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Title: NEBs / NEIs – What Measures Matter? What Measures Deliver the Most NEBs? Getting Past Program-wide NEBs to Uncover What Households Value Most

Abstract: Non-energy benefits or impacts (NEBs / NEIs) are the positive and negative effects beyond energy savings that are experienced in conjunction with energy efficiency programs. Serious analysis and quantification of NEBs has been around for more than 20 years. There are now well more than 300 studies estimating NEBs values from around the US and internationally. These results cover hundreds of programs, and include thousands of survey results. However, on the residential side, most NEB studies are conducted "program wide". While this tells us which programs deliver a lot of "comfort", or water savings, etc., the studies have used only crude methods to attribute these NEBs to the underlying program measures, so programs can't estimate the tradeoffs – in the NEBs or the resulting impacts on program benefit-cost analyses – from changing out measures. In this research, we used regression analysis of customer survey data to conduct a defensible attribution of NEBs/NEIs from residential programs to the specific measures offered by the program. We present the results applied to real programs and present the NEBs values by NEB category and by measure. The presentation identifies those measures leading to high NEBs, and identifies where the bulk of their NEB value is the participant, societal, or utility perspective, and the major contributors to that result. We identify the implications for program design, scenario analysis, benefit-cost analysis, and other applications. Our approach provides a defensible approach for attributing NEBs to measures, but we also prioritize gaps and next steps needed for best practices in developing measure-based NEBs/ NEIs going forward.