

Statistical Analysis of Laundry Time Use and Energy Demand in US Residential Housing

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ABSTRACT

Households often have relatively large electrical loads that typically run only for relatively short periods and make a disproportionate contribution to peak demand than overall electricity consumption. Although appliances such as clothes washers and dryers have a medium impact on peak demand periods compare to HVAC and lighting, they have potentially flexible duty cycles and can be scheduled to operate outside of peak periods, shifting away electricity loads from peak hours. This study aims to determine laundry activities' contribution to electricity demand peak hours as well as to investigate the potentials through shifting cycles to off-peak hours in laundry appliances. This study uses ATUS and RECS datasets to analyze laundry activity time duration and laundry electricity consumption, respectively. The results illustrated an average of 23% of the time used for laundry activity during demand peak hours, which is equal to 1.6% of the total electricity used in an average US house.