International CFL Harmonisation Initiative

5th Stakeholder Progress, Reporting and Planning Forum

23/24 October 2006
Grand Hyatt Dulles, Washington DC

MEETING NOTES

These meeting notes provide a record of the 5th in a series of Stakeholder Progress, Reporting and Planning Fora by the International CFL Harmonisation Initiative. An attendee list is attached to these notes, and all presentations that were made will be available on the CFLI website (www.apec-esis.org/www/cfl/). Highlights of the various presentations, and key discussion points (in italics), are included in these minutes.

Monday 23 October

Richard Karney (US DoE) welcomed all participants to the meeting, highlighting that the goal of workshop was to provide an opportunity for US stakeholders to gain a better understanding of the CFL Harmonisation Initiative (CFLI) and to provide direct input to the evolution of the programme.

Presentation: Overview of the CFLI (Noah Hormowitz NRDC)

- Goals and history of the initiative date
- Funders of the CFLI (primarily Australian Greenhouse Office (AGO) and the UK Market Transformation Programme (UK MTP), with additional support from the Danish Electricity Saving Trust, the US DoE and APEC); the Initiative facilitators' time is funded by the AGO and UK MTP
- Key perceived benefits for stakeholders
- Precedents from other products (in particular power supplies)

Presentation: Introductory joint NEMA/ELCF perspective on the Initiative (Dale Work, Philips Lighting)

- Perceived goal of the participating stakeholders to saving energy through increased sales of CFLs, not simply to raise efficacy
- Always a price – size – performance trade off when producing CFLs
- When approaching current CFL performance limits, strengthening of one performance parameter may lead to the need to weaken one or more other parameters
- When setting tiers necessary to be cognisant of what is good enough for the market, eg is decreasing start time from 0.2 sec to 0.1 sec necessary to increase CFL adoption/maintain consumer satisfaction?
- If a range of performance tiers are set, there should be some commonality of performance criteria between tiers.

- Proposal that new Energy Star Version 4.0 or European EST specifications should be one of tier levels, with a further proposal that Energy Star Version 2.0 (currently the US Minimum Standard) should be another Tier
- Need to attempt to link lab accreditation processes used around the world, hence providing confidence of lab results
- Agreement that IEC is the appropriate "home" for both the test method (60969) and any performance requirements.

Presentation: Review of CFLI activities related to CFL Testing Protocol (Owen Manley, Australian Lighting Council)

- Original driver to examine testing methodologies and propose revision due to need to bring tests for all performance parameters into one place, clarify known areas of confusion, improve representation of real world usage and where possible, remove performance measures – but remembering that any resulting methodology needs to balance accuracy/purpose of testing with costs
- CFLI aimed to give a very wide body of stakeholders the opportunity to have their views expressed in the revision process; form a consensus on what should be included and under what conditions; conduct several rounds of inclusive revisions; and submit to IEC as a well formed document for review, revision and adoption
- Highlighted key areas of significant proposed change and rationales (key changes related to scope, definition of individual lamp failure, voltage of tests, lamp orientation; addition of start up time, run up time, low temperature start, switch withstand, power factor and an mercury test proposal)
- Highlighted current outstanding issues, particularly related to lack of clear stakeholder consensus on what switch withstand cycle should be used
- Proposal made to IEC to amend IEC 60969 based on CFLI Version 13 draft protocol

Presentation: IEC Standards Process, TC34 Stakeholder Participation Mechanism for North America (Ed Yandek, GE Lighting)

- Overview on the IEC process, how US stakeholders can gain information and mechanism for US stakeholder to provide input
- Highlighted current outstanding issues within the draft methodology proposed to the IEC, particularly related to lack of clear stakeholder consensus on what switch withstand cycle should be used and definitions of individual end of life issues
- Raised question of whether separate performance levels should be the work of the IEC or the CFLI

[The following notes summarise discussion between and after previous two presentations plus relevant discussions that followed the verification testing presentation]

Some detailed discussion over proposed version 13 revisions. In particular, questions were raised over the need for inclusion of some of the less generic tests (eg low temperature start time); whether the time at which the lumen maintenance testing is completed should be part of the performance standard rather than the test methodology (ie could then align with the lamp life set in performance specification); and proposed revisions to the definition of end of life and associated parallel US activities related to charring of/smoking from lamp base.

A further discussion occurred on the suitability of having testing at upper and lower levels of the declared voltage range (particularly for start time) rather than the declared voltage midpoint. The discussion centred on whether the testing methodology should take account of the most challenging conditions the lamp may face in operations or whether it should be based of the stated lamps performance/limitations as manufacturers make design/production

cost decisions around self defined criteria (eg the need for voltage control). No consensus was reached on this issue

However, broad agreement was reached that submission to the IEC of the proposed methodology revisions to IEC 60969 was the appropriate route forward. Commitments were made that comments received on the current (or future IEC draft) methodology by the CFLI will be aggregated with information from the testing verification process, posted on the CFLI website and forwarded to the IEC committee for consideration. A request was also made for the CFLI coordinator to be copied on comments submitted direct to the IEC by individual attendees. Hence maintaining full transparency in the process.

Regarding the issue of whether any performance specifications should be developed directly by the IEC rather than initially by the CFLI, Mr Kalle Hashmi (STEM – Swedish Energy Agency) stated he disagreed strongly. Mr Hashmi felt much of the early damage done to the Swedish market place was due to CFLs not performing as promised by manufacturers and thus to have a wider group of stakeholders than normally associated with the IEC process would be appropriate. The CFLI gave a an opportunity for a wider stakeholder group to provide input to define reasonable levels of performance for CFLs that may be appropriate for different applications in a range of marketplaces, and it was appropriate for the CFLI to act as the conduit to articulate those stakeholder views prior to submission to the IEC.

Mr Owen Manley informed delegates that the IEC would require an initial 2 paragraph proposal to initiate the development of a new standard to accommodate any performance specifications that may be developed by the CFLI. Given the extended gestation period of this process, the forum was urged to support such a submission prior to next IEC meeting in April 2007 [participants agreed to this proposal during the Tuesday session].

Presentation: Protocol Validation Testing (Joe Marella, Laboratory Quality Systems)

- Aim of testing to provide public domain data on the proposed revisions to the testing protocol by highlighting any deficiencies/over specifications in the proposed testing protocol; providing empirical data to facilitate selection of the most appropriate testing methodology where more than one has been proposed; demonstrate applicability of test across a wide range of economies/labs
- A straight comparative test methodology is being used, with testing being undertaken on one lamp type only (Philips Genie 8W) all drawn from a single production batch. Results will be normalised against a single lab following a "star test.
- Laboratories participating: National Lighting Test Centre (China), Lighting and Appliance Testing Lab (Philippines), DELTA (Denmark), OSRAM Germany, GE (Hungary), Intertek (USA), OSRAM/Sylvania (USA) and potentially Philips (USA)
- Tests being undertaken: Start-up, run-up, initial luminous flux, initial efficacy, lumen maintenance, lifetime, switch withstand (3 various cycles), light distribution.
- All labs started tests or starting imminently. 100 hour tests received from 3 labs. 2,000 test results will begin to arrive in 1.5 months.
- Following confirmation of results, all raw data will be posted on CFLI site with associated box plot analysis showing lab variation, 1st and 3rd quartile, spread of individual lamps, outliers, mean and medium. The lab identities will not be reported and will simply be reported as Lab 1, Lab 2, etc.
- All results to be fed to the IEC revision process
- Initial issues identified: due to lab equipment limitations, definition of lamp stabilisation needs revision to be based on light output (in one direction) rather than variations in total luminous flux. Also a problem with start-up test due to possible

over specification of measurement response times and potential difficulty consistently identifying illumination point in graph.

Presentation US Testing Laboratory Perspective (Jacki Swiernik, Intertek Testing Services)

- Brief summary providing the experiences of Intertek to date as part of the comparative testing programme.

Some discussion on the robustness of the testing methodology initially used for photometry measurement due to the difficult in accounting for variation in lamps verses variation in labs. Some discussion ensued on whether the proposed star round robin was appropriate and effective but general consensus that approach was suitable following confirmation from Ronald Daubach (Osram/Sylvania) that NVLAP have now adopted the same approach where more than 2 or 3 labs are involved in testing activity. Also a group recognition that testing one lamp wattage/type was not representative of the various lamps available (particularly for the switch withstand test), but given resource limitations it remained a useful process for putting a set of data in the public domain for information/challenge.
Agreement reached that investigations will be made into how analysed data can be presented to show lab comparisons (eg NVLAP vs non-NVLAP, regional difference, independent vs manufacturer owned, etc) while maintaining individual lab confidentiality.

Presentation: Performance Specifications (Stuart Jeffcott, CFL Harmonisation Coordinator)

- Aim of the harmonisation initiative to develop mechanism that could facilitate a reduction in the plethora of CFL efficiency/performance specifications that are currently in place or being developed by various schemes around the globe
- Review of development process to date, ie in Korean CFL forum outline definition of 12 “core” criteria to be specified and first proposals for performance tier levels made in London
- Description of the concept of creating “Bands” of CFL performance, ie grouping performance criteria and collectively allocating performance levels to all criteria hence creating a single Tier of performance. Repeating this process could provide a series of increasingly stringent tiers of performance (stringent overall, not necessarily for one or more criteria) against which existing programmes could be categorised, and which present and future scheme operators/manufacturers may wish to use as basis for future specifications. The concept was extended to show how schemes not currently specifying all proposed criteria could be accommodated within the conceptual approach in the short/medium term.
- Proposals for criteria threshold values for both 3 and 4 tier systems (based on levels currently set by 7 schemes in countries at various levels of development/market sophistication)
- Proposals for a CFL marking system which would allow scheme administrators, enforcers and competitors (NOT intended for consumers) a mechanism for identifying the declared performance criteria with a scheme, and as the products travel to/between different international markets (example used a Roman numeral system in line with that used in the international harmonisation of external power supplies)
- Proposals to establish an international working group consisting of a number of national/regional lighting manufacturer bodies, national scheme operators/regulators and advocacy groups in attempt to deliver proposals that can be taken to IEC post Xiamen meeting in April 2007.

Extensive discussions followed that can be broadly broken down into six topic groups [note that comments include those made in a second discussion session on this topic on the second morning]

1) Is the creation of a tier system necessary?
Views expressed by some manufacturers that there was no benefit from their introduction of any kind of regulation and that the market should be left to choose. However, manufacturers also held the view that it was necessary to protect the consumer (and ultimately the market) by setting some base levels to ensure poor performing products did not sour the market. There was also recognition that incentive/promotional schemes such as Energy Star require the setting of some kind of performance specification.
General view that a reduced number of specifications globally would be of use to manufacturers and regulators.

2) Who are the proposed users of a performance tiers system?
Re-clarification that users were scheme operators who defined MEPs, procurement/promotion standards, etc.
Reiteration of the issue that the CFLI is seeking to assist scheme operators around the world; particularly the developing and transitional economies.
Also a reiteration that some level of harmonisation of scheme requirements is necessary to allow scheme operators to have any level of cooperation on initial scheme entry and/or enforcement activity, hence reducing their costs of, and/or increasing the monitoring of, compliance.

3) IF Tiers were to be developed, at what level and using what criteria?
Manufacturer reiterated that increasing stringency across all criteria was not possible. Beyond levels roughly in line with Energy Star 4.0, improvements in one criterion (eg lumen maintenance) would lead to the need to relax others (eg mercury content). Should a Tier above Energy Star 4.0 be "required", a proposed compromise solution was put forward whereby a "top" Tier was included in the IEC discussion process and proposed standards, but with no specific values attached.

Also a view that increasing stringency may not be the solution to broadening the market, ie rather than increasingly stringent tiers, some suggested perhaps the introduction of performance specifications defining "long life" lamps, "high efficacy" lamps, "low temperature lamps" etc may be the solution.

Suggestion that lower tiers may have fewer specified criteria as appropriate for some emerging markets, eg lowest tier may just specify life, lumen maintenance and efficacy. Further, there was also some extended discussion on how these lower Tiers could be usefully specified given the potentially large variations in operating conditions which have a direct impact on resulting lamp design (eg temperature, humidity, line voltage control, etc).

Also strong views expressed that the current naming approach (ie Tier I, Tier II…) was inappropriate and maybe an alternative would be more appropriate user friendly, eg "Standard, Quality, Premium". [Note that a similar view was also expressed that "The International CFL Harmonisation Initiative" was too long and an alternative name should be sought].

4) IF a tier type system was developed, would the marking system be appropriate?
Little discussion occurred but no strong opposition registered.

5) IF a tier type system and/or marking system were developed, where is the "natural home"?
As with the testing methodology/protocol, broad agreement was reached that should such a system(s) be developed, they should be proposed to the IEC for adoption.

6) Other issues
In future issues of any proposed specification/thresholds it should be made more overt what the thresholds relate to, eg bare lamps. Also, suggested that bare lamps should be the starting point and should be used as the "pilot" to see if major issues could be resolved before more complexity added by considering other bulb types (eg. Reflectors, covered A-lamps and globes, etc.) , ie the "walk before you run" principle

No clear consensus was reached on any of the above issues other than the probable benefit from some kind of tier system (item 1 above).

However, agreement was reached that a small working group was the most appropriate route to take these issues forward and report back/propose resolutions to the wider group, albeit accepting the April 2007 target deadline as potential optimistic. [Additional Note: Dale Work was proposed as the NEMA representative to the working group at the close of the meeting]

Presentation: North American Hopes and Expectations for Global Harmonisation Effort (Richard Karney, US DoE)

- Overview of the specifications likely to be confirmed for Energy Star Version 4.0. Version 4.0 likely to go into effect in September 2007 (approx).
- Overview of specification for Energy Star Version 2 which now forms US MEP (minimum energy performance) level
- Showed results of market surveillance of reflector lamp compliance with Energy Star Version 3.0. Non-compliance rate close to 50%. DOE moving toward a "manufacturer pays" check testing requirement in Energy Star 4.0 spec which should result in annual testing of approximately 20% of listed products
- Reiteration that Energy Start Versions 2.0 and 4.0 should be considered as two of the Tiers within the CFLI performance specification proposals

Presentation: North American Hopes and Expectations for Global Harmonisation Effort Cont'd (Pierrette Le Blanc, National Resources Canada)

- Canada has adopted the Energy Star specification for a range of products including CFLs; the current Canadian Energy Efficiency Act does not allow to regulate quality specifications and justifying regulating the performance of the CFL's would be difficult since benefits are calculated by comparing the product (CFLs) with a less efficient one
- Two new developments are on the horizon, the creating of a 10-15 year residential lighting programme and a requirement for new product labelling (including performance criteria) that will required manufacturers to indicate "Lumen Output", "Wattage" and "Life" of the products. This will include CFLs
- Canada will keep a database of all regulated CFLs (for labelling). Although most of these will be verified through the ENERGY STAR program, there may be some that are not and this regulation will help identify them

Presentation: CFL Performance Trade-offs and Power Factor Issues with CFLs (Ed Yandek, GE Lighting)

- Reiteration of the fact that adjustment of one CFL performance criteria (efficacy was used as the example) has a direct impact on the design requirements for other performance criteria, as most CFL performance criteria are interdependent
- A review of the impact of CFL power factor on supply capacity, including whether individual CFLs may have a negative effective on supply capacity. The presentation explained why when individual CFLs were installed in a region, or when installed in areas where other appliances were in operation, any potentially negative impact was normally significantly reduced. The more CFLs installed and/or the greater the mix of electricity end uses, the more any impact is negated
- A suggestion that, should an increase in power factor become one of the performance specifications, then there is little benefit in moving from 0.5 to 0.6 and the shift should be significant (possibly to 0.9). However, specifiers should remain cognisant of the fact this may have impact on other performance characteristics, product size, and/or price

Suggestion that power factor was not a significant issue were echoed by a number of participants, and Mr Marten Willemsen (Philip Shanghai) noted that Philips had demonstrated that major installations of CFLs do not have a negative effect on power factor by converting a whole Chinese village to CFLs and monitoring the impact – Mr Willemsen was invited to submit these results for posting on the CFLI website to inform the public debate.

Tuesday 24 October

Presentation: China Association of Lighting Industries (CALI) view of CFLI (Wang Zhuo, CALI)

- Overall very supportive of this harmonization effort.
- CALI has been involved in throughout the process and has had attendance at each forum other than Frankfurt. Lack of comments during the meetings should not be taken as lack of willingness of CALI to participate and provide active input. However, due to the language barrier it takes longer to assimilate all the information and provide effective input – input that is always provided later.
- China is capable of making the complete range from the very best to the very worst lamps. Manufacturers will supply to market need or scheme drivers but need clarity for manufacturers to understand what is required by the different markets, and widespread adoption of the CFLI outputs will bring this market clarity and increase market supply of quality products

Presentation: The Wider Chinese Picture (Hua Shuming, National Lighting Test Centre NLTC), Beijing)

- China's largest manufacturer produces approximately 120 million CFLs/year. Next ten are in the order of 20-80 million CFLs/year. Total annual production now comfortably exceeds 1 billion lamps per year.
- However, many, many small manufacturers producing low quality branded products. While top 20% of manufacturers produce 80% of products which are generally of higher quality, it is difficult to control smaller manufacturers as enforcement actions typically result in product reappearing under an alternative name. However, compliance is improving. In 1998 first check testing done and performed every year since. In 1998, 50% compliance with China minimum standard, in 2005 80% compliance.

- When minimum standard first set, manufacturers complained it was too challenging. However, manufacturers now calling for strengthening of minimum standards beyond the current 6,000 hour mark (8,000 hour CFL production cost estimated to be around 80 cents). It is expected this minimum standard will be revised in 2007 and this new standard could be used as the base threshold for the CFLI.
- Increasing demand for higher quality lamp units and increasing insistence from buyers that batch testing takes place on supplies. Cuba cited as an example of requirement for 1billion lamps over next three years with each batch supplied being check tested
- Support from NLTC given for improvements to the IEC standard to reduce uncertainty and increase repeatability. Also general support for the CFLI in bid to harmonise between countries.

Presentation: Compliance Mechanisms (Adam Hinge, Sustainable Energy Partnerships)

- Introduced potential elements for future compliance mechanism. These could include: lab qualification process, mutual recognition, central data base of "qualified products", some level of cooperation of check testing, etc.
- Some background on the switch in focus from one global CFL compliance data base to a bottom up building of compliance collaborations between schemes which may or may not move to a central database system in the longer term
- An introduction to the proposed compliance framework and the underlying staircases of compliance activity for initial scheme entry, ongoing market monitoring and data sharing

Presentation: Compliance Mechanisms (Ronald Daubach, Osram Sylvania)

- Discussed that much of what Adam Hinge had presented was in line with US manufacturer thinking
- Stressed that as much testing as possible should be undertaken for scheme access and check testing to ensure that products were in compliance and consumer expectations are met
- Suggested that any proposals made by the CFLI should ensure laboratories are accredited to internationally recognised schemes, and that results should be acceptable from manufacturers laboratories accredited to these schemes
- Suggested that schemes should bear all the costs of check testing rather than manufacturers