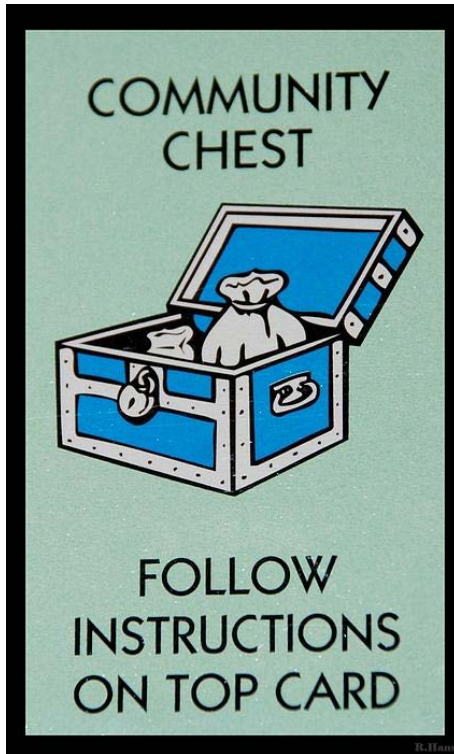# Using ACS Data in Utility Policy & Planning

Presented at ACS Data Users Conference – May 14, 2 019

Southern Alliance for Clean Energy (SACE)

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WHY ELECTRIC UTILITY COMPANIES?

COMMUNITY CHEST
FOLLOW INSTRUCTIONS ON TOP CARD

Utility companies are generally government-granted monopolies that provide services such as electric, gas, water, telephone, etc.

Utility service is regulated by Public Service Commissions (PSCs) or other state regulatory bodies.

What's considered a public utility is changing and some services are being de-monopolized:

- Some regions have elements of competition due to recent shifts in economics of constructing power plants & infrastructure.

- FCC classified broadband internet as utility in 2015.

"Fun" fact: In the board game, the 'Community Chest' card is statistically the most likely to result in the player getting money.

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WHY IS ACS DATA NEEDED?

To help represent the public interest and assess a wide variety of consumer impacts. Although utilities are regulated and required to report the customer impacts of a given activity, in many cases, utilities are unable to collect or unwilling to share data with the public. Regulators are often forced to rely on utilities to define the relationship between a given program or policy and customers.
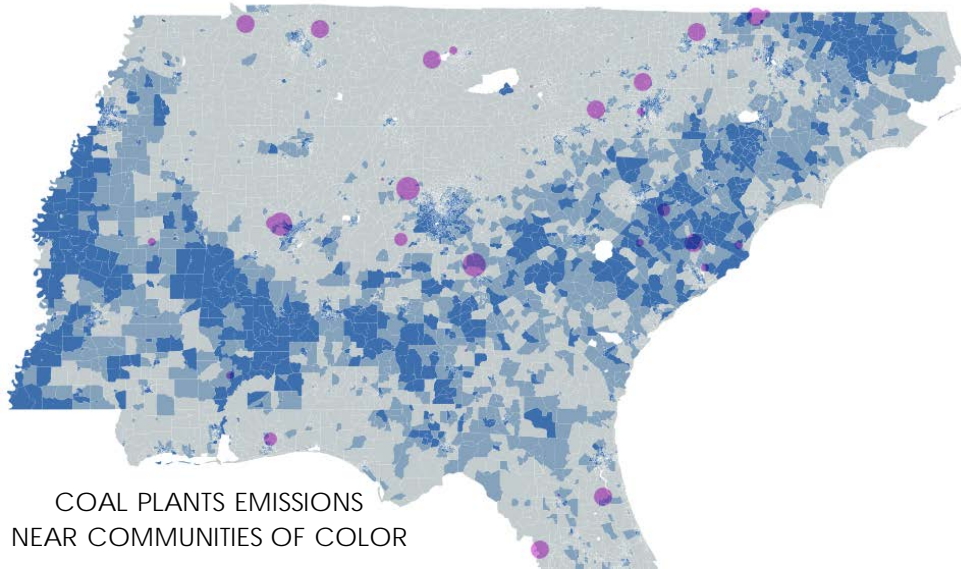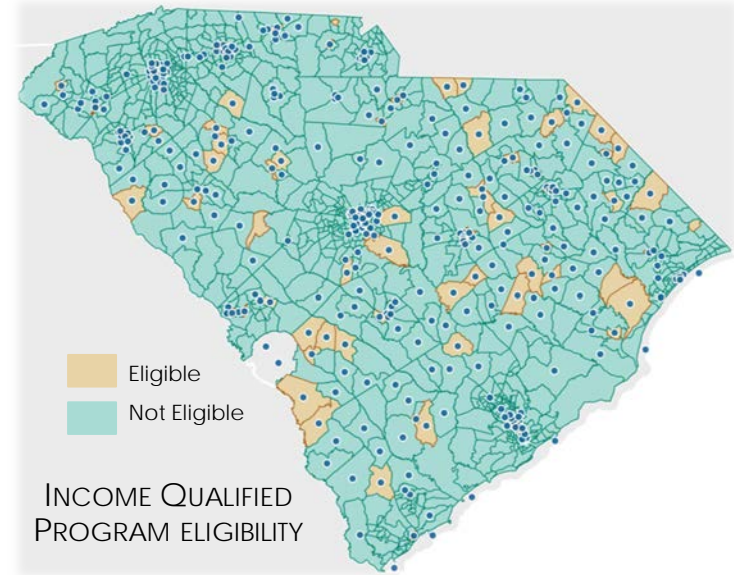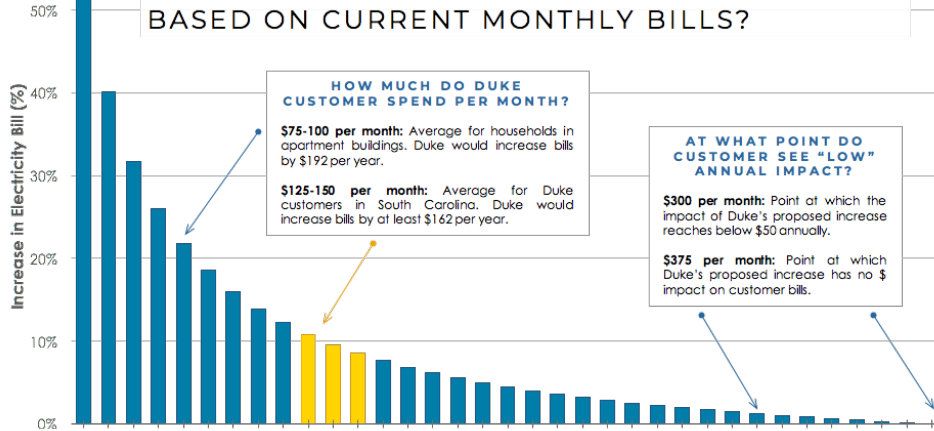
Transparency is a crucial part of the regulatory process, yet the underlying assumptions made by utility filings are rarely shared, even in cases where the data is publicly available:

"Even after a series of correspondence from the Commission expressing concern that IMPA seemed to **rely heavily on EIA as a significant input** into their analysis but **classifying this public domain source as confidential.'"**
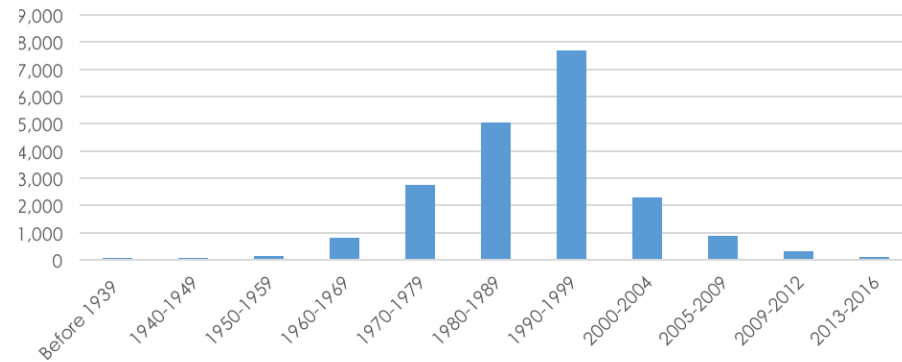
- Draft Director's Report for 2017 Integrated Resource Plan
on behalf of the Indiana Utility Regulatory Commission

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WHAT IS THE IMPACT OF DUKE'S RATE CHANGE BASED ON CURRENT MONTHLY BILLS?

HOW MUCH DO DUKE CUSTOMER SPEND PER MONTH?

$75-100 per month: Average for households in apartment buildings. Duke would increase bills by $192 per year.

$125-150 per month: Average for Duke customers in South Carolina. Duke would increase bills by at least $162 per year.

AT WHAT POINT DO CUSTOMER SEE "LOW" ANNUAL IMPACT?

$300 per month: Point at which the impact of Duke's proposed increase reaches below $50 annually.

$375 per month: Point at which Duke's proposed increase has no $ impact on customer bills.

Increase in Electricity Bill (%)

Eligible
Not Eligible

INCOME QUALIFIED PROGRAM ELIGIBILITY
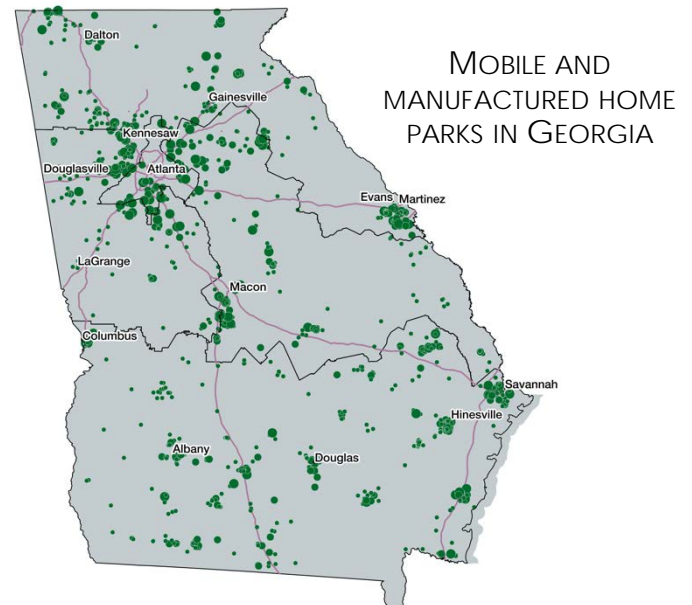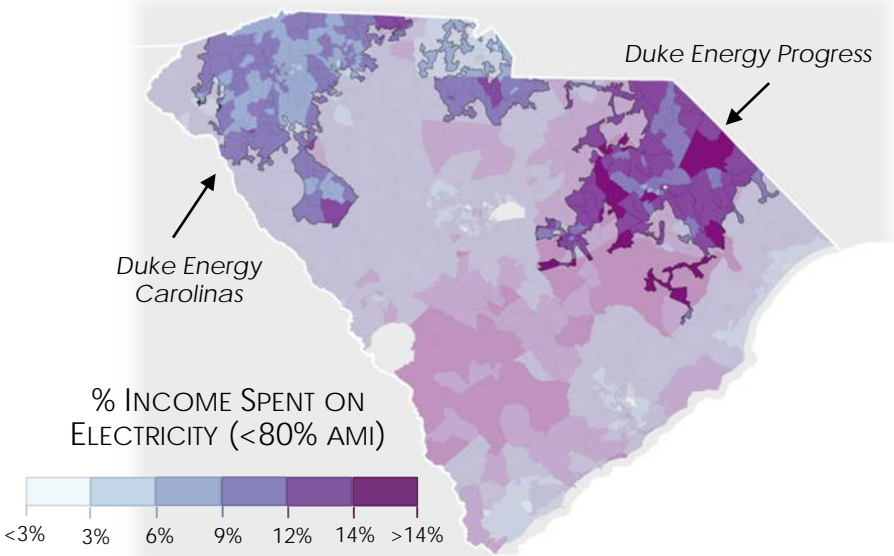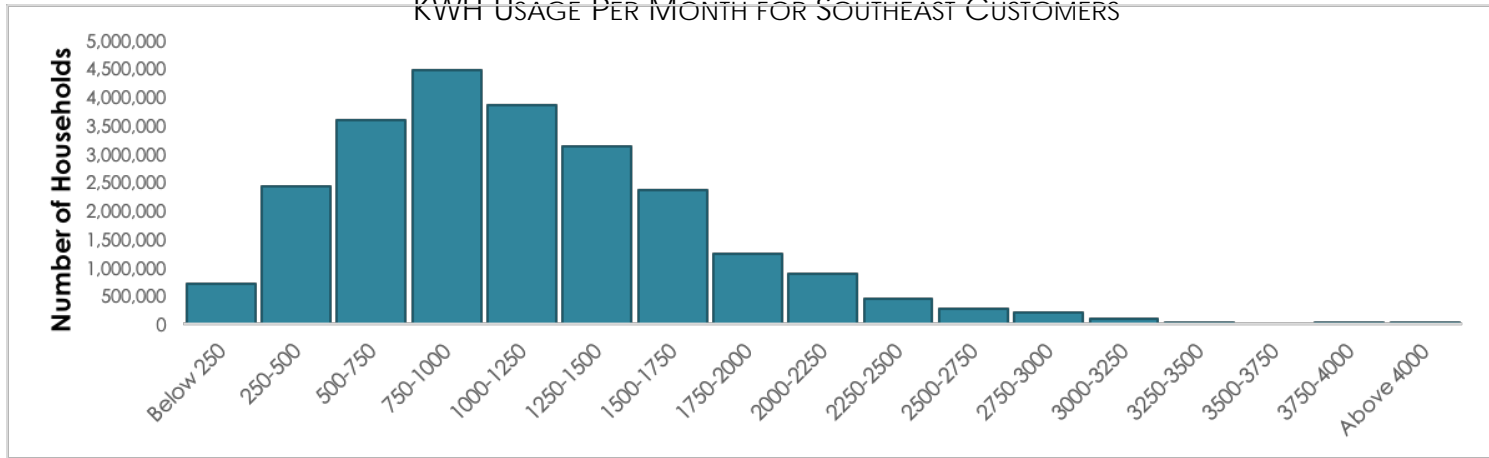

COAL PLANTS EMISSIONS
NEAR COMMUNITIES OF COLOR

AGE DISTRIBUTION OF GEORGIA MANUFACTURED HOUSING STOCK

ACS LEVERAGED WITH OR FOR OTHER DATASETS

KWH Usage Per Month for Southeast Customers

% Income Spent on Electricity (<80% ami)

Duke Energy Progress

Duke Energy Carolinas

Mobile and manufactured home parks in Georgia

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FIT WITH ACS DATA

The issues that arise from using ACS for this purpose appear to be the usual suspects….

Varying levels of certainty in data estimates:
- Small/mid-size cities or groups have most to gain from ACS data
- However, due to staff limitations may be least likely to have time/skills to fully consider various measures of sampling error.

Aligning ACS multiyear estimate:
- Can be an odd fit to align with planning years (every 2-3 years)
- Still less frequent than annual state/local government, so it is appropriate to prioritize accuracy over timeliness

Difficulties aggregating ACS data to nonstandard geographies:
- Good candidate since service areas almost never change
- Still challenging due to the patchwork nature of utility service areas.

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ANALYSIS OF UTILITY SERVICE AREAS

Utility service areas come in all shapes and sizes…

Very few are coterminous with standard geographies. It is common for service areas to have several compacts areas and many diffuse patches.

Census tracts small enough to aggregate, but counties too coarse to divide.

Simple area weighting is best fit for addressing census tracts that fall partially within service area. Others have simply aggregated census tract centroids that fall within service area.
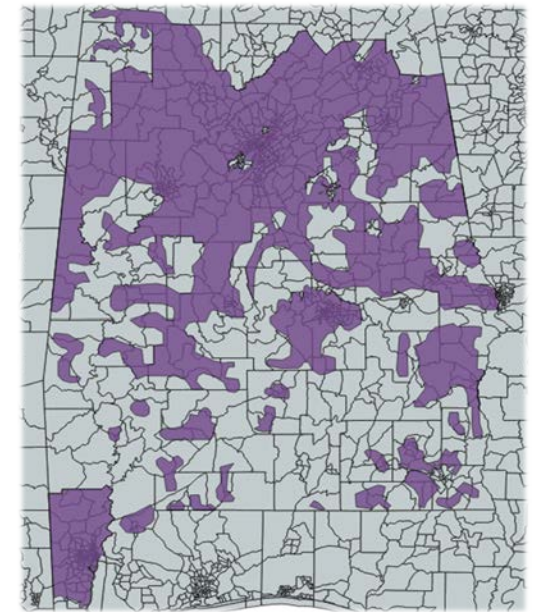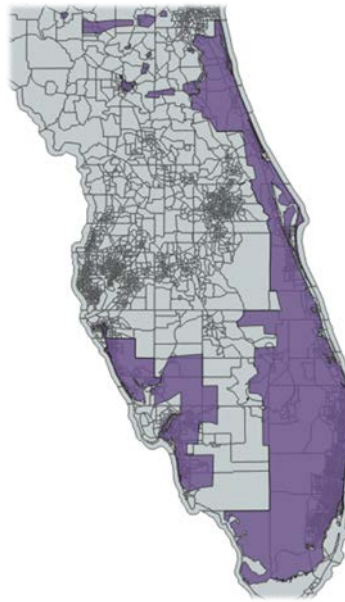
Source: Platts Electric Power Data

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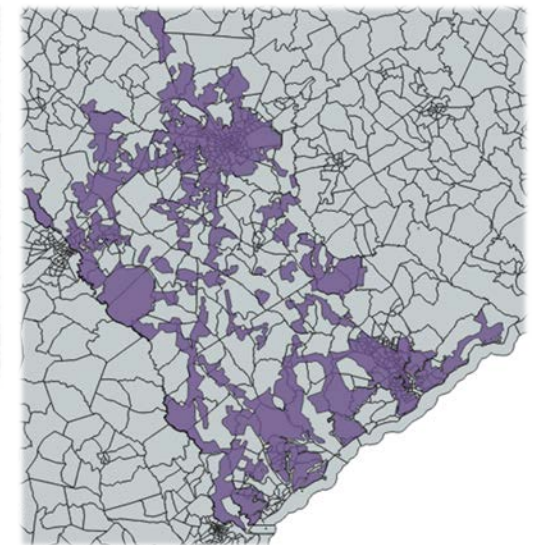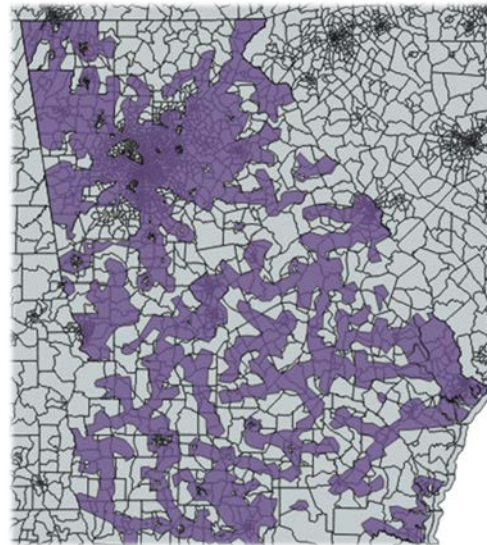
ANALYSIS OF UTILITY SERVICE AREAS

	EIA Form-861	ACS 2013-2017 5-Year		
State	Residential Customers	Housing Units	Households	Population
Alabama	2,213,592	2,231,126	1,856,695	4,850,771
Florida	9,291,707	9,259,684	7,510,882	20,278,447
Georgia	4,296,977	4,203,288	3,663,104	10,201,635
Mississippi	1,284,578	1,308,259	1,103,514	2,986,220
North Carolina	4,488,039	4,521,697	3,874,346	10,052,564
South Carolina	2,251,558	2,229,324	1,871,307	4,893,444
Tennessee	2,847,696	2,903,199	2,547,194	6,597,381
		✔	✖	✖

- # of housing units is best fit in terms of producing a direct comparison to the number of utility residential customers. Can be used to further adjust estimates for other household characteristics.

- Total counts and averages are desirable for planning purposes. May also be better to estimate compositional / descriptive characteristics (rates and percentages) with ACS data and pair with other available data.

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Uses of ACS data for this purpose might appear limited, but seemingly unrelated topics add depth to policy discussions. Consider the following subject matter included in the ACS:

- Vehicles - travel time to work, aggregate # of vehicles
- Citizenship status – over the age of 18 in household
- Internet access – broadband (cable, fiber optic, or DSL)

ACS data has multifaceted uses - while none of these questions were directly intended to relate to electric utilities, they still have relevance to policy & planning.
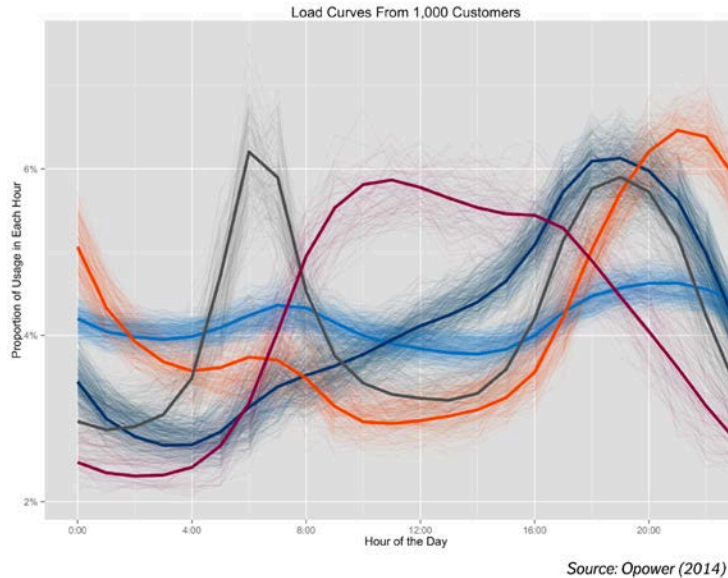

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Load Curves From 1,000 Customers

Source: Opower (2014)

Many utilities have begun to study impacts energy consumption impacts of electric vehicles (EV) have. In particular ACS may help efforts to:

Identify how charging overlaps with hourly load profiles – based on time leaving home to go to work and vice versa. Most EV charging is done at home but shift may occur from overnight charging to 1-2 hours during peak hours.

Anticipate clusters of vehicles charging simultaneously - If in times of peak demand, may potentially require older transformers to be upgraded or replaced.

Other issues: ACS estimate may be more valuable if some time groups (4:00 pm to 11:59 pm) had hourly resolution instead. PUMS can supplement.

Image & source: Depicts how different customers are classified by hourly energy usage (load profiles) https://blogs.oracle.com/utilities/load-curve-archetypes

SOCIAL, ECONOMIC, AND HOUSING ESTIMATES: CITIZENSHIP
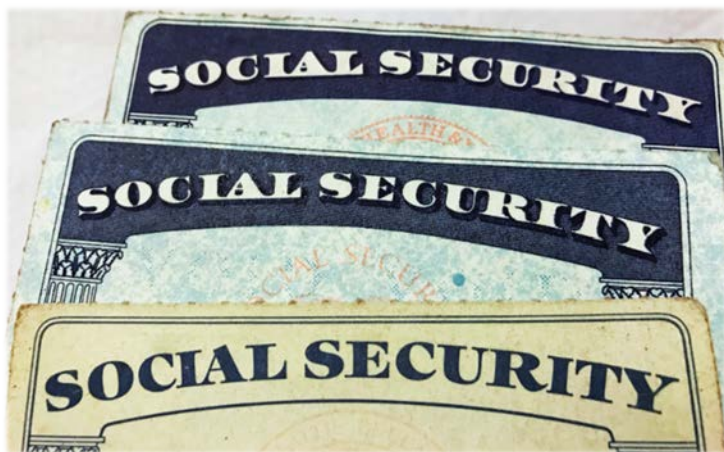
Many electric utilities require a social security number in order to receive service, making it difficult or impossible for immigrants to sign up for service in their own name.

Policy change is unlikely to happen elsewhere. Social Security Administration (SSA) guidelines to noncitizens states: "**We can't assign a Social Security number solely for you to get** a driver's license **or a service that requires a credit check."**

- Over 500+ utilities in the Southeast alone, too time consuming to review and/or challenge service requirements for each one. ACS estimate may help estimate impact and prioritize need for policy change.

- Recent case in LaGrange, GA where municipal utility policy was challenged to be discriminatory: "They're making it impossible for [immigrants] to have basic services so they can live there. The effect is to tell certain immigrants, 'You can't live here.'"

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- Most current internet service is provided by privately owned telecommunications companies.

- Shift to municipalities and rural co-op utilities as a provider for underserved areas?

- ACS estimates help answer question of how well underserved areas align with municipal utility boundaries and if addressing legality or other barriers is necessary.

Examples in Southeast:

- **Chattanooga Electric Power Board** - municipal electric utility in Tennessee provides some of the fastest broadband internet service in the country. Fiber optic network installed in tandem with electrical distribution upgrades had lead to reduced power outages, proactive customer service, increased reliability.

- **Mississippi Broadband Enabling Act** – makes explicit the legality of electric utilities offering broadband service with rules that electric service cannot subsidize costs.

THANK YOU FOR LISTENING!

Non-ACS Datasets Referenced:

- **U.S. Energy Information Administration (EIA):** Residential Energy Consumption Survey (RECS), uses ACS as benchmark: https://www.eia.gov/consumption/residential/data/2015/#structural
- **U.S. Department of Energy (DOE) Better Building Initiative:** Low-Income Energy Affordability Dataset (LEAD), custom crosstab of PUMS data/HUD fair market rents: www.openei.org/dataset/celica-data
- **Homeland Infrastructure Foundation-Level Data (HIFLD):** mobile/manufactured home park locations derived from ACS: hifld-geoplatform.opendata.arcgis.com/datasets/mobile-home-parks/

Reports or Articles Referenced:

- **National Association for the Advancement of Colored People (NAACP):** Coal Blooded Report, see methodology for EJ rankings: www.naacp.org/wp-content/uploads/2016/04/CoalBlooded.pdf
- **Pew Charitable Trust:** Article on municipal utility SSN requirement: www.pewtrusts.org/en/research-and-analysis/blogs/stateline/2017/10/17/no-social-security-number-no-lights
- **Jackson Free Press:** Article on municipal broadband internet bill at legislature: www.jacksonfreepress.com/news/2019/apr/10/mississippi-speaker-touts-rural-broadband-law-ques/

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