



Representing America's Natural Gas Utilities

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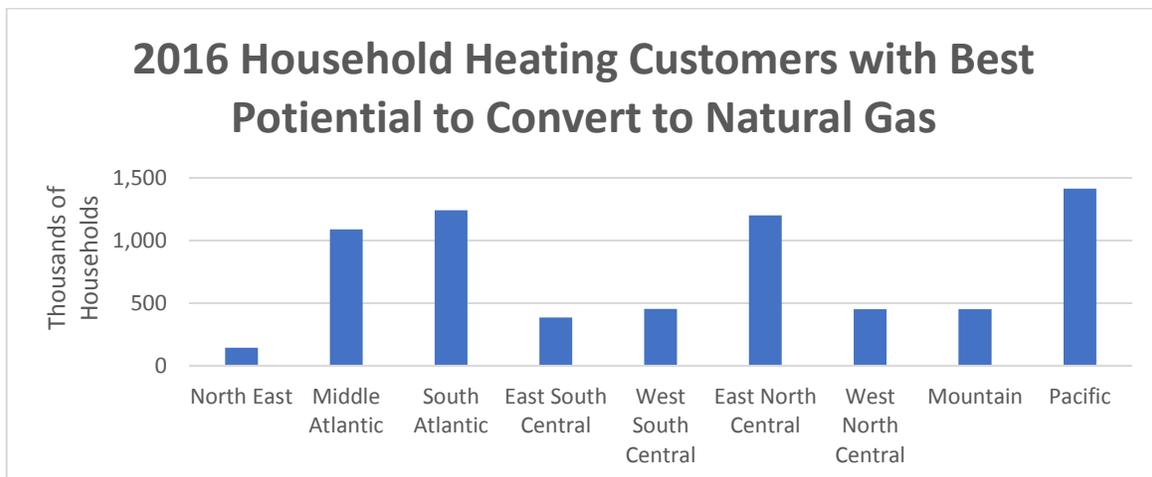
Issue:

Residential Space Heating Conversion Potential

Estimating the total number of households that could convert to natural gas space heating is a challenging task due to a variety of reasons. Proximity to gas mainlines and cost are only two of the possible impediments. However, these factors can be crucial in determining whether adding new customers is economic for distribution companies and the customers alike. The following breaks down an approach for locating readily available households by evaluating individual zip codes for market share penetration as well as housing density. Additional layers could be added to break down this estimate by technology and/or cost.

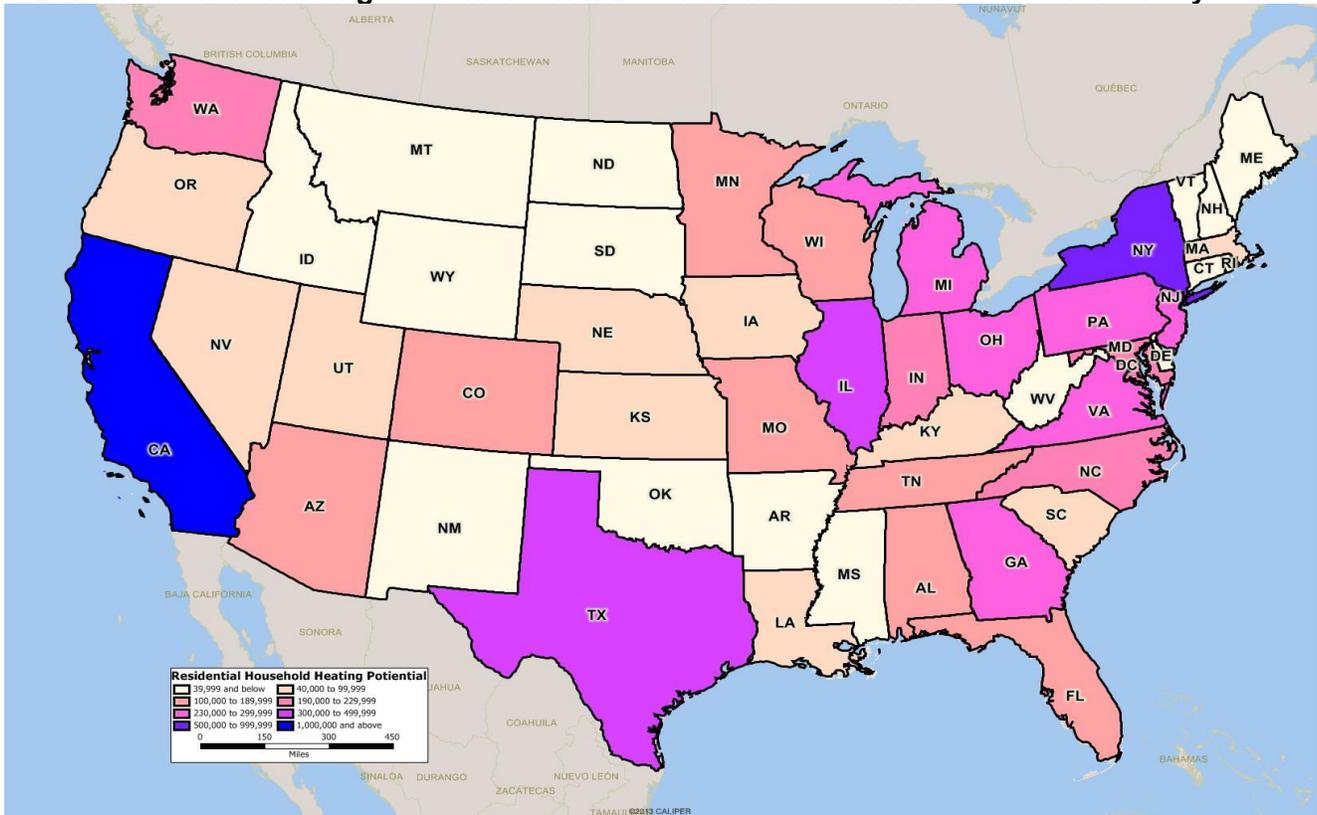
Findings

- In 2016, natural gas was still the preferred way to heat a US home with a total market share of 57 million out of 117 million households using it as a primary fuel for space heat. Of the remaining households, over 44 million rely on electricity for space heating, 6 million on fuel oil or kerosene, 5 million on propane and 5 million on other.
- Of the 60 million not using natural gas as a primary fuel for space heating, nearly 6.9 million were estimated to be in zip codes with a high penetration of existing gas customers and a household density great enough to support a growing distribution system.
- Eighty percent of the 6.9 million households with the potential to readily convert exist in zip codes with a 50 percent or greater existing natural gas market share. On the opposite end of the spectrum, 11.5 million of the total 60 million exist in zip codes with less than a 10 percent natural gas market share. Only 100 thousand households were estimated to be readily convertible in zip codes with low existing gas market share.
- The average national household gas distribution density, within a distance of 200% of the average length of service to mains, was 1,733 households (being served) per square mile. The state with the least dense average distribution system was Alabama with an estimated 432 households per square mile being served. The highest density was Oklahoma with an estimated 10,843 households per square mile being served.
- Half the estimated 6.9 million readily convertible households are in zip codes with a greater household concentration than the estimated state gas distribution household density.



*All nine US census regions sum to complete 6.9 million readily convertible households

2016 Household Heating Customers with Best Potential to Convert to Natural Gas by State



Source: American Community Survey, U.S. Census Bureau.

*Methodology

- AGA examined over 32 thousand US zip codes for potential new customers using the US Census American Community Survey, House Heating Fuel 2016 data set and Department of Transportation Office of Pipeline Safety for state-level feet per service data.
- Potential new customers were primarily determined based on existing market share. For example, zip codes with 90%+ market share counted 90% of the remaining 10% as potential new customers. Zip codes with lower market shares such as 30% make the same assumption that only 30% of the remaining 70% can be counted as likely to be convertible to natural gas service.
- In addition to existing market share an additional test was conducted to determine if the existing housing density is great enough to support a growing LDC system.
- By means of US Census data for zip code land mass and total households, a density per square mile value was calculated for each zip code. A state level gas distribution density value was created by finding the average length of service per customer and determining how many equally dispersed customers could fit in a square mile within 200% of that distance to a mainline. All zip codes with a density greater than the state average gas distribution density were expected to convert most of their remaining market shares. Zip codes with a lower density have a reduced percentage of potential conversions.
- All final state and census regions were calculated as a sum of each zip code's total potentially convertible household regardless of fuel type or ownership status.

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