



# Natural Gas Prices and Weather

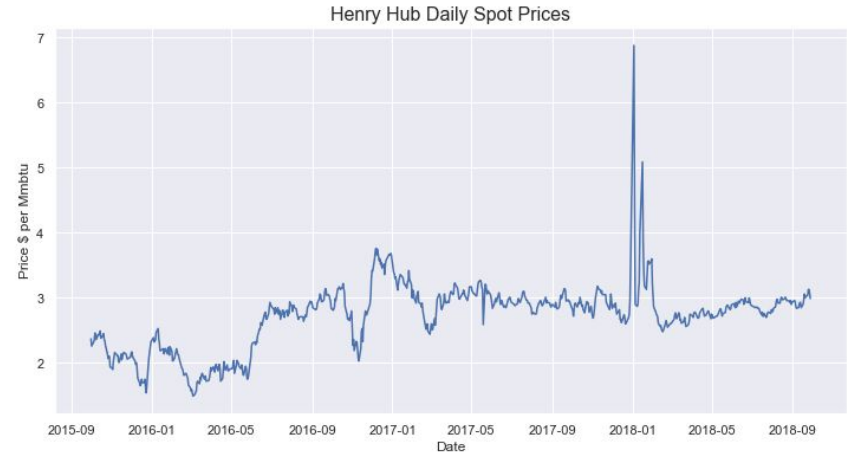
Angela Huang

# Background

What goes into natural gas pricing?

- Company policies
- Supply
- Demand

How much does weather dictate natural gas prices?



**Average departure from normal temperatures for December 24, 2017–January 3, 2018**



# Data Scraping

## Commodity

- Wall Street Journal

## Weather

- Dark Sky API
  - Daily Low Temperature
  - Daily High Temperature
  - Type of Precipitation
  - Amount of Snowfall



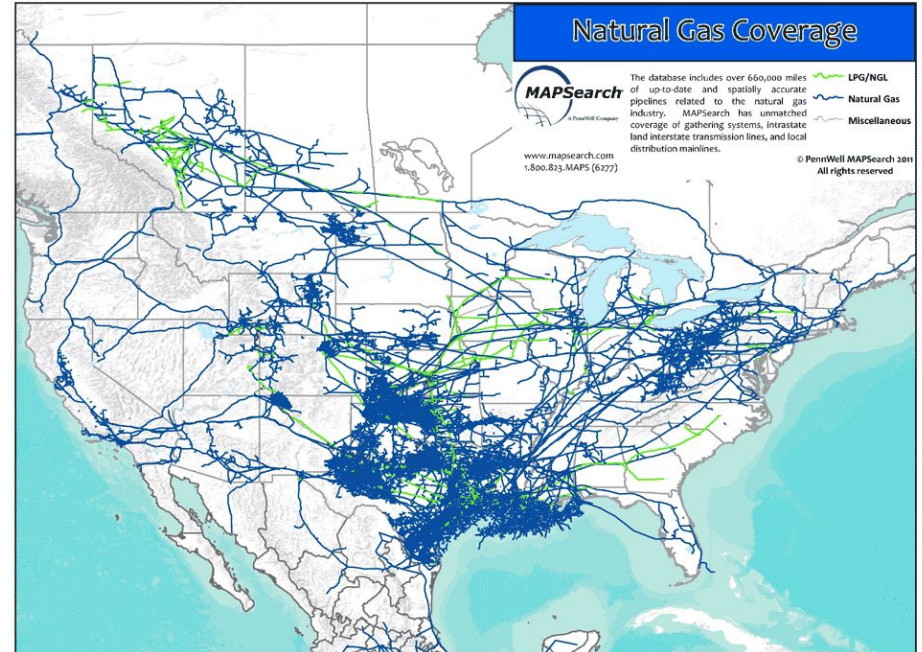
# Results

5 pricing hubs scraped

- Henry
- Transco Z3
- Transco Z6 NY
- Panhandle East
- Opal

Summer vs winter

Location, location, location



# Results

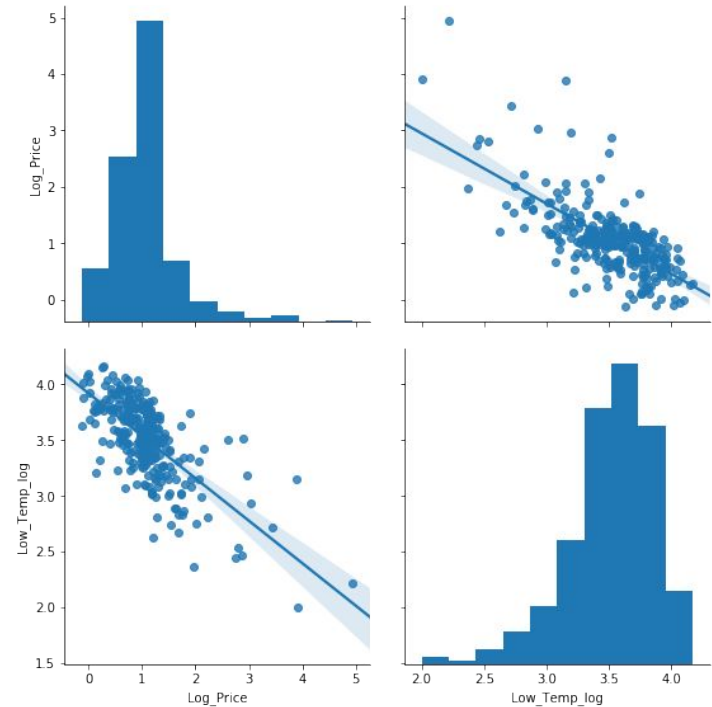
Cross Validation Testing → Simple Linear Regression

- Applying to hold out test set:  
 $R^2 = 0.536$

Summary

- Intercept: 5.4424
- Coefficient: -1.2461

Transco Z6 Winter Prices

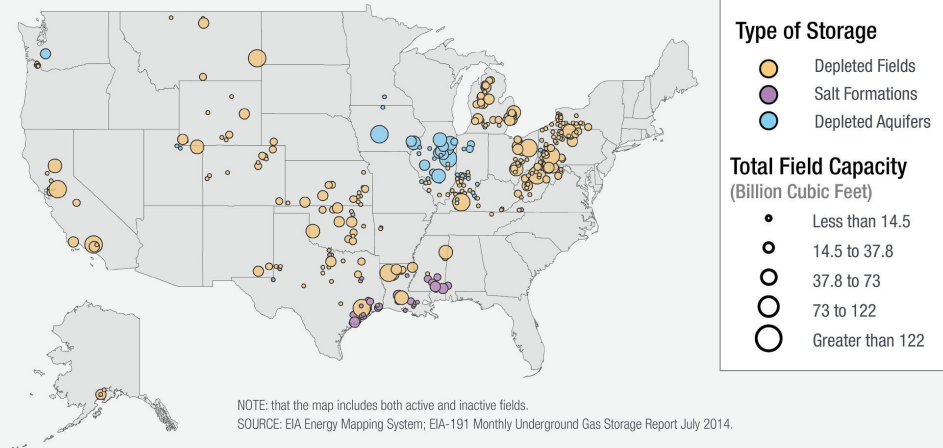


# Future Work

- Investigate why certain locations are less price sensitive to weather
- Scrape weather for multiple demand locations
- Expand to other types of commodities (energy, agriculture, etc.)

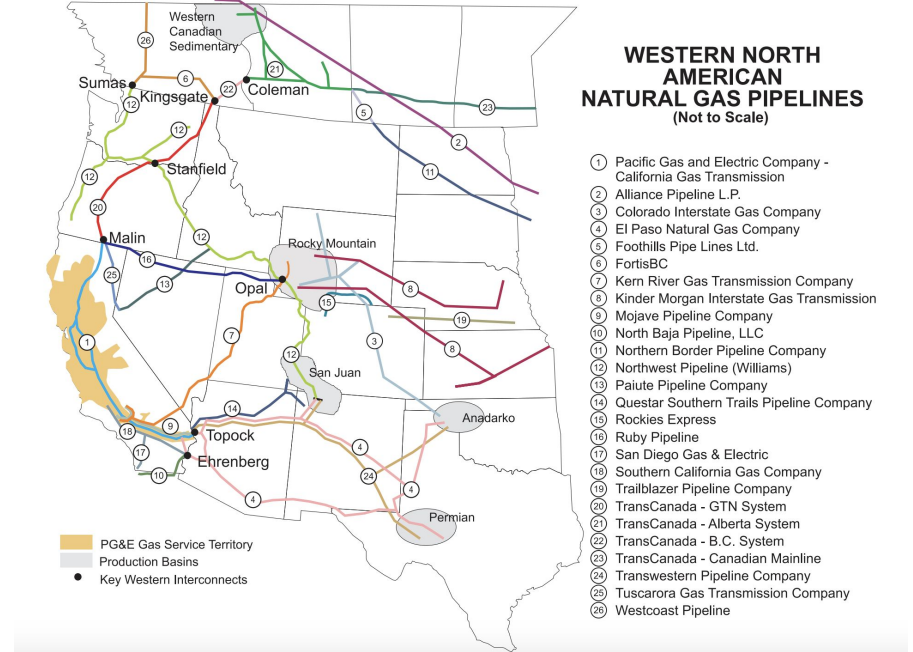
## Where Natural Gas Underground Storage Fields are Located

Type of Storage and Total Field Capacity, July 2014





**Thank You!**





Temperature (F)	Log Temp	Log Price	Price
20	3.00	\$1.71	\$5.53
22	3.09	\$1.59	\$4.91
24	3.18	\$1.48	\$4.40
26	3.26	\$1.38	\$3.98
28	3.33	\$1.29	\$3.63
30	3.40	\$1.20	\$3.33
32	3.47	\$1.12	\$3.08
34	3.53	\$1.05	\$2.85
36	3.58	\$0.98	\$2.66
38	3.64	\$0.91	\$2.48
40	3.69	\$0.85	\$2.33
42	3.74	\$0.78	\$2.19
44	3.78	\$0.73	\$2.07
46	3.83	\$0.67	\$1.96
48	3.87	\$0.62	\$1.86
50	3.91	\$0.57	\$1.76
52	3.95	\$0.52	\$1.68
54	3.99	\$0.47	\$1.60
56	4.03	\$0.43	\$1.53
58	4.06	\$0.38	\$1.47
60	4.09	\$0.34	\$1.41

Intercept	5.4424
Coef	-1.2461