Trusted Partners: Everyday Energy Efficiency Across the South

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Executive Summary

The Southern Ethnographic Project at the American Council for an Energy-Efficient Economy (ACEEE) has been a multi-sited, qualitative research project looking into everyday energy practices across the sectors of buildings, agriculture, and transportation. The Behavior and Human Dimensions Program staff at ACEEE used a case-study approach to tackle specific suites of questions in locales distributed across Alabama, Georgia, Louisiana, and Mississippi, which are all states with nascent or emergent energy efficiency program adoption. The over-riding questions that this project sought to answer with regard to the Southern states were: 1) How do residents of the South understand their energy consumption and what are their attitudes toward consumption and conservation? 2) What are their relationships with external factors affecting their energy consumption, such as utilities, city administrations, and federal agencies (for example, the U.S. Department of Agriculture)? We analyzed the data gathered at our five field sites to speak to the questions of how information about energy use and savings can best be delivered and how services for implementing efficiency measures best be provided—on a large scale?

Abe's Diner, in Corinth, MS, where soft drinks come in frosted Mason Jars.

To answer these questions, we conducted interviews with sets of Southerners at sites across five states, covering a variety of sectors of energy use: residential, commercial, agriculture, and transportation. We talked with people in small towns and big cities, in their homes, on their farms, and about their businesses. The heart of this report is composed of case studies drawn from the five different sites, each with their own research questions but sharing a common methodology. Each stands alone, but collectively they contribute to a more holistic understanding of the region and what the ingredients of successful energy efficiency programs may be. Ethnographies like these seek specificity rather than attempting to form general rules about the nature of a phenomenon. Our goal is to report consistent sets of answers within diverse sets of respondents. This type of methodology is excellent for providing useful, valid insights into the range of behavior to be found in any given situation.

In the four sites where we conducted in-depth interviews (Oneonta, Corinth, Alpharetta, and New Orleans), we asked 22 interviewees about their energy bills and how they engaged with them. These sites were serviced by a set of utilities that include large investor-owned utilities, medium-sized rural co-operatives, and a small town municipally operated utility that is a TVA client. The utility bill questions showed a remarkable degree of uniformity with respect to the engagement consumers have with their energy bills, while at the same time revealing a diversity of attitudes held about their energy provider. In Southern states it appears that proactive utility partners may also be missing (or undercapitalized in the case of rural co-operatives), and market-based solutions may be too costly (again in the opinion of our informants). Since several of our interviewees expressed outright distrust of government intervention with respect to energy

efficiency, potential solutions may lie with some of the non-profit, member-based, or voluntary associations we encountered in our research, each of which was concerned with communicating on some facet of energy efficiency.

In the next two pages, we summarize the key takeaways from each section:

Smart Agriculture

Federal and state programs could focus on increasing the number of local and regional farm energy auditors. Farmers are eligible to apply for USDA's Rural Energy Assistance Program (REAP) grants that can be used for renewable energy and energy efficiency improvements, energy audits, and feasibility studies. Expanding the availability of farm energy auditors will make it easier for farms to access the required assessments to apply for funding.

In addition, state resources can further develop utility programs and support extension services that serve farms in energy efficiency efforts. Several state agencies in other regions have worked with utilities to offer farm energy audits and assessments and provide incentives, such as the New York State Energy Research & Development Authority, the Texas State Energy Conservation Office, and the Minnesota Department of Commerce (EnSave 2012). These programs offer not only audits, but also technical and financial assistance to farmers.

Small- to Medium-Sized Enterprises

Utilities could adopt a multi-level policy approach to delivering energy efficiency opportunities to small and medium-sized businesses in small towns. Rural electrical cooperatives typically have higher than average distribution costs and lower than average revenues; therefore, it can be financially challenging for a cooperative to offer energy efficiency programs and rebates to small commercial members. Cooperatives can instead look to their energy wholesale supplier for energy efficiency resources to offer their members.

Local organizations could offer energy efficiency services and technical assistance programs to local small businesses. Local groups like Chambers of Commerce are trusted advisors in the business community and can leverage their relationships of trust to help advance energy efficiency (West and Dethman 2012). It is in the interest of such business associations to promote existing energy efficiency services and technical assistance programs.

Upscale Consumers

Segmentation is key, and programs need to take the different perspectives and attitudes of upper income homeowners into account. An alternative to dynamic pricing that charges more during critical periods but that also targets shifting energy load is the Peak Time Rebate, which provides a reward for a reduction in energy use (relative to a baseline) during a critical peak period. If no conservation action is taken, the customer is billed as they normally would be. Such a program

can effectively shift load (creating generation efficiencies) while supporting on-going energy-saving behavior and choices.

Low-Income Residents

Special attention needs to be paid to how energy efficiency programs are marketed to various segments of residential customers. "Low-income" is not a monolithic bloc within the population, sharing similar perceptions, values, and attitudes. Understanding the finer-grained differences within targeted income groups can direct utility and municipal communication efforts with greater effect. Policies, at both state and municipal levels, could dictate a spending requirement to serve low- and middle-income customers. Such policies often provide exemptions for cost-benefit testing and can spur partnerships with weatherization and low-income assistance organizations that can provide effective outreach in communities that are difficult to reach or where utility trust is low.

Local policies are also needed that encourage owners of rental properties to make energy efficiency improvements. Large portions of low-income residents are renters, subject to split incentives that make property owners unmotivated to make upgrades that benefit their tenants. Utilities can offer special programs for rental and multi-family properties that address the unique barriers and opportunities of the owner-tenant arrangement. The argument can be successfully carried to the investor in rental properties, as we see happening in the Corinth section.

Independent Truck Drivers

State and local policies should encourage retrofit technologies that increase the fuel efficiency of existing trucks on the road, such as auxiliary power units. Technology can reduce the cost in terms of comfort or convenience that long-haul truckers may experience when turning off their engine overnight. Policies should support fuel-efficient upgrades of equipment. The up-front cost for fuel efficiency improvements, however, can pose a distinct barrier for smaller fleet owners and owner-operators, according to our respondents. Fuel efficiency initiatives are often created with the economies of scale of larger fleets in mind but these may not be as manageable for owner-operators, who must deal with short-term financial circumstances and other factors implicit in their smaller business model.

Using Trusted Institutions to Support Energy Efficiency Improvements

Voluntary associations are powerful conduits for messaging and behavioral change, especially when the field of action is multi-faceted, as is the case with energy consumption. In the South, when economic capital is unavailable, social capital may be a good lever for achieving widespread energy efficiency. The implementation of large-scale energy efficiency programs is costly, and in the absence of state utility commission support there may not be a mechanism for utilities to re-coup expenditures for energy savings. States are several years into a period of limited economic growth, and state and municipal budgets are strapped for cash. Although energy efficiency measures, once deployed, can save money and create jobs, the immediate economic capital for

widespread investment in energy efficiency in the South is hard to come by. In the place of economic capital, voluntary associations can draw upon a well of social capital to bootstrap investment in local communities. The key to increasing energy efficiency in the South lies in taking cultural norms into consideration— working with local worldviews and institutions and not against them.

Acknowledgments

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Finally, we would like to thank Steven Nadel, our executive director, for supporting this idea from the start!

Research Rationale and Background

RESEARCH RATIONALE

Nobel-prize-winning economist Marilyn Brown called the Southeastern United States the "Saudi Arabia of Energy Efficiency" (Brown et al. 2010). Indeed, great untapped potential exists which could unlock large energy savings—and it exists, in part, as unrealized behavior change. States in the Southeastern United States have a relative paucity of state- and utility-run energy efficiency programs. Various explanations have been offered for this absence of government and utility initiatives. A common one is that the lack of energy efficiency programs and policy in the South is due to consumer indifference. Other often-heard memes about the South and energy include that energy in the South is cheap (implying little need to conserve for financial reasons) and that the muggy climate in the South makes people unmotivated to change their air conditioning habits.

The potential for energy savings through efficiency would yield particularly welcome benefits in communities with unmet economic needs such as healthcare and nutrition. The old cotton belt continues to possess stubborn pockets of poverty (Berube 2008). Here, resources currently going towards energy expenditures could go towards improving the lives and communities of some of our neediest citizens. Until now, little research has been conducted regarding the energy-saving behaviors of people living in economically stressed areas, or the knowledge and attitudes that underlie these behaviors. Energy savings through efficiency has potential benefits for other demographics as well. "Relovilles" (Kilborn 2009a) such as Alpharetta outside of Atlanta, Georgia, have become a crossroads for upwardly mobile corporate employees from across the country, forging a new melting pot for attitudes and values. What does this mean for acceptance of energy efficiency programs among the customers of Southern utilities—including the installation of smart meters, real-time feedback, and enhanced-billing type behavioral programs?

The South has a history of being misunderstood and marginalized in terms of its socio-political processes, and there is often a tendency to conflate the political and ideological outcomes with the cultural values that drive everyday activities and behavior. Our research focused on ordinary people and their energy use practices, in an effort to refine the conversation about energy efficiency and the South. We used a regional focus and classic ethnographic methodologies (underutilized in studies of energy efficiency and behavior) to delve into energy issues in general, looking at older questions in a new frame.

The Major Research Gap

Interventions intended to decrease energy consumption, such as messaging, education, and feedback, have often taken place with the individual or household as the intended audience and agent of change. However, such interventions are not always successful, in part because the design of the intervention does not take into account the complexity and nuance of consumers' decision making. As people navigate their social environment, their choices are constrained by material conditions, such as their access to resources and their degree of control over their living spaces.

These key elements of consumers' decision making around energy have been absent in analyses of energy use behavior, and there is a critical need to understand the social and cultural forces acting on individuals' decision making. Such new knowledge will support the development of more effective energy efficiency programs and inform choices about efficiency programs.

Our research explored the influence of individuals' social and cultural capital on their attitudes, knowledge, beliefs, and decision making around energy consumption (see section on theoretical foundations below). We made a concerted effort to connect with a diverse cross-section of people and to learn about their activities at home, in small businesses, and on the farm. We listened for their attitudes and experiences with the institutional structures around them, such as government agencies, utilities, and city administration. Our findings provide nuanced insight and information about how consumers think about energy and energy expenditures, what motivates them to change or resist change, and what external structures and organizations may be promising candidates for initiating organized efforts to increase energy efficiency in the South.

Goals of the Research

We approached this research as an opportunity to explore the ways in which people are implementing energy efficiency solutions in their homes and businesses throughout the Southern United States. We went to the field to look for common patterns of behavior across a variety of settings (rural to urban), social strata, and sectors. Ethnographic inquiry lets the voices of energy consumers be heard in context, allowing respondents to share their practices and perceptions in their own words.

Oldest extant church building in Corinth, MS. Note the compact fluorescent light bulbs in the portico.

Our goal was to collect data and provide analysis that will be helpful to policymakers and program designers; therefore, the research was organized by site and sector. For example, those readers who are primarily interested in residential programs can turn to the Alpharetta case-study, while people interested in transportation issues can focus on trucking owner-operators at the Great American Truck Show. In each section, we offer policy recommendations specific to that particular situation.

Locales: Where We Went

In order to represent the diversity that exists in the South, we selected sites that could stand in for the geographical distribution of consumers. In the social sciences, the idea that there are qualitative and quantitative differences in people's worldviews depending upon their location is referred to as the "rural to urban continuum" which is concerned with the ways in which human

settlement patterns affect the ways people perceive, and act in, the world.[1] Our research design used this "rural to urban continuum" framework to capture a variety of energy consumption practices. The experience of living in a small community differs widely from that of a more densely populated, cosmopolitan area, and this experience drives the habits and values expected of members of the local society, as well as the nature and format of information they can receive about their energy consumption. In addition, the denser the population, the more likely one is to encounter overlapping jurisdictions and constraints that can complicate analysis. Positioning these communities as representatives of a recognizable type of social organization, allows for a more nuanced treatment of meaningful differences among them. In our research design, we sought out sites at points along this continuum.

Rural Oneonta, Alabama was the site for our research into precision agriculture and energy efficiency in the South. The technological and social changes witnessed by farmers during their lifetimes are immense, including the advent of genetic modification of crops and livestock, insecticides, sprayer technology, irrigation, no-till practices, cotton pickers and balers, and GPS-driven operations. Oneonta was selected, among other reasons, because farmers there were quoted in recent stories about labor shortages (Robertson 2011) resulting from the implementation of The Beason-Hammon Alabama Taxpayer and Citizen Protection Act (HB56)2, a strict anti-illegal immigration law. One farmer was quoted as saying that she would "give up organic farming and mechanize" in response to the law. We investigated whether a shift is underway from specialty to commodity crops in reaction to this labor shortage, and what that might mean for mechanization and fuel consumption. What kinds of benefits could precision or "smart" agriculture (ACEEE 2012) bring to this situation, and how much do farmers in the region know about it, practice it, or plan to utilize it in the future? All of the farmers we spoke to came from farming backgrounds dating back four or five generations in Northeast Alabama and many of them believe they will be the last generation to farm.

Small Town Corinth, Mississippi was our site for looking at small- to medium-sized businesses and their owners' attitudes about—and perceptions of barriers to—energy saving activities/actions. Corinth is a classic Southern small town of about 14,000 residents located near the Civil War battlefield of Shiloh, Tennessee, which was itself of strategic importance with two major battles taking place in Corinth contesting the railroad crossing (a fact that is a major aspect for driving tourism and the economy, and local pride). Today, there exists a sharp economic divide between haves and have-nots, and one of the chief difficulties of the entire project became acquiring interviews when business owners were either overwhelmed, or out of business. Like Oneonta, many of the people we spoke with had lived in Corinth (or the surrounding area) for many generations, and change might be slower to arrive in such a conservative environment. Yet we found energy-efficient compact fluorescent light bulbs in the portico of the oldest church in town.

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[1] Anthropologist Robert Redfield, a seminal figure in the field, published *Tepoztlán, a Mexican Village: A Study of Folk Life* in 1930, around the same time that the Chicago School of Urbanism was in full swing.

[2] Robertson, Campbell, "After Ruling, Hispanics Flee an Alabama Town" New York Times, October 3 2011 http://www.nytimes.com/2011/10/04/us/after-ruling-hispanics-flee-an-alabama-town.html.

Business people in Corinth were well informed and alert to the possibilities of energy efficiency for boosting their profit margins, yet lacked a trusted ally sensitive to commercial interests.

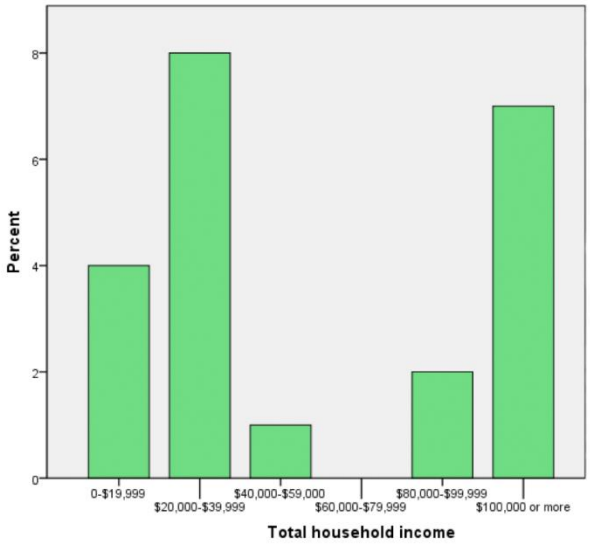
Suburban Alpharetta, Georgia was our site for looking at upper-income families (in homes over 3500 sq. ft.) and their responsiveness to energy efficiency campaigns by their local utility. What we found was a high-level of engagement around energy-efficient practices: air-conditioning was set to 78 degrees in all of the homes we visited in the middle of a Georgia summer; all homes had programmable thermostats; and most homeowners had received a home energy audit. In other words, our respondents were generally aware of and engaged with their energy consumption at home to a higher degree than anticipated. Residents would like to have "smart" homes, a term they associate with energy efficiency, and are willing to invest to make HVAC systems contribute towards their increased comfort. They are, however, not interested in time-of-use pricing, as they see it as "punitive" and "restrictive," especially when combined with other requests for energy savings.

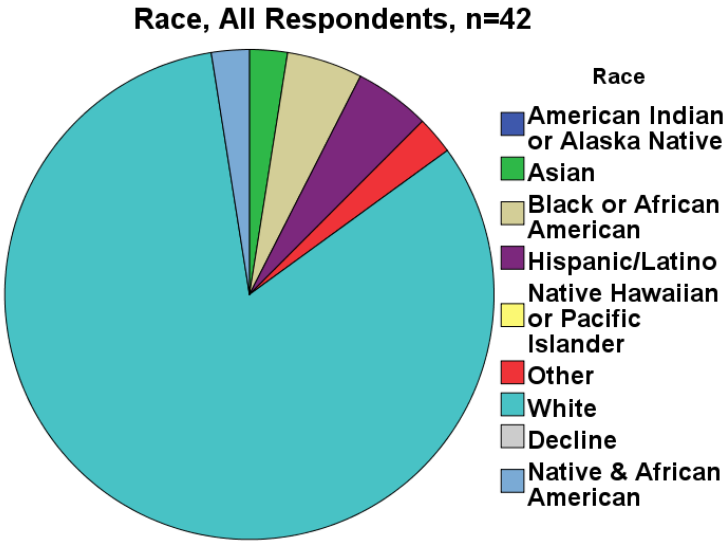
Urban New Orleans, Louisiana was our location for looking into lower income residents' exposure and access to programs that can help to lower energy costs, as well as the means for making their homes livable and cost-efficient. Our research found that knowledge about energy efficiency is not enough when citizens still struggle with what they see as the legacy of dysfunctional local government, and are serviced by a utility they perceive as remote from their day-to-day existence. It is important to recognize that 'low-income' in and of itself is not a segment; our informants all live in households with incomes below the state median, however the diversity of social and cultural capital they possess means that decision making and attitudes towards energy efficiency can diverge. This has implications for utility programs striving to reach this sometimes elusive audience with targeted messages.

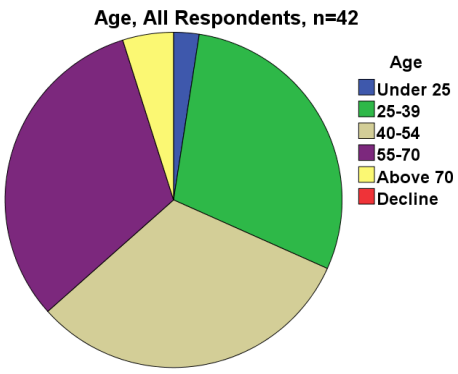
Transportation We went to the Great American Truck Show (GATS) in Dallas, Texas to talk with Southern-based owner-operators about energy efficiency related to freight transport. We discussed vehicle and purchase decision making processes, aesthetics concerning aerodynamic accessories, their driving habits, idling rules and solutions, as well as other aspects influencing their fuel expenditures and business practices. Unlike the other four sites where lengthy (one- to three- hour) interviews were held in homes and businesses, at the truck show our team conducted "intercepts" which lasted between 15 and 45 minutes. The members of this group—which makes up about half of the total number of respondents in this study—were not asked the energy bill-related questions we asked in the other sites. As in the other sites, we found many owner-operators engaged in grappling with decisions about fuel consumption, prices, and energy saving practices. One example being, at what point are diesel prices high enough that idling becomes cost prohibitive? Owner-operators then have the choice to get a motel room, use an Alternate Power Unit (APU), or patronize a service like IdleAir, but each of these comes with its own pros and cons. The choices made by individual owner-operators differ significantly from those made by fleets, due to their operating within unique economic constraints, and expressing cultural, rather than corporate, values.

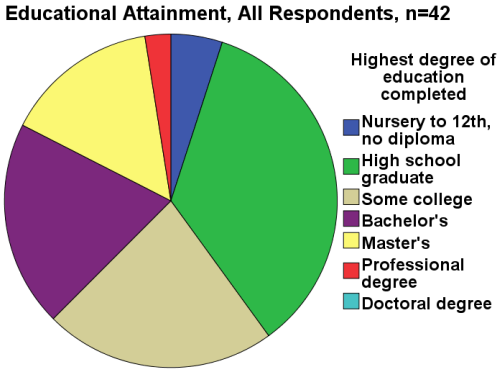
Demographics

This report presents the result of ethnography, analyzing the experiences of a diverse swath of energy consumers in the South, speaking in their own voices. It is not a statistically representative picture of "the South" but rather it focuses on a set of carefully selected respondents whose recruitment we describe briefly below (and then in more detail in the appendices). In this report, we offer a set of viewpoints that capture the nuance and complexity present in the region, as our respondents represent a range of incomes, ethnicities, ages, and educational statuses.



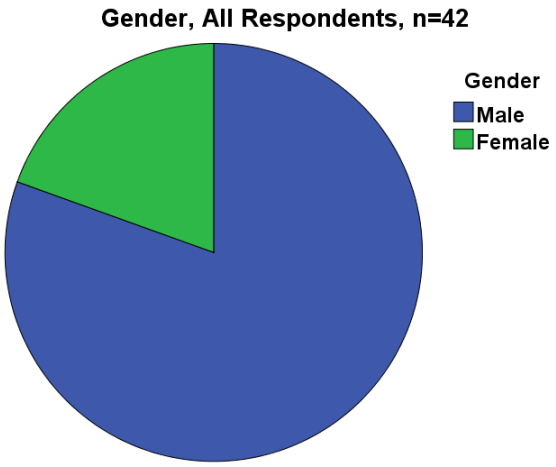






GENDER

We use this sidebar to note the role that women played on farms and as partners in trucking firms in particular because the process of self-identification had an unexpected impact on our ability to classify the data we collected. We wanted to call out the fact that we have many women's voices on our audio recordings. While sampling was not an issue in Alpharetta, or New Orleans, where we have a larger number of female participants, their seeming absence from some sites could lead to false conclusions about their role in the Oneonta and GATS sub-sections, or about our sampling schema.



For example, although only one of the self-defined farmers we interviewed was female, women played a major role on all farms. Our first interview was with Bobby and his partner and nephew, Kerwin. We conducted the interview in the office, with Kerwin's wife, Sandy, sitting at the computer and participating equally. Sandy did a great deal of the paperwork, accounting, and secretary work and often the men turned to her for answers to specific, quantitative questions. She handled the bills, and easily gave the price per kilowatt-hour that they paid for their power. In another interview, farmer Kurt Williams told us that his wife was working at Wal-Mart that evening, and the following day she would be driving their produce into the farmer's market and running their stand.

Similarly, while many of the truckers who self-identified were male (only a couple of owners were female), they were often accompanied by their wives, among whom several asserted that they did drive for the firm, or had driven for the firm. In addition, as with the farmers, many functioned as the administrative arm, arranging contracts and handling the accounting, as well as keeping track of regulatory issues through their trade association, Owner Operator Independent Driver Association (OOIDA). Pam from Louisiana, the wife of one of the truckers, was the "true" interviewee, rattling off figures about various types of fuel, their costs and tradeoffs (among which she included health).

It is evident from our interviews that the women we met through the interviews play a major role in both farming and trucking operations, a fact that may go unrecognized when the men are on record as the sole business owners. Decisions made by farmers and truckers are collective decisions, therefore, and that adds a layer of complexity to understanding outcomes.

Theoretical Underpinnings

Ethnographies seek specificity, providing a valuable complement to quantitative research on energy efficiency. The goal of ethnography is to understand respondents from their own perspectives and in their own words. Given that human beings are not rational, autonomous actors but rather make decisions in much more complex ways, ethnography offers the opportunity to delve deeply into the unpredictable arena of decision making, individual by individual. We interviewed our respondents with carefully designed sets of questions in order to elicit a description of their attitudes, beliefs, and knowledge regarding energy use and energy savings.

Our research was guided by an array of theoretical perspectives as we examined data and arrived at conclusions. In this study, we used the theoretical construct of a **rural-to-urban continuum**, beginning from the premise that geographic locations and settlement patterns influence residents' worldviews, their responses to stimuli, their decision making, and their behavior. In addition, we used four other theoretical axes that guided the design of the research protocol, the development of specific questions, the classification of data, and the conclusions that we drew. For a more extensive discussion of the theoretical underpinnings of this research, please see Appendix A.

An overarching framework for understanding individuals' decision making is **structure vs. agency**, a framework that recognizes that decisions are constrained by the material conditions of an individual's surroundings. These constraints restrict the range of viable choices. As an example, people who rent rather than own homes are constrained in the decisions they can make regarding energy efficiency in their homes; they have no control, for instance, over investments in weatherization or efficient appliances. Laws and policies are another way in which behavior is channeled in one direction or another, as we will see in both the New Orleans case study, where utility policies affect consumer perceptions, and in the GATS case study, where independent truck drivers select routes influenced by the level and type of enforcement of "anti-idling" laws.

A second theoretical framework used here is that of **social and cultural capitals as mediums of exchange**. The concept of economic capital is a familiar one in which "capital" indicates power over or access to a material object, or *what you have*. Similarly, social capital is access to or power in social relationships, in other words it is *who you know*. Someone who is born into a family of doctors will have easier access to the recommendations and advice that is necessary to become a medical professional than someone who was not; this is a form of social capital. Cultural capital encompasses a person's knowledge and skills as well as his or her abilities in using the knowledge or exercising the skills; it is *what you know*. That same person who wants to become a doctor will find her path smoothed by the possession of information regarding the behaviors expected of them, which she or he will have grown up observing. Medical knowledge itself is a form of cultural capital and the possession of the types of social and cultural capital associated with being a doctor are essential for anyone who wishes to work as a doctor. This is why social scientists often say that capitals are exchangeable with one another.

Ownership of both social and cultural capital is acquired in ways that can seem trivial or invisible, (unless you are the person lacking them) and they are unevenly distributed. The variability of social and cultural capitals influences the range of decisions that individuals can or are inclined to make, and yet this variability is often not given very much weight. With respect to this research project, consider that the farmers we interviewed were, without exception, born and raised in Alabama, to farming families going back generations. Their experience with agriculture spans the introduction of several new technologies (tractors, GPS) and methods (no-till, plastic mulching). They possess a wealth of knowledge about the subjects "farming" and "diffusion of innovation" and that knowledge applies to a specific environmental context. Their energy needs are different than are those of their Midwestern peers; therefore, their receptivity to efficiency solutions will also differ.

Where social and cultural capitals intersect, there emerge various roles or identities of an individual. This **multiplicity of identities** determines the lens through which people see and navigate their social environments. It is at this theoretical level that regional identities can be described and their impact understood. People inhabit more than one role at a time, fluidly managing themselves as required by their social environments, and these roles can have a regional character. Identities mean that a person may express herself in a certain way or make a certain decision not because it is the economically rational thing to do, but rather because her social group or social status requires such an expression or decision. Anthropologists often use the term "cultural competence" in discussing the active performance of identity: for example, that of a bride at her wedding, where the selection of dress, food, flowers, and music are deliberately composed to transmit a message of identity. *The economics of a wedding are often tangential to the activity itself*. They are present, but they are neither drivers, nor are they particularly explanatory. We find a related example in Alpharetta, where we find people selecting appliances they deem to be "smart" and "efficient" but that also offer features designed to make entertaining easier. Efficiency can "hitch a ride" on higher end offerings, but is unlikely to be the driver for the selection in this demographic.

Last, we were alert for **explanatory narratives** expressed by our interviewees that would show how they understood the larger forces around them. Explanatory narratives are sets of beliefs that influence how individuals organize their lives. For example, we noted attitudes and beliefs held by our respondents about other social groups, institutions such as government agencies and city administrations, and energy-related organizations such as local utilities. We also noted explanatory narratives held about larger events, such as Hurricane Katrina. People in New Orleans noted their presence or absence during Katrina with respect to their own claims of a New Orleans identity and authenticity. Another example is the variety of explanations truckers gave for why they did not like more energy efficient Super Single Tires, such as not delivering claimed mileage or being overweight for border crossings. We recorded such statements because they reflected the impressions and opinions of trucking owner-operators. Just as in New Orleans, every sub-culture will have developed a *mythos*, an explanatory narrative, unique to their specific history and social structure.

Study Design

For a more in-depth description of the ethnographic process, please refer to Appendix A. Below we summarize recruitment and selection, interviewing methods, and data analysis for our study of energy efficiency behaviors in the South.

Recruitment and Selection

Using contact information in publicly available lists of business owners, homeowners, farmers, and trucking owner-operators, we sent letters to a large number of people in each location. Through these mailings we obtained some of our respondents; all people who contacted us were also interviewed. We also used traditional "snow-ball-sampling" to reach our target numbers. This is a process anthropologists use to acquire a set of respondents by activating an existing social network (methodology is discussed at length in Appendix A). In the case study in New Orleans, that social network was one of energy activists and volunteers. To identify our key informants—public figures who provided expert background knowledge that was used to frame ethnographic analysis—we contacted a variety of third parties, including political representatives, state officials, local officials, county extension offices, and chambers of commerce.

Validity vs. Reliability: What We Base our Conclusions Upon

The small sample sizes used in ethnography are often difficult for quantitatively predisposed researchers to accept. The key is in understanding that the unit of measure is the individual, and the value of the data sought lies in its specificity to the situation. Since we are seeking specificity and not attempting to form general rules about the nature of a phenomenon, it becomes more important to reduce researcher bias than sample bias. Similarly, our goal is not to report a consistent set of answers across a diverse set of respondents, but rather to report consistent sets of answers within diverse sets of respondents. In other words, not everyone across the South has the same opinion; however, defined types of actors should demonstrate consistency in their answers to specific questions.

We wanted to represent a diverse swath of energy consumers in the South, speaking in their own voices, and not a statistically representative picture of "The South." In ethnographic research, the goal is not to mimic the exact distribution of particular demographic types within a set of geographic boundaries. Instead, we wanted to offer a set of viewpoints that capture the nuance and complexity present in the region. Therefore, all of our demographic categories show a healthy amount of variety; we have respondents representing a range of incomes, ethnicities, ages, and educational statuses. Further, the sites they live in lay along the rural-to-urban continuum in five states, and our question sets covered five sectors, which added dimensionality to the data set.

Interviewing Methods and Question Development

We used three types of interview structures. (For fuller descriptions of interview structures, see Appendix A.) We used **formal interviews** when interviewing people in their homes and businesses in our four contextual inquiry sites. (That is, for all except our interviews with key respondents, e.g., public figures like the Mayor of Corinth, MS, or with truckers at the Great American Truck Show.) In the formal interviews, we followed a pre-defined script, customized for each site. Each interview covered basic lifestyle questions as well as more focused questions on energy use. These interviews were loosely structured and conversational ("formal" refers to the common structure across respondents). Respondents were given time to elaborate on open-ended questions with unrehearsed answers.

We used **informal interviews** with public figures from which we solicited expert background knowledge that was used to frame our analysis. Informal interviews are shorter and focused on site-specific topics. This format was also employed with people with whom we had chance encounters, such as taxi drivers or restaurant servers, and who provided background and local insight into a given site.

The third interview structure used was the **intercept**. Intercepts are short, scripted interviews designed to delve into the knowledge and attitudes of a respondent about a specific subject. We used intercepts in our fieldwork at the Great American Truck Show, asking truckers a series of questions about several design features of their vehicles.

Data Analysis

All interviews and intercepts were recorded with Livescribe pens and paper tablets. After each site visit, the ethnographer listened to the recording and uploaded it to the Livescribe Online website, where it was made available to the entire research team for the duration of the project and through write-up. Respondents' answers to the questionnaire were coded and entered into SPSS, and statistical analyses were run. (For details, see Appendix A.) Respondents' answers during interviews were organized in spreadsheets where answers were compared across respondents and sites.

Customers and Utility Bills

As a starting point for investigating the relationship among consumers' demographics, household formations, and energy use patterns on the one hand, and policies, prices, and other constraints on decision making on the other, we calculated the average percentage of a household's income that is spent on energy bills for all 50 states. We have excerpted the results from this exercise in the Top Ten chart below.

The electricity and bill data compiled by the Energy Information Administration provides kWh prices for each utility in a state and the number of customers of each utility, allowing the weighted

average retail residential price to be calculated for a given state. We estimated energy costs per household using this weighted average energy price, total reported residential electricity sales, and the number of customers. We then overlaid that information with the average household income for a family of four for that state,[3] to arrive at the percentage of total income that energy costs are taking out of consumers' wallets.

In the United States, median-income households spend 1.5-4.8% of their income on energy bills. We found, using weighted average energy prices and median income data, that the proportion of income going to energy could be seen as a proxy for which states' households may be paying more for energy, as a proportion of their income. Tellingly, citizens in the states with the worst energy efficiency records also devote a higher proportion of their household budget to pay for energy expenses, and all of the states where we conducted research (Mississippi, Texas, Alabama, Georgia, and Louisiana) fall within this set.

It is our interpretation that this state of affairs is linked to policy decisions, rather than individual behaviors and decision making patterns. If poverty alone were responsible for the large dent electricity costs put in people's budgets, then we would expect to see that New Mexico, which has the *lowest* median household income, would be at the top of the list in terms of percentage of household income going to electricity. Idaho similarly has the sixth lowest median income but their households spend as much percentage-wise (1.6%) on energy as Ohio or Indiana, which are in the middle of the pack.

In the recent ACEEE paper, *Opportunity Knocks: Examining Low Ranking States in the State Energy Efficiency Scorecard* the authors describe the specific policy directions of low-income states (Sciortino, Young, Nadel 2012):

> Utilities in low-income states strategically plan efficiency programs to overcome cost barriers to participation. The Public Service Company of New Mexico (PNM), which budgeted $18.3 million (or around 1.8% of revenues) for energy efficiency programs, implemented numerous programs aimed at low-income customers as part of its broader portfolio of programs in 2010. The utility plans to broaden its low-income programs to enhance customer participation in 2011, in part by launching an energy efficiency program aimed at low-income renters (PNM 2011).

The converse is also true, with *none* of the high-ranking states from the *2012 ACEEE State Energy Efficiency Scorecard* showing up as costing their citizens a larger percentage of their household income, even when *rates* are higher. For example, number two ranked California has a weighted average rate of 14.81 cents per kilowatt-hour, which is higher than Mississippi's 10.17 cents, yet Californians pay only 1.8% of their median household budget for electricity, as opposed to residents of the Magnolia State (Mississippi), who see almost three times that amount go to pay their utility bill.

[3] Data Set: 2007-2009 American Community Survey 3-Year Estimates.

Table 1. Top Ten States that Spend the Greatest Proportion of Income on Electricity

State Code	State Name	Avg. Res. Retail Electricity Price 2011 (¢/kWh)	Res. Retail Sales 2011 (MWh)	Total Res. Bills ($ mil)	Number of Households (2010)	Avg. Annual Electricity Bill per Household ($)	Median Household Income (2011, $)	% of Household Income Spent on Electricity
MS	**Mississippi**	**10.17**	**19,336,430**	**1,967**	**1,115,768**	**1,762**	**36,919**	**4.8%**
AL	**Alabama**	**11.09**	**33,002,815**	**3,660**	**1,883,791**	**1,943**	**41,415**	**4.7%**
SC	South Carolina	11.05	30,801,731	3,404	1,801,181	1,890	42,367	4.5%
TN	Tennessee	9.98	43,067,861	4,298	2,493,552	1,724	41,693	4.1%
FL	Florida	11.51	116,341,105	13,391	7,420,802	1,805	44,299	4.1%
LA	**Louisiana**	**8.96**	**32,019,040**	**2,869**	**1,728,360**	**1,660**	**41,734**	**4.0%**
GA	**Georgia**	**11.05**	**57,749,519**	**6,381**	**3,585,584**	**1,780**	**46,007**	**3.9%**
AR	Arkansas	9.02	18,787,349	1,695	1,147,084	1,477	38,758	3.8%
WV	West Virginia	9.39	11,746,151	1,103	763,831	1,444	38,482	3.8%
OK	Oklahoma	9.47	24,425,027	2,313	1,460,450	1,584	43,225	3.7%
TX	**Texas**	**11.08**	**145,654,228**	**16,138**	**8,922,933**	**1,809**	**49,392**	**3.7%**

Source: EIA, State Energy Data System; Census Bureau 2010 Census & 2011 American Community Survey
Notes: Figures in red come from sources; those in black were calculated. Updated on 12/18/2012 by Ben Foster, ACEEE
Bold values are for states of interest for the ACEEE Southern project.

This chart represents only electricity for best comparison among the sub-set of states we investigated. To control for the contribution of other forms of energy to household budget costs, we chose a defined area of the Southern United States, with relatively comparable climates, building styles, and HVAC needs. Thus, we can see that Georgia, which has a higher investment in energy efficiency (33rd in the *2012 ACEEE Scorecard*) passes on to consumers both lower rates and lower percentage costs than its neighbors. Sciortino, Young, and Nadel (2012) address this relationship when they write that, "Regulators and utilities argue that energy efficiency programs put upward pressure on rates, which negatively impact consumers, particularly poorer customers most vulnerable to potential rate increases." Our analysis summarized in the Top Ten chart shows that despite lower prices per kilowatt-hour, household energy bills take a bigger bite of income in the South without producing value in return. An inefficient economy is a much less productive one, and a less productive economy weakens the ability of communities to provide for their local needs (Laitner et al. 2012). Sciortino, Nadel, and Young write, "In practice, the benefits of energy

efficiency programs to participants and non-participants outweigh their costs in the long run. Benefits include:

- Reduced energy costs for participants
- Increased customer satisfaction
- Improved electric system reliability due to lower base load and peak demand
- Reduced need for transmission and distribution facilities
- Reduced use of fossil fuels
- Improved home air quality and comfort for program participants
- Environmental benefits from reduced pollutant emissions."

In short, the lack of energy efficiency programs and policy plays a crucial role in producing higher energy costs for all households, and especially so in lower income states, even if prices per kilowatt-hour are generally lower in the South. Thus, saving energy and saving money will have a greater impact on these households than elsewhere—and those savings could instead be spent in their local communities, creating local jobs.

RELATIONSHIP WITH UTILITY

In the four contextual inquiry sites, the questions we asked revealed distinct patterns in the nature of the relationship of customers with their utilities, and this relationship differed from site to site. Reviewing the sets of interviews, we can see that there is a continuum from positive, to neutral, to negative, and utilities in the South are sited at all points along this line:

Positive

Sawnee Electric Membership Cooperative (EMC), the utility serving customers in the Alpharetta area, gets mostly high marks. None of the customers had had trouble, and all of them had taken advantage of energy efficiency programs like home energy audits. The one issue brought up by multiple people was uncertainty over how gas prices were calculated. People were satisfied with their service, and seemed to understand that they were part of a collective, wielding their purchasing power together.

Neutral

Alcorn County Electric (ACE) Power, the utility for Corinth, had no complaints, and respondents considered them a potential partner for energy efficiency investments. At the same time, there was uncertainty about whether they have offerings for commercial customers (they do not), and for one customer a tax credit for a furnace was confused with a rebate. People seemed to regard them as a traditional service provider, and looked forward to their doing more, including energy audits for businesses, loaning electricity load meters and monitors, (e.g., Kill-A- Watt), and more educational efforts about savings.

Indifferent

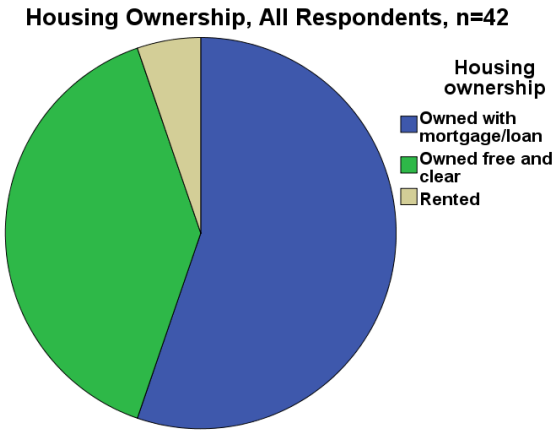
Alabama Power, the utility serving customers in Oneonta, was seen as more of a hindrance than a helpmate, but was not regarded with open animosity. People seemed dismissive of Alabama Power's ability to service their needs in a constructive manner; they regarded the calculation of the bill with suspicion or lack of comprehension, and felt that there was a lack of customer service. In addition, they felt their bills were high and often made jumps that were unexplained.

Negative

Entergy, the utility serving customers in New Orleans, received across the board condemnation from customers. Entergy also received low marks for customer service, tagged as having "crowded" offices and being uncommunicative both during outages and when undertaking construction.

CUSTOMERS AND BILLING

In the four contextual inquiry sites (Oneonta, Corinth, Alpharetta, and New Orleans), we asked 22 interviewees about their energy bills and how they engaged with them[4]. Respondents were asked about their average bills, and to break them out both seasonally and with respect to fuel source, sorting gas from electricity.



Money

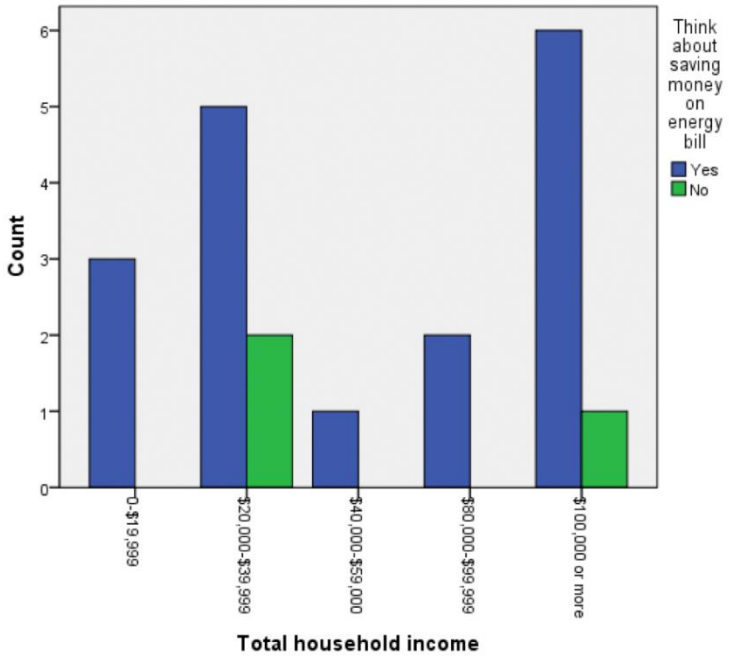
Most looked at their bills regularly, and told us they were primarily interested in how much money they had paid on any given bill. Everyone had a good idea of what they paid, and in several cases, we verified this by looking at the most recent bill. Interestingly, nearly half of those who said they looked for "money" instead remembered either usage or fee changes a month later. This suggests that they were on the alert for changes to their bill rather than simply verifying a set amount of money. Those who thought about saving money were most often the self-described, "self-employed." There was no correlation between household income and savings[5]. Those who did think about saving money named "modest" amounts (10-15%) as their targets.

[4] See Appendix B for scripts.

[5] See Appendix C for statistical data.

Organization and Presentation

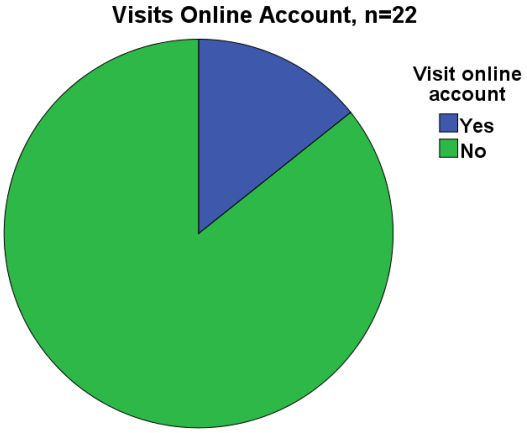
No one felt any information was "missing" from their bills; however, they did wonder, with respect to their gas bills in particular, what some of the formulas written on their bills meant. Energy terms such as "kilowatt hours" and "therms" had no meaning to any of them, except as units relevant to the bills.



Online Accounts

Most respondents answered "no" to whether they had an online account, and those who had one did not visit it. There was no correlation between education levels and interest in using the online account, nor in income levels and interest in using the account. The most common reason was that it was "too much like work" and they did not want to page through a website.

RECOMMENDATIONS



There is a fairly substantial gap between the effort and money that have gone into the design and implementation of energy provider websites, and the level of engagement they have produced among the target audience. The most basic takeaway being that if customer-facing platforms such as bills[6] and websites were to be revamped using user-centered design (UCD) principles, it could help consumers make better choices about their energy usage and future purchases and investment in home energy upgrades.

[6] For more discussion on this issue as relates to utility bills, see the ACEEE report, *The State of the Utility Bill*, by Ben Foster and Elena Alschuler, http://aceee.org/research-report/b111.

Case Study: Smart Agriculture, Smart Farmers in Oneonta, Alabama

"We've got to have food and fiber. A shirt on your back and food in your belly. People think food grows in the grocery store and clothes from the department store."

RESEARCH QUESTIONS

Our goal in going to Oneonta, Alabama, was to address energy efficiency issues in the agricultural sector, specifically to query whether and how "Southern" identity may affect behavior and decision making around energy use in agriculture. A major reason for making Oneonta our site was the recent passage of an anti-immigration law that is influencing a broad array of changes in farming practices. Farmers around Oneonta have been featured in the media addressing the issue of labor shortages due to the recent passing of a strict anti-immigration law in Alabama, The Beason-Hammon Alabama Taxpayer and Citizen Protection Act (HB56)[7] thus affecting farm labor availability. This change in circumstances provides the context for a shift in the technologies used in agriculture. We sought to understand how farmers are framing their response to labor shortages and other financial pressures, and whether questions of energy efficiency come into play. Are they looking to increase investment in "smart agriculture" or "intelligent efficiency" options? How much of this do they already do? What pathways to information do they utilize as they seek solutions?

Team members spent time researching the area, and using various contacts and channels to identify the names of farmers in the area. Letters were sent out letting potential informants know that we would be conducting research in the area, and these were followed up with individual phone calls explaining our purpose in coming out to Oneonta. While we attempted to set up as many interviews as possible prior to fieldwork, most interviews were finalized once we were there, as it was the height of harvest time in July. It was primarily through the intervention of Dan Porch, the County Extension Coordinator for Blount County that we were welcomed at all, and we remain extremely grateful for his help. Most people initially were under the impression that we were coming from the "government" and were wary of meeting with us. Others were not sure what we wanted (extremely common when conducting this type of fieldwork[8]) and yet were still willing to sit down with us.

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[7] See http://www.openbama.org/index.php/bill/fulltext/3154.

[8] Many times people express the concern that they are not experts about a given topic. One of the ways to move the interview forward is through conducting a "Grand Tour" set of questions (see Appendix B). In the case of Oneonta farmers, the "Grand Tour" was literal, with researchers touring fields in pickups and tractors.

History and Background

The years after World War II were ones of profound and rapid change on American farms. In 1945, when many of the farmers we interviewed were children, most farms in Alabama used mules for farm work. Less than one third of farmhouses had electricity, and only about one in ten had running water. Tractors were a new technology gaining in popularity. The percentage of farms operating tractors rose from 3% to 6% between 1940 and 1945 (USDA 1945), and by the late 1960s, the farming landscape in Alabama had changed dramatically. Less than 2% of all farms in Alabama used mules, and almost all farms had at least one tractor (USDA 1969). As one Alabama farmer put it, "we went from mules to irrigation and plastic mulch" over the course of his farming career.

Farming Activities

The farmers we spoke to could be divided into three main types: conventional, produce, and truck farmers. The conventional farmers cultivated soybeans, cotton, corn, and peanuts, as well as "chicken house"[9] operations, whereby poultry producers such as Tyson and Cook owned the chickens and paid the owners of chicken houses (our respondents) to manage the hatching and growth process. The produce farmers had a mix of tree and bush crops, with peaches, tomatoes, and strawberries being the most common, but also included more traditionally "Southern" products like watermelons, scuppernongs,[10] and okra. Truck farmers grew a variety of crops. We spoke to P.J. at the Oneonta Farmers' Market about what he grows:

> Whatever I can get to come up. I put down on my growing permit a lot of different things, but I sometimes don't get around to it—peaches, plums, nectarines, peppers, squash, occasionally watermelon.

Farmers' Market, Oneonta, Alabama

Farmers could also be distinguished according to whether they grew commodity or specialty crops. This division of actors into distinct economic worlds was one we found in other sectors as well, such as trucking owner-operators vs. fleets, or the independent pharmacist vs. the chains. In the case of farmers, they see an enormous difference in their operations as compared to the operations of their Midwestern counterparts, as Royce explained, "We're just kind of 'patch' farmers. Little patches. Those farmers in the Midwest, they've got as much land in one field as I have [all together]."

[9] Informants described their large industrial chicken bars as "houses" but they should not be confused with small chicken coops.

[10] Large, green, muscadine-type grapes native to the Southeastern United States.

Financial Stresses

The specialty farmers have been more heavily affected by labor shortages due to HB56, and are simultaneously not eligible for the kinds of subsidies and protections offered to commodity farmers, as Caleb asserted:

> Corn, soybeans, people, they get a lot of subsidies. Ain't nothing for fruits and vegetables… Insurance, we got insurance on our peach crop. The media blows things out of proportion. If we'd lost our crop it wouldn't have even paid for the pruning of trees. The only reason to do it [is] if we have a disaster and we get DECLARED a disaster; if you don't have insurance, you don't qualify.

It is for this reason, and similar fiscal dilemmas, that Caleb attributes the rapid attrition of produce growers in the Oneonta area. "Take this county: 25 years ago we organized the fruits and vegetables association. We had 3500 acres of peaches. You'd be hard pressed to find 200 acres today." Joan raises organic garlic as her primary cash crop. She also raises livestock goats, sheep, hogs, and chickens for meat, processing them herself (as opposed to the "leaseback" type arrangement of the chicken houses), and she told us that she finds it economically stressful to get her items to market, as the drive to and from the closest meat processing plant is several hours each way.

While the farmers we spoke with seemed very happy with their work, they recognized that fewer and fewer people are attracted to the farming lifestyle and that the farming community as a whole is growing older. In 2007, almost 28% of farmers in Alabama were over 55, while less than 2% were under 35 (USDA 2007). We saw this phenomenon first-hand with our interviews, which were pervaded by a strong sense of melancholy. Jayden, one of the youngest farmers in the county, said, "The way I see it, we're the last of a dying breed. It's what this country was built on, and it's dying out." Royce agreed, "All the farmers are dying and taking their knowledge with them." Even his own sons "wouldn't have a clue" how to farm. Royce also explained, in another interview:

> For the younger farmers, just being able to get financing. Anybody who has got the money to go into farming, they are going to go do something else. Farmers, first thing people ask is, 'How much land you own?' but farmers don't even think about that, it's all about equipment. You can find land to lease.

History of and Openness to Change

Within the past decade, all of the informants had made some major change in farming technique or had invested in a large capital project. Irrigation and plastic mulch were the farming techniques mentioned most often, while capital investments included sprayer technologies and global positioning systems (GPS). Mike explained which major innovations he had experienced, "I went

from convention to a no-till scenario. That was huge. For water conservation adding poultry litter as our fertilizer source. And the addition of the GPS." [11]

Mike is referring to the changes in weather patterns that are now allowing peanuts to be grown further north than in the past, when the "Deep South" was peanut country that started "South of Montgomery." For peanuts, GPS is essential to maximizing crop yields due to the way in which peanuts grow in the ground; their exact location relative to the above-ground bush can be hard to determine with accuracy, and being off by even half an inch can mean that you miss half your crop (and profit). We were told that in the past farmers would, "go out into the fields at night with half a bottle of whiskey and dig." The growing of peanuts is a profitable cash crop, and the addition of GPS has brought in more reliable yields and higher incomes, more than paying for itself.

As mentioned above, the passing of the strict anti-immigration law, HB56, was a major pull for us to conduct our research in Oneonta. The media described labor shortages that were forcing changes in farming techniques and crop choice. Much of the media coverage had been supportive of HB56, but each of the farmers interviewed who mentioned HB56 strongly supported an easier and less expensive system of legalization of illegal immigrants. Farmers all over the area had suffered since the passing of HB56. Caleb Irwin described the difficulties faced after HB56 passed and many immigrants fled the area. He told us, "A normal Mexican can pick 200 boxes of tomatoes a day. After the labor law, when everyone left, we got some labor bussed in from Birmingham. Only one person made it through the day and he picked [just] 30 boxes!"

Soybeans at an interviewee's farm

Fear of continued labor shortages was pushing Caleb to start the shift from produce to row crops, which require less labor and rely more on machinery. All of the farmers described the changes that they had witnessed in the farming industry throughout their careers and those that they had implemented themselves. Many farmers had started farming using mules, and today were using tractors outfitted with GPS systems. Each day also brings an accumulation of small changes. Jayden, Caleb's son, said that even with advice from other farmers and the extension office, farming is different for every farmer in every field. Differences in soil, changes in weather, pests, and numerous unforeseen events make farming a unique and variable task. In order to be a successful farmer, one has to be flexible and adapt constantly, from day to day, as one farmer put it, "You're never too old to learn."

[11] Global Positioning Systems (GPS) applications in precision farming are being used for farm planning, field mapping, soil sampling, tractor guidance, crop scouting, variable rate applications, and yield mapping. GPS allows farmers to work during low visibility field conditions such as rain, dust, fog, and darkness. (gps.gov).

All of the conventional farmers that we interviewed had adopted no-till farming within the last decade. Not everyone transitioned at the same time, but once farmers saw the success of others, they too changed to no-till farming. Bobby Frank discussed this method of adaptation, saying that most farmers were willing to change the way they farmed once they had proof that the new method works. He said that once someone adopted a new method or technology for farming, slowly other farmers followed suit.

Trusted Sources of Information

All of the farmers interviewed were very open to change, though many of the changes happened only after a trusted source had experimented with the innovation and deemed it successful[12]. In terms of sources and their social network, the number one trusted agent of change was the county extension agent (working with Auburn University). Dan Porch, the extension agent for Blount County, received nothing but praise. Caleb was one such fan:

> Dan Porch. The County agent, he's a fine man. If he don't know it he will get on the phone and dig, if it's available he'll find it for you. He went to school with my oldest son. I've known Dan 30-40 years, but he'll do the same for everybody, don't make no difference. The County will be hurting when he retires.

Mike, a poultry farmer leading the way in LED lighting for chicken barns

Other valued sources of information were, "the lady at the farm store" and representatives from seed and chemical companies, whose bias was acknowledged even as the products were hailed as revolutionary and life changing. When asked how farming had changed in his lifetime, Royce told us:

> Probably the boll weevil eradication and the invention of the cotton picker…I raised soybeans 30-40 years ago, before we started the no-till and now you look out at the beans and you see how clean they are and how straight they are and that is from the technology in the seed and being able to spray over the top. We drill 'em now. We don't put 'em in rows like we used to. [He gestures over the fields.] A solid stand.

In terms of trusted sources of information, social networks were invoked often and neighbors were considered close. Relatives are often in business together, such as Bobby and Kerwin with the chicken barns; Mike and Bobby were also old friends and owned a cotton gin together. They

[12] For example, the typical "S-curve" of adoption: http://www.icsb.org/wiki/index.php?title=S_curve#Why_adoption_curve_is_an_S_curve.3F.

seemed to have organized the production of poultry between them so that they were involved in overlapping, but non-competing niches. Bobby told us, "[Mike] grows chickens for Wayne, 65 days, 8 pounds, like a young turkey" as opposed to the four pounders, which Kerwin produces.

There was some wariness at our being from Washington, D.C. However, the farmers were reassured to learn that we were not from the government. Government "regulations" were, by far, the largest complaint voiced by the farmers, most specifically, the recordkeeping and paperwork required of them that, to their mind amounted to a second full-time job. One farmer said that he needed a full-time secretary to do it, and that the money just was not there for it. According to him, the government had a larger plan behind requiring such great amounts of paperwork:

> The government is hard-pushing, trying to push farmers, small farmers, outta business. They are putting us outta business. Corporations are replacing the small farms and corporations running 2,000-3,000 acres can afford a secretary. It's a whole different ball of wax.

As we saw with the truckers, a key complaint among farmers is the rising tide of paperwork required for them to comply with regulations. One way to speed the adoption of energy efficiency innovations in agriculture is to implement information communication technologies (ICT) in ways that reduce paperwork. ICT stresses the unification of telecommunications systems and computers including any software, storage, and peripheral systems that enable users to access, store, transmit, and manipulate information. Energy auditors, who provide technical assistance, should focus on the 'home office' aspect of farming in addition to what is happening in the fields.

Current Change: Labor and Mechanization

We explored in detail some of the more complex trade-offs that occur in the nexus of rising energy costs, labor shortages, and market demands. Rich, a blueberry farmer in Jackson, Mississippi with whom we spoke with as a key informant, explained how the market rewards handpicked and mechanized harvests differently. Even as mechanization continues to improve the handling of the fruit, farmers forego a premium on price when manual labor is replaced by mechanization. Farmers were willing to discuss the impact of HB56 on local labor availability; however, in general it was framed as something that happened to someone else or else was downplayed. Regarding the use of field hands, Bobby told us that, "sometimes in the harvest season we might use one or two part-time. We can't afford…we use seasonal help." It was clearly a conundrum, politically, as the following excerpt from our interview with Bobby makes clear:

> The ones I know changed for the same reason. I know the produce farmers had to change because of the immigration laws (it didn't affect us) but it affected a lot of people. We are going to pay the price for that down the line. I'm not going to sit here and say I want a country full of illegals, but I don't think the American public realizes the amount of harvesting that is done by Hispanics. You cannot hire local people to go out and work in the sun like those people; and it has nothing to do with the pay. I know some folks are

> paying twelve bucks an hour, and that's pretty good pay on the farm, and they can't get local people.
>
> I know one guy who went back to soybeans and peanuts, and he had been heavy into strawberries, but all his labor left in September after this new immigration law came into effect in Alabama. You know, there's no use in producing something that's going to rot on the vine. He's trying to do stuff with machines, same as we are.

Caleb pointed to regulations as yet another barrier to employing itinerant labor, "Ain't nobody in Blount County housing workers anymore, [because of] the government regulations." In other words, the cost and trouble of managing temporary housing was not worth the convenience of having workers housed on-site. The answer to that was selling low-cost housing to workers, who then were available to work for a specific set of farmers. The issue of labor was larger than simply immigration. There was a palpable sense of frustration that the people who make regulations do not have a real sense of what it takes to get food out of the ground and into stores:

> I would like to see all of them, from the President on down, come out here for TWO days. Let's see them crawl their butts out of bed at four o'clock, get stuff loaded, get water fixed, and go out there in that heat all day.

The general public came in for some light mockery as well, with one farmer's wife telling us, "They think chocolate milk comes from black cows and white milk from white cows." Her husband rejoined by saying, "People get real fussy about how a chicken is treated in the chicken house, but then they go down to McDonald's and order chicken fingers, they don't realize where those chicken fingers come from."

Energy Use and Savings

The difficult economics of smallholdings were on display in the concerns of the farmers. Increased yields and more secure income streams were a stronger theme than profits *per se*. Bobby stated, "From the standpoint of chemicals, you don't necessarily save on fuel, but you increase your income." Operations were thought of as fixed costs, regardless of the potential for savings: "All of your fixed costs are there, so you increase your yield, you increase your net profits." However, time, money, and energy are all saved when trips to the field are minimized, and this was recognized as an important factor in calculating return on investment. Royce mentioned that new spraying and planting techniques means you spray "a lot less" and that saves trips to the field, and thus fuel. Caleb said, "I went from a diesel-driven pump to an electric pump, and the savings that first year paid

Control panel for poultry house lighting, Oneonta, AL.

for it the first year. The cost of the fuel alone, just the fuel!" In one interview, the subject of high tunnel houses[13] for accelerating and protecting produce came up, and energy savings were referenced directly as Bobby told us:

> They are pretty popular, simply from the energy savings standpoint, 'cause a regular greenhouse, there's gotta be heat! If you want to grow 'maters early, then use a high tunnel house so you don't have to pay a utility bill.

Energy Prices

Mike had recently changed all of the lights in three out of his six chicken houses to LED bulbs (control panel pictured here). The bulbs currently cost $40.00 each, and he replaced 52 bulbs in three houses. Sixty percent of the cost of raising chickens is in the energy to power the lights, so he hopes to see a significant drop in his electricity bill. The upfront expense makes energy efficiency a difficult investment for farmers, but Mike's hope is that the LED bulbs will save enough energy and money to be deemed a success, and he hopes that more farmers shift to this energy-efficient technology. He spoke the most about saving money through energy efficiency, and the ways in which high oil prices affect farming, telling us how propane prices are dependent on weather, and lately there had been wide swings due to wild weather. Petroleum-based chemicals had also gone up in price; therefore, he had installed the LEDs "looking for a way to cut some expense out, from the power bill." His wife added, in response to our question as to whether the decision had paid off, "It's hard to increase profits when the price of chemicals, and fuel, just go up!"

Being a Southern Farmer

When we asked respondents if they self-defined as a "Southern" farmer, the answer was a resounding "yes," for both geographical and cultural reasons. Geography makes a farm what it is because it constrains the types of crops one grows, choices that are further refined by history or regional tradition (okra, watermelon, scuppernong). Within the South there are further divides, and we were told the "Deep" South begins below Montgomery, Alabama, "The types of crops we grow [define us] like peanuts, cotton; when you get further south, Mississippi and Louisiana, you get your sugarcane farmers and rice farmers." Other characteristics invoked to explain "Southerness" were being born and dying in the same place and farming in just one place for a person's entire life. Caleb told us that what you eat defines who you are: "Cornbread and milk. That's what I eat 90% of the time at night. Take some cornbread, crumble it up, pour some milk over it." This was a sentiment we would hear again in Corinth, Mississippi.

Smart Agriculture in Alabama?

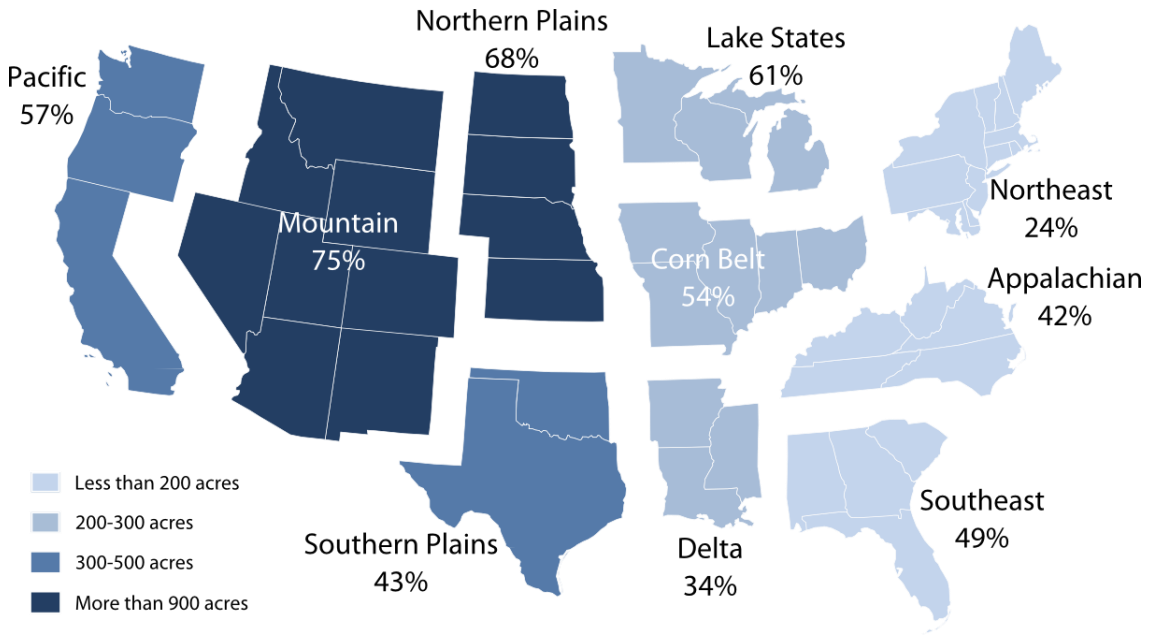
ACEEE considers precision agriculture to be the logical next step towards agricultural energy efficiency. Precision agriculture is the practice of applying water, chemicals, and other inputs to a crop "at the right time, in the right place, and in the right amounts" (Khosla 2010). Within a field,

[13] Unheated greenhouses, also known as "hoop-houses" which are typically fabric stretched over metal arches.

there can be a great deal of variation, even between spots just a few meters apart. Soil pH, slope, drainage, and distance from the edge of the field are all factors that affect how plants grow. The goal of precision agriculture is to minimize waste for optimum yield. Smart agriculture could dramatically decrease energy use in farming. According to the USDA, if 10% of planted acres in the United States use GPS guidance, we could save 16 million gallons of fuel, 2 million quarts of herbicide, and 4 million pounds of pesticide per year (NRCS 2011). Since agricultural chemicals such as pesticides are generally very energy-intensive to produce, reducing their use results in significant energy savings. On the farms we visited in Alabama, we saw several technologies indicating "smart agriculture," agricultural systems that use computers and modern information technology to obtain and respond to data about crops or livestock. One was the use of GPS-outfitted tractors, which allowed farmers to track the path of farm equipment as they planted, sprayed, or harvested to "sub-inch" accuracy. Such systems minimize the over-application of expensive, energy-intensive chemicals, and minimize loss of crops at harvest. GPS is used in combination with Real Time Kinematic satellite navigation on tractors, which enables tractors to drive themselves, removing human error. Other precision agriculture systems that we did not see include variable-rate applicators for farm chemicals that can work with Geographic Information Systems (GIS), real-time soil moisture sensors, and use of satellite imagery or aerial photographs.

Many Alabama farmers are aware of smart agriculture, but do not consider it an option for their own farms. Many of the farmers we talked with think of smart agriculture as the domain of extremely large Midwestern farms. Royce spoke of smart agriculture almost as though it were science fiction. When comparing himself to his idea of Midwestern farmers, he said, "The tractors I have here are just toys to people up there…[their equipment is]high tech stuff. You just set the computer and you don't even need to have nobody on it to drive it." He cited the local geography as the reason why such equipment would not work in Alabama. However, smart agriculture is practiced in Blount County, Alabama. Mike and Bobby both use GPS-guided tractors on their farms—theirs were the largest of the farms that we visited in Alabama. This corresponds with a national trend in smart (or "precision") agriculture. As shown in the map below, the states that have the largest farms on average also have the highest prevalence of smart agriculture. The popular image of the Midwest mentioned by the farmers we spoke to, a region of gargantuan farms and equipment that "drives itself," has some truth to it.

Farm Size and Prevalence of Precision Agriculture by Agricultural Region



Source: USDA 2012/Designer: Kate Farley, ACEEE

Recommendations: Helping Farmers Reap Energy Savings

The farmers in Oneonta, Alabama indicated interest in ways to cut costs related to energy. Farms can achieve energy savings through more efficient operations, such as the savings achieved through GPS-outfitted tractors or by upgrading to more efficient equipment, such as the chicken house lighting upgrades. A primary resource for Oneonta farmers interested in making energy upgrades is the USDA Rural Energy Assistance Program (REAP), but farms need assistance to access these resources. REAP helps farmers cut costs, but the gateway to REAP assistance lies in first having an audit performed. State and utility programs, where they exist, can also be good sources of technical assistance and funding.

Federal and state programs could focus on increasing the number of local and regional farm energy auditors. Farmers in Oneonta are eligible to apply for USDA's Rural Energy Assistance Program (REAP) grants and loans, which can be used for renewable energy and energy efficiency improvements, energy audits, and feasibility studies. Proposals with more than $50,000 in eligible costs require an energy audit by a Certified Energy Manager or a Professional Engineer, though a report by the National Center for Appropriate Technology notes that only a small fraction of eligible auditors have experience with agricultural operations (NCAT 2009). Some states provide programs to offer farm energy audits or train new auditors. In 2009, the USDA listed only five independent auditors on their website, three of which were in Iowa (USDA no longer provides this list) (The Minnesota Project 2010). Expanding the pool of farm energy auditors will make it easier for farms to access the required assessments to apply for funding.

Extension educators could be trained and mobilized to assist farms in accessing resources for energy efficiency. Extension educators were cited as a trusted source by the farmers we interviewed. Extension can play a greater role in providing the assistance farmers may need to take advantage of USDA REAP funding. Farmers may need grant-writing support and help navigating a federal grant process, technical experts to complete necessary technical reports and assessments, and reliable information on technologies and equipment, all of which Extension is well-positioned to help provide. In order for Extension offices to play this greater role, they will require education, training, and state and federal funding support to maintain or expand their outreach and service capacity. USDA can play a central role in partnering with Extension offices and providing training and assistance to train extension officers as energy educators (Neubauer and Nadel 2011; Neubauer and Watson 2009).

State agencies could partner with utilities and Extension services to help provide the necessary technical and funding resources to expand farm energy efficiency programs. Currently, the state of Alabama does not have any state-specific policies for energy efficiency and no state support for energy efficiency for farms. Without resources or incentive for utilities to provide energy efficiency programs, farms and other customers alike in Alabama miss out on opportunities to save energy. State energy agencies can partner with utilities and Extension services to support farms energy efficiency efforts. Seventeen states currently have utilities that offer agriculture energy efficiency programs, including the New York State Energy Research & Development Authority, the Texas State Energy Conservation Office, and the Minnesota Department of Commerce (EnSave 2012; dsireusa.org). These programs offer not only audits, but also technical and financial assistance to farmers. Many of them work in partnership with state Extension services and are able to provide the dedicated technical assistance necessary to engage the range of agriculture industries in energy efficiency. State agencies can also support educational efforts by utilities and Extension to promote energy efficiency options for farms (Neubauer and Nadel 2011; Neubauer and Watson 2009).

Case Study: Small Town, Small Business in Corinth, Mississippi

"Energy efficiency? We don't even have curb-side recycling!"
Shop owner, downtown Corinth

Downtown Corinth

Background

Corinth is the kind of small-town America that sometimes seems to have vanished, particularly the handsome downtown area, where the county courthouse faces Borroum's, "the oldest drugstore in Mississippi," with its local specialty of Depression-era "slugburgers" and milkshakes. The main industry is the Civil War, with museums, driving tours, and battlefields, as well as homes not only preserved intact but with many of the same families living in them. Houses trade hands very rarely in the heart of Corinth, though many newcomers seem to prefer subdivisions. The other primary economic engine is the hospital, which employs approximately 1000 people. According to staff in the Mayor's office, several major industrial firms, including a large printing plant that had produced National Geographic, had gone out of business or sharply reduced their workforce over the past twenty years. This shift in sectors from manufacturing to service (healthcare) is of course one mirrored elsewhere in the country.

Research Questions

As in the other sites across the South, we were primarily interested in attitudes about energy consumption and energy efficiency. When small town, small- to medium-sized businesses consider their bottom line, do they see investments in energy efficiency as a viable possibility? If so, what types of financial instruments are attractive to them?

Who We Spoke To and Why

Corinth was the most difficult site to locate respondents for formal interviews, and it was the site with the most informal interviews and the most time spent "on the ground." Due to the recent economic downturn, many businesses had recently closed, and the owners of the remaining businesses were very busy. In addition, despite our letters to local businesses, and the help of the Mayor's office, few people were willing to speak "on the record."

BUSINESS HISTORY


Church with compact fluorescent lighting

Nick went into business in Corinth immediately after college in 1978, whereas Jake came after a career elsewhere about eighteen years ago. Nick was also Mississippi born and bred, while Jake was originally from the North. Both own "service" type businesses, as opposed to manufacturing. When asked about the business environment in Corinth, both men responded positively, with Jake pointing out that for him the presence of major corporations was vital, and that Corinth was "people-friendly." Nick explained that the "watershed" for customers was large, and that over time competition for his business had changed. What had originally been a plethora of independents was now reduced to one other independent and a few large chains with which he felt comfortable competing:

> We have a good perimeter to draw off of, there is nothing between here and Waltham. I have a captive audience. There is nothing between us and Booneville, and nothing between us and Iuka…The upshot is there are two independents, and then [Chain A], [Chain B], I put one of my stores between [the chains], let's get it on! We are going to give the best care, the best delivery, credit...we take care of our people, and we are going to continue to do so.

Both men are engaged in civic and religious activities, which they saw as good for business. Jake volunteers at the animal shelter and teaches church classes. He "was on the tourism board for eight years; past involvement just about everything, historic preservation, board of museum, chamber commerce, Mississippi Main Street; CCD classes; symphony." Nick had withdrawn some from civic organizations, but remained heavily involved in church activities and charity work, such as helping at the community fish fry and a Thanksgiving celebration for the underprivileged of Corinth. Civic and religious engagement was seen as good for business, even if that was not always the case, as Jake answered when we asked:

> On occasion, we do a lot of stuff on [the] Civil War, the mayor will ask me to do favors for the visiting generals, he will expect me to do favors because he knows I am on the tourism board [and his argument will be] "We are bringing thousands of visitors into town," and it is great for the town, but then I'll need to waive these expenses, kind of like between a rock and a hard place.

Despite being well-known and civically engaged, both Nick and Jake felt that they could make the same types of decisions for their businesses as someone who was less well known. This is

debatable,[14] however, given that the Southern United States has retained more traditional, kin-based, community structures than perhaps elsewhere in the country. Research has shown that owners of businesses in strongly kin-based communities, such as women receiving micro-loans to start grocery stores in East Africa, often face strong pressure to grant expensive concessions to their extended family members, concessions that, when not checked, may even bankrupt them (Khavul, Bruton, and Wood 2009). The business decision making process of the owners of smaller, commercial enterprises is sometimes opaque to those who seek to service them (such as utilities) so it is worth keeping in mind that choices become constrained by factors other than purely economic when people are deeply embedded within the social institutions of their local community.

BUSINESS VALUES

The men held similar values as business owners. What was important to Jake was "taking care of my family, keeping my credit rating high. Paying my bills on time and being a good neighbor." Nick echoed these sentiments in telling us that his key business values were being a friend and abiding by the "golden rule." Similarly, even though both men had claimed that they were able to operate the same way within such a small "fishbowl," in fact, their values sometimes did come into conflict with their bottom line. Their attempts to protect their bottom line met with occasional resistance, as Jake recounted:

> I charge for water, for instance, and I lost a lot of business. People would come in and say, "You're chargin' for water?" Well, you come in here, you split one sandwich and you get two glasses of water, what I say is "I'm sorry, sir, I charge for water because, one, I have a waitress, she serves you the water and I have to pay the waitress who serves you the water. I have to pay for the water, I have to pay for the ice, I have to pay for the lemon that goes in it. I have to pay for the dishwasher to clean it, and YOU don't want me to charge for it?

Part of the difficulty was the class structure of Corinth, which was bifurcated:

> It's difficult for me to be in business, because everyone who comes to the 'Inn' thinks they have to be dressed up or pay a lot of money. It's difficult for me to impress upon people that they can walk in here in flip flops and a t-shirt. My values in that respect are, I'm trying to be like everyone else. This town has no middle class, there are either lower [class] out-of-work people or upper class. You kind of have to work with both of them. It's hard to structure your business to appeal to both of them. You want to appeal to the

[14] That they actually operate without constraints on their decision making in a small, face-to-face community is highly unlikely, since research as far back as Ferdinand Tonnies in the 19th century has shown that residents of such communities would face *additional* constraints upon their decision making, in contrast to counterparts operating in areas with a lower density of social relations.

> folks that go out once a month and they spend $20.00 and you want to appeal to the folks that go out once a month and they spend $400.00.

This division of Corinth into two economic worlds is similar to what we saw in other sites, including Oneonta, where the decision making regarding smart agriculture is highly dependent upon acreage and crop type, as well as in freight transportation (discussed below), where the different values of owner-operators versus fleets is stark. Commercially, in Corinth, this division manifests itself as business owners seem to fall into one of two camps: the overwhelmed and the out of business.

Capital Investments and Credit

The men were asked what kind of capital investment decisions they typically had to make, and what their process was. Jake's list included:

> The furnace [this year]. I had both roofs replaced two years ago. I had both furnaces [there are two houses on his property]. Maintenance on air conditioning. Repairing water lines or cleaning them out, 'cause the water lines here are 150 years old and they're pretty bad. When I've got a full house here I've got six people showering here at one time, so I had to address that a few years back. Once a month, something usually crops up, these houses are 100 years old.

Nick had two separate kinds of businesses, his primary career and the investments he had made in apartment homes across Corinth. His investments required smaller, shorter-term capital investments:

> I buy a lot of houses, I have 35 houses (180 apartments) seven or eight had zero insulation, nothin'! We knocked sheetrock out, put insulation in, put the sheetrock in, like building a new house.

Nick had two retail outlets, and for one he had invested as much as a quarter of a million dollars in machinery to give him a competitive edge. Neither man had any difficulty acquiring credit, and both were sanguine about their ability to manage capital investments, as Jake said, "[It is] something I take in stride, depending upon the severity of it, perhaps I can hold off on it, for a year or two."

Energy Costs and Impact

Energy prices, of course, affected both business-owners; however, the scale and type of service they deliver means they think about it differently. As Jake put it:

> It affects my business in a way, whenever prices go up, for gas, electric, even food, you can't always put them back on the public. You can only charge so much before [people

> stop coming]. Most people understand this, but they only understand it at home, 'cause it affects them there. When they go out they don't expect the prices of anyone else to go up!

Jake sees his biggest cost as being air conditioning, "because guests [at the Inn] leave units running all day, my housekeeper leaves them running all day." I asked him what he thought the temperature in the common area should be, and he told me 77 degrees (which we confirmed). This is in-line with what we saw in Alpharetta, Georgia, and may be evidence of a "new normal" for air conditioning in the South. Jake's smaller, more interpersonal relationships with customers mean that he is making decisions more reactively than Nick, who has the scope to think and plan more strategically. For his investment houses, Nick installs insulation with an eye toward long-term stability of return, "There was *zero* insulation in the houses. I put in energy windows [to] make it easier for tenants to pay their rent."

Interest/Implementation of Energy Efficiency

Nick recently had a new retail establishment constructed, and he did the same thing there as he had done in his investment properties, putting $25,000 worth of high R-value insulation in the new store; however, his initial belief was that it was not paying him back as much as he had anticipated. Not having a "coach" for his energy efficiency investments, he lacked tools to calculate what his return should be. We did some back-of-the-envelope calculations and it turned out he was saving five cents per square foot per month in the new store compared to the older one—this despite the fact that the new store had a yogurt shop running a commercial freezer. Over time, Jake had replaced many of the old-fashioned windows for ones with higher R-values: "I fixed all the ones that were single paned [and broken] and changed to double-paned on the side that were affected by the afternoon sun." Like Nick, he had added insulation when he renovated. There was no resistance to efficiency implementation; instead, there was genuine interest, which grew as we talked about things that business owners can do.

Relationship with Utility and Financial Incentives

The two men differed as to whether there is support for commercial energy efficiency investment through their utility, Alcorn County Electric (ACE). Jake thought there were incentives, while Nick did not know of any. In fact, the ACE website[15] makes no mention of commercial energy efficiency. Further, there seem to be few resources for business owners, as Jake learned when he invested in a new furnace. He describes what he thought was a rebate: "$1500 for a new furnace, installed by end of last year; when it came through it was a tax credit not a rebate, but because of the way my business is structured, I could not take advantage of it—it did not mean a thing. I bought it because of the rebate." One financing mechanism that is becoming increasingly popular for defraying upfront investment costs in energy efficiency is on-bill financing (Sciortino, Young, Nadel 2012); however, neither business owner was interested in participating. Typically, these

[15] http://www.ace-power.com/Programspagegreen.html (accessed 10/13/12)

programs permit customers to finance energy efficiency upgrades with loans that are paid back through the project's energy savings. Nick did not need it, as he had no issues accessing credit for investments at least as large as a quarter of a million dollars. Jake did not like the idea because, as someone with a variable cash flow, he does not want to be tied to a fixed payment every month.

Being "a Southerner"

"Hell, yes," answered Nick when asked if he considered himself a Southerner. He was born "poor" (his words) in Iuka twenty miles away, he grew up on a farm, working hard, and asserted that, "a Southern boy eats his veggies, buttermilk, and cornbread." As in Oneonta, we see that food consumption is central to one's identity. Jake was from the North but had adopted a Southern identity. For him it was more about values than eating habits:

> I tell people I was born on the south side of Syracuse (New York). I think I am. I have been here 18 years, I have gotten used to this kind of life. I get bored up north, I went to visit people and I was, wanted to go back home. It's a lot nicer down here, up there you have to watch everyone. Down here, people are more family-oriented. More God-oriented. Not necessarily that they practice it when they leave the church, but at least they are trying.

Religion, Politics, and Business

Corinth, Mississippi, like Oneonta, is in a dry county. However, Corinth as a city is allowed to sell beer and wine coolers, and there will be a referendum shortly about the sale of mixed drinks in restaurants (no standalone bars). Locals were pinning their hopes on an upcoming liquor referendum, which was to be the latest salvo in a generation-long back and forth over alcohol and its role in the dry county of Alcorn (Corinth for a Vote 2012). It was a lively topic of conversation around town, and everyone that we spoke with was in favor of it. It was anticipated that passing a less restrictive liquor law would draw more chain restaurants, fast casuals like Applebee's and Chili's, into the downtown; currently they were only found 40 miles away in Tupelo, which was not dry.

The example of the liquor referendum is relevant for understanding the conservative context within which business decisions are made. The politics of the town are dominated by traditional Southern Baptist beliefs, and this will continue to be the case for at least the near future. Both informants were regular church attendees, and both were deeply involved with the running of their congregations. Jake teaches Christian Living courses, and Nick founded and boosted a sober living center operating out of his church. However, both men were in favor of the referendum passing, because of the far-reaching economic implications. Jake in particular could grow his restaurant business with less restrictive liquor licensing laws. They were able to find a way forward, where their religious values, and business needs, could work together for the greater economic growth of their community. Energy efficiency promoters would do well to keep this complex set of relationships in mind.

RECOMMENDATIONS: REACHING THE SMALL BUSINESS THROUGH THE RURAL COOPERATIVE

Corinth is served by a rural electrical cooperative. Smaller cooperative utilities often have a broad geographical territory without the density of customers as do urban utilities, and without a critical mass of industrial or commercial customers found in metropolitan areas. Given that commercial customers make up only a small percentage of a cooperative's mix of energy consumers (15% on average in Mississippi[16]), and that customers are relatively dispersed geographically, t can be financially challenging for smaller cooperatives to offer energy efficiency programs and rebates to commercial members, (Electric Power Association of Mississippi 2012).

State energy efficiency policy could be expanded to encourage energy suppliers to provide energy efficiency programs for smaller municipal or cooperative utilities that may not be able to support their own commercial energy efficiency program. Energy Efficiency Resource Standards often do not apply (or apply in full) to cooperative utilities, but these smaller cooperatives can look to their energy wholesale supplier for energy efficiency resources to offer their members. In the case of Alcorn County Electric Power Association, the Tennessee Valley Authority (TVA) is their supplier and offers a program, Energy Right, which provides technical assistance and financial incentives to residential, commercial, and industrial customers. Businesses that are members of the Alcorn County Electric Power Association can request these resources and benefits from their local cooperative and connect with TVA's energy efficiency program.[17]

Local organizations could offer energy efficiency services and technical assistance programs to local small businesses. Chambers of Commerce, business associations, economic development administrations, and local utilities are all trusted partners, and well-positioned to offer and promote energy efficiency services and technical assistance programs. It is in their interest to do so because these institutions seek to bolster local economic development, and energy efficiency efforts can contribute to business resiliency. A successful example of such an effort is the Bartlett Area Chamber of Commerce's "Team Green Zone," which is based in Bartlett, Tennessee, but serves territory in Mississippi. The Team Green Zone program provides technical assistance to benchmark a commercial operation, identify opportunities for improvement, and guide the business through implementation and financing options (Bartlett Area Chamber 2011). While the local, Corinth-based, Chamber of Commerce did not evince particular interest in energy efficiency, the opportunity still exists for them to lead.

[16] Based on 650,000 residential meters of 754,000 total meters.

[17] Confirmed by Michelle Vigen via phone call to Alcorn County Electric Power Association. December 2012.

Case Study: Big Homes, Big Savings in Alpharetta, Georgia

"What does the phrase 'dynamic pricing' suggest to me? *Marketing*."
Donna, Lake Windward, GA

BACKGROUND

Alpharetta, Georgia, located north and slightly west of Atlanta, was christened a "reloville" by Peter Kilborn, first in an article for the *Wall Street Journal* in 2005, and later in his book, *Next Stop Reloville* (2009). A reloville is a community constructed around the needs of a transient population of middle to upper income corporate workers, whose jobs require a high degree of mobility. Kilborn's thesis is that such mobility means that, in order for families to remain stable, new neighborhoods must mimic the old:

> America's first Reloville might have been Darien, Conn. In *A Nation of Strangers*, pop sociologist Vance Packard wrote of coming upon affluent, globe-trotting "corporate gypsies" camping in suburbs of New York, in particular Darien, in 1972. These well-paid and footloose storm troopers were leading their companies' growth across the U.S. and abroad; IBM, its young hustlers had begun to say, meant "I've Been Moved."[18]

We identified Alpharetta as an archetypal location of the "New South" of which Atlanta is a much-vaunted example (Cobb 2008). Its residents, as a blend of born Southerners and adapted Southerners, offer an instructive perspective on how such mobility and interaction may be changing habits around energy consumption in the area.

Alpharetta is actually composed of a number of different municipalities, spread across a large geographic region (zip codes 30004 and 30005 for our research purposes), yet clearly sharing an aesthetic and purpose distinct from Atlanta proper. Neighborhoods are tidy, planned, clean, and lushly landscaped. Houses are all variants on traditional styles, though clearly distinct in their clusters of lot size, square footage, architectural detail, and access to amenities like lakes and docks and schools.

Gracious Southern Living

[18] Kilborn 2009b.

WHO WE TALKED TO

Alpharetta residents see their communities as having features that set them apart from others in the vicinity, "Johns Creek really has the best schools," says one interviewee; "My sister lives nearby, but has a smaller house, well, a different lifestyle," says another. Yet to the outsider, the area presents a manicured appearance, with neatly intersecting streets and chain restaurants. Houses are corralled into subdivisions, whose names appear on the parkways that debouch into them between low stone and brick gates. One interviewee lived further out, in an area where more of the houses are custom-built and sit scattered among horse- and dog-breeding farms. Another interviewee had the largest home, on a lake with her own dock in the most severely planned and managed homeowner association, complete with streets named after boat types.

The four interviewees in Alpharetta (the last interview with an Alpharettan took place in Corinth, Mississippi) kept their homes at 78—surprisingly warm for the South in summer— and all had programmable thermostats which were set. Three had had a home energy audit at some point, if not in the home they currently occupied. We asked, "If I mention 'smart homes' what comes to mind?" Our respondents were divided, with most saying that that "smart homes" are energy-efficient homes; only two considered a "smart home" to be one where devices and the grid talk to one another. Similarly, smart appliances are generally seen to be energy-efficient appliances, with the lone respondent (who works in information technology) mentioning refrigerators that can "read" what is stored in them (e.g., QR Code readers).

Interview in Detail

Elizabeth has a beautiful home, out in the country that looks like a traditional farmhouse, surrounded by azaleas and hydrangeas. The farmhouse atmosphere is enhanced by her chicken coop, which houses chickens named after the characters in *Gone with the Wind*, including a Buff Orpington named Aunt Pittypat and a blazing red named Belle Watling.

Elizabeth spoke engagingly about her lifestyle interventions in the quest to reduce her and her family's dependence on the outside world in general, including such aspects as having a well. She is deeply Christian, and deeply "green" in the sense that waste of all kinds bothers her. She believes that having been given so much, it is a blessing to her to be able to pass on the favor through the bounty of her garden and the volunteering of her time for church and local schools.

The home of the cast of *Gone with the Wind*

Among Elizabeth's other activities is placing buckets in showers to catch water for her garden, and she exhorts guests to put on sweaters when they complain that her house is too cold. We

talked about her family, how her grandparents were all farmers, and that there is a sense of thrift that goes hand in hand with a fear that good times never last, which seems to pervade the descendants of such families. She was somewhat put out at a friend who had broken the compressor on her air conditioning by turning it down to 58 "on a day when we were at 98!" and had it ice over while he slept. As had several other interviewees, Elizabeth had a home energy audit, performed by her co-op utility Sawnee, but due to her diligence there was not a lot for them to recommend, other than stapling up the insulation underlying her floors (ceiling of basement). She has high R-value windows, extra insulation in the attic, and a whole-house fan.

Elizabeth and her dog (all participants' names have been changed)

Elizabeth has strong ideas about the government and utilities not getting too involved in helping people do this sort of thing, and she feels it is more the responsibility of individuals and the market. She thinks that people in her circle DO recognize the need for more energy efficiency in their homes, especially since "many are unemployed, and in their 40s and 50s, it may be hard for them to ever get another job."

Household Decision Making

We asked our respondents who was the "decider" for decisions about house operations and maintenance, aiming to gather data to help the designers of energy efficiency programs speak to the proper target, the person in the household who actually cares for home systems. Sixty percent of our respondents said they were the ones who pay the bills and take care of the house; however, 80% claimed they were the ones on the hook to call the plumber. We were interested in capturing this information because it could be helpful to shape thinking regarding home energy retrofits, selecting as the proper target the person in the household who actually cares for home *systems*. Our follow-up questions probed the process of decision making in the home, and the following response from Leanne was typical:

> Appliances, if we need an appliance there is always online research, always. Once we find one we like we just go…So for big appliances we look at *Consumer Reports*, then reviews from Amazon, then I go on-line to see where we can find it cheapest. Smaller appliances, if I need a blender then I just go buy it at Wal-Mart, you know?

Research was always mentioned, was mostly done online, and decision making often divided between spouses, with one partner searching and the other partner holding veto power. For this group of participants, using online, web-based, or smartphone channels to reach them with messaging about energy efficiency may make more sense than for other, more rural or less affluent audiences.

We asked about appliances, seeking to elicit attitudes about energy efficiency in general. Ella told us that her research seeks efficiency, fit, and price, in that order. When asked how she would describe "smart" appliances, Donna answered, "I think of appliances that are very energy-efficient, as well as being well designed. Like a fridge that can be reconfigured [to hold juice or water dispensers for entertaining]." Efficiency was consistently mentioned in the top three factors for purchasing appliances; however, it was never the sole decision driver.

HOMES AS SYSTEMS

Given that well-maintained heating and cooling systems can help homeowners with savings, we were interested in whether or not the idea of "homes as systems" might resonate, using a message of "maximization" or "optimization." In addition, knowing that several institutions, such as the Western Cooling Efficiency Center at the University of California at Davis[19], are interested in learning more about how homeowners handle their HVAC maintenance routines, we thought gathering data in this area could be instructive. All of the homeowners paid attention to their air conditioning, and most had regular maintenance, even contracts for maintenance. As we mention elsewhere, Leanne's husband took action and bought a temperature gun when he suspected that his unit was not producing enough cool air. This is a group of homeowners who are very invested in maintaining the value of their most valuable asset, their homes, and part of that means they are attuned to the "tech" that keeps them comfortable.

Smart Homes and Appliances

The concepts of "smart" and "energy-efficient" were inextricably intertwined in the minds of our respondents. When asked about appliances, they mentioned energy efficiency. If asked about "smart" appliances, they mentioned energy efficiency. When Leanne was asked, "When you think about smart appliances, what comes to mind?" she told us "energy-efficient washers need special detergents, use less water." Similarly, when the same question was put to Ella, she said, "[like a] smart TV? It has the Internet. There are TVs that use less power." This was excellent, as one of our hypotheses was that excitement about energy efficiency and home energy retrofits will be easier to generate when homeowners think of their houses as systems that should be optimized.

For a number of our interviewees, smart homes are sustainable in addition to being efficient: "Smart homes have energy-efficient appliances and solar energy," said Leanne. A smart home," said Frank, "comes with appliances that are energy-efficient, smart, programmable, mainly the air conditioning being smart about when people go out and come in and adjust the temperature based on use. Or something that is easy to program." Meanwhile, Ella told us that, "smart homes have solar panels; my cousins have a beach home in Santa Barbara, Montecito. The stonework was recycled, and everything is recycled. Net zero, they give everything back. It was incredible."

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[19] http://wcec.ucdavis.edu/research/by-technology-topic/interactions-of-behavior-and-technology/ (accessed 12/19/2012)

Clearly, "smart" encompasses both ecologically sound and energy-efficient in the minds of our respondents.

Interest in Home Audits and Retrofits

We were particularly interested in homeowners' exposure to the term "home energy retrofit" as potential data for a separate report we were composing on community-based social marketing and "home energy retrofit" programs. In it, we discuss in detail the barriers faced in cultivating a value proposition for such activities:

> These programs suffer from low participation rates due to a lack of understanding of and demand for retrofit services, plus the added barrier of high capital costs that homeowners incur in order to access rebates and the benefits of energy efficiency.

There was no familiarity with the term, "home energy retrofit," which will come as no surprise to readers who have been engaged on this issue. Retrofit is a term that represents a technical conceptualization of a process granting, to the average homeowner, an uncertain benefit (Vigen and Mazur-Stommen 2012). In contrast, there was high awareness of, and participation in, home energy *audits*, with four of the five households having had at least one audit on a house. The audits were provided by (variously) a utility, third party, and "a friend," but all were free, and all were seen as a "good value." Ella told us, "I need to have one done here on this house. I know I could save energy." However, despite the positive impression, only two of the households had followed up on specific recommendations. Leanne was the lone holdout; they had not had a home energy audit, though she said she was open to the idea. Like Elizabeth, Leanne is deeply Christian, and heavily involved in church activities. She says they are frugal, mostly from religious reasons, and just not wanting to waste the good things "God has given them."

Donna had reservations, not about the concept or value of home energy retrofits, but about the providers assigned to conduct them. Auditors who came to her house were scam artists, in her opinion, trying to sell her things:

> All they wanted to do was give me a list of things to buy and for them to do to my house, "Well, you need a box on the outside, and this widget isn't connected to the flange, and da da da da." Everybody I hire in this country, I get ripped off. I have been looking for a reputable company to look at the outside of my house and energy efficiency, but energy efficiency is such a new era, there is, you know the homeowner's association to deal with and that is just a nightmare.

Donna feels she was misled two different times with respect to her HVAC system; this type of difficulty with contractors and managing outcomes was a common barrier for participation in home energy retrofits and definitely stymies the achievement of greater savings. Much of her difficulties with contractors she attributes to a specifically Southern male culture of, "look here, little lady"; on her own initiative she went around unplugging televisions, putting lights on power strips, and turning up her HVAC to 78 degrees. In the process, she reduced her electric bill from

about $1000 a month to $600.[20] Donna would have liked to do more, including installing a new 'cool' roof, but was prohibited from doing so by the board of her homeowners association (HOA). This problem was also seen in research concerning cool roof retrofits conducted for Lawrence Berkeley National Laboratory (Mazur-Stommen 2011). HOAs, with their covenants, conditions and restrictions (CC&Rs), can often stymie the installation of any energy efficient building technology that is visible from the outside.

Acceptance of "Conservation"

Just as there was high awareness of, and a positive attitude toward, home energy audits, most people embraced the term "conservation." This was unexpected, given that other research has shown more resistance to the use of the term (Dougherty 2010). Leanne, the youngest homeowner and the least given towards energy efficiency measures, told us that, "I am all for conserving energy, I don't believe in being wasteful. I save water, for instance. I want to save money on my bills. I think most people want to save money and conserve." Other informants were more specific about what they felt "conservation" activities represented, for example, Frank said he likes to "make sure windows and doors are tightly secure, make sure our thermostat is right so we are not wasting energy; I have different programs for weekdays and weekends; 80 when gone. 68 in winter; I have it set to go down to 76 a little bit before my wife comes home [with the baby]."

Dynamic Pricing

Many utilities have instituted plans that customers can join that price electricity relative to its actual demand. These have received a variety of names, including "dynamic pricing," "flex-time pricing," and "time of use" pricing and all of them operate on the principle that people are sensitive to rates and will adjust their consumption to take advantage of potential savings. However, both Ella and Elizabeth think that, no matter what they are called, they are punitive programs for people who already do a lot with energy efficiency in their homes, and that they would refuse to participate in such pricing modifications. "I mostly run my dishwasher at night," said Elizabeth, "so the one time I have company over and want to run it in the daytime I have to pay more?"

Frank was the lone vote in favor of something like dynamic pricing, seeing it from his IT background as something fair. However, it would run counter to his best interests since, like the others, he keeps his house at around 78-80 degrees, unless he has guests, in which case he turns it down to 72 degrees. The problem with dynamic pricing programs is that this income bracket is willing to pay a premium for flexibility and convenience, as has been recognized by luxury appliance manufacturers for many years[21].

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[20] Self-reported

[21] For more on this topic, including specific examples, see our blog post from October 11 2011 on the ACEEE website, "Anthropology, Advertising, and Appliances" http://aceee.org/node/10419 (accessed 12/9/12)

RECOMMENDATIONS: EMPOWERING AND REWARDING ENERGY EFFICIENCY

Alpharetta, Georgia's, upwardly mobile population demonstrated a culture of conservation driven by common sense and pragmatism. Despite their (sometimes) extensive work to achieve greater energy savings, they described hesitancy for much government or policy intervention in their energy efficiency efforts.

Promising programs for upper-income households include free home energy audits that aid energy efficiency decision making. Free energy audits were the energy efficiency service that came up most often in conversations with our respondents in Alpharetta. Energy audits help identify the most cost-effective upgrades and give homeowners a greater sense of ownership over the decision making process for what improvements to make. A thorough energy audit empowers homeowners to make an informed decision (one that is already motivated by reasons beyond utility incentives) about making an energy-efficiency investment. Utility rebate programs can support the additional energy-saving upgrades.

Dynamic pricing offers pricing signals to energy consumers about the real-time cost of energy use and encourage them to shift or lower energy use, saving the utility and therefore the customer, energy. The aim of dynamic pricing is to shift energy use to lower-demand times of the day, such as at night, resulting in energy cost savings. Some of our interviewees noted that some dynamic pricing programs can be seen as punitive, such as Critical Peak Periods, which assign higher rates during certain time periods. Other dynamic pricing programs are designed to be rewarding. An example is the "peak time rebate", which has been piloted by several utilities through We Energies in Wisconsin, Baltimore Gas & Electric, and San Diego Gas & Electric (We Energies 2012; Wisconsin Electric Power Company 2012; BG&E 2012; and SDG&E 2012). Peak time rebates provide a reward for a reduction in energy use (relative to a baseline) during a critical peak period. If no conservation action is taken, the customer is billed as they normally would be. Such a program can effectively shift load (creating generation efficiencies) while rewarding, and not penalizing, existing energy-saving behavior and choices.

Case Study: Not so Easy: Accessing Energy Efficiency in New Orleans, Louisiana

"In my mind they [Entergy] represent a lot of the thing that people think of that are negative in regard to big corporations"

Robert Vogler

Background

New Orleans is a city of contradictions. The city is famously called "The Big Easy" and "the city care forgot," both of which indicate a relaxed attitude towards life and its troubles. This, however, is at odds with the realities experienced by the lower-middle-class residents of the city and parish. Consumers in lower-income strata often have "structural barriers" to program participation that can range from their inability to document income, to reluctance to expose living conditions (too many people in an apartment), to openly adversarial relationships with authorities from the state due to illegal activities, as well as bad experiences with and thus distrust of welfare or child protective services. Our interviewees perceived systemic corruption, structural inequality, and obdurate bureaucracy as primary barriers to developing a more energy-efficient city.

St. Louis Cemetery Number 1, New Orleans.

Research Questions

Currently, residents of New Orleans are the exclusive recipients in their state of utility energy efficiency programs, which are made possible by EnergySmart, a program developed by the New Orleans City Council (and administered by Entergy-New Orleans) (Entergy New Orleans 2011). New Orleans was also one of the Department of Energy's Better Buildings Neighborhood projects, and developed NOLA (New Orleans, LA) Wise, offering residential and commercial customers assistance from assessment to upgrade (Better Buildings Program 2012). At this research site, we set out to examine the energy savings practices and attitudes of lower-income residents of New Orleans who are renters or live in public housing. We initially sought information about the split incentive problem; namely, that people who could use and want assistance with upgrades to their homes and energy savings through weatherization cannot directly access programs, because the onus of energy efficiency investments lies with building owners who often have no financial incentive to act. However, even when people own their own homes, the complex procedures and (perceived) corruption of the system can stymie their ability to engage. People who successfully

access public weatherization assistance are those who marshal an array of capitals (cultural, social, political, and economic) to navigate "the system."

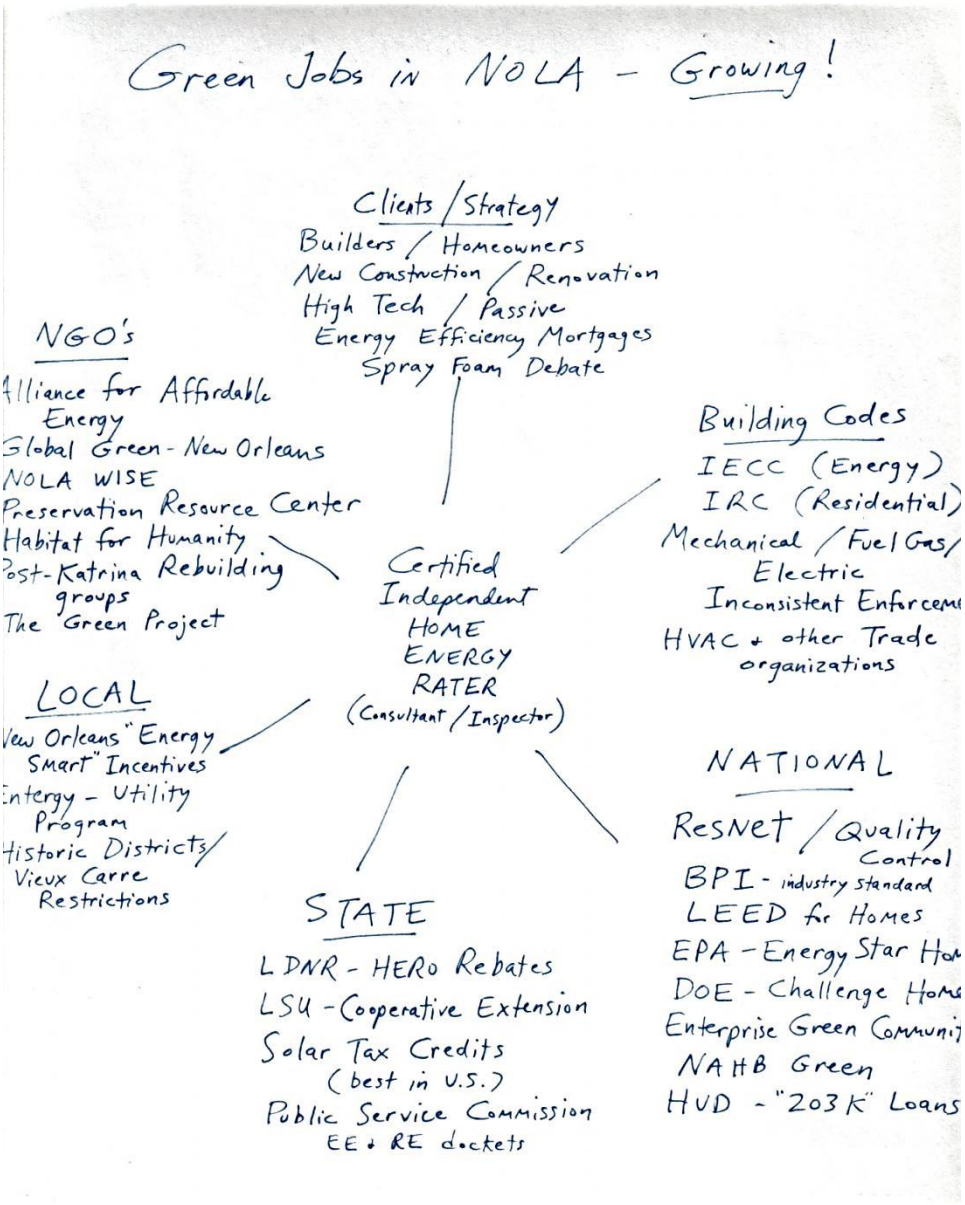
Challenges in the Field

Due to New Orleans' recent history dealing with the catastrophe of Hurricane Katrina in 2005 and the aftermath of rebuilding, it seemed prudent to add a local ethnographer to the team, someone who would be familiar with the many ways in which various institutions and jurisdictions intersect in the on-going restoration and revitalization of New Orleans and the surrounding region. We sought someone who had been living and working in New Orleans for some time, and chose Pat Huff, a doctoral student at the University of Georgia, Athens. Pat had been working in New Orleans since 2007, and produced his master's thesis for Georgia State University, "Movement Against Disaster: An Ethnography of Post-Katrina Volunteerism in the Lower Ninth Ward of New Orleans, Louisiana," from research conducted in the city exploring the experiences and practices of disaster relief volunteers.

New Orleans was the one site where traditional anthropological practices were followed with respect to entry into the field, rapport building, and snowball sampling (using one respondent to find the next, and thus activating a social network rather than sampling randomly, see Appendix A for more on methodology). Pat's diligent pursuit of interviewees revealed a sprawling network of volunteers and activists engaged in energy efficiency, renewables, and conservation. The high levels of social and cultural capital possessed by these people rendered some of our interview questions moot—what had been designed to elicit potentially buried information became unnecessary in light of the intimate knowledge shared willingly by respondents.

Interview in Detail

Shelby Jones is a home energy rater, and has worked as a "green" consultant since 2000. She possesses a wealth of local knowledge concerning energy policy in the city of New Orleans, and Louisiana more generally. Shelby has a strong sense of compassion and a commitment to energy justice, or the equitable distribution of energy access for meeting basic needs, including cooking, heating, and lighting. She has extensive knowledge of the local history of struggles around energy policy and the social connections and networks of relationships in the energy arena. Shelby has been involved in energy activism for years around the city, and, as with the other interviewees in New Orleans, she evinced a considerable skepticism at the idea that the local government and Entergy New Orleans are committed to building an ecologically sound and efficient energy infrastructure. We asked her to produce the cognitive map of the relationships among energy-oriented organizations in the city, which we have reproduced on the next page. Like many of our other informants, Shelby was possessed of high social and cultural capital, which offsets her relatively low income (vulnerable to fluctuations as her energy rating business ebbed and flowed). New Orleans provides a good example of what we mean when we say that capitals can be exchanged for one another. Higher levels of education and activated social networks function as resources, and help people get their needs met in the face of structural inequalities.



Shelby was not only actively trying to get an energy rater industry going in Louisiana, and therefore a hub of the energy activism network, but she was also engaged on a daily basis with friends and neighbors, providing assistance and exchanging favors. This type of social network is especially fluid and fragile, and highly dependent upon a charismatic node at the center, which can make efforts to launch large-scale energy-efficiency campaigns or movements problematic if it remains dependent upon such a fluid form of organization. However, the cognitive map of the institutional relationships present around energy efficiency in New Orleans shows the robust nature of the current environment, in that a wide variety of forms of organization are flourishing simultaneously.

Understanding the role of various forms of capital (which is explored in more depth in the appendix) helps illuminate what might seem surprising: in several instances, people who were heavily involved in energy issues were unable to identify programs meant to assist low-income residents of New Orleans with their energy costs. This was despite the fact that all of our informants were officially low-income. We discuss the identification and selection process in more detail in the Appendix, but all of our New Orleans respondents met the criteria that follow:

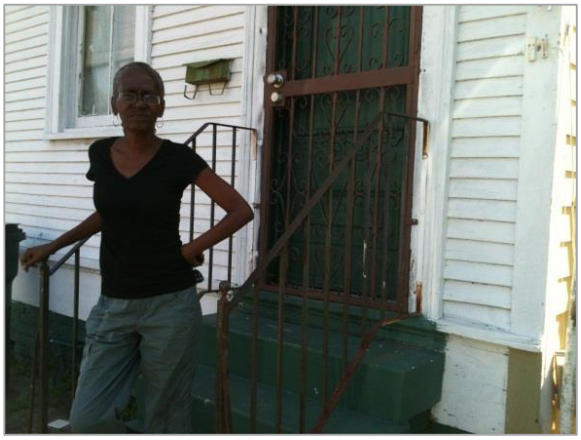
- Residents had to live within the New Orleans city limits.
- Residents' incomes had to be below the median household income for Louisiana, or $43,000.
- Residents could be of any age, with a range of ages from 20 to 80 being ideal.
- Residents could be of any self-described ethnic heritage or national origin, with a range of respondent types being ideal.
- Residents had to be of at least legal age, and enfranchised to make decisions about their shelter.

From a programmatic standpoint, there are significant barriers to reaching low-income households with energy efficiency services and information. Low-income populations tend to be diverse in terms of culture, language, and housing arrangements. The variations in types and levels of capital which individuals can possess or access make defining such populations in need problematic; as we see here, even self-identified low-income residents of New Orleans had not defined themselves as in need of assistance.

Paying Bills

Jared, who is white, had never directly paid a utility bill despite living his entire life in the city. All of his landlords have bundled his rent with the utility bills. He explained that one reason landlords like to bundle rent with utilities is that "they're too cheap to pay for a separate meter." Jared reported that, in the case of a duplex apartment, instead of installing separate meters for each apartment, the landlord will keep the utilities in his/her name, accruing charges for both apartments on the single meter. The landlord's rental rate factors in the usual cost of utilities along with baseline rent. While Jared believed that it was a *common* practice to bundle rent with utility bills, another respondent, Michelle Simone, who is black, claimed that it was *very uncommon* for a landlord to bundle rent and utilities. Michelle had lived in New Orleans on and off for 30 years. She was not in New Orleans during Hurricane Katrina, as she was living in Denver at the time, and returned to the city in 2007. Her utility bill in the month we interviewed her late July 2012) was $134, but she felt that a "reasonable" price to pay would be $75. Her feelings about Entergy were extremely negative. She described a life as a single, working mother; she spoke of having her house robbed, then moving to a better neighborhood albeit with a higher rent, "1200 dollar a month! And I had a son in private school, in Jefferson parish, when they ended my job. No job, a kid with tuition, and rent that high, I just couldn't pay it [her utility bill]. I still have trouble paying bills on time, I rob Peter to pay Paul."

Michelle is late paying her bill "just about every month. But I don't trust Entergy. I was on this one plan where you picked the date…and when I moved all of a sudden my bill was just that big!" She is frustrated that her bills follow her from house to house, affecting her ability to get electricity turned on. She is frustrated when the accumulation of late fees means she loses her ability to negotiate payment with the utility, which then becomes the target for her ire.



Michelle Simone outside of her home in New Orleans, LA.

We asked our participants if they ever had to decide between paying energy bills and other necessities such as food, medical care, school supplies, transportation, and clothes for work; Michelle seems to consider paying tuition to be a simple fact of life in New Orleans. When discussing her $1,200 a month market rate rent, she expresses a sense of shock and resignation, but not ire. So why is so much of her anger directed at the utility? Michelle may not see Entergy so much as a company[22] selling services to her, but rather as a public service, that is required to deliver her the "invisible" energy services that undergird her entire life. As Elizabeth Shove wrote (2003), "Much environmentally significant consumption—and in particular, consumption of energy and water—is quite simply invisible. It is bound up with routine and habit and with the use as much as the acquisition of tools, appliances, and household infrastructures." Some consumers may not see energy services or water delivery as the product of exchange, but rather as common necessities, whose interruption is an intolerable breach of a civic compact.

Saving Energy

Roland Bateaux is an elderly widower, retired architect, and lifelong resident of New Orleans. His home is located in the Esplanade Ridge neighborhood, separated from the Lake View neighborhood to the east by Bayou St. John. He designed and built his home with a clean modernist aesthetic and it is well kept and tidy. He is conscious of his energy usage and tries to keep bills down by using a sufficient but minimal amount of energy, saying, "I don't—I really don't think I'm a very extravagant user of energy because I'm very conscious of its use and its impact on the country, the more you use the more they have to generate and pollute in the process."

Roland was the oldest of all of our interviewees, both in New Orleans and elsewhere. His attitudes on energy consumption were grounded in the practices of a time when air conditioning was not

[22] Entergy New Orleans has been an incorporated entity since the early 1900s, first as New Orleans Public Service Inc., then as Middle South Utilities.

common. He designed and built his own home in the late 1960s, and it takes advantage of vernacular aspects, including louvered shutters over the windows, that keep it cool without needing to run the air conditioner. These have been commonplace in New Orleans since the early 19th century because, "louvered windows facilitates the ventilation necessary in the tropics…Southern Louisiana also has a tropical climate" (Upton and Vlach 1986; 67). As both an architect and a life-long resident of the Crescent City, Roland would have been intimately familiar with such features and their function. His house, when we visited him, was very comfortable without any air conditioning running, midday in late July. His energy bill runs about seventy-five dollars a month.

One of our informants, Hunter possessed higher-than-average knowledge of the local energy context and his own energy use. Indeed, he keeps months of energy records organized in a folder. He owns a small digital meter that tracks all electrical use in his home. During the interview, he demonstrated a deep local knowledge of the energy sector of the economy and its relation to local politics and administration. His perspective on saving energy was driven more by lifestyle and aesthetics, than necessity and practicality. He describes himself as 'not needing' very much energy, since he cooks simple meals and does not own a television. Hunter's pride in living ascetically comes through in his voice on the recordings, for him energy consumption seems less like a resource to be managed or conserved, and more like a challenge to be won. He pays a bill of about thirty to forty dollars a month.

Shelby lives down the street from Roland, and often stops by to help with groceries or other life necessities. She is intellectually engaged with energy usage, but by her account has not actually implemented energy-efficient features like Roland, the retired architect, nor does she track her energy use the way Hunter does. Her house is older and possesses a warm "lived in" charm. Worn wood floors and well-used furniture contribute to its character. Like many older houses in New Orleans, it is permeable and not perfectly insulated; "it breathes" in the words of her partner, Robert. She has a family home in Mandeville, across Lake Pontchartrain from the city, that she is spending time restoring. Mandeville has many historic and vernacular homes, so like Roland Shelby is familiar with the energy savings features of older homes, however it does not seem that her personal consumption of energy is the issue that motivates her. Rather, like Hunter, she lives a spare lifestyle, with much of her attention devoted to promoting energy efficiency in and around New Orleans, developing an 'energy rater industry' across the state of Louisiana, and volunteering.

Relationship with Utility

We asked respondents, "Do you generally find it easy or difficult to communicate with your energy provider?" The underlying sentiment of skepticism expressed toward the local energy provider was *unanimous* among interviewees across all demographic categories. Roland Bateaux was less vociferous in his distrust or dislike of Entergy than some of his fellow citizens; in general, he seemed to have a "live and let live" attitude. He cannot remember ever speaking to a representative personally (and he has lived in New Orleans for his entire life) saying,

"Occasionally, they have a rep who gets on the phone and apologizes for a blackout or whatever" referencing pre-recorded messages that auto-dial his phone. However, even he has his limits, and according to him, the torn up sidewalk outside his home was Entergy's doing:

> Entergy, both electricity and gas, they are changing something; I don't know what is going on, outside. As a matter of fact, I didn't know they were going to do this until they knocked on the door and asked to look at the meter! A little advance notice, they were just lucky that I was confined to the house and able to let them in to check the meter. They didn't know whether or not I had a car, and they would have broken up this driveway and locked me in if I *had* a car.

Another interviewee, Hen-Jo LaBrune, distrusts both the local government and the energy provider. When we asked, "What word comes to mind to describe your utility," the first word that came to his mind was "corrupt." Michelle Simone uses an online account to pay her utility bills almost exclusively, since this allows her to avoid dealing with Entergy employees. She feels that they generally have a bad attitude and are unwelcoming. She also complained about the crowding at the local Entergy office.

Relationship with the City

We wanted to find out if there were alternative avenues for people to take in order to access help with energy savings, and we thought that the city of New Orleans might be one place they could turn to (since they were adamant that their utility was not helpful in this regard). When we asked life-long resident Roland Bateaux if he kept up with city politics, he laughed, "Boy yes, you have to, in this city! We've had some real Neanderthals on city council! And then, the Mayor's office, oh boy!"

We asked people, "Can you give me an example of how they operate that is aggravating to you?" Bateaux's neighbor, Robert Vogler, has local knowledge of the construction industry in New Orleans, with decades of work as a contractor in the city under his belt. He stated that almost nothing happens in terms of construction in the city without paying necessary bribes to one or another local government official. Hen-Jo LaBrune, ex-military and current student, also felt that the city's bureaucracy, particularly the legal system, is slow and dysfunctional. As with almost all of the interviewees, Jared also noted that one of the key problems with the city and the local energy supplier was corruption and greed. In one of the few positive examples, Jared, an "underemployed part-time bartender," expressed a cautious optimism tempered by weary experience:

> There is definitely a lot of corruption and bureaucracy, but it is getting better as far as the corruption goes. I honestly think it is getting gradually better. They have become a lot more transparent. …Every time somebody leaves office, like there's a new mayor or something, the past administration, [the new administration] always ends up getting a bunch of people indicted so that brings a bunch of stuff to light and they can't keep doing the same schemes—every—you know, over and over again.

Even though Jared feels more optimistic about the *future* of New Orleans politics, when we asked, "What, in your mind, is the biggest obstacle to getting things done in New Orleans?" he answered that he still sees the system as mired in corruption, one that is breeding poverty, and preventing basic infrastructure improvements necessary for any efficiency gains:

> There is not a lot of money to go around and the money that we do get, from … federal government … a lot of that gets lost to graft, you know. Yeah, like the infrastructure, like the streets and the electrical system and all that needs a lot of work.

In an environment where the predominating *mythos* is one of legendary corruption, it is likely that some of the historical context colors present-day perceptions of actions taken by those institutional actors (Mazur-Stommen 2004). It is hard to know whether our informants, like Jared above, have actually witnessed any 'graft' or merely find the term a handy metaphor to describe the social inequality that they experience day to day. It is important to remember, that all of the New Orleans informants –despite variation in possession of such capitals as education or access to helpful networks of like-minded individuals—were self-described as 'low-income' in other words living in a household with an income below the median for Louisiana, which was $43,000. Thus, they face real constraints upon their choices and decision making, in terms of where and how they live. The lived experience of inequality, which can have cryptic origins, is ripe for simple explanations, such as 'graft' and 'corruption'. In the words of the famous anthropologist, Claude Levi Strauss, such statements are made because they are 'good to think with' (as opposed to having an objective reality).

Hope

Despite a sometimes bleak picture of New Orleans, the city administration, and their own personal struggles, most participants hold a deep affection for the society and culture of the city. Michelle Simone expressed her affection thus:

> I can get up, rainy Sunday mornings, that I can get up and can be sitting in my house on any day and a Second Line roll down[23]—I can travel the same street 20 times and suddenly see a house with the most magnificent architecture, the history of the city, the color of the city, the music, the food. When I first came home [after Katrina] I walked in Rouse's [a local supermarket chain] and there was an older lady in there and she said, "Hey baby," and I was just in tears. That's what I love about New Orleans.

In New Orleans, the various public and private sector failures associated with Hurricane Katrina and its aftermath have done little to boost public confidence in the administrative systems that often seem remote from the public's daily struggles to get by. What ethnographic experience and the interviews suggest is that the issue of energy efficiency cannot be considered in isolation from the broader socio-political context of the city.

[23] A "Second Line" is a relatively loosely structured parade accompanied by a brass band.

RECOMMENDATIONS: BRING ENERGY EFFICIENCY ACCESS TO MID- TO LOW-INCOME HOUSEHOLDS

In New Orleans, Louisiana, residents describe a mix of frustration and resignation with political institutions and their energy utility. Interviews among New Orleans residents illustrated a population whose main interaction with their utility is through monthly energy bills and who are unfamiliar with programs that offer energy efficiency services or support. This will affect the fiscal health of low- to middle-income households who have been seen to pay disproportionately more for energy than other households in national studies.[24]

Entergy New Orleans, the investor-owned utility provider in New Orleans, relies on the New Orleans City Council to offer policy support and regulation that the state provides for other investor-owned utilities in the state. The city of New Orleans and Entergy have an established Integrated Resource Plan[25] that is undergoing an update. In 2013, the City Council will also be due to review the Energy Smart energy-efficiency programs. Continuation and expansion of these programs is crucial to keeping energy costs low for New Orleans residents, businesses, and institutions.

Utility energy efficiency programs could expand their partnerships with local organizations to reach low-income residents. There are significant barriers to reaching low-income households with energy efficiency services and information. Low-income populations tend to be diverse in terms of culture, language, and housing arrangements. Our respondents in New Orleans were unable to identify programs that they are eligible to participate in, such as the Low-Income Heating Energy Assistance Program, Energy Smart, and NOLA Wise. Reaching low- to middle-income households can be accomplished, but requires policy action ranging from the state level on down. Targeting utility programs and efforts toward multi-family buildings can ensure the availability of services and resources for the populations that need energy efficiency the most. By partnering with local and trusted organizations that provide other services to low-income residents, utilities can overcome the barriers of distrust and access and increase knowledge of and participation in energy-saving programs.

Local policies are needed that encourage owners of rental properties to make energy efficiency improvements. Enabling supportive state policies, however, is only half the battle in reaching low-income customers. Local policy and regulation plays an important role due to the local nature of low-income housing organizations. Many low-income residents are renters, subject to split incentives that make property owners unmotivated to make upgrades that benefit their

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[24] Low-income households have been shown to pay 10-17% or more of their income on energy costs compared to 3-7% among average-income households. Eisenberg, Joel F., "Weatherization Assistance Program Technical Memorandum Background Data and Statistics," Oakridge National Laboratory 2010, ORNL/TM-2010/66; and The National Energy Assistance Director's Association. 2009 National Energy Assistance Survey. April 2010.

[25] http://www.entergy-neworleans.com/irp/

tenants. Utilities can offer special programs for rental and multi-family properties that address the unique barriers and opportunities of the owner-tenant arrangement. Utilities are in an ideal position to partner with weatherization and other housing organizations to reach tenants and help lower their energy bills. Local government can also play a role in providing regulations and incentives to owners of rental housing to make important energy upgrades. For example, an ordinance in Boulder, Colorado, "SmartRegs," operates in conjunction with Boulder's EnergySmart incentives program to effectively create a baseline energy efficiency code for multi-family buildings licensed as rental housing (Gishon and Cuzzolino 2012).

Case Study: Idle No More: Owner-Operator Decision Making at the Great American Truck Show

BACKGROUND

The owner-operators at the Great American Truck Show (GATS) held in Dallas, Texas in August 2012 demonstrated pride in their trade and the independent spirit that comes with owning one's own business. We were primarily interested in speaking with owner-operators who identified as Southern, and while GATS draws from a wider basin it was instructive to talk with both Southern-based drivers as well as non-Southerners[26] who prefer operating in the South for what they saw as higher wages and generally less intrusive regulation. We also felt that speaking to this demographic functioned as a strong test for attitudes, since it seemed likely that there may be more resistance to federally imposed regulations and oversight in the Southeastern states (and Texas) than elsewhere. If the drivers we spoke to at GATS were interested in fuel economy and related issues, it would be a positive result.

Owner with a contestant truck in the Polish N' Shine contest at GATS.

RESEARCH QUESTIONS

GATS was our site for qualitative research about the attitudes and acceptance of emergent changes in vehicle design. This research took place against a backdrop of upcoming federal regulation concerning fuel economy for heavy-duty vehicles that will be phased in between 2014 and 2019.[27] This regulation will require that diesel mileage attained by high-roof sleeper-cab tractor-trailers increase by almost 31%, from 5.66 miles per gallon (MPG) (on average) in 2010 to 7.41MPG in 2017. The primary avenues through which this increase will be achieved are improvements in engines, tractor aerodynamics, and tires; reductions in vehicle weight, and idle as well as vehicle speed delimiters. Of these, our research was mainly concerned with owner-operators and their attitudes and acceptance of aerodynamic improvement, idling reduction, and vehicle speed limits. The Dallas Convention Center during the Great American Truck Show is a world unto itself. Not only could the arena hold a first-class abundance of booths and displays, but at least three dozen tractors and tractor-trailers filled the edges of the room in the Polish N' Shine section, where full-sized rigs shone under the fluorescent lighting. In order to do our

[26] Primarily Texans.

[27] EPA and NHTSA (2011), Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engine and Vehicles; Final Rules, Federal Register, Vol. 76, No. 179, September 15 2011

intercepts, we had to rent a booth from the exhibiting organization. Our intercepts were conducted both on the floor and at the booth.

Truck Purchase and Use

Two brothers, both owner-operators, show off a 1981 Peterbilt tractor in the GATS Polish N' Shine contest

We began with ATDynamics, a retailer in efficiency equipment. They are a channel distributor for trailer-side skirts and a manufacturer of tail fairings. We identified two interviewees, Rich and Danny who were sitting in folding lawn chairs next to the back end of a larger tractor. Rich and Danny own their tractors (bought new) and lease them, with themselves as the drivers, to companies for hauling liquids. Both drivers have regular routes in Texas and Louisiana, driving around 110,000 miles per year (which they say is "pretty light"). Rich bought his truck new in 2003 and plans to keep it for another five years (14 years total). Danny has the same make and model, bought new in 2005, and he likewise intends to keep it for several more years. Their attitude towards investment and ownership is complicated, since, due to the "leaseback," they do not consider that they "own" their trailers. This is the reason they cite for not having made any aerodynamic or other fuel efficiency improvements. They financed their trucks. "I make sixty payments, one at a time," says Danny.

Frank was the first interviewee who was keenly interested in efficiency during the purchase decision, rather than in a retrofit. He drove two Class 8 tractor-trailers, one a Volvo and the other a Freightliner, both of which he bought used. He most often drives the Volvo, which gets 6.5-6.6MPG, and he attributes what *he* sees as good mileage to the scoop nose of the truck. His criteria for purchase, in order of importance, are "comfort, fuel mileage, and a good record." We consistently saw "fuel mileage" as the second of top three criteria.

Another interviewee was a woman who owned four trucks, together with her husband. They put about 80,000 miles on each truck each year, mostly doing shorter trips within Texas, as well as some longer trips into Kansas. They purchase new trucks because "he's a mechanic and can fix things, which cut down on costs." In her opinion new trucks have better equipment, are more up to date, offer better fuel efficiency, and fewer breakdowns.

Jose owns 8 trucks and 42 trailers. He operates a "drop n' go"-type of operation between southern and central California, which means round trips of 250-350 miles per day, six days per week. When looking for trucks, Jose focused on the engine ("I don't go by the mileage"), and he would "listen" to it to be sure it "breathes easily." He wants trucks that have not had a "hard life, with a

bad driver," and with bodies that "aren't cracked." He normally buys them used ("easy to work on") and prefers to pay cash, keeping them for about nine years. "We prefer to get them 'semi-new.' We are afraid of all the sensors. All eco stuff, you know? If we get them used, we can work on them ourselves." He prefers to buy trucks from fellow owner-operators rather than from used truck dealers, because "you get a better story, a better history on them, where it has been."

Brand and Aesthetics

Branding played a role, especially with Peterbilt. Repeatedly, Peterbilt trucks were referenced with nostalgia and called "classic." One example of this phenomenon was a driver we will call Bob, who identified himself as an owner-operator, but in fact he was an employee of a company with 50 trucks. Later, we learned that Bob was so highly valued by the company that he was their main representative on the road, and he had been rewarded with a customization of his truck. Bob expressed a sense of ownership in his truck (in contrast to Rich and Danny who actually do own their trucks, but due to leaseback, do not share the same sense of possession) and gets his truck to last seven years through regular maintenance, in contrast to what he claims is a fleet average lifetime of four to five years. While his company is exploring some more efficient models, he remains biased toward the "old" look of his Peterbilt. Another driver was currently driving a truck from 1987, with an "eight-inch short hood." He had made his purchase decision based on brand—specifically, Peterbilt. He believed that a Peterbilt would, "last better, ride better, look better...and if it don't shine, it ain't mine."

Aesthetics were also a major factor for some. Jose told us that he "liked the classic look" but he did "feel better when fueling" with the scoop-nose-type truck (of which he had three). One couple who used to drive but now does customizations said that putting in $12,000 worth of "shine" may only mean a $10,000 mark-up on some of the bigger-brand trucks. "Shine," therefore, functions as a loss leader but likely leads to quicker turnover when a trucker wants to sell (and if a person's debt is $2000 a month, any carrying costs add up quickly). Another interviewee owns six tractor-trailers and collects trucks. He had "no idea" what his fuel costs might be over the course of a year while having very strong opinions against aerodynamic features that alter the look of a truck.

Fuel Costs

Owner-operators diverged significantly with regard to the attention they paid to fuel costs and the proportion of income they constitute. At one end of the spectrum were people who had little idea, while others made wild assessments that doubled "$25,000? No, $50,000?" At the opposite end were people like Randall, who knew his costs and profits almost to the penny. He described in detail the methods he used to arrive at an "average of 7.5 MPG, and sometimes as high as 8.4, with a low of 6.9 MPG. I keep a log book."

Pam and her husband are, like Randall, "extremely fuel conscious, calculating what loads he picks up (mostly military and construction equipment on a step-deck) and how much it weighs. There are a ton of gauges on his dashboard. When heavy, he gets about five MPG, when light about

seven, bobtail only, eight. We have been in business for 32 years and nothing without a receipt!" She reported fuel costs of about $67,000, or half their gross.

Mark got "around six miles per gallon" and he described his fuel costs as making up 50-60% of his total costs. According to him, as recently as 2009, they made up only 30%, but gas prices had increased. Bob told us that he had, "made a lot of money" but that a lot of that went towards paying for fuel, in the amount of at least $72,000 in the last year.

Fuel Efficiency

Fuel efficiency was a factor in purchase decisions with some of the interviewees; however, reliability and power usually came first, with answers like "engine, fuel economy, gear ratio," and "wheel-base, engine, mileage" being typical. Drivers felt speed was important: "I drive like a maniac, sometimes up to 130 mph" and "I like lots of horses and have one of the fastest…" were common descriptions. One of the most often-cited values of the owner-operators was the ability to get home at night, and speed helped them with that goal.

Efficiency aspects that they *were* interested in included:

- Adjusting and improving motor/engine parts: Chuck from Arkansas believed that efficiency depended on "how you got the motor set up" and that replacing his air filters and adjusting his valve set had contributed to his 7MPG (among the highest reported during interviews)

- Purchasing and installing an auxiliary power unit (APU) to reduce idling: APUs contribute greatly to comfort at night, but come with two major issues, that of cost and the fact that certain models will shortly be outlawed in California. Maintenance difficulties with older models also got a mention.

- Changing driving habits to increase safety (and then fuel efficiency): driver health is a major concern, obviously to their families. Health exhibits such as the one next to our booth were popular. Pam from Goldonna, Louisiana, said that her husband had experienced health issues that she attributed to diesel fumes. For that reason, they were interested in "new, natural fuels. Cleaner fuels. We stopped by the Chesapeake CNG booth. I just want him to come home and not smell like diesel!"

Fuel efficiency was definitely on their minds, but implementing it depended highly on the type of truck (flatbed, trailer, cattle car), the loads they carried (shape and weight), where they drove (California; the South; Edmonton, Alberta), and how far they drove on an average trip.

Aerodynamic Modifications

We talked with representatives from AirTab, the makers of a small plastic piece that can be added to the edges of van trailers to conduct air movement off the back of the trailer more efficiently. They claimed a payback period of two to three months if a truck was being driven 100,000 or

more miles per year. Originally designed with the owner-operator in mind, positive reviews caught the attention of the fleets. They said that Air Tabs would not seek SmartWay[28] certification because they were seeing the distrust from owner-operators, and they felt that the other SmartWay "branded" equipment was not living up to its claims.

The different economic circumstances of owner-operators and fleets came up several times in discussions of aerodynamic features and the Super Single tires[29]. Most of the newer aerodynamic features were seen by owner-operators to be acceptable to fleets because they have both higher fuel costs (in absolute terms) as well as the capital to invest enough to reap larger overall savings. Owner-operators sometimes incorporated specific types of aerodynamic modifications into their purchasing decisions if they felt it enhanced their "show," in particular, top fairings/whale tale/air dams on the top of cabs. Rich installed a "whale tail" on the top of his cab that does help with aerodynamics, but he confessed that he got it more for looks. Overall, Rich had ventured further into installing efficiency modifications than had his partner Danny; he had a scoop hood, he was using the Super Singles, and he had purchased an auxiliary power unit to reduce idling.

Owner-operators who were not interested in aerodynamic features told us it was variously because: 1) they did not own their vans (square trailers), or they drove a flat bed or carried liquids, or they did not own a trailer; 2) they thought they were ugly; or 3) they believed that they were ineffective in reaping savings. Several owner-operators told us it was not possible to install aerodynamic features because a double-decker cattle trailer had holes that would nullify any gains. One interviewee had purchased a tractor from his former employer when the company closed down. He was nearing retirement and did not expect to purchase another, but he knew about efficiency technologies and was the first to speak (somewhat) favorably of the Airtabs. He said that he thought they worked but that there was "something funny" about them. In this case, we can see that experience was not enough to trump the lack of a satisfactory explanatory narrative.

The more trucks that any given operator owned, the closer their economics came to resemble those of a fleet and the more interested in fuel savings he or she became. One owner-operator with many trailers did express interest in cutting costs with the skirts. Jose was one of the few who used skirts and had cones on the noses of his tractors to increase aerodynamics. Randall, who was a careful observer and logger of the gains various measures have gotten him, told us "side-skirts and rear-tabs are great, except for places like the Southwest where you get rough roads, deep ditches, and a lot of [railroad] crossings." He had an aerodynamic nose on the Kenilworth t660 that he drove, and chose to drive more slowly than his governor is set for, "66 on cruise control,

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[28] SmartWay is a public/private collaboration between the Environmental Protection Agency and the freight transportation industry intended to promote fuel efficiency. Most of the large fleets are SmartWay Transport Partners.

[29] "Super single tires are tires greater than thirteen inches in cross section width designed to replace two tires in a dual fitment."(Blue Book 2007: Joint Committee on Taxation's General Explanation of Tax Legislation Enacted in the 109th Congress: 81) The resulting reduction in weight, combined with lower rolling resistance, leads to better fuel economy. www.fhwa.dot.gov/planning/freight_planning/talking_freight/talkingfreight01_17_07cb.ppt

67 on throttle, I go 64 on cruise control, getting an additional two tenths mile per gallon, and when I need to I can go faster and pass someone. You also get a better record as a driver."

Tires

One area with near unanimity among owner-operators was that Super Single tires were not feasible for them for a variety of reasons, many of which underscored the economic divide between owner-operators and fleets. Issues cited included not being able to afford the downtime and service if they broke down on the highway. "You have a flat and you are gone," said Chuck. Owner-operators also mentioned not having access to the services and stock that a fleet can keep at terminals, and losing time on the road, thereby endangering future competitiveness. Safety concerns also figured prominently, with people feeling that if a sole tire blew out, they would be stranded and vulnerable at the side of the road, whereas with dual tires they could run on a flat to the next service station. Worse, Randall reported, "If you have a power divider, and your Super Single blows, you may not have enough traction to even get *off* the road. You are parked."

Other arguments against the Super Singles came down to a sense that they did not deliver mileage savings that had been claimed, or that what mileage savings accrued were not enough to offset the risks described above. Truckers also admitted that they did not give much credence to tests such as those performed by the Society for Automotive Engineering, instead preferring their own experience on the road. One interviewee brought up the problem that his perception was that Canada does not recognize them for their weight and therefore they reduce his payload if he goes into Canada. These impressions and opinions of trucking owner-operators are an explanatory narrative, unique to their specific history and social structure.

Standards and Regulations

Just as in our research with farmers in Oneonta, Alabama, the biggest complaint heard from truckers was about regulations. Owner-operators were especially sensitive to regulations that could easily be met by fleets but were harder for them as independent operators. They also complained about regulations that they felt were being skirted by Mexican drivers whom, though legally allowed to deliver loads in the United States, they accused of illegally picking up loads for the return trip, which was made easier for them thanks to lax enforcement.

Other regulations were seen as having effects that were counterproductive, such as biofuels causing lower miles per gallon, which required more oil, or when having filters on the exhaust system made the engine run at a higher temperature resulting in the engine working less efficiently. One driver who was very dissatisfied with the regulations told us that he understood that "smog is an issue" but he was also concerned about how the regulations would prevent him from passing one of his older trucks (that are non-compliant) on to his son one day to start his own business, as his dad had done for him.

The biggest headache for many truckers was California, and none wanted to drive there because of all the regulations and strict enforcement by the California Department of Transportation.

"Gas in California is crap," said Randall, "because of the cetane required by regulation. It binds up your injectors and gets you lowered fuel economy. The government bureaucracy needs to continue issuing regulations to justify their existence." Colorado was a runner-up to California as least-liked state, for "over enforcement" said one couple who delivered oil equipment on runs between Houston and Edmonton. Pam did not like them because they were "a consumer state, they don't make anything and it is hard to get loads going back." She also did not like her husband taking jobs in the Northeast: "Yankees are cheap," she laughed, "they pay a lot less per pound than the South does."

Even Texas came in for some dislike, with complaints centered mainly on the enforcement of anti-idling regulations in Dallas and Houston. One interviewee complained, "I was at a truck stop in Houston, and the highway patrol came out, and put an egg-timer on someone's hood, and you shoulda seen all the drivers scrambling!" Our interviewees' views on regulations around idling were informative. Due to higher fuel prices, the cost of a hotel room (about $40.00 at a Motel 6 in Texarkana, Texas, the week of the truck show) was fast approaching the cost of idling through a night. Truckers have three choices for rest-time: idling, motel, or auxiliary power unit. All three have economic pros and cons for the drivers. Idling is noisy and smelly. Motels may not have adequate turn-around space for big rigs. Moreover, auxiliary power units can be expensive up-front investments. Alternatives include a "red-neck air conditioner," which was literally an air conditioner inserted into a hole cut in the back of a cab, and the services of the company Idle Air, which provides a "hook-up" for power, air, cable, and Internet for a competitive price (but is not available everywhere). The bottom line is, truckers do not like to idle, but sometimes they feel they have no other choice, as it comes down to idling illegally or dying of heat stroke.

Recommendations: Aligning Energy Efficiency Policy with the Priorities of Independent Operators

The owner-operators at the Great American Truck Show demonstrated pride in their trade and the requisite independence that comes with owning one's own business. While they indicated interest and concern about fuel consumption and costs, some showed greater trust in their own instincts and experience than in lab-tested and negotiated policies to achieve greater fuel efficiency. The 2011 fuel economy standards require manufacturers of new medium- and heavy-duty engines and vehicles to increase average fuel efficiency to a specified level, varying by the class of vehicle, starting in 2016 (EPA 2011). These fuel efficiency standards are anticipated to increase the price of tractors by around $6,000, but the additional cost will be recovered by energy savings that average about 20%, allowing the incremental cost to be paid back within two years and providing over $80,000 in net fuel savings over 10 years per truck (Kahn and Langer 2012).

Many owner-operators, especially those interested in minimizing maintenance costs, purchase new trucks (rather than used), and they will be directly impacted by the new regulations, requiring them to either raise the additional capital (in the case of cash payment) or be approved for a larger loan. In the case of owner-operators who purchase *used* trucks, the standards will have

a delayed impact. New trucks used for long-haul purposes are usually retired to short-haul uses after three to four years. Drivers and fleets tend to purchase new equipment around this time, and they send their trucks into the used truck market. Owner-operators purchasing used trucks, therefore, can expect to see used standard-compliant and more fuel-efficient trucks for sale beginning in 2017-2019.

To minimize the delay in fuel efficiency benefits that owner-operators experience, state and local governments should continue to pursue policies that result in fuel conservation, such as anti-idling. Until 2017-2019, owner-operators who purchase used trucks may not benefit from the increased fuel efficiency resulting from the forth-coming standard (see footnote 25). Additional policies at the state and local level could further promote the use of retrofit technologies that increase fuel efficiency of existing in-use trucks. For example, anti-idling policies can be implemented at the state or municipal level to reduce unnecessary engine idling. When an engine is turned off versus idling, a trucker saves one gallon per hour (EPA 2004). California has a statewide policy, and Dallas, Texas, has a municipal ordinance limiting idling (CARB 2005; City of Dallas 2007). Compliance can be achieved through driver behavior (simply turning off the truck at night), but many drivers still need a power source to power phones, laptops, or other devices. Auxiliary power units offer an alternative to the main engine for providing driver comfort and electrical power, effectively eliminating fuel use during overnight stays, and lowering fuel use per mile for the trip. While interviewees expressed frustration with such policies, they understood the air quality benefits and cost savings of not idling, and indicated interest in investing in auxiliary power units to save fuel overnight.

Policies and programs should support fuel-efficient upgrades of existing equipment. Policies can also encourage truck owners to upgrade existing equipment to be more fuel-efficient. The Environmental Protection Agency's SmartWay Program is a collaborative effort with manufacturers and fleets to reduce transportation-related emissions by creating incentives to improve supply chain fuel efficiency. Policies that promote adoption of SmartWay-certified equipment can help drivers save on fuel costs. The California Air Resource Board adopted its Heavy Duty Vehicle Greenhouse Gas Reduction Regulations in December 2008, which seeks to lower emissions by increasing fuel efficiency through upgrades and retrofits (CARB 2012). The regulations require truck owners to upgrade their existing fleets to low rolling-resistance tires (SmartWay-certified) and apply SmartWay aerodynamic equipment by a given date depending on the age of the truck. The process of getting such equipment onto the trucks owner-operators drive will require that attention be paid to their concerns; the various explanatory narratives examined here are a good place to start in terms of developing appropriate messaging and incentives.

Conclusions

One major goal of this project was to explore the ways in which consumers in the Southeastern United States are engaging in energy efficiency, despite the uneven distribution of energy programs and policies across the region. We pointed out at the beginning of this paper that the lack of effective energy efficiency policies in the South are hurting consumers who may pay lower rates yet have some of the highest bills, and experience the largest "bite" out of the budgets of their median households. Furthermore, they do not necessarily even have the low rates that they often claim (while ignoring the high bills). The research we conducted across the South has shown that there are consumers, homeowners, business owners, farmers, and truckers, who are all investing in various forms of energy efficiency on their own initiative:

- Oneonta, Alabama

  Farmers faced with "high power bills" are investing in LED lights for poultry farms. Labor scarcity is driving them to use more mechanization, and they are turning to "smart" agriculture methods to do it leanly. Finally, weather pattern change is affecting the crops one can grow, turning more of Alabama into the peanut-growing "Deep South." This new cash crop is requiring more use of intelligent efficiency, such as GPS, to ensure a complete harvest. None of this has occurred with help from their utility.

- Corinth, Mississippi

  In Corinth, the largest real-estate owner in town has put high R-value insulation in his primary business and investment properties. Another business owner seeks to invest in energy-efficient upgrades for his business, including roofing, furnaces, and HVAC systems. Neither these men, nor others feel they have a competent, dynamic partner to help with commercial decision making.

- Alpharetta, Georgia

  Upper-income residents of this affluent Atlanta suburb are turning up the thermostat on their air conditioners and getting home energy audits for homes larger than 3,500 square feet. One homeowner, with a 6,000 square foot lakefront home, has cut her power bill by 40%, even as she installs high R-value windows, and seeks eco-friendly roofing, yet she feels stymied by her homeowners association and feels that she cannot trust energy auditors "with something to sell."

- New Orleans, Louisiana

  A social network of energy activists webs the town, including "energy rater" Shelby Jones, who is trying to jump-start a new industry of independent home energy auditors in Louisiana. Low-income, yet with high social and cultural capital, few know about how people can access assistance with bills or weatherization, despite their wealth of knowledge about energy issues in general. It is unlikely that they will trust their utility to deliver this information; therefore, they would welcome a partner in energy efficiency but are unsure of which way to turn.

- Great American Truck Show, Dallas, Texas

  Trucking owner-operators invest in energy-efficient equipment haphazardly and for a variety of reasons. Many recognize the savings aerodynamic equipment can bring them, but their truck type or driving habits provide the wrong context. Some are unwilling to trust national certifying bodies (e.g. the Society for Automotive Engineers) instead feeling that their own experience is a better guide. Others distrust regulations that often appear to be operating at cross-purposes, favor the fleets, or simply fail to take the realities of the profession into account. Where is their trusted messenger and energy efficiency partner?

TRUSTED INSTITUTIONS TO SUPPORT ENERGY EFFICIENCY IMPROVEMENTS

Several of our interviewees expressed outright distrust of government intervention. In Southern states, proactive utility partners may also be missing (or undercapitalized in the case of rural co-operatives), and market-based solutions may be too costly. These findings underscore what we see to be the partial failures of two narratives common within the energy efficiency community: the rational autonomous actor model, and the market-based solutions model. These explanatory models, having had thirty-plus years to be deployed in behavior-change efforts, have not made much headway in the South. Potential solutions may lie with some of the nonprofit, member-based, or voluntary associations we encountered in our research, each of which was concerned with communicating on some facet of energy efficiency.

- In Oneonta, the farm extension service (which is a government-financed entity run through the University of Auburn) is a trusted partner on energy efficiency. At the same time, it has been stretched thin by regional consolidation (there are now several counties under one technical assistant, according to farmers we spoke with in both Alabama and Mississippi[30]), and the slow attrition of agents with experience. "Used to be people thought it was a good job, you had freedom, and a truck," said Caleb, "but nobody wants to do it anymore." The farmers particularly trusted *their* extension agent, Dan Porch, rather than the institution of the farm extension service, but the farm extension service definitely is a voice of authority with respect to the energy efficiency aspects of their mission.

- In Bartlett, Tennessee, 90 miles from Corinth, Mississippi, the Chamber of Commerce has been proactive in collaborating with energy efficiency expert Clayton Poff. Together, they have created the "Team Green Zone" dedicated to removing "the barriers that prevent private and public sector decision makers from utilizing ENERGY STAR materials and recommendations—and to help its members increase efficiency." Clayton, who served as a key informant on this project, is committed and energetic, willing to drive as far as Corinth to include them in his mission. However, he is not easily replicated, and the circumstances that motivated the Bartlett-area Chamber of Commerce to invest time and attention to energy

[30] In Jackson, MS, we interviewed a blueberry farmer, Dave Crocker, for two hours on background issues as a key informant (7/25/12).

efficiency were not manifest in our encounters with the Corinth Chamber of Commerce—they were helpful and polite, but disengaged from the issue of energy efficiency.

- In New Orleans, the social network that we studied revolved around Shelby Jones, an energy activist, and most of the respondents in New Orleans were themselves volunteers. This type of social network is especially fluid and fragile, and highly dependent upon a charismatic node at the center, which can make efforts to launch large-scale energy efficiency campaigns or movements problematic. However, the cognitive map of the institutional relationships present around energy efficiency in New Orleans shows the robust nature of the current environment, in that a wide variety of organizations are flourishing simultaneously.

- At the Great American Truck Show several drivers we spoke with mentioned the Owner-operator Independent Driver Association (OOIDA) as a widely accepted medium for learning about regulations that affect them, including fuel efficiency standards. OOIDA was cited as a critical resource and a means of mobilizing protest against the introduction of new standards. Their adversarial stance makes them an unlikely partner for energy efficiency promotional efforts, though not out of the question if energy efficiency can be seen as something which serves member interests.

Energy efficiency advocates need to make serious efforts to include voluntary associations into their plans. It is difficult to "evaluate, measure, and verify" behavior based on non-economic principles, and for programs that must operate under specific rules, the lack of an ability to tease out free-riders, for example, may mean such an effort will have costs that outweigh any benefits. This suggestion to work with trusted partners can be applied to any program, and can also be undertaken in tandem with the variety of policy recommendations we explored in our case studies. There are potential advantages and drawbacks to collaborating with such entities, but overall we think this is a promising path.

As we stated in our introduction to this paper, huge potential exists for energy efficiency based savings in the South, both due to the relative paucity of state- and utility-run energy efficiency programs, as well as the untapped possibilities of behavior change. Given the large opportunities in the South, it is imperative that we understand how best to establish programs which resonate with Southerners. These interviews shed light on how energy efficiency messages have resonated, and which messengers are likely to be the most successful in delivering those messages.

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Appendix A: Methodology and Analysis

ETHNOGRAPHY

Ethnography is the written description of a culture where a culture is a complex set of values, habits, and beliefs that guide peoples' behavior in the real world. The key method of ethnography is "participant-observation," the immersion of the researcher into the lived experience of the people that he or she is interested in understanding. Participant-observation means operating according to rhythms and rules of the people of interest in order to put their statements and actions into a meaningful context. Ethnographic research is by necessity based on carefully identified case studies, as opposed to broad surveys of a cross-section of a community. The generalizations drawn by ethnographers are thus distinct from the types drawn by quantitative researchers. Anthropologists' methods are cross-cultural and comparative, meaning that we do not focus exclusively on one culture area or on one topic. Rather, we operate within overlapping sets of research questions, where useful parallels to similar work in other areas or topics can be drawn productively.

At the core of anthropological research are etics and emics, or "form" and "meaning." Obtaining data on formal, external structures as well as internal meanings and values enriches our understanding of a particular challenge or problem set. Etics involve studying a system by applying an external, universal metric or analytic system, while emics involves studying a system by finding its internal structure and the units that make that up. In the case of energy efficiency in the South, we took the macro-structures of political and economic choice (the etics) and imbued them with the meanings those choices and activities hold for people (the emics).

> "[A] primary reason for fieldwork in ethnography is to achieve the emic validity that ethnography promises. I define emic validity simply as understanding the study host(s) from their own system of meanings.[31]

Ethnography starts with observation, and proceeds from there to a hypothesis. Anthropologists spend long years "denaturalizing" their assumptions about how the world works in order to approach their research targets with as open of a mind as is possible. This practiced naiveté helps anthropologists to ask questions that other people may assume to be already answered, with often surprising and counter-intuitive results. From our respondents' answers to our questions we formulate hypotheses. Our hypotheses are thus data-driven and highly empirical, based upon actual behavior rather than assumptions, models, or speculation. This methodology is excellent for providing useful, valid insights into the range of behavior possible in any given situation. This

[31] Whitehead, Tony, "Basic Classical Ethnographic Research Methods: Secondary Data Analysis, Fieldwork, Observation/Participant Observation, and Informal and Semi-structured Interviewing" 2005 http://www.cusag.umd.edu/documents/WorkingPapers/ClassicalEthnoMethods.pdf (accessed January 2011)

methodology also helps us capture outliers, activities that may not rise to the surface in another form of data collection.

While good ethnographic-type work has been done in the area of energy efficiency, little of it is "classic" ethnography in terms of context, immersion, and participant-observation. That alone makes it worthwhile as a contribution to the science of behavior and energy. In addition, this methodology is important for enriching the data set through spending time with people, creating conversations in naturalistic settings, and observing what else is going on in their lives. Anthropologists trade in "thick description" that allows us to use context to explicate meaning—the classic example is distinguishing between a wink and a tic. By unobtrusively observing people's behavior, it is possible to see a wide variety of practices that deviate from the ideal or normative answers people give when asked about their choices directly.

The Need for Ethnographies Exploring Behavior Change and Energy Efficiency

While there has been impressive qualitative and ethnographic work done around behavior and energy, no truly immersive work exploring attitudes and barriers to behavior change regarding energy usage in the South has been undertaken. Traditionally, fieldwork by cultural anthropologists involved participant-observation (DeWalt and DeWalt 2001; Spradley 1980) that lasted at least six months and usually a year or more. However, as ethnography has come to be used in more applied settings, anthropologists have modified their methods to include shorter visits, long-distance studies (using other people's findings), straight interviews, visual studies, library and documentary research, and cross-cultural comparative studies.

This project fell into the middle-range between traditional ethnographies, which were designed with a full harvest year in mind, and the extremely bounded versions often used in marketing or user design research. Five fieldworkers (three of whom are anthropologists) spent various amounts of time in the field. The time investment ranged from Michelle Vigen, who conducted intercepts over two days at GATS; to Sarah el Hattab and Kate Farley, who spent a week in Oneonta; to Susan Mazur-Stommen who was in the field for a month, and visited all five sites; to Pat Huff, who has spent several years working as an ethnographer in New Orleans, and has been 'in the field' this year for several months duration. For that reason we can describe this work as both qualitative and immersive, since the ethnographer experiences the same landscapes, foodways, daily rhythms, and cultural constraints as the interviewees.

Theoretical Foundations

The goal of ethnography to understand our respondents from their own perspectives. At the same time, all analysis is a process for turning description into useful explanation. Social scientists use theoretical perspectives to guide data analysis and draw conclusions. This research project utilizes the rural-to-urban continuum, the theoretical stance that geographic locations and settlement patterns help to shape residents' worldviews, responses to stimuli, decision making, and behavior. Similarly, we had four other theoretical "axes" that were consistently used in the design of the

research protocol, the development of specific questions, the classification of data, and the conclusions that were drawn. These remaining four axes are concerned with structure and agency, identity construction, mythmaking, and the possession and distribution of various capitals:

Ethnographies use small sample sizes. The unit of measure is the individual, and the value of the data sought *lies in its specificity to the situation*. We are seeking specificity rather than attempting to form general rules about the nature of a phenomenon. Our goal is not to report a consistent set of answers across a diverse set of respondents, but rather to report consistent sets of answers within diverse sets of respondents. In other words, not everyone across the South has the same opinion; however, defined types of actors should demonstrate consistency in their answers to specific questions. As an example, when asked, "Why do you farm?" all of our respondents answered with some variation on the theme, "Because I love it."

Structure vs. Agency: Constraints on Individuals' Decision Making

Energy efficiency interventions, such as messaging, education, and feedback, have often taken place with the individual or household as the intended audience and agent of change. However, even as individuals navigate their social contexts and make choices, their choices are constrained by the material conditions around them—for example, their disposable income or the degree of control they have over their living conditions. The importance of material conditions for decision making is a fundamental reality, but one that has not been a key driver in the analysis of energy usage behavior for almost 30 years (Wilhite et al 2000). The better we understand the forces acting on individuals' decision making, the better we can design effective models for encouraging energy efficiency at the level of institutions.

Cultural and social capitals as mediums of exchange An example of how social capital works in the sites we visited comes from the article, "Bonding, Bridging and Linking: How Social Capital Operated in New Orleans following Hurricane Katrina." The authors noted that:

> Residents, especially those with low incomes, relied on, built upon, and collapsed all levels of social capital for individual, family, and community survival. Participants described a process through which close ties (bonding) were important for immediate support, but bridging and linking social capital offered pathways to longer term survival and wider neighborhood and community revitalization. (Hawkins and Maurer 2010)

Social and cultural capital are not simply alternative descriptors of socio-economic status. Rather, the ways in which capitals intersect provide a window into the process by which we make decisions and navigate the networks and institutions that structure our everyday lives.[32] We are inheritors of the past, and receive our values and habits from our parents and early peers. Though we might add or subtract to them later in life, they will form a core identity from which decision

[32] For one of the most complete distillations of this principle see Pierre Bourdieu, *Distinction: A Social Critique of the Judgment of Taste*

making proceeds. These values and habits are indeed affected by socio-economic status, which is composed, among other things, by age, gender, and marital status. the opinions we have and the actions we undertake are related to what social space we are occupying at any given time.

Social and cultural capitals form the basis of our characterization of a "Southern" identity and our analysis of its influence on the ways in which people think about and use energy in the South, while at the same time recognizing that this "identity" shifts from place to place and person to person. Folding these concepts into analysis of energy usage behaviors can help us delineate the important non-energy benefits that energy efficiency can bring to communities. A relatively straightforward hypothesis that might be formed would be that the savings realized from investing in energy efficiency can be directed towards other needs within a community, and that pay-off continues over a long period.

Multiplicity of identities Social and cultural capitals intersect, creating various weighted personas or roles that determine the parameters surrounding a person's decision making. These roles are the product of a set of rules governing behavior, which precede the worldview—the lens through which people see and navigate their social environment (Bourdieu and Passeron 1977; Tzanakis 2011). In this research, the social environment is "The South," writ large; therefore, we asked the interviewees questions about identity and characteristics of "being Southern." We found, especially with Corinth and Oneonta (small town and rural farmland) that the answer to the question, "Are you Southern," was always affirmative, even from the one person not originally from the region.

People inhabit more than one role at a time, fluidly managing themselves as required by their social environment and changing from one role to the next as interactions and the varying positions of social actors require. Individuals' roles are externally constrained by the asymmetrical possession of capitals. Related to energy efficiency, some people do not have a great deal of choice about their housing; they live where they can afford to, which may be a rented space and sub-standard. In many cases the role of "renter" is imposed by financial constraints and not chosen, and goes on to funnel future choices. Those most in need of weatherization often do not own their homes and therefore have no control over the decision to invest in insulation. Such performances are the reason social scientists reject the idea of the rational, autonomous actor. "Identity" is larger and more inclusive a concept than is "individual." Any given individual is not making decisions as a unique self that is abstracted from relationships with other individuals; rather the decisions are made by a *performer* who inhabits an identity (Goffman 1959):

> I have said that when an individual appears before others his actions will influence the definition of the situation, which they come to have. Sometimes the individual will act in a thoroughly calculating manner, expressing himself in a given way solely in order to give the kind of impression to others that is likely to evoke from them a specific response he is concerned to obtain. Sometimes the individual will be calculating in his activity but be relatively unaware that this is the case. Sometimes he will intentionally and consciously

> express himself in a particular way, but chiefly because the tradition of his group or social status require this kind of expression and not because of any particular response (other than vague acceptance or approval) that is likely to be evoked from those impressed by the expression. Sometimes the traditions of an individual's role will lead him to give a well-designed impression of a particular kind and yet be may be neither consciously nor unconsciously disposed to create such an impression.

If the idea of the rational, economic decision maker is removed and replaced with the idea of the performer in a role, then the choices that people make, that may seem counter-intuitive when analyzed monetarily, make sense as an aspect of their "performance" and their externally influenced social roles. One example from our fieldwork that shows how people make non-economic decisions that are in line with their values is the trucker who is willing to drive 113 miles per hour if it means that he gets to sleep in his own bed. This value trumps the law (speed limits), safety (risk of crashing), economics (fuel savings), and environmental impacts (emissions, pollution). The trucker understands the choices he/she is making; however, it is not a rational calculus in which cost and benefit trade-offs are analyzed before a foot hits an accelerator pedal. This activity, of bringing disparate aspects of one's lifestyle, habits, and beliefs has been referred to as a "unity," and explored at length by Grant McCracken in his book, *Culture and Consumption* (1988, 129).:

> The Diderot unity and effect can serve as an opportunity to change tastes and preferences and create new patterns of consumption. Once the consumer has been persuaded to make an initial departure purchase, and entire set of purchases may well follow.

For this research, unities are relevant in that, if small energy-efficient changes in behavior are already underway among consumers in the Southern states, then it seems more likely that they would be amenable to further suites of purchases and investments.

Explanatory narratives In anthropological parlance, an explanatory narrative is the set of beliefs that people use to organize their lives. These are often community-specific. In the case of energy efficiency and the South, we were on the alert for any explanations by our respondents concerning the activities of government agencies (such as the Environmental Protection Agency), local utilities, and actors such as environmentalists (e.g., "greenies"). Certainly, attendees at The Great American Truck Show in Dallas, Texas, were on alert that we might be from the government, including in one case, asking us whether we were, "from TARP" which appears to be a law and not an agency.[33]

We paid attention to explanatory narratives surrounding events like Hurricane Katrina in New Orleans, where there is a persistent misconception that "the levees were blown up" to save the French Quarter. The presence or absence of such misconceptions is an important factor in

[33] http://www.pulltarps.com/State_and_Federal_Truck_Tarping_Laws.htm#TX

understanding the emic basis for the decisions made, and actions undertaken, by individuals. An example of this from the fieldwork is the attitude taken by people towards the city administration and the local utility in New Orleans.

Recruitment

All sites were sent a letter approximately a month in advance of the research, introducing ACEEE and our research objectives. The letters were tailored to the field site's requirements and directed to a mailing list of appropriate recipients for each site, including: a business directory for Corinth; a Nielsen Prizm data list of owners of homes over 3500 sq. ft. in the 30004 and 30005 zip codes; farmers in the vicinity of Oneonta, identified through state and county resources; and trucking owner-operators drawn from the a list of attendees at the Great American Truck Show.[34] Each mailing list was far larger than the final, desired sample of 500 recipients (e.g., Nielsen sent 10,000 addresses); therefore, an N-select was performed, depending on the size of the list, to arrive at the final number. The letters were mailed approximately four to six weeks before planned travel to the site for interviews.

Responses to our mailings were one method for finding appropriate partners and informants for ethnographic interviews. In addition, traditional "snow-ball sampling" was used to fill out the set based upon local knowledge and recommendations. Snowball sampling is a form of non-probability sampling, used to access a social network of respondents, or a specific, possibly hidden, population. Findings from such samples are not used to draw conclusions about the general population. We found our key informants for formal interviews through phone calls and emails with political representatives, churches, and chambers of commerce. We asked respondents for the contextual inquiries (the four place-based studies) to contact us and set up interviews in advance; every person who contacted us was interviewed. For each case study, we aimed to do five to ten interviews. Respondents for the intercepts were invited to stop by our booth at the Great American Truck Show. Intercepts involve engaging attendees with an incentive for a short conversation on a limited set of questions about a very specific topic. The goal is to complete a set of questions within about fifteen minutes, though intercepts can be as short as five or as long as forty-five minutes. Incentives to recruit participants for this project were in the form of gift certificates to site-appropriate vendors.[35] As discussed below, all formally interviewed or intercepted participants signed an informed consent form. Each site had specific criteria bounding the potential set of informants.

For example, our Alpharetta criteria were as follows:

- Residents had to live in the zip codes 30004 and 30005.
- Residents' homes had to be at least 3500 square feet.
- Residents had to be of at least legal age.

[34] New Orleans was the only site not to receive a letter, recruitment was person-to-person.

[35] BP, Wal-mart, Subway, Lowe's, Bruster's Ice Cream and (NOLA-based supermarket chain) Rouse's

- Residents could be of any self-described ethnic heritage or national origin, with a range of respondent types being ideal.
- Residents must own the home they lived in.

We purchased a list of households matching this criteria from Nielsen, using their Prizm marketing selects (the demographic make-up of which we had used to identify the wealthiest areas of Alpharetta, those in and around Lake Windward) totaling just under 10,000 names. We then performed an N-select on the list, where N = 18 to get 500 names for sending letters to. From those 500 we received 3 responses (on par for direct mail campaigns) and they were scheduled for visits. The other two Alpharetta respondents were acquired through 'snowball sampling' where one informant passes on the name of another informant.

Participant-observation methodology A major method of cultural anthropology—the one for which it is most renowned and the one that laypeople often associate with ethnography—is participant-observation. This is the practice of spending large amounts of time immersed in the activities of a culture other than that of the anthropologist, observing people, making notes about what is going on, and analyzing the observed phenomena using a variety of methods. In addition to simple observation and note taking, the ethnographer generally incorporates photography and video, as well as captures certain forms of ephemera (posters, flyers, matchbooks) from the environment under study. Members of our research team spent varied amounts of time in the field ranging from two days, to a few weeks, to several months in the case of Patrick Huff, who was writing a dissertation on volunteer networks in New Orleans. In the chapter on New Orleans we referred to two common ethnographic tropes, entry into the field and rapport building. Gupta and Ferguson (1997: 23) discussing the qualities that make a good fieldworker, quote Paul Radin (1935), "The essential qualification for an observer is that he possess the gift for establishing a direct and immediate contact with his source of information in as unobtrusive a manner as possible." Meanwhile, Lassiter (2005:72) quotes George Marcus (1997) as defining rapport to be, "instrumentally building a relationship with a participant or informant with the predesigned purposes of anthropological inquiry in mind."

Interview methodology Interviewing is the basic technique in ethnography. Interviewing can mean applying a set questionnaire (closed-ended interviewing), free-ranging questions and discussion (open-ended interviewing), or anything in-between. A semi-structured questionnaire often gives the best results. Anthropologists study the script thoroughly before the interview and then apply it in an improvisational manner. The anthropologist does not allow the interview to end without getting all the questions answered, but lets some free play happen, so the interviewee can get clear about meanings, discuss points, and clear up any ambiguities arising during the process. We carried out two types of interviews, formal and informal, in a variety of settings.

Questionnaires

Every informant was asked to fill out a basic demographic questionnaire. People at four of the five sites were asked a common set of questions about energy usage, utility bills, and money (Questions can be found in Appendix B).

Formal interviews Armed with a script of questions, we went to people's homes and businesses. With the exception of public figures, all names and identifying information have been replaced with pseudonyms and other identifying details were obscured. Each interview included a core set of questions about demographics and basic attitudes about energy use such that they can be compared across all sites and give a general picture of energy consumption in the South. Formal interviews were generally conversational, loosely structured, possibly even mobile, and the goal was is to encourage people to give open-ended and unrehearsed answers. Formal interviews ran from one hour to half a day. During our fieldwork, we collected approximately 60 hours of audio from formal interviews.

Informal Interviews

We carried out informal interviews for shorter, focused interviews on site-specific topics, often when we spoke with key members of the community such as public officials, major employers, and civic and religious leaders. These interviews solicit expert background knowledge that is used to frame ethnographic analysis. Examples of informal interviews include a conversation in the office of Tommy Irwin, the Mayor of Corinth, Mississippi, and members of his staff. We used an informal interview structure also when we spoke with County Extension agent Dan Porch in Oneonta, Alabama. This type of interview is used with an individual possessing a specifically germane knowledge set, a person known as a "key informant." Often this type of informant is a public figure, but informal interviews can also be with *ad hoc* informants, such as taxi drivers, servers in restaurants, or people with whom the anthropologist has chance encounters—people who can provide deep background and local insight for the case study. We do not anonymize the key informants as we do with our formal interviews. Informal interviews may be recorded through after-the-fact notes, and sampled for the final report, but they are not coded and put into the data set.

Intercepts

We used intercepts when we interviewed people at the Great American Trucking Show (GATS) in Dallas, Texas. In this form of interview, we asked open-ended "probe"-type questions concerning various design elements on a variety of trucks. While leading questions are discouraged, researchers can ask the same question in multiple ways, drilling down for specifics. For example, the researcher may point to a vehicle and ask the respondent what they think of its design. The researcher may follow up with a question about a particular design feature, such as a boat-tail. Next, the researcher might probe for intensity of attitude, asking how much the respondent likes or dislikes the feature. Respondents are encouraged to discourse at length, as they feel comfortable, and may introduce new topics into the conversation; for that reason it is not unusual for an intercept scheduled to take about 15 minutes may last as long as 45. Our intercepts

included offering a small cash reward in the form of a gift card in return for speaking with researchers for five to ten minutes. At the Great American Truck Show we conducted 25 intercepts over two days with 30-35 respondents, sometimes speaking with multiple respondents in a set. The intercepts were audio recorded (we obtained a total of 15 hours), and demographic data were captured.

Data Analysis

Results from the interviews were processed at the conclusion of fieldwork in August and September 2012. All of the interviews and intercepts were recorded using Livescribe pens and paper tablets.[36] After a site visit was completed, the ethnographer listened to and uploaded the interviews to Livescribe Online, where the rest of the team could also listen. Each member of a site team prepared summaries of the interviews, including contextual details. All of the data (audio, summaries, photos, artifacts) from fieldwork were available to the team for reference during write-up. Respondents' answers to the questionnaire were coded and entered into SPSS, 3and descriptive analyses and chi square tests were run among the sets (tables are in Appendix C). The remaining questions we asked during the interviews were site-specific (also in Appendix B). The answers were organized into spreadsheets, so that we could compare responses to individual questions. In this way we were able to review qualitative data through a quantitative lens.

[36] Livescribe pens record audio and pen stroke simultaneously, allowing the user to refer back to written notes (in electronic form) and listen to the corresponding audio simultaneously.

Appendix B: Interview Scripts

ENERGY BILL SCRIPT (ALL SITE INTERVIEWS INCLUDED THE ENERGY QUESTIONS)

Initiating the interview—For all interviews, do the following: introduce yourself, reiterate your purpose in the interview, and about how long it will take. Once settled, please take out the demographic survey and release form and have them fill it out. Take out the LiveScribe pen and notepad, show them the pen, and explain that it will be recording them. Arrange a point in the interview to break and take some pertinent photos. A photo of the person/family/ household would be great, but not required if they feel uncomfortable. Pictures of the business, farm, or house would also be helpful.

Concluding the interview—Thank them again for their time. Hand them the gift card. We are going to put them into thank you cards with envelopes, and your biz card (Susan). Hand sign a thank you inside the card. Remind them that they will be notified when the report is available, and that they should feel free to contact you with any questions. If they know someone who might be willing to talk to you while you are in town, please have them call you on your cell/email.

[Begin interview with Grand Tour and mini-tour]

I would like you to please take me through your average day, what kind of tasks do you need to accomplish?*

What kind of activities do you do in a normal week?*

*Pay attention to anything requiring energy, including electricity, natural gas, octane, diesel, or any other form of fuel.

ENERGY BILL QUESTIONS

1) How much do you pay for utilities?
2) Can you break that out between electricity and gas?
3) What does that mean to you in terms of kWh and therms?
4) Do you read your monthly notice?
    i) [If they read it] What information do you look for?
    ii) [If they read it] Have you ever found a mistake?
    iii) [If they read it] What sort of things do you tend to remember from one month to the next?
    iv) [If they do not read it] Why not?
        (a) [For both responses] Is anything missing from the utility bill that you would like to see?
5) Do you have an online account, or access to your data?
6) Do you visit it?

i) [If they visit it] Is it helpful?
ii) [If they do not visit it] Why not?
1. [For both responses] What do you not find useful about the online access?

7) Is saving money on your energy bills something you think about?
8) How much would you think is reasonable to save? [They can answer in dollars, percent, or units of consumption]

CORINTH INTERVIEW QUESTIONS

1) How long have you been in business?
   a) How long have you been in this location?
   b) How many employees do you have?
2) How did you get into business here in Corinth?
   a) Why Corinth specifically?
   b) What makes Corinth good for doing business in?
3) Are you involved in the community?
   a) [If no] would you like to be?
   b) [If yes] How do you get involved
      i) How does that impact your business?
   c) Can you make the same decisions when people know you?
      i) [If yes] Can you give me an example?
      ii) [If no] Why not?
         (1) Can you give me an example?
4) What kinds of capital investments do you typically have to make?
   a) How often do you make those kinds of decisions?
   b) Can you tell me a little about how you make those decisions?
5) What is important to you as a business owner?
   a) What would you say are your key values as a business owner?
   b) How do those values shape your decision making?
   c) Can you give me an example of a time when they influenced the outcome of a decision?
   d) Do you values ever come in conflict with your bottom-line?
   e) Can you share a time when that happened to you?
6) Are these common values in Corinth?
      i) [If yes] How so?
      ii) [If no] Why do you think not?
7) How do energy prices impact your business?
   a) How do you try to minimize their impact?
   b) Have you changed anything you do?
      i) Have you seen any change in your bill?
      ii) How much have you saved?
   c) What have you been doing lately?
      i) How much do you think you should see in terms of savings, for that?

d) What do you think is the biggest cost, energy-wise, for your business?
    i) How would you LIKE to see it reduced?

8) Without looking, what should your thermostat be set on?
   [Ask to look]
   a) Any problems?
   b) Does your A/C seem to distribute cool air evenly about the shop?
   c) Do you 'maintain' your A/C?
   d) What kinds of things do you do to it? I.e., filter change? Service call?
   e) How often does your A/C need care?
   f) What kinds of things alert you that your A/C needs attention?
9) Does your utility offer any rebates for commercial customers?
   a) What kind?
   b) Have you taken advantage of any of them?
      i) [If not] Why not?
   c) How much money would they have to offer for you to participate?
   d) Are there any that you wish they would offer?
   e) What is appealing about that kind of offer
10) Have you ever heard of something called 'on-bill financing?'
   a) What do you think it means?
   b) If your utility offered that (whatever they think it means) would you be interested in it?
      i) [If answer is wildly off] What if 'on-bill financing' meant [explain]
         (1) Would that interest you?
   c) What might be some pros and cons, in your opinion as a business-owner?
11) "Have you encountered problems borrowing morning to finance investments?"
   a) "Does access to borrowing pose a barrier to implementing energy efficiency projects?"
12) Do you consider yourself to be 'a Southerner?'
   a) [Either yes or no] What does being 'a Southerner' mean to you?
   b) How are values different here than elsewhere?
   c) Why is that, do you think?

ALPHARETTA INTERVIEW QUESTIONS

Who pays the bills in the household, as in actually makes sure the check or electronic debit goes through?
Who takes care of the house?
Who calls the plumber?
How do you buy furniture and appliances?
Imagine you wanted to renovate a room, like a kitchen or bathroom, can you walk me through the process?
What kinds of work have you had done on the house?
What would you like to do?
    What is your timeframe?

Who had the final word on buying this house?
What do you like about the house?
What do you not like about the house?
What do you like about this location?
Does your house keep cool in summer?
Without looking, what temperature should it be set on?
[Ask to look]
Any problems?
Does your A/C seem to distribute cool air evenly about the house?
Do you 'maintain' your A/C?
What kinds of things do you do to it? I.e., filter change? Service call?
How often does your A/C need care?
Who deals with that, as in make the phone call and the appointment?
What kind of things alert you that your A/C needs attention?
What parts of the house are most comfortable?
    Why?
What parts are least comfortable?
    Why?
Have you ever heard the term Home Energy Retrofit?
    [If they have] What comes to mind?
    [If they have not] What do you think it might consist of?
Have you ever heard about home energy audits?
    [If yes] Where did you learn about it?
Have you seen them offered by your *utility*?
Have you ever had a home energy audit?
    [If yes] Who performed it?
        [If yes] How much did it cost?
        [If yes] Do you think it gave good value?
        [If yes] How did you hear about them?
        [If yes] Which recommendations did you follow up on?
    [If seen but no uptake] Why not?
If I were to ask you to 'conserve' energy, what would you say?
If I mention 'smart homes' what comes to mind?
If I mention 'smart appliances' what comes to mind?
Do you use all of the features on your appliances?
Which features are your favorites?
What utility customer receptions and satisfaction are around dynamic pricing programs (such as time-of-use, critical peak pricing, etc. Our inquiry includes customer use of enabling technologies (such as programmable communicating thermostats, in-home displays, glowing orbs, auto DR switches, and web-based energy usage data).

ONEONTA INTERVIEW QUESTIONS

Does farming run in your family?
- [If no] How did you become interested in farming?
- [If no] How did you pick up the skills you needed?
- [If either] How long have you been farming?

Why do you farm?
Why is farming important?
How many acres do you own/manage?
Have you learned new techniques over the course of your career?
- [If yes] Were you trying to solve a particular problem?
- [If no] Why have you decided to keep farming the same way?

When you need information, where do you go to get it?
What sources do you find to be trustworthy?
Which sources have been of most use to you?
Are there any programs or assistance you would not use again?
- [If yes] What are they?
- [If yes] Why would you not use them again?

Are there any programs or assistance you would recommend to others in a similar situation?
- [If yes] How did they earn your regard?
- [If yes] What did you like about them?

How has farming changed during the course of your career?
What changes do you approve of?
Why are these good?
What changes do you dislike?
What do you not like about [these changes]?
Do you know anyone who has changed the way they farm?
- [If yes] What do you think about the changes they have made?

Have you implemented any new technologies recently?
- [If yes] Which ones?
- [If yes] What drove the decision to invest in _____?
- [If yes] Did this investment save you money?
  - [If yes] Was this money previously spent on energy/fuel?
  - [If yes] Was this money previously spent on labor?
- [If yes] Did this investment save you time?
- [If yes] Did this investment increase profits?

**Explore the complex relationship in decision making -- i.e. hand-picked vs. mechanical, channels they sell through, and pricing (fresh/premium) vs. (mechanized/vats).*

Do you employ any farm workers?
- [If yes] How many?
- [If yes] Has the number of employees you have changed over time?
- [If yes] Has the number gone up or down?

Why did the number change?
What are the biggest challenges facing farmers in Northeast Alabama today?
Do you consider yourself to be a 'Southern' farmer?
[If yes] Why so?
[If no] Why not?
[If no] Is there such a thing as a 'Southern' farmer?

New Orleans Interview Questions

How long have you lived in New Orleans?
Do you share this space with roommates?
If yes, how many people live in this space?
Have you ever been late paying your energy bill(s)?
If yes, why were you late with your payment?
Which bill(s) have you been late paying?
How often do you estimate being late on your bill(s)
Are there penalties for late payment?
Do the penalties make it harder for you to pay next month's energy bill(s)?
Have you ever had to ask someone for help paying your energy bill(s)?
If yes, did that person help you?
Who are the person(s) that would help you out?
How often have you asked for help paying your energy bill(s)?
Have you ever had to decide between paying your energy bill(s) and other necessities such as food, medical care, school supplies, transportation, and clothes for work?
If yes, what did you chose?
Could you tell me more about that?
Could you name the company(ies) that provide your utilities?
Have you ever spoken directly with a representative of your energy provider(s)?
Phone? In person? Email? Which providers have you spoken with?
What was the nature of the communication?
Was the communication helpful or unhelpful?
Do you generally find it easy or difficult to communicate with your energy provider?
Why/why not? Could you tell me more about that?
When you receive your energy bill(s) is it easy or difficult to read? Does it clearly explain costs?
Why/Why not? Could you explain more about that?
Are there things that you could do personally to save on energy use?
If yes, how did you learn of this/these ways to save energy?
If yes, do you use this/these strategy(ies) to save energy?
Does your landlord bundle utilities with rent?
If yes, is your monthly rent/energy bill(s) available for your inspection?
Do you examine your monthly rent/energy bill(s)?
Do you trust your landlord to not to over charge you?

Do you know how much (what percentage) of your monthly payment to your landlord covers energy cost? Electric? Gas? Propane?
Do you prefer bundling?
Could you explain why this is preferred/not preferred?

Are you aware of any city, state, or federal programs that will assist you in paying your energy bills?
If yes, how did you learn of this program(s)?
Could you name the program(s)?
Have you ever sought assistance from the program(s)?
Why/why not?

What changes in your life would make it easier to pay your energy bills?

Does your job pay enough to cover your monthly expenses? Are there better job opportunities available for you in New Orleans?

Which season of the year, if any, seems the most expensive in terms of your energy bills?
Which bills? Gas? Electric? Propane?

Do you know of any city or state programs that provide assistance paying energy bills? If so, could you name them?

What, in your mind, is the biggest obstacle to getting things done in New Orleans?
Can you give an example of how that works?

What do you need in order to 'get ahead' these days?
How do you get that/those things?

Are there people you turn to in your neighborhood who know how to get things done?
How about among your friends and family?
Can you tell me about a time someone helped you?

How would you describe your utility, what words come to mind?
What about city or other local administration?
Who has been the easiest to deal with?
Why are they easier to work with than some others?
When was the last time you had any dealings with them?
Who has been the most frustrating?
Why are they worse than others?
Can you give me an example of how they operate that is aggravating to you?

[At this point, you can begin to ask follow-up questions, bringing up anything, like the levees exploding, that did not come up 'naturalistically'. When it comes time to code for analysis, we will note that these answers were in direct response (DR) to probes, rather than a spontaneous response (SR).]

GREAT AMERICAN TRUCK SHOW INTERCEPT QUESTIONS

1. How many trucks do you own and/or operate?

2. What type[37] of truck have you purchased?
3. How many years do you typically keep a truck?
4. About how many miles per year does your truck(s) average?
5. Could you please describe a typical route for you?
    a. [If they are confused] In other words, how far is an average round trip?
    b. Do you have a territory?
6. Do you prefer to buy or lease?
    a. [If they need a nudge] Why do you prefer?
7. Do you generally purchase new or used trucks?
    a. What is the advantage of [either]
    b. [If used] What source(s) do you typically use to determine a fair market value?
8. Do you finance your truck purchases or pay cash?
9. Where do you purchase trucks from? Or from whom?
    a. What are the top three things that determine your choice of truck?
    b. Do you prefer driving a truck with a *fully* manual or an *automated* manual transmission (AMT)?
10. How does fuel efficiency enter into your truck selection?
    a. Do you evaluate the fuel consumption of trucks before you buy?
    b. How about once you own it?
    c. What percent of your total costs does fuel account for?
11. Do you think you could get a larger loan to pay for a more expensive but also more efficient truck?
    a. [If yes] Would you be interested in such an option?
12. Does your truck have equipment to improve aerodynamics?
        i. [If yes] What kind of equipment
        ii. [If no] Would you consider adding aerodynamic equipment?
            1. [If no] Why not?
13. Do you have experience pulling trailers that have side skirts?
    a. [If yes] What do you find the savings to be?
    b. Given the choice, would you outfit your whole fleet with side skirts?
14. How do you select replacement tires?
15. Do you know what SmartWay[38] certified tires are?
    a. [If yes] Are they an option for you?
16. Are there any fuel-savings features that you do not have but wish you did?
17. Are there fuel-saving features that you do not like?
    a. Why not?
18. Have you made *any* modifications to your truck to improve its fuel efficiency?
19. How about differences in how you *use* your trucks?
20. Do you operate in states that have anti-idling regulations?

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[37] Meaning class, tractor-trailer or utility. Class = 2 to 8

[38] EPA designation for most efficient tires

    a. [If yes] Does this influence your choice of truck purchase?
        i. [If yes] How does it influence you?
21. Are you familiar with the federal fuel efficiency standards adopted last year?
    a. [If yes] Will they affect you?
    b. [If yes] How will they affect you?

Appendix C: Statistics

Total household income

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 0-$19,999	4	18.2	18.2	18.2
	2.00 $20,000-$39,999	8	36.4	36.4	54.5
	3.00 $40,000-$59,000	1	4.5	4.5	59.1
	5.00 $80,000-$99,999	2	9.1	9.1	68.2
	6.00 $100,000 or more	7	31.8	31.8	100.0
	Total	22	100.0	100.0	

Have an online account * Visit online account
Cross-tabulation
Count

		Visit online account		
		1.00 Yes	2.00 No	Total
Have an online account	1.00 Yes	2	3	5
	2.00 No	0	9	9
Total		2	12	14

Visit online account

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1.00 Yes	2	4.8	14.3	14.3
	2.00 No	12	28.6	85.7	100.0
	Total	14	33.3	100.0	
Missing	-88.00	7	16.7		
	System	21	50.0		
	Total	28	66.7		
Total		42	100.0		

Visit online account * Highest degree of education
Cross-tabulation
Count

		Highest degree of education completed					
		2.00 High school graduate	3.00 Some college	4.00 Bachelor's	5.00 Master's	6.00 Professional degree	Total
Visit online account	1.00 Yes	0	1	0	1	0	2
	2.00 No	4	2	4	1	1	12
Total		4	3	4	2	1	14

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	4.472[a]	4	.346
Likelihood Ratio	4.892	4	.299
Linear-by-Linear Association	.353	1	.553
N of Valid Cases	14		

a. 10 cells (100.0%) have expected count less than 5. The minimum expected count is .14.

What information on utility bill do you look for? * Things remembered from utility bill, month to month
Cross-tabulation
Count

		Things remembered from utility bill, month to month			
		1.00 Money	2.00 Changes in fees	3.00 Usage	Total
What information on utility bill do you look for?	1.00 Money	6	3	3	12
	2.00 Changes in fees	0	2	0	2
	3.00 Usage	1	0	1	2
Total		7	5	4	16

Total household income * Think about saving money on energy bill
Cross-tabulation
Count

		Think about saving money on energy bill		
		1.00 Yes	2.00 No	Total
Total household income	1.00 0-$19,999	3	0	3
	2.00 $20,000-$39,999	5	2	7
	3.00 $40,000-$59,000	1	0	1
	5.00 $80,000-$99,999	2	0	2
	6.00 $100,000 or more	6	1	7
Total		17	3	20

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	2.073[a]	4	.722
Likelihood Ratio	2.791	4	.593
Linear-by-Linear Association	.058	1	.810
N of Valid Cases	20		

a. 8 cells (80.0%) have expected count less than 5. The minimum expected count is .15.

Employment status * Think about saving money on energy bill
Cross-tabulation
Count

		Think about saving money on energy bill		
		1.00 Yes	2.00 No	Total
Employment status	1.00 Employed for wages	1	1	2
	2.00 Self-employed	9	2	11
	5.00 Homemaker	2	0	2
	6.00 Student	1	0	1
	7.00 Retired	2	0	2
	9.00 Self-employed & retired	1	0	1
	10.00 Self-employed & for wages	1	0	1
Total		17	3	20

Chi-Square Tests

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	3.244[a]	6	.778
Likelihood Ratio	3.705	6	.717
Linear-by-Linear Association	1.825	1	.177
N of Valid Cases	20		

a. 13 cells (92.9%) have expected count less than 5. The minimum expected count is .15.