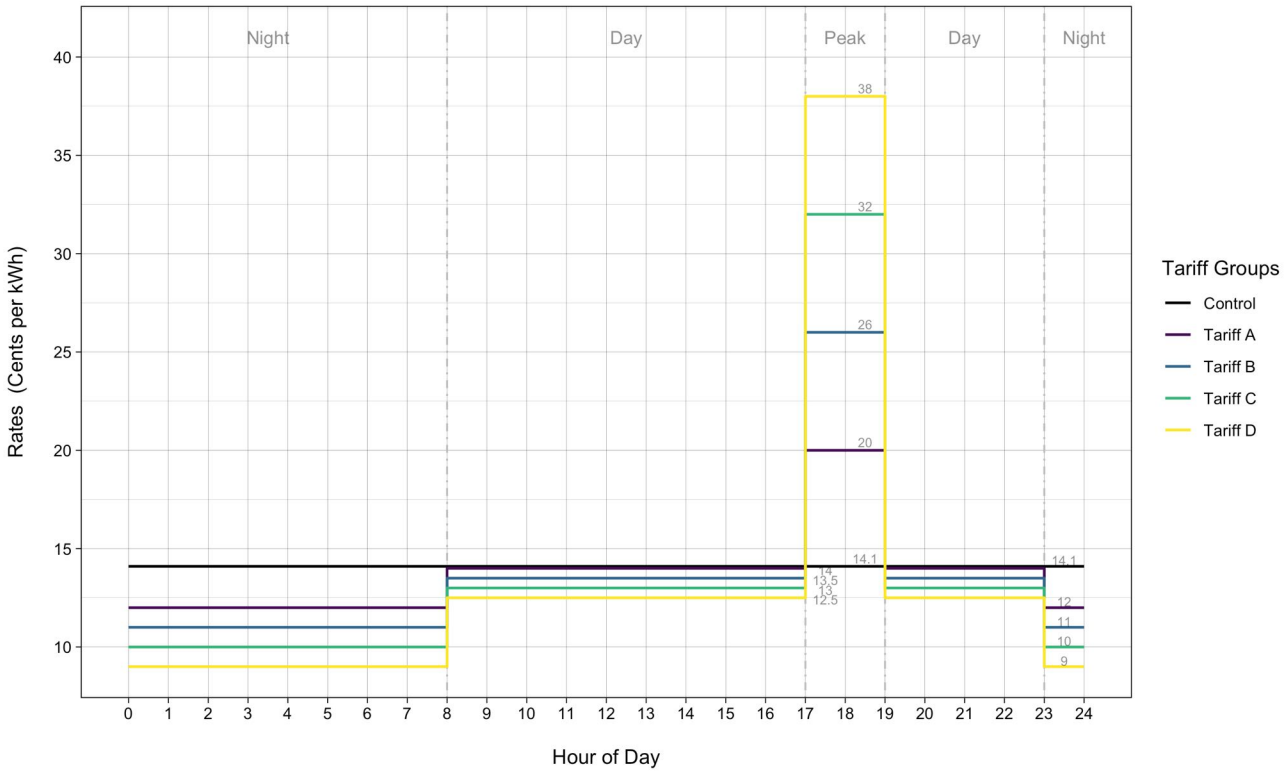

Figure 1: Time-Of-Use Pricing Structures

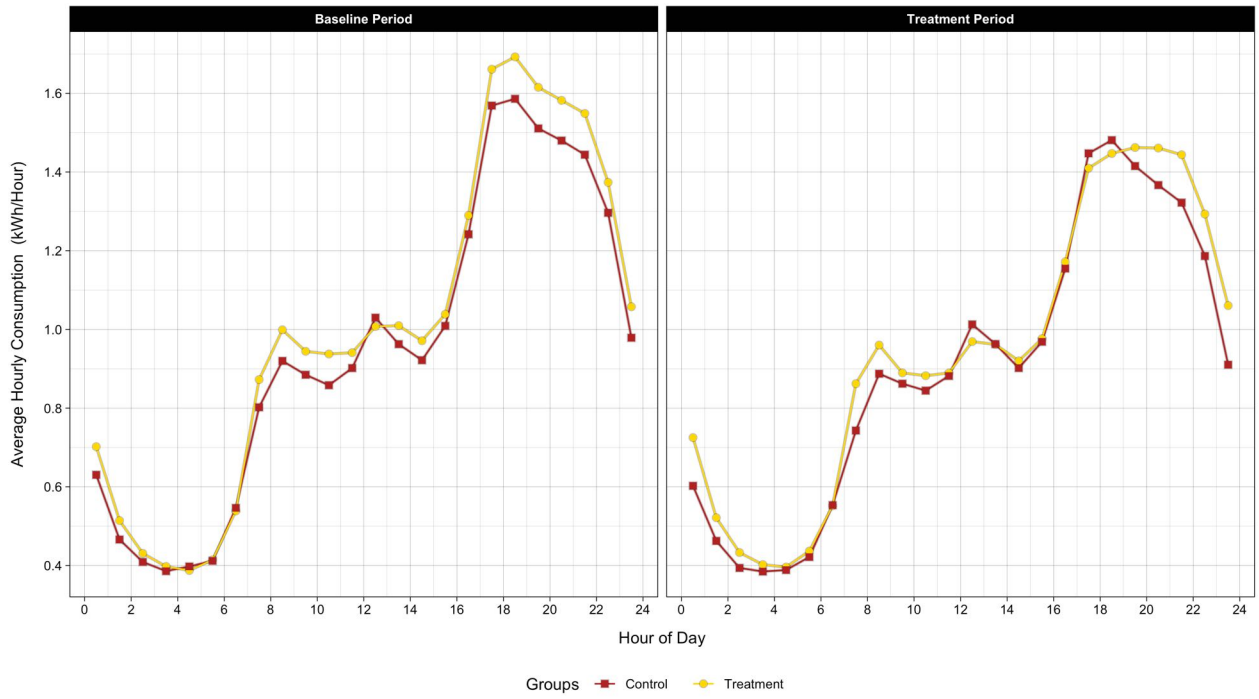

Figure 2: Average Hourly Electricity Consumption by Time of Day

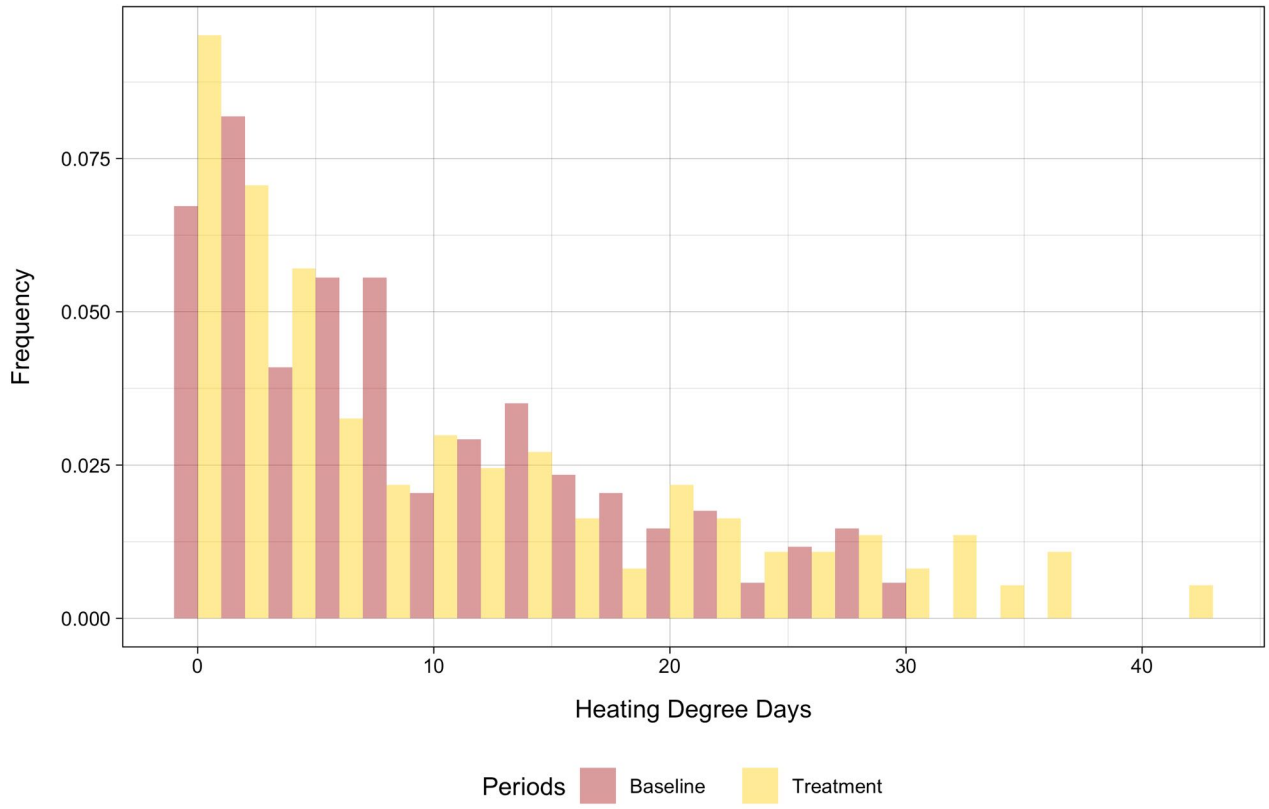

Figure 3: Distribution of Heating Degree Days during the Experiment Period

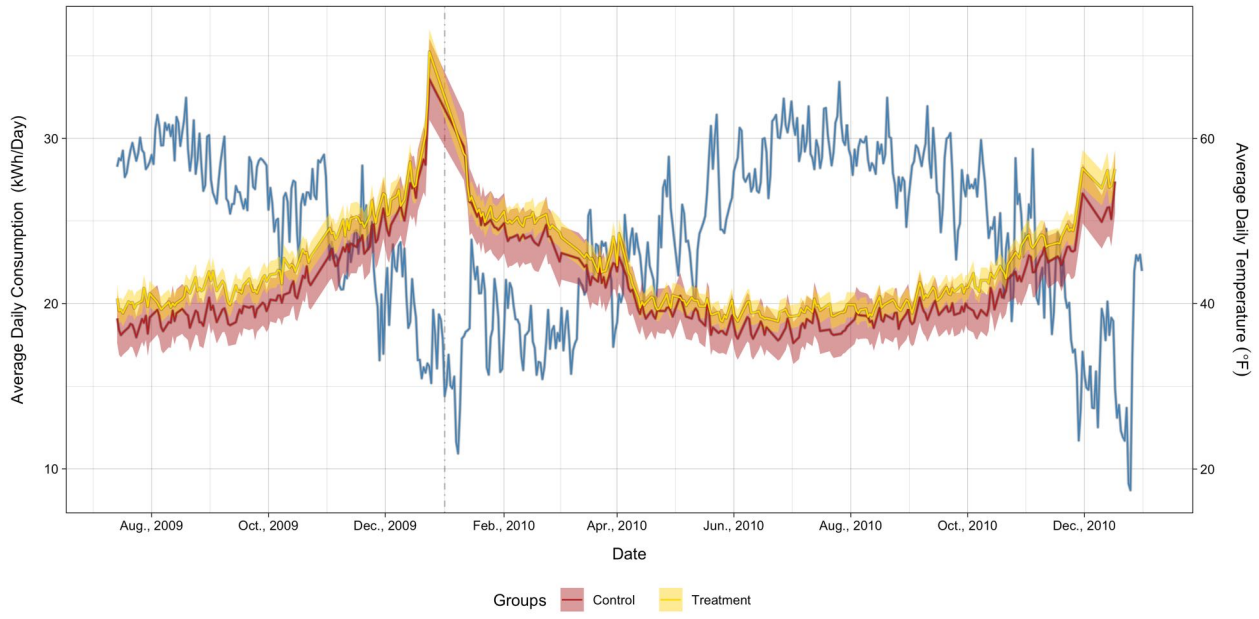

Figure 4: Average Daily Electricity Consumption

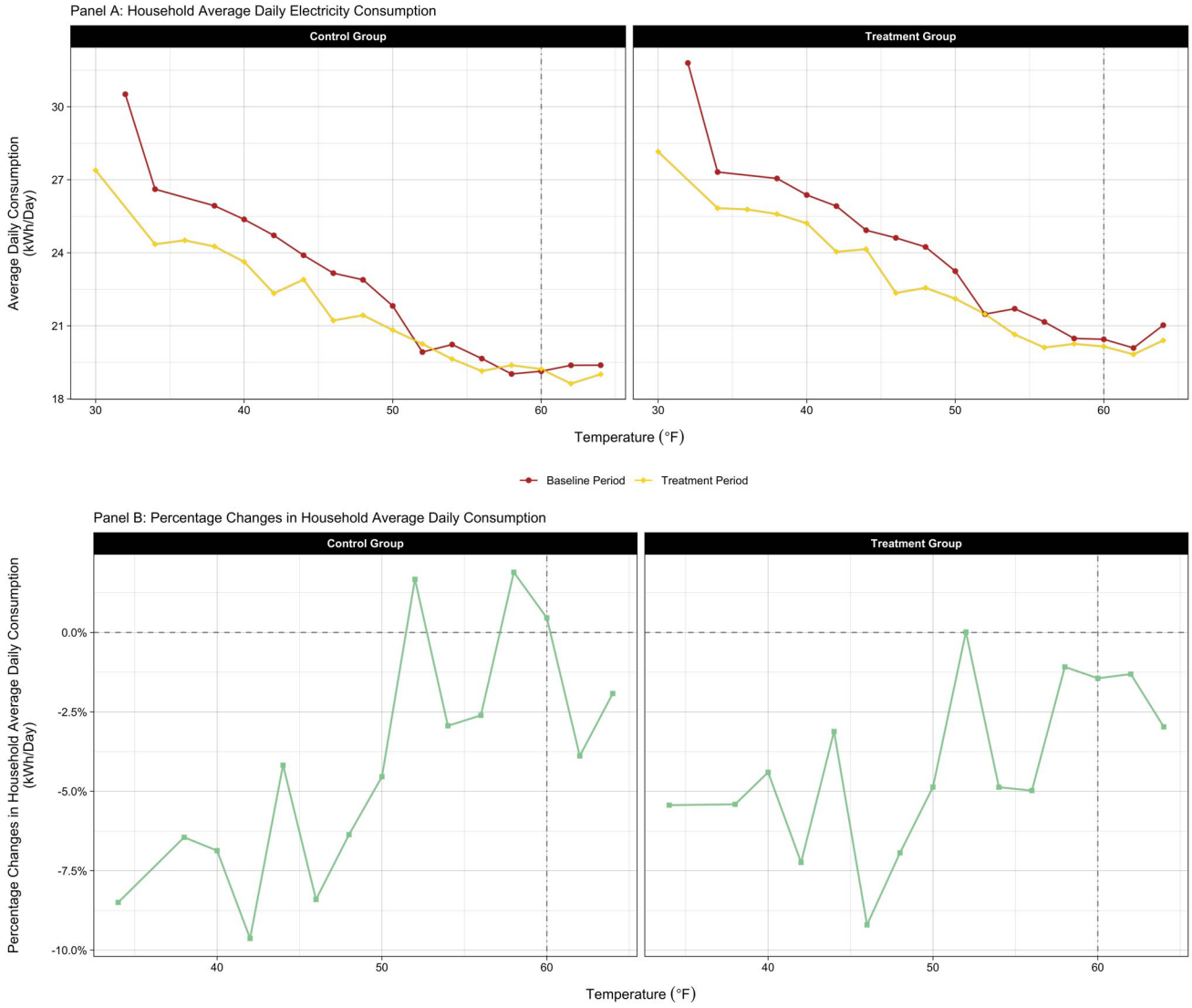

Figure 5: Pre- and Post-Treatment Household Average Daily Electricity Consumption

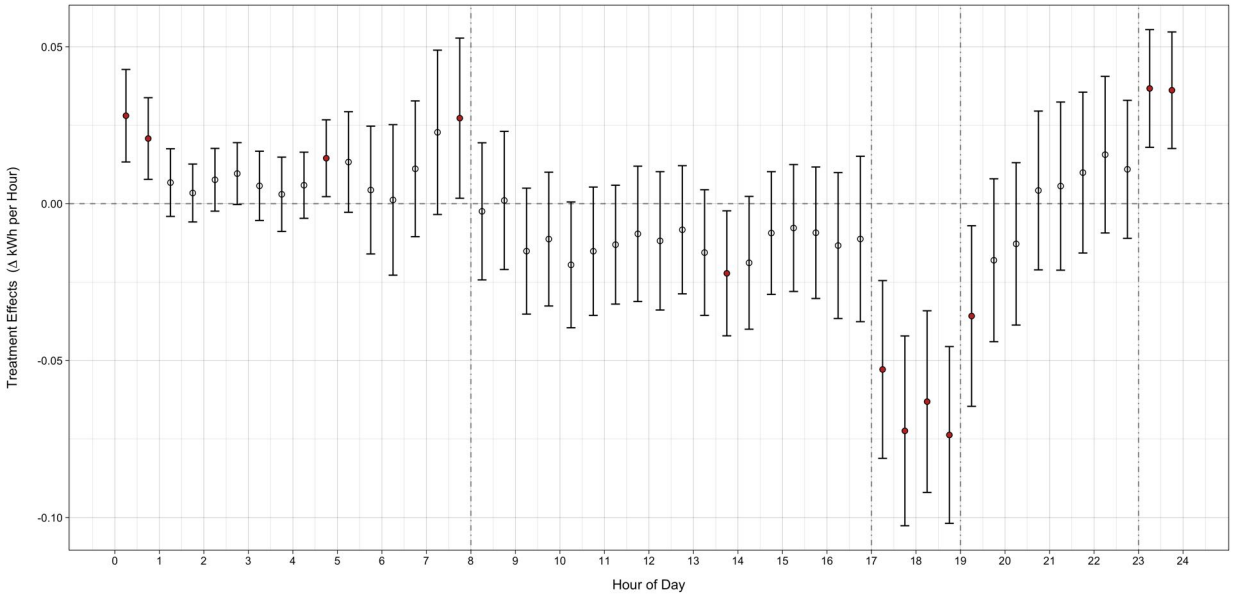

Figure 6: Half-Hourly Average Treatment Effects

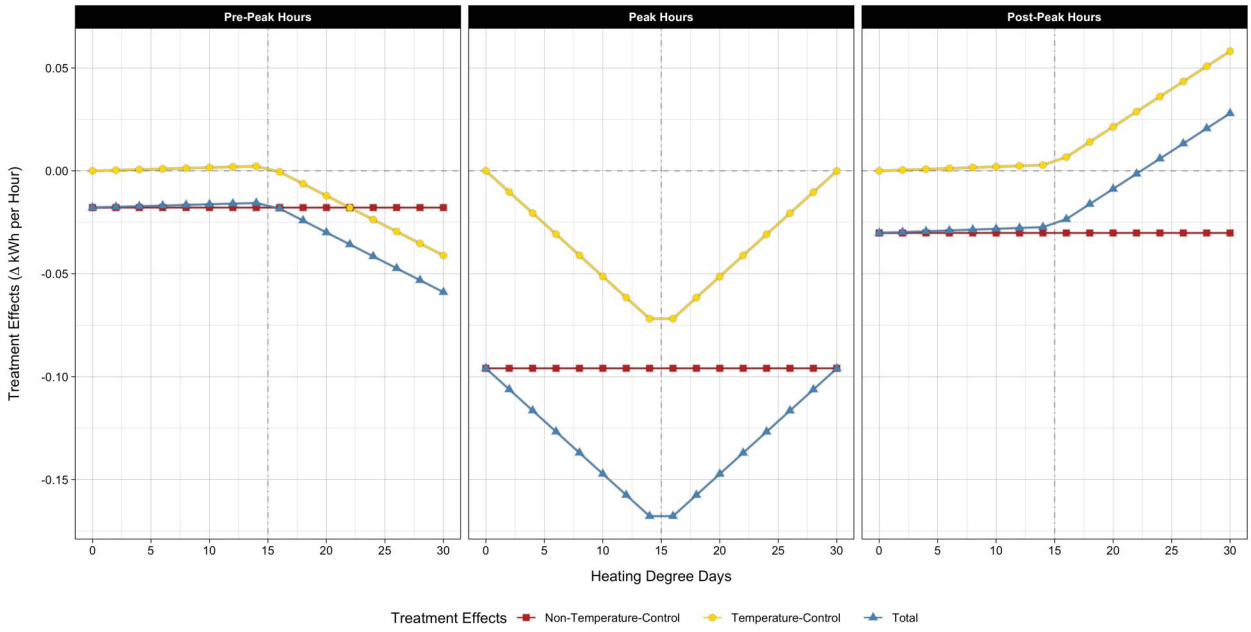

Figure 7: Breakdown of Hourly Average Treatment Effects

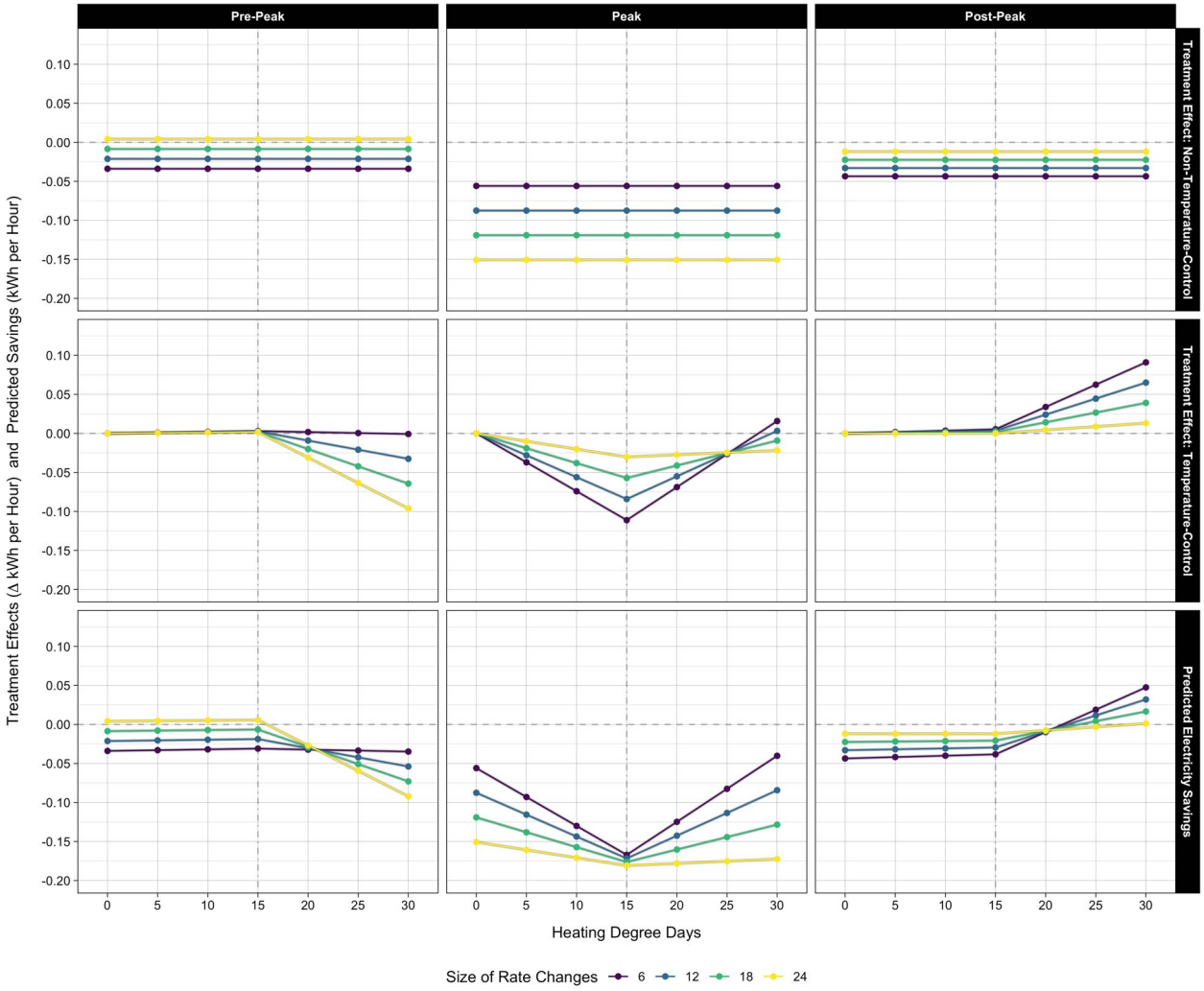

Figure 8: Treatment Effects and Predicted Savings as a Linear Function of Peak-hour Price Changes

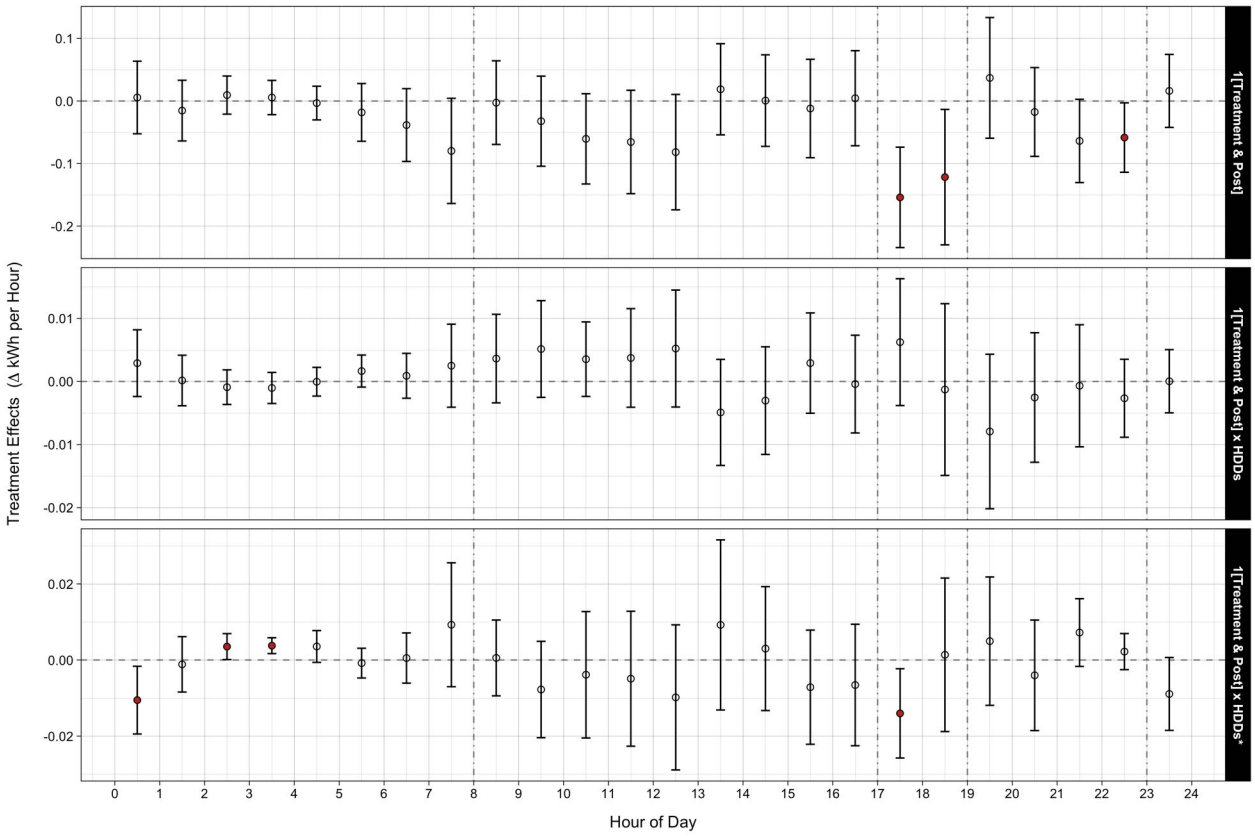

Figure 9: Relative Comparison of Tariff Group D to Tariff Group A

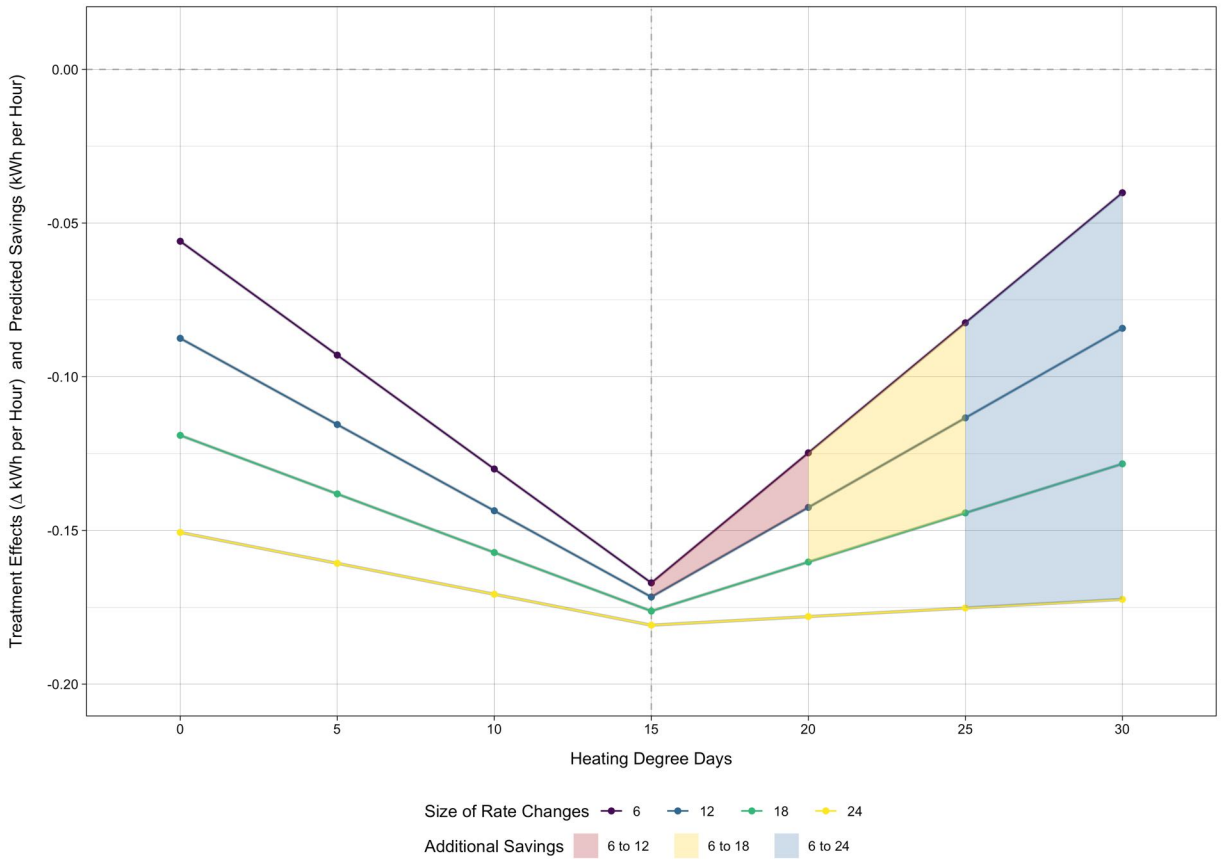

Figure 10: Additional Savings from an Alternative Electricity Pricing Scheme

Table 1: Treatment and Control Group Assignments

Stimuli	Tariffs					Total
	A	B	C	D	Control	
Monthly Bill	0	79	37	89	28	233
Bi-Monthly Bill	0	81	34	76	34	225
Bi-Monthly Bill + IHD	0	79	22	86	30	217
Bi-Monthly Bill + OLR	0	90	27	84	34	235
Control	260	0	0	0	0	260
Total	260	329	120	335	126	1,170

Table 2: Summary Statistics and Differences in Means

	Control		Treatment		Difference		
	Mean	(S.E.)	Mean	(S.E.)	Mean	(S.E.)	p-value
Electricity Consumption during Baseline Period (kWh)							
Daily	22.122	(0.674)	23.529	(0.379)	1.407	(0.773)	0.069
Hourly	0.939	(0.028)	0.996	(0.016)	0.057	(0.032)	0.074
Hourly, Night Rate	0.524	(0.018)	0.560	(0.010)	0.035	(0.021)	0.088
Hourly, Day Rate	1.128	(0.034)	1.193	(0.019)	0.065	(0.039)	0.095
Hourly, Peak Rate	1.537	(0.053)	1.642	(0.029)	0.105	(0.060)	0.080
Demographics							
Age Group: 65+?	0.277	(0.028)	0.225	(0.014)	-0.052	(0.031)	0.096
Education: Third Level+?	0.265	(0.027)	0.344	(0.016)	0.078	(0.032)	0.014
Employed?	0.488	(0.031)	0.596	(0.016)	0.108	(0.035)	0.002
Number of People over 15 in Home	2.488	(0.061)	2.506	(0.032)	0.019	(0.077)	0.808
Number of People under 15 in Home	1.754	(0.060)	1.964	(0.035)	0.210	(0.138)	0.132
Housing Characteristics							
Owned House?	0.904	(0.018)	0.932	(0.008)	0.028	(0.020)	0.165
Number of Bedrooms	3.335	(0.054)	3.465	(0.028)	0.130	(0.061)	0.035
Timer for Space Heating	0.792	(0.025)	0.802	(0.013)	0.010	(0.028)	0.728

Note: The variable descriptions with question mark suggest that these variables are binary.

Table 3: Correlations in Average Daily Temperatures between Weather Stations

Stations	Correlation Coefficients	
	For Sample Period	For Experiment Period
Ballyhaise	0.98291	0.98244
Belmullet	0.96089	0.96361
Cork Airport	0.97121	0.97130
Gurteen	0.98389	0.98307
Johnstown	0.98189	0.97958
Mace	0.95870	0.95921
Malin	0.95632	0.95705
Markree Castle	0.97194	0.97179
Moore Park	0.98057	0.97798
Mount Dillon	0.97945	0.97782
Mullingar	0.98876	0.98654
Newport Furnace	0.97015	0.97211
Oak Park	0.99074	0.98925
Shannon Airport	0.97696	0.97582
Sherkin Island	0.95342	0.95411

Note: For each weather station, historical weather data from the weather station at Dublin airport is utilized to compute the two correlation coefficients. I do not provide the p-value of each correlation coefficient because it is arbitrarly small in magnitude. And the experiment period is the period between July 2009 to December 2010, while the sample period is the second half of 2009 and 2010.

Table 4: Hourly Average Treatment Effects in and near the Peak Rate Period

	Hourly Electricity Consumption (kWh/Hour)														
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)
𝟙[Treatment & Post]	−0.048***	−0.053*	−0.002	−0.049	−0.032***	−0.125***	−0.161***	−0.119***	−0.249***	−0.143***	−0.082***	−0.055*	−0.015	−0.113**	−0.058***
	(0.016)	(0.027)	(0.017)	(0.031)	(0.011)	(0.020)	(0.036)	(0.022)	(0.044)	(0.015)	(0.020)	(0.030)	(0.021)	(0.048)	(0.015)
Description of Interval	Pre-Peak	Pre-Peak	Pre-Peak	Pre-Peak	Pre-Peak	Peak	Peak	Peak	Peak	Peak	Post-Peak	Post-Peak	Post-Peak	Post-Peak	Post-Peak
Interval of Hours	15 to 16	15 to 16	15 to 16	15 to 16	15 to 16	17 to 18	17 to 18	17 to 18	17 to 18	17 to 18	19 to 20	19 to 20	19 to 20	19 to 20	19 to 20
Tariff Group	A	B	C	D	All	A	B	C	D	All	A	B	C	D	All
FEs: Household by Half-Hourly Time Window	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FEs: Day of Week by Half-Hourly Time Window	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
FEs: Month of Year	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	506,540	326,800	511,700	331,960	1,006,200	506,540	326,800	511,700	331,960	1,006,200	506,540	326,800	511,700	331,960	1,006,200
Adjusted R^2	0.312	0.330	0.320	0.327	0.308	0.384	0.397	0.383	0.367	0.379	0.371	0.389	0.376	0.361	0.372

Note: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 5: Breakdown of Hourly Average Treatment Effects

	Hourly Electricity Consumption (kWh/Hour)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
$\mathbb{1}$[Treatment & Post]	−0.018	−0.096***	−0.030	−0.056**	−0.128***	−0.086***	−0.194***
	(0.020)	(0.024)	(0.024)	(0.028)	(0.038)	(0.031)	(0.040)
$\mathbb{1}$[Treatment & Post] × HDDs	0.0002	−0.005**	0.0002	−0.009***	−0.002	−0.002	−0.007
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.005)
$\mathbb{1}$[Treatment & Post] × HDDs*	−0.003	0.010***	0.003*	0.019***	0.003	0.003	0.013**
	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)	(0.002)	(0.005)
Tariff Group	All	All	All	A	B	C	D
Description of Interval	Pre-Peak	Peak	Post-Peak	Peak	Peak	Peak	Peak
Interval of Hours	15 to 16	17 to 18	19 to 20	17 to 18	17 to 18	17 to 18	17 to 18
Knot	15	15	15	15	15	15	15
FEs: Day of Week by Half-Hourly Time Window	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,006,200	1,006,200	1,006,200	506,540	326,800	511,700	331,960
Adjusted R^2	0.024	0.047	0.040	0.046	0.045	0.044	0.045

Note: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 6: Hourly Treatment Effects as a Linear Function of Peak-Rate-Period Price Changes

	Hourly Electricity Consumption (kWh/Hour)		
	(1)	(2)	(3)
$\mathbb{1}$[Treatment & Post]	-0.047^{*}	-0.024	-0.054
	(0.028)	(0.034)	(0.034)
$\mathbb{1}$[Treatment & Post] $\times$ ΔRC	0.002	-0.005^{***}	0.002
	(0.002)	(0.002)	(0.002)
$\mathbb{1}$[Treatment & Post] $\times$ HDDs	0.0002	-0.009^{***}	0.0005
	(0.003)	(0.003)	(0.003)
$\mathbb{1}$[Treatment & Post] $\times$ HDDs*	0.002	0.020^{***}	0.007^{*}
	(0.005)	(0.004)	(0.004)
$\mathbb{1}$[Treatment & Post] $\times$ HDDs $\times$ ΔRC	-0.00001	0.0003	-0.00002
	(0.0002)	(0.0002)	(0.0002)
$\mathbb{1}$[Treatment & Post] $\times$ HDDs* $\times$ ΔRC	-0.0003	-0.001^{***}	-0.0002
	(0.0002)	(0.0003)	(0.0003)
Description of Interval	Pre-Peak	Peak	Post-Peak
Interval of Hours	15 to 16	17 to 18	19 to 20
Knot	15	15	15
FEs: Day of Week by Half-Hourly Time Window	Yes	Yes	Yes
Observations	1,006,200	1,006,200	1,006,200
Adjusted R^2	0.024	0.047	0.040

Note: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

A Appendixes

Table 7: Breakdown of Hourly Average Treatment Effects

	Hourly Electricity Consumption (kWh/Hour)						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
HDDs	0.020***	0.046***	0.042***	0.046***	0.046***	0.046***	0.046***
	(0.003)	(0.004)	(0.003)	(0.004)	(0.004)	(0.004)	(0.004)
HDDs*	0.005	−0.012	−0.014**	−0.012	−0.012	−0.012	−0.012
	(0.007)	(0.010)	(0.007)	(0.010)	(0.010)	(0.010)	(0.010)
𝟙[Treatment]	0.039	0.059	0.071	0.020	0.173*	−0.015	0.251***
	(0.043)	(0.054)	(0.047)	(0.062)	(0.090)	(0.062)	(0.082)
𝟙[Treatment] × HDDs	0.001	0.006**	0.006**	0.009**	0.008	0.003	0.003
	(0.002)	(0.003)	(0.003)	(0.004)	(0.005)	(0.004)	(0.006)
𝟙[Treatment] × HDDs*	−0.0002	−0.008**	−0.012***	−0.013***	−0.007	−0.006	−0.002
	(0.003)	(0.003)	(0.003)	(0.005)	(0.006)	(0.004)	(0.005)
𝟙[Post]	0.022	0.052	0.033	0.052	0.053	0.053	0.051
	(0.021)	(0.034)	(0.039)	(0.034)	(0.034)	(0.034)	(0.034)
𝟙[Post] × HDDs	−0.009***	−0.015***	−0.011***	−0.015***	−0.015***	−0.015***	−0.015***
	(0.003)	(0.006)	(0.004)	(0.006)	(0.006)	(0.006)	(0.006)
𝟙[Post] × HDDs*	0.008	0.014	0.0002	0.014	0.014	0.014	0.013
	(0.008)	(0.013)	(0.009)	(0.013)	(0.013)	(0.013)	(0.013)
𝟙[Treatment & Post]	−0.018	−0.096***	−0.030	−0.056**	−0.128***	−0.086***	−0.194***
	(0.020)	(0.024)	(0.024)	(0.028)	(0.038)	(0.031)	(0.040)
𝟙[Treatment & Post] × HDDs	0.0002	−0.005**	0.0002	−0.009***	−0.002	−0.002	−0.007
	(0.002)	(0.002)	(0.002)	(0.003)	(0.003)	(0.003)	(0.005)
𝟙[Treatment & Post] × HDDs*	−0.003	0.010***	0.003*	0.019***	0.003	0.003	0.013**
	(0.004)	(0.002)	(0.002)	(0.003)	(0.004)	(0.002)	(0.005)
Tariff Group	All	All	All	A	B	C	D
Description of Interval	Pre-Peak	Peak	Post-Peak	Peak	Peak	Peak	Peak
Interval of Hours	15 to 16	17 to 18	19 to 20	17 to 18	17 to 18	17 to 18	17 to 18
Knot	15	15	15	15	15	15	15
FEs: Day of Week by Half-Hourly Time Window	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,006,200	1,006,200	1,006,200	506,540	326,800	511,700	331,960
Adjusted R^2	0.024	0.047	0.040	0.046	0.045	0.044	0.045

Note: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.

Table 8: Hourly Treatment Effects as a Linear Function of Peak-Rate-Period Price Changes

	Hourly Electricity Consumption (kWh/Hour)		
	(1)	(2)	(3)
HDDs	0.020^{***}	0.046^{***}	0.042^{***}
	(0.003)	(0.004)	(0.003)
HDDs*	0.005	-0.012	-0.014^{**}
	(0.007)	(0.010)	(0.007)
$\mathbb{1}$[Treatment]	-0.015	-0.017	0.072
	(0.058)	(0.072)	(0.065)
$\mathbb{1}$[Treatment] $\times$ ΔRC	0.004	0.006	-0.0001
	(0.003)	(0.004)	(0.003)
$\mathbb{1}$[Treatment] $\times$ HDDs	0.0002	0.012^{***}	0.005
	(0.003)	(0.005)	(0.004)
$\mathbb{1}$[Treatment] $\times$ HDDs*	-0.002	-0.015^{***}	-0.016^{***}
	(0.004)	(0.006)	(0.004)
$\mathbb{1}$[Treatment] $\times$ HDDs $\times$ ΔRC	0.00003	-0.0004	0.00001
	(0.0002)	(0.0003)	(0.0003)
$\mathbb{1}$[Treatment] $\times$ HDDs* $\times$ ΔRC	0.0001	0.001^{**}	0.0003
	(0.0002)	(0.0003)	(0.0003)
$\mathbb{1}$[Post]	0.022	0.052	0.033
	(0.021)	(0.034)	(0.039)
$\mathbb{1}$[Post] $\times$ HDDs	-0.009^{***}	-0.015^{***}	-0.011^{***}
	(0.003)	(0.006)	(0.004)

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Table 8 – continued from previous page

	Hourly Electricity Consumption (kWh/Hour)		
	(1)	(2)	(3)
$\mathbb{1}$[Post] × HDDs*	0.008	0.014	0.0002
	(0.008)	(0.013)	(0.009)
$\mathbb{1}$[Treatment & Post]	−0.047*	−0.024	−0.054
	(0.028)	(0.034)	(0.034)
$\mathbb{1}$[Treatment & Post] × ΔRC	0.002	−0.005***	0.002
	(0.002)	(0.002)	(0.002)
$\mathbb{1}$[Treatment & Post] × HDDs	0.0002	−0.009***	0.0005
	(0.003)	(0.003)	(0.003)
$\mathbb{1}$[Treatment & Post] × HDDs*	0.002	0.020***	0.007*
	(0.005)	(0.004)	(0.004)
$\mathbb{1}$[Treatment & Post] × HDDs × ΔRC	−0.00001	0.0003	−0.00002
	(0.0002)	(0.0002)	(0.0002)
$\mathbb{1}$[Treatment & Post] × HDDs* × ΔRC	−0.0003	−0.001***	−0.0002
	(0.0002)	(0.0003)	(0.0003)
Description of Interval	Pre-Peak	Peak	Post-Peak
Interval of Hours	15 to 16	17 to 18	19 to 20
Knot	15	15	15
FEs: Day of Week by Half-Hourly Time Window	Yes	Yes	Yes
Observations	1,006,200	1,006,200	1,006,200
Adjusted R^2	0.024	0.047	0.040

Note: * $p < 0.1$, ** $p < 0.05$, and *** $p < 0.01$.