

Supporting Information

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Additional Tables

Table S1 details all household variables obtained from utility company and 2010 Census data.

Electricity Consumption. Table S2 provides results for the following models (S1, S2, and S3), using ordinary least-squares (OLS) analyses, with robust SEs clustered by household.

$$y_{it} = \alpha + \beta_1 \cdot X_{it} + \beta_2 \cdot Y_{it} + \beta_3 \cdot Z_{it} + \gamma \cdot \text{treatment_group}_i + \delta_1 \cdot \text{treatment_period}_t + \delta_2 \cdot \text{first-month-after_period}_t + \delta_3 \cdot \text{second-month-after_period}_t + e_{it} \quad [\text{S1}]$$

$$y_{it} = \alpha + \beta_1 \cdot X_{it} + \beta_2 \cdot Y_{it} + \beta_3 \cdot Z_{it} + \gamma \cdot \text{treatment_group}_i + \delta_1 \cdot \text{treatment_period}_t + \delta_2 \cdot \text{first-month-after_period}_t + \delta_3 \cdot \text{second-month-after_period}_t + \lambda_1 \cdot CDD_{it} + \lambda_2 \cdot HDD_{it} + e_{it} \quad [\text{S2}]$$

$$y_{it} = \alpha + \beta_1 \cdot X_{it} + \beta_2 \cdot Y_{it} + \beta_3 \cdot Z_{it} + \gamma \cdot \text{treatment_group}_i + \delta_1 \cdot \text{treatment_period}_t + \delta_2 \cdot \text{first-month-after_period}_t + \delta_3 \cdot \text{second-month-after_period}_t + \lambda_1 \cdot CDD_{it} + \lambda_2 \cdot HDD_{it} + \eta_i + e_{it} \quad [\text{S3}]$$

where:

y_{it} : log of the average daily electricity consumption for household i in month (billing period) t .

X_{it} : the fraction of days in the treatment period for month t for households in the treatment group and 0 for households in the control group.

Y_{it} : the fraction of days in the first month after the intervention ended for month t for households in the treatment group and 0 for households in the control group.

Z_{it} : the fraction of days in the second month after the intervention ended for month t for households in the treatment group and 0 for households in the control group.

treatment_group_i : whether household i is in the treatment (=1) or control group (= 0).

$\text{treatment_period}_t$: the fraction of days in the treatment period included in the monthly electricity use for t .

$\text{first-month-after_period}_t$: the fraction of days in the month after the intervention ended included in the monthly electricity use for t .

$\text{second-month-after_period}_t$: the fraction of days in the second month after the intervention ended included in the monthly electricity use for t .

CDD_{it} : cooling degree days for month t , using the weather station closest to household i .

HDD_{it} : heating degree days for month t , using the weather station closest to household i .

η_i : household's characteristics (e.g., household size or electric heating). Table S2 gives results for each characteristic. For the rest of the tables, as in the manuscript, we indicate that household characteristics have been included.

e_{it} : error term.

Table S3 applies model S3 using 3 and 4 y of data. Doing so increases the number of observations per household while reducing the number of households captured (e.g., as consumers move). All participants had electricity consumption data for the 2 y before the study, 97.2% for 3 y, and 87.9% for 4 y. As seen, the treatment and posttreatment effects are very similar with all three periods. We also conducted a model using 4 y of electricity usage, and excluding winter data. Treatment effect was a 2.6% reduction ($\beta_1 = -0.026$, $P = 0.02$).

Table S4 shows analyses with a specification using a household-level standard fixed-effect estimator, capturing all time-invariant household characteristics (which were partially represented using Census information). Results are very similar to the ones already presented, with savings owing to the treatment of 2.5%.

Table S5 uses the previous model to examine the heterogeneity of the treatment effect. It finds that the treatment effect was larger for smaller households and those with higher income, although the latter effect moderates with household income above \$130,000.

Survey. Treatment group respondents remembered having received more postcards when they had lived in their homes longer [$r(222) = 0.16$, $P = 0.03$] and when they lived with fewer people [$r(226) = -0.15$, $P = 0.02$].

Table S6 indicates respondents' and nonrespondents' characteristics. Table S7 details all questions included in the survey. Tables S8 and S9 detail the energy-saving actions performed by respondents who reported reducing their electricity use during the study. The actions that they reported performing were mainly related to not wasting electricity with unused appliances. A smaller fraction reported actions related to air conditioning. Table S10 shows the relationship of actual use with survey questions, based on the 136 respondents who answered all survey questions among 162 who reported remembering at least one postcard.

Table S4. OLS regressions and average treatment using a household-level standard fixed-effect estimator

DV: ln(kW-h/d)	Model S7		
	Coefficient	SE	t
Treatment effect	-0.025**	0.012	-2.099
First-month-after effect	-0.006	0.01	-0.639
Second-month-after effect	-0.007	0.008	-0.823
Treatment period	-0.039***	0.007	-5.352
First-month-after period	0.037***	0.006	6.079
Second-month-after period	-0.029***	0.006	-5.116
Cooling degree days	0.057***	0.001	112.189
Heating degree days	0.015***	<0.001	60.557
Constant	2.891***	0.004	731.462
Household-level fixed effects		Yes	
R ²		0.090	
No. of households		5,598	
No. of observations		124,578	

Dependent variable (DV) is the log of household average daily electricity use. *P < 0.10, **P < 0.05, ***P < 0.01.

Table S5. OLS regressions and average treatment effects by household characteristics

DV: ln(kW-h/d)	Model S8		
	Coefficient	SE	t
Treatment effect × household size	0.050356**	0.022	2.263
Treatment effect × income	-0.004338**	0.002	-2.200
Treatment effect × income ²	0.000016*	<0.001	1.943
Treatment effect	0.083472	0.120	0.697
Treatment period × household size	-0.025902*	0.016	-1.600
Treatment period × income	0.005898***	0.001	4.215
Treatment period × income ²	-0.000028***	<0.001	-4.700
Treatment period	-0.237678***	0.083	-2.800
Cooling degree days	0.057134***	<0.001	110.000
Heating degree days	0.015243***	<0.001	60.000
Constant	2.887660***	0.004	710.000
Household-level fixed effects		Yes	
R ²		0.089	
No. of households		5,598	
No. of observations		113,624	

Dependent variable is the log of household average daily electricity use. *P < 0.10, **P < 0.05, ***P < 0.01.

Table S6. Survey respondent and nonrespondent characteristics

Characteristics	Respondent mean	Nonrespondent mean	t	P value
Household size*	2.8	2.8	-1.13	0.26
% households renting*	14.4	13.8	-0.56	0.58
% households with electric heating [†]	32.1	33.3	1.09	0.27
No. of rooms [†]	6.5	6.5	-0.53	0.60
Household income (in thousands of dollars) [†]	106.0	101.6	-2.17	0.03
% households with low payment history [‡]	6.8	12.7	3.38	0.00
% households with low income subsidy [‡]	1.8	1.7	-0.13	0.89
% Whites*	51.7	47.0	-2.84	0.00
% Blacks*	25.4	31.4	3.28	0.00
% Asians*	14.0	13.2	-0.98	0.33
% Hispanics*	12.1	11.6	-0.82	0.41
Summer 2010 electricity use, [‡] kW-h/d	42.3	41.8	-0.47	0.64
Fall 2010 electricity use, [‡] kW-h/d	28.4	28.7	0.34	0.74
Winter 2011 electricity use, [‡] kW-h/d	39.6	41.6	1.10	0.27
Spring 2011 electricity use, [‡] kW-h/d	29.7	30.0	0.29	0.77

*Source: 2010 Census data (block-level information).

[†]Source: 2010 Census data (tract-level information).

[‡]Source: data provided by utility company (household-level information).

Table S7. Survey questions

Question
Study ID (previously inserted)
What is your sex?
What is your age?
Who is primarily responsible for paying your monthly electricity bill? (I am, Another adult (spouse, roommate, family member, etc.), My landlord, Other)
How do you receive your monthly bill? (Online—I log in to view it, In the mail—I receive a paper bill, I don't get one—an automatic payment is deducted from my bank account, Other)
Who generally picks up the mail at your home? (I do, Another adult (spouse, roommate, family member, etc.), Other)
How many people live in your home?
How long have you lived in your current home?
How many of these postcards do you remember having seen? [a picture of a postcard was inserted next to this question]*
If you did not see all five postcards, why do you think that happened? (I wasn't at home throughout the study (vacation, moving, living somewhere else, etc.), I might have thrown a postcard away without noticing it, Someone else might have picked up a postcard, Other)*
What do you think was the purpose of the Smart Electricity Study?*
Are you aware of having done anything different after receiving the postcards?*
Please tell us how much you agree with the following statements about the study. I think the study ... [1: Strongly disagree to 5: Strongly agree]*
Made me more aware of my electricity use
Made me reduce my electricity use
Made me learn more about what things use electricity in my home
Had no effect on me at all
How often did you do each of these things, during the month of the study? During the study ... [1: Much less than usual to 5: Much more than usual; 6: Doesn't apply]*
I turned off my air conditioner (AC)
I set my AC thermostat higher
I turned off lights when not in use
I turned off computers and TVs when not in use
I unplugged appliances when not in use
I used electrical devices less
I replaced incandescent light bulbs with CFLs
I bought an energy-efficient appliance
If you changed any other aspect of your electricity use during the month of the study, please describe the change.
Please indicate how often you do these things to save electricity, in general. In general, to save electricity ... [1: Never to 5: Always; 6: Doesn't apply]
I turned off my air conditioner (AC)
I set my AC thermostat higher
I turned off lights when not in use
I turned off computers and TVs when not in use
I unplugged appliances when not in use
I used electrical devices less
I replaced incandescent light bulbs with CFLs
I bought an energy-efficient appliance
I use an electricity tracking device (e.g., in-home display)
I insulate my home
If you do other actions to save electricity (not listed in the previous table), please describe them.
How much do you agree with the following statements? Compared with the average household in my city ... [1: Strongly disagree to 5: Strongly agree]
My household uses more electricity
My household has done more to reduce its electricity consumption
My household cares more about the environment
About how much was your last monthly electricity bill?
About how many kilowatt hours (kWhs) did you use on your last monthly bill?
At what temperature do you usually keep your AC thermostat in summer?
How many of each of these appliances do you have? Please write a number in each space. Several appliances were listed (e.g., Central air conditioner, TV, and dishwasher)
Do you have a smart meter in your home? (A smart meter sends your electricity use to the power company continuously, rather than just once a month). (Yes, No, I don't know)
How much do you agree with the following statements. Smart meters can ... [1: Strongly disagree to 5: Strongly agree]
Make electricity more expensive
Violate your privacy
Let the electric company control your electricity use
What is your current employment status? (Used full time, Used part time, Unemployed, Looking for work, Student, Homemaker, Retired)
What is the highest level of education that you have completed? (Less than high school, High school/GED, Some college, 2 y college degree (Associates) 4 y college degree (BA, BS), Masters, PhD, MD, JD, etc.)
What is your annual household income(\$)? (0–15k, 16k–30k, 31–50k, 51–75k, 76–100k, 101–125k, 126–150k, 151–175k, 176k+, Prefer not to answer)

Table S7. Cont.

Question

Would you describe yourself as: (American Indian/Native American, Black/African American, Asian, Hispanic/Latino, White/Caucasian, Other, Prefer not to answer)
 Do you consider yourself to be: (Democrat, Republican, Independent, Other, Prefer not to answer)

*Only households in the treatment group.

Table S8. Energy-saving actions reported by survey respondents

Action performed more than usual during the study	% of respondents
I turned off lights when not in use	69.6%
I turned off computers and TVs when not in use	60.4%
I turned off my air conditioner (AC)	45.8%
I unplugged appliances when not in use	45.8%
I replaced incandescent light bulbs with CFLs	43.5%
I set my AC thermostat higher	38.3%
I used electrical devices less	28.3%
I bought an energy-efficient appliance	26.1%

Only responders who reported taking actions in response to the study.

Table S9. Energy-saving actions reported by respondents who did and did not report reducing their use in response to the study and those in the control group

Action	Mean		
	Treatment: reported reduction (i)	Control (ii)	Treatment: didn't report reduction (iii)
I turned off my air conditioner (AC)*	3.13	2.81	2.96
I set my AC thermostat higher	3.43	3.52	3.31
I turned off lights when not in use	4.37	4.42	4.41
I turned off computers and TVs when not in use	4.24	4.13	4.09
I unplugged appliances when not in use**	3.23	2.66	2.67
I used electrical devices less***	3.25	2.64	2.25
I replaced incandescent light bulbs with CFLs	3.24	3.46	3.38
I bought an energy-efficient appliance	3.78	3.97	3.99
I insulate my home	3.38	3.73	3.65

Respondents used a scale anchored at 1 = "Never" and 5 = "Always." We also asked for the use of in-home displays (but only a very small number of respondents used (or know) these devices. There were no significant difference between (ii) and (iii), except for using electrical devices less. * $P < 0.10$, ** $P < 0.05$, *** $P < 0.01$, when comparing (i) vs. (ii).

Table S10. OLS regressions and average treatment effects, using survey questions

DV: ln(kW-h/d)	Coefficient (t statistic)				
	Remembered postcards	Perceived reduction	Model S9	Model S10	Model S11
Treatment effect	-0.026** (-2.051)	-0.026** (-2.051)	-0.026** (-2.051)	-0.026** (-2.051)	-0.026** (-2.051)
Treatment group (=1; 0 if not)	0.007 (0.473)	0.007 (0.473)	0.007 (0.472)	0.007 (0.472)	0.007 (0.472)
Treatment period	-0.042*** (-5.219)	-0.042*** (-5.221)	-0.042*** (-5.230)	-0.042*** (-5.231)	-0.042*** (-5.231)
Effect of remembering at least one postcard	0.104 (1.166)	—	—	—	—
Effect of perceived electricity reduction caused by the study (1 = "Strongly disagree" to 5 = "Strongly agree")	—	-0.029 (-0.879)	—	—	—
Effect of doing (reported) more than neighbors to save electricity (1 = "Strongly disagree" to 5 = "Strongly agree")	—	—	0.005 (0.071)	0.009 (0.132)	-0.004 (-0.062)
Effect of concern (reported) about being observed with new metering devices (1 = "Strongly disagree" to 5 = "Strongly agree")	—	—	0.037 (0.679)	0.035 (0.637)	0.030 (0.542)
Effect of interpreting the study's purpose to save, learn, or be more aware about electricity (= 1; 0 if not)	—	—	—	-0.025 (-0.294)	-0.039 (-0.463)
Effect of becoming more aware of their electricity use because of the study (1 = "Strongly disagree" to 5 = "Strongly agree")	—	—	—	—	0.035 (0.916)
Cooling degree days	0.056*** (107.665)	0.056*** (107.665)	0.056*** (107.604)	0.056*** (107.608)	0.056*** (107.607)
Heating degree days	0.014*** (54.991)	0.014*** (54.994)	0.014*** (54.977)	0.014*** (54.98)	0.014*** (54.98)
Constant	1.438*** (26.434)	1.438*** (26.433)	1.437*** (26.421)	1.437*** (26.422)	1.437*** (26.422)
Control for answering survey (and interactions with group and period)	Yes	Yes	Yes	Yes	Yes
Control for answering survey question (and interactions with group and period)	Yes	Yes	Yes	Yes	Yes
Household characteristics	Yes	Yes	Yes	Yes	Yes
Adjusted R ²	0.220	0.220	0.221	0.221	0.221
No. of households	5,598	5,598	5,598	5,598	5,598
No. of observations	113,624	113,624	113,624	113,624	113,624

Note that 136 respondents answered all survey questions, among 162 who reported remembering at least one postcard. Dependent variable (DV) is the log of household average daily electricity use. **P* < 0.10, ***P* < 0.05, ****P* < 0.01.