Summary of Instrument Construction

**Step 1: Use EIA form 860 to get shares of each fuel type for each utility**

* Fossil was put into 3 categories: coal, natural gas, and petroleum for each utility code
* The share of total fossil for each category was calculated, so that share coal+share ng+share petroleum = 1

**Step 2: Get price data for each fuel type in each year**

* Use oil spot WTI for petroleum and Henry Hub for natural gas
* All prices were converted to $/kwh
* For Coal, I constructed the price 3 different ways, creating IV1-3
  + IV1: Coal prices vary a lot across the country. EIA form 923 has prices paid for coal in regulated plants and not unregulated plants. I used 923 prices for regulated plants and the average price from the coal mine state reported in 923 for regulated plants. For imports, I use the average import price.
  + IV2: Instead of using 923 prices for regulated plants, I used the average price from the coal mine state reported in 923 for all types of plants. For imports, I use the average import price.
  + IV3: I use a national average coal price from EIA for all coal plants
  + For IV1 and IV2, I calculated an MMBTU-weighted coal cost for each utility code—most utilities got coal from more than one source
* Then, I calculated a single IV price for each utility code weighting each fuel price by its share for the utility. Note: For IV-3, I had a price for all form 860 utilities. For IV1 and IV2 some prices were missing because form 923 does not perfectly merge with form 860. Form 860 appears to include much smaller capacity utilities. 5.8% of 860 coal capacity did not have a match in 923 price data

**Step 3: Map utilities to counties**

* I used form 861 from 2007 to map utilities to counties
* There was not great overlap between form 860 and form 861. (The same result as with Sebastien’s utility\_county file )
  + 648 utility codes were in both—58% of observations
  + 2307 were only in 861—24.12%
  + 1222 were only in 860—18%

**Step 4: Merge EIA data with SEEARP data**

* 354 counties, 75,073 observations, 13% of SEEARP observations don’t merge with EIA data
* 519,683 remaining observations