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Title: Energy-Saving Tweaks: The Sequel - How Long Do They Persist?

Abstract: A smart thermostat, a setpoint adjustment algorithm, and an evaluator walk into a bar. The algorithm gives the thermostat a makeover, the evaluator leans over and says "yeah it looks good now, but how long will it last?" This study presents evaluation findings for Nest's Seasonal Savings program to determine the effects of running thermostats optimization programs for multiple years. For multiple years, National Grid and Commonwealth Edison have partnered with Nest to offer Seasonal Savings, a program in which energy savings are derived from making small tweaks to setpoint schedules at the beginning of the cooling or heating season for residential customers who already have a Nest thermostat. Results from the first year program evaluations confirmed the technical feasibility of the solution and the success of the program in generating small (but statistically significant) energy savings per device (approximately 2-5% of the cooling load). This led to considerable total savings when summed across the approximately 150,000 thermostats in the evaluations. However, given the relative infancy of these programs, many questions remain. This presentation focuses on the results of the second year evaluations (with a robust sample of over 150,000 thermostats from both utilities) which sought to determine 1) how long the initial savings last, 2) whether customers leave the setpoint adjustments or return to their original setpoint schedules the summer after adjustments are made, 3) the number of customers who opt-in two years in a row, and 4) whether there are incremental savings from a second set of adjustments. Results show that 1) the initial savings persist into a second summer with some decay even when customers do not reenroll in the program, 2) customers stick with the adjusted setpoints, 3) customers tend to opt into the program at similar rates during the second, consecutive summer (approximately two-thirds opt in), and 4) customers who re-enroll achieve incremental savings (of approximately 2%) during the second summer. These results suggest thermostat optimization programs have the potential to deliver lasting savings when offered just one time and to build savings year-over-year when offered multiple times.