumer energy savings of around \$400 million each year.
- These savings can be attributed to the phase-out regulations and various activities aimed at promoting the use of CFLs, such as state-based lamp replacement schemes.

Phase-out Results

- Good uptake of CFLs on track with predictions.
- Both import data and intrusive household survey indicate that some consumers have moved to halogen lamps rather than CFLs.
- Implications for amount of energy saved.
- Feeds in to future development of regulatory policy and consumer education.

Benchmarking/Compliance Testing Activity

- 2008 – samples of 96 CFL products were purchased and tested to establish baseline in advance of implementation of Australian MEPS regulation.
- Part of a broader program of benchmarking of products across much of Asia including India, Indonesia, Philippines, Thailand, Vietnam.
- Results from efficacy testing were compared to limits for the proposed Australian MEPS, ELI, Energy Star and UK Energy Savings Trust schemes (for bare lamps).
- Assisted in evaluation of proposed approach to MEPS for CFLs in Australia

Benchmarking/Compliance Testing Activity

- 2010 - Over 170 CFL products were purchased (after introduction of MEPS in late 2009) and tested.
- Suppliers of products found to not be registered were contacted with request to register.
- Test results including lifetime are currently being analysed.
- Suppliers of non-compliant products will be contacted however many of these products may have been imported prior to introduction of MEPS.
- Also ironing out issues with reporting formats used by test labs (need to be cleared in advance).

Benchmarking/Compliance Testing Activity

- 2013 - We will soon be commencing an in-store survey of incandescent and fluorescent lamps which will examine:
 - Compliance with product registration requirements
 - Compliance with packaging requirements
 - Some samples of incandescent lamps will be tested for compliance with MEPS
 - Also expect to soon test a further 100 CFL lamps

Benchmarking/Compliance Testing Activity

- Benchmarking overview:
 - 2008 – Pre-regulation snapshot and regional context
 - 2010 – Initial evaluation of impact of regulation
 - 2011 – Intrusive Survey links market level data to use of products in the home
 - 2013 – Monitoring progress of phase-out 3-4 years on.

Ingredients for Store Surveys

- Train survey staff & provide practice opportunities.
- Provide letters of introduction for survey staff and ensure they understand their rights and responsibilities – have a contact number in case need further advice.
- Ability to check registration status – we use special purpose software for use in PDA/smart phones in-store with link to our registration data base to check if products are registered.
- Purchase lamps for compliance testing from a range of store types – supermarkets, hardware, discount, specialist lighting.
- In-store survey will occur in three cities and where possible samples of a product will be purchased from more than one outlet in more than one city to try to obtain sample variation (not just one production batch).

Ingredients for Store Surveys Cont'd

- Product packaging may also be photographed to assist in later identification.
- Secure services of a competent accredited test lab/s. Make sure they are available to carry out the compliance testing within a set timeframe.
- Agree on application of test or other tolerances before testing commences.
- Access to technical expertise to liaise with store surveyors and test lab

Other Compliance Testing

- Apart from store surveys, other catalysts for compliance testing may include:
 - Rates of registration (i.e. if suppliers are not registering a certain type of product that is known to be sold).
 - Registration information is inconsistent.
 - Previous history of non-compliance.
 - Unlikely test claims.
 - Industry supplied information.
 - Consumer complaints.

Registration, Monitoring and Compliance – who needs to know?

- Before commencing regulation of MEPS on a new product category, ensure stakeholders are aware including:
 - Manufacturers in countries of origin – to assist them to provide compliant products in time
 - Consumers – to understand the changes in product availability that will take place and how to select from new products.
 - Suppliers – to allow them to source and test compliant products and to hopefully not have stockpiles of old non-compliant stock.

Communicating Non-Compliance

- What to do with Compliance Test Data:
 - Before publishing - consider any legislative requirements in your country that may have implications for the supply of supplier / manufacturer names. Establish a consistent policy.
 - Publish news of compliance activity to show that it is being undertaken.
 - If suppliers are not to be identified, you can supply a key to allow suppliers to identify their own products.
 - Consider making arrangements to share and exchange compliance results with other countries carrying out lighting efficiency regulation and enforcement – particularly useful if harmonised standards in place.
 - Ensure secure database for retaining test results to inform future MEPS revisions and updates.

After Check Testing – Penalties?

- Preferably your regulation should include penalty provisions for non-compliance
- The Australian GEMS Regulator has the power to issue infringement notices or ask businesses to compensate consumers.
- For more serious breaches of the law, the GEMS legislation allows the courts to impose financial penalties.
- Often publication of non-compliance can be a big incentive to improve product quality
- Also consider working with community consumer organisations (who may also product test and publish) and the consumer affairs regulator.

LED Lighting – Benchmark Testing

- Monitoring of LED lighting in the market indicates that technology is developing rapidly.
- LED lighting has the potential to broaden the range of energy efficient lighting options available to consumers.
- However evaluation of LED products currently available in the marketplace indicates a wide variation in quality and efficacy.
- We are concerned that consumer experience of expensive, poor quality LEDs will impact upon their willingness to buy the products in the future.

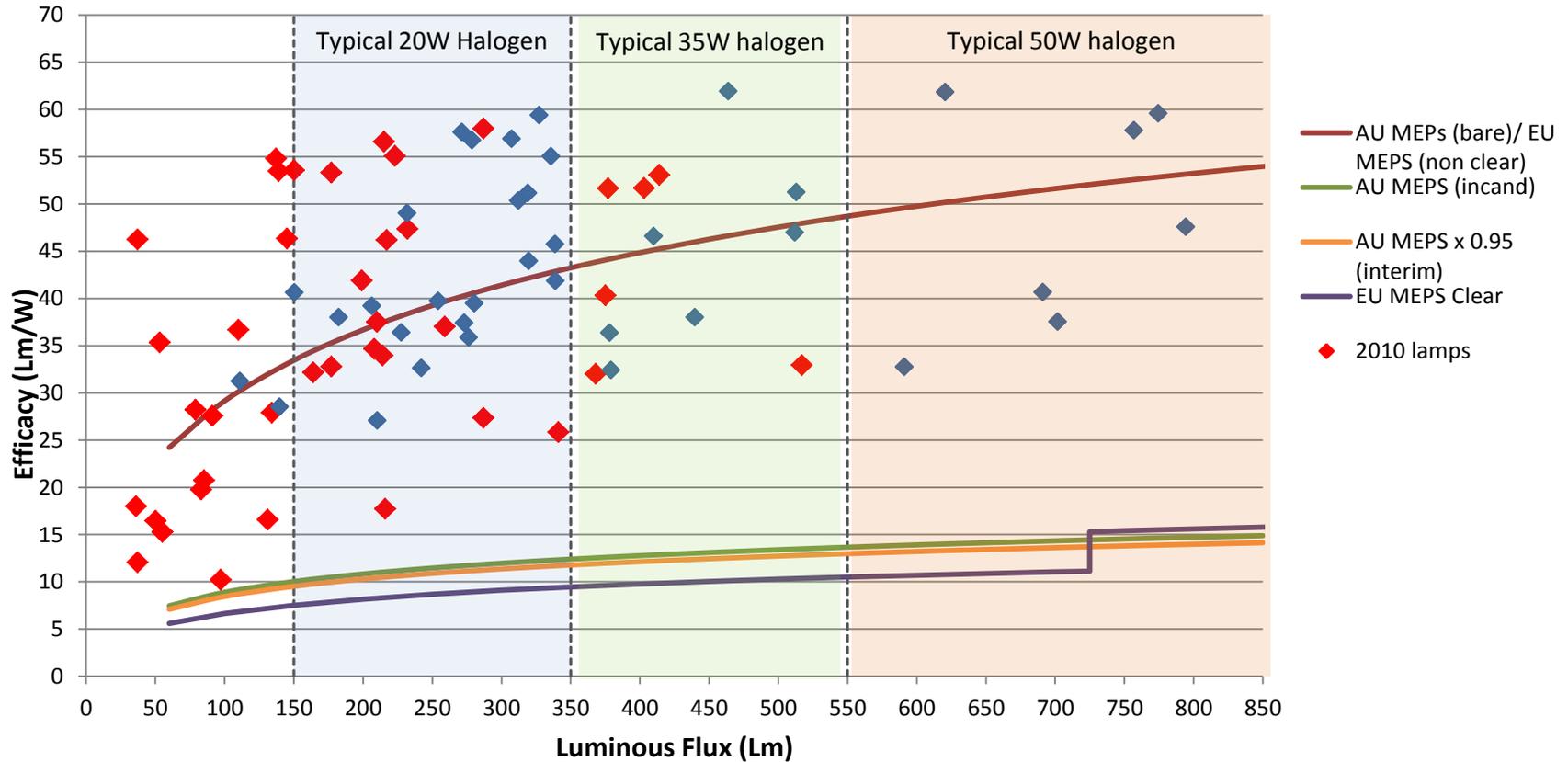


LED Lighting Monitoring

- Negative consumer perception could reduce consumer uptake and reduce the energy savings that could be gained from adoption of this new technology as a replacement for inefficient lighting.
- We have commenced testing of over 80 LED products purchased in Australia and overseas:
 - to further understand the quality and efficacy of products currently available to consumers;
 - to examine available test methods for LEDs (do they work?).
 - To help us evaluate the need for and approaches to regulation of LED lamps in Australia
- Tests to date have shown significant variation in quality and efficacy and between claimed and measured performance.

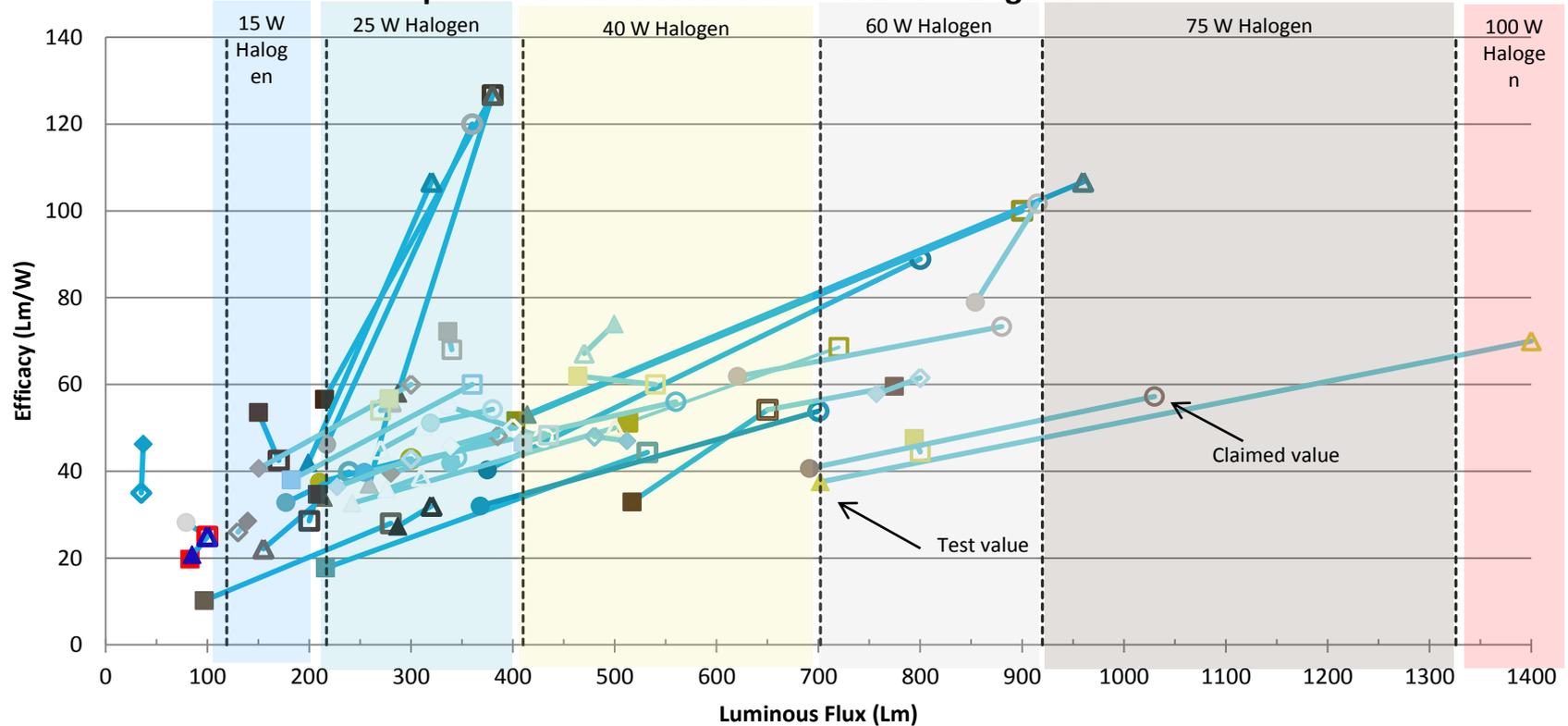
LED Testing - Performance

Performance of LED lamp technologies purchased in 2010 and 2012



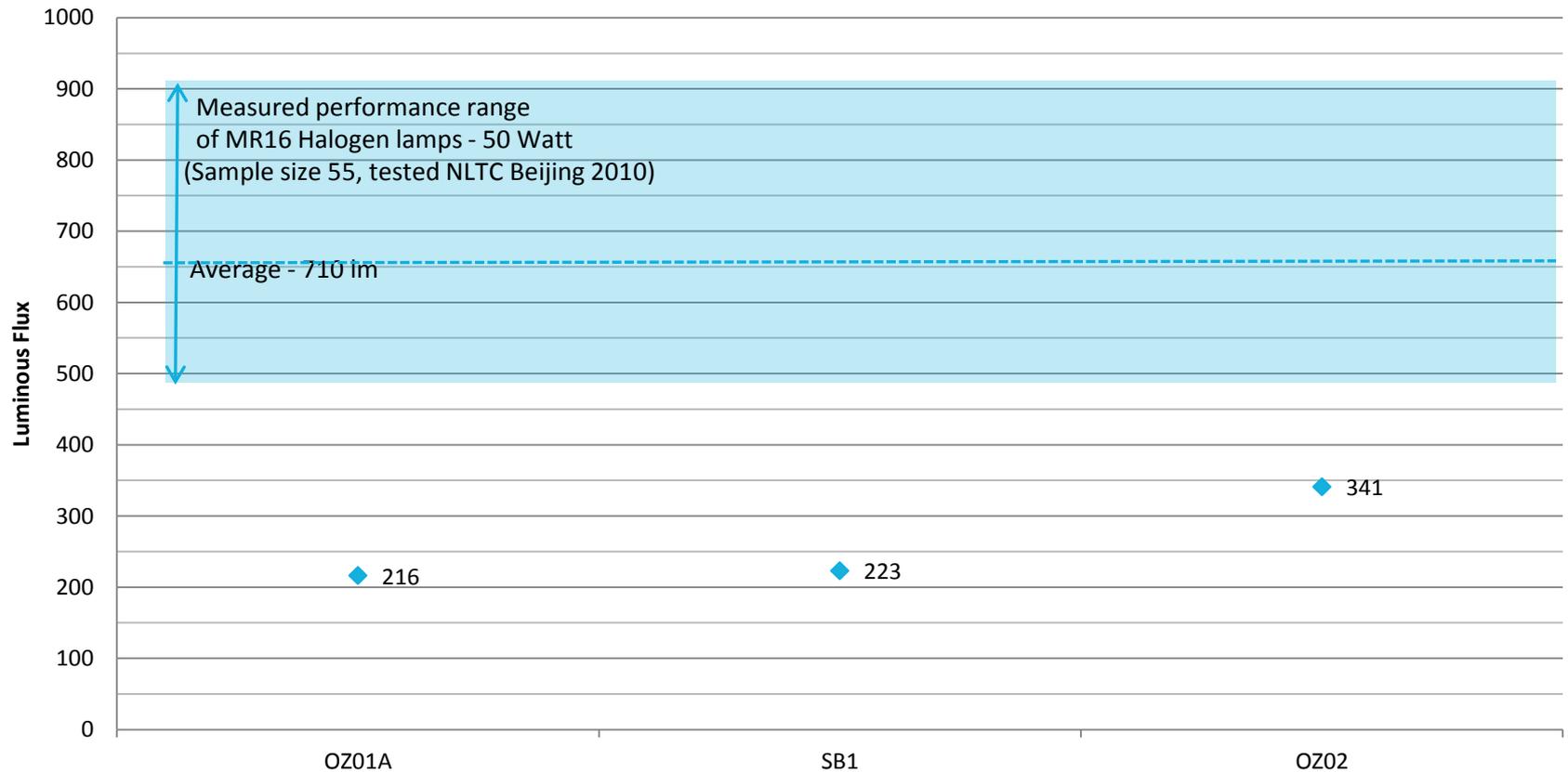
LED Performance – Claim Vs Test

Variance between Rated Efficacy to Tested Efficacy of LED lamps.
Equivalent incandescent luminous flux ranges shown.



Equivalence Claims

Lamps claiming equivalency to 50 Watt Halogen - Comparison of test results to performance of 50 W MR16 Halogen Lamps



Summary

- Begin understanding the products and market in advance of commencing any regulation or labelling.
- Plan and budget for your monitoring and data collection as a key part of your regulatory program.
- Monitoring, check testing and enforcement should be a central part of your program in order to boost stakeholder confidence.
- Make sure that you have the technical skills, survey and testing capacity available to support your program.
- Plan ahead – monitoring and compliance actions take time and involve the coordination of a number of parties.
- Communicate actions and results.

Thank You

Further information:

www.energyrating.gov.au

www.climatechange.gov.au/en/what-you-need-to-know/lighting