

Usage Patterns and Consumer Preferences Regarding Compact Fluorescent and Halogen Torchieres

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Torchiere lighting fixtures have received considerable attention as being highly energy intensive and a potential safety hazard due to the high operating temperature of halogen lamps. Torchieres equipped with compact fluorescent lamps utilizing 50-80 Watts appear to have significant energy savings potential as an alternative to torchieres equipped with 300- or 500-Watt halogen lamps. Achievable savings are, however, affected both by duration and intensity of operation, as most halogen torchieres are equipped with dimmers. There is little documented evidence of the energy actually consumed by torchieres in operation.

To improve estimates of the energy savings potential, Lawrence Berkeley National Laboratory (LBNL) and the Sacramento Municipal Utility District (SMUD) conducted a monitoring project involving 60 households in the SMUD service area. SMUD obtained a random sample, screening to assure that the consumer used at least one halogen torchiere but had not yet purchased a fluorescent torchiere. This requirement related to the second objective of the study: obtaining consumer evaluations of various attributes of halogen and fluorescent torchieres. To obtain the most meaningful data about consumer acceptance of fluorescents as a substitute for halogens, the strategy was to include only consumers who had not yet been persuaded to buy a fluorescent model.

The experimental design required six visits to each home. At the first visit, researchers verified the number of halogen torchieres in the home and installed a compact, unobtrusive data logger on each torchiere to record the kW load. The loggers were able to store 28 days of 5-minute interval data. After an initial monitoring period of about 4 weeks, the researchers returned to retrieve the load data for the halogens and to deliver the first of 4 different fluorescent models. The researchers installed the fluorescent model in the position of the halogen model most frequently used. Project participants agreed to store their halogen models away for the duration of the study.

At this second visit, and each subsequent visit, the researchers interviewed the participants about their likes and dislikes regarding their own halogen model and each of the 4 fluorescent models, utilizing a standard battery of questions. Participants rated each torchiere on a 0-4 scale regarding several attributes: the amount of light, the color of the light, controllability, quickness of startup, fixture appearance, and safety. The researchers returned at approximately 4-week intervals to retrieve the load data for each torchiere and to obtain the participants' evaluations of each model. At the final visit, the participants ranked the 5 torchieres in their order of preference. As an ultimate test of the acceptability of fluorescent models as a substitute for the halogens, the researchers asked the participants if they would be willing to trade their halogen for the fluorescent model of their choice. Each participant willing to trade received a brand new fluorescent torchiere in exchange for his/her halogen model. 45 of the 57 households that completed the project were willing to trade.

Monitoring data determined that the halogen torchieres averaged 237 watts when operating, while the fluorescents averaged 43 watts. For the vast majority of participants who found the fluorescent torchieres acceptable substitutes for their halogen models, this 82% reduction in energy use matches exactly the reduction that would be estimated from replacing a halogen torchiere rated at 300 watts with a fluorescent rated at 55 watts, the most typical fluorescent model.