



U.S. Department of Energy
Energy Efficiency and Renewable Energy

emerging technologies

R-CFL Technology Procurement Project Update

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Energy Star® Lighting
Partners Meeting

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R-CFL Project Overview

- ***Project Goal***

- Encourage introduction of new product category of R-CFLs for use in ICAT fixtures, and to promote their initial sales in collaboration with project partners

- ***Market Need***

- Efficient light source for large installed stock of recessed downlights (> 350 million)



R-CFL Project Overview (cont.)

- ***Technical Challenges***
 - Size (initially) and satisfactory operation of lamps (luminous flux and lamp life) in high temp environments
- ***Partners***
 - NEEA, NEEP, SMUD, CEE, others.



Key Milestones to Date

<u>Milestone</u>	<u>Date</u>
• RFP Released	10/24/02
• Proposals Due	10/22/02

– 5 proposals representing 11 models were received by the 10/22/02 deadline.



Key Milestones to Date (cont.)

Milestone

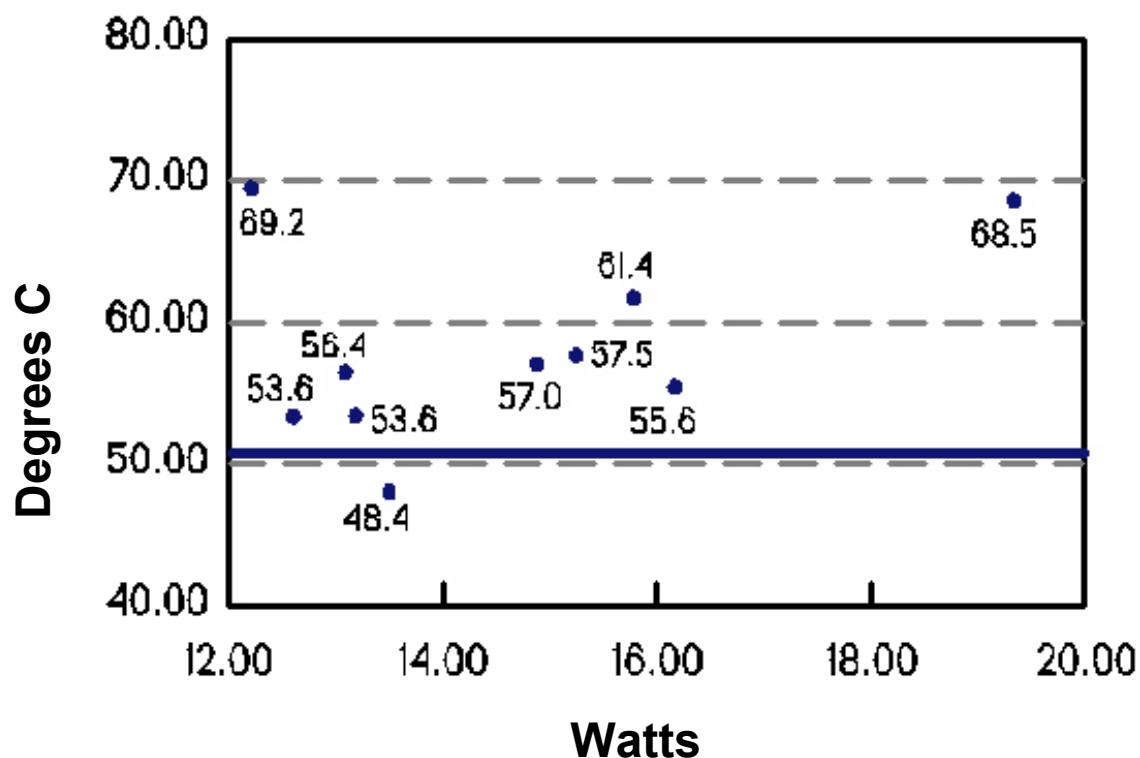
Date

- Initial Model Selection 7/25/03
 - Evaluations, including short-term testing completed. 8 R-CFL models selected for long-term testing
- Long Term Testing Started 9/17/03
 - Elevated temperature (50°C/60°C) testing apparatus complete. Long term testing started.



Initial Test Results Emphasized Heat Issue

Ambient Temperature vs. Rated Wattage



R-CFLs tested by PNNL in a simulated ICAT environment ; most operated above manufacturer max. operating temp. guidelines.

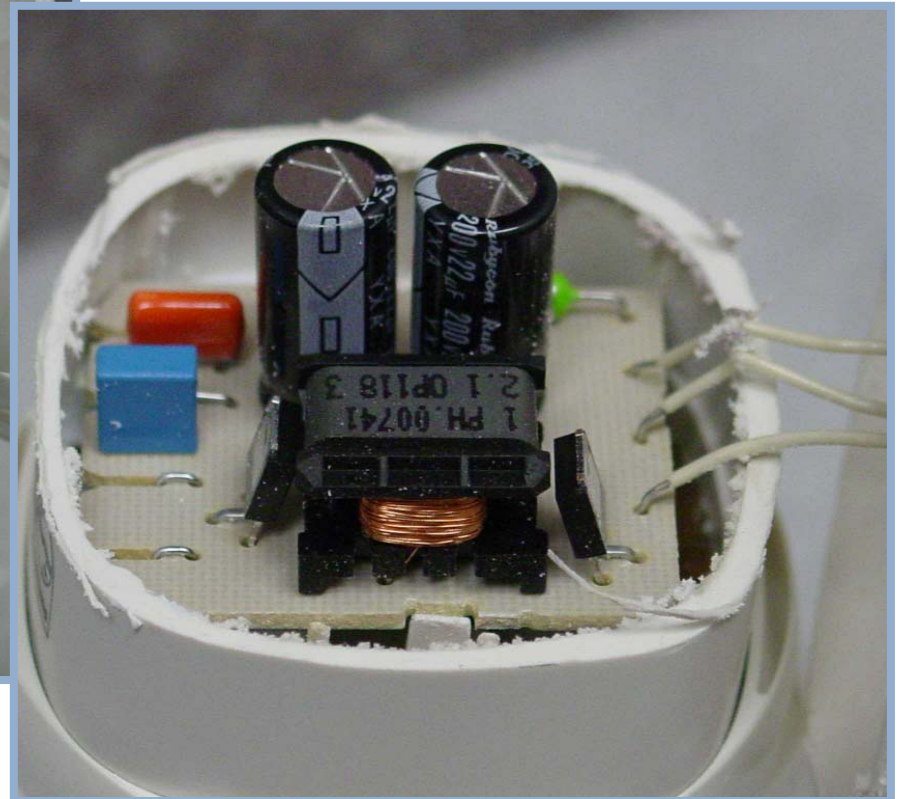


Key Prescriptive and Performance-Based Specifications, Phase 1

- Maximum MOL (R-30 = 5.6"/R-40 = 6.6")
- Electrolytic capacitors rated for at least 125°C and 5,000 hours
- Minimum of 500 initial lumens delivered at 60°C
- ENERGY STAR® labeled
- Beam angle < 120°
- Performance based testing (i.e. life testing at 50°C and 60°C vs. 25°C)



More Heat Resistant Electrolytic Capacitors included in Phase 1 Spec





Key Upcoming Project Milestones

<u>Milestone</u>	<u>Date</u>
• LT Testing complete (6,000 hours)	6/21/04
• LT Testing complete (8,000 hours)	9/17/04
• Basic Order Agreements Signed with Manufacturers	Jul/Oct 04
• Winners Announced	Oct 2004
• Promotions begin	Oct 2004



Models Undergoing LT Testing

Status Report, April 16, 2004

5 of the 8 models in LT testing failed (6 or more samples burned out) at about 4,000 hours (of 6,000 hour minimum).

Manufacturer ID	Model ID	# Failed (of 10)
A	4A	9
A	4B	9
A	5A	7
B	8A	5
B	9A	9
B	10A	9
C	11A	1
C	7A	0



Long-Term (Elevated Temperature) Test Apparatus





Elevated Temperature Life Testing Apparatus



Phase 2 Timeline (preliminary)

2004

- July Draft specification complete
- October Industry/partner input to draft specification complete
- November Specification finalized
- November RFP released



Phase 2 Timeline (preliminary)

2005

- January Proposals due
- March Proposal evaluations and short-term tests complete
- March Models selected for long-term testing
- December Long-term (6,000 hours) testing complete, winners announced

For More Information:

www.pnl.gov/cfldownlights/index.html