

Electric Utilities and American Climate Policy

Supporting Information

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A1 Data Description

- Table A1 presents the list of the utilities in the U.S. using coal and renewable sources together, their net generation, types of utilities, and the states they are located on.
- Table A2 presents the summary statistics for the lobbying from electric utilities for the environmental bills that we consider in this article in 112th Congress.
- Table A3 presents the summary statistics for explanatory variables.
- Table A4 presents the summary statistics for net generation by utility type.
- Table A5 presents the correlation matrix.

Name	Net Generation	Type	State	Name	Net Generation	Type	State
AES	25443.13	Independent	MD	ALABAMA POWER CO	77841.38	Traditional	AL
ALLEGHENY ENERGY	36813.64	Traditional	VA	AMERICAN MUNICIPAL POWER	1440.847	Traditional	WV
APPALACHIAN POWER CO	38595.4	Traditional	WV	ARIZONA PUBLIC SERVICE CO	57969.98	Traditional	NM
BASIN ELECTRIC POWER COOPERATIVE	23345.17	Traditional	SD	BLACK HILLS POWER	2952.607	Independent	CO
CALPINE MIDATLANTIC GENERATION	2781.227	Independent	MD	CEDAR BAY OPERATING SERVICES	1718.119	Independent	FL
CITY OF AMES	451.901	Traditional	IA	CITY OF COLORADO SPRINGS	5744.179	Traditional	CO
CITY OF COLUMBIA	100.736	Traditional	MO	CITY OF GRAND HAVEN	360.444	Traditional	MI
CITY OF HAMILTON	579.965	Traditional	OH	CITY OF MARQUETTE	313.484	Traditional	MI
CITY OF PELLA	65.971	Traditional	IA	CITY OF PERU	91.593	Traditional	IN
CITY OF VIRGINIA	107.009	Traditional	MN	CITY UTILITIES OF SPRINGFIELD	2738.541	Traditional	MO
COLMAC CLARION	267.012	Independent	PA	CONSUMERS ENERGY CO	18533.94	Traditional	MI
CPI USA NC	552.132	Independent	NC	CRISP COUNTY POWER COMM	36.414	Traditional	GA
DAIRYLAND POWER COOP	5975.724	Traditional	WI	DTE ENERGY	987.891	Independent	MI
DUKE ENERGY	165394.4	Independent	OH	EASTERN KENTUCKY POWER COOPERATIVE	10367.81	Traditional	KY
EMPIRE DISTRICT ELECTRIC	4138.19	Traditional	KS	ENERGY	115558	Independent	NY
EXELON	154281.3	Independent	PA	FIRSTLIGHT POWER RESOURCES SERVICES	1433.103	Independent	CT
GAINESVILLE REGIONAL UTILITIES	1623.172	Traditional	FL	GEORGIA POWER CO	122664.2	Traditional	GA
GRAND RIVER DAM AUTHORITY	8006.298	Traditional	OK	GREAT RIVER ENERGY	10129.46	Traditional	MN
HAWAIIAN COMMERCIAL AND SUGAR	198.968	Independent	HI	HIBBING PUBLIC UTILITIES COMM	174.297	Traditional	MN
HOOSIER ENERGY R E C	8273.375	Traditional	IN	IHI POWER	892.271	Independent	CA
INDIANA MICHIGAN POWER CO	39733.8	Traditional	IN	INTERSTATE POWER AND LIGHT CO	10142.66	Traditional	MN
JEA	14502.22	Traditional	FL	KANSAS CITY POWER AND LIGHT CO	21578.18	Traditional	KS
KCPANDL GREATER MISSOURI OPERATIONS CO	3358.405	Traditional	MO	KENTUCKY UTILITIES CO	18066.78	Traditional	KY
LOS ANGELES DEPTOF WATER AND POWER	24201.24	Traditional	UT	LOUISVILLE GAS AND ELECTRIC CO	18495.04	Traditional	KY
LOWER COLORADO RIVER AUTHORITY	16364.35	Traditional	TX	MADISON GAS AND ELECTRIC	519.53	Traditional	WI
MANITOWOC PUBLIC UTILITIES	491.127	Traditional	WI	MIDAMERICAN ENERGY HOLDINGS	31381.13	Traditional	IA
MINNESOTA POWER	9877.288	Traditional	MN	MISSISSIPPI POWER CO	16215.96	Traditional	MS
MONTANADAKOTA UTILITIES CO	966.705	Traditional	ND	NEBRASKA PUBLIC POWER DISTRICT	17840.91	Traditional	NE
NIAGARA GENERATION	291.9	Independent	NY	NORTHERN INDIANA PUB SERV CO	14998.32	Traditional	IN
NORTHERN STATES POWER MINNESOTA	35779.87	Traditional	SD	NRG ENERGY	113.995	Independent	TX
OHIO POWER CO	54195.67	Traditional	WV	OKLAHOMA GAS AND ELECTRIC CO	28831.15	Traditional	OK
OMAHA PUBLIC POWER DISTRICT	12267.19	Traditional	NE	ORLANDO UTILITIES COMM	5879.876	Traditional	FL
OTTER TAIL POWER CO	7378.499	Traditional	SD	PACIFICORP	60803.48	Traditional	CA
PLATTE RIVER POWER AUTHORITY	2187.564	Traditional	WY	PORTLAND GENERAL ELECTRIC	11284.26	Traditional	OR
POWERSOUTH ENERGY COOPERATIVE	4766.315	Traditional	AL	PPL	59586.76	Independent	MT
PROGRESS ENERGY	99080.02	Traditional	FL	PUBLIC SERVICE ENTERPRISE GROUP	62716.11	Traditional	NH
ROCHESTER GAS AND ELECTRIC	345.306	Traditional	NY	ROCHESTER PUBLIC UTILITIES	233.163	Traditional	MN
SALT RIVER PROJECT	31226.54	Traditional	AZ	SIERRA PACIFIC POWER CO	6176.645	Traditional	CA
SOUTH CAROLINA ELECTRICANDGAS CO	22953.24	Traditional	SC	SOUTH CAROLINA PUBLIC SERVICE AUTHORITY	24002.94	Traditional	SC
TENNESSEE VALLEY AUTHORITY	163571.9	Traditional	TN	TES FILER CITY STATION LP	482.381	Independent	MI
TUCSON ELECTRIC POWER CO	9947.037	Traditional	AZ	UNION ELECTRIC	49211.67	Traditional	MO
UPPER PENINSULA POWER CO	210.933	Traditional	MI	US OPERATING SERVICES	7561.859	Independent	PA
VIRGINIA ELECTRIC AND POWER CO	65623.34	Traditional	NC	WESTAR ENERGY	19079.21	Traditional	KS
WHEELABRATOR TECHNOLOGIES	5206.606	Independent	PA	WISCONSIN ELECTRIC POWER CO	20515.09	Traditional	WI
WISCONSIN POWER AND LIGHT CO	13407.38	Independent	WI	WISCONSIN PUBLIC SERVICE	6916.426	Traditional	WI

Table A1: List of Utilities using both coal and renewables

Variable	Mean	N
Lobbying for H.R.2454	0.049	1655
Lobbying for S.1733	0.03	1655
Lobbying for S.2877	0.019	1655
Lobbying for S.1462	0.031	1655

Table A2: Summary statistics for the environmental bills in 112th Congress

Variable	Mean	Std. Dev.	Min.	Max.	N
Net Generation	2401	11015	-274	165394	1655
Renewable Net Generation	212	1812	-1	49234	1655
Coal Net Generation	1189	6407	-2	105499	1655
Natural Gas Net Generation	486	2169	-2	59025	1655
Renewable Net Generation (Logged)	4.85	5.45	0	17.71	1610
Coal Net Generation (Logged)	1.97	5.02	0	18.47	1610
Petroleum Net Generation (Logged)	2.60	3.74	0	15.52	1610
Natural Gas Net Generation (Logged)	4.70	5.81	0	17.89	1610
Net Generation (Other, Logged)	3.02	4.20	0	18.79	1610
RPS	0.71	0.45	0	2	1655
Deregulation	0.35	0.47	0	1	1655
Deregulation suspension	0.17	0.38	0	1	1655
Republican Representatives %	42.5	24.5	0	100	1654
Republican Senators %	35.8	39.1	0	100	1655
Independent Generators	0.54	0.49	0	1	1655

The values of net generations are measured in thousands Megawatts per hour

Table A3: Summary statistics for explanatory variables

<i>Traditional Utilities</i>					
Variable	Mean	Std. Dev.	Min.	Max.	N
Net Generation	3043	12047	-274	163571	748
Renewable Net Generation	320	2607	-0.4	49234	748
Coal Net Generation	1807	7641	-2	97597	748
Natural Gas Net Generation	423	2629	-2	59025	748
<i>Independent Generators</i>					
Variable	Mean	Std. Dev.	Min.	Max.	N
Net Generation	1871	10061	-13	165394	907
Renewable Net Generation	123	608	-1.2	12360	907
Coal Net Generation	679	5122	0	105499	907
Natural Gas Net Generation	538	1699	-0.4	27590	907

The values of net generations are measured in thousands Megawatts per hour

Table A4: Summary statistics for net generation by utility type

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) Coal Net Generation (Logged)	1.00									
(2) Renewable Net Generation (Logged)	0.01	1.00								
(3) Natural Gas Net Generation (Logged)	0.26	-0.29	1.00							
(4) Net Generation (Other, Logged)	0.45	-0.09	0.20	1.00						
(5) RPS	-0.09	0.07	-0.01	-0.15	1.00					
(6) Deregulation	0.00	0.01	0.08	-0.00	0.47	1.00				
(7) Deregulation suspension	-0.09	0.12	0.07	-0.14	0.08	-0.34	1.00			
(8) Republican Representatives %	0.08	-0.16	0.04	0.09	-0.50	-0.37	-0.10	1.00		
(9) Republican Senators %	0.09	-0.12	0.12	0.04	-0.45	-0.07	-0.33	0.51	1.00	
(10) Independent Generators	-0.13	0.22	0.08	-0.26	0.26	0.29	0.20	-0.32	-0.17	1.00

Table A5: Cross-correlation table

A2 Full Results

- Table A6 presents the probit estimation of the lobbying behavior of individual electric utilities with respect to the American Clean Energy and Security Act (H.R. 2454).
- Table A7 presents the probit estimation of the lobbying behavior of individual electric utilities with respect to the Clean Energy Jobs and American Power Act (S. 1733).
- Table A8 presents the probit estimation of the lobbying behavior of individual electric utilities with respect to the American Clean Energy Leadership Act (S. 1462).
- Table A9 presents the probit estimation of the lobbying behavior of individual electric utilities with respect to the American Power Act (S. 2877).

	(1)	(2)	(3)	(4)	(5)	(6)
Coal Net Generation (Logged)	0.023** (0.010)	-0.005 (0.012)	-0.008 (0.014)	-0.006 (0.012)	-0.008 (0.012)	-0.008 (0.013)
Renewable Net Generation (Logged)	0.076*** (0.011)	0.071*** (0.011)	0.074*** (0.013)	0.071*** (0.011)	0.072*** (0.011)	0.071*** (0.012)
Natural Gas Net Generation (Logged)	0.078*** (0.011)	0.066*** (0.011)	0.072*** (0.013)	0.067*** (0.011)	0.064*** (0.012)	0.068*** (0.012)
Independent Generators	0.019 (0.128)	0.107 (0.131)	0.168 (0.162)	0.100 (0.141)	0.108 (0.143)	0.122 (0.150)
Net Generation (Other, Logged)		0.074*** (0.013)	0.090*** (0.016)	0.076*** (0.014)	0.082*** (0.014)	0.086*** (0.015)
RPS				0.205 (0.164)	0.377** (0.184)	0.456** (0.198)
Deregulation				-0.118 (0.171)	-0.131 (0.178)	-0.209 (0.199)
Deregulation suspension				-0.115 (0.189)	-0.003 (0.198)	0.063 (0.236)
Republican Representatives %				0.002 (0.003)	0.002 (0.004)	
Republican Senators %				0.003* (0.002)	0.005** (0.002)	
Atlantic						-0.001 (0.263)
Northeast						0.219 (0.260)
Northwest						0.332 (0.250)
Midwest						0.045 (0.202)
Southeast						-0.630 (0.397)
State FE	NO	NO	YES	NO	NO	NO
Observations	1655	1655	1519	1655	1654	1654
Pseudo R^2	0.203	0.249	0.299	0.251	0.259	0.269
AIC	525.305	497.768	533.226	502.108	501.053	505.003

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A6: Lobbying for H.R.2454 American Clean Energy and Security Act

	(1)	(2)	(3)	(4)	(5)	(6)
Coal Net Generation (Logged)	0.021* (0.012)	-0.011 (0.014)	-0.011 (0.017)	-0.013 (0.014)	-0.016 (0.015)	-0.012 (0.015)
Renewable Net Generation (Logged)	0.072*** (0.013)	0.062*** (0.014)	0.073*** (0.018)	0.062*** (0.014)	0.062*** (0.014)	0.059*** (0.014)
Natural Gas Net Generation (Logged)	0.091*** (0.013)	0.077*** (0.014)	0.095*** (0.018)	0.078*** (0.015)	0.074*** (0.015)	0.077*** (0.015)
Independent Generators	0.223 (0.166)	0.284* (0.168)	0.415* (0.224)	0.321* (0.182)	0.320* (0.184)	0.307 (0.194)
Net Generation (Other, Logged)		0.084*** (0.016)	0.103*** (0.020)	0.088*** (0.016)	0.095*** (0.017)	0.098*** (0.017)
RPS				0.289 (0.200)	0.447** (0.221)	0.617** (0.246)
Deregulation				-0.294 (0.213)	-0.333 (0.223)	-0.528** (0.262)
Deregulation suspension				-0.180 (0.232)	-0.051 (0.244)	-0.047 (0.289)
Republican Representatives %				-0.000 (0.004)	0.001 (0.005)	
Republican Senators %				0.004* (0.002)	0.006** (0.003)	
Atlantic					0.058 (0.311)	
Northeast					0.371 (0.325)	
Northwest					0.360 (0.306)	
Midwest					-0.155 (0.265)	
Southeast					-0.473 (0.422)	
State FE	NO	NO	YES	NO	NO	NO
Observations	1655	1655	1287	1655	1654	1654
Pseudo R^2	0.228	0.292	0.371	0.298	0.307	0.319
AIC	350.684	324.569	337.989	327.880	328.106	332.719

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A7: Lobbying for S.1733 Clean Energy Jobs and American Power Act

	(1)	(2)	(3)	(4)	(5)	(6)
Coal Net Generation (Logged)	0.018 (0.012)	-0.015 (0.014)	-0.013 (0.017)	-0.013 (0.014)	-0.016 (0.014)	-0.012 (0.015)
Renewable Net Generation (Logged)	0.070*** (0.013)	0.064*** (0.013)	0.069*** (0.016)	0.062*** (0.013)	0.062*** (0.013)	0.060*** (0.014)
Natural Gas Net Generation (Logged)	0.075*** (0.013)	0.061*** (0.013)	0.069*** (0.016)	0.059*** (0.013)	0.056*** (0.013)	0.060*** (0.014)
Independent Generators	0.093 (0.150)	0.199 (0.156)	0.135 (0.203)	0.150 (0.171)	0.147 (0.173)	0.125 (0.183)
Net Generation (Other, Logged)		0.085*** (0.015)	0.107*** (0.019)	0.090*** (0.016)	0.096*** (0.016)	0.100*** (0.017)
RPS				0.346* (0.199)	0.508** (0.219)	0.726*** (0.244)
Deregulation				-0.092 (0.203)	-0.136 (0.213)	-0.367 (0.252)
Deregulation suspension				0.053 (0.216)	0.169 (0.227)	0.245 (0.282)
Republican Representatives %				-0.001 (0.004)	0.001 (0.004)	
Republican Senators %				0.004* (0.002)	0.007** (0.003)	
Atlantic					0.146 (0.305)	
Northeast					0.562* (0.300)	
Northwest					0.483 (0.304)	
Midwest					-0.090 (0.265)	
Southeast					-0.602 (0.464)	
State FE	NO	NO	YES	NO	NO	NO
Observations	1655	1655	1357	1655	1654	1654
Pseudo R^2	0.188	0.255	0.332	0.263	0.272	0.293
AIC	379.928	351.041	366.422	353.465	353.273	353.712

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A8: Lobbying for S.1462 American Clean Energy Leadership Act

	(1)	(2)	(3)	(4)	(5)	(6)
Coal Net Generation (Logged)	0.027*	0.002	-0.009	0.004	0.005	0.004
	(0.014)	(0.017)	(0.022)	(0.018)	(0.018)	(0.019)
Renewable Net Generation (Logged)	0.096***	0.083***	0.107***	0.088***	0.088***	0.092***
	(0.018)	(0.018)	(0.023)	(0.019)	(0.019)	(0.020)
Natural Gas Net Generation (Logged)	0.107***	0.088***	0.101***	0.096***	0.093***	0.101***
	(0.018)	(0.018)	(0.023)	(0.020)	(0.020)	(0.022)
Independent Generators	0.690***	0.642***	0.787***	0.581**	0.572**	0.681**
	(0.246)	(0.236)	(0.300)	(0.257)	(0.260)	(0.282)
Net Generation (Other, Logged)		0.059***	0.087***	0.066***	0.067***	0.070***
		(0.019)	(0.024)	(0.021)	(0.021)	(0.022)
RPS				1.038***	1.121***	1.266***
				(0.326)	(0.341)	(0.375)
Deregulation				-0.168	-0.257	-0.321
				(0.246)	(0.262)	(0.298)
Deregulation suspension				-0.146	-0.076	0.253
				(0.283)	(0.297)	(0.401)
Republican Representatives %				-0.006	-0.002	
				(0.006)	(0.006)	
Republican Senators %				0.004	0.006*	
				(0.003)	(0.004)	
Atlantic					-0.104	
					(0.478)	
Northeast					0.770**	
					(0.387)	
Northwest					0.593	
					(0.469)	
Midwest					0.390	
					(0.372)	
Southeast					0.044	
					(0.531)	
State FE	NO	NO	YES	NO	NO	NO
Observations	1655	1655	1038	1655	1654	1654
Pseudo R^2	0.289	0.317	0.382	0.360	0.366	0.388
AIC	234.555	227.654	232.642	220.253	222.244	225.465

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A9: Lobbying for S.2877 Clear Act

A3 Zero-inflated Negative Binomial Count Model

- In addition to understanding decisions to lobby on any particular bill, we check if the amount of net generation using different fuel type has impact on the frequency of lobbying activities.
- We create the count variable for the frequency of lobbying decisions on the major climate bills. In order to address a concern about excessive zeros (over 90% of total observations that never lobbied on any bill among the major bills), we implemented a zero-inflated negative binomial estimation that accounts for lobbying and non-lobbying decisions in the logit part of the models and thereby addresses concerns about excessive zeros in the dependent variable.
- Table A10 presents the zero-inflated negative binomial count estimation of the lobbying behavior of individual electric utilities with respect to all of the major climate bills together.
- Across all the specifications, the results show that the amount of renewable net generation and that of natural gas net generation predict non-lobbying activity. Specifically, the amount of renewable net generation and that of natural gas net generation have negative impacts on the lobbying probability on at least one major bill while amount of coal net generation to have little impact on the probability to lobby. However, we did not find evidence that the amount of renewable net generation and that of natural gas net generation predict increase the probability to lobby on one more climate bill.

	(1)	(2)	(3)	(4)	(5)
DV=Lobbying count					
Coal Net Generation (Logged)	0.003 (0.011)	-0.006 (0.012)	-0.003 (0.013)	-0.004 (0.013)	-0.002 (0.015)
Renewable Net Generation (Logged)	0.001 (0.013)	0.001 (0.013)	0.000 (0.013)	-0.001 (0.013)	-0.001 (0.014)
Natural Gas Net Generation (Logged)	0.032** (0.016)	0.022 (0.017)	0.016 (0.018)	0.016 (0.018)	0.018 (0.020)
Independent Generators	0.213 (0.165)	0.221 (0.165)	0.188 (0.174)	0.188 (0.188)	0.167 (0.194)
Net Generation (Other, Logged)		0.027 (0.018)	0.033* (0.018)	0.031* (0.019)	0.032 (0.020)
RPS			0.346 (0.213)	0.326 (0.233)	0.403 (0.261)
Deregulation			-0.055 (0.209)	-0.068 (0.217)	-0.119 (0.222)
Deregulation suspension			-0.038 (0.246)	-0.052 (0.266)	0.064 (0.353)
Republican Representatives %				-0.002 (0.006)	0.001 (0.006)
Republican Senators %				0.000 (0.003)	0.000 (0.004)
Atlantic					0.073 (0.429)
Northeast					0.422 (0.293)
Northwest					0.325 (0.353)
Midwest					0.029 (0.289)
Southeast					0.211 (0.488)
Inflate					
Coal Net Generation (Logged)	-0.033 (0.022)	0.017 (0.024)	0.019 (0.025)	0.022 (0.025)	0.020 (0.027)
Renewable Net Generation (Logged)	-0.174*** (0.024)	-0.155*** (0.024)	-0.154*** (0.025)	-0.156*** (0.025)	-0.151*** (0.026)
Natural Gas Net Generation (Logged)	-0.166*** (0.024)	-0.142*** (0.025)	-0.145*** (0.026)	-0.137*** (0.026)	-0.141*** (0.027)
Independent Generators	-0.163 (0.287)	-0.207 (0.286)	-0.180 (0.309)	-0.183 (0.313)	-0.231 (0.328)
Net Generation (Other, Logged)		-0.132*** (0.028)	-0.136*** (0.029)	-0.148*** (0.030)	-0.156*** (0.031)
RPS			-0.301 (0.376)	-0.645 (0.418)	-0.827* (0.454)
Deregulation			0.190 (0.378)	0.266 (0.397)	0.503 (0.452)
Deregulation suspension			0.092 (0.411)	-0.127 (0.431)	-0.224 (0.535)
Republican Representatives %				-0.001 (0.008)	-0.001 (0.008)
Republican Senators %				-0.008* (0.005)	-0.012** (0.005)
Atlantic					0.062 (0.610)
Northeast					-0.514 (0.564)
Northwest					-0.569 (0.547)
Midwest					-0.016 (0.458)
Southeast					1.530* (0.886)
Observations	1655	1655	1655	1654	1654
AIC	798.993	774.822	782.198	785.371	794.962

The result from the estimation using state fixed effects is not reported since the model does not converge.

Standard errors in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table A10: Zero-Inflated Negative Binomial Count Model Estimation