October 22, 2004

Line-voltage Socket Design Competition
Summary of Activities

Replaceable electronic ballasts for ENERGY STAR® residential lighting fixtures are becoming more popular due to increasing demand from utilities, builders, and other market actors, as well as the need to provide this convenience for consumers. Currently, there is no design standard for line-voltage sockets (i.e., what the replaceable ballast plugs into). The lack of a standard line-voltage socket, and thus a lack of a standard pin base on the replaceable ballasts, is a barrier to ballast interchangeability.

On June 24, 2004 a round table was held at the Lighting Research Center (LRC) in Troy, NY. The purpose of the round table was to bring together fixture and ballast manufacturers to discuss and determine a standard pin-base configuration and identify next steps. The participants of the round table agreed to organize a design competition to select one standard line-voltage socket and ballast holder, which would accept replaceable ballasts from different manufacturers within a category of luminaires. The following members were selected to participate in the evaluation committee:

1. Mariana Figueiro, Lighting Research Center – Chair
2. Terry McGowan — (American Lighting Association)
3. Ron Bezdon (Super X)
4. Greg Murphy (Maxlite)
5. Rebecca Foster (Consortium for Energy Efficiency)
6. Andres Duljas (Seagull Lighting)
7. Jeff McCullough (Pacific Northwest National Laboratory)

The LRC, in conjunction with the American Lighting Association (ALA) and the Environmental Protection Agency (EPA) organized the design competition.

In August 2004, all the ENERGY STAR partner manufacturers and the evaluation committee were invited to submit comments on the competition evaluation criteria. All comments received were incorporated into the evaluation criteria, which is attached to this document. The call for entries was announced in August 2004. Intent to submit letter was due on August 27, 2004. Manufacturers were invited to compete with innovative line-voltage socket designs suitable for residential luminaires of 26 watts or less, including floor and table lamps, wall fixtures, chandeliers, and ceiling fans. As a condition of entry, the winning socket design must maintain an open protocol and be made available to the public after the competition without any royalties. Four manufacturers sent in the intent to submit letters. The competition submission period closed at the end of September and three manufacturers submitted design specifications and product samples. One manufacturer dropped out of the competition.

On October 20, 2004, the evaluation committee members and a representative from EPA participated in a conference call to review the entries. All the materials submitted by the
entrants were sent out to the committee members ahead of time, so they could evaluate the entries before the conference call was held. The materials were numbered and entrants’ names were not revealed. An evaluation form was also sent out to the evaluation committee members, so they could rate each of the technical requirements listed in the evaluation criteria form received by the entrants. The ratings ranged from 1 to 5 (1 = not acceptable; 2 = acceptable; 3 = good; 4 = very good; 5 = excellent). The EPA representative did not participate in the evaluation process. The ratings given by each committee members were compiled and added by the Chair. The recommended design was the one with the highest overall ratings.

**Final Recommendation by the Evaluation Committee**

The overall ratings for the 3 entries were as follows:

- **LVS 1** (TCP Lighting) – 120 points
- **LVS 2 (Viva Lighting)** – **172 points**
- **LVS 3** (Rhine) – 157 points

The highest overall rating was given to the socket design submitted by Viva Lighting.

**Next Steps**

The chair of the committee wrote a letter to inform the entrants and the ENERGY STAR manufacturers about the results of the competition. The evaluation committee recommended that EPA adopts the socket design submitted by Viva Lighting in their ENERGY STAR residential light fixtures “spec.” The evaluation committee, represented by Terry McGowan, will also recommend that ALA promotes the adoption of this socket design among ALA members. It is expected that the EPA will be working with Viva Lighting to develop more detailed socket design specification drawings, which will eventually be incorporated into the ENERGY STAR residential fixture “spec.” EPA and LRC will continue to work with various manufacturers to try to expand the number of manufacturers interested in manufacturing the recommended design.