



Electricity Price growth compared to energy source



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Motivation

There is a common idea that Renewable energy is expensive, and thus, price is the trade off for clean energy. I wanted to see if it was true and how expensive renewables are to the average American.

Research Question

Does a growing focus on renewable energy increase electricity price?

Data

U.S. Energy Information Administration:
Net generation for All sectors
Average retail price of electricity
InfoCtr@eia.gov

Method

A linear regression comparing increase in natural gas and renewable use with increase in electricity price.

Model

I divided the years 2004-2019 into 3 different periods for each state. I compared how much the price of electricity for the state changed from each time period, with the change in percentage.

$\Delta \text{In Price} = B_0 + B_1 * (\text{Change in Renewable share}) + B_2 * (\text{Change in Natural Gas Share}) + B_3 * (\text{SecondTimePeriod}) + B_4 * (\text{ThirdTimePeriod})$

Conclusion

I found no significant effect that a focus on renewables has on electricity prices. I did, however, find that the rate in which electricity prices rise has been decreasing as time goes on.

Results

	Coefficients	Standard Error	t Stat	P-value
Intercept	0.307	0.018	16.743	3.86E-35
Natural Gas % Mix change	-0.191	0.118	-1.616	0.108
Renewables % Mix change	-0.037	0.211	-0.175	0.862
2nd time period	-0.193	0.024	-8.073	2.93E-13
3rd time period	-0.258	0.025	-10.347	5.86E-19
Multiple R	0.710			
R Square	0.504			
Adjusted R Square	0.489			
Standard Error	0.115			
Observations	144			

Disclaimer

The above results does not take into effect state location or policy. I tried to account for this in another regression, but found no significance, and thus omitted it from the results.

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