

Main Citation

Zivin JSG, Kotchen MJ, Mansur ET (2014) Spatial and temporal heterogeneity of marginal emissions: Implications for electric cars and other electricity-shifting policies. *Journal of Economic Behavior & Organization* **107**(A): 248-268

How it was used

Hourly GHG data of WECC from Fig. 4/Table 2 in the paper was scaled such that a **value of “1.0”** in the input curve to PVC **corresponds to being at the “average GHG of the grid”**

CA_HourlyProfile_GHG.csv - Notepad	
0,1.0456	
1,1.0332	
2,1.0456	
3,1.0456	
4,0.9959	
5,0.9585	
6,0.8838	
7,0.8216	
8,0.8465	
9,0.9585	
10,1.0581	
11,1.0954	
12,1.0954	
13,1.0705	
14,1.0332	
15,1.0207	
16,0.9958	
17,0.9834	
18,0.9834	
19,0.9959	
20,1.0083	
21,0.9959	
22,1.0083	
23,1.0207	

Input Curve to PVC

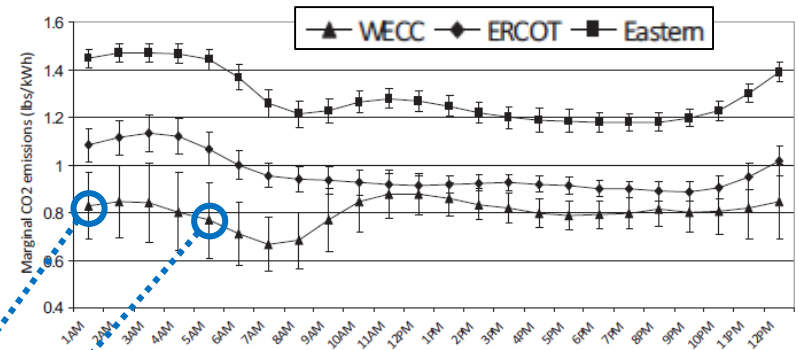


Table 2
Regression Results of marginal CO₂ emissions (lbs/kWh), by interconnection, NERC regions, and time of day.

Hour	Interconnection			Eastern NERC region								Total
	WECC	ERCOT	Eastern	FRCC	MRO	NPCC	RFC	SERC	SPP		U.S.	
1 AM	0.83 (0.07)	1.08 (0.04)	1.45 (0.02)	1.33 (0.18)	1.91 (0.58)	0.73 (0.31)	1.73 (0.18)	1.28 (0.09)	1.35 (0.47)			1.31
2 AM	0.84 (0.08)	1.11 (0.04)	1.47 (0.02)	1.22 (0.16)	2.83 (0.24)	1.32 (0.25)	1.40 (0.11)	1.44 (0.06)	0.92 (0.27)			1.36
3 AM	0.84 (0.08)	1.13 (0.04)	1.47 (0.02)	1.19 (0.15)	2.82 (0.24)	1.41 (0.26)	1.37 (0.11)	1.45 (0.06)	1.11 (0.28)			1.37
4 AM	0.80 (0.08)	1.12 (0.04)	1.47 (0.02)	1.21 (0.15)	2.81 (0.25)	1.46 (0.27)	1.38 (0.11)	1.43 (0.06)	1.24 (0.29)			1.36
5 AM	0.77 (0.08)	1.07 (0.04)	1.44 (0.02)	1.26 (0.15)	2.81 (0.28)	1.35 (0.35)	1.47 (0.13)	1.30 (0.07)	1.44 (0.33)			1.35
6 AM	0.71 (0.07)	1.00 (0.03)	1.37 (0.03)	1.44 (0.16)	2.67 (0.31)	1.18 (0.45)	1.58 (0.16)	1.05 (0.08)	1.75 (0.36)			1.30
7 AM	0.66 (0.06)	0.95 (0.03)	1.26 (0.03)	1.48 (0.17)	2.80 (0.39)	1.36 (0.45)	1.41 (0.18)	0.87 (0.09)	1.74 (0.39)			1.22
8 AM	0.68 (0.06)	0.94 (0.03)	1.21 (0.03)	1.52 (0.16)	2.35 (0.37)	1.24 (0.35)	1.46 (0.16)	0.76 (0.09)	1.74 (0.40)			1.17
9 AM	0.77 (0.07)	0.94 (0.03)	1.23 (0.03)	1.75 (0.18)	2.15 (0.31)	1.21 (0.28)	1.46 (0.12)	0.79 (0.09)	1.41 (0.37)			1.18
10 AM	0.85 (0.07)	0.92 (0.03)	1.26 (0.02)	1.81 (0.21)	2.37 (0.29)	1.42 (0.23)	1.25 (0.10)	0.99 (0.07)	1.16 (0.34)			1.21
11 AM	0.88 (0.05)	0.92 (0.02)	1.28 (0.02)	1.65 (0.22)	2.49 (0.24)	1.50 (0.20)	1.08 (0.08)	1.20 (0.06)	0.97 (0.29)			1.22
12 PM	0.88 (0.04)	0.91 (0.02)	1.27 (0.02)	1.33 (0.20)	2.43 (0.21)	1.52 (0.16)	0.99 (0.07)	1.32 (0.06)	0.91 (0.27)			1.20
1 PM	0.86 (0.04)	0.92 (0.02)	1.25 (0.02)	1.12 (0.18)	2.38 (0.18)	1.45 (0.16)	0.99 (0.06)	1.32 (0.06)	0.86 (0.25)			1.18
2 PM	0.83 (0.03)	0.92 (0.02)	1.22 (0.02)	0.97 (0.17)	2.28 (0.17)	1.41 (0.17)	1.01 (0.06)	1.27 (0.07)	0.87 (0.23)			1.15
3 PM	0.82 (0.03)	0.92 (0.02)	1.20 (0.02)	0.89 (0.16)	2.17 (0.17)	1.45 (0.18)	1.01 (0.07)	1.21 (0.07)	0.95 (0.21)			1.12
4 PM	0.80 (0.03)	0.92 (0.02)	1.19 (0.02)	0.89 (0.15)	2.18 (0.17)	1.40 (0.18)	1.03 (0.07)	1.18 (0.07)	0.92 (0.20)			1.11
5 PM	0.79 (0.03)	0.91 (0.02)	1.18 (0.02)	0.93 (0.15)	1.99 (0.16)	1.33 (0.17)	1.09 (0.07)	1.16 (0.07)	0.89 (0.19)			1.10
6 PM	0.79 (0.03)	0.90 (0.02)	1.18 (0.02)	1.04 (0.14)	1.78 (0.14)	1.31 (0.17)	1.14 (0.06)	1.11 (0.06)	0.96 (0.18)			1.09
7 PM	0.80 (0.03)	0.90 (0.02)	1.18 (0.02)	1.15 (0.14)	1.69 (0.15)	1.16 (0.17)	1.22 (0.06)	1.07 (0.05)	0.92 (0.19)			1.09
8 PM	0.81 (0.04)	0.89 (0.02)	1.18 (0.02)	1.23 (0.15)	1.64 (0.18)	1.11 (0.21)	1.27 (0.07)	1.04 (0.05)	0.90 (0.22)			1.09
9 PM	0.80 (0.05)	0.89 (0.02)	1.19 (0.02)	1.28 (0.15)	1.81 (0.17)	1.28 (0.20)	1.21 (0.07)	1.07 (0.05)	0.87 (0.21)			1.11
10 PM	0.81 (0.05)	0.91 (0.03)	1.23 (0.02)	1.35 (0.15)	2.03 (0.18)	1.05 (0.20)	1.35 (0.07)	1.05 (0.05)	0.77 (0.24)			1.14
11 PM	0.82 (0.07)	0.95 (0.03)	1.30 (0.02)	1.46 (0.16)	2.27 (0.19)	1.06 (0.23)	1.06 (0.08)	1.12 (0.06)	0.72 (0.26)			1.21
12 AM	0.84 (0.08)	1.02 (0.03)	1.39 (0.02)	1.34 (0.17)	2.50 (0.21)	1.06 (0.25)	1.51 (0.09)	1.23 (0.06)	0.75 (0.26)			1.28
R ²	0.95	0.97	0.99	0.99	-	-	-	-	-			-