

ABSTRACT (ACEEE 2014)

Consumer frustration threshold for compliance to energy efficiency solutions and policies
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In order to reduce idle energy consumption for consumer electronics and appliances, the majority of energy efficient solutions and technologies require various degrees of consumer trade-off with respect to delayed services. For example, an energy efficient television set-top box may require prolonged wake-up time from its sleep mode. Consumers' long term compliance to energy efficient technologies relies significantly on their tolerance level to the inconvenience. The objective of the present study ascertains "the consumer frustration threshold", defined as the duration of delay a consumer is able to comply before experiencing negative perceptions regarding the service. In a simulated living room environment, consumer behavior sensors, such as an IR remote sensor, were employed to measure participant reactivity patterns as they were induced to wait a randomized range of time, before a television program is displayed. These situations were constructed to mimic what the subjects may perceive with energy saving modes for the television and/or the set-top box. Initially, volunteers from the faculty and student body of University of California, Irvine (UCI) were invited to participate in this study. Preliminary results have shown that the average frustration threshold approximates 15 seconds. Further discussions include the non-linear development of participant reactivity patterns. Understanding the limit of consumer tolerance quantitatively can help electronics design engineer and manufacturers to optimize efficiency solutions to encourage long-term compliance.