SEEA
SOUTHEAST ENERGY EFFICIENCY ALLIANCE

THE STATE OF HEALTHY AND EFFICIENT HOUSING IN GEORGIA STATE HOUSE DISTRICT 98

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About us

Founded in 2007, the **Southeast Energy Efficiency Alliance** (SEEA), promotes efficient energy as a catalyst for economic growth, workforce development, and energy security across 11 southeastern states. We provide research, consultation and education, stakeholder facilitation, program management and financial services to a diverse set of stakeholders in the energy sector. We believe that all people in the Southeast should be able to live and work in healthy and resilient buildings, utilize clean and affordable transportation, and thrive in a robust and equitable economy.

Table of Contents

Project Overview

In early 2022, Georgia State Representative Marvin Lim contacted SEEA to identify ways to leverage anticipated federal funding to expand the supply of healthy and efficient housing in his district. Together with the Gwinnett Housing Corporation (GHC) and SEEA, he successfully applied for a capacity building grant from the American Cities Climate Challenge Justice40 Capacity Building Fund created by Bloomberg Philanthropies.

With this funding, the project team conducted an energy and housing landscape analysis of HD98 to better understand the needs of residents and to identify federal investments that could address these priorities. The team presented the analysis to stakeholders with interest in, and influence over, the district.

This report presents the complete conclusions of SEEA's energy and housing analysis. A shortened overview of our findings and recommendations for pursuing federal funding is available in *How to Access Funding for Healthy and Energy-Efficient Housing* (SEEA, 2022).

1. Energy Insecurity in the South: Regional Context

Energy affordability and access are critical issues. This is especially true in the South, where millions of Southerners struggle to pay their electric and gas bills every month. More customers are cost-burdened in the South than in any other part of the country, and nearly 30% of households have trouble keeping up with their energy bills. These Southerners live in a state of energy insecurity, where they struggle to maintain vital, and potentially life-saving, energy services like heating and cooling.

> Sociologist Diana Hernández defines energy insecurity as "an inability to adequately meet household basic energy needs," including heating, cooling, and lighting, among others.
>
> Energy insecurity encompasses the various factors that contribute to difficulty in maintaining energy services, including the physical condition of the home, occupant behavior, and energy access and affordability.[1]

Energy insecurity is rooted in historical racial and economic inequities, which still shape energy and housing sectors and limit access to affordable power. The result is that low-income households and people of color in the South typically pay a higher financial and health price to power their homes than everyone else.

Southern states are overrepresented in both the number and proportion of households that have experienced energy insecurity, according to the 2020 Residential Energy Consumption Survey from the U.S. Energy Information Administration (EIA). In the South, 9.3. million people currently face or have faced energy insecurity, approximately 28% of the region's population.[2]

Figure 1 shows that southern states experience higher rates of energy insecurity than the rest of the

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1 Diana Hernández, "Understanding 'energy insecurity' and why it matters to health," Soc Sci Med 167 (October 2016): 1-10.

2 EIA defines energy insecurity as difficulty paying bills, while considering other factors such as safety and utility disconnections because a household struggles to afford their bills.

nation. The proportion of residents facing energy insecurity ranges from a low of 24% in Virginia to Mississippi, where more than four out of every ten people experience energy insecurity. Across the region, 4.7 million households must keep their home at an unhealthy temperature because of the cost of energy, 10.7 million households reduce their consumption of food or medicine to pay their utility bills, 5.7 million households have been disconnected or received a stop service notification, and 5.3 million households are unable to use heating or cooling equipment in their home.[3]

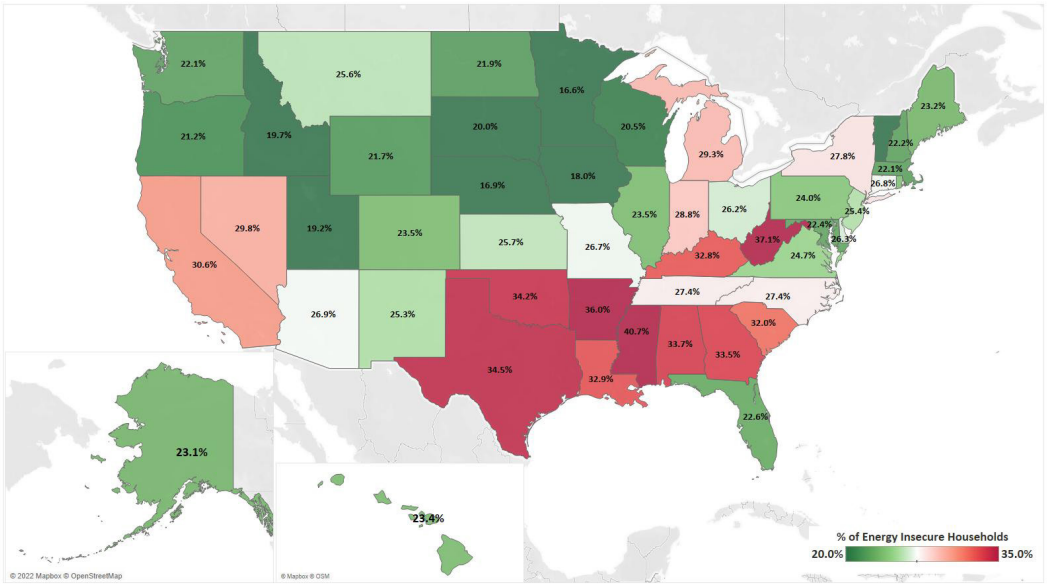

Figure 1: Share of residents who have experienced energy insecurity by state.

These burdens fall most heavily on low-income and Black, Indigenous, and people of color (BIPOC) households, who too often struggle with high energy bills despite comparatively low electric rates.

Low-income people throughout the nation, and especially in the South, pay a significantly higher proportion of their income for energy than higher-income households. The average household in the region spends 5.8% of its income for energy, compared to a national average of 3.5%. The typical low-income household spends 10.1% of its income on energy, more than four times more than an average upper-income household in the region.[4]

Energy insecurity is not just a financial problem; it cuts into the resilience of Southern communities facing climate change. Cities in the Southeast are experiencing more extreme heat waves than any other part of the country. The Union of Concerned Scientists predicts that the number of days over 100°F in the region will triple by midcentury, while days exceeding 105°F will increase from fewer than nine days per year to more than six weeks.[5] Unless action is taken, the financial and health impacts of this heat will fall most heavily on low-income households and people of color, who are often already struggling to

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3 U.S. Energy Information Administration (EIA), Residential Energy Consumption Survey, Table HC11.1: Household energy insecurity, 2020.

4 U.S. Department of Energy (DOE), Low Income Energy Affordability Data (LEAD) Tool. See also Ariel Drehobl and Lauren Ross, Lifting the High Energy Burden in America's Largest Cities: How Energy Efficiency Can Improve Low Income and Underserved Communities. (Washington DC: American Council for an Energy-Efficient Economy, 2016) and Ariel Drehobl, Lauren Ross, and Roxana Ayala, How High Are Household Energy Burdens?: An Assessment of National and Metropolitan Energy Burden across the United States (Washington, DC: American Council for an Energy-Efficient Economy, 2020).

5 Kristina Dahl, et. al., "Regional Data By Heat Index Threshold and Scenario," in Killer Heat in the United States: Climate Choices and the Future of Dangerously Hot Days (Cambridge, MA: Union of Concerned Scientists, 2019).

keep their homes at a safe temperature due to the cost of energy.

Energy insecurity also inhibits the ability of utilities to rebuild the grid in the aftermath of extreme weather events because utilities often offset these costs onto cost-burdened households, further undercutting their ability to pay and contributing to an overall lack of resiliency in the energy sector.

Much of the discussion of climate change focuses sea-level rise and the intensity and frequency of natural disasters. But millions of people in the Southeast are struggling with energy access and affordability, putting them on the front lines of climate change.

> Investments in the efficiency and healthfulness of housing, particularly for vulnerable communities, play a critical role in increasing housing affordability and stability, enhancing community resilience in the face of extreme heat and other disasters, decreasing health risks, and reducing greenhouse gas (GHG) emissions.

As we explain in this report, our research finds that residents of Georgia's State House District 98 are at risk for energy insecurity. Leveraging federal, state, utility, and philanthropic funds to invest in housing and developing programs to support homeowners and renters in the district is critical to building resilience, promoting affordable housing, and ensuring that homes provide healthy spaces for residents to live, work, and play.

2. Georgia State House District 98

Georgia's State House District 98 (HD98) is located on the southwestern boundary of Gwinnett County, as shown in Figure 2. It is bounded by Interstate 85 to the north, Beaver Run Road to the east, and the county line to the west. HD98 was created from HD99 in 2022 during Georgia's redistricting process. The entirety of HD98 is in unincorporated Gwinnett County.

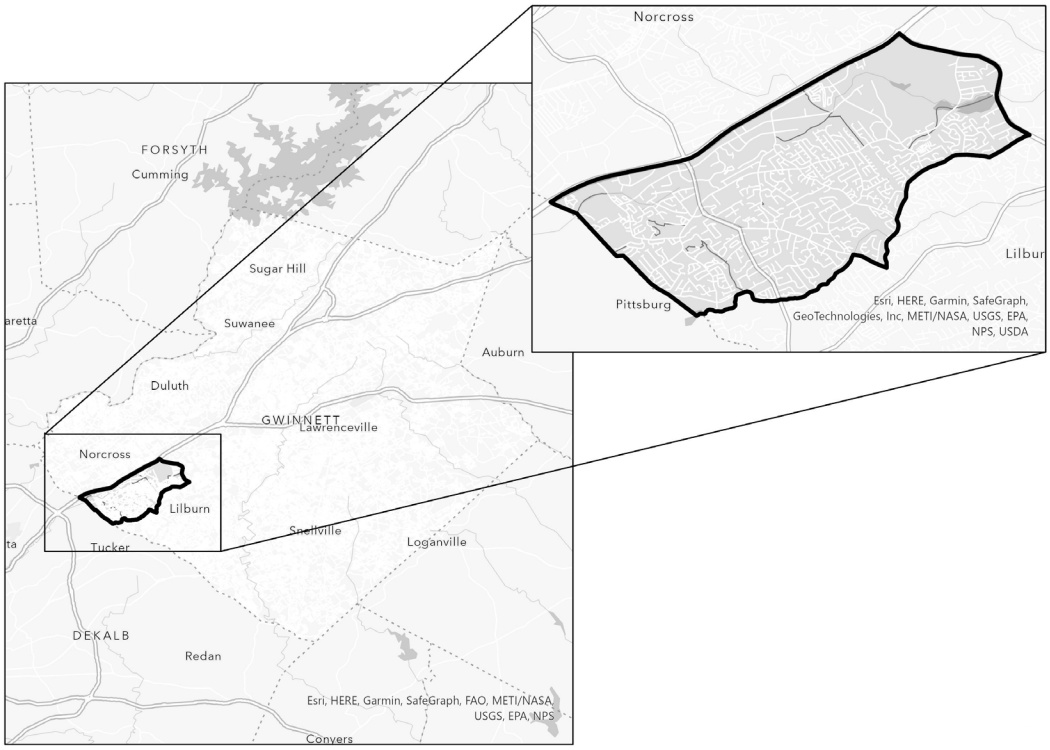

Figure 2: Location and boundaries of Georgia State House District 98 in Gwinnett County.

In 2020, there were 59,615 people were living in HD98, approximately 16% of all residents in Gwinnett. This was 19,563 households, with an average of 3 people living in each household.

Communities in HD98 face multiple burdens simultaneously, with high levels of energy insecurity. According to the White House Council for Environmental Quality (CEQ), every census tract is considered disadvantaged according to federal criteria and eligible for funding under the Biden Administration's Justice40 directive. Two tracts in the district, 504.21 and 504.18, are considered disadvantaged, according to the U.S. Department of Energy's Disadvantaged Communities Reporter.[6] The U.S. Department of Transportation considers all census tracts in the district but one to have "transportation access disadvantages," where communities "spend more, and longer, to get where they need to go."[7]

Tracts in HD98 are in the highest national percentile brackets for issues that include linguistic isolation, the proportion of low-income residents, proximity to toxic infrastructure, and traffic exposure, among others. Figure 3 indicates which thresholds are exceeded for each census tract, according to CEQ's Climate and Economic Justice Screening Tool (CEJST).[8]

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6 U.S. Department of Energy (DOE), Disadvantaged Communities Reporter, 2022.
7 U.S. Department of Transportation (DOT), Transportation Disadvantaged Census Tracts, 2022.
8 White House Council for Environmental Quality, Climate and Economic Justice Screening Tool (CEJST), 2022.

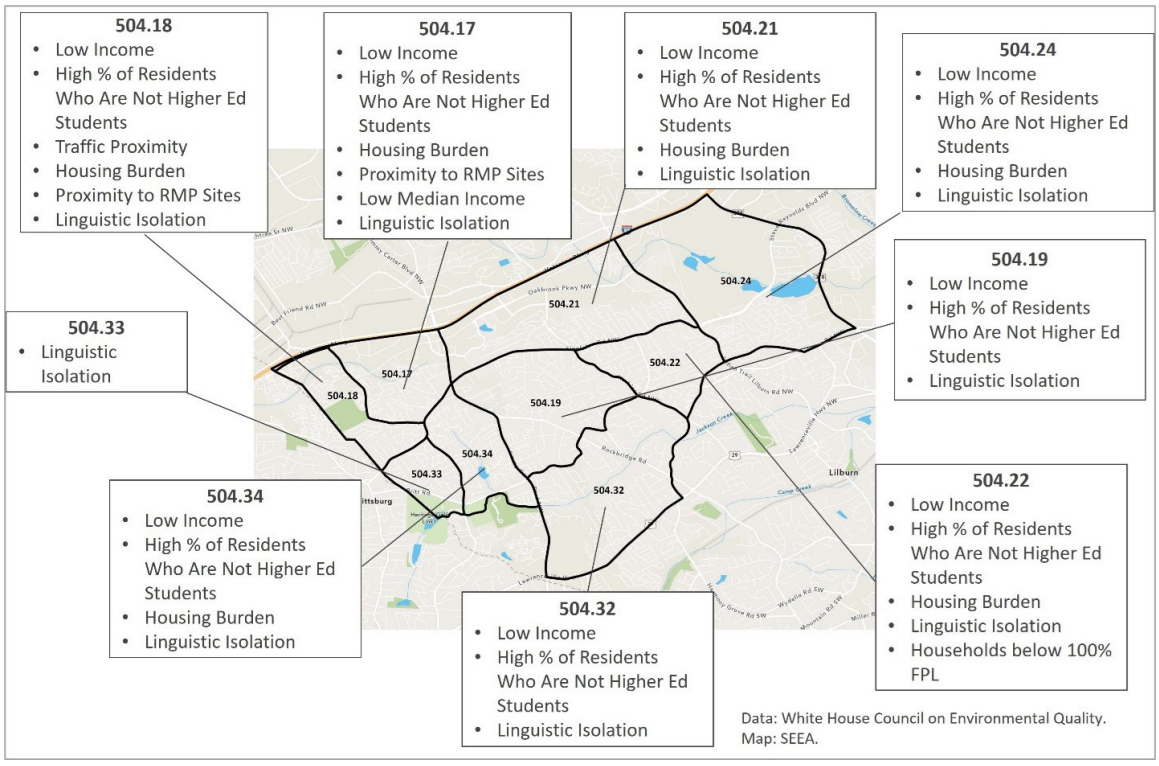

Figure 3: Thresholds exceeded for each census tract in the White House Climate and Economic Justice Screening Tool (CEJST).

Below, we will provide a sociodemographic overview of HD98 along with a discussion of how key issues impact vulnerability to energy and housing insecurity.

2.1. Income

Income is correlated with a wide range of energy and housing vulnerabilities, from utility disconnections to health risks. Gwinnett County is a higher income county than metropolitan Atlanta overall, yet incomes in HD98 are among the lowest in Gwinnett. The median household income in HD98 is $49,384, compared to $58,568 in Norcross and $74,737 in Gwinnett overall. HD98's median household income is also 24% less than the median for the city of Atlanta.

HD98 has a higher proportion of residents at the bottom of the income distribution than either Gwinnett or Norcross, as shown in Figure 4. Forty-four percent of all households in HD98 – more than 8,600 – make below 60% of the area median income (AMI), making them eligible for most forms of housing and energy assistance.

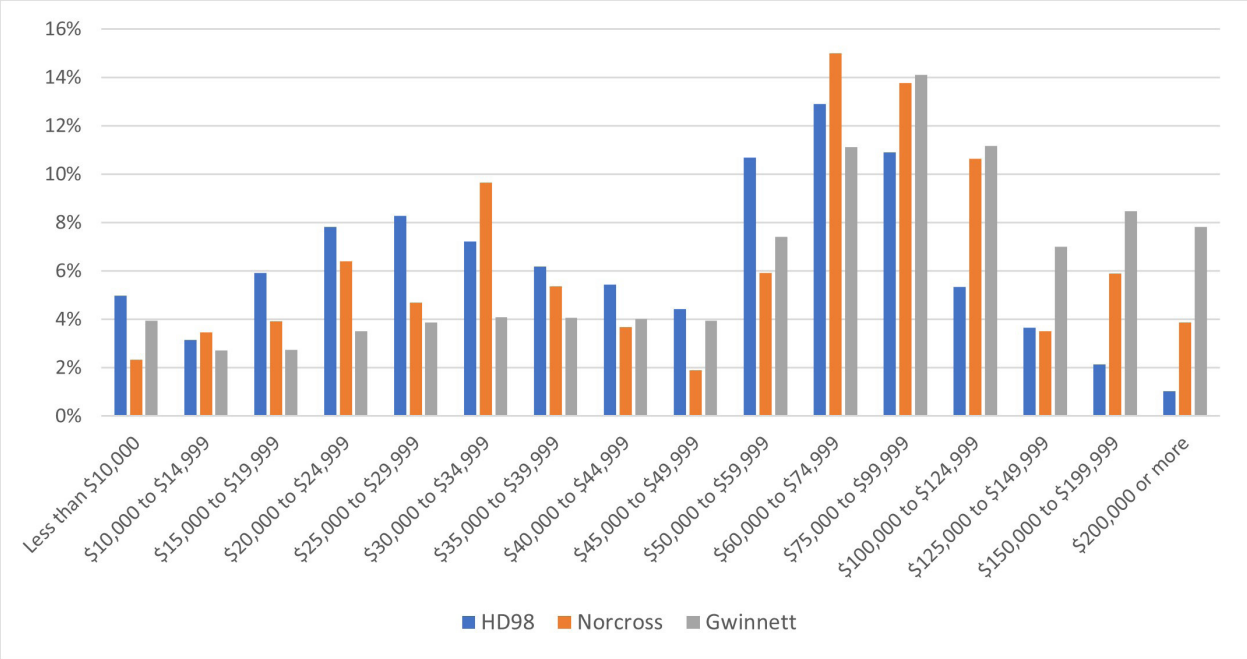

Figure 4: Income Distribution by Percent of Households, in HD98, Norcross, and Gwinnett County

A low-income corridor in Gwinnett County parallels Interstate 85 and runs through HD98. The lowest median household income of $30,665 is in tract 504.45 – a majority Hispanic neighborhood with relatively young residents and a significant proportion of multifamily rental housing, as Figure 5 indicates. The highest household incomes are in census tract 504.44, with a median income of $65,050 – more than double that for tract 504.45. This majority Hispanic neighborhood has older residents and is overwhelmingly made up of single-family owner-occupied homes, which indicates that residents have less trouble accessing capital and lending for purchasing a home.

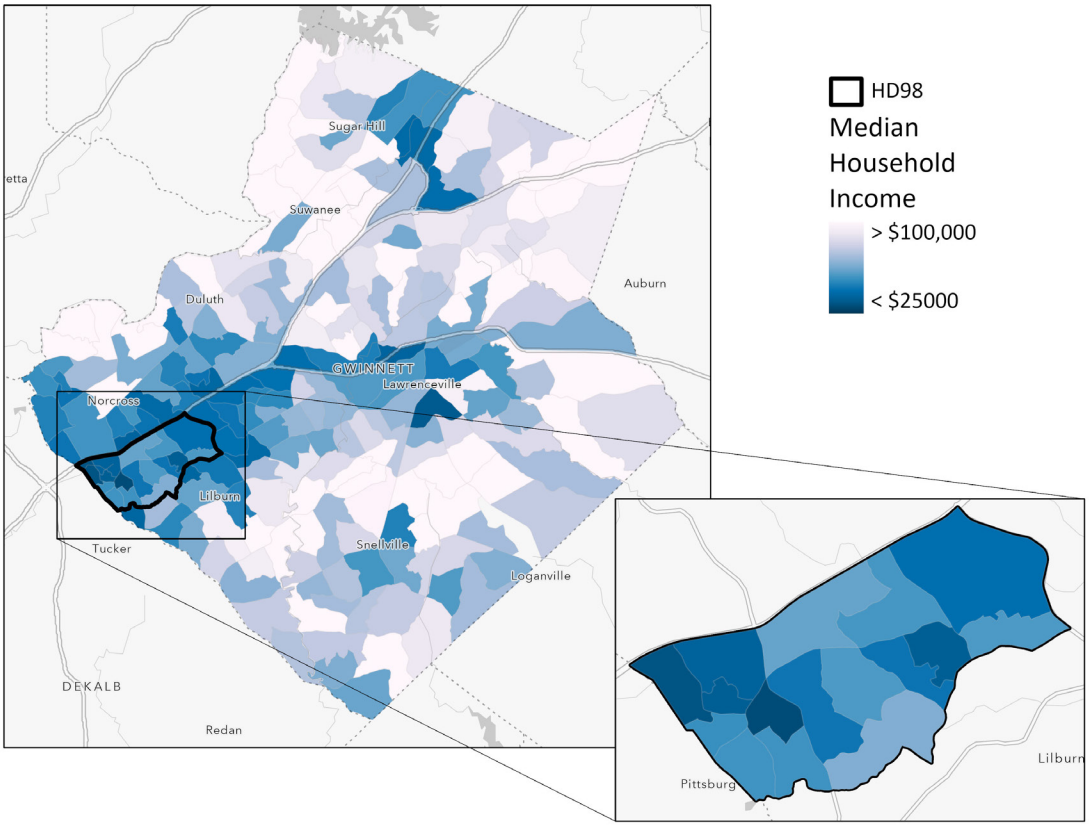

Figure 5: Median household income by census tract in Gwinnett County and HD98.

2.2. Suburban Poverty

HD98 is a prime example of the suburbanization of Atlanta's poverty. Over the past two decades sharp rises in the costs of housing have forced many low-income residents to move out of the city – where housing prices have been rising fastest – and into surrounding suburbs. According to the Atlanta Regional Commission (ARC), between 2000 and 2013, suburban poverty increased by 7.5% in the metropolitan region, one of the highest increases documented in a national study of cities. Over that same time, the number of Gwinnett residents receiving food stamps doubled. ARC noted that the core of HD98 – where there is a "sizable cluster of high-poverty neighborhoods" – had a five-fold increase in the number of people receiving food stamps in the seven years between 2007 and 2014, the largest increase in the entire metropolitan Atlanta region.[9]

In the decade after 2000, the proportion of residents of the current HD98 in poverty grew substantially, so that today residents there are at a significantly higher risk of poverty than people in other parts of the county. HD98 has a poverty rate of 19.9%, almost double the national poverty rate as well as that of Gwinnett County.

HD98 also has a child poverty rate more than twice that of Gwinnett overall, at 32.8% compared to

9 Mike Carnahan, Suburbanization of Poverty in Metro Atlanta: An Update (Atlanta, GA: Atlanta Regional Commission). See also Elizabeth Kneebone and Alan Berube, Confronting Suburban Poverty in America (Washington, D.C.: Brookings Institution Press, 2013), 22-23.

14.4%. One out of every three kids in HD98 live in poverty, nearly 5,000 children. According to data from the U.S. Census Bureau, the likelihood that a Hispanic child born in the bottom 20% of incomes in Gwinnett will earn in the top 20% of incomes during their lifetime is only around 7.2%, placing the county in the forty-eighth percentile nationally for upward mobility. In HD98, upward mobility rates for Hispanic children are even lower, at 5.1% for a child born to a low-earning household in the district.[10]

As these figures suggest, vulnerable groups are disproportionately burdened by poverty. A quarter of all women in HD98 live below the poverty line, and families there most likely to experience poverty are typically headed by a single mother. HD98 also has higher rates of poverty among those age 65 years and older, at 14.5%, compared to Gwinnett County's 8.6%.

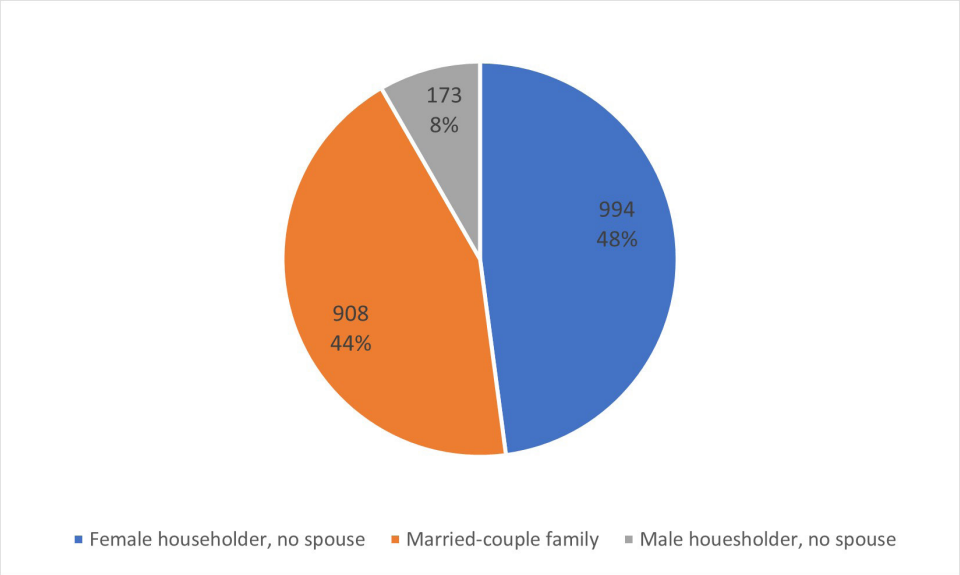

Figure 6: Proportion of families below the poverty line by family composition.

As Figure 7 shows, poverty is most prevalent in tracts 504.47 and 504.37, with 35.0% and 34.7% of the population, respectively, living below the federal poverty line. Tract 504.47 is predominately Hispanic and 504.37 is predominately Black. Both tracts are overwhelmingly home to renters and have high rates of geographic mobility, suggesting housing instability. Both tracts have significant proportions of residents with housing cost burdens and are linguistically isolated. These two tracts also have the highest energy costs and energy burdens, as a percentage of income, in HD98, which further undercuts household finances by tying up significant resources in utility costs. Poverty is a constellation of issues, and these areas should be priorities for investment and programmatic support that can mitigate the poverty and energy insecurity faced by many residents.

10 U.S. Census Bureau, The Opportunity Atlas, 2022.

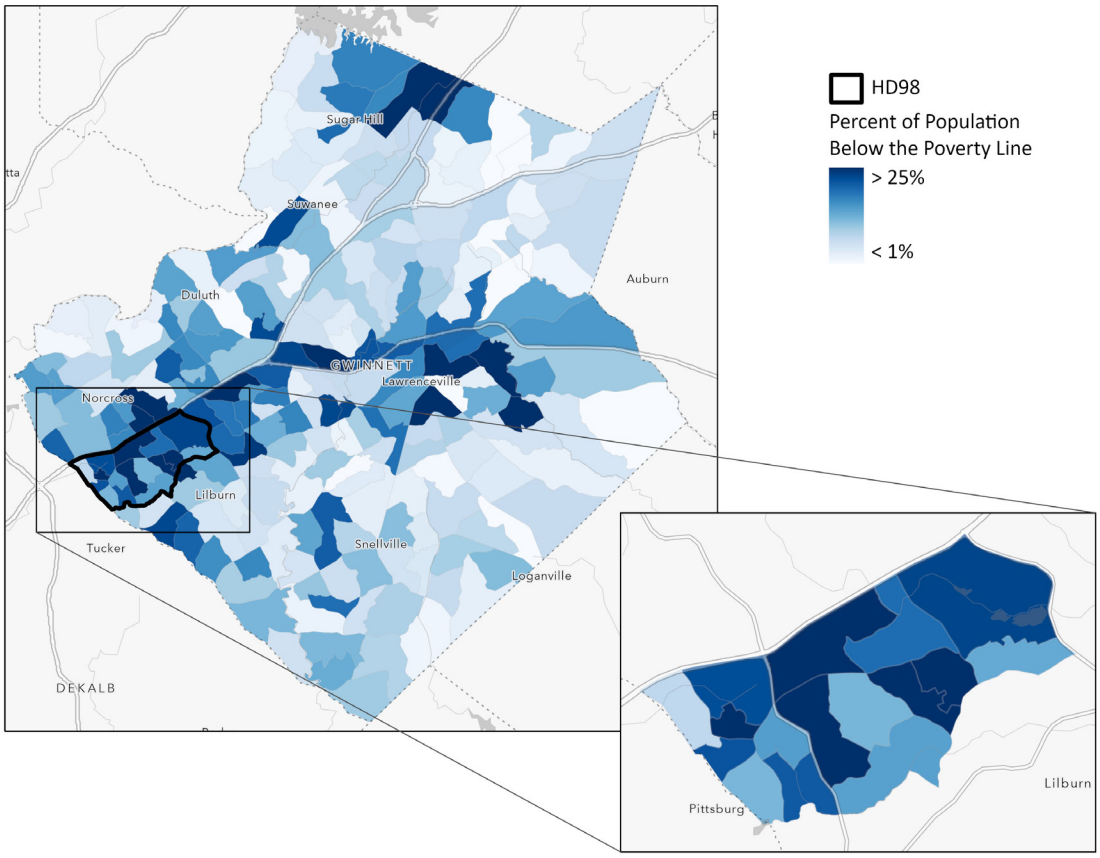

Figure 7: Proportion of residents earning less than the federal poverty line.

Low incomes and poverty contribute to cycles of energy insecurity by limiting a person's ability to pay their utility bills. This can lead to utility disconnections, which can have cascading financial, health, and housing impacts. It can also lead people to take action to reduce their bills, which can place them at a higher risk for health and safety hazards, or to take out high interest payday loans that further undercut their financial stability.[11]

2.3. Demographics

HD98 is a racially and ethnically diverse district, which can contribute to energy insecurity and limit opportunities for accessing energy and housing assistance. Over half of residents of HD98 identify as Hispanic or Latino (56.7% of the population), more than double the proportion of Hispanic and Latino residents in Gwinnett County overall. There are 12,117 people who identify as Black or African American in HD98, 20.3% of the population, a lower proportion than in Gwinnett County overall (30.8%). 16% of the population of HD98 identifies as white, as Figure 8 indicates.

11 On payday loans see Rob Levy and Joshua Sledge. "A Complex Portrait: An Examination of Small-Dollar Credit Consumers" (Chicago: Center for Financial Services Innovation, 2012).

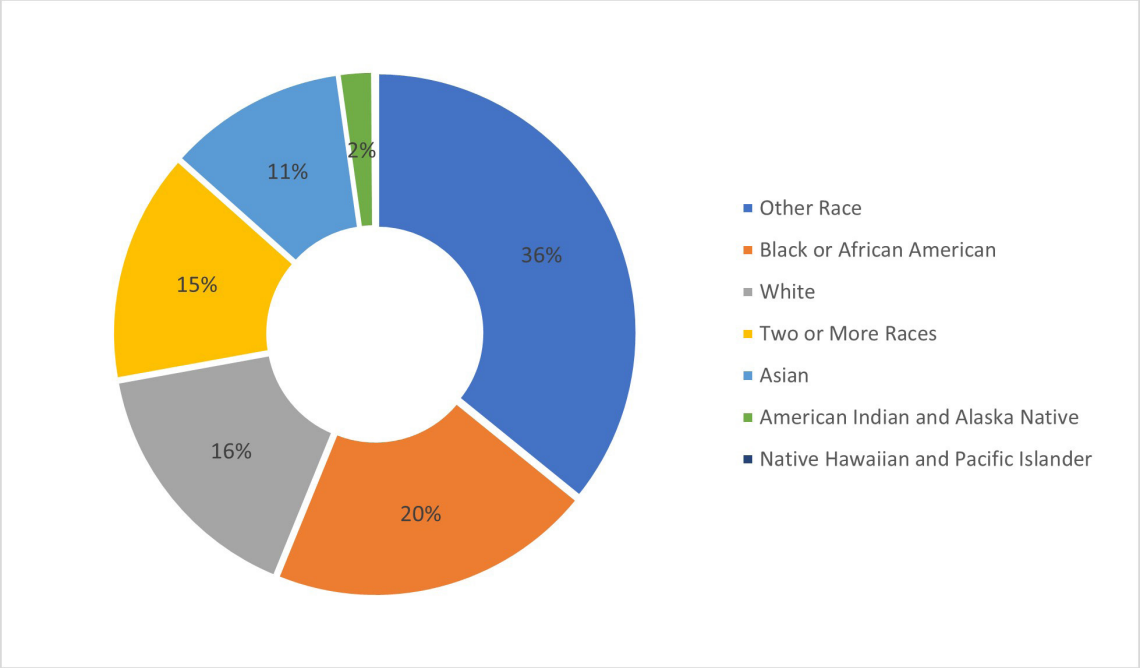

Figure 8: Racial identity of HD98 residents.

Although demographics may seem disconnected from a household's ability to pay and the vulnerability of residents to energy insecurity, research underlines the fact that people of color and foreign-born residents are at a higher risk of energy insecurity than all other groups. A 2020 study by the American Council for an Energy-Efficient Economy (ACEEE) found that Black households have a median energy burden that is 43% more than white households, while Latinx households had a median burden that was 20% more than white households.[12] A research team at the University of Indiana used survey responses during the COVID-19 pandemic to conclude that Black and Hispanic households are most vulnerable to energy insecurity, including being more likely to have their power disconnected by their utility.[13]

Most residents of HD98 identify as non-white and are at high risk for energy insecurity due to generations of disparities in access to affordable housing, capital for home purchase and/or improvement, housing segregation, and other policies that have circumscribed access to efficient, healthy, and affordable housing.

HD98 also has a higher proportion of foreign-born residents in HD98 than Gwinnett County or Norcross, as Figure 9 indicates. HD98 has 24,734 foreign-born residents, 44.1% of the population, while just a quarter of the population of Gwinnett overall was born outside the United States. HD98 has one of the highest proportions of undocumented immigrants in the Atlanta metropolitan region.

12 Drehobl, Ross, and Ayala, "How High Are Household Energy Burdens?", iii.

13 Trevor Memmott, Sanya Carley, Michelle Graff, and David M. Konisky, "Sociodemographic disparities in energy insecurity among low-income households before and during the COVID-19 pandemic," Nature Energy 6 (February 2021): 186-93; Diana Hernández, Yumiko Aratani, and Yang Jiang. Energy Insecurity Among Families with Children. National Center for Children in Poverty (New York: Columbia University Mailman School of Public Health, 2014).

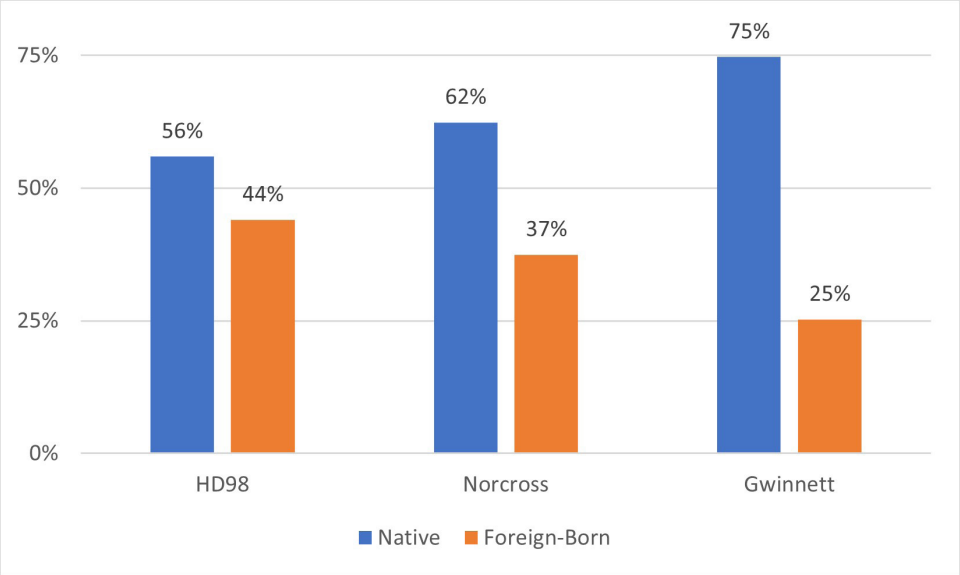

Figure 9: Proportion of foreign-born residents in HD98, Norcross, and Gwinnett.

According to the White House, every census tract in HD98 is above the ninetieth percentile nationally for linguistic isolation – households where no resident over the age of 14 speaks English fluently. Linguistic isolation can make it difficult to access existing energy and housing assistance – whether from a utility or the federal government – and contributes to keeping households energy insecure.

2.4. Employment and Occupations

Our research has found that employment and occupation trends in HD98 contribute to the vulnerability of residents to energy insecurity, but also have the potential to bolster stable employment by expanding access to clean energy and energy efficiency job pathways.

Energy insecurity is rooted in housing and household finances, and vulnerability can be either mitigated or exacerbated by available job opportunities and stability. Research shows that job and wage instability contribute to energy insecurity by undermining household finances, and the necessity of securing transportation to work without reliable public transit can further cut into available funds. Occupations with low incomes or seasonal work often fail to carry benefits, yet at the same time these jobs can prevent workers from accessing social benefits.[14] Additionally, jobs in sectors like construction or service occupations often expose workers to health and safety hazards that can make them more vulnerable to health hazards in their homes. Yet jobs in energy efficiency and clean energy can provide stable employment during the current energy transition that can bolster incomes for at-risk communities.

HD98 has a labor force participation rate of 70.8% compared to Gwinnett County at 68.6%, and a lower unemployment rate at 3.1% compared to 4.0% in Gwinnett. HD98 also has fewer remote workers than Gwinnett County overall (4% compared to 9%), suggesting that transportation costs factor more into household finances in HD98.

14 Diana Hernández, "Understanding 'energy insecurity' and why it matters to health," Soc Sci Med 167 (October 2016): 1-10.

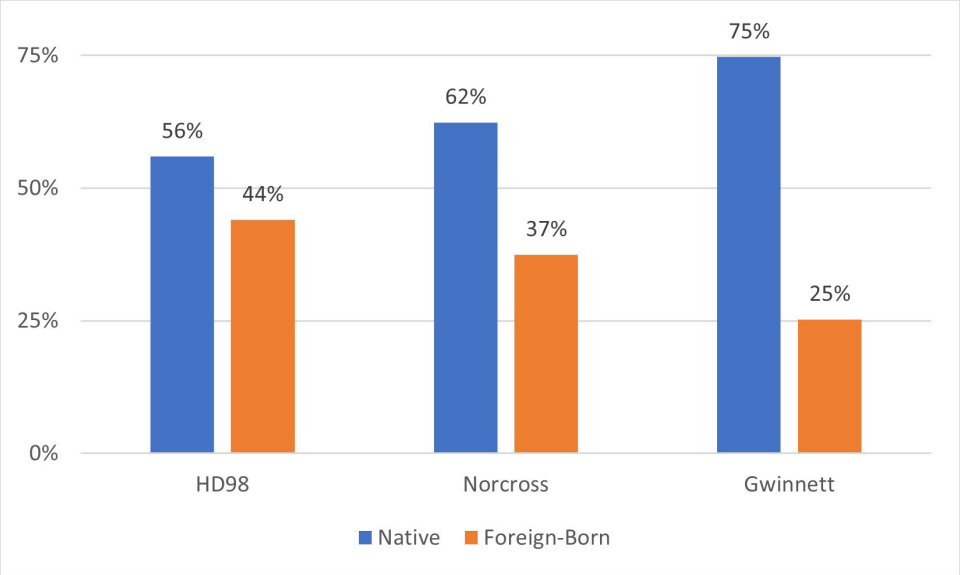

Figure 10: Proportion of HD98 workers by occupation type.

Workers in HD98 have a mixed employment, but the most common sector is construction, which employs 22.9% of all workers in HD98, as indicated in Figure 10. In contrast, most workers in Gwinnett County have jobs educational services, healthcare, and social assistance, which employ 18.7% of the county's workforce.

The most common job opportunities available within the district are in construction, at nearly a quarter of all jobs. This is followed by professional and scientific management, and administrative and waste management services as well as retail occupations. In contrast, the most common jobs available within Gwinnett County are educational services, health care, and social assistance – jobs that tend to have higher incomes and more stability. These differences highlight some of the challenges for HD98 residents in addressing housing and energy insecurity, particularly due to lower incomes and a lack of benefits available through employers.

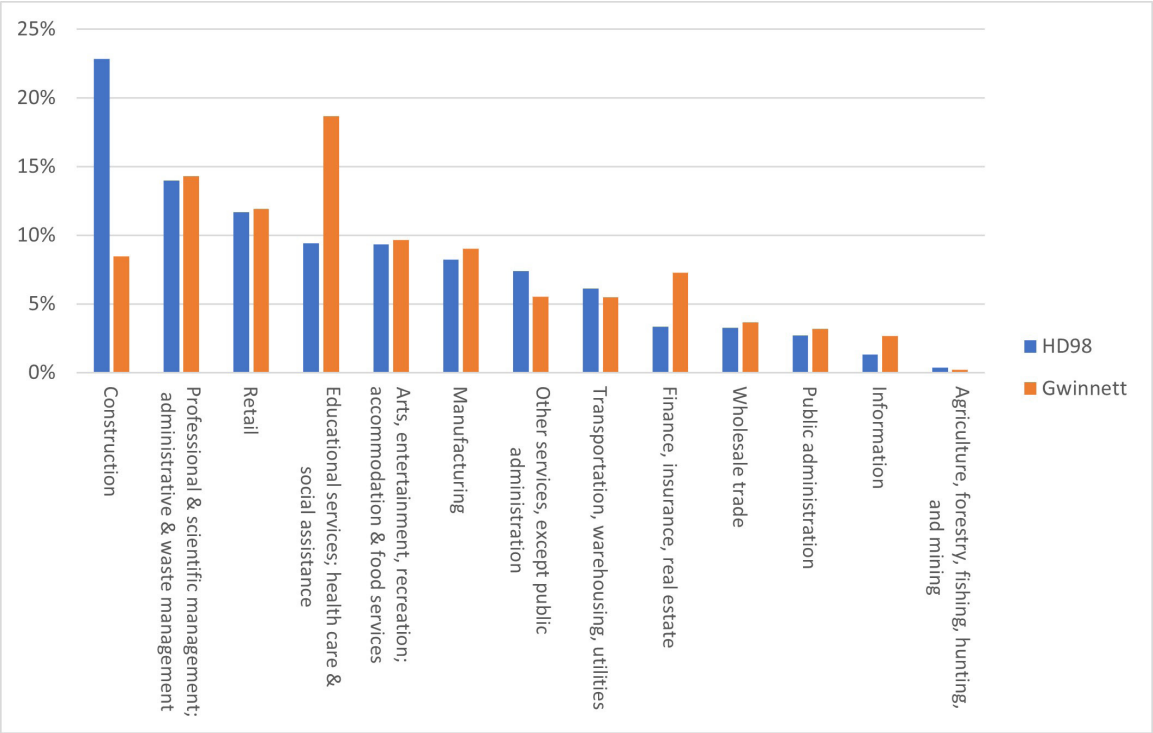

Figure 11: Occupations by sector available within HD98 and Gwinnett County.

Additionally, construction and service occupations have lower average incomes, more market variability, and carry a greater risk of injuries and illnesses for workers – particularly from material handling, noise, air contaminants, and exposure to high temperatures. While these occupations can contribute to vulnerability to energy insecurity and health problems in the home, they also offer opportunities for building a thriving economic base in HD98 by expanding work to supply green and healthy housing throughout Georgia.

2.5. Transportation

In the past, the construction of transportation infrastructure and implementation of new transit technologies has not benefitted all communities. These technologies have too often burdened low-income people and people of color, whether through a continued lack of access to new forms of transportation, affordability challenges from commuting to work, community displacement to make way for infrastructure, or the pollution burdens. Our research has found that transportation burdens in HD98 play a significant role in making the district's residents vulnerable to energy and housing insecurity.

Workers in HD98 – like those in Gwinnett County – rely on automobiles to get to work. Only 9% of HD98 workers do not regularly use an automobile to commute to work. Many have employment outside the district and the average commute time for residents is 33 minutes. These long commutes strain household finances, and almost a quarter of workers carpool to reduce costs – more than double the rate in Gwinnett.

Workers in HD98 have little access to clean forms of transit that could reduce fuel costs and decrease emissions burdens from living near transportation infrastructure. Georgia currently offers no available incentives for households to purchase an electric vehicle (EV), whether new or used, with the result

that personal EVs are financially out of reach for income constrained households.[15] There are two Metropolitan Atlanta Rapid Transit Authority (MARTA) bus routes that run through parts of HD98 – routes 20 and 30 – which are serviced by buses using either diesel or natural gas fuel.

While there are 91 public electric vehicle charging stations in Gwinnett County as of November 2022, there is not a single public EV charger located anywhere in HD98. The only alternative fuel charger in HD98, indicated in Figure 12, is a liquefied petroleum gas supply at the U-Haul store on Jimmy Carter Boulevard. As a result, residents and small businesses in HD98 are not profiting from vehicle charging. However, HD98 has 43 gas station/convenience stores or auto service stations that are primed to adopt electric charging and take advantage of new, sustainable revenue streams, especially given their proximity to Interstate 85.

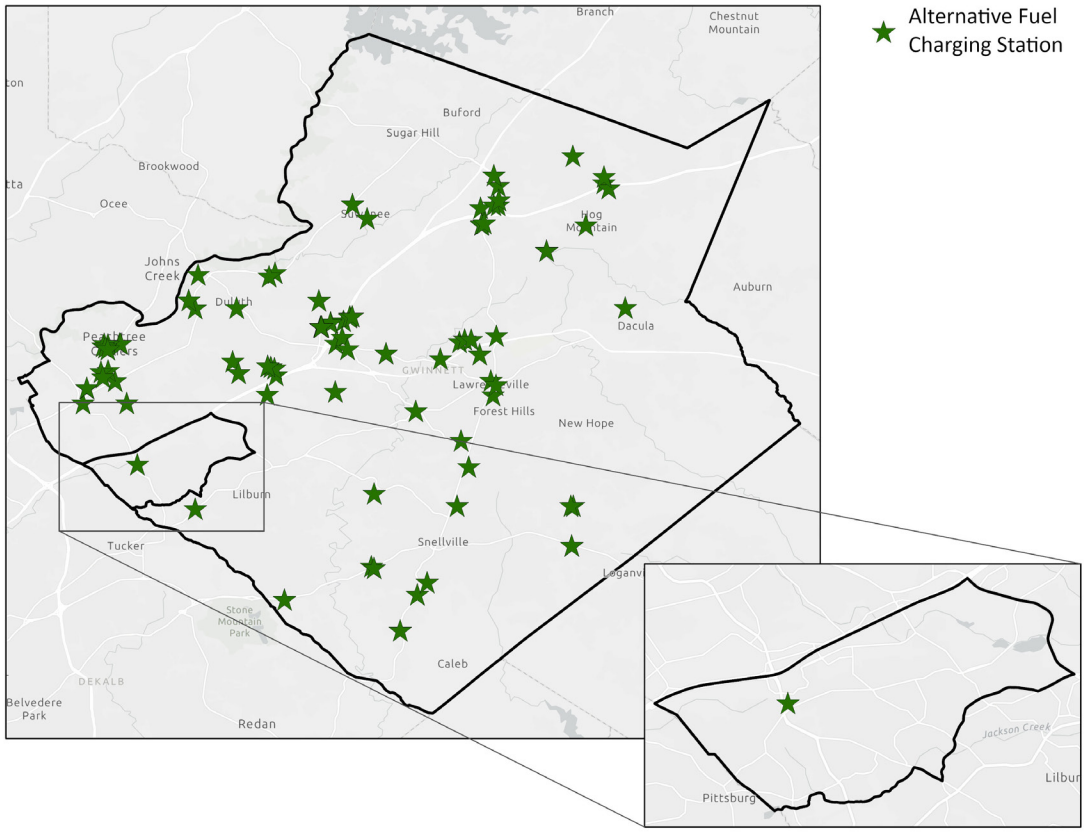

Figure 12: Location of alternative fuel charging stations in HD98 and Gwinnett County. Data current as of November 2022.

3. Energy Insecurity and Clean Energy in HD98

Our research finds that residents of HD98 struggle with energy insecurity and a lack of access to healthy and affordable housing – issues that have ripple effects throughout the district. These issues impact

15 Justin Brightharp, William D. Bryan, Laura Kuehl, and Joy Ward, *Equity in Georgia's Electric Transportation*. ArcGIS StoryMap. Southeast Energy Efficiency Alliance (SEEA), 2022.

residents of HD98 by contributing to unaffordable and unstable housing, a lack of resilience to disasters, community health risks, and by emitting greenhouse gases that contribute to climate change. We believe that investments in housing are the most direct way to address these causes of energy insecurity for occupants in a meaningful way.

3.1. Energy Costs

The average energy costs in HD98 are $1,972 per year, $164 per month. This is 18% less than the Georgia state average, and it is less than average energy costs for residents of Norcross and Gwinnett, as indicated in Figure 13.

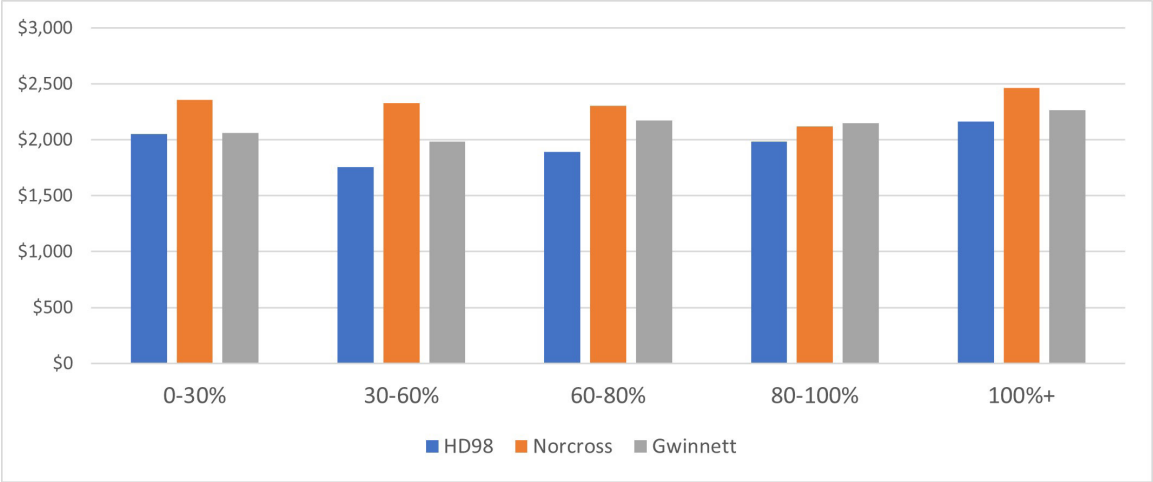

Figure 13: Average annual energy costs by income bracket (as a % of area median income), for HD98, Norcross, and Gwinnett.

The highest energy costs in HD98 are in tract 504.21, at $2,344 per year or $195 per month. This is $372 more per year than the HD98 average. High costs here are due, at least in part, to the old age of housing in this tract, most of which is at least five decades old.

While average costs may not be as high in HD98 as Gwinnett County and Atlanta, they can still strain finances and force difficult choices about how to pay the bills and prevent a utility shutoff, particularly for the district's low-income residents.

> Energy burden is the percentage of annual income that a household pays for its energy. The U.S. Department of Housing and Urban Development (HUD) recommends that a household should pay no more than 6% of its income for these costs to be considered affordable.

3.2. Energy Burdens

The average energy burden in HD98 is 5.8%, which is 66% higher than the average for all households nationally and just under the 6% threshold for affordability recommended by HUD.

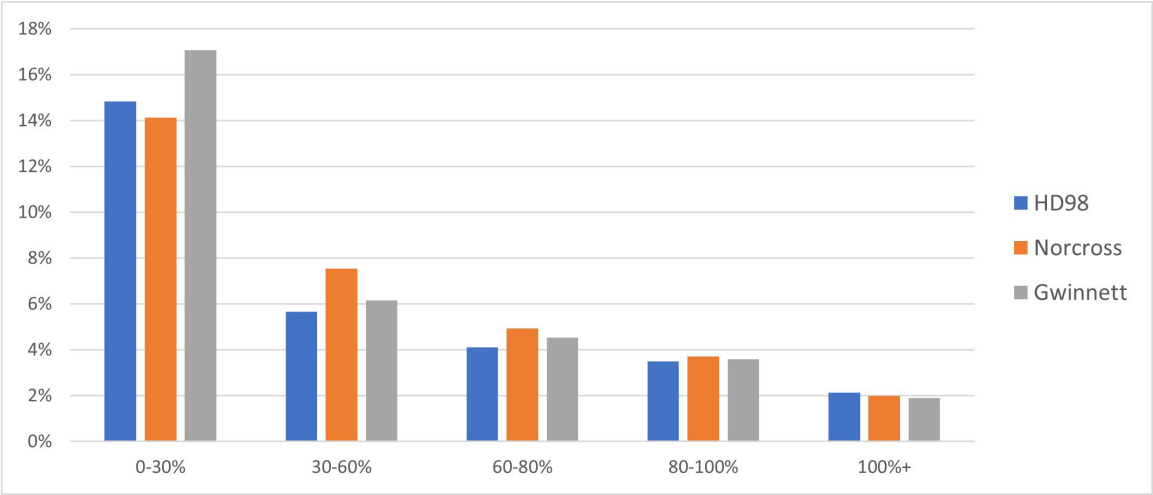

Figure 14: Average energy burdens (% of income) by area median income for HD98, Norcross, and Gwinnett.

There are more than 5,000 households in HD98 that face either extreme (>10%) or high (6-10%) energy burdens, as indicated in Figure 15.

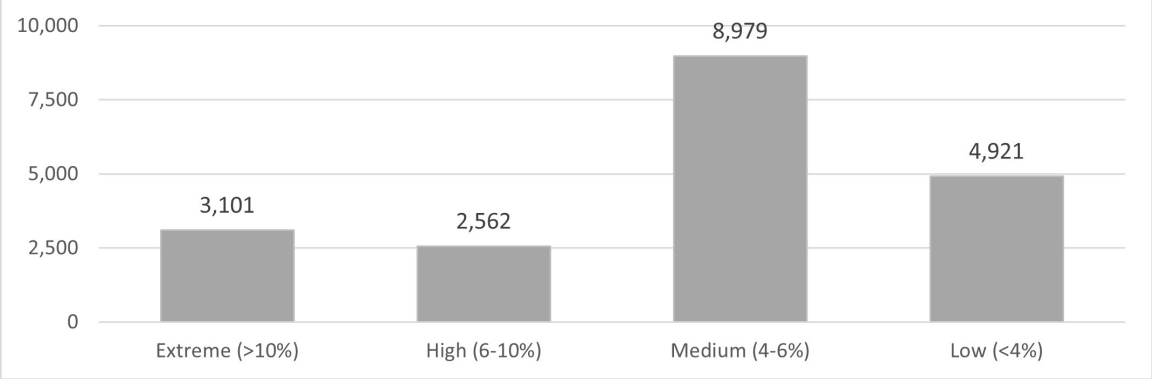

Figure 15: Number of households in HD98 by level of energy burden.

The highest average energy burdens are in tract 504.21, where burdens average 7.4%, followed by tract 504.22 at 6.5%. The highest average energy burden for low- and moderate-income households in HD98 is in tract 504.21, where energy costs average almost 11% of income, followed by tract 504.22 at 8.4%, as shown in Figure 16.

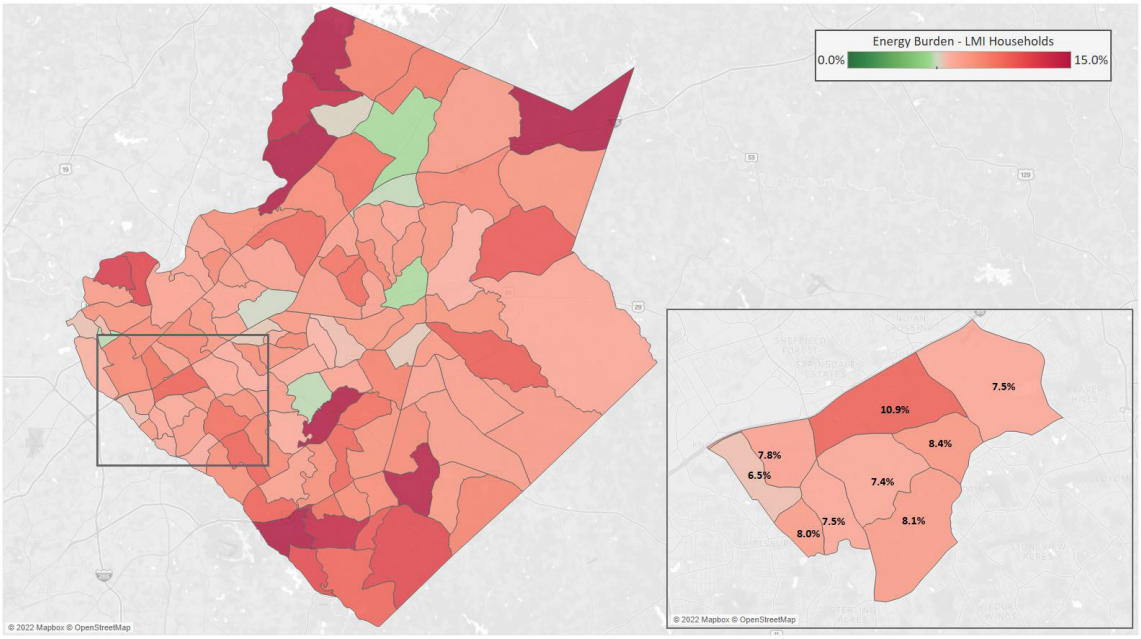

Figure 16: Energy burdens as a % of income for low- and moderate-income households in HD98 and Gwinnett County.

A low- to moderate-income household in HD98 makes at most around $49,000 each year. With this income, their energy costs would be the following: $1,960/year = low burden; $2,940 = high burden; $4,900/year = extreme burden.

3.3. Renewable Energy

Improving the efficiency of a home is a key strategy to lower energy bills and make housing healthier and more affordable. Pairing efficiency with renewable energy offers additional benefits in improving affordability and mitigating the impacts of climate change. However, clean energy – primarily rooftop solar – requires significant outlays of capital. As a result, communities of color and low-income communities have adopted renewable energy sources, particularly rooftop solar, at lower rates than others.[16]

Residents of HD98 have few incentives available to finance clean energy, and renewable energy infrastructure is scarce in HD98 where many residents face constrained finances. Only 8 homes have rooftop solar in the district, despite more than 300 rooftop installations in Gwinnett County. 14 additional homes received county permits to install rooftop solar panels in 2020-2021.

Although there has been little investment in renewable energy in HD98, there is significant potential for rooftop solar if the capital constraints of most residents can be overcome. According to estimates from Google's Project Sunroof, more than half of all buildings in most HD98 tracts are suited for rooftop solar

16 See D. A. Sunter, S. Castellanos, and D. M. Kammen. "Disparities in rooftop photovoltaics deployment in the United States by race and ethnicity," *Nature Sustainability*, Vol. 2, No. 1 (2019): 71-76.

because of their sun exposure, as indicated in Figure 17. Capitalizing on this opportunity will require deploying accessible programs that can reduce the first cost of solar investments, particularly for HD98's low-income residents, while maintaining net metering policies that make solar investments cost effective in the long term.

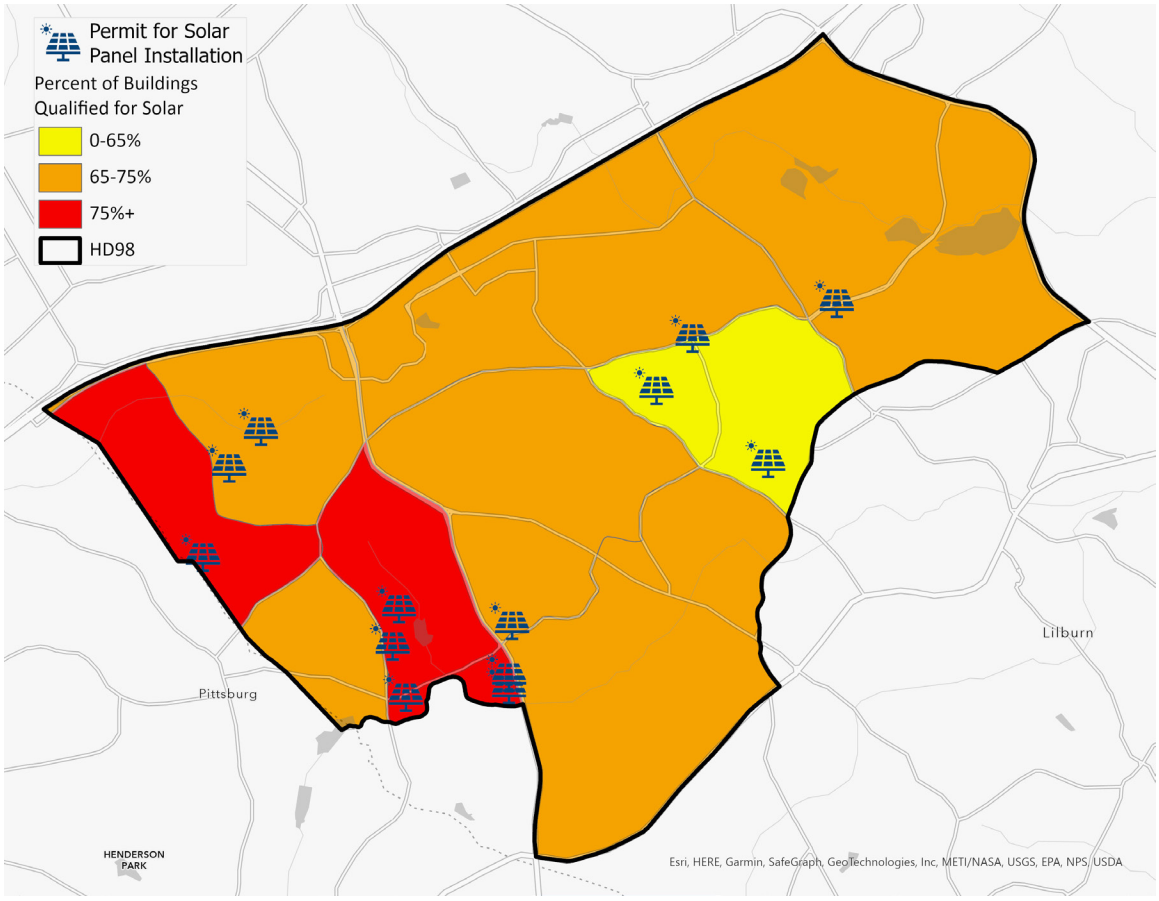

Figure 17: Permits for solar installations in 2020 and 2021 compared to the proportion of buildings suited for rooftop solar.

3.4. Greenhouse Gas Emissions

Investing in LMI households is a critical pathway to reduce greenhouse gas (GHG) emissions, but LMI households are not the primary source of emissions in residential housing. In Gwinnett, non-LMI households contribute more CO2e annually overall and per house. Non-LMI households contribute around 2.9B pounds of CO2e every year for the 182,559 households in Gwinnett, an average of 15,819 pounds each year per household. LMI households contribute 1.4B pounds of CO2e less every year for the 105,394 LMI households in Gwinnett, an average of 14,279 pounds each year per household.

Overall, LMI households in Gwinnett County contribute approximately 1.5 billion pounds of CO2e every year, the emissions equivalent of driving 147,091 gasoline-powered cars for one year. Reducing this demand even by 7% - the typical electric use savings resulting from weatherization improvements commonly deployed by the Weatherization Assistance Program (WAP) - would result in an emissions savings of 105,350,000 pounds of CO2e each year. This is the emissions savings equivalent to 13 wind turbines running for a year.

HD98 has 11,723 LMI households that generate approximately 167,392,717 pounds of CO2e per year, 11% of Gwinnett County's total emissions. Reducing energy use in HD98 through weatherization could save 1,147,490 pounds of CO2e every year, the equivalent of burning 575,878 pounds of coal.

As **Appendix III** shows, the greatest opportunities to reduce GHG emissions by weatherizing Gwinnett County's LMI housing stock is to focus on households that make between 60-80% of the area median income, are homeowners, and live in single-family buildings constructed since 1980.

4. The HD98 Housing Stock

Income and socio-demographics impact a household's vulnerability to energy insecurity. As physical infrastructure, the quality of housing also has a significant impact on vulnerability to energy insecurity. Inefficient housing units – those with a leaky building envelope, poor insulation, and energy intensive appliances – are less affordable long-term and can contribute to health and safety hazards that impact the wellbeing of residents.[17]

The following analysis provides an overview of the housing stock of HD98 with an eye toward health, safety, and efficiency.

The most common type of residential housing unit in HD98 are single-family detached residences (46%), followed by smaller multifamily buildings (10-19 units and 5-9 units). Large multifamily buildings (10-50 units) make up 10% of all housing units in the district.

What is the typical home in HD98?

- Single-family, Detached
- 1,865 square feet
- Two stories
- Three bedrooms
- Built in the 1980s
- Rented by a tenant
- Built with wood siding
- Has a gable-hip roof
- Has electric service and utility gas service
- Uses forced hot-air gas heat
- Has a $242,400 tax valuation for the land and dwelling
- Sited on a .33-acre lot

17 See N. Ma, M. Hakkarainen, M. Hou, D. Aviv & W. W. Braham, "Impacts of building envelope design on indoor ozone exposures and health risks in urban environments," *Indoor and Built Environment*, Vol. 31, No. 10 (2022) and G. D. Jenerette, et. al., "Micro-scale urban surface temperatures are related to land-cover features and residential heat related health impacts in Phoenix, AZ USA," *Landscape ecology*, Vol. 31, No. 4 (2016): 745-60.

Mobile homes are not a significant portion of the district's housing stock. There are only around 200 mobile homes in HD98, making up 1% of the district's housing stock. However, mobile homes are twice as expensive on average for energy per square foot as single-family homes, and residents are more likely to have lower-than-average incomes, making them particularly vulnerable to unaffordable energy costs and energy insecurity.[18]

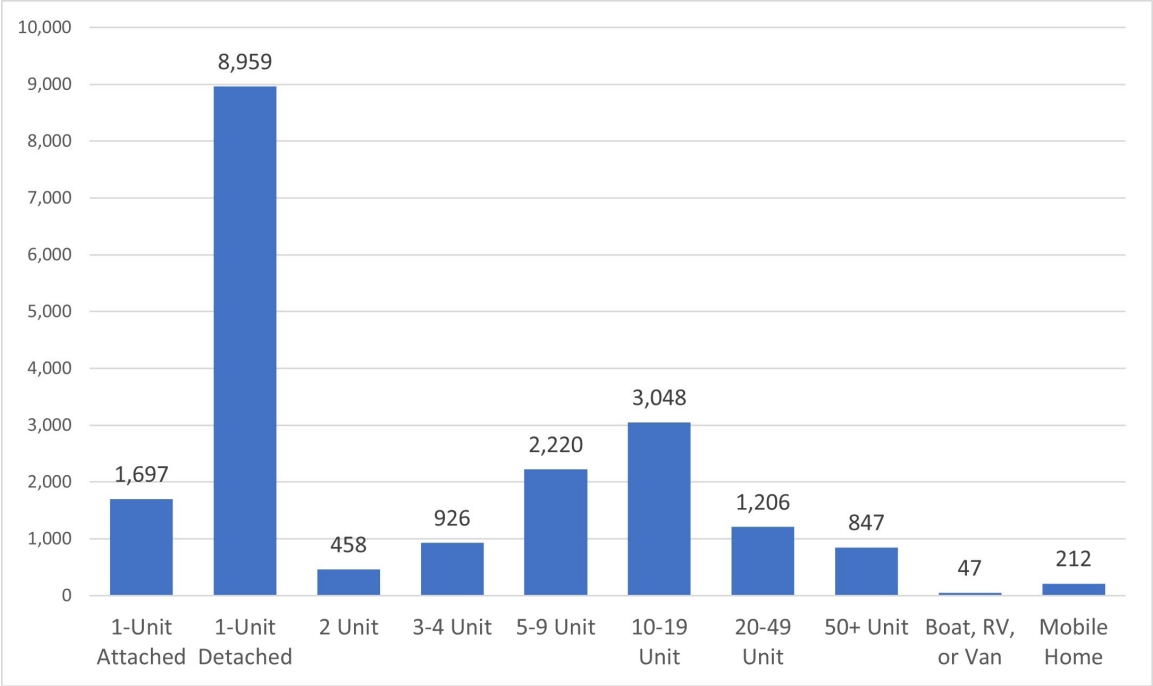

Figure 18: Number of housing units in HD98 by type of housing.

While the housing stock of HD98 is relatively new compared to Atlanta, there has been little housing in the district built in the last two decades and is a shortage of new units, particularly for low-income residents.

Most housing in Gwinnett County was built between 1970 and 2000, and the district experienced the highest levels of new unit construction between 1980 and 1999 for both single- and multi-family housing.[19] The median year of construction in HD98 is 1983.

Still, more than a quarter of the county's housing units (5,011) were built before 1980, when the nation's first building energy codes were introduced. These households are at risk for inefficiencies that drive up utility costs and strain resident health. Gwinnett County's Comprehensive Housing Study from 2022 notes that the county's housing stock is rapidly approaching both "physical" and "economic obsolescence" and will need to be replaced in the next two decades, and this is certainly true for thousands of units in HD98.[20] Figure 19 below shows the age of housing stock by tax parcel.

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18 Jacob Talbot, *Mobilizing Energy Efficiency in the Manufactured Housing Sector* (Washington, DC: American Council for an Energy-Efficient Economy, 2012), 12; *Manufactured Housing in Rural America* (Washington, DC: National Association of State Energy Officials, 2021).

19 *Gwinnett County Comprehensive Housing Study 2022* (Gwinnett County, 2022), 76.

20 *Gwinnett County Comprehensive Housing Study 2022*, 86.

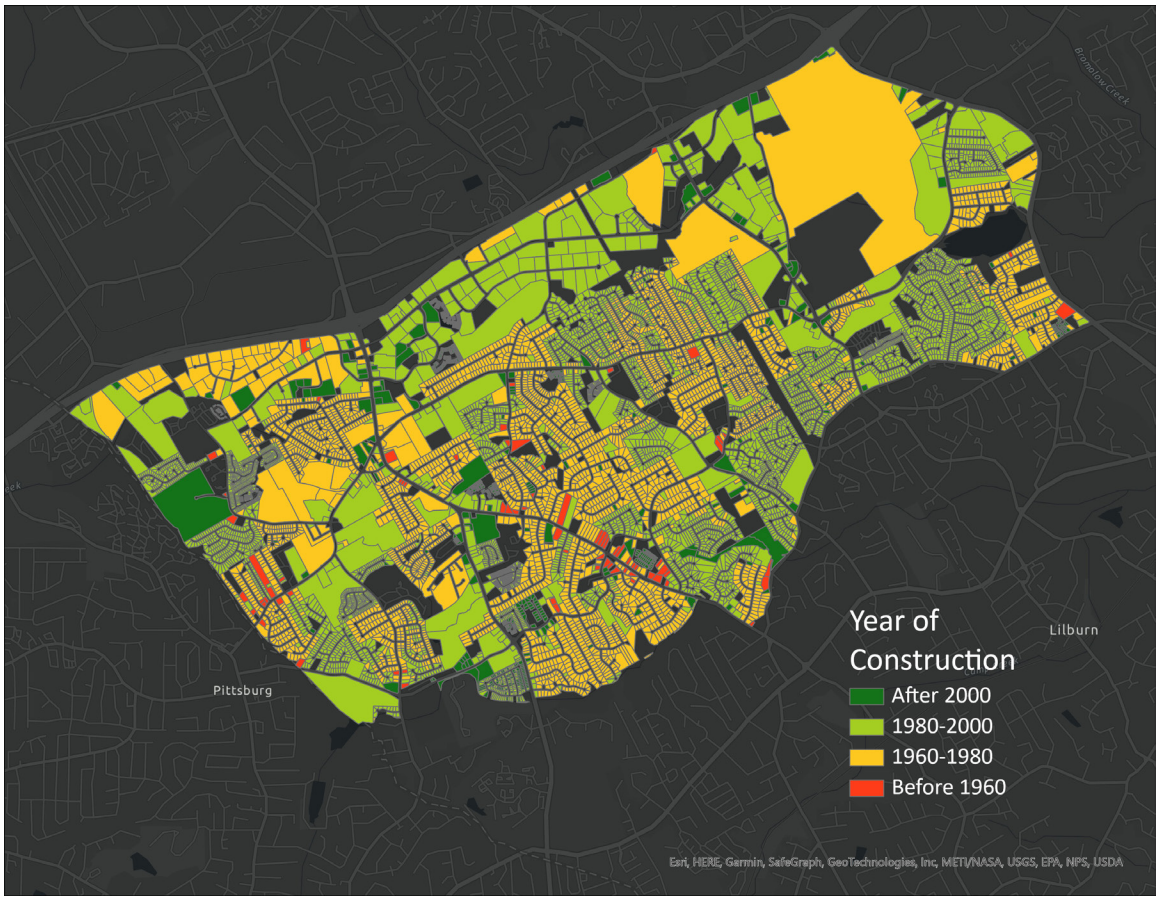

Figure 19: Age of building stock by parcel for HD98.

As we will unpack below, HD98 lags in the construction of new, affordable housing. Only 271 housing units have been built there in the last decade so that housing in the district has not kept up with demand.

The housing stock in HD98 is predominately single-family households. As indicated in Figure 25, the highest proportion of single-family homes is in tract 504.44 and the highest proportion of multifamily units is in tract 504.56. Both tracts are low-income and have high proportions of residents who experience housing burdens.

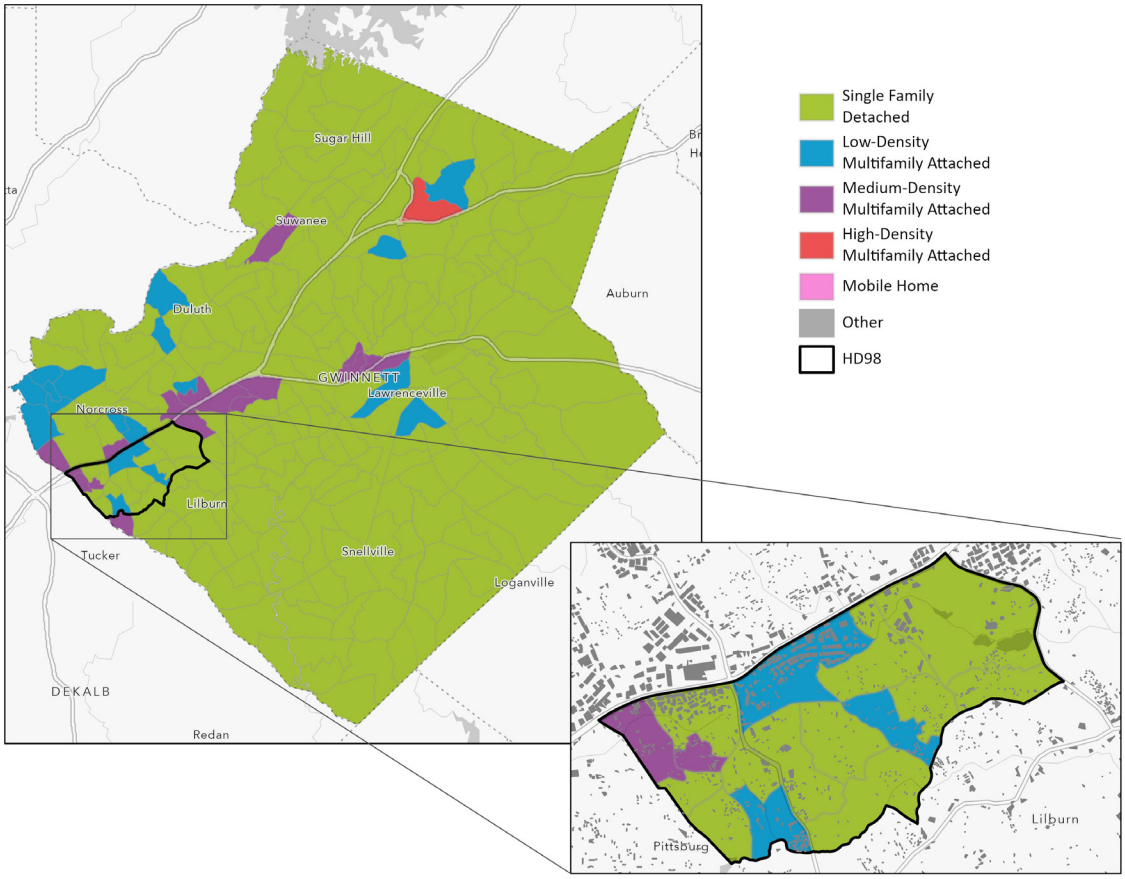

Figure 20: Most common type of housing by census tract, in HD98 and Gwinnett County.

There is a significant proportion of renters in HD98, which is the inverse of Gwinnett County. As Figure 21 shows, 67% of all households in HD98 rent their homes or apartments, while 66% of all households in Gwinnett County own their residences.

Renters in HD98 face the highest energy cost burdens. Yet they are least likely to access energy efficiency assistance due to the "split incentive" problem, where landlords own the premises and must front all capital for efficiency upgrades while renters receive the benefits of reduced energy bills.[21]

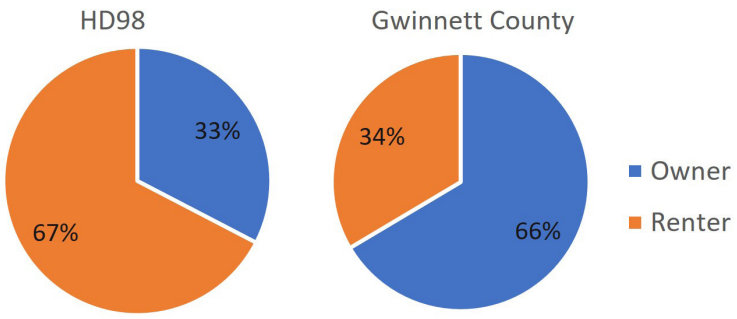

Figure 21: Proportion of renters and owners in HD98 and Gwinnett County.

21 On the split incentive see Stephen Bird and Diana Hernández, "Policy options for the split incentive: Increasing energy efficiency for low-income renters." *Energy Policy 48* (September 2012): 506-14.

Renters in HD98 typically live in multifamily buildings with more than five units, and there are over 7,000 of these households in HD98. The parcels in the Figure 22 are likely rental units, which lack access to energy and healthy housing assistance and have some of the highest energy burdens in the district.

Figure 22: Rental units by parcel in HD98.

The proportion of owner-occupied housing is highest in tract 504.44, where 79% of all housing units are owned, and is lowest in tract 504.56, where more than three quarters of housing units are rented.

Georgia Power is the only electric provider in HD98, and the utility gas market is competitive. Just over half of all residential units in HD98 use utility gas heating, as Figure 22 indicates, while 45% of households in the district use electric resistance heat, suggesting that they are all-electric.

Electrifying homes that currently use utility gas has clear health, safety, and climate benefits, particularly as Georgia's grid becomes more reliant on renewable sources of energy.[22] Providing low- and no-cost options for electrifying households in gas-dependent areas can mitigate climate impacts while improving affordability, especially given fluctuating prices for natural gas. Additionally, block group 1 in tract 504.37 – indicated in Figure 22 – has more households that use bottled tank and/or liquid propane gas than electricity or utility gas. In this block group, 52% of all households use bottled tank and/or liquid propane

22 Saul Griffith and Sam Calisch, No *Place Like Home: Fighting Climate Change (and Saving Money) by Electrifying America's Households* (Rewiring America, 2020); Ada Zurofky, Jeffrey Schub, John Rhodes, Tony Curnes, and Sam Calisch, *Rewiring Communities: A Plan to Accelerate Climate Action and Environmental Justice By Investing in Household Electrification at the Local Level* (Rewiring America and the Coalition for Green Capital, 2021), 3.

gas for heating. Because these fuels have a higher emissions profile, fuel switching through low- or no-cost home retrofits in this area has the potential to bring significant climate benefits.

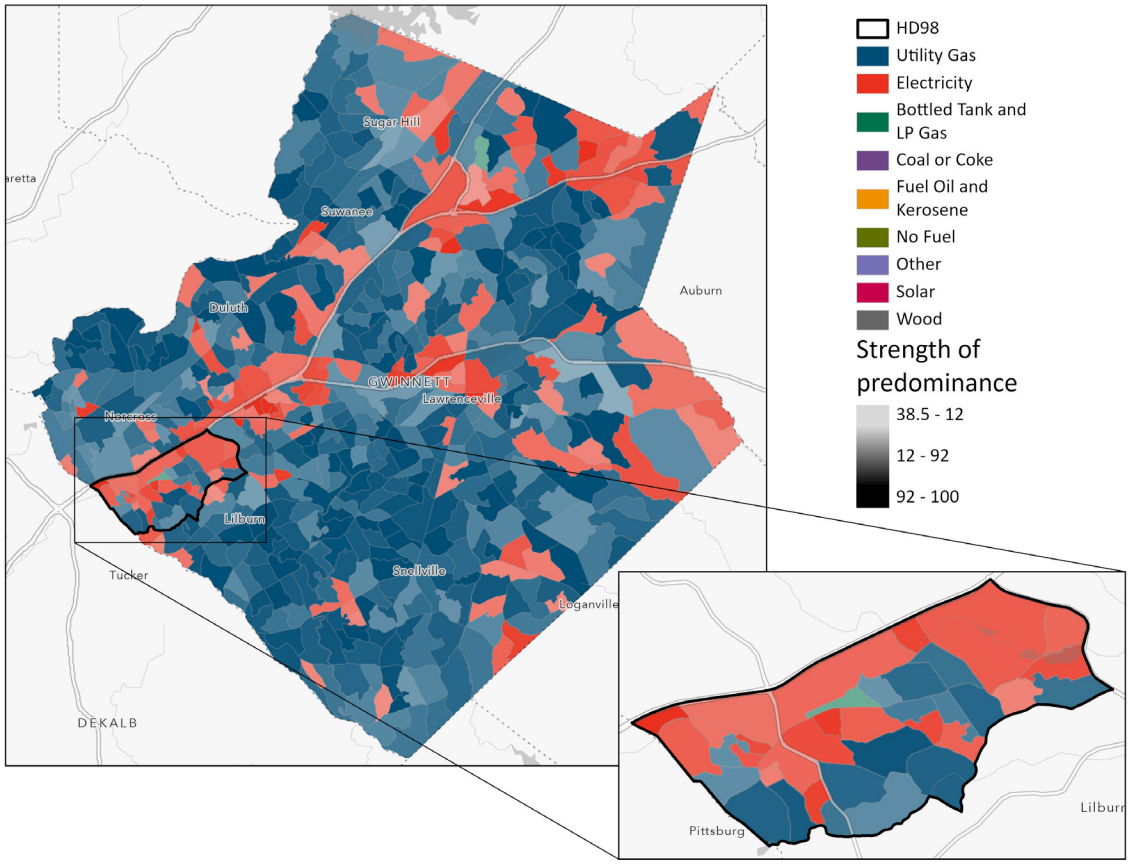

Figure 23: Predominant heating fuel in HD98 and Gwinnett County by census block group.

4.1. Housing Quality

Housing quality is closely associated with the efficiency, affordability, and health of a home. As a key social determinant of health, poor quality housing is correlated to health risks. Because people spend so much time in their homes, these spaces can have a significant impact on chronic conditions like asthma as well as mental health. Studies have found that low-income households are more likely to reside in low-quality housing with a lack of insulation, poor quality appliances and heating/AC. This contributes to thermal discomfort and distress that can impact the health and safety of residents.[23]

The Gwinnett County Comprehensive Housing Study from 2022 finds that 79% of all housing units in unincorporated Gwinnett are rated as "C" by the Tax Assessor's Office – reflecting middling quality. Only 2% of housing units are rated as "A," the highest quality grade, while 19% received a "B" rating. Although these ratings are largely correlated with the age of housing, this suggests that hundreds of thousands of units in Gwinnett are potentially facing serious quality issues in the next few years.[24]

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23 Lauren A. Taylor, "Housing and Health: An Overview of the Literature," *Health Affairs Health Policy Brief,* June 7, 2018.
24 *Gwinnett County Comprehensive Housing Study 2022*, 87.

Unfortunately, the data on HD98 almost certainly understates the number of households facing poor housing conditions. Only 0.9% of dwellings are rated by the Gwinnett County Tax Assessor as below normal or very poor quality for their age (76 units), indicated in Figure 24. Most of these are single-family townhouses in the Wellington Square complex, nearly all of which were rated as below normal condition by the county tax assessor.

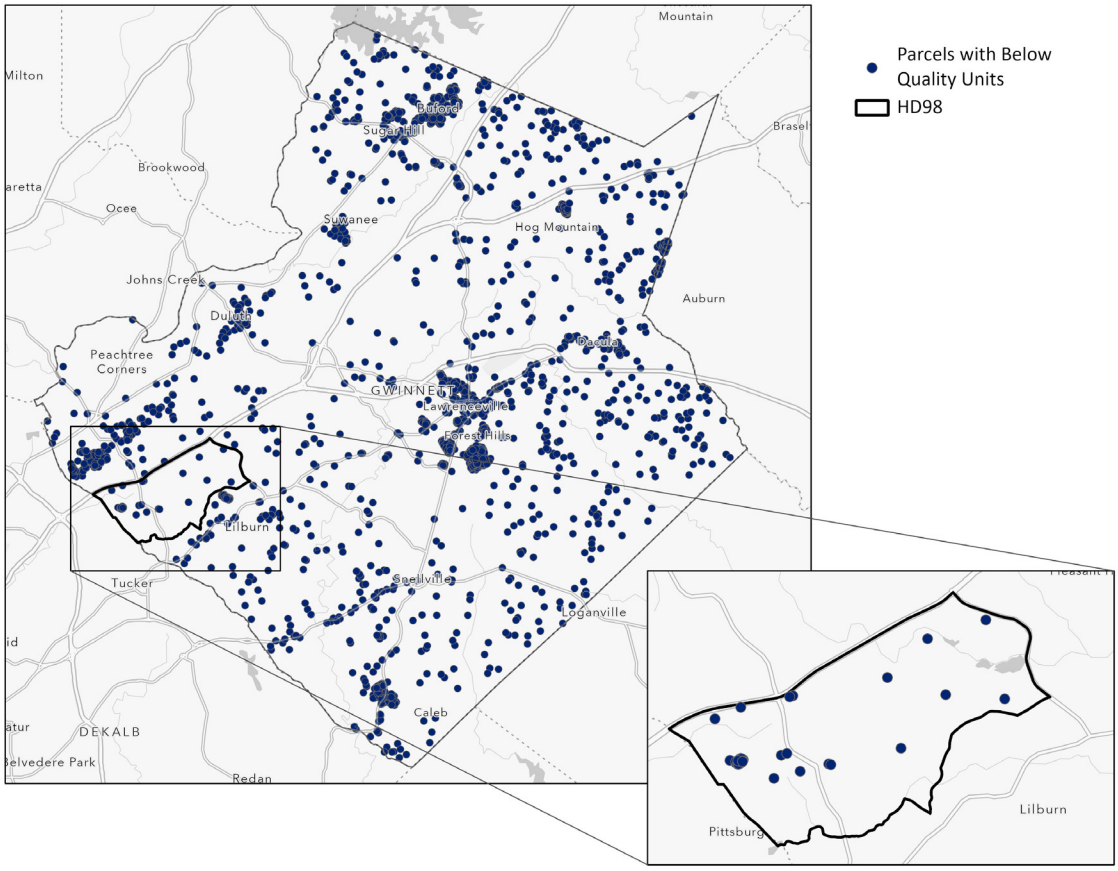

Figure 24: Households rated by the Gwinnett County Tax Assessor as below normal, poor, or very poor quality in HD98 and Gwinnett County.

Gwinnett County issued 2,138 code violations in HD98 in 2020 and 2021, shown in Figure 25. These violations only cover conditions outside the home, including outdoor storage, unkempt lawns and premises, junk vehicles, unauthorized businesses, and property maintenance issues. Because Gwinnett County does not have minimum standards for maintaining a residence other than outdoor appearance, these citations cannot provide a one to one indication of where housing quality is a problem.

Reporters with the *Atlanta Journal-Constitution*, for instance, discovered that HD98's Las Palmas Apartments has had a significant number of housing violations. According to the paper, a 2017 county-commissioned inspection found that Las Palmas Apartments had "crumbling foundations, rotting wood, and discarded furniture and other trash piled high outside its dumpsters and scattered in the surrounding woods."[25]

25 "Advantage to the Landlords," *Atlanta Journal-Constitution*, November 20, 2022: A10.

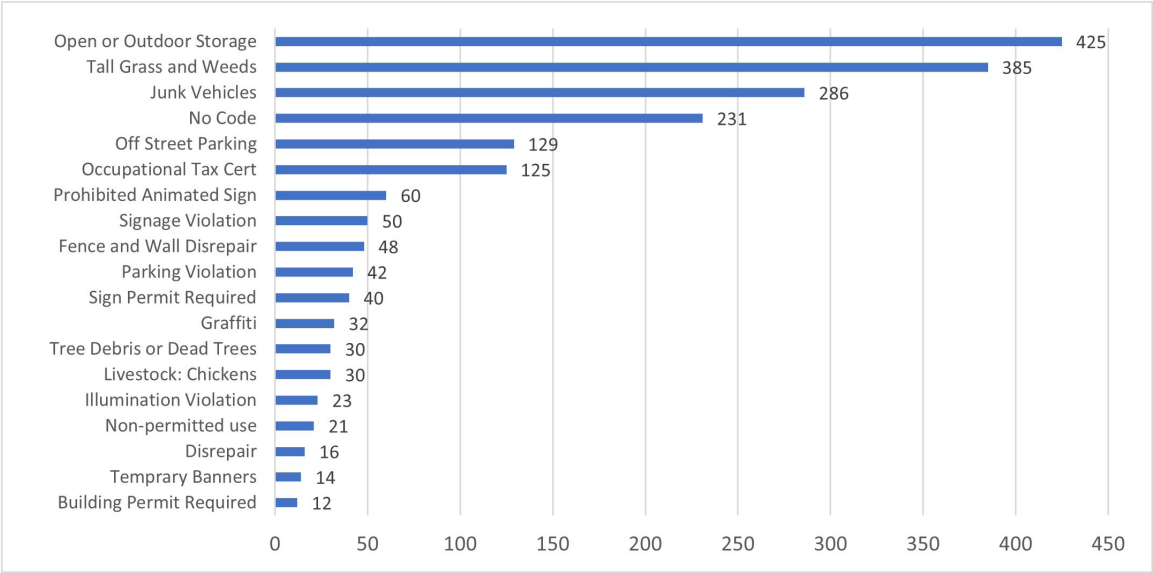

Figure 25: Most common code violations in HD98 with number of cases opened in 2020 and 2021.

There are many barriers to addressing housing quality issues to expand the stock of healthy and efficient housing, but ineffective and inequitable code enforcement is a key shortcoming. Researchers in cities like New York and Boston have discovered the ways that inequitable code enforcement contributes to housing and health burdens.[26] Yet in Georgia, there are few statutory protections for renters that can ensure access to healthy, safe, and efficient housing, a point that was underlined by an exhaustive 2022 investigation by the *Atlanta Journal-Constitution*.[27]

The state of Georgia, for instance, enacted a law in 2019 protecting renters who can show that they have faced landlord retaliation after attempting to address a "life, health, safety, or habitability concern" related to their housing.[28] Although this provides renters with some protection from retaliation after seeking to correct health and safety issues, the state has no minimum standard for housing quality and local enforcement efforts are spread across multiple agencies with little power to effect change.[29]

This is especially true in Gwinnett County. Until 2021, county officials acknowledged that "Gwinnett County does not have a maintenance code requiring landlords to maintain certain living conditions" and directed inquiries to Georgia's Department of Community Affairs.[30] The lack of renter protection ordinances is particularly troubling for residents of HD98, where two-thirds of all housing is rented.

These burdens fall the hardest on Gwinnett County's sizeable immigrant population, as the University of Oregon's John Arroyo found in a 2021 study of the county conducted for HUD. Arroyo notes that the lack of renter protections and an insufficient healthy and affordable housing stock has forced Gwinnett County's immigrant population, among others, to live in poor quality housing.[31]

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26 See Evan Lemire, Elizabeth A. Samuels, Wenyi Wang, and Adam Haber, "Unequal housing conditions and code enforcement contribute to asthma disparities in Boston, Massachusetts," *Health Affairs*, Vol. 41, No. 4 (2022): 563-72; I*nequitable Enforcement: The Crisis of Housing Code Enforcement in New York City* (New York: Office of the Public Advocate and Association for Neighborhood & Housing Development, 2008).

27 "Advantage to the Landlords," *Atlanta Journal Constitution*, November 20, 2022: A1, A4, A8, A9, A10.

28 The Tenant Retaliation Bill, GA. Stat. § 44-7-24 (2019) https://www.legis.ga.gov/api/legislation/document/20192020/187010

29 "Advantage to the Landlords," A1, A4, A8, A9, A10.

30 "Advantage to the Landlords," A1, A4, A8, A9, A10.

31 J. Arroyo, "Facades of Fear," *Cityscape*, Vol. 23, No. 2 (2021): 181-206.

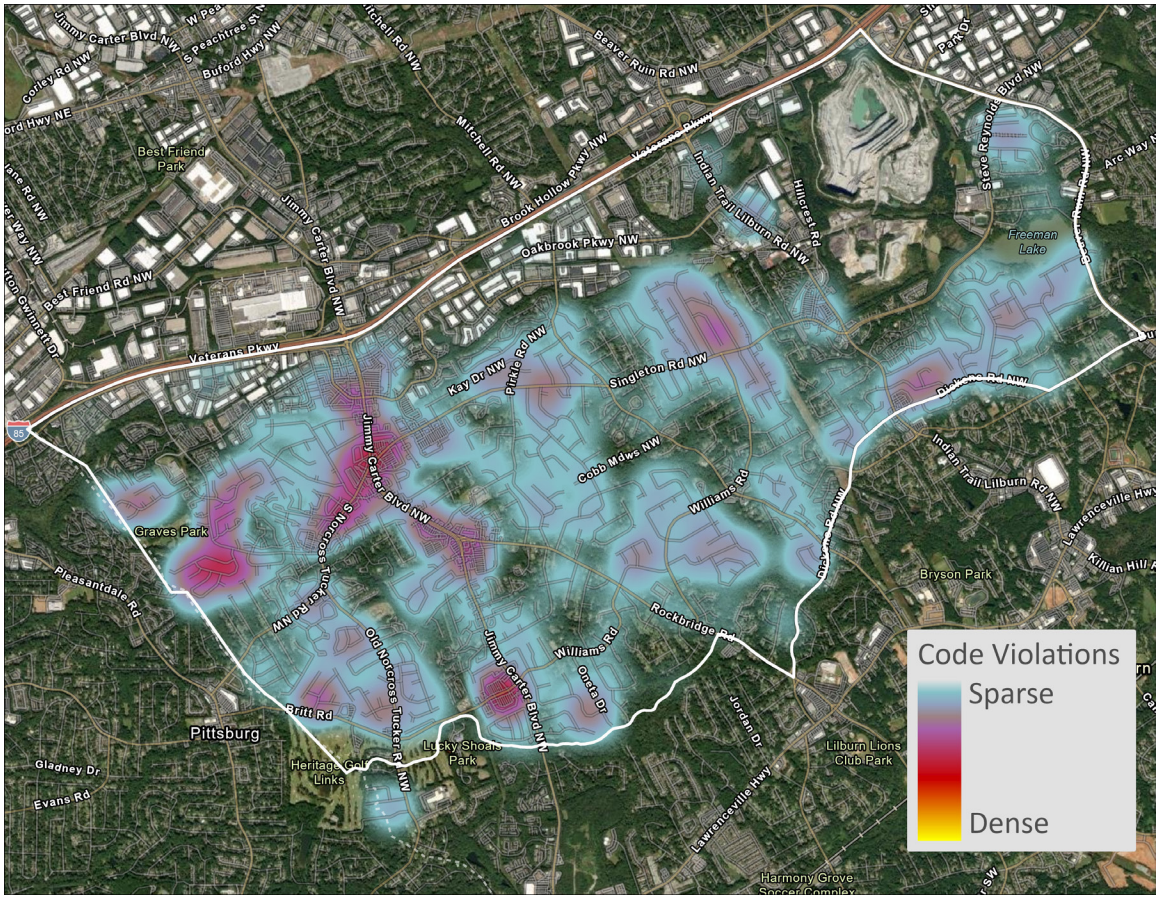

Figure 26: Density of code violations in HD98.

The lack of data on the quality of housing in Gwinnett suggests that county officials need to more effectively assess and track housing quality issues to understand the issues faced by their communities.

4.2. Construction of New Housing

In 2020 and 2021 Gwinnett County issued 64 building permits for new single-family construction, most of which were to build out the Creekside Cowan and Creekside Heritage subdivisions. The county issued 1 building permit for the construction of a new multifamily building.

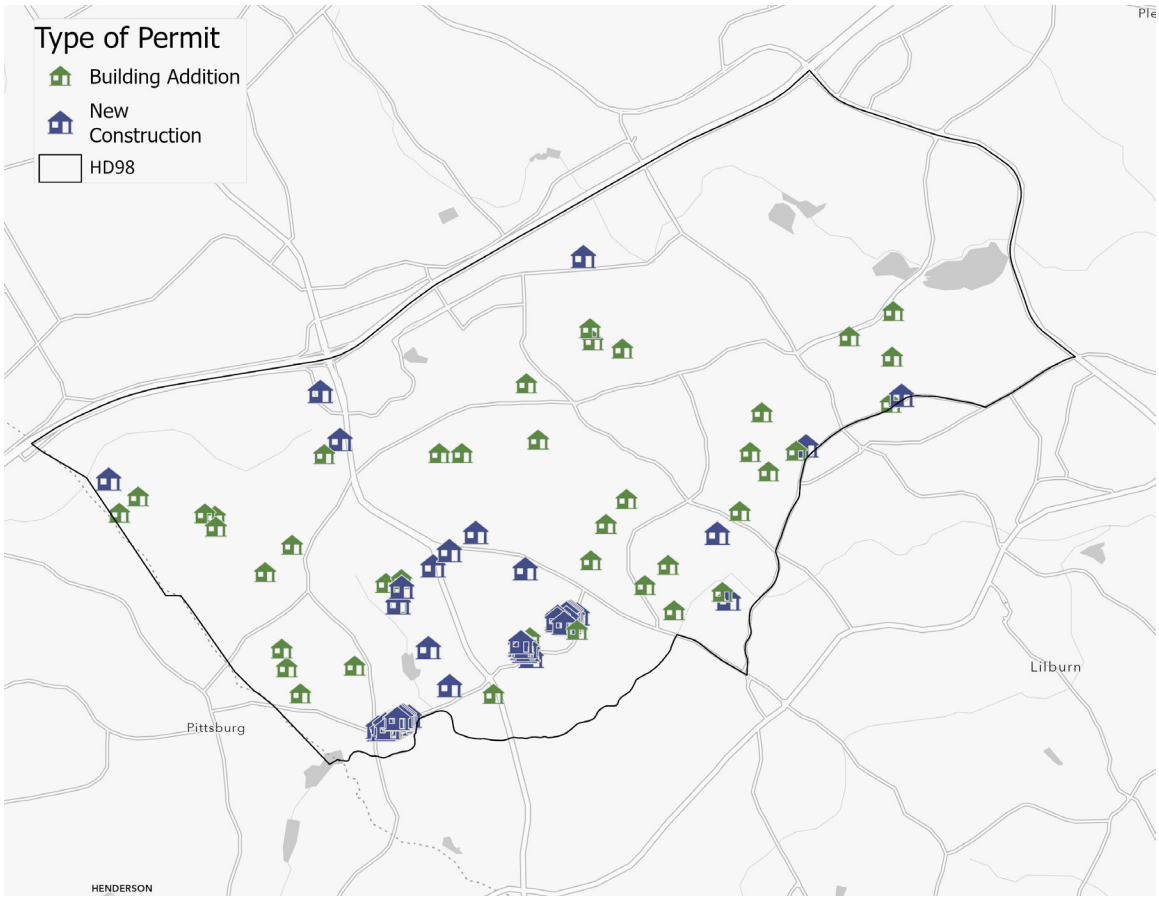

Figure 27: Location of building permits issued in 2020 and 2021 in HD98 for new construction or housing additions.

In its 2022 comprehensive housing plan, Gwinnett County estimates that there will be a need for 12,285 units per year in unincorporated Gwinnett County. HD98 has 19,563 households overall – 6% of the county's units overall. According to the county's plan, there need to be approximately 323 replacement units and 583 net new units built in HD98 to keep up with demand. Given that the county issued only 64 building permits for new construction in 2020 and 2021, this falls far short of the demand and potentially will exacerbate affordability and health crises.[32]

4.3. Housing Finance

One of the key hindrances to healthy and efficient housing is a lack of affordable financing and capital, which are required to improve home efficiency and affordability. Our research finds that low-income residents in HD98, particularly people of color, face barriers accessing affordable capital for housing.

According to the U.S. Consumer Financial Protection Bureau (CFPB), in 2017 – the most recent data available – 1,541 households in HD98 applied for a loan for home improvement, purchase, or refinancing, as indicated in Figure 28. Most loan applications were focused on one- to-four-unit family dwellings, and 94% were intended for a home purchase or refinance. Although there are other sources

32 See *Gwinnett County Comprehensive Housing Study 2022* (Gwinnett County, 2022), 109-

of capital available for home improvements, only 6% of applications from HD98 were intended for home improvements.

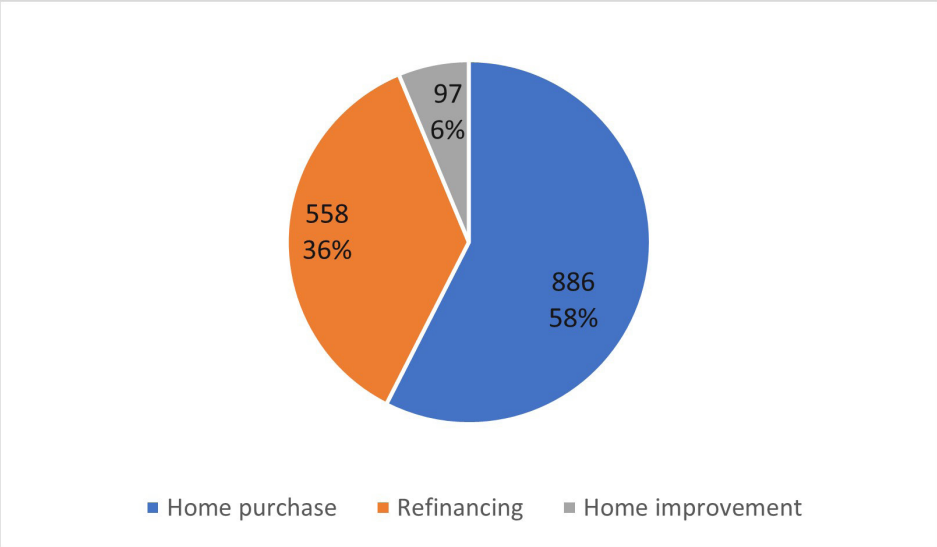

Figure 28: Mortgage loan applications for HD98 residents by intended use.

Nearly 42% of these applications were unsuccessful, either because they were not accepted, denied, or withdrawn. We will discuss the implications of these failed loans in more detail later in this report.

4.4. Home Improvements

The solution to making housing more energy efficient is through home improvements, including adding insulation, swapping out windows, etc. Building permit data can shed light on what efforts homeowners and landlords are taking to make housing more efficient and affordable.

County permit data for HD98 from 2020 and 2021 suggests that most homeowners are unable or unwilling to make major upgrades that would reduce long-term costs and enhance the health of their housing. Even the few households that are investing in home improvements tend to use items with the lowest first costs, which do little to reduce long-term operating costs, improve household health, or mitigate the impacts of climate change.

This resonates with data from ESRI's 2022 U.S. Consumer Spending Database, which shows that HD98 has some of the lowest rates of home improvement spending of any part of Gwinnett County. As shown in Figure 29, most HD98 residents spent between $0 and $330 each year on home improvements. This falls far short of the typical level of investment needed to improve the efficiency of the building envelope and invest in high-efficiency appliances that can make housing more affordable long-term. This low level of spending is largely due to financial constraints and a lack of access to affordable capital, which undercuts the ability of residents to take steps that could reduce the energy use intensity of their homes and improve affordability, health, and climate resilience.

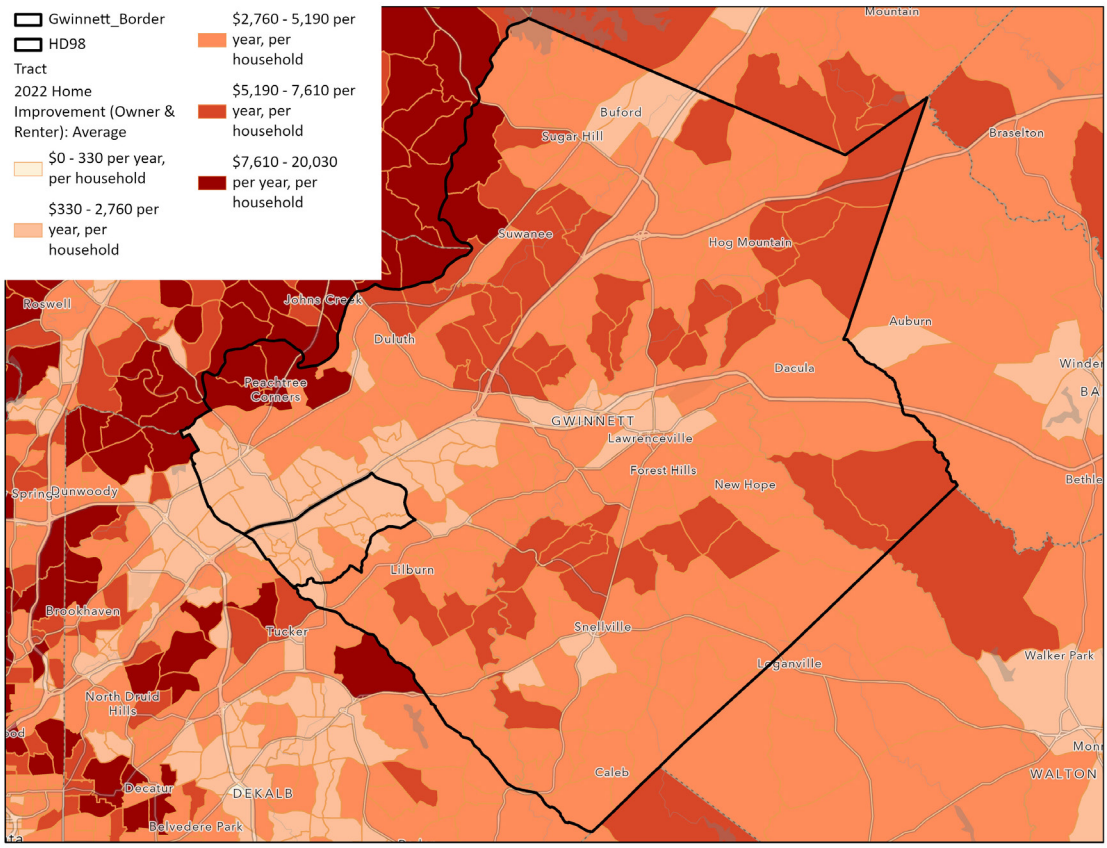

Figure 29: Average annual home improvement spending by census tract, in HD98 and Gwinnett County.

The most common building permit issued in HD98 for home improvement work was for general electrical alterations, including wiring, installations, and maintenance, which have little impact on building efficiency. Aside from new construction, there were virtually no building permits issued in 2020 or 2021 for retrofits that would significantly improve the energy performance and health of homes in the district, as indicated in Figure 30.

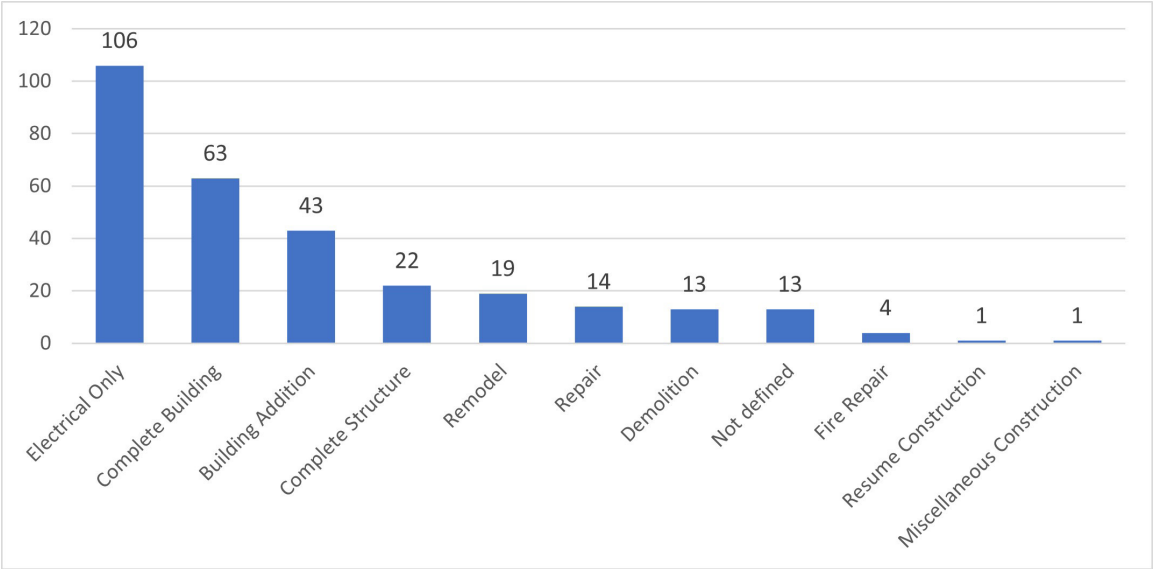

Figure 30: Number of building permits issued in HD98 in 2020 and 2021 by type of work authorized.

4.4.1. HVAC

55 permits were issued in HD98 for HVAC repair or replacement – a key opportunity to boost the efficiency and health of homes. Only a small proportion of households upgraded to highly efficient heat pump technologies, or to high SEER HVAC units. The average seasonal energy efficiency ratio (SEER), where listed, is 14 SEER. This is the minimum standard for HVAC systems in this climate zone, suggesting that landlords and homeowners are taking lowest first-cost cost option when upgrading HVAC systems.

4.4.2. Water Heater

54 permits were issued for water heater replacements in HD98. Water heaters are one of the biggest energy users in any home. Because water heaters typically last eight to twelve years, replacements provide an invaluable opportunity to improve home energy performance through the installation of a high-efficiency appliance. However, most landlords or homeowners in HD98 swapped out their water heater for a comparable unit. Only one home installed a more efficient electric water heater.

4.4.3. General Remodel

There were few permitted remodels carried out in HD98 in 2020 and 2021. This is likely due to a combination of the high price of building materials and a lack of access to capital options to finance retrofits. Most remodels were focused on enclosing outdoor spaces like a porch or garage, which have little efficiency or health impact besides the addition of insulation.

4.5. Transportation Infrastructure

Automobiles are the most common means of travel throughout HD98, with nearly 91% of residents commuting to work via car, truck, or van. A higher proportion of workers carpool in HD98 than in Gwinnett overall (24% vs. 11%), and fewer HD98 residents work from home compared to Gwinnett (4% vs. 9%).

There is currently not a single public electric vehicle (EV) charger located anywhere in HD98, and only one household received a building permit for the installation of a fast EV charger in 2020 and 2021.

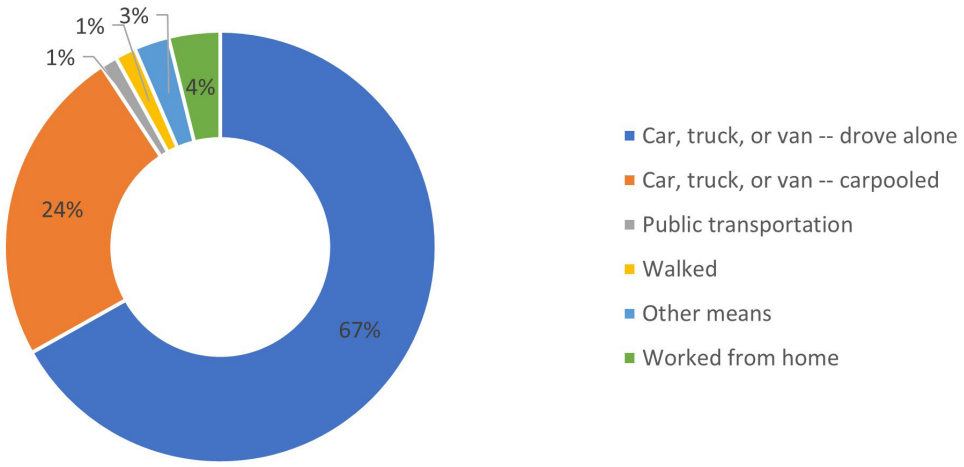

Figure 31: Means of transportation to work by proportion of residents, for HD98.

5. Housing Affordability and Stability

The lack of affordable housing and financial pressures due to housing costs are key challenges for residents of HD98. These are issues that cut across geographic lines and impact both renters and homeowners. A lack of quality affordable housing undercuts household financial stability and can lead to elevated utility bills, which contributes to energy insecurity.

Across HD98, more than 9,000 household face housing costs – either mortgages or rents – that exceed 30% of their income and are considered unaffordable. Tract 504.51 has the highest proportion of owners and renters who are cost burdened by their housing, as indicated in Figure 32.

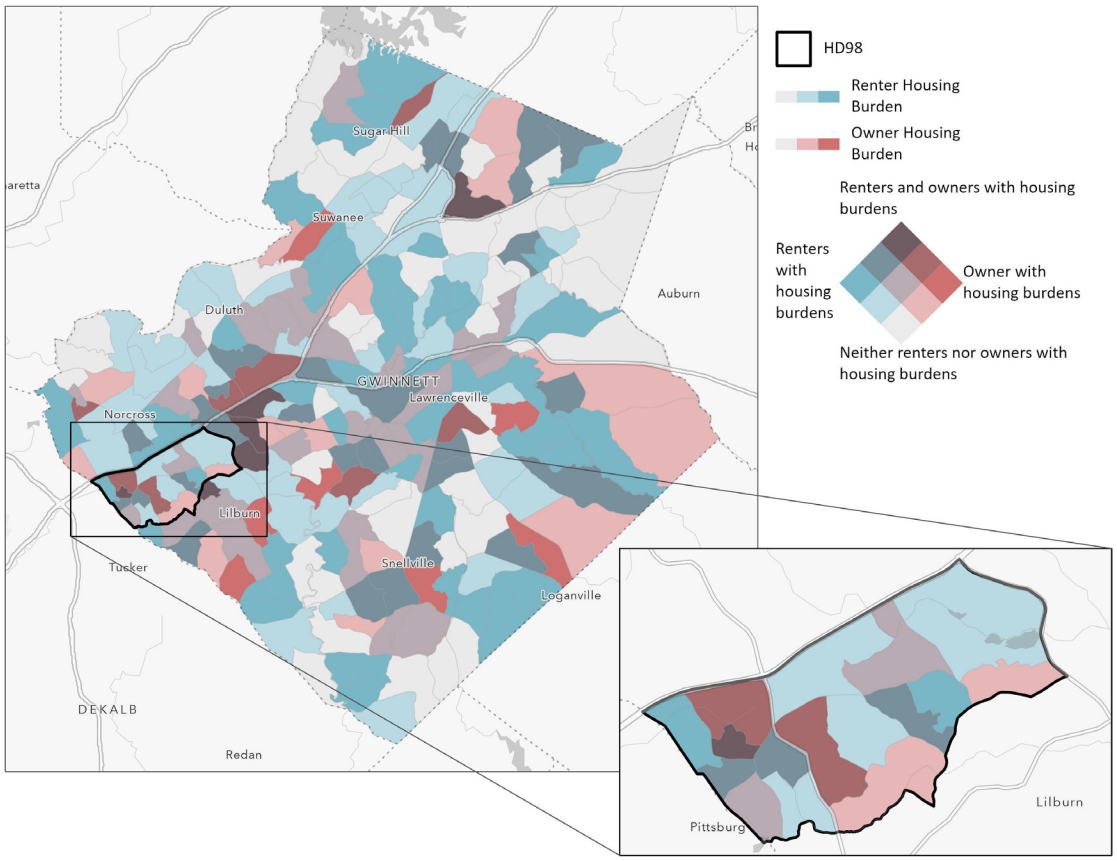

Figure 32: Likely housing burdens experienced by renters and homeowners in HD98 and Gwinnett County.

Rent and mortgage costs have in HD98 have outpaced the rest of Gwinnett County and the metro Atlanta region, putting pressure on HD98 residents. As indicated in Figure 33, home prices in HD98 increased by 198% and rents increased by 103% between 2014 and 2022 – the largest increase of any zip code in Gwinnett County.

On top of rising rents, many prospective tenants in HD98 face high application fees to even be considered for housing. Georgia has no statutory limit on rental application fees, and large multifamily apartment complexes in HD98 charge hundreds of dollars in nonrefundable application and administrative fees even to be considered for a unit. Elliot Norcross, for instance, charges prospective renters a $75 application fee along with a $250 administrative fee to apply for an apartment.

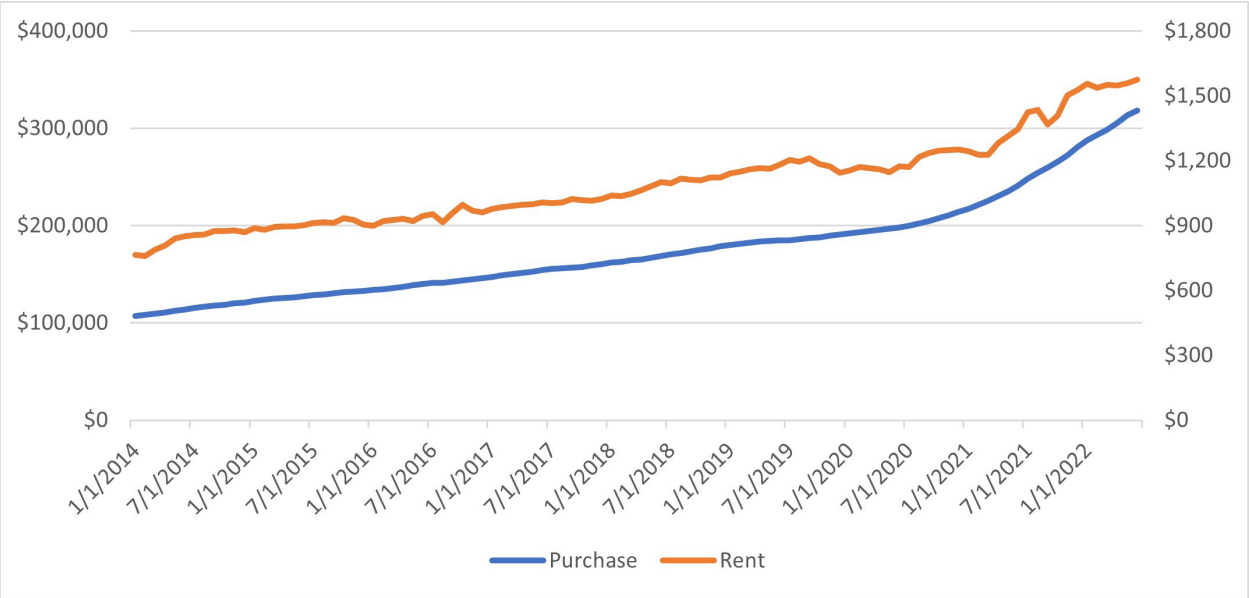

Figure 33: Average home purchase prices and rents between 2014 and 2022 for zip code 30093.

5.1. Housing Stock Available for Rent and Purchase

Low vacancy rates for rental and for sale housing in Gwinnett County and HD98, combined with the low inventory of new housing and lack of new construction, put upward pressure on rents and home purchase prices that impact low-income residents.

In HD98, the rental vacancy rate is 4.4%, on par with Gwinnett County but significantly lower than the 2022 national average (6%) and average for the Atlanta metropolitan area (6.6%). Between 2016 and 2020 there were an average of 650 units every year available to rent in HD98.

It is especially difficult for homeowners looking to locate in HD98 to find an available property, likely due to the district's high proportion of rental properties. Although the homeowner vacancy rate for Gwinnett County was 0.9% – the same as the national average – in HD98 the homeowner vacancy rate was near 0% between 2016 and 2020. According to Georgia's Multiple Listing Service (MLS), just 24 single-family homes, condominiums, or townhomes were available for sale in zip code 30093 in December of 2022.

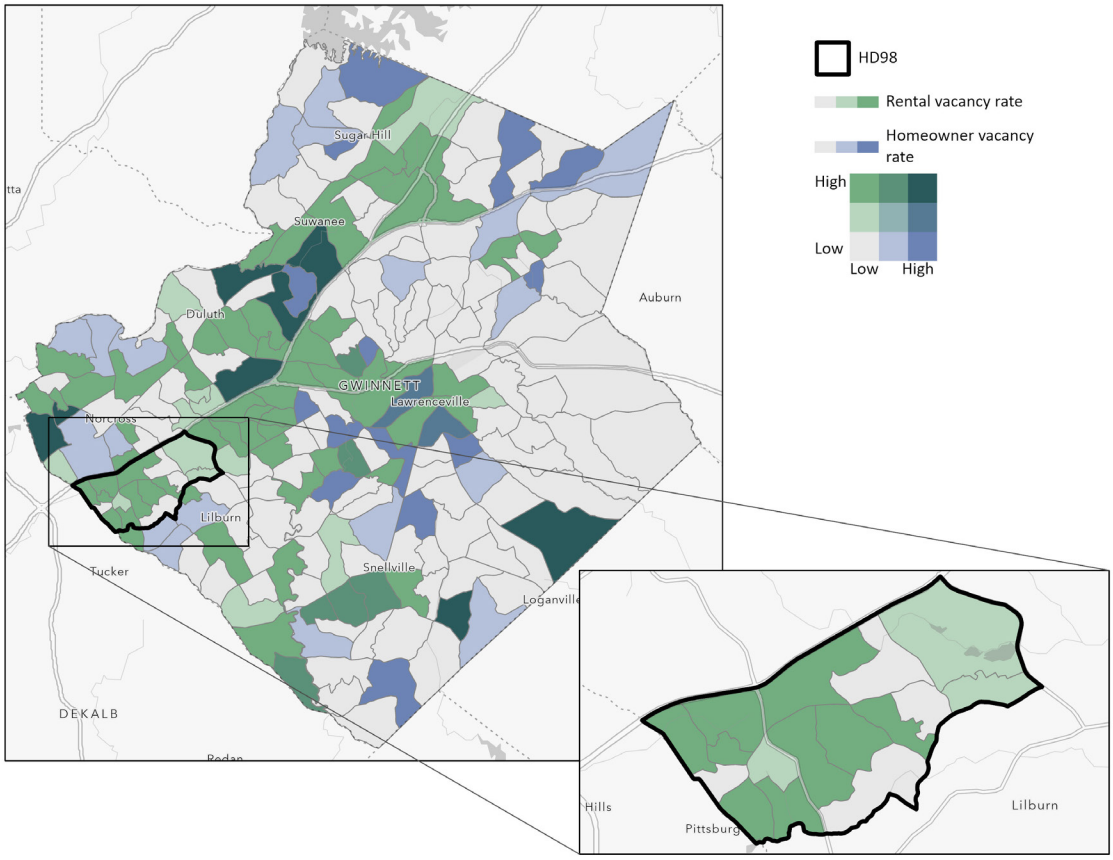

Figure 34: Vacancy rates for rented and owned housing units in HD98 and Gwinnett.

5.2. Corporate and Absentee Landlords

Like much of the Atlanta metro region, HD98 has a significant proportion of housing stock – particularly single-family units – owned by absentee and/or corporate landlords. Recent research in Georgia suggests that corporate landlords put upward pressure on rents and are more likely to evict tenants.[33]

As indicated in Figure 35, 447 properties in HD98 are owned by out-of-state individuals or corporations, and 10 are owned by out-of-country entities. The top cities for ownership of properties in HD98 are Scottsdale, AZ (37 properties), Santa Ana, CA (20 properties), Capitol Heights, MD (21 properties), Dallas, TX (56 properties), and Washington DC (18 properties).

The expansion in corporate ownership of rental housing is especially marked in HD98's single-family housing stock. Following the 2008 housing crisis, institutional investors throughout the United States – but especially in Atlanta – invested significant sums of capital to buy up single-family housing that was in foreclosure or otherwise below market value that they could lease. According to Suzanne Lanyi Charles, real estate investment trusts focused on single family rentals grew by 850% between 2013 and 2018. By 2018, these units were 1.7% of all single-family housing in Atlanta, and this has only expanded in

33 Elora Raymond, et. al. *Corporate Landlords, Institutional Investors, and Displacement: Eviction Rates in Single-Family Rentals* (Atlanta: Federal Reserve Bank of Atlanta, 2016).

the years since. Gwinnett County has experienced higher rates of single-family ownership by real estate investment trusts than any other county in the metropolitan Atlanta region.[34]

HD98 is not the center of real estate investment trust activity in Gwinnett County, but there is still considerable activity in the district, with an estimated 6% of single-family residences in the district being owned by outside entities.[35] Corporate owners with the most properties in HD98 are among the largest real estate investment trusts in the nation investing in single-family rental housing, including Invitation Homes, OpenDoor, Starwood Property Trust, Yamasa Corporation, and Tricon Residential.

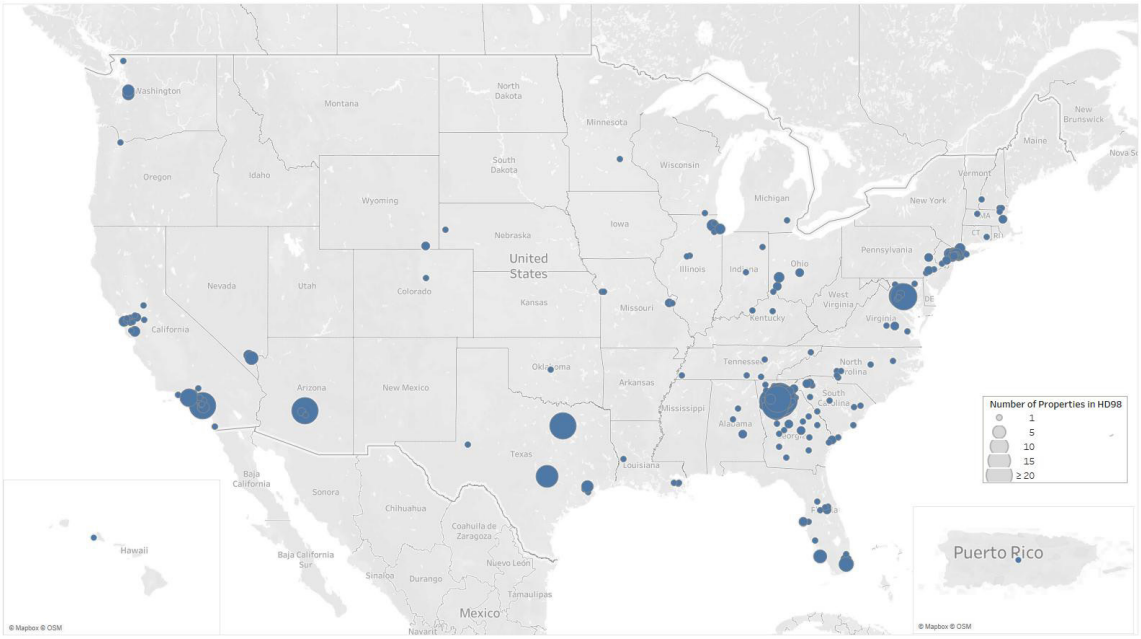

Figure 35: Location of all landlords owning property in HD98.

5.3. Mortgage Denials

Nearly 42% of 1,541 applications from HD98 for mortgage financing failed because the application was denied, approved but not accepted, withdrawn, or closed for being incomplete. This is a higher rate of failed loans than in Norcross (39%) and Gwinnett County as a whole (36%).

Residents who had failed loans were predominately BIPOC, and this was the case at a higher rate than the proportion of BIPOC residents in the district. 23% of those denied identify as Hispanic and/or Latino, 20% identify as Asian, and 22% identify as Black. This suggests that people of color in Gwinnett County continue to lack access to affordable capital at a higher rate than white residents and sheds light on barriers that these communities face in securing affordable and healthy housing.

5.4. Evictions

High energy costs can contribute to evictions by straining tight household finances and making it difficult to pay necessary bills, including rent. Between 2019 and the July 2022 there were 9,244 formal eviction

34 See Suzanne Lanyi Charles, "The financialization of single-family rental housing: An examination of real estate investment trusts'; ownership of single-family houses in the Atlanta metropolitan area," *Journal of Urban Affairs*, Vol. 42, No. 8 (2020): 1321; Dan Immergluck, *Red Hot City: Housing, Race, and Exclusion in Twenty-First Century Atlanta* (Oakland: University of California Press, 2022), 160-64.

35 *Gwinnett County Comprehensive Housing Study 2022*, 102.

filings brought against tenants in HD98 in Gwinnett County Superior Court. This constituted almost 15% of all eviction filings in Gwinnett County, though this is comparable to HD98's high proportion of renters. Still, eviction rates are high. In 2019, more a quarter of all renter households in HD98 faced an eviction filing.

Just five multifamily buildings have been responsible for 1,109 filings since January 1, 2020 – including evictions filed during the moratoria established by the Centers for Disease Control because of the COVID-19 pandemic. Table 1 provides an overview of which multifamily buildings in HD98 have had the most eviction filings since 2020.

Complex	Address	Owner	Owner Location	Eviction Filings Since January 1, 2020
Elliot Norcross	1355 Graves Road Norcross, GA 30093	Ashcroft Capital	New York, NY	371
The Reserve at Gwinnett Apartments	1780 Graves Road Norcross, GA 30093	Broadstone Real Estate	Rochester, NY	212
Parc at 1695 Apartments	1695 Graves Road Norcross, GA 30093	Western Wealth Capital	North Vancouver, BC	207
Legacy Commons Apartments	6259 Norcross Tucker Road Tucker, GA 30084	GDE Renovations	Atlanta, GA	165
Canopy Glen	1635 Pirkle Road Norcross, GA 30093	Priderock Capital	Palm Beach Gardens, FL	154

Table 1: Multifamily buildings in HD98 with the highest number of eviction filings since 2020.

6. Health and Environmental Hazards

Residents of HD98 face a series of health and environmental hazards that exacerbate housing and energy insecurity. These health threats are also heightened by unhealthy and inefficient housing available to residents.

6.1. Air Quality

Residents of HD98 experience poor air quality that can make chronic health conditions more acute, particularly air toxics resulting from proximity to traffic. Research has demonstrated that people living near high-traffic roadways are at risk to various chronic health conditions, and 7 block groups in HD98 are in the eightieth percentile or higher for traffic compared with all census block groups in Georgia.[36]

Residents of HD98 are vulnerable to diesel particulate matter in the air, caused by the operation of diesel vehicles – often hauling freight – on nearby highways and roads. 15 block groups are in the ninetieth percentile for diesel particulate matter in the air compared to the rest of Georgia, with the remaining block groups in the eightieth percentile for airborne diesel particulate matter.

All 26 block groups in HD98 are in the ninetieth percentile or above for PM2.5 air pollution. One of the leading causes of PM2.5 air pollution is the combustion of gasoline. Less than 10% of census block groups in Georgia have higher exposure to PM2.5 pollutants in the air than those in HD98.

6.2. Hazardous Materials Facilities

Along with the risks from transportation infrastructure, residents of HD98 live near a variety of hazardous waste facilities. All but two block groups are in the seventy-fifth percentile or higher statewide for proximity to Risk Management Plan (RMP) facilities, which are required to develop a risk management plan due to their use of hazardous substances under §112(r) of the Clean Air Act amendments.

Since 2020, the Georgia Environmental Protection Division (EPD) has registered 8 complaints about facilities in zip code 30093. These complaints range from concerns about air quality impacts from the Vulcan Construction Materials Quarry to hazardous material spills at businesses and homes across the district.

6.3. Tree Canopy

Tree canopy and greenspace plays a key role in decreasing ambient air temperatures and lowering the amount of energy required to cool a home during periods of extreme heat. Yet tree canopy is often distributed inequitably, with disparities in greenspace following racial and income lines. In Atlanta, researchers have found that formerly redlined neighborhoods are on average 7°F warmer than non-redlined neighborhoods, requiring residents to spend even more than other areas to cool their home to a healthy and safe temperature.[37]

Overall, Gwinnett County has a slightly higher percentage of tree cover than HD98, at 42% compared to 37% in HD98. However, canopies in HD98 range from 22% coverage in tracts 504.52 and 504.37, which are primarily made up of commercial buildings, to 57% in tracts 504.44 and 504.50, home to residential neighborhoods.

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36 HEI Panel on the Health Effects of Traffic-Related Air Pollution, *Traffic-Related Air Pollution: A Critical Review of the Literature on Emissions, Exposure, and Health Effects*, Special Report 17 (Boston: Health Effects Institute, 2010).

37 Jeremy S. Hoffman, Vivek Shandas, and Nicholas Pendleton, "The Effects of Historical Housing Policies on Resident Exposure to Intra-Urban Heat: A Study of 108 Urban Areas," *Climate*, Vol. 8, No. 1 (2020): 1-15.

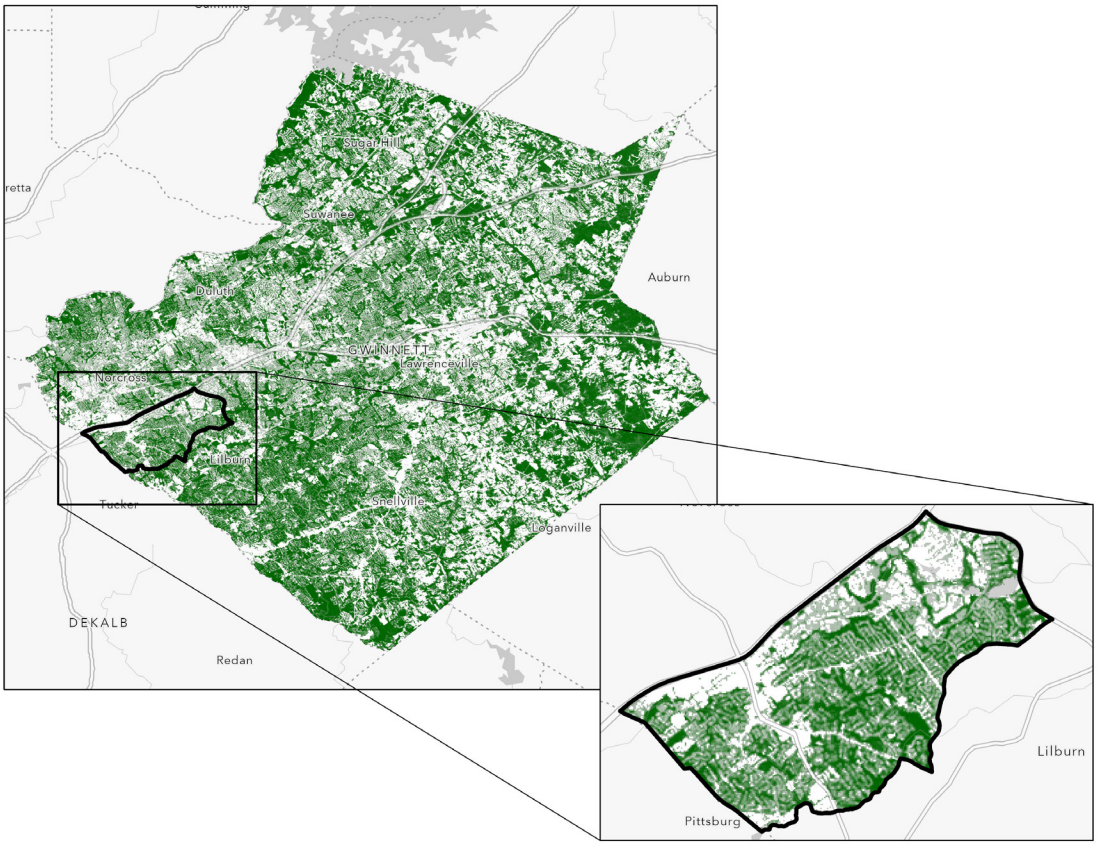

Figure 36: Tree canopy in Gwinnett and HD98.

6.4. Built Environment and Infrastructure Development

HD98 is highly developed, and impervious surfaces are common. This can have cascading effects on housing and energy use, including increasing ambient heat, changing hydrologic processes, and contributing to flooding.[38] Like Gwinnett overall, HD98 has a high proportion of impervious surface and high intensity developed land uses.

The amount of land in the High Intensity Developed (HID) category grew by 31% in Gwinnett County between 2001 and 2019 (a total of 7.32 new square miles of new HID).

38 S. V. Chithra, M. V. Harindranathan Nair, A. Amarnath, and N. S. Anjana, "Impacts of Impervious Surfaces on the Environment," *International Journal of Engineering Science Invention*, Vol. 4, No. 5 (May 2015): 27-31.

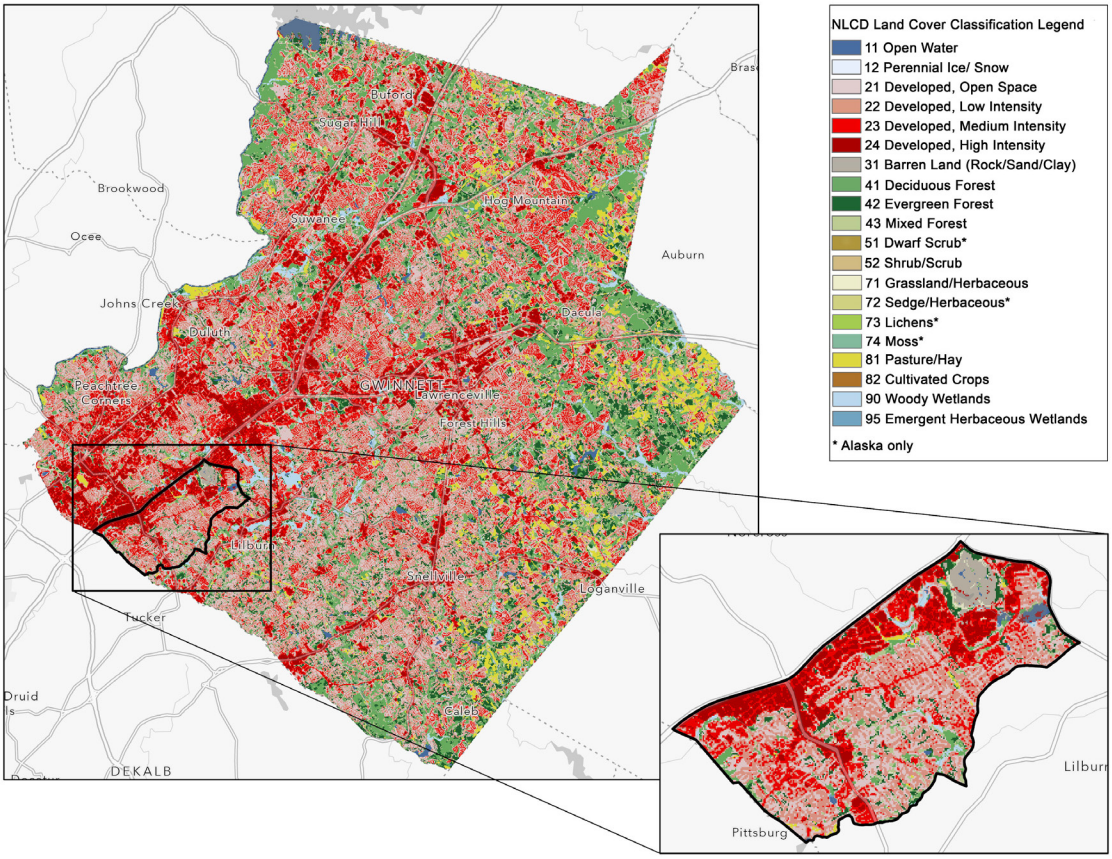

Figure 37: Land cover in HD98 and Gwinnett County.

6.5. Urban Heat Island Effect

HD98 has a significant amount of HID land uses and impervious surface, but it does not stand out markedly for urban heat island (UHI) risks. This is not to say that residents do not face high temperatures that strain their ability to cool and stay safe, only that the heat island effect appears less extreme than other parts of Atlanta and Gwinnett County, given limitations in available data.

6.4. Chronic Health Conditions

Where we live impacts our livelihoods and quality of life. Housing security, food access, health centers, and even income-based inequalities can be predicted by our zip codes. These social determinants of health are the economic and social conditions that influence a group's health and well-being. Improvements to the communities within a zip code must be prioritized to ensure long-term equity and address disparities in which we live and work.[39]

As a social determinant of health, the quality of housing can impact residents' health in far-reaching ways. Additionally, energy insecurity forces people to make decisions that prioritize financial survival over health – such as forgoing food or medicine to pay bills or using dangerous equipment like an oven

39 D. Ritchie, "Our zip code may be more important than our genetic code: Social determinants of health, law and policy," *Rhode Island Medical Journal*, Vol. 96 (2013): 14.

to heat their home. Healthcare expenses and a lack of a safety net can also inhibit social mobility and prevent people from investing in their housing in ways that would make it more affordable and healthier in the long term.

As explained below, we find that a significant proportion of HD98 residents are at a high risk for health conditions that either exacerbate, or are exacerbated by, chronic energy insecurity. Addressing the efficiency and health of homes for residents of the district is a needed step, but this must also be paired with greater access to healthcare resources and support to fully address the manifestations of energy insecurity.

As indicated in Figure 38, more than a quarter of residents of HD98 are experiencing fair or poor health (25.7%), nearly double the rate for the rest of Gwinnett County (13.7%).

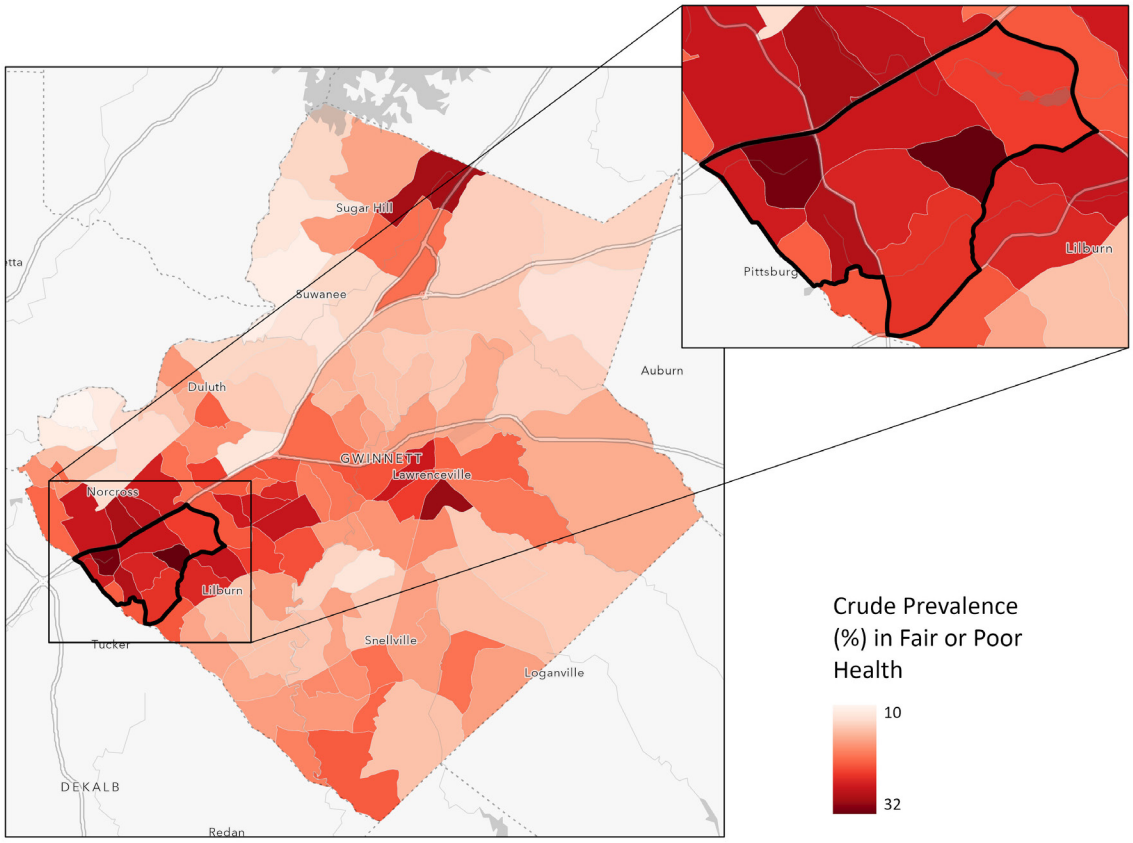

Figure 38: Crude prevalence of people in fair or poor health by census tract, for HD98 and Gwinnett County.

Asthma can be exacerbated by triggers in housing, including moisture, mold, and pests, which are key indicators of inefficiencies in the home and can be addressed through efficiency solutions. Gas stoves are also a key risk factor, contributing to an estimated 12.7% of childhood asthma cases in the United States.[40]

40 Talor Greunwald, Brady A. Seals, Luke D. Knibbs, and H. Dean Hagood III, "Population Attributable Fraction of Gas Stoves and Childhood Asthma in the United States," *International Journal of Environmental Research and Public Health*, Vol. 20, No. 75 (2023): 1-4.

Residents of HD98 face a slightly decreased risk of asthma (8.5%) than those living in other parts of Gwinnett County (9.0%), and HD98 is below the Georgia average (8.9%). However, there are still more than 5,000 people in the district who experience asthma and could benefit from housing interventions designed to improve efficiency and remove asthma triggers.

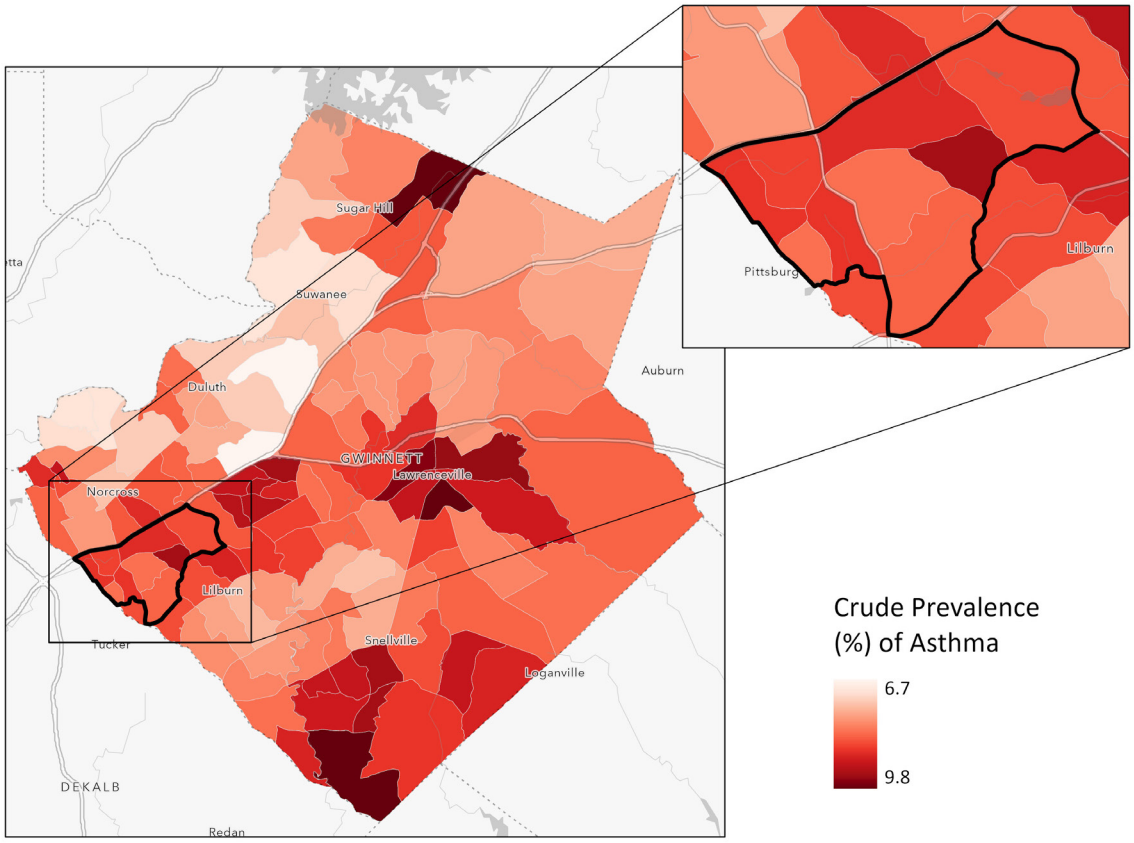

Figure 39: Crude prevalence of asthma in HD98 and Gwinnett County.

HD98 has less access to greenspace and recreational facilities that not only provide relief from high temperatures, but facilitate physical activity, compared to the rest of Gwinnett County. As indicated in Figure 40, just 1% of the county's park acreage is in HD98 (150 acres), which provides residents with fewer options for physical recreation that can improve physical and mental wellbeing.

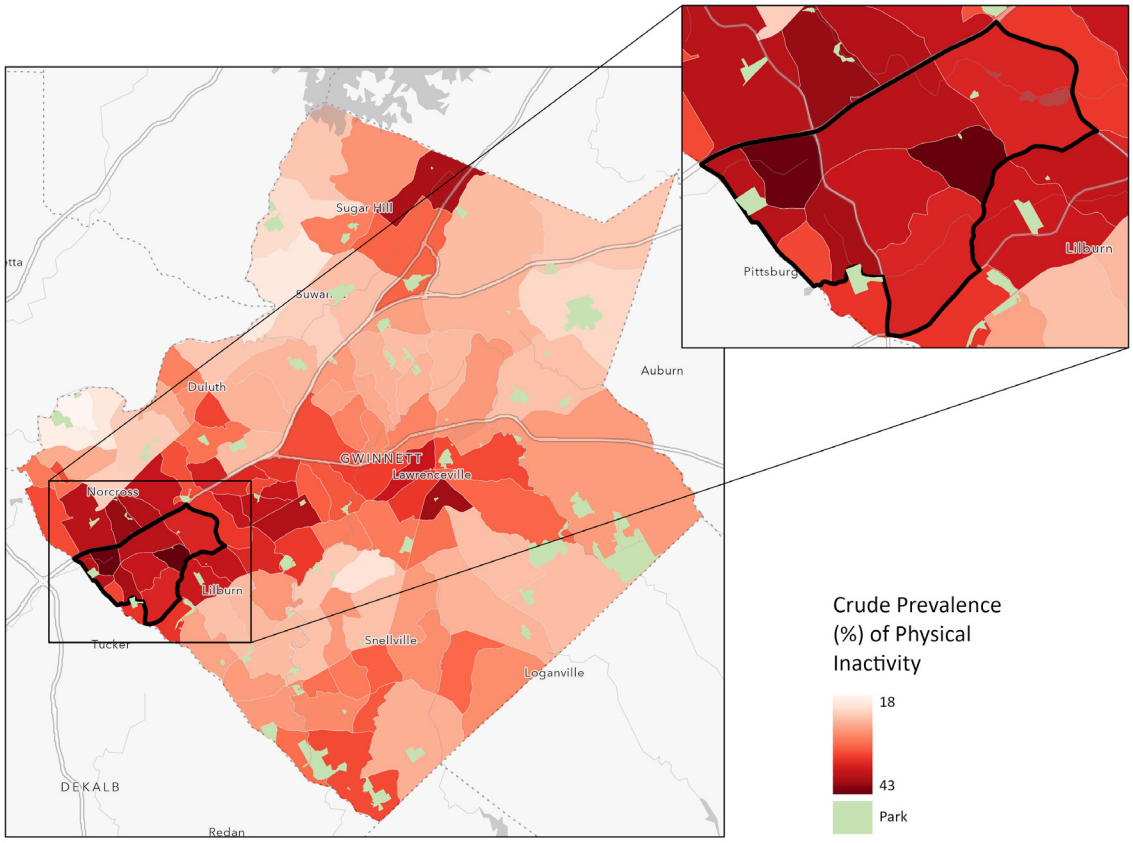

Figure 40: Crude prevalence of physical inactivity by census tract and the location of county-owned parks.

Additionally, health stressors put many residents at greater risk of chronic conditions and make it more difficult to address health issues stemming from the home. 40% of HD98 residents (22,304 people) lack health insurance. Though a higher proportion of the population of HD98 participates in the work force than in Gwinnett County, only 15.7% of Gwinnett County residents live without health insurance. Improving access to healthcare is a vital step to addressing chronic health issues that can be exacerbated by conditions in the home.

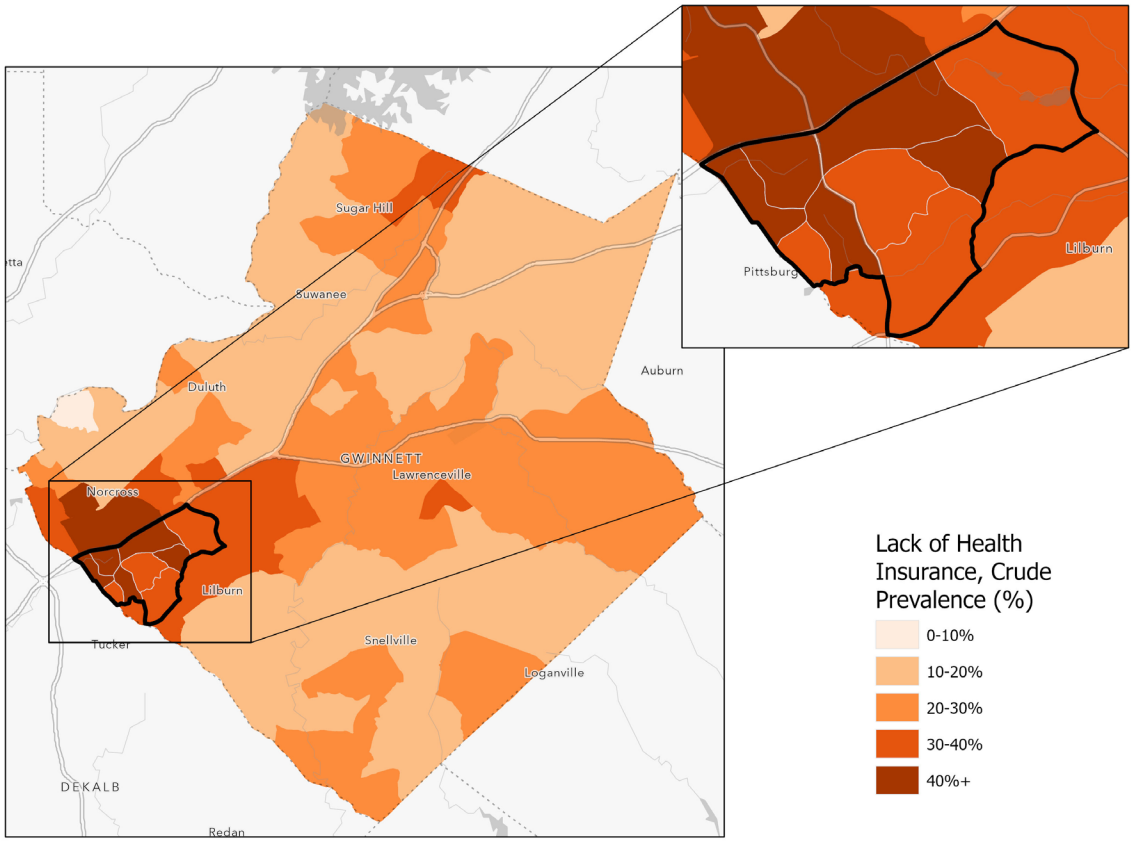

Figure 41: Proportion of residents in HD98 and Gwinnett County who lack health insurance.

7. Who is at risk for energy insecurity?

Identifying who is at risk for energy insecurity is crucial to determine how to direct resources from the federal government and other sources to support the needs of these communities. The following analysis, based on our data analysis and stakeholder feedback, outlines communities and housing types that are most at risk for energy insecurity and should benefit from comprehensive investments.

7.1. Low- and moderate-income households

Households with lower incomes struggle with high energy costs, which exacerbate housing unaffordability and instability, more than higher income households. Households in the lowest income bracket face energy costs that make up almost 15% of their income. Nearly 60% of all households in HD98 are low- or moderate-income (approximately 12,000 households).

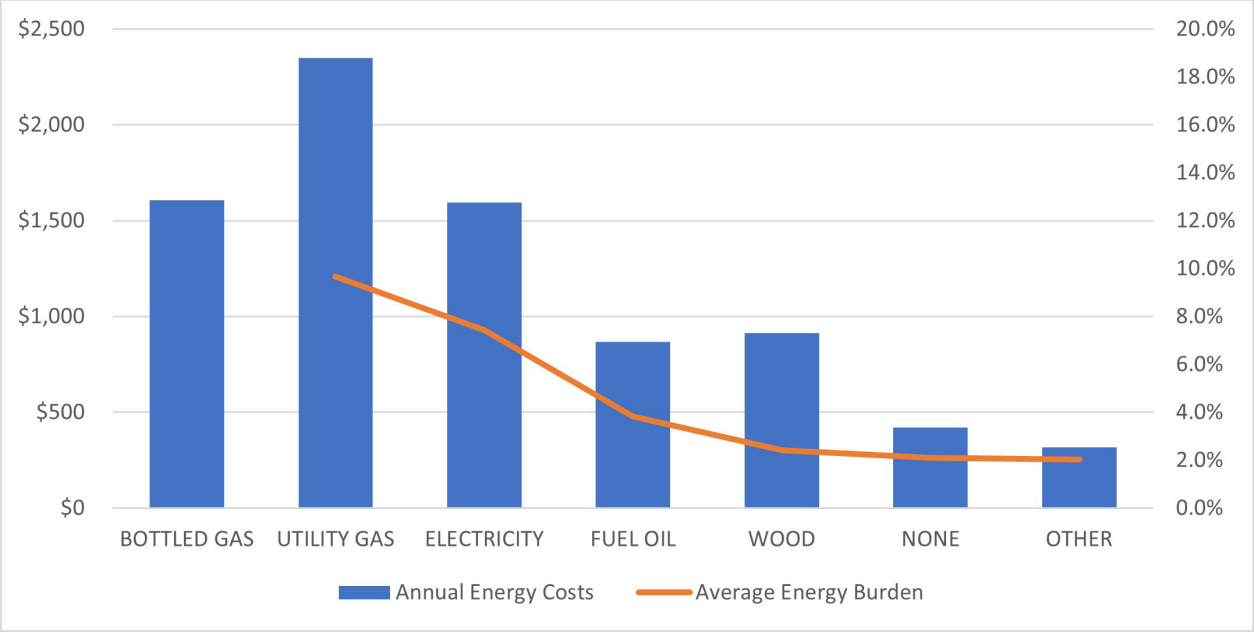

Figure 42: Energy costs and cost burdens by income bracket for HD98.

7.2. Renters

Renters in HD98 tend to pay less overall for their energy than homeowners, but they have energy burdens nearly 30% higher than owners, and there are significantly more renters in HD98 than owners.

On top of the disproportionate burdens that they face, renters also have barriers to accessing energy efficiency programs that do not exist for homeowners. While tenants in rental properties most often pay the utility bills, they do not have the authority to make changes to the property that could lower these bills. Conversely, landlords, because they do not pay utility bills directly, have difficulty justifying the expense of investing in energy efficiency measures which most immediately benefit the tenant.

7.3. Single-family Households

Residents of mobile homes, recreational vehicles, and similar types of housing face the highest energy costs and energy burdens in HD98 by a significant margin. Yet there are only around 200 of these units in the district. Given this, residents of single-family households – the most common housing type in the district – are also at risk given their comparatively high energy costs and cost burdens.

This is not to say that residents living in multifamily buildings do not face burdens. On one hand, multifamily dwellings require different approaches to address energy efficiency that make interventions more complicated, but the overall number of residents served is greater and per unit costs are lower compared to single family units.

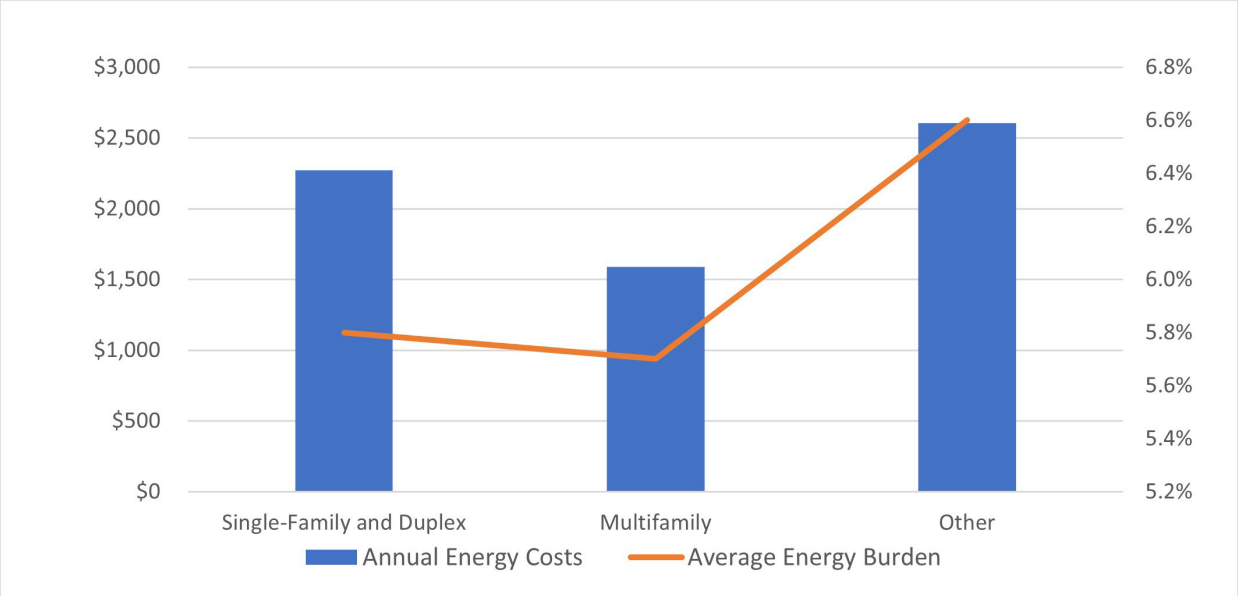

Figure 43: Energy costs and cost burdens by building type for HD98.

7.4. People who live in old buildings

Low- and moderate-income residents of buildings built before 1980 are especially at risk for high energy costs and cost burdens. Older housing stock is typically less efficient, and units built before 1980 were built before any meaningful building energy codes existed, the only minimum standards for efficiency and safety in new housing.

There are more than 3,000 housing units built before 1980 with LMI residents. These residents have average energy costs that are 9% higher and energy burdens that are 24% higher than residents who live in newer housing units.

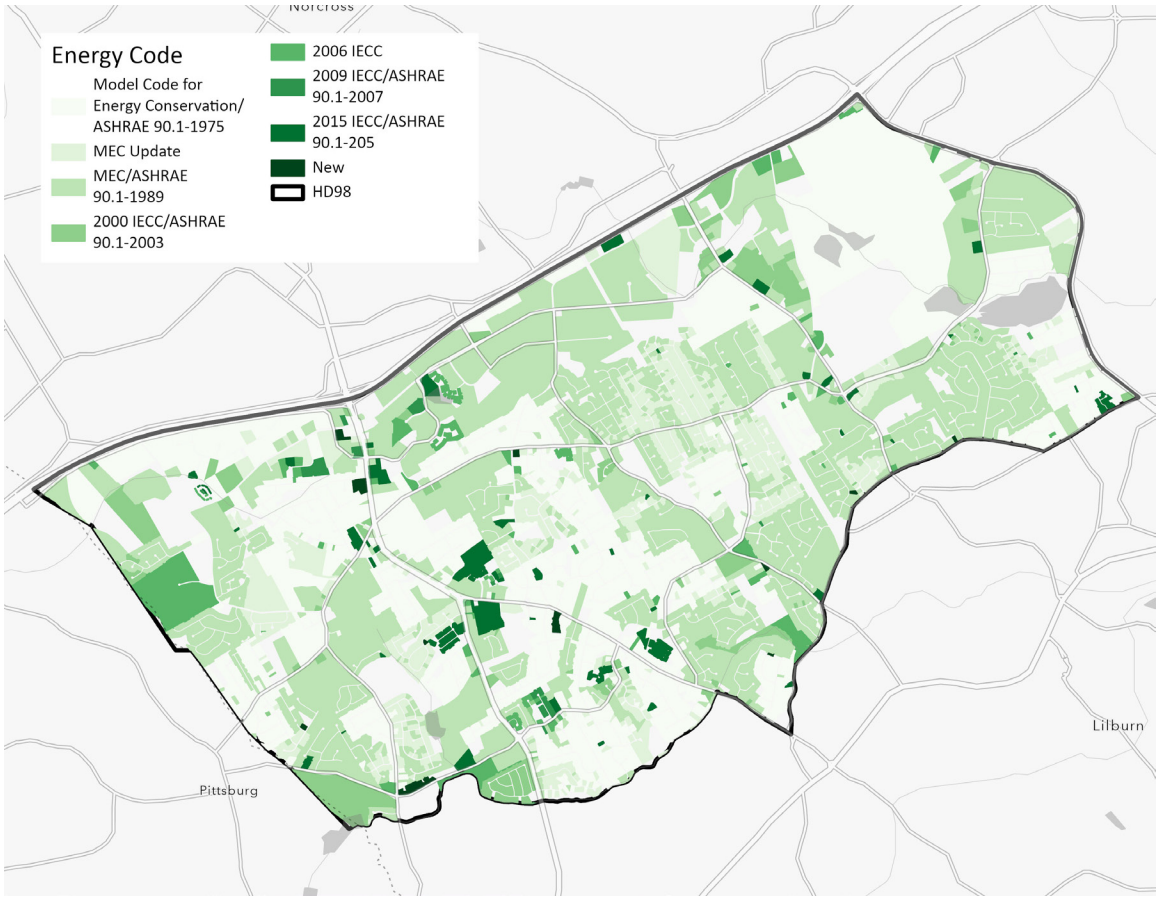

Figure 44: Residential buildings in HD98 by energy code requirements they were built to satisfy.

7.5. Utility Gas Customers

Households that use utility gas for heating equipment have both higher annual energy costs and energy burdens compared to customers who rely on electric heating (and are likely all-electric households). Utility gas customers pay 45% more each year on energy compared to all-electric households. Utility gas customers face 31% higher energy burdens compared to electric customers, which has likely become more burdensome given recent increases in the cost of natural gas.

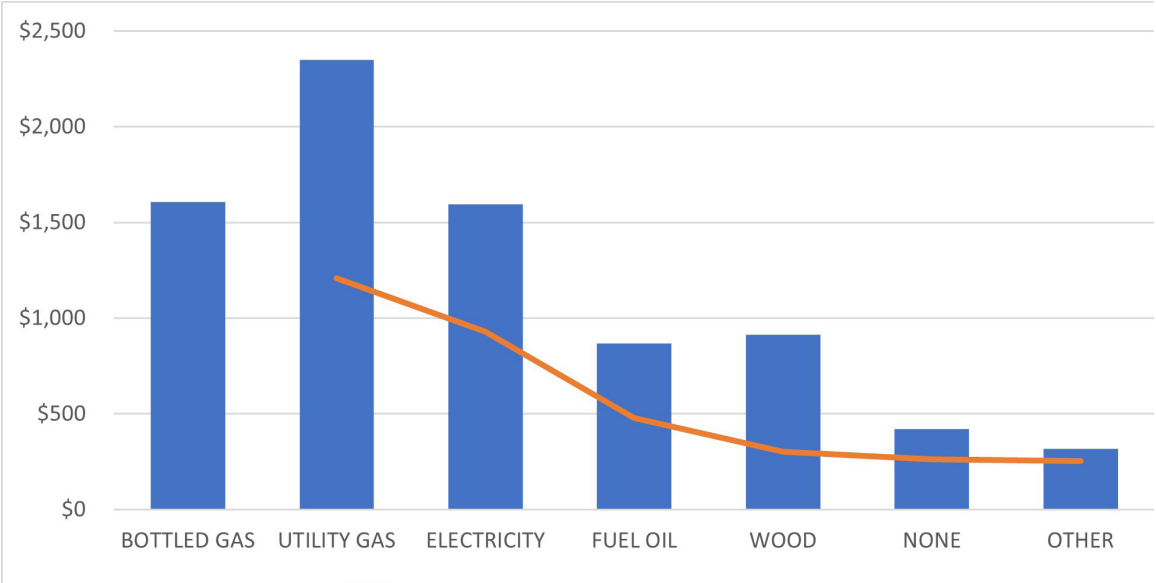

Figure 45: Energy costs and cost burdens by heating fuel in HD98.

8. Conclusion

Our research makes it clear that residents of HD98 are particularly vulnerable to energy insecurity, which is exacerbated by a host of associated issues, including the quality of housing, low incomes, chronic health conditions, and access to greenspace, among others. We believe that valuing housing as critical infrastructure and investing directly in housing in HD98, and throughout the Southeast, offers a pathway to reducing the vulnerability of communities to energy insecurity.

Although historic federal investments in energy, housing, and climate offer new pathways for communities like HD98 to address longstanding risks, these efforts must take a holistic approach that focuses on housing itself. Investments in the efficiency and healthfulness of housing, particularly for vulnerable communities, play a critical role in increasing housing affordability and stability, enhancing community resilience in the face of extreme heat and other disasters, decreasing health risks, and reducing greenhouse gas (GHG) emissions.

Acknowledgements

This report was made possible with funding and support from the American Cities Climate Challenge Justice40 Capacity Building Fund created by Bloomberg Philanthropies and managed by Kapwa Consulting. The authors are grateful for their support throughout this project.

Appendix I: Housing Cohorts with the Highest Average Energy Costs in HD98

Housing Cohort	Annual Energy Costs	Number of Units
0-30% AMI | Boat, RV, Mobile Home | Owner | Built after 1980	$4,285.38	7
30-60% AMI | Boat, RV, Mobile Home | Owner | Built after 1980	$3,768.75	20
0-30% AMI | Single-Family | Renter | Built before 1980	$3,748.39	285
100%+ AMI | Boat, RV, Mobile Home | Renter | Built after 1980	$3,373.06	32
80-100% AMI | Multifamily | Owner | Bult before 1980	$3,016.98	12
60-80% AMI | Multifamily | Owner | Built before 1980	$3,016.98	8
80-100% AMI | Boat, RV, Mobile Home | Owner | Built after 1980	$2,859.58	29
60-80% AMI | Boat, RV, Mobile Home | Owner | Built after 1980	$2,742.05	39
0-30% AMI | Boat, RV, Mobile Home | Renter | Built after 1980	$2,663.97	44
100%+ AMI | Single-Family | Owner | Built before 1980	$2,581.00	819

Appendix II: Housing Cohorts with the Highest Energy Burdens in HD98

Housing Cohort	Annual Energy Burden	Number of Units
0-30% AMI | Single-Family | Rented | Built before 1980	30.9%	285
0-30% AMI | Boat, EV, Mobile Home | Owner | Built after 1980	21.7%	7
0-30% AMI | Single-Family | Owner | Built before 1980	19.7%	220
0-30% AMI | Multifamily | Owner | Built after 1980	16.9%	31
0-30% AMI | Single-Family | Owner | Built after 1980	15.8%	436
0-30% AMI | Single-Family | Renter | Built after 1980	14.5%	502
0-30% AMI | Multifamily | Renter | Built after 1980	12.3%	1,469
30-60% AMI | Boat, RV, Mobile Home | Owner | Built after 1980	12.2%	20
0-30% AMI | Boat, RV, Mobile Home | Renter | Built after 1980	10.4%	44
0-30% AMI | Multifamily | Renter | Built before 1980	10.3%	474

Appendix III: Greenhouse Gas (GHG) Emissions for Low- and Moderate-Income Households by Housing Cohort in Gwinnett County

Cohort Category	Avg. Annual Energy Costs	Avg. Energy Burden	Household Count	Annual GHG Emissions *(lbs CO2e)*
60-80% Owners, Newer SF	$2,407	5%	15,128	245M
30-60% Owners, Newer SF	$2,248	7%	15,277	231M
0-30% Owners, Newer SF	$2,367	20%	10,265	160M
30-60% Renters, Newer MF	$1,515	5%	11,006	123M
30-60% Renters, Newer SF	$2,325	7%	6,323	96M
0-30% Renters, Newer MF	$1,476	12%	7,648	86M
0-30% Renters, Newer SF	$2,392	17%	4,835	77M
60-80% Renters, Newer SF	$2,333	5%	4,461	73M
60-80% Renters, Newer MF	$1,468	3%	6,703	71M
30-60% Owners, Older SF	$2,101	7%	4,299	61M
60-80% Owners, Older SF	$2,407	5%	3,052	46M
0-30% Renters, Older SF	$2,514	17%	2,170	41M
0-30% Owners, Older SF	$2,029	18%	2,558	35M
30-60% Renters, Older SF	$2,297	7%	2,199	35M
30-60% Renters, Older MF	$1,577	5%	2,378	27M
60-80% Renters, Older SF	$2,478	5%	1,449	25M
0-30% Renters, Older MF	$1,510	10%	1,934	22M
60-80% Renters, Older MF	$1,521	4%	1,172	13M
30-60% Owners, Newer "Other"	$2,178	7%	403	7M
0-30% Owners, Newer "Other"	$3,121	21%	364	7M
60-80% Owners, Newer "Other"	$1,713	3%	370	6M
0-30% Renters, Newer "Other"	$1,708	13%	291	5M
30-60% Renters, Newer "Other"	$2,024	7%	195	3M
60-80% Renters, Newer "Other"	$2,148	4%	136	2M
30-60% Owners, Newer MF	$1,690	6%	215	2M
60-80% Owners, Newer MF	$1,341	4%	143	1M
0-30% Owners, Newer MF	$1,384	13%	156	1M
30-60% Renters, Older "Other"	$1,547	4%	77	1M
60-80% Owners, Older MF	$2,003	4%	43	1M
60-80% Renters, Older "Other"	$2,528	5%	36	1M
0-30% Renters, Older "Other"	$1,447	15%	43	0M
30-60% Owners, Older "Other"	$1,209	3%	42	0M
60-80% Owners, Older "Other"	$2,262	4%	14	0M
30-60% Owners, Older MF	$2,287	6%	6	0M
0-30% Owners, Older "Other"	$950	6%	6	0M

Appendix IV: Methodology and Data Sources

Study Boundaries

The names and boundaries of the census tracts associated with HD98 have recently changed and the project team is approximating the bounds of HD98 using two different census geographies, depending on the vintage of data available. For all data available before 2020, we are using the census tracts as defined in the 2010 census universe. For all data available from 2020 to the present, we are using the census tract boundaries as defined in the 2020 census universe. The overall bounds of HD98 will differ slightly depending on the vintage of data used.

The maps below provide an overview of tract boundaries and names for each universe.

Data Sources

The project team first conducted an energy equity analysis of HD98. This analysis drew on a range of housing, energy, and health datasets. The core of the energy, housing and emissions data analyzed for this report is derived from the Energy Equity Inspector, a geospatial data tool developed in 2020 by SEEA and the Texas Energy Poverty Research Institute. The research team layered in additional data from a variety of sources, as listed below, to complement and add depth to the findings from the inspector tool.

- For socio-demographic, transportation, employment, and housing information, we used data from the 2020 American Community Survey five-year estimates from the U.S. Census Bureau.
- For ownership and housing characteristics, we drew on parcel-level tax and improvement data available from the Gwinnett County Tax Assessor's Office.
- For household-level code violations and building permits, we used data provided by the Gwinnett County Department of Planning and Development.
- For evictions, we received access to household-level data from the Atlanta Region Eviction Tracker, developed by the Atlanta Regional Commission, Federal Reserve Bank of Atlanta, and Georgia Tech's School of City and Regional Planning and Center for Spatial Planning Analytics and Visualization.
- For solar power potential, we used data from Google's Project Sunroof.
- For home loans, we used Home Mortgage Disclosure Act data provided by the Consumer Financial Protection Bureau.
- For developed land and impervious surface, we used data from the U.S. Geological Survey's National Land Cover Database.
- For tree canopy, we used the U.S. Forest Service's Analytical Tree Canopy Cover Dataset.
- For air quality and health and environmental hazards, we used the EJSCREEN database from the U.S. Environmental Protection Agency (EPA).
- For the prevalence of chronic health issues, we used the Centers for Disease Control and Prevention's PLACES: Local Data for Better Health dataset.
- For housing prices and rent, we used the Zillow Home Value Index and Zillow Observed Rent Index.
- For which census tracts are considered disadvantaged and eligible for Justice40 funds, we used the White House Council on Environmental Quality's Climate and Economic Justice Screening Tool.