Metric for energy poverty help policy maker and legislator identify how much need there is for programs that alleviate …..decide how much funding should………………….However, qualifiers for participating in such a program are needed.

Energy poverty occurs when a household experiences inadequate energy services for one’s dwelling place (Boardman, 1991). In Europe, there is understanding amongst researchers that energy poverty is a result of high energy prices, low incomes, inefficient buildings, and individual household practices and needs (Boardman, 2010; Thomson, Bouzarovski, & Snell, 2017). Energy poverty is especially acute in Texas where, like many other states, residential electricity prices have increased over the past two decades and electricity demand has increased due to increasingly severe weather (Yun & Steemers, 2009; DOE, 2016; Wible & King, 2016).[[1]](#footnote-1) These trends often create a compounded burden for vulnerable individuals living in older, less energy efficient housing (Valenzuela, et al., 2014).

The most common way of measuring energy poverty is energy burden; individuals who are living in energy burden spend more than a certain percentage of their income on energy bill. Typically people who spend more than twice the median amount of their income on energy. For example, the 4% is the median amount households spend on energy bills in Texas. Therefore, 8% is the threshold at which a household is considered energy burdened…..Roughly 22% of Texas households are energy burdened (Wible & King, 2016).

Measuring energy poverty is necessary to inform legislators and policy makers of how widespread the issue is, the causes of the issues, and how much funding to allocate to programs. While literature by European scholars have used both qualitative methods to analyze the regional, social, and economic indicators of energy poverty, much of the quantitative literature in the U.S. focused on energy efficienicy ………….

Recent studies have also shown a link between health & food insecurity and energy burden (Tuttle & Beatty, 2017). Since geography is a strong predictor of these disparities (Bouzarovski & Simcock, 2017). Thus, this study uses the former to predict the later at a county level for Texas.

**Literature Review**

Over the past decade there has been increasing evidence that socio-demographic, geographic, and economic indicators are causes of energy poverty in the United States. Hernandez and Bird interviewed low income individuals in Boston revealing that lack of financial resources and housing instability, and inefficiency compounded…..,and….

In terms of financial resources they postulate that utilities in different regions are incapable of

In ACEEE 2016 report showed that amongst the largest XX cities in the U.S. the percent of income varied XXX from city to city (CITE).

In Reames showed that …..CITE

Finally in Texas, Olmedo show that in Colonias ( informal settlements within XXX miles of the Texas-Mexico border) individuals may be spending 18-19% of income (CITE TEPRI std)

**Analysis and Validation Methods**

The relationship between energy burden and socio-demographic, health, and economic indicators are tested using a linear regression. Linear model was chosen because all of the variables in the study are continuous, the aim is to understand the relative impact of the variables on energy burden…. (i.e. compare magnitude of the coefficients), and finally linear models have high interoperability (CITE ISLR txtbk). Median age of the houses built in each county is included as a control variable to represent relative energy efficiency (CITE).

The independent variables for the study are shown in the table below( FIG XX).

In order to test the level of variation in energy burden that is attributed to region, a dummy variable was included to represent whether or not a county was a border county. Here we use the TX DHS definition of a border county: a county that is with 69 miles of the Texas-Mexico variable (CITE TX DHS).

**Data Management Methods**

The

1. *Throughout this document, energy and electricity are used interchangeably. The study we are proposing deals with solely electricity.* [↑](#footnote-ref-1)