ENERGY STAR® for Residential Light Fixtures
Quality Efforts

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Sponsor: US EPA

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Project Team

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- US EPA
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Efforts

- Accelerated life testing (ALT) method for ballasts in ENERGY STAR residential light fixtures
- GU-24 product testing
- Photometric testing of ENERGY STAR residential light fixtures (not discussed here)
Accelerated Life Testing Method for Ballasts

• The goal of the project is to work with manufacturers to establish an ALT method for ballasts used in ENERGY STAR residential light fixtures
  – New spec requires the use of electronic ballasts
  – Needed a test to “weed out” poor performance products
Accelerated Life Testing Method for Ballasts

- Strawperson was developed by the LRC and presented to the industry at a round table held in May 2005
- Strawperson dealt with
  - Heat
  - Continuous operation + cycling
  - Voltage variation
- Question remained unanswered was:
  - How many cycles constitutes a meaningful ALT for ballasts in residential light fixtures?
Accelerated Life Testing Method for Ballasts

- The goal of the pilot study performed by the LRC was to estimate the number of cycles needed to constitute a meaningful accelerated life test (ALT) for ballasts used in residential light fixtures.
Accelerated Life Testing Method for Ballasts

- **Pilot Study**
  - Tested 5 ballast samples from 4 manufacturers
  - 2 temperatures (60°C and 80°C)
  - 2 voltages (108V and 132V)
  - Continuous operation for 8 hours
    - At the end of each hour, apply 15 cycles of 20-sec on/20-sec off, totaling 240 cycles for each day of operation
    - Number of cycles varied from 240 to 2880
  - Measured electrical parameters every other cycle
    - Power factor, current crest factor, lamp current and input power should not vary by more than 10%
Accelerated Life Testing Method for Ballasts

• Next steps
  – Present results of the pilot test to participants of the round table on March 16, 2006
  – Review strawperson based on the input from participants of the call
  – Recommend ALT method to EPA
GU-24 Socket Ballast Testing

• Goal
  – Evaluate three models (10 samples each model) of GU-24 line voltage socket ballasts being used in ENERGY STAR residential lighting fixtures

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<th>Lamp Wattage</th>
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GU-24 Socket Ballast Testing

- **Testing parameters**
  - System (lamp and ballast) efficacy
  - Lumen maintenance (@ 1000-hr and @ 40% life)
  - CRI and CCT (@ 1000-hr and @ 40% life)
  - Others such as start time, ballast frequency, PF, and CCF

- **Current status**
  - Finished 100-hour seasoning
  - Upgrading and calibrating LRC sphere system
  - Will start sphere measurements by end of February
Thank you!

For more information

www.lrc.rpi.edu

(Lighting Transformations Program)