



PEARL Update

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Presented at 4/04 Energy Star Partners Meeting
Austin, Texas

PEARL Background

- ◆ Program for the Evaluation and Analysis of Residential Lighting.
- ◆ Independent “off-the-shelf” testing program for Energy Star labeled screw-based CFLs and fixtures.
- ◆ Created due to product quality concerns and lack of Energy Star or industry verification testing.

PEARL Basics

- ◆ Run by PEARL Board
 - Consists of representatives from utilities, program administrators, regional MT groups, advocates, and national labs.
- ◆ Currently PEARL is a self-standing program hosted by the Lighting Research Center (LRC) in Troy, NY. LRC is a NVLAP facility.

Roles

PEARL Board

- ◆ Develops list of products to test
- ◆ Purchase samples
- ◆ Reviews data/approves report
- ◆ Distributes results

LRC

- ◆ Receives and logs samples
- ◆ Performs testing
- ◆ Creates reports
- ◆ Invoices and accounting

Roles II

- ◆ PEARL provides full data set and summary report to Energy Star (DOE and EPA).
- ◆ Any follow-up inquiries, delisting, etc. is done by Energy Star and NOT by PEARL.

Testing

- ◆ CFLs
 - Moving from 5 to 10 samples/model for testing (plus six additional ones for rapid cycle test).
 - Buy samples from 3 parts of the country.
- ◆ Fixtures
 - Only test 1 sample/model.
 - Buy 2, one for back-up.

Status

- ◆ Historically tested 20 CFL models and 10 fixtures per cycle. Roughly 2 cycles/yr.
- ◆ Finalizing Cycle 5. About to begin Cycle 6.
- ◆ To date, all funding has been from utilities, MT groups, etc. and recently from Energy Star.
- ◆ New ES CFL specification adds “Pay to Play” requirement for Energy Star partner.

Future CFL Funding

- ◆ Current sponsors unwilling to continue to fund PEARL other than nominally.
- ◆ Need to work out specifics on overall budget and how to allocate costs.
- ◆ Near-term plan use LRC to do Cycle 6 and 7.
- ◆ Cycle 8 to occur in mid 2005 and will be funded by manufacturers.

CFL Trends/Results

- ◆ Ongoing high levels of non-compliance with Energy Star specification found for three key parameters:
 - Rapid cycle
 - 1,000 hr lumen depreciation (70%)
 - 40% of rated life lumen depreciation (80%)
- ◆ Problems not limited to just a few companies. Culprits include both “large” and “small” companies.

CFL Trends/Results II

- ◆ Greatest non-compliance found with covered products (reflectors, globes, A-lamps), especially reflectors.
- ◆ Relatively wide performance spread found for specific models (QA/QC issues at the factory?).

Cycle 4 Findings

◆ Lumen Depreciation

- 40% of the tested models did not meet the 90% lumen requirement at 1,000 hrs.
- Of the 90 CFL samples tested:
 - 20 burned out prior to 40% of life.
 - 28/70 that survived did not meet the 80% LM requirement.
- Reflector LM found to be 65%-75%. This will be noticeable.

Cycle 4 Findings II

- ◆ Rapid Cycle – 1/3 of the tested models failed (2 or more of the 6 died during the test).
- ◆ The Shocker – Only 5 out of 20 models met all the requirements for efficacy, 1,000 hr and 40% of life LM, and rapid cycle.

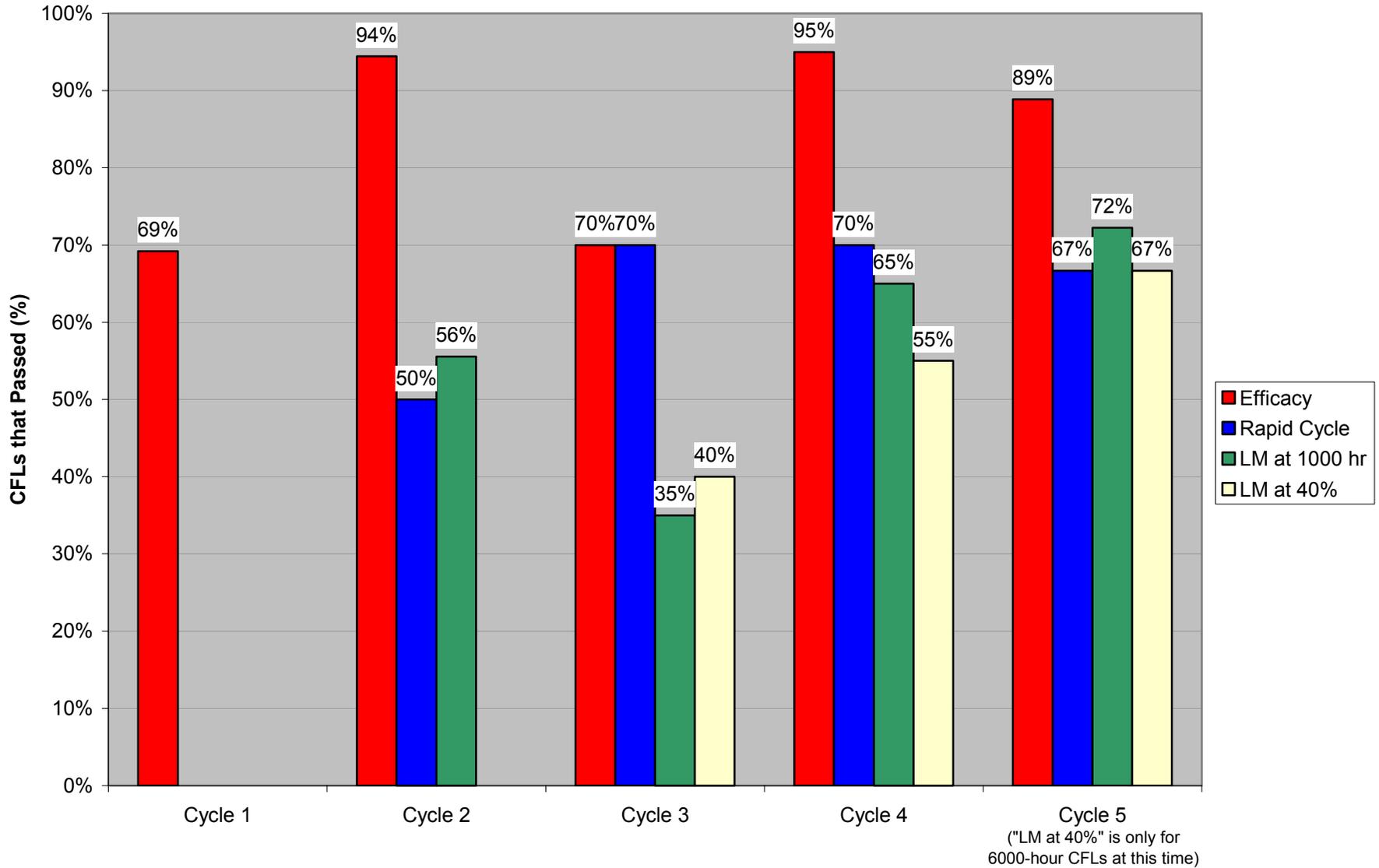
Preliminary Cycle 5 Results

	<u>Failure Rate</u>
Efficacy	2/18
Rapid Cycle	6/18
LM – 1,000 hr	6/18
LM – 40% life	TBD
OVERALL	8/18

Significance

- ◆ Compliance varies greatly by lamp category
 - 8/10 (80%) of bare bulbs met all three requirements.
 - 2/8 (25%) of covered products met all three requirements.
- ◆ Reflectors and globes, with few exceptions, are not meeting the requirements.

Overall CFL Performance



PEARL's Of Wisdom

- ◆ Why the disconnect between initial qualification data (met ES reqts) and extensive non-compliance from off-the-shelf testing?
- ◆ Reflectors – in field experience likely to be even worse due to heat build-up in cans.

PEARL to conduct in-situ testing of reflectors as part of Cycle 6.

PEARL's of Wisdom II

- ◆ Concerns:
 - Changes being made to products after initial qualification (different components, suppliers).
 - Products being made at different factory than before. Multiple factories used for same product.
 - Insufficient process control and attention to QA/QC.

Where to From Here?

- ◆ Begin planning for Cycle 7
 - Agree on how to fund it
 - Create technical committee to discuss key issues (test methods, sample size, data reporting, etc.). Industry and retailers welcome.
- ◆ DOE to propose various administrative models to continue the off the shelf testing. If PEARL, we plan to:
 - a) Expand data distribution.
 - b) Competitively bid out key functions (testing, data analysis, etc.)

Regardless of Administrative Model

- ◆ Keep the testing going, no hiatus.
- ◆ Use a “targeted” approach for developing the list of products to test. Don’t just make it random.
- ◆ Energy Star create well-defined criteria for delisting and adhere to it.

Regardless of Administrative Model II

- ◆ Consider action on reflector lamps – remove until further notice; add in-situ test to the next version of the spec, etc.
- ◆ Current PEARL sponsors need continued access to testing results to help justify ongoing promotion and incentive programs.

Our Per Cycle Estimate

(based on current administrator and lab, scope, and services)

	<u>5 samples/ model</u>	<u>10 samples/ model</u>
20 models	\$120 K	\$200 K
<u>30 models</u>	\$157 K	<u>\$277 K</u>
40 models	\$198 K	\$352 K

Note – costs include sample purchase and shipping, sample logging, testing and verification, data analysis and reporting, sample storage (1 yr), and travel to PEARL meetings.

Budget/Cost Considerations

- ◆ Need to resolve:
 - Size of the pie (defined by number of bulbs tested, lab used, etc.)
 - How to allocate the costs?

75% manufacturers	10% ES – DOE
10% retailers	5% public interest
 - How to slice the manufacturer piece? Per company? Per SKU?

Beware: List will likely shrink dramatically once deadline for payments is received.