ENCOURAGING DENSITY IN THE FUTURE GROWTH OF PERRY, GEORGIA THROUGH MIXED-USE CATALYSTS

by

WILLIAM JERLES

(Under the Direction of Katherine Melcher)

ABSTRACT

The city of Perry is a small-town mere miles away from the geographic center of Georgia whose population has only grown at a tremendous rate over the last 30 years. This population growth and demand for housing has exasperated the fragmentation of the landscape through unfettered suburban sprawl. In this thesis, I will endeavor to describe the existing conditions and ramifications of Perry's current trajectory of growth and propose two design interventions in the East Gate Shopping center, a massive parking lot that contributes to environmental harm. However, it need not remain so. Herein I will prove the potential of such a space in hopes that Perry and other small cities like it may be inspired to change course towards a denser, more environmentally and equitably wise future.

INDEX WORDS: Density, Edge Cities, Small Towns, Mixed-Use Development, City of Perry, Wildlife Corridors, Disease, Pollution, Gentrification, Displacement, COVID-19

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by

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DEDICATION

To my mother, Dawn, my father, Billy, my brother, Hudson, and darling Ali

And to the city that raised me

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CHAPTER 1

INTRODUCTION

I was raised in Perry, Georgia from 1991 until 2009 when I left to pursue my undergraduate degree at UGA. The town has always represented the epitome of Small Town, USA, at least to me. My first home sat on Pine Needle Drive, a neighborhood of single-family units in the northern part of Perry, surrounded by similar neighborhoods. After about two or two-and-a-half years we moved to a new subdivision at the south-eastern edge of the city limits. While the subdivision, which terminated in a cul-de-sac, would eventually hold about twenty, multistory single-family units, Chinaberry Lane possessed (and still possesses) a rural character. Somewhere in the ballpark of 411 acres of open space lie to the subdivision's north and east. To the south and west nearly 4,110 acres (including a pecan orchard and a ~580-acre farm) of undeveloped land just outside the city limits, laterally bisected by Big Indian Creek. These are the existing conditions surrounding the neighborhood in which I spent my childhood, and if the status quo persists then they will soon rapidly change.

When I arrived in 1991, our home sat on the very edge of the city limits. In the years since 1990, Perry made piecemeal annexations of land to support the increasing population. Unfortunately, these annexations typify one of the great environmental conundrums of the modern era: suburban sprawl.

This country, America, is blessed with an abundance of land. It is a *big* place. What is that popular comparison of sentiments between us and our European cousins?

"Americans think 100 years is a long time, and Europeans think 100 miles is a long way?" Or perhaps: Europeans measure distance in minutes, and Americans measure it in miles. In any case, Americans all over the continent have had plenty of room to spread out for centuries. But now, 20 years into the 21st century, we have long passed the point where we must not only recognize the damage caused to our fragmented ecosystems, but also reconcile our land use with our booming populations.

One great casualty of suburban sprawl are the corridors of undeveloped land through which species of plant and animal alike move from patch to patch. Our development projects transform these patches into smaller and smaller refuges with equally fewer connections between them. This continual fragmentation of habitat exacerbates the already perilous existence of species and contributes to this age of manmade environmental influence-- this Anthropocene's horrifying extinction rate.

Another equally troubling casualty of suburban sprawl is less obvious at first, but once made visible it becomes impossible to ignore. In 1996, Keith Schneider wrote an article for Nieman Reports titled, *Suburban Sprawl: America's Most Important Environmental Issue.* In it he states, "Farmland continues to be paved over for housing developments and parking lots at an astonishing rate. The American Farmland Trust estimates that 1.1 million acres of prime cropland are lost to sprawl every year in the United States. In California during the mid1980's, 500,000 acres of Central Valley farmland, among the most productive on earth, were ruined by sprawl. In Michigan, 10 acres are lost each hour, or nearly 100,000 acres a year, according to a recent assessment by the state Department of Agriculture." (Schneider 1996, paragraph 23). Reflect on these numbers and consider the effects impervious surfaces such as parking lots have on

stormwater runoff. Think also about the pollution generated by modern living *in addition to* the pesticides, herbicides, and other environmentally detrimental effects for which modern agricultural industry is so notorious.

Let us now briefly look at the Atlanta metro area. This vibrant, exploding economic zone has continued to scarf up the land with abandon for decades. To serve the water needs of such an area, Atlanta relies on the Chattahoochee River. In a periodical for the National Parks Conservation Association, Chris Fordney writes:

"Along the river, which begins in northeast Georgia and travels 542 miles to the Gulf of Mexico, Chattahoochee River National Recreation Area holds 48 miles of land. Created in 1978, the national recreation area is also dealing with several kinds of pollution: sewage spills from overloaded plants, runoff from the furious pace of construction, and 'thermal pollution.' This last one is caused when rainwater lands on hot pavement and runs into the river while still hot enough to kill organisms and fish. Its effects reach as far as Apalachicola Bay, for now one of the most productive fisheries in the nation" (Fordney 2003).

For more context regarding the pace of sprawl, this poisonous condition, Fordney mentions another frightening statistic, "Nowhere is water a more critical issue than around Atlanta. In 1991, the city opened a new water treatment plant that pulled 3.8 billion gallons from the Chattahoochee, the city's main water supply. Then, as the city's population exploded from 2.2 million in 1980 to 3.7 million in 2000, the plant's needs grew to nearly 20 billion gallons a year. 'If, as expected, Atlanta's population reaches 5 million by 2025, the Chattahoochee won't be able to handle the load,' water expert

Jeffrey Rothfeder has written. 'The river will be bone dry, at least as a water source, and the city will run out of fresh water'" (Fordney 2003, paragraph 8).

Atlanta's current population as of 2021 is 5,911,000 (Macrotrends).

The dire environmental impacts of sprawl are well documented, and this research will briefly remind us of its cost. However, if spreading outward causes all this damage, then surely the proper solution is to develop more vertically, more densely, or at the absolute least more wisely. As William H. Whyte says in *The Last Landscape*, "Increasing density does not mean putting everyone in towers; it means making a much more intensive use of the land we have not been using, or using very well, and we would the better were it done" (Whyte 2012, 10).

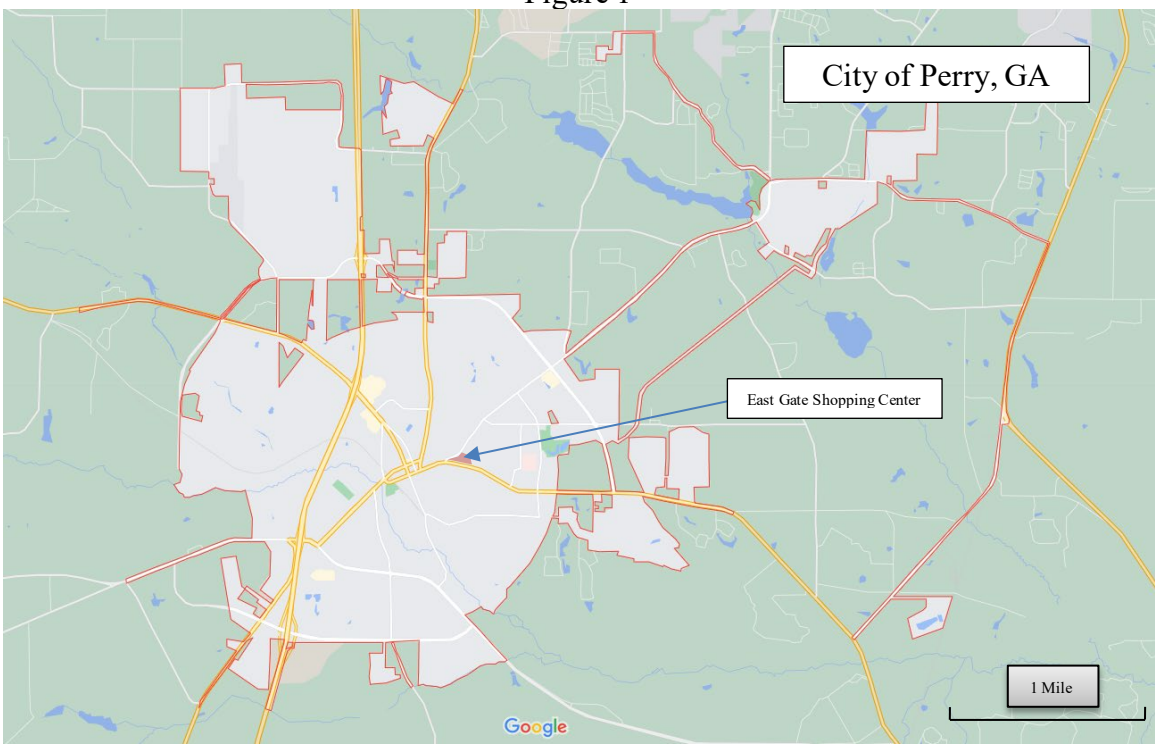
The question is: how? How do we change habits developed over decades? How do we encourage a veritable 90-degree turn in policy? How do we identify and address the roadblocks preventing us from arresting the momentum of suburban sprawl and deflecting the growth of our small towns and edge cities onto a more equitable, and sustainable trajectory? The interconnectedness of the dynamic systems in nature are immense, and the consequences of our actions regardless if they are helpful or harmful to the environment ripple out in ways that can be unpredictable. The scale of this reality is mentally daunting, and one might simply resign oneself to only be concerned with one's own well-being. This is understandable, but we must strive to overcome it. Designers of every skill level in every profession must engage in long-term planning to consider the consequences of our actions on the world both environmental and social.

In this thesis, I will examine such possibilities by focusing on my hometown of Perry, whose meteoric growth, unique design constraints, and cultural objectives have

created the conditions where a beacon of the future might be created. Can Perry re-design its wasted spaces to encourage a more dense, and environmentally responsible future? With the help of the Middle Georgia Regional Commission, City of Perry DDA, and others, I will examine the history of the town, its current land use (public, private, as well as parking), transportation, and cultural identity. I will then propose design solutions that, with great hope, might inspire the city planners for not only Perry, but also those of every emergent edge city across America.

The design site is the East Gate Shopping Center, a near-abandoned relic of the strip-mall era of about 11 acres. The structures are the remains of a Piggly Wiggly (then Harvey's, then a thrift/donation store like Goodwill) grocery store with ancillary shopping spaces. A Family Dollar is the only remaining commercial enterprise remaining. Adjacent these buildings, across the gulf of asphalt is a church. All of this exists on a slight, but noticeable, southbound grade.

Figure 1



Map of the city limits of Perry, GA -- Image Source: Google Maps (2021)

As such, the site was practically a blank canvas on which to work with few design constraints other than the property lines, especially once DDA representatives confirmed that they were open to demolishing the existing structures.

In Chapter 4 I will examine the current economic conditions of Downtown Perry and what potentials exist for revitalization. What gaps in the local economy could be filled? What is the current land use in Downtown Perry? Is the project site within a convenient distance to Downtown Perry to be useful to the revitalization efforts?

I will also examine social equity in design. What are the demographics of Perry? What are the local aesthetic sensibilities? What are the consequences of redevelopment? What happens to the people who already live in the area when gentrification inevitably follows the redevelopment? Is it possible to ensure the local cost of living doesn't skyrocket with the new developments and preserve affordable housing? I will also call attention to the crises of rising rents and barriers to homeownership, and I will describe some of the key factors contributing to these issues.

In Chapter 5, I will lay out my designs and how they were informed by the knowledge gleaned in the preceding chapters. I created two different iterations of how this acreage could be used to create density where the potential housing supply increased by 51or 101 dwelling units. Additionally, this design allows for businesses to fill the commercial gaps identified by the Middle Georgia Regional Commission, which we will explore in Chapter 3.

The main goals of this project are to make a place that still looks and feels like a place that belongs in Perry and in Middle Georgia at large. I will also briefly identify policy changes, and the social equity of these designs. However, like with zoning codes,

it is beyond the scope of this research to fully explore policy or determine the best policies. These designs are made with the intention to be as equitable as possible, while more research is needed on how to properly combat gentrification and displacement.

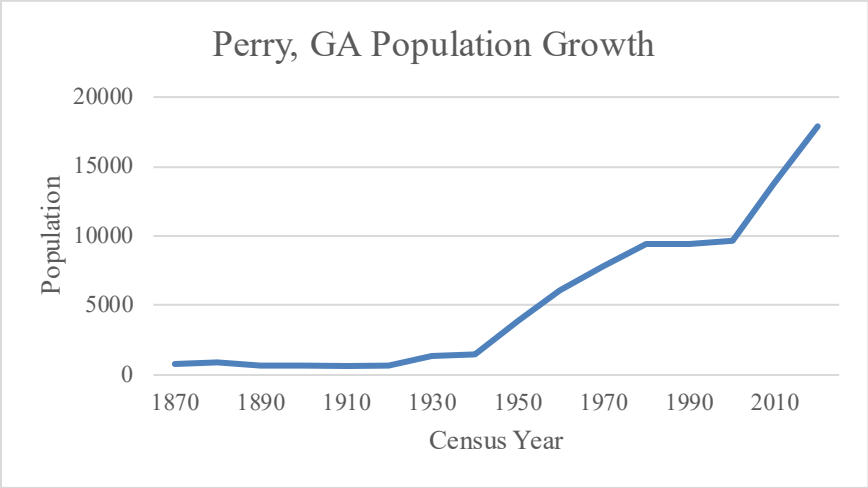
CHAPTER 2

The City of Perry

In this chapter, we will briefly examine the history of Perry and identify the factors contributing to the population growth that spurs this research.

Perry formally incorporated and became the first municipality in Houston County in 1824. Its city limits stretched in a half-mile radius outward from the courthouse square, excepting the natural border of Big Indian Creek. With a population of just 836 according to the 1870 census, it would not be until the 1910s and 20s when its downtown would begin to resemble a familiar form. Thanks to new technologies and successful industries in agriculture, forestry, and mining, the population totaled 1,542 by 1940. This number would quadruple by 1960. The pressures of World War 2 and the subsequent Cold War would see the construction and operation of Robins Air Force Base in nearby Warner Robins (formerly Wellston). RAFB would become the largest employer in central Georgia, and when combined with the completion of Interstate 75 Perry would continue its growth.

Table 1



Data Source: U.S. Decennial Census (Census.gov 2020)

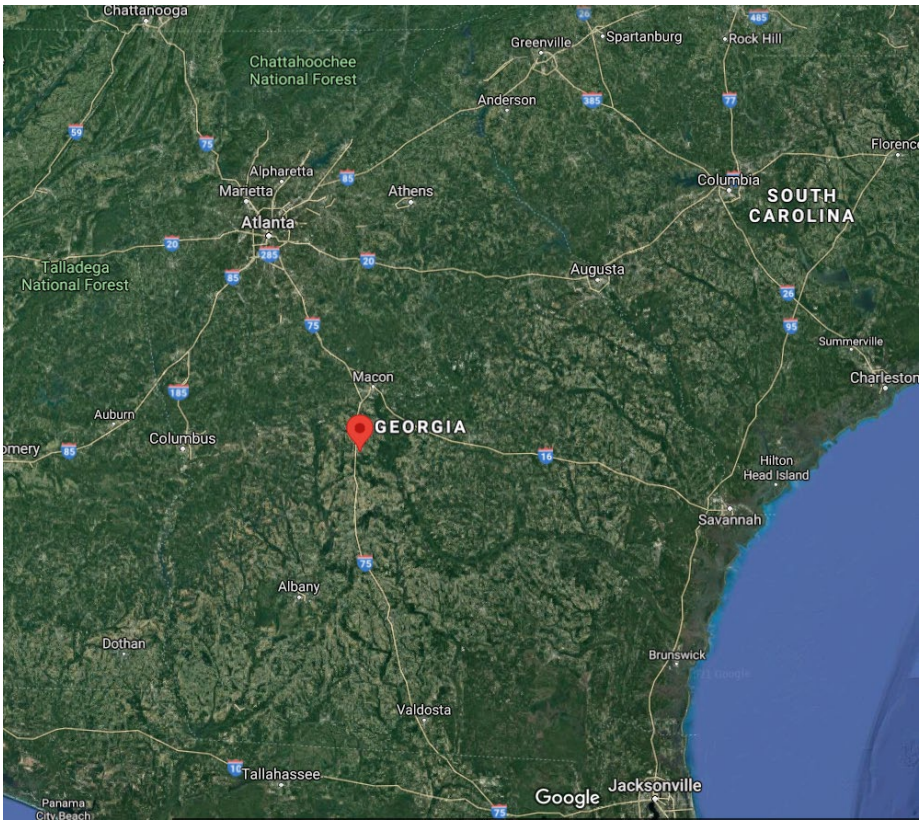
Starting in 1990, Perry established the Georgia National Fairgrounds. This convention campus hosts over 260 annual events and brings more than 500,000 people to Perry every October to attend the Georgia National Fair. At the time, the population stayed in and around 9,452 until the 2000s when Perry Parkway, a bypass to the east, finished construction and several annexations of land on the periphery of the city limits expanded Perry's available land to be settled and developed. Perry has not seen a decline in population since, and currently counts at 17, 894. (*"Census of Population and Housing"*. Census.gov. *Retrieved June 4, 2015.*).

It is little wonder then how Perry's population growth has remained so steady and consistently positive over the decades. If "location, location, location" were ever to apply to a place, then Perry is one such example. Perry's location is so convenient that one struggles to imagine a future or the conditions where its population *does not* grow. Let us examine some factors.

- Perry is but 32.3 miles southwest of Georgia's geographic center in Dry Branch (Figure 2).

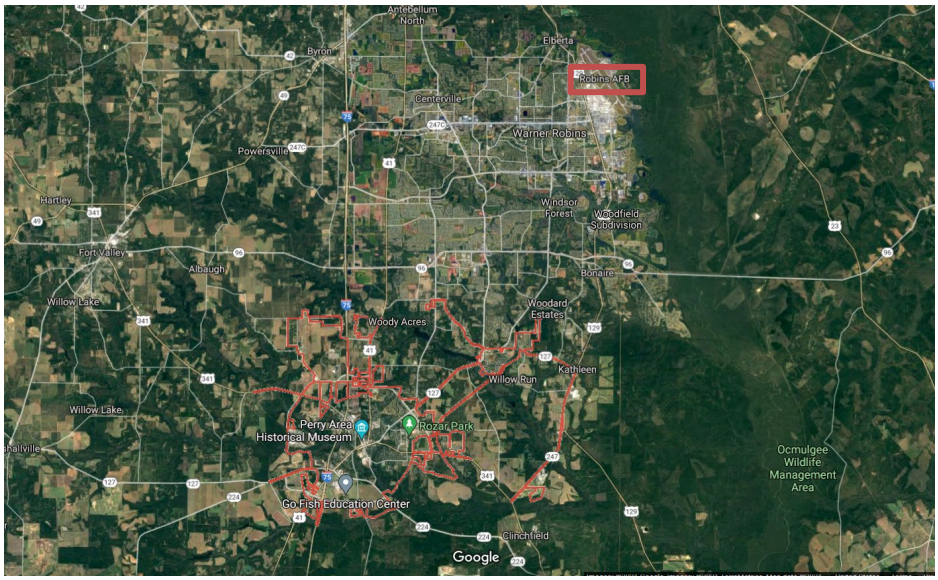
- Perry is 30 miles south of Macon, the largest city in the region. Its population as of 2019 was 153,159.
- Perry is 16 miles southwest of Warner Robins Air Force Base, which is as previously stated the largest single employer in the region. (Figure 3).
- Perry straddles I-75, the through line which connects it all.

Figure 2



Perry: "Where Georgia Comes Together" -- Image Source: Google Earth

Figure 3



Proximity to Warner Robins Air Force Base -- Image Source: Google Earth

It is common knowledge that civilization arose around rivers and within their watersheds. Rivers provide sustenance to the population in the form of food and water as well as a kinetic energy resource, the means to produce more sustenance resources in the form of agriculture, and an easier way to receive and transport significant quantities of these resources. Thus: trade and commerce.

Enter I-75, one of the major north-south routes of the National Highway System. 1786.47 miles (2875.04 km) of arterial purpose extending from Miami in the Sub-Tropical Atlantic to Sault Sainte Marie, Michigan. 355.11 miles (571.49 km) of it runs through Georgia connecting Perry to the rest of the state. (DeSimone, Tony. October 31, 2002. "Table 1: Main Routes of the Dwight D. Eisenhower National System of Interstate and Defense Highways as of October 31, 2002". *Route Log and Finder List*. Federal Highway Administration. Retrieved October 2, 2007.) If one takes the interstate, the economic hubs of Macon and Warner Robins, and Perry's prestige as the Houston County

seat then it is justifiable that one of the city's most recent marketing tag lines is "Where Georgia Comes Together." It is little wonder then how Perry's population growth has remained so steady and consistently positive over the decades. Perry's location is so convenient that one struggles to imagine a future or the conditions where its population *does not* grow.

Thus, it follows that when Perry's primary means of physical growth, according to Greg Boike, Director of Public Administration of the Middle Georgia Regional Commission, is by annexation of new subdivisions and new services springing up to accommodate the demands and distances created by said annexations then Perry suffers from sprawl.

Sprawl "is the unrestricted growth in many urban areas of housing, commercial development, and roads over large expanses of land, with little concern for urban planning," (Fouberg, Erin Hogan 2012). It is the piecemeal process by which what few remaining ecological corridors, where wild animals may find refuge from human activity and move from habitat to habitat, are devoured by our insatiable human systems. Our roads first divide the forest which creates a near impenetrable barrier to species movement depending on how busy the new route is. Soon after, that road becomes a branching system of other roads, further dividing the patch before, in the case of forests, a developer comes along and destroys the forest patch outright to make room for a new subdivision, or office park, or shopping center.

In 1996, Keith Schneider wrote an article ominously titled *Suburban Sprawl: America's Most Important Environmental Issue*. In it he states "Rural land is being taken over for Wal-Marts and McDonalds, which entice people to drive longer distances.

Rivers are filling with eroded sand and the solvents and grease flowing from acres of new parking lots. The progress the country has made in improving air and water quality, and protecting biodiversity is now at risk… Sprawl is becoming the most graphic illustration of the power of technology, capital, and public policy to utterly change the face of a community… Sprawl has become the embodiment of what Pulitzer Prize winning historian Bruce Catton called the 'fearful heritage' of the 20th Century."

During this research I interviewed Susan Langfried who worked on the Middle Georgia Regional Commission as a Senior Government Services Specialist and worked with the Perry Downtown Development Authority on an updated Downtown Plan.

The following are her most important points:

"Unlike a lot of other communities, Perry does not seem to have any major barriers to continuing to grow outwards. The cost of infrastructure to service new development is obviously important, but the city does not face some of the issues that other communities face. Many coastal communities are now planning within the constraints that sea level rise may limit or change development styles. Metro Atlanta communities must plan with traffic in mind, which may influence how communities may direct development and allow density. Metro Atlanta also has a housing affordability challenge which influences development density.

"At present, Perry doesn't face any of those major challenges, which does not compel the city to pursue or encourage denser development beyond the apartment complexes needed to meet current demand.

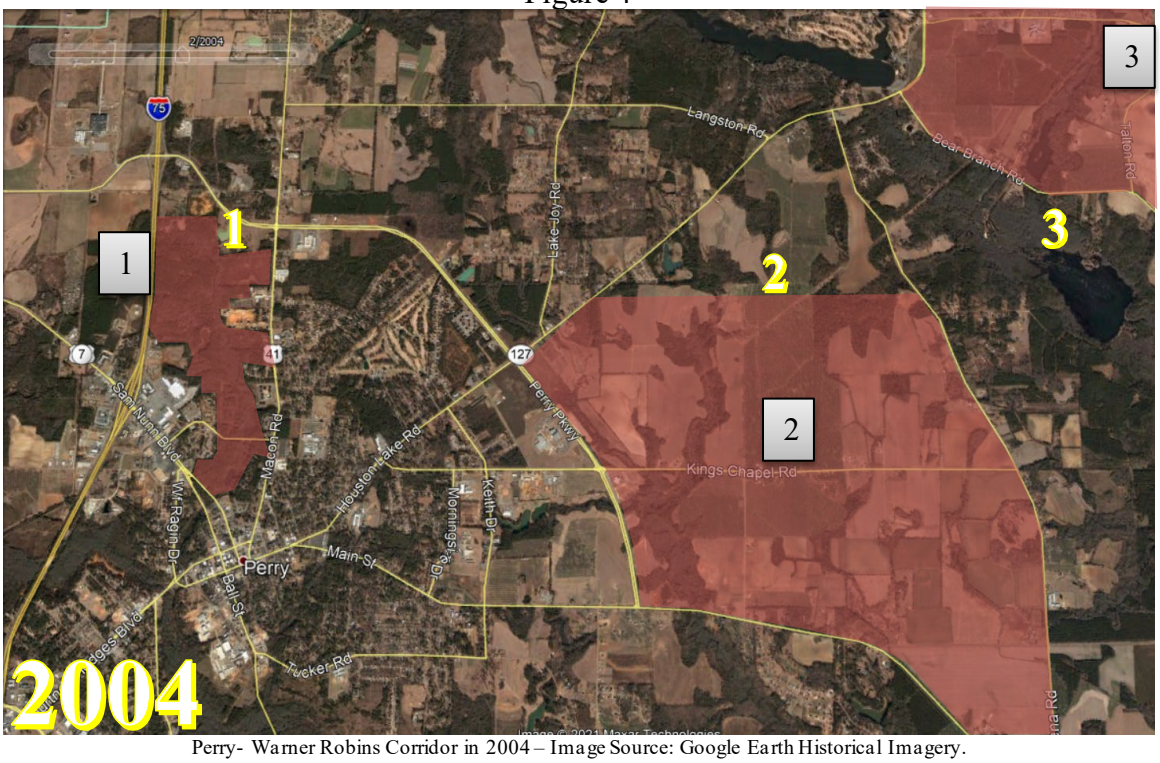
"If there is available land and the demand for that type of development is there, then a cheaper form of development is likely going to be what developers do in the area.

There is not necessarily incentive to develop denser development or develop in any other way. The private sector's role is just as important as the city government's, but the city through zoning and land development regulations can guide that private sector."

In summary, it is the duty of the city government to create the incentives for developers to focus their intentions within the city limits. This does not translate to Perry simply expanding its city limits, but instead Perry must adjust its zoning codes to attract for more imaginative attention from the private sector.

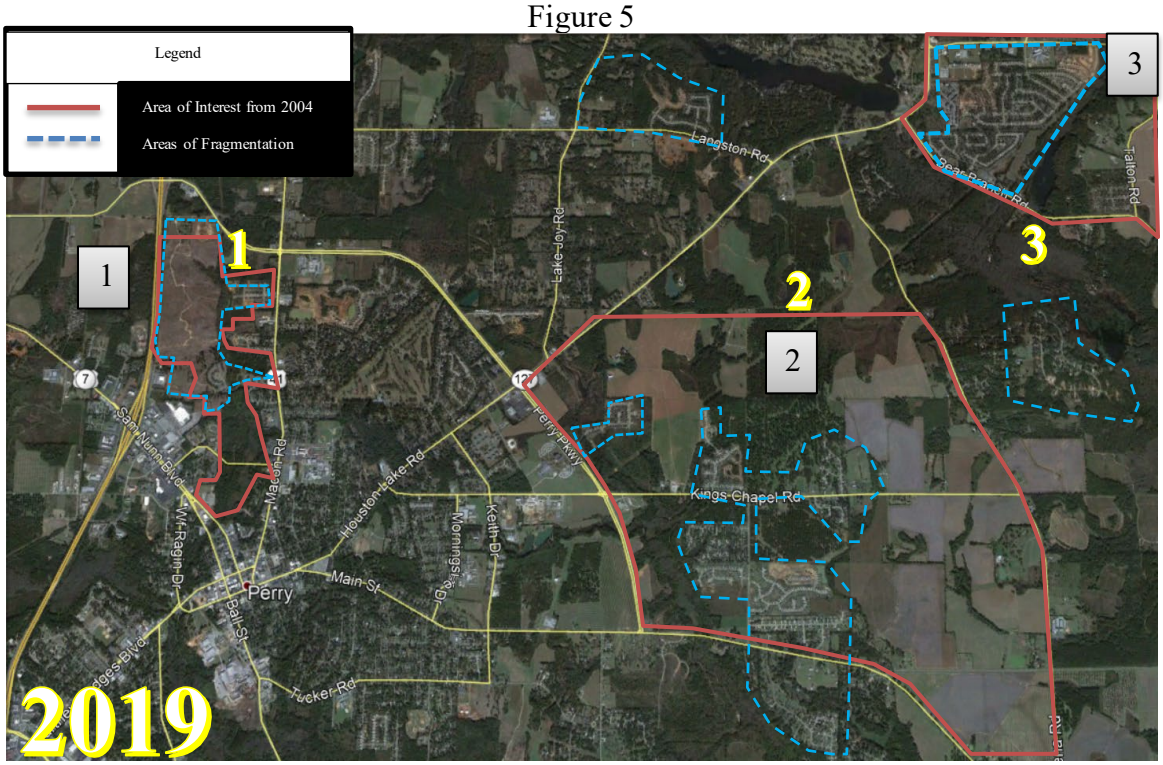
We have already mentioned Perry's proximity to Warner Robins and the Warner Robins Air Force Base. It is the largest employer in the entire region. As such, it is related to Perry's continued growth. The following are satellite photographs (Figure 4 and Figure 5) taken from 2004 and 2020 thanks to Google Earth's Historical Imagery tool. These images help us visualize the geographic changes wrought by people relocating to the region. We can see these changes in the areas north-east of Perry, which are the lands most in between Perry and Warner Robins AFB. Therefore, they are quite attractive areas for constructing new subdivisions due to their convenient distance to both cities and employment.

Figure 4



Perry- Warner Robins Corridor in 2004 – Image Source: Google Earth Historical Imagery.

Figure 5



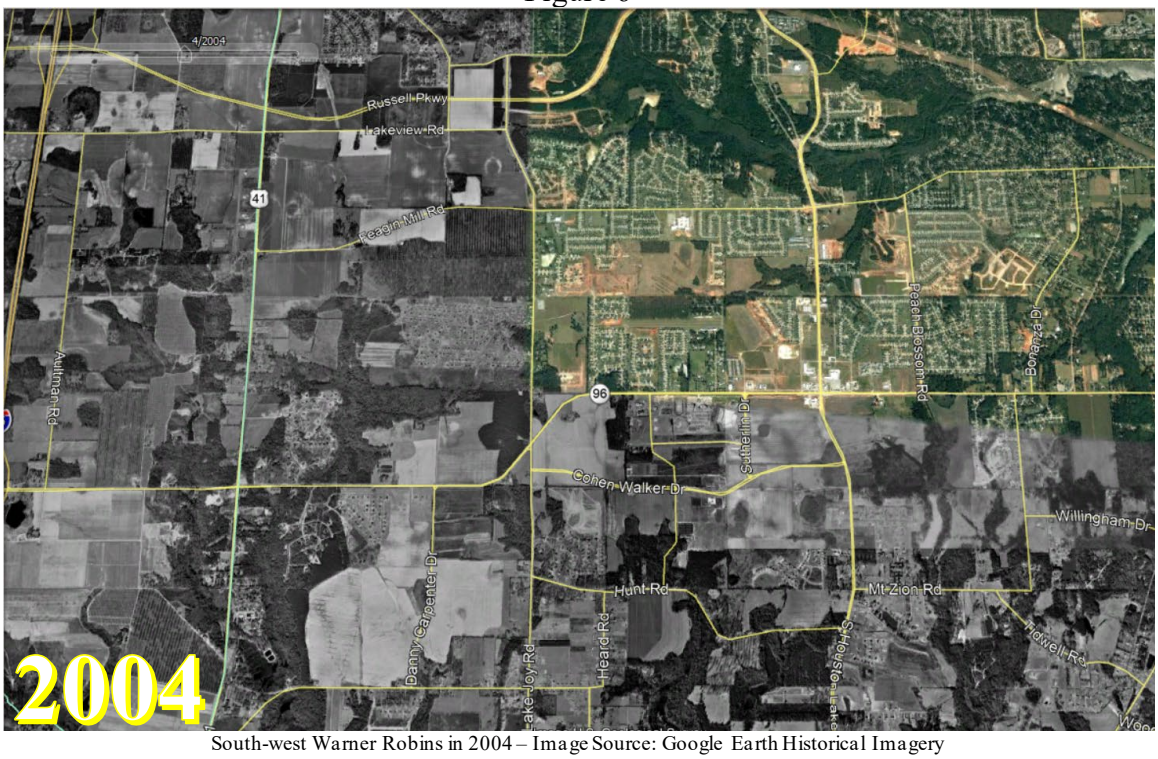
Perry-Warner Robins Corridor in 2019 – Image Source: Google Earth Historical Imagery

In comparing these two images and contrasting the changes wrought upon the landscape in the intervening years we can see fragmentation in action.

- Area 1 comprises ~442 acres. By 2019, ~241.5 acres are cleared for development. This represents a 54.638% decrease in habitat.
- Area 2 represents the eastern reaches of Perry, where many of its piecemeal annexations take place. Indeed, Perry may be expanding eastward in response to growth pressure from the north illustrated below. Most of this land is farmland with its population of trees split between cultivated species such as pecans (*Carya illinoisensis*) and the remaining forest corridor reaching south.
- Area 3 represents the southern encroachment of places like Warner Robins and Bonaire. In 2004 this was ~ 421 acres of farmland and woods. Today it is entirely suburbia. While farmland and fields provide a very different habitat for different species (as opposed to forests) they are still large tracts of land where human interaction can be avoided, save for the occasional, perilous crossing of roads, and even simple 2 lane roads can become impenetrable barriers to some species.

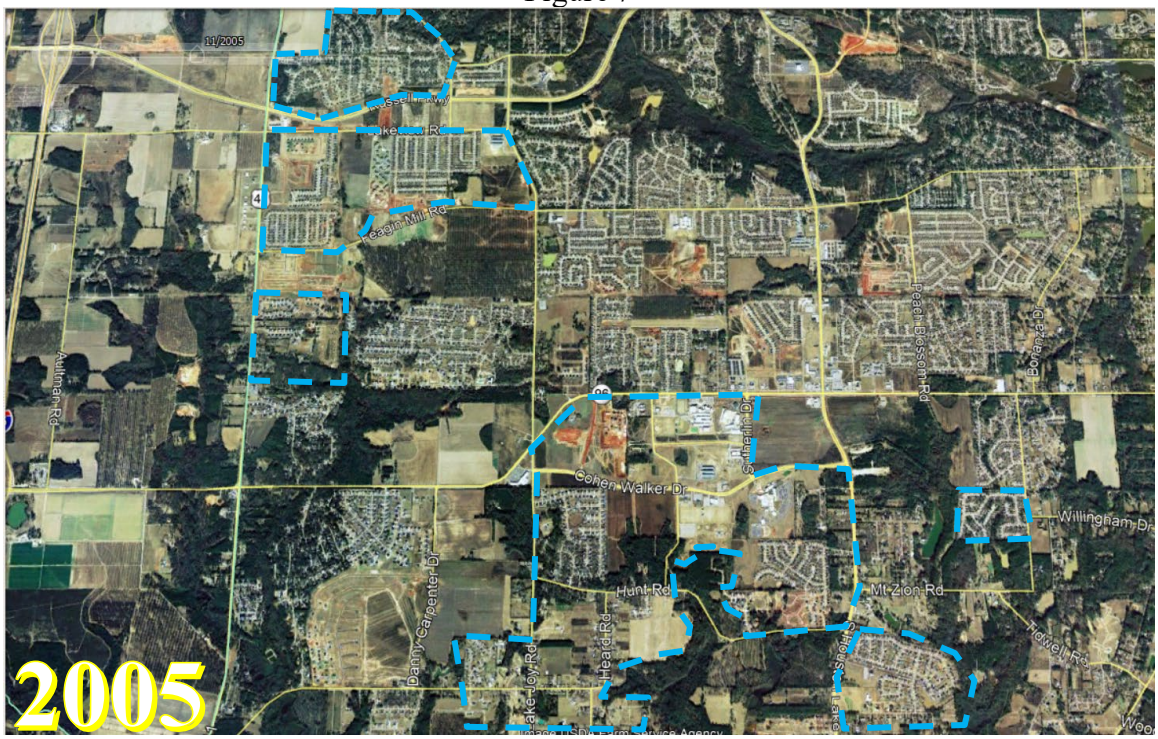
We can see even more drastic change in land use beyond (Figures 6 & 7). Let us look at the south side of Warner Robins from 2004, 2005, and 2019.

Figure 6



South-west Warner Robins in 2004 – Image Source: Google Earth Historical Imagery

Figure 7

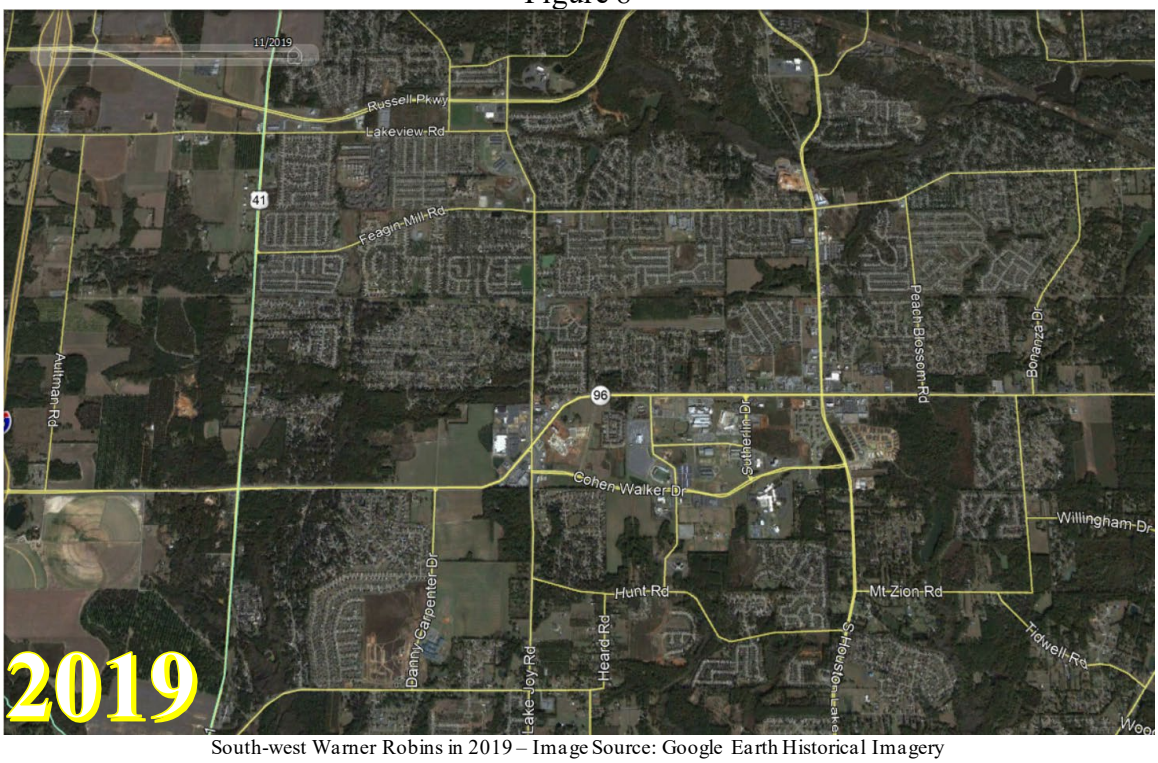


South-west Warner Robins in 2005 – Image Source: Google Earth Historical Imagery

In a single year, the number of subdivisions exploded. There are a couple of possible explanations. First, according to the Houston County Development Authority the 2 biggest employers in the region are the Warner Robins Air Force Base, as I have mentioned previously, and the Houston County Board of Education. The county has always had reputation for high quality education, and families naturally relocate to such school zones, in this case often from neighboring Bibb County to the north. This period from the late '90's to 2010 also coincides with Generation X as they entered their prime working and early parenting years. Finally, the base also hosts the Warner Robins Air Logistics Complex, which played its part as a sustainment and maintenance depot during Operation Desert Storm and Desert Shield in the early '90's, and in 2001 the Georgia Air National Guard entered an arrangement with the active Air Force in the Joint STARS mission, referring to the Northrop Grumman E-8 Joint Surveillance Target Attack Radar System (J-STARS) aircraft of the 116th Air Control Wing.

Moving to more recent years (Figure 8), we can see more and more subdivisions have since filled in much of the remaining space.

Figure 8



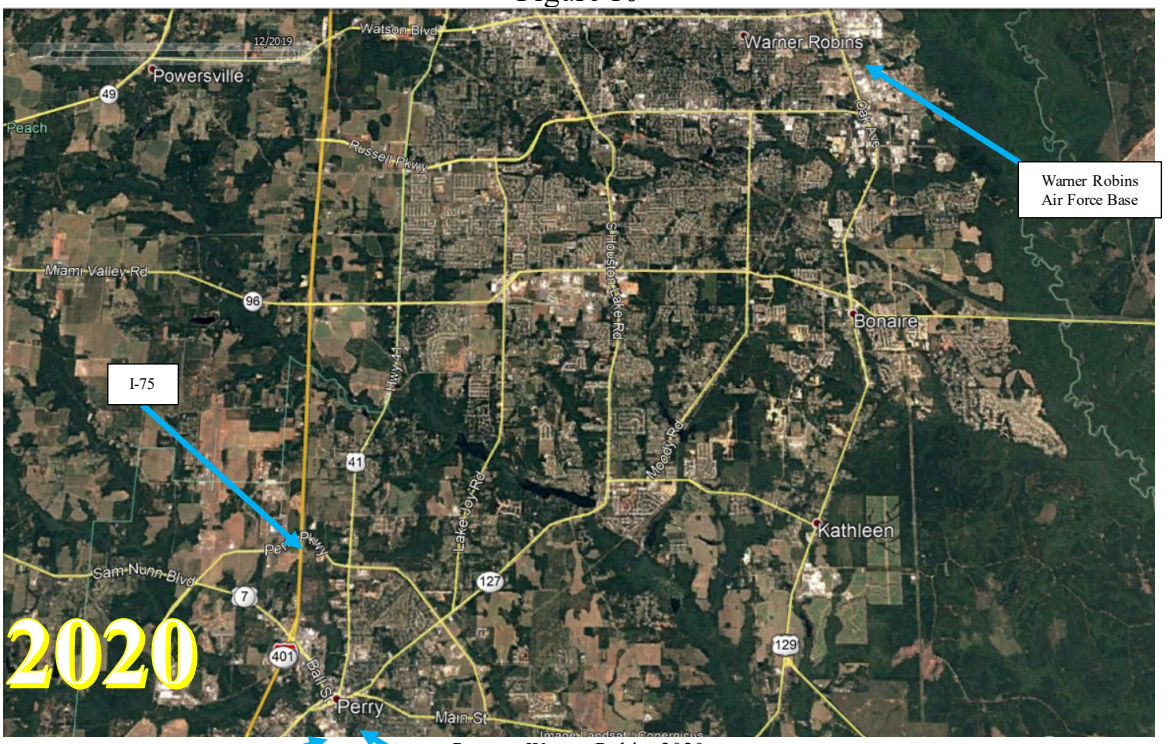
South-west Warner Robins in 2019 – Image Source: Google Earth Historical Imagery

However, this is only a small snapshot of the area. Let us look at a larger geographical picture. The following are images of the greater Perry-Warner Robins corridor starting in 2000.

Figure 9

Perry to Warner Robins 2000

Figure 10



Perry to Warner Robins 2020

There are some caveats to be considered with these photos. First, the difference in seasons and photo resolution may make it difficult to discern wooded areas from green farmland. Second, there are indeed areas where tree growth as occurred, either by human or natural means. However, the acreage recovered is insignificant compared to the amount lost over time to either new fields for farmland or to new subdivision development. Third, the image quality may camouflage subdivisions within the divided land. All of these may make the visual differences appear more drastic from year to year, however, these subdivisions are still fragmenting the land regardless of when they were built.

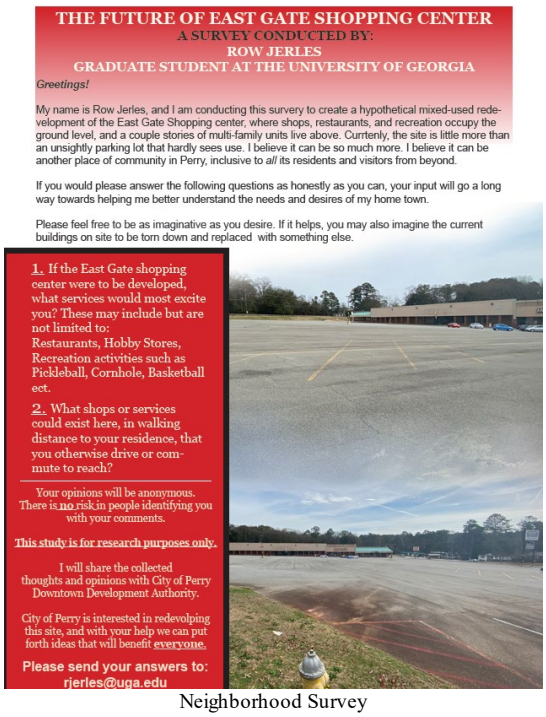
METHODS

The first stages of this research were spent seeking out and interviewing members of the Middle Georgia Regional Commission such as Greg Boike, Director of Public Administration and Susan Langfried, formerly the Senior Government Services Specialist and downtown Perry planning consultant with the Perry Downtown Development Authority. I asked them questions regarding their visions for the future of Perry, their current observations of local trends, and where they see the most important issues. At the end of this process, I was given access to the DDA's Downtown Development Assessment documents that will be referenced later in this research. It included valuable information pertaining to Perry's current land-use, its available parking (and how much of it even gets used), demographics, and surveys related to the aesthetics of future

developments within Perry, amongst other imminently relevant data quite helpful to this research.

I needed to engage and include the neighborhood immediately north of the project site which is low-income and separated from a higher income bracket by the project site. I created a survey (Figure 11) to discover their interests and wishes. Unfortunately, I received only one response expressing desire for restaurants, a grocery store, a pharmacy, and hobby shops such as Michaels.

Figure 11



Neighborhood Survey

It was at this point I began my first sketching and iterations of forms that future development might take while simultaneously delving into more traditional research investigating academic articles and other literature, resulting in the cited works throughout this research. The nature of the investigation led to many moments of falling down the rabbit hole. The environmental and societal issues that drive this investigation

exist on a global scale, and it becomes easy to lose oneself in the interconnected nature of everything.

In the following chapters, I will explore some key facets regarding the impacts of sprawl, and the ecological, economic, and equitable benefits of denser development practices. I will start with specific ecological impacts of sprawl and how this phenomenon represents not only an environmental challenge by culling available habitat for wildlife but also, by extension, a public health crisis created when certain species lose their habitat and cope by moving more and more into human space.

CHAPTER 3

Environmental Problems - Fragmentation as Public Health Issue

In this chapter I will describe just some of the public health consequences of fragmentation through the lens of the following:

1. Wildlife corridors
2. Deer-vehicle collisions
3. Disease
4. Pollution

While these are not all the problems brought about by fragmentation, they are 4 factors that are interconnected such that we may imagine all the myriad natural connections our actions, namely suburban sprawl, affect. I will show how continued decimation of the available corridors through which wildlife may traverse lands without human contact forces more and more interaction with humans that may otherwise may not occur. This decimation over long distances forces a reliance on personal vehicle transportation, which contributes to toxifying stormwater runoff and poisoning the air we all breathe. As a result, there is greater chance for injury and suffering to human and animal populations if we continue to spread out instead of densifying. If we are able to identify all these things which degrade every living being's quality of life, shouldn't we also be able to intervene, and change the status quo?

As new subdivisions are developed outside of a city's core, the amount of land sacrificed increases to include not only the new neighborhood, but also the routes and services such as gas stations and more convenient grocery options that inevitably sprout up along those routes to the city center. For example, as neighborhoods developed to Perry's east along Hwy 341 and north along Houston Lake Road, Perry Parkway, a city bypass route, was eventually built. Since its construction, the following have developed along this road: Perry Middle School, a new county courthouse (Perry is the Houston County seat), new neighborhoods, and a shopping center that includes a Publix, hair salon, a Subway, Mexican and Asian cuisine, a McDonalds, Starbucks, and most recently a Wendy's and large car wash facility. All of this comes at the cost of land, both agricultural and wild, which results in the loss of animal habitat, forcing the wildlife into smaller and smaller spaces away from humans. We know this phenomenon as fragmentation.

Wildlife Corridors

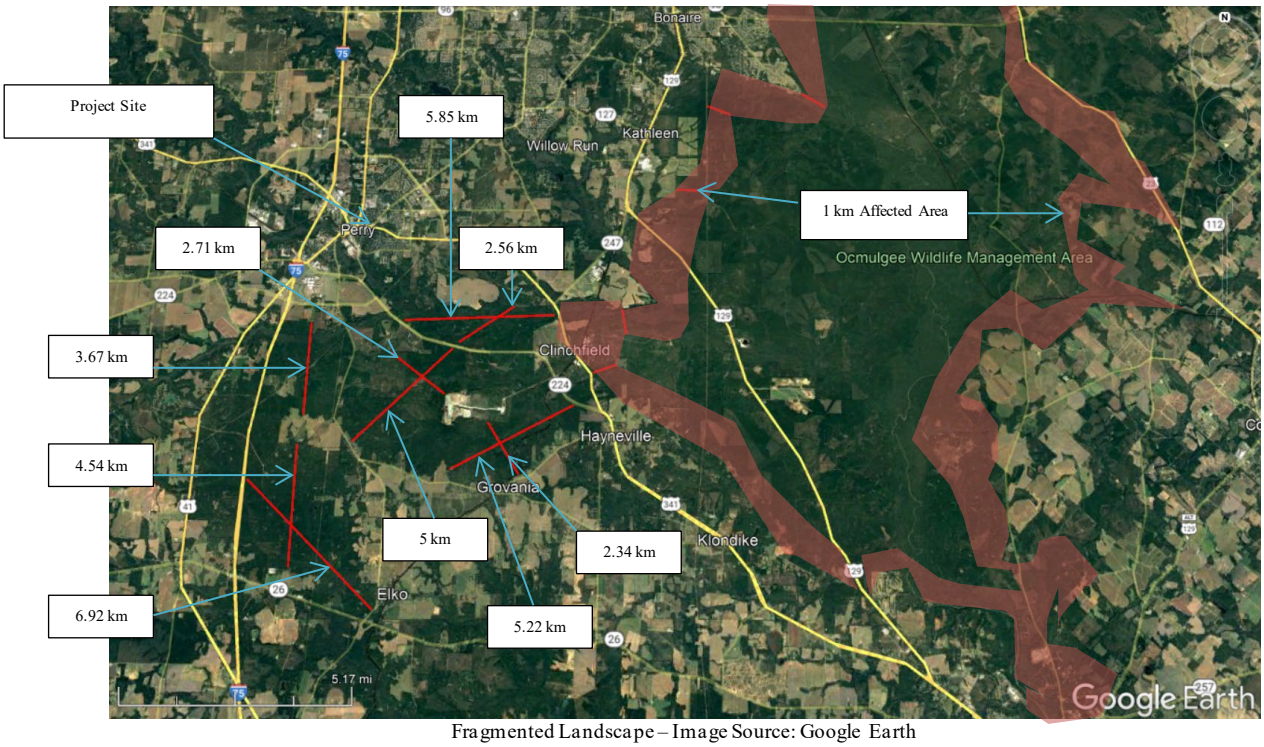
A striking, visible casualty of suburban sprawl are the wildlife corridors of undeveloped land through which species of plant and animal alike move from patch to patch. Our development projects transform these patches into smaller and smaller refuges with equally fewer connections between them. This continual fragmentation of habitat exacerbates the already perilous existence of species and contributes to this age of manmade environmental influence-- this Anthropocene's horrifying extinction rate.

In *Habitat Fragmentation and Its Lasting Impact on Earth's Ecosystems*, Nick Haddad *et al* analyzed global forest cover and found that within 1 kilometer of a forest's

edge, 70% of that forested area suffers from the consequences of fragmentation. (Haddad et al. 2015, 1).

If we examine the corridors around Perry, we paint a grim picture (Figure 12). The only forested areas large enough to mention are located south of town. To the east lies the Ocmulgee Wildlife Management area, but when we subtract 1 kilometer from the perimeter of these forested areas (to account for the affected edge zone mentioned by Haddad et al.) we find that the already tiny area for wildlife becomes even more constrained. This does not even account for small, developed patches within these forested areas, and small logging or other-purpose roads that further fragment the interior.

Figure 12



Fragmented Landscape – Image Source: Google Earth

"Fragmentation has the capacity to generate persistent, deleterious, and often unpredicted outcomes, including surprising surges in abundance of some species and the

pattern that long temporal scales are required to discern many strong system responses. Considering these conclusions and ongoing debates, we suggest that fragmentation's consistency, pervasiveness, and long-term degrading effect on biodiversity and ecosystem function have not been fully appreciated" (Haddad *et. al.* 2015, 7)

Deer-Vehicle Collisions

A major side effect of our drastically reduced wildlife corridors is that human interaction with the wild animals, who have increasingly little where else to go, is creating harmful and even deadly repercussions amongst both the civilized and natural communities. According to Georgia DNR, there are about 1.27 million deer in Georgia. This figure, as they note, may be incomplete because, "it does not account for an accurate number of deer in urban areas. Deer living in suburbs and areas not zoned for hunting are hard to monitor because most of the data about the deer population is from hunters in more rural areas. Urban neighborhoods also provide safety and food which attract more deer and desensitize them to human activity. This can be dangerous for both the humans and the deer." (Georgia wildlife, 2017)

Whitetail deer (*Odocoileus virginianus)* is a medium-sized creature whose males can grow to 150kg (300 lbs) and whose females can grow to 90kg (198 lbs). Consider these facts according to the University of Georgia:

1. There are more whitetail deer in America now than there were at the time of Columbus' arrival.

2. Whitetail deer on the Savannah River Site, an area of land dedicated to study and research, can almost double their number every year, and with this high reproductive rate and lack of predators, they can rapidly become a problem because of their effects on the vegetation of an area and their propensity to cause car accidents.

Ask anyone unlucky enough to have hit a deer, or have a deer hit them, and they will tell you the violent impact can cause serious harm to the vehicle passengers. Indeed, it is not uncommon for deer to run out into the road at an interval so small it leaves the driver with little choice but to hit the animal. However, in an instinct to avoid collision the driver may swerve, potentially causing greater harm to themselves and passengers by running off the road and hitting a light pole, a tree, or rolling the vehicle entirely.

Can we predict where one is more likely to have a deer-vehicle collision (DVC)? Rob Found and Mark S. Boyce, working with the Department of Biological Sciences at the University of Alberta set out to examine why DVCs were increasing (Figure 13). In their article, *Predicting Deer-Vehicle Collisions in an Urban Area,* they determined that, "Models based on roadside characteristics revealed that DVCs occurred frequently where roadside vegetation was both denser and more diverse, and that DVCs were more likely to occur when the groomed width of roadside right-c of-ways was smaller. No DVCs occurred where the width of the vegetation-free or manicured roadside buffer was greater than 40 meters. Landscape-based models showed that DVCs were more likely in more heterogeneous landscapes where road densities were lower and speed limits were higher, and where non-forested vegetation such as farmland was in closer proximity to larger tracts of forest" (Found, Boyce 2011, 1).

Figure 13

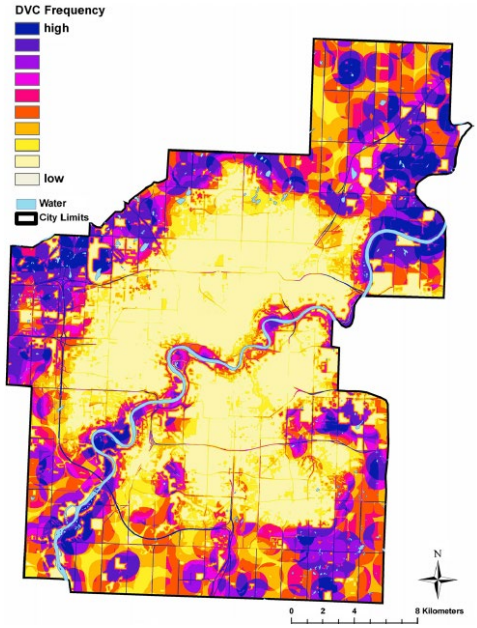


Fig. 2. Map predicting where deer–vehicle collision frequencies are expected to be highest, within Edmonton, Alberta. Landscape variables from digital 2003 and 2007 data were extracted from 800 m buffers around 260 known deer–vehicle collision locations weighted by the number of deer–vehicle collisions recorded there from 2002 to 2007, based on model estimated using zero-truncated negative binomial regression. Higher frequencies of deer–vehicle collision expected to occur where posted speed limits are higher, the distance to the nearest non-forested vegetation is less, the density of roads within the buffer is less, and the number of different landcover classes represented in each buffer is greater (a measure of landscape heterogeneity).

Map Predicting DVC Frequency -- Image Source: *Predicting Deer-Vehicle Collisions in an Urban Area* (Found, Boyce 2011)

When applying this data to Perry, we would be wise to remember what Susan Langfried said about the town's sprawling nature. Because there is no disincentive to sprawl, especially north towards Warner Robins, Perry, and cities like it, accrue dispersed, newly constructed subdivisions to which they must also construct the utility services and the roadways needed to link everything together. This, of course, requires the clearing of land, further fragmenting the wildlife corridors into smaller and smaller patches and thereby creating more of the forest edge habitat deer enjoy for access to both open land and shelter.

To help illustrate the increased risk of DVCs, we can turn to a study conducted in Alaska, the completely opposite end of the United States. *Urban encroachment on the wilderness: moose-vehicle collisions in Anchorage, Alaska, 1991-1995* by L. C. Garrett

and G. A. Conway. In this study they reviewed moose-vehicle accidents on rural, two-lane highways – a common enough feature in Georgia – because moose have successfully adapted to urban sprawl in Alaska. To quote their conclusions: "The moose-vehicle collision rate increased significantly from 38 to 49.2/100,000/yr during the study period ($p = .005$, $x2 = 7.795$). Of 519 reported moose-auto collisions, 120 (23%) resulted in injury to 158 people, with no human fatalities. Most collisions (291 or 56%) occurred between 1800 and 0200 hours; 411 (79%) occurred after dark; 154 (30%) occurred during December and January; and slick road conditions were identified in 280 (54%) incidents. Incidents occurred primarily near greenbelt areas," (Garrett, Conway 1995, Paragraph 2, Results).

Why moose? Why Alaska? How is this relevant to Perry, GA? First, they may be larger and impart more damage on the vehicle and passengers, but moose are still cervids just as notorious for vehicular accidents as our local whitetails, as the research implies. Secondly, Alaska is known as America's last frontier for a reason. Our general impression of the place is one of vast expanses of wilderness pocketed by human existence. The point of comparison is that even in a place of such reputation as this the threat was deemed important enough to necessitate such research investigating the relationship between urban sprawl and DVAs (or DMAs in this case). The research does conclude that over a 5-year period the number of accidents did increase. If this is the trend even in Alaska, how much more dire or acute is it in the far more developed Southeastern U.S.? Finally, I would like to call attention to the years this research was conducted and studied, and then question how much worse the situation has become in the nearly 30 years since.

Disease

In addition to the danger that vehicular collisions with deer impose, human expansion brings us into conflict with another creature; one far smaller, and already notoriously associated with deer: the lowly tick. Two species of tick in particular, the lone-star tick *(Amblyomma americanum)* and the black-legged tick (*Ixodes scapularis)* have long been pariahs in the eastern United States known for imparting such unpleasant maladies such as Lyme disease and Alpha-gal syndrome (AGS).

If one will allow a personal anecdote, my brother suffers from Alpha-gal at the time of this writing. According to the CDC, "Alpha-gal (galactose-α-1,3-galactose) is a sugar molecule found in most mammals. It is not found in fish, birds, reptiles, or people. Alpha-gal syndrome (AGS) (also called alpha-gal allergy, red meat allergy, or tick bite meat allergy) is a serious, potentially life-threatening allergic reaction. AGS may occur after people eat red meat or are exposed to other products containing alpha-gal."

- AGS reactions can include:
    - Rash
    - Hives
    - Nausea or vomiting
    - Difficulty breathing
    - Drop in blood pressure
    - Dizziness or faintness
    - Severe stomach pain

Symptoms commonly appear 3-6 hours after eating meat or exposure to products containing alpha-gal (for example, gelatin-coated medications). AGS reactions can be

different from person-to-person, but all are generally unpleasant. This is to say nothing of the psychologic toll one may endure when, as in my brother's case, one's favorite foods suddenly become hostile to comfortable living.

Lyme disease is more infamous. The CDC lists its myriad ailments as: "fever, headache, fatigue, and a characteristic skin rash called *erythema migrans*. If left untreated, infection can spread to joints, the heart, and the nervous system."

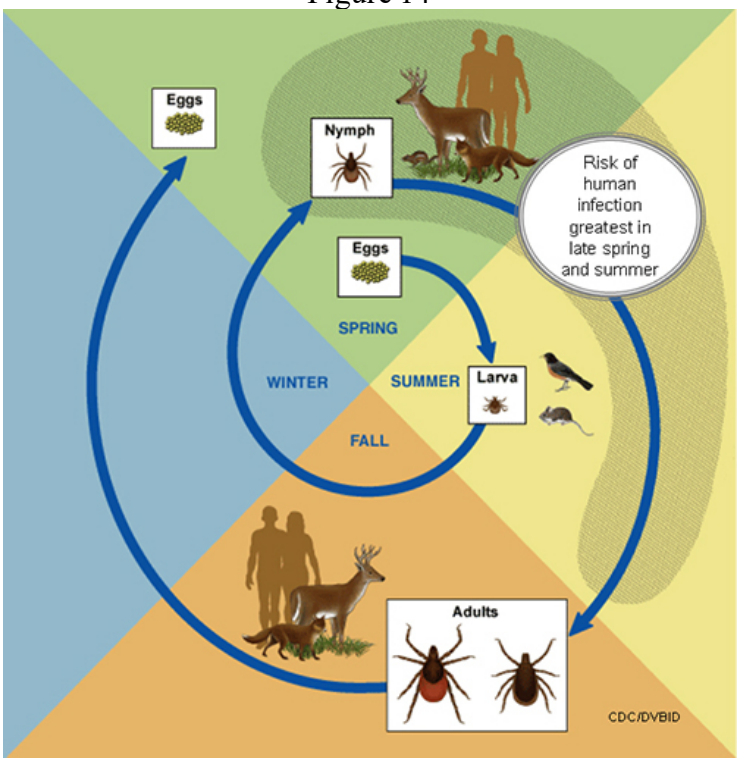
Other Complications include:

- Severe headaches and neck stiffness
- Additional EM rashes on other areas of the body
- Facial palsy (loss of muscle tone or droop on one or both sides of the face)
- Arthritis with severe joint pain and swelling, particularly the knees and other large joints.
- Intermittent pain in tendons, muscles, joints, and bones
- Heart palpitations or an irregular heartbeat (Lyme carditis)
- Episodes of dizziness or shortness of breath
- Inflammation of the brain and spinal cord
- Nerve pain
- Shooting pains, numbness, or tingling in the hands or feet

Both illnesses are carried by the black-legged tick *(Ixodes scapularis)* which favor deer and other mammals such as mice as hosts. In fact, according to Brian Allen, Felicia Keesing, and Richard Ostfeld's *Effect of Forest Fragmentation on Lyme Disease Risk,* the white-footed mouse (*Peromyscus leucopus*) is a "principal natural reservoir of the Lyme bacterium, *Borrelia burgdorferi"* (Allen, Keesing, and Ostfeld 2003, 268). This

mouse is common and found all over the North American continent and plays into the life cycle of *Ixodes scapularis* (Figure 14).

Figure 14



Life Cycle of *Ixodes Scapularis* -- Image source: Centers for Disease Control and Prevention

Furthermore, the article suggests that increased fragmentation and the reduction of forest patches greatly increases the density of infected tick nymphs. From their abstract: "We hypothesized that small forest patches (<2ha) have a higher density of infected nymphal black-legged ticks, which is the primary risk factor for Lyme disease, than larger patches (2-8 ha). In the summer of 2000, we sampled tick density and *b. burgdorferi* infection prevalence in 14 maple-dominated forest patches, ranging in size from 0.7 to 7.6 ha, in Dutchess County of southeaster New York state. We found a significant linear decline in nymphal infection prevalence with increasing patch area and significant exponential decline in nymphal density with increasing patch area. The

consequence was a dramatic increase in the density of infected nymphs, and therefore in Lyme disease risk, with decreasing forest patch size. We did not observe a similar relationship between the density of larval ticks and patch size. These results suggest that by influencing the community composition of vertebrate hosts for disease-bearing vectors, habitat fragmentation can influence human health." (Allen, Keesing, Ostfeld, 2003, 267). This seems to imply that as suburban sprawl continues to decrease the size of forest corridors and patches, then the percentage of disease-carrying parasites increases.

Simultaneously, there exists no clear evidence to suggest that aggressive culling may have a positive effect on the prevention of disease. "Robust evidence linking deer control to reduced human Lyme disease risk is lacking. Currently, there is insufficient evidence to recommend deer population reduction as a Lyme disease prevention measure, except in specific ecologic circumstances… Broad population reduction could, at least temporarily, increase human risk of disease by increasing the number of questing adults seeking alternate hosts and by increasing infection prevalence among nymphs (Deblinger et al., 1993; Mount et al., 1997; Ginsberg and Zhioua, 1999; Rand et al., 2004). Incomplete understanding of these effects limits the ability to generalize findings from published studies that seek to link specific deer densities, tick abundance and Lyme disease risk" (Kugeler, Jordan et. al. 2015, 337 & 342).

Finally, there remains a massive elephant in the room: COVID-19. During the especially earliest days of the global pandemic, there were stories everywhere about how people were leaving the cities in droves. It was assumed that dense populations contributed to the exponential spread of the virus, and that the best course of action was to pack up and move to the country, or at least to the suburbs. Forbes magazine examines

the phenomenon in Peter Lane Taylor's *COVID-19 Has Changed the Housing Market Forever. Here's Where Americans Are Moving (And Why)*.

"Dozens of cities and counties that were once considered too small, too southern, too hot, too flat, or lacking in amenities, culture, or sophistication are now finding themselves being swooned to the top of the real estate desirability lists as Americans seek warmer, healthier, less dense, better educated, and more mobile places to live that offer closer access to the outdoors, better hospitals, smaller schools, and more open space with no clear end to the pandemic in sight" (Taylor 2020, paragraph 5).

I want to put emphasis on "less dense." There was intense desire to escape the necessity of being in close proximity to one's neighbors, and the increasing prevalence of working from home gave many Americans the final push to leave their big city and pursue a lifestyle they perceived as healthier and less risky.

It is vital that this perception be countered. We must remember, our cities have evolved with us since the dawn of civilization, and as Cécile Maisonneuve puts it, "Cities have been built *against* pandemics." She is the President of La Fabrique de la Cité, a thinktank "dedicated to urban innovations and prospective." I listened to her guest appearance on *The Urbanist* podcast where she emphasized some of the key points from her article *Long Live Urban Density* published in October of 2020.

To summarize: the problems here are not in density of dwellings, but instead the density of social activity and the density of "social contacts," and the number of people willing to comply with best practices to mitigate the spread of infection. She asks, "But doesn't concentrating so many inhabitants and functions amount to creating the ideal conditions for the spread of coronavirus? No, because it is not urban density that

facilitates its spread but rather the density of social contacts, which is not correlated with population density. This explains the emergence of clusters [of COVID-19] in Mulhouse (5,000 inhabitants/km2) or in sparsely populated Italian villages. And if the French *département* of *Seine-Saint-Denis* has paid a heavy price for the pandemic, it is not because of its density, which is three times lower than that in Paris *intra-muros*, but because of overcrowded housing" (Maisonneuve 2020, paragraph 3).

We must simply remember that living densely did not on its own contribute to the rampage of the virus, but instead it is how we conducted ourselves. We will close this sore subject with a quote from Cécile Maisonneuve's *Urbanist* interview: "It is more important to redesign the interiors of buildings and courtyards than to abandon density."

Pollution

Besides the complicated interactions between people and wildlife / people and people, there are more invisible and insidious consequences of sprawl. With new developments come new ground surfaces. Some are only partly impervious/permeable like urban green spaces and the occasional porous pavement, but most of the new built environment will comprise of the rooftops of new buildings and the asphalt and concrete routes to get to those buildings. All these surfaces collect impediments which will eventually find their ways into our bodies.

Storm Water Runoff Concentration Matrix for Urban Areas by P. Göbel, C. Dierkes, and W.G. Coldewey analyzed hundreds of references to create a matrix for future modelling of stormwater treatment facilities. Among the pollutants contained within their findings are:

- toxins such as vehicle deicer
- heavy metals such as lead (Pb), copper (Cu), zinc (Zn), and cadmium (Cd), nickel (Ni) and chromium (Cr) often originating as dust particles emitted by various metal industries and combustion plants
- Organic macro-pollutants such as animal feces, leaf and flower litter, and pollen
- Organic Micro-pollutants like the carbon particles created through the combustion of fossil fuels
- Polycyclic aromatic hydrocarbons – "a class of chemicals that occur naturally in coal, crude oil, and gasoline. They also are produced when coal, oil, gas, wood, garbage, and tobacco are burned. PAHs generated from these sources can bind to or form small particles in the air" (Centers for Disease Control and Prevention).
- Mineral oil hydrocarbons – "a diverse group of mixtures of hydrocarbons containing thousands of chemical compounds of different structures and size, derived mainly from crude oil but also produced synthetically from coal, natural gas and biomass." (European Food Safety Authority)
- Salts

There are a couple of methods by which these pollutants get into our systems. First, "Dry atmospheric deposition is the direct transfer of dust, aerosol, and gas from the atmosphere to the ground and plant surfaces (Georgij et al., 1983). Particles with a higher density fall to the ground; particles with a lower density stay in suspension or rise to higher atmospheric strata" (Göbel et al. 2006, 27). This is what happens when we speak of carbon dioxide (CO_2), methane (CH_4), and other greenhouse gasses reaching the upper portions of the atmosphere to continue the trend of global warming.

New roofing and other surfaces can, for a time, act as sinks for these collected pollutants. However, that storage only lasts until the next storm event. In what is known as "first flush," Rainwater acts as a second method by which these impediments can get to us and other living creatures.

"Rainwater yields major ions like sulphates (SO4), chloride (Cl), ammonium (NH4), nitrates (NO3) and phosphates (PO4) in measurable concentrations. The concentration of nitrogen (N) and phosphorus (P) compounds is ecologically negligible compared to organic substances. Sulphur oxides (SOx), nitrogen oxides (NOx) and Cl from combustion installations generate acids affecting the pH value of storm water. In the last ten years the average pH value of rainwater in Germany increased from 4.4 to 5.1. During a storm water event the mobilization of substances is not constant and exhibits sometimes a first-flush behaviour. The pH value increases during the first 2 mm of the storm water event and afterwards decreases asymptotically. The electrical conductivity (EC), representing the total amount of dissolved ions, shows the same behaviour. Also, the EC correlates with the storm water intensity. Because of the low pH value, heavy metals such as Pb, Zn, Cu, Cd, nickel (Ni) and chromium (Cr) in the storm water partly occur as dissolved substances." (Göbel, Dierkes, Coldewey 2006, 27).

As mentioned in the list above, inorganic particles are not the only disruptive pollutants. Stefan Kalev and Gurpal S. Toor examine the consequences of organic carbon (OC) in their article, *Concentrations and Loads of Dissolved and Particulate Organic Carbon in Urban Stormwater Runoff.* "Urban development can contribute to a significant influx of organic carbon (OC) due to the contribution from additional sources such as lawn grass clippings, leaves, eroded sediments, atmospheric deposition, and wastewater

flows from sewage and septic systems. An increase in OC concentrations in water bodies can intensify the binding and co-transport of pollutants, reduce light penetration, lessen vertical heat distribution, and diminish oxygen mixing and production." (Kalev, Toor, 2020, 2).

So, because carbon is one of the elements most readily available to bind to other elements, organic carbon in the runoff helps to pick up and transport the pollutants we mentioned earlier and carry them into the water supply. It is interesting, and critical, that they mention grass clippings because here in Georgia (as well as in their study area of Florida and indeed much of the English-speaking world) turf lawns remain popular. This is unfortunate because lawns are already a poor design choice when considering ecology. Grass lawns provide little to no habitat and often require the application of chemicals to maintain their uniformly green presentation. These chemicals equally susceptible to stormwater sheet flow and runoff, and they contribute to heavy loads of nutrients entering the water bodies. This can result in algae blooms which, along with eroded sediment particulates, help disrupt light penetration, which can negatively affect the growth of other plant life within the water body, which can negatively affect the concentration of oxygen.

Related to the disruption of plant-life and oxygen production is another impediment caused by both new development projects and agriculture alike. Silt or sediment is created from the disruption of soil, which starts from several factors. "Factors responsible for excessive sediment loading to agricultural streams are upland soil erosion and subsequent delivery to streams, gullying and channel incision in headwaters, trampling of stream banks by livestock, bank erosion due to hydraulic forces during flood

events, and land use changes" (Lamba, et. al. 2015, 45) such as the development of the built environment.

Not only can this loose soil act as another medium in which to carry other pollutants like phosphorus (P), but also it can cause its own kind of destruction of watery ecosystems. As runoff carries silt into bodies of surface waters like streams, ponds, and lakes, it eventually will fall out of suspension within the water and settle. This degrades habitat for both aquatic plants and animals. Aquatic plants can be buried and killed in addition to the restricted sunlight caused by the sediment still held in suspension which can prevent new growth, thus reducing oxygen supply to the water. Animals lose habitats such as pools and the nooks and crannies created by submerged structures such as rocks, plants, and fallen trees as extreme sedimentation fills it all up and smothers them (Lamba, et. al., 2015). "Excessive sedimentation and nutrient losses combined account for almost 20% of all causes of impairment for U.S. 303(d) listed waters, i.e., list of impaired waters in the U.S. that do not meet water quality standards based on Section 303(d) of the Clean Water Act" (Lamba, et. al., 2015, 44).

However, *what* the water carries is not the only issue of runoff. Georgia is well known for its hot summers, and this translates into thermal pollution. This kind of pollution can be quite harmful to the biological diversity and ecology of our streams. To illustrate, I use *Temperature Dynamics of Stormwater Runoff in Australia and the USA* by J.M. Hathaway et al. "Productivity of coldwater ecosystems is dependent upon the thermal regime of surface waters (Beschta et. al., 1987). For instance, Wang and Kanehl (2003) correlated higher stream temperatures to low macroinvertebrate biodiversity, and stream temperature spikes can directly impact the development of coldwater fish at all

life stages by influencing egg development, metabolism, resistance to disease and parasites, migration, spawning habits, and survival." (Beschta et. al.,1987; Hokanson et. al., 1977; Armour, 1991; Caissie, 2006)," (Hathaway et al., 2016, 142).

Modern agricultural practices have long been a major source for pollution of all kinds. To an average citizen, agriculture's veneer of lush crops and peaceful, rural character may belie its destructive actions on the environment, whereas the urban environment presents a more obvious target for scorn due to the high visibility of clearly "dirty" activities and processes; automobiles in their thousands and the old smokestacks of industry just to name a couple.

The cycle is thus: pollutants are deposited onto surfaces indirectly, by falling out of suspension in the air, or directly by automobiles or human application such as agricultural practices. Then, potentially hot storm water runoff flushes these accumulated chemicals, metals, and other substances like silt into seepage and ground water. "The surface water bodies receive the storm water runoff directly through the local urban drainage system. The seepage water is influenced by the centralized and de-centralized infiltration of storm water in the subsurface. The ground water is influenced by the seepage water, which is affected by the pollution retention capacity of the subsurface soil. Furthermore, the quality of ground and surface water is related to interaction processes" (Göbel, Dierkes, Coldewey 2006, 37).

It is a messy chain of negative consequences of particular interest to this research because there is a stream called Big Indian Creek to the south of our design site in Perry, and it is quite vulnerable to all these explored impediments.

Finally, there is the air pollution generated by industry and automobiles. "In 2018, 41.9 million Americans, or 13.0 percent, had ever been diagnosed with asthma by a health professional. This was an increase of 43 percent from 9.1 percent in 1999," (American Lung Association 2012). However, unlike in previous generations, vehicle emissions cause most of the air pollution versus industry (Lutz 2010), and asthma is but one cause within a myriad of other causes of the 200,000 annual "premature deaths" combustion emissions cause (Caiazzo, et. al., 2013, 198).

As Perry and Warner Robins continue to expand into one another like raindrops on glass, those higher populations will constantly be commuting to work, which means more cars on the road, which means more emissions, which means more respiratory health disorders, which means more premature death. Electric vehicles may one day become so prevalent that vehicle emissions are drastically reduced from present day levels, but we may still have years to go yet until that is attained.

Unfortunately, it is beyond the scope of this research to examine all sources of pollution. For instance, I have not even made mention of fecal coliform impediments generated by livestock and dog owners who fail to pick up after their faithful companions.

What I have endeavored to illustrate in this chapter is how sprawl only creates more opportunities to make our already daunting environmental management challenges even more difficult mitigate, let alone remedy. Therefore, the city of Perry (and every emergent city) must prioritize a paradigm shift in its design thinking for the sake of its future environmental quality, of the land beyond the city limits, and of the healthy lives of the people who dwell everywhere in between.

CHAPTER 4

The Economics of Downtown Perry and Equitable Design

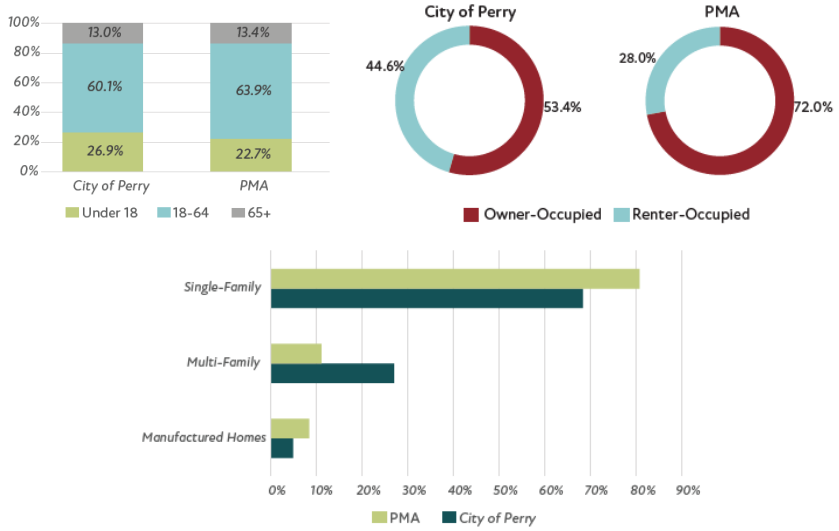
While public health risks and benefits can be compelling enough reasons to densify on their own, the innumerable, intricate series of links in the environmental chain can become overwhelming to many. "*This* affects *that*; but if we address *this* to solve *that*, then what happens to *the other thing*?" Repeat *ad infinitum*.

The sheer scale of interconnectedness of Nature's dynamic systems and the effect of human intervention, both exploitive and regenerative, can overwhelm absolutely anyone. It is understandable how anyone might throw their arms up in frustration, incomprehension, or dismay and instead opt to focus more on modern living's demands on themselves and their loved ones. Therefore, it is critical that designers and advocates of every stripe and profession who are dedicated to a future of sustainable civilization focus our energies not only on the environmental benefits of the paradigm shift from sprawl to density, but also the economic and socially equitable incentives of such pragmatic, long-term thinking and how they may apply to an average citizen's daily life.

Herein we shall discuss Perry's current economic and social qualities, and how density can create improvements to both. First, I will describe the demographics of Perry (Figure 14) and the vulnerabilities that threaten its long-term prosperity.

For Perry, here are some details (Figure 15) regarding the types of housing, who owns vs. who rents, and the age demographics.

Figure 15



Demographics by Age and Homeownership -- Image Source: Perry Strategic Plan (MGRC, 2020)

I would like to call specific attention to the high percentage of renters within the city limits. As of 2020, nearly half of all residents within City of Perry pay rent. Keep this in mind when we consider the following data:

1. Cost of living

While the cost of living in Perry, GA is 15.5% less than the national average, prices still rose 1.4% from last year according to Salary.com's Cost of Living Calculator, which analyzes an area's data relating to the cost of housing, energy, food, transportation, and healthcare (Salary.com).

2. Housing Affordability

The National Low Income Housing Coalition (NLIHC) publishes an annual report on housing affordability called "Out of Reach." In 2020, the report states that full-time, minimum wage workers cannot afford a one-bedroom rental unit in 95% of U.S. counties. Full-time, minimum wage workers cannot afford a *two*-bedroom rental unit anywhere.

The metric which is commonly used is that rent should not account for more than 30% of a tenant's income (NLIHC 2020).

In the report, "the average minimum wage worker must work nearly 97 hours per week (more than two full-time jobs) to afford a two-bedroom rental home or 79 hours per week (almost exactly two full-time jobs) to afford a one-bedroom rental home at the fair market rent. People who work 97 hours per week and need 8 hours per day of sleep have fewer than 2.5 hours per day left over for everything else—commuting, cooking, cleaning, self-care, caring for children and family, and serving their community. Doing so is an impossibility for a single parent who needs a larger-than-one-bedroom apartment. Even for a one-bedroom rental, it is unreasonable to expect individuals to work 79 hours per week to afford their housing. For people who can work, one full-time job should be enough," (NLIHC 2020, 2).

However, when seeking out to find the average size of apartments in the United States I discovered that over the last 10 years newly built apartments have gotten smaller by 5% while their rent has increased by 28%. Even without considering when an apartment is constructed, the average size across the country remains 882 sq. ft. The largest apartments are found in the Southeast (975 sq. ft.) and the smallest apartments are in California (837 sq. ft.) (Home Stratosphere, 2021). Therefore, larger than average living spaces kept at affordable prices (at *least* 10% of these *must* remain affordable in accordance with Set-Aside Requirements) will be quite attractive and the new apartments will quickly sell, providing the commercial interests with a ready neighborhood of patrons.

3. Dwindling Housing Supply

Simultaneously, large corporate firms such as Invitation Homes have spent the last decade buying up homes that may otherwise have been available to young and/or first-time home buyers, the working-class, and the middle class. Journalists from *Slate, The Atlantic,* and *Reuters* have been covering this pattern for years before the COVID pandemic, which has its own part to play that we will look at later.

"Between 2011 and 2017, some of the world's largest private-equity groups and hedge funds, as well as other large investors, spent a combined $36 billion on more than 200,000 homes in ailing markets across the country. In one Atlanta zip code, they [Invitation Homes] bought almost 90 percent of the 7,500 homes sold between January 2011 and June 2012; today, institutional investors own at least one in five single-family rentals in some parts of the metro area, according to Dan Immergluck, a professor at the Urban Studies Institute at Georgia State University. Some of the nation's hardest-hit housing markets were finally stabilized," (Semuels 2019, paragraph 4).

Today, Invitation Homes owns more than 12,500 houses in Atlanta (Botella, 2021). At the time, it was argued that large corporations could be better landlords than independent, private landlords. Unfortunately, this may not be the case. "The business strategy of the country's biggest landlords, Invitation Homes and American Homes 4 Rent, does not seem to be, 'Make renting with us so delightful that if my tenants have to move cities, they'll specifically seek out another property owned by our company.' Based on reports from Reuters, the New York Times, and the Atlantic, it appears to be closer to 'Squeeze our tenants for every penny, avoid making repairs, let black mold and raw

sewage accumulate, and count on the fact that moving is a huge, expensive hassle,'" (Botella 2021, paragraph 6).

To quote Reuters, "Among those tenants is Contrell Wethersby in Atlanta, who told Reuters she had to go for more than a year without heat or a functioning refrigerator, stove, microwave or garage door – not to mention having to endure a leaky ceiling and black mold… Some renters, like Willie Jean Brister in Los Angeles, have seen their rent increase by as much as 50 percent over three years. During that time, Brister has filed work orders for an exterminator and repairs on a bathtub, faucets, bathroom door, cabinet doors, fence, hot water and garbage disposal – all of them reviewed by Reuters on the company's web portal. The grandmother with five children in the house said the portal keeps saying 'work completed,' but the work is never completed. You get worn out, like you are paying all this rent and not getting any services,'" (Conlin, 2018, paragraph 19).

4. COVID-19, Material Scarcity and Demand

On top of all of this, is the COVID-19 pandemic. The nature of an air-born pathogen necessitated social distancing stay-at-home orders. Of course, if one must stay at home, then one cannot be at work unless that job can be done remotely.

"Between February and April, as the pandemic ramped up, almost 25 million Americans lost their jobs, sending the unemployment rate up to a record 14.8%. ... Employment was down the most in personal care services at the end of 2020, with 2.8 million fewer people employed last December compared to the same month in 2019. That means that nearly half — 46% — of personal care workers employed in December 2019 were out of a job at the end of 2020. This category includes people like hairdressers, exercise trainers, and childcare workers, many of whom were unable to continue work amid social distancing

measures and lockdowns over the course of the year," (USAFacts, 2021, paragraph 1 & 4).

The staggering number of layoffs and unemployment necessitated provisions in federal actions such as the CARES Act of 2020 which put moratoriums on evictions. That is: people who could not afford rent due to unemployment caused by the pandemic could not be forced from their homes. The Supreme Court ended the eviction moratorium in August, 2021 in a 6-3 ruling along party lines that the CDC had no authority in this; only Congress has the power to enforce such a moratorium (Hurley, Wolfe, 2021).

An eviction is no simple matter. A past-due rent balance that leads to eviction magnifies the burden on the tenant to *thousands* of dollars in legal fees and the cost of filing the eviction in the first place. To make matters worse, someone with an eviction on record may have tremendous difficulty finding another home to rent. So much so that some apartment complexes cater to those under the cloud of their prior evictions. Such places are not characterized in a good light.

NPR's Lulu Garcia-Navarro interviewed activist Kayla Reed, who recounts her experience with eviction in 2014 after falling behind on rent when her car suffered a major repair bill and was unable to commute to work. "It just was application followed by denial over and over again. I made the money. I met the other requirements to get an apartment, but this eviction just sort of became this dark cloud following me around. And I wasn't able to find a place of my own for several months. And ultimately, when I did find a place - a particular apartment complex in St. Louis took folks who had evictions. And it was terrible - rodents. We had mice. We had roaches. There was mold. And it was a place where a lot of folks who were dealing with the same issue were landing. And so

eventually, I was like, I can't stay here. And so I left. And then another eviction got filed. And this time, not only did, you know, a bill for one month late rent turned into a multi-thousand-dollar bill. The law firm that represented the management company put a lien on my bank account and garnished my wages," (NPR 202, paragraph 6).

Depending on the state, evictions can remain on one's permanent record for up to 7 years. Therefore, unless tenants have an understanding landlord, or are fortunate to work for a company that allows remote work, they may find themselves in a frightening position: choose to continue staying at home and risk eviction and all the trauma that comes with it or continue to go into work and risk contracting or spreading a deadly disease to others. But the COVID interference doesn't end at the precipice of employment status.

In the spring of 2020, home buying dropped to lows not seen since 2007. By April 2020, people delisted their homes at a rate 25% higher than in 2019 and the number of new home listings dropped by 40% (Gascon, Haas, 2020). Combining an already dwindling housing inventory with the decline in new listings caused housing over all to drop to new levels (Gascon, Haas, 2020). Additionally, housing price did not decline in step with the decline in demand due to the combination of low inventory and historically low interest rates (Gascon, Haas, 2020).

Table 4

Image Source: Federal Reserve Bank of St. Louis (Gascon, Haas, 2020)

These lows did not last very long. Demand eventually started a definite rebound in May that year. "Pending sales in U.S. metro areas, which were down more than 30% in April, were up almost 30% by August (2020) over last year's sales during the same period," (Gascon, Haas 2020, paragraph 11).

However, "housing supply did not recover at the same pace. New listings, despite improving from their April lows, were only slightly higher than one year ago through August. As a result, inventory continued to decline: In August 2020, there were less than two-thirds the number of homes on the market as there were in August 2019. While health-related concerns may continue to keep sellers from the market, surveys indicate that the overall economic uncertainty and the inability to purchase another home are also keeping homeowners in place," (Gascon, Haas 2020, paragraph 12).

One of the factors preventing people from purchasing a new home, which in turn prevented them *selling* their current home lies in the hands of the great logistical nightmare the pandemic instigated. Throughout 2020 and 2021 the ability to get goods from one place to another has been utterly hobbled. Dozens of cargo ships face days or even weeks at anchor just outside their port-of-call, such as the Port of L.A. or Long

Beach, when pre-pandemic wait times of merely a couple of days was considered anomalous. Dock workers are home sick for two weeks with COVID or COVID exposure, creating a labor shortage, and "transit times from Taiwan to L.A. typically takes about 2 weeks, so an additional 10 days of waiting represents a near doubling of shipping times (Wendover Productions, 2021).

Of course, investigating why there are so many shortages of, well, everything is way beyond the scope of this research. However, relevant to the housing crisis (and how Perry can or cannot increase its available stock of housing) is one good in particular: lumber.

Remember how demand for housing increased in late spring of 2020? As the pandemic showed no sign of being "over by Easter," like the Trump Administration claimed, people who were flirting with leaving urban life pre-pandemic or were lucky enough to work remotely began to leave metropolitan areas, believing, however erroneously, that less densely populated areas would be safer from the virus. "In most jobs that were fully remote during the pandemic, workers will be expected to regularly show up in person soon, if they haven't already. That means they can't leave the region where their job is based, but it also means they can move further away from the office. A longer commute for cheaper housing is more tolerable if it is only a few days a week," (Governing 2021, paragraph 10).

"Monica Schwerberg is a real estate agent who works with clients who want to live within two to 2 1/2 hours of New York City, mostly rural areas upstate. 'Things have definitely picked up and have gotten pretty wild,' she says. In a busy April, when home

shopping typically picks up, she and her colleagues would typically get about 75 inquiries. This April, it was more than 400," (Berliner 2020, paragraph 13).

If the available housing stock is already low, as we've discussed, then surely new home construction must satisfy the demand. The problem is this: "sawmills struggled to keep up with the increased demand, especially as their workers were forced to stay home during infection spikes or actually caught the coronavirus," (Hernandez 2021, paragraph 8).

Demand plus scarcity equals higher prices.

"The futures price of lumber in March 2020 was $303.40 per thousand board feet. That cost more than quintupled over the following 14 months, reaching a high of $1,607.50 this May," (Hernandez 2021, paragraph 10).

This has far-reaching consequences for homebuyers of every stripe.

"In a world where we're all tightening our belts, this is not good news. For every $1,000 increase in home prices, approximately 150,000 U.S. families get priced out. For a change in price of $16,148, we're looking at a staggering 2.4 million families who would have been able to afford a new single-family home now forced to stay where they are or pursue other options," (Kato 2020, paragraph 4).

Table 5

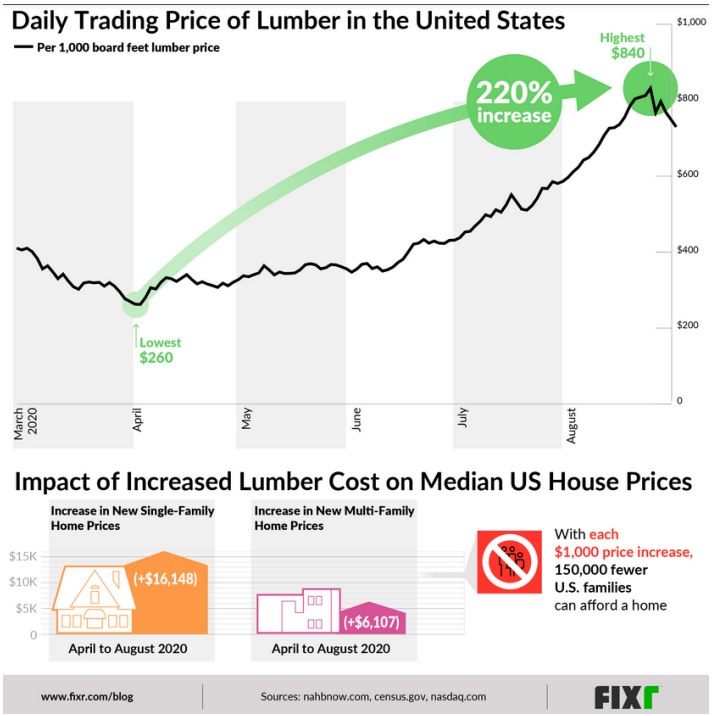


Image Source: fixr.com (Kato, 2020)

According to the National Association of Home Builders, these incredible leaps in price led to the average, new, single-family home to increase its cost of construction by $35,872 (NAHB, 2021).

There is good news, bad news, and worse news. The good news is that lumber prices seem to be falling. Now that vaccines are widely available and the country seems to be rounding a corner in the pandemic, a lot of people are returning to the office for work. Less time spent at home means less time renovating and remodeling if one could afford to do so in the first place. Additionally, at the time of writing we are entering autumn and winter, when construction typically calms down, which also drops the price of lumber. However, the bad news is that consumers should not expect lumber to fall to pre-pandemic levels (Hernandez, 2021).

Worst of all, however, is that the new demand for suburban living contributes to suburban sprawl, worsening the environmental conditions we have already discussed.

To summarize, rents across the entire United States were already rising before the pandemic. Already scarce housing stock in this country is exacerbated simultaneously by large corporations depleting the very inventory on which middle- and working-class families rely and exoduses from urban centers driven by fear and insecurity, which in turn exacerbates our perilous environmental condition. Finally, the crisis of high demand and shortages of all kinds of goods all over the world affect the ability to construct new housing to expand the supply to meet the demand. Lumber is far from the only construction-related good affected, and potential homebuyers can only watch in horror as the prospect of achieving homeownership *anywhere*, a critical step for any demographic in building generational wealth, seems ever the more impossible. As George Carlin once said, "It's called the American Dream because you have to be asleep to believe it."

Recall in Figure 14 that the largest age demographic in Perry is more than 60% 18-61 years old. That is a wide net, but the Downtown Strategic Plan gets more granular. The media age within the Perry City Limits is 32.1. "This is likely due in part to the large number of families with children living in the city, as more than a quarter of the city's population is under 18 years in age," (MGRC 2020, 26). Recall, now, that nearly *half* of residents inside the city limits are renters (44.6%). Now, this does not mean to imply that 100% of those people are interested in buying a home. Renting is a practical solution to one's housing needs. However, I would posit that this large percentage represents a possible vulnerability to the prosperity of Perry and those who live there currently.

Perry is likely to continue its growing trajectory. Perry issued 450 building permits for single family homes in 2020, far beyond the 190 awarded in 2014 (Hammond, 2021). Perry's Director of Community Development says that subdivisions are also on the rise. Last year they approved 1500 lots. (13WMAZ, 2021). It's central location in the state astride the I-75 interstate and its proximity to major centers like Macon or Warner Robins Air Force Base already makes Perry geographically an ideal position for the commuting worker. The city's self-investment only makes the area all the more attractive, which stresses the already low housing stock, and new developments – change - including the designs proposed herein will inevitably bring about some form of gentrification and displacement. The question remains: how Perry and emergent cities like it will cope and adapt in such ways that do the most amount of good for the most amount of people possible.

Increasing the housing supply can be one way to help, and Perry can begin by infilling the wasted or vacant spaces downtown to spark a new, denser trajectory so that all this growth does not overwhelm the natural landscape. In fact, they already have.

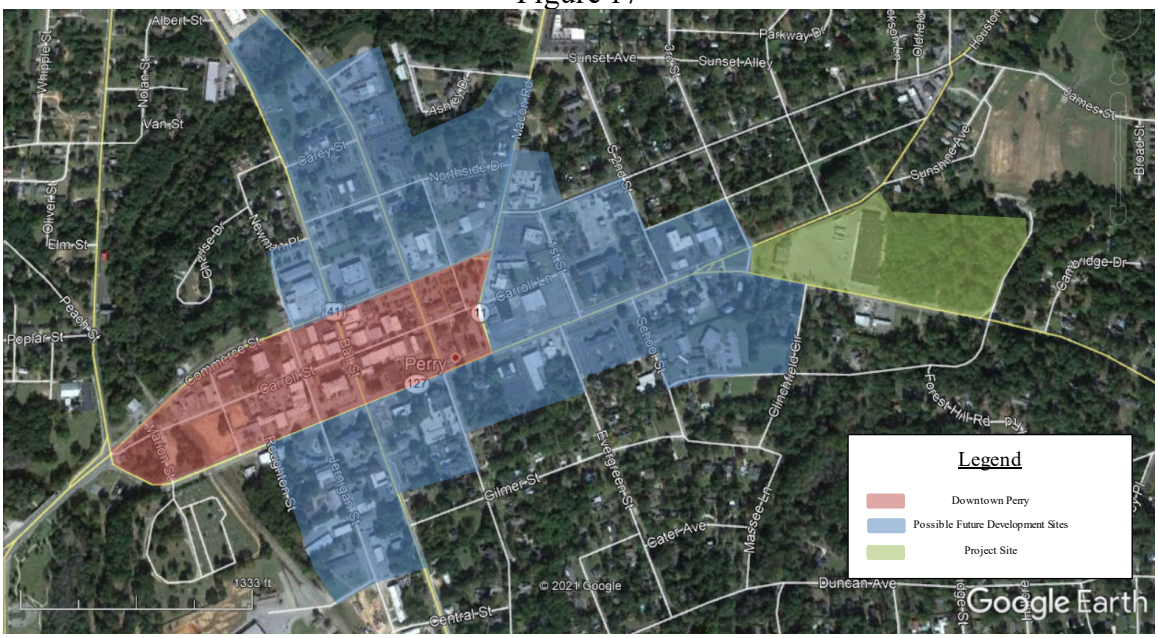
The Commodore (Figure 16) is a multi-use building under construction on Commerce Street. It's located on a formerly empty lot and will contain a street-level restaurant and 3 lofts above - 2 one-bedroom lofts and 1 two-bedroom loft available for short term rent, Airbnb, and VRBO (Schiller, 2021). This shows that others are aware of Downtown Perry's potential and are willing to invest in its development.

Figure 16

New Construction of The Commodore Building -- Image Source: 41 WMGT (Schiller, 2021).

This research was made possible by the City of Perry's (CoP) Downtown Development Authority (DDA). When this research began, the Middle Georgia Regional Commission (MGRC) had just published a final assessment of the city's main attributes contained within a Downtown Strategic Plan, which the city formally adopted on December 14, 2020. For the purposes of this research, I shall establish the current extent of the *heart* of Downtown Perry (Figure 17) will consist of the blocks between Macon Road/Meeting Street to the east, Gen. Courtney Hodges Boulevard to the west, Commerce Street to the north, and Main Street to the south.

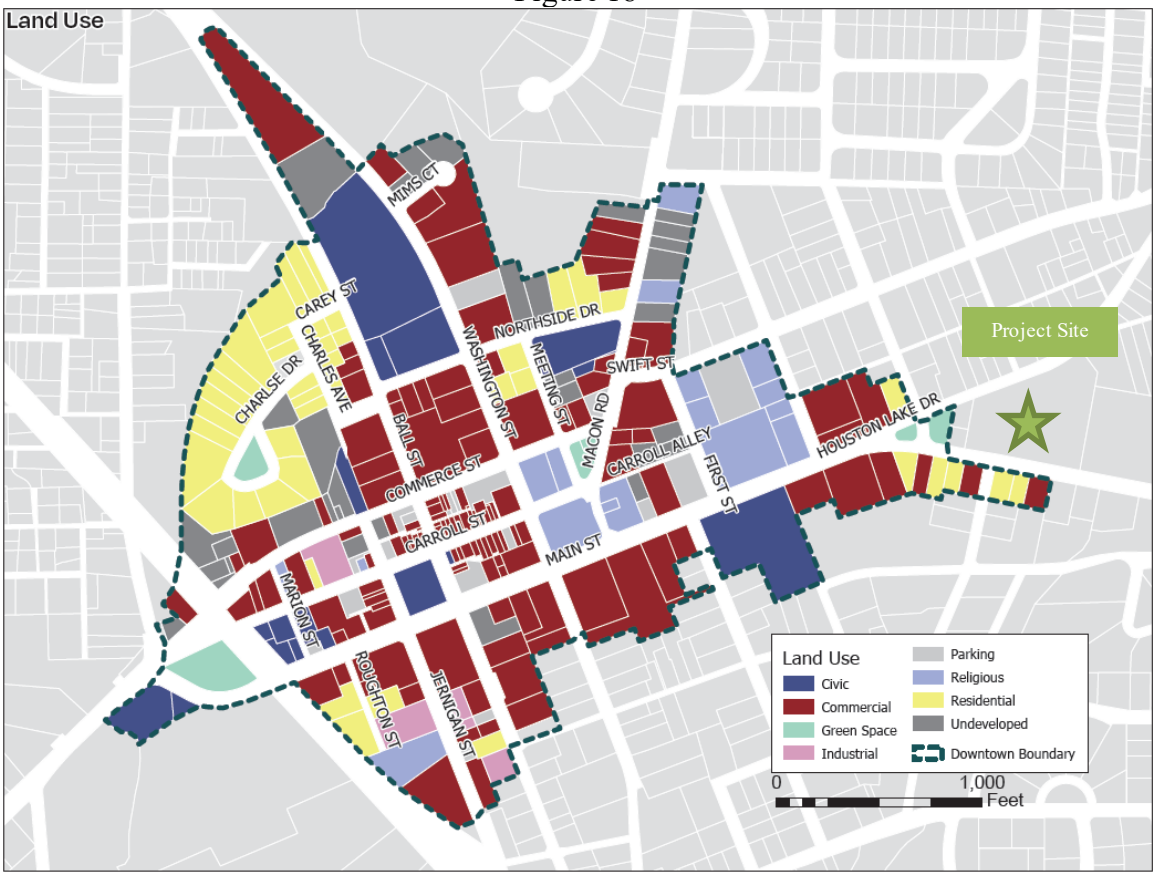
Figure 17



The Heart of Perry – Image Source: Google Earth 2021.

Next, we will compare this map to the one provided by the Strategic Plan (Figure 18). We can see that commercial interests exist all over this area. However, most of the small shops and aesthetics which one might typically associate with a small town's downtown is on Carrol Street. This is to be juxtaposed by, say, the large Walgreen's, which dominates the Ball Street block, for example. With boutique stores lining both sides

Figure 18



Downtown Perry Land Use -- Images Sourced from: City of Perry Downtown Strategic Plan.

of the shady one-way street, Carrol Street and its connections to Commerce, Main, and Marion Streets make this section of town the most walkable in all the city limits.

However, Carrol Street and the associated blocks alone cannot spark the renaissance CoP is searching for. Throughout my lifetime and experience of the 1990s and early 2000s the shopping here consisted mostly of similar boutique stores who seem tailored to middle- and upper-income women Most other forms of commerce simply did last more than a couple years or less. The context of the time was dominated by big box stores down Sam Nunn Boulevard such as a K-Mart, which was replaced by a Wal-Mart. These big chains had a devastating effect on Downtown Perry where there once was a

thriving and diversified scene of local commerce. Then, of course, came the recession of 2008.

I noticed the first stirrings of revitalization in Perry during the years of recovery after 2010. I was in journalism school at UGA from 2009 to 2013 and I can clearly remember each visit home to Perry came with little snapshots of positive change. Cafés came… and they went… and they came back again… and they went again. A 1950's style soda joint called Schultze's Old Fashioned Soda Shop opened up on the corner of Carrol and Jernigan. It still exists, but it closes at 2 pm everyday currently, and back then one could never be certain if it were operating that day at all.

There was even a comic book shop at one point around 2015, and that brought me great personal joy because for once I felt like I had a destination there; a reason to go to Carroll Street to begin with. Unfortunately, the store did not last very long, but its very existence – that someone even *tried* was my own personal "ah ha!" moment - things were beginning to change.

During the Mid-2010s CoP DDA put serious thought and effort into rebranding and revitalizing Downtown Perry which is viewed as integral to Perry's cultural identity. Some efforts have been quite successful at attracting people from all over the county such as the New Year's Eve Buzzard Drop. This tradition began in 2013 and has continued to be a success. However, an annual event does not a bustling, self-sustaining downtown make, and 5 years later Downtown Perry hosted its first Food Truck Fridays, a weekly event where food-trucks from all over congregate in downtown Perry. There is live music, spirits, and the local shops stay open later. Since 2018, it has been a wild success where the streets are conspicuously packed with patrons who spend their cash to fill their

bellies and support local business. After a 600-day hiatus due to COVID, Food Truck Friday returned May 14th, 2021 to the tune of 30 vendors and a crowd that remained lively well past 10:30 pm. If you are not from Perry or any place like it, it is difficult to describe how significant that is.

That is the intangible benefit of Food Truck Fridays that becomes like the "chemical X" in the formula for jumpstarting a transformation. *Large numbers of people are walking around Downtown Perry.* This means there are eyes looking around and experiencing it and imagining the possibilities of such a place; what it *could* be; what it *can* be. "Gosh, wouldn't it be nice if there were a bar with a patio here?" Now there are two. Amongst the throngs of residents and visitors are potential entrepreneurs and investors that might one more voice to revitalization's momentum.

I have given this brief commercial history of Downtown Perry, and now we may examine the current commercial setting, thanks to the Strategic Plan, to identify the economic gaps for which my design solution may account. The MGRC conducted a market study which establishes that "In Perry's PMA specifically, few industry sectors are in oversupply, meaning that demand exists for new businesses" (MGRC 2020, 28). Figure 18 reveals the current economic gaps where there is opportunity to grow.

Figure 19

Market Gaps in Perry -- Image Source: *Downtown Perry Strategic Plan* (MGRC 2020, 28)

As we have stated before, City of Perry has a strong desire to transform the downtown into a self-sustaining, economic generator. However, we have also established that without barriers to sprawl, more and more people who move to the area are finding homes out in the distant subdivisions several miles from any downtown activity and *well* outside any reasonable walking distance. Therefore, there is a development incentive to build strip mall shopping centers such as the Publix shopping center off Perry Parkway we briefly visited in Chapter 2.

It follows that people will naturally seek the most convenient location to get what they need. Currently, the Publix shopping center on Perry Parkway, and the stores accompanying Wal-Mart on Sam Nunn Boulevard are intercepting potential visitors to downtown Perry. Therefore, by allowing sprawl to continue unabated, incentivizing more economic centers outside the downtown area, City of Perry is figuratively shooting themselves in the foot.

Todd Litman, founder and executive director of the Victoria Transport Policy Institute, puts it thus: "Sprawl has two primary impacts: it increases per capita land consumption, and by dispersing destinations it increases the costs of providing public

infrastructure and services, and increases the distances that people must travel for a given level of accessibility, which increases total per capita transportation costs," (Litman 2015, 3).

There is another factor contributing to the puttering revival of downtown Perry, and its name is housing density (Figure 20). The Strategic Plan determined that "because people will generally walk five to ten minutes for goods and services, having housing within that range of downtown is critical to having a local consumer base. An analysis by the Georgia Conservancy found that a downtown with a commercial node of about 30,000 sq ft. requires 2,000 households to support that node," (MGRC 2020, 23).

To support a node that size amounts to around 5.7 houses/acre in a 10-minute walking radius. Perry only has 310 individual housing units, amounting to .89 units/acre. Therefore, if Downtown Perry wishes to thrive, more occupied housing is required. (MGRC 2020, 23).

Figure 20

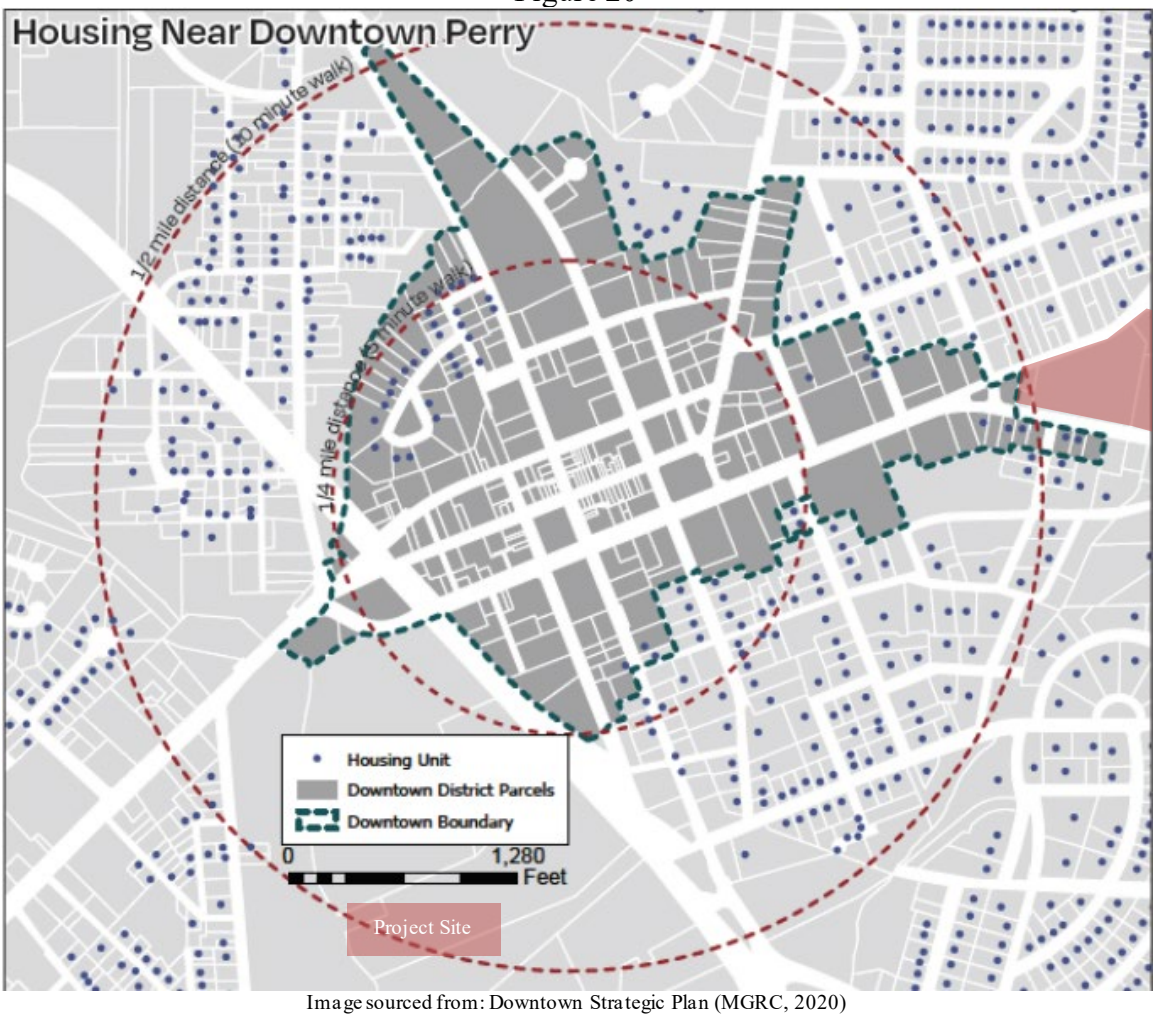


Image sourced from: Downtown Strategic Plan (MGRC, 2020)

One might notice that the project site is just barely outside the 10-minute walking ring. I believe that it lies within a zone that residents will conclude is close enough that people will not mind the extra steps.

The Social Equity of the Site Design

We cannot speak of housing, however, without speaking of equity. The goal of a landscape architect or city planner, now more than ever, is to properly create a built environment that does the most amount of good for the most amount of people while displacing as few of the existing residents as possible. This ideal is achieved through policies such as the following, compiled by the EPA's *Creating Equitable, Healthy, and Sustainable Communities: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development*.

- Facilitating community engagement in planning and land use decisions that is both meaningful and empathetic. This process must include a multilingual aspect, depending on the community, because this is America after all, and America contains multitudes of diverse communities. The engagement process should include assessments and workshops where the community has a chance to be involved.
- Promoting environments for the good of public health and safety. For example, cleaning up and reusing blighted or contaminated properties such as dilapidated buildings or trashed vacant lots, reduce exposure to goods movement activities and facilities (such as industry) with potential environmental concerns, promote green building and build green streets.
- Fix the existing infrastructure because there is no sense in letting a big problem now becoming even bigger later.
- Preserve existing affordable housing while increasing the affordable housing supply.

- Provide public transportation that gives just access to all neighborhoods
- Improve access to critical investments in human opportunity and health such as safe routes to diverse schools that prioritize the community, parks/green spaces for recreation, and healthy food.

Acting upon these goals with the intent to succeed, as opposed to lip-service, is imperative for all communities, especially emergent communities since they most likely have the momentum of change and growth propelling them; that momentum *must* be pointed in the right direction as soon as possible. However, a thorough exploration of policy is beyond the scope of this research. Interested parties can find more dedicated research at the resource cited above, or at the American Planning Association (APA) *Planning for Equity Policy Guide.*

The proposed designs herein aspire to serve the entire city of Perry. Therefore, it must be as equitable as possible, and one of the first questions I asked concerned that of aesthetics and style. "Don't judge a book by its cover" goes the old saying, but I think if we are honest, the cover is still vitally important to our first impressions. This question was crucial to my first processes when designing the site. "What will the people enjoy looking at?" The goal is to attract as much participation as possible, and it is not a poor leap of logic to believe that people will not frequent places they don't like.

Fortunately, part of the Strategic Plan conducted a poll across the city regarding this very question. I have included their results in Figure 21.

Figure 21

Mixed-Use Aesthetic Poll -- Image Source: Downtown Perry Strategic Plan (MGRC, 2020)

Of the responses gathered, a clear preference of design emerges. Images 1 and 3 share similar styles that harken back to the look and feel of older American towns. Images 2 and 4 are far more modern. Even though image 2 shares a brick as a primary façade material with images 1 and 3, the overall physical design (I believe it is the way the roof pitches) has more in common with image 4, which was definitively the least favored style among the responses. Image 4 represents the modern aesthetic that has popped up in city after city, development after development, and have become commonplace as a result. This mass-produced template of mid-rise, wood-framed development can be a culprit of *placelessness*, a loss of something that makes a place distinct, or something of its own making. This, of course, is not an intentional effect by any means. Merely, it is the product of supply and demand. Metropolitan regions experiencing population booms across the country have been on a building spree over the last years as demand for density and higher housing supply increases. High design costs

more in time, and therefore in real dollars, so it has become the capitalistic pattern that one builds the most cost-effective structure -- especially if the land on which to build is expensive. Builders and developers have simply settled into a pattern because it is cost and time effective. The materials are normally quite affordable, and the well-rehearsed process of construction means a reasonably fast project completion time, which also saves a lot of money.

But the people of Perry see this architectural style and worry about the loss of their own identity. In my own investigations and interviews, there is a deep concern regarding the transformation of Perry into Anywhere, USA. From my conversations with Perry DDA and from the surveys, there is an overwhelmingly strong appetite for new development that cares about representing the people who actually live there over an aloof bottom-line.

Part of the cost saving measures for the Anywhere, USA mid-rise apartments is that they are single-use, residential developments. Mixed-use developments that need commercial enterprise on the ground floor such as restaurants and shopping require more time, money, and attention to fire code adherence. While big cities such as Atlanta may be able to continue these construction sprees of single-use residential developments, emergent cities like Perry require things for current and new residents *to do* once they relocate there.

I mentioned the economic gaps in the previously. These are the areas of the Perry Market Area that have room for more enterprise. It follows that building the spaces for these businesses to inhabit will give future residents more reasons to *stay* and *play* in

Perry, as per one of the cities longer running marking slogans. Filling these economic gaps will be crucial to the foundation of the project site's redevelopment.

In the ideal scenario post-development, the owners of these enterprises are locals. A sense of community investment is paramount in the long-term productivity of a space. It may sound cliché, but investment in locally owned enterprises can add that little extra kick of vibrancy that truly brings out a place's distinct identity.

One might suggest that because chain enterprises are still managed and run by people, usually local, that there is little difference between your neighbor owning a small business versus becoming a franchisee because we are still interacting with each other; to which I remark, "fair point." However, in my experience having worked for several franchised, service enterprises, such as Subway, there exists a profound difference in the quality and quantity of interaction between manager, employees, and the customers. Under these franchised businesses, whose owners or corporate guiding hands are kept in some far away location such as a large metropolitan city or an entirely different state or country, employees are treated little better than automatons. There are quotas to fill, and strict rules, standards, and protocols to be followed for that franchise to keep up with the national standard established by the brand. These investments in national success preclude any of the intangible, unique benefits focus on the immediate, local community provides. For example, the one-on-one connections between small, or independent business owners, managers, employees, and customer run deeper because their energies can focus more on that "personal touch" which is so ineffable. Big corporations can pump all the dollars they wish into marketing emphasizing their *commitment to you*, but the fact of the matter is that those entities are simply too big with concerns too

widespread for the customer to be anything more than a statistic in a spreadsheet. The goal here is not to disparage the success of these enterprises, nor is it to debate the authenticity of their care. This is simply my experience, and it is an acknowledgement that there exists a size threshold beyond which it becomes impractical or impossible to attain or maintain the "personal touch" small, local businesses can achieve; barring, of course, finding and hiring exceptional individuals in management and groundwork roles.

Of course, there is the other objective for mixed-use developments. Residential dwelling units are constructed on the upper stories, like the Commodore building I mentioned earlier. The design goal of this type of building is to quickly increase the housing stock available in this part of Perry. The housing goal is so pressing that there is room for single-use, multi-family buildings to be included in the project site so that Perry can catalyze more vigorous immigration to its downtown area so that Perry can get closer to a self-sustaining economic core.

The apartment floor plans should be diversified as much as space will allow. While it is indeed efficient and economical to follow templates, we should not stymie ambition when considering hypothetical proposals such as these designs. Therefore, a variety of floor plans must be devised. However, efforts must prioritize making the changes in form merely different as opposed to "better." For example, every apartment should have ample views of the community they share, however, these are decisions for the architect as this researcher is no structural engineer.

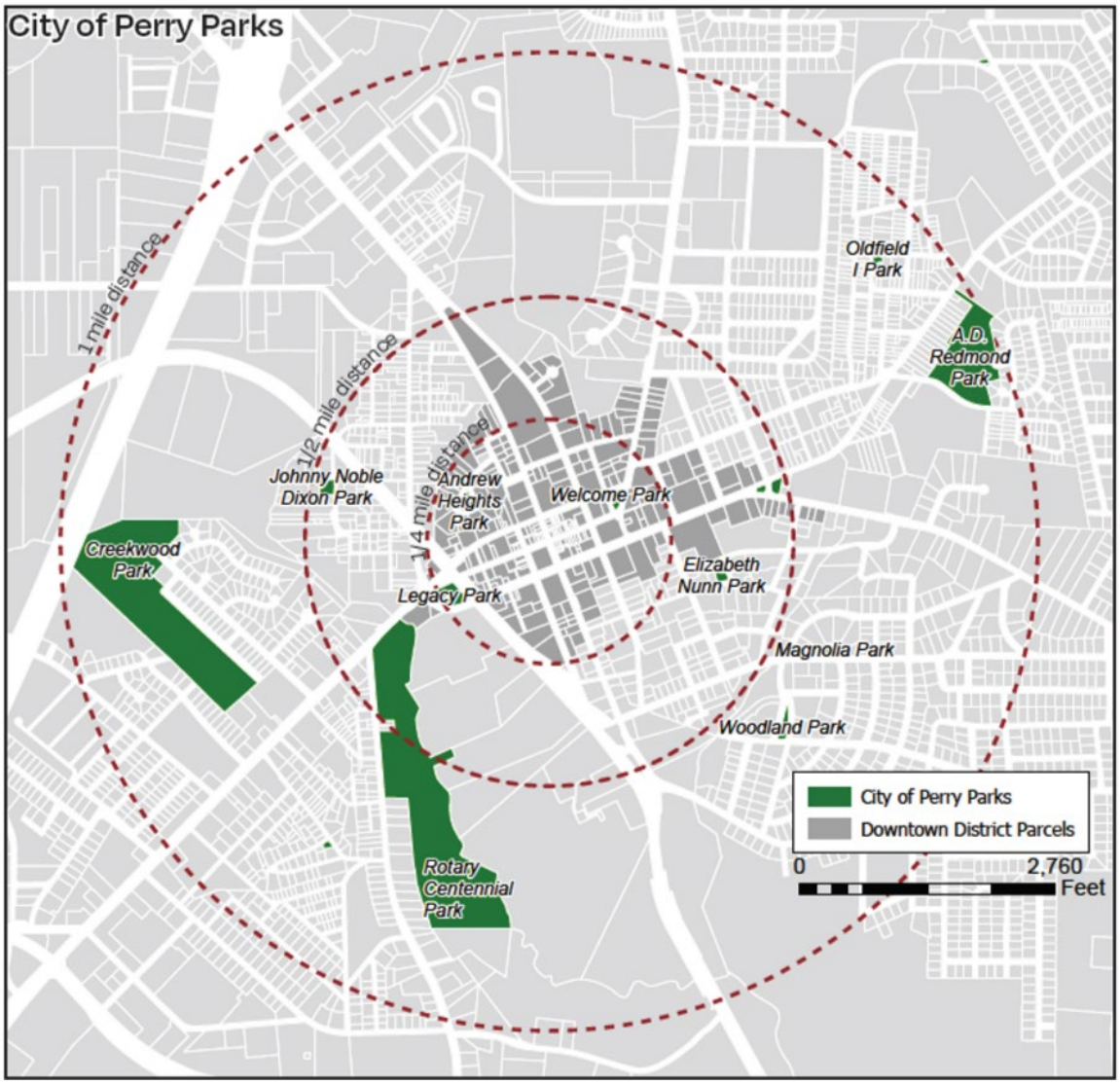
The amount of outdoor space available for residents and visitors to enjoy differs according to which variant of design is in use. In the instance of maximized dwelling units, combining The Point and Canopy Homes, the mixed-use development (a.k.a. "The

Point") has ~34350 ft^2 or just above .7 acres of recreational space. This includes the 2 commercial promenades between buildings. The remaining eastern tract (a.k.a. "Canopy Homes") will have ~3100 ft^2 of available space for amenities such as a playground.

If Canopy Homes is instead reserved for more park space, then we gain nearly 5.5 more acres in the form of "Canopy Park." In this instance, as many of the existing canopy will be preserved for wooded walking/biking trails, and places of private reflection in "rooms" created by shade-tolerant planting designs. The center of the park will be cleared for ~31300 ft^2 of open space where other forms of play may take place.

Finally, there is an opportunity to create a greenspace that can connect the parks within the 1-mile radius of Downtown Perry center. The iteration which includes Point Park in these designs fits geographically in such a way as to complete Perry's own string of pearls. Figure 22 shows the existing green space within this 1-mile radius.

Figure 22

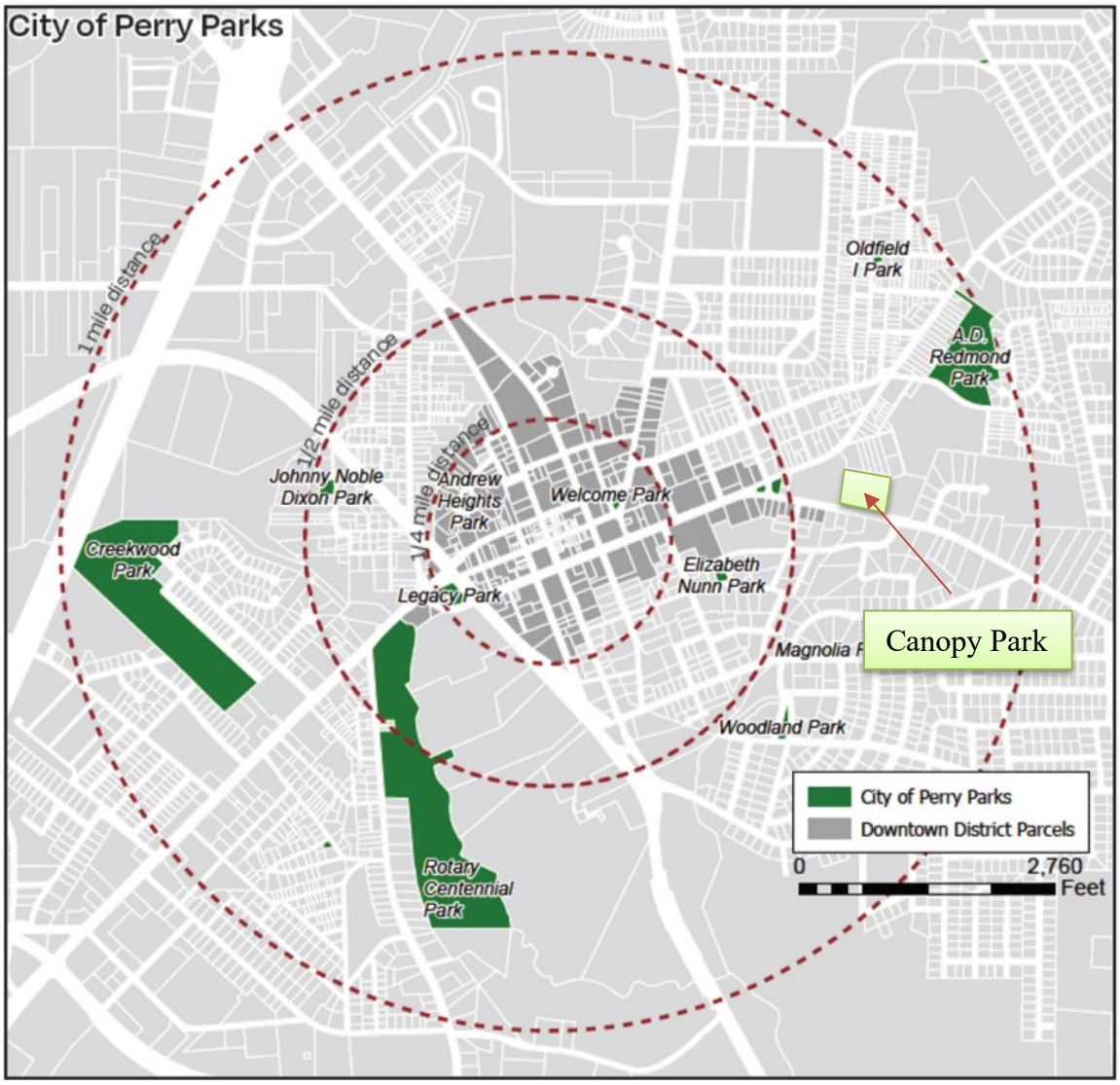


City of Perry Parks -- Image Source: Perry Strategic Plan (MGRC, 2020)

The eastern portion of the city center has around 4 small parks leading up to A.D. Redmond Park. Not pictured in the diagram above is the former Perry Country Club, whose fate has recently been decided to become another new park that totals around 120 acres. It lies directly north of A.D. Redmond Park by about 1,100 yards or 1 kilometer.

Figure 23 adds the proposed Point Park's 5.5 acres to the archipelago of greenspace.

Figure 23



City of Perry Parks, Complete Archipelago -- Image Source: Perry Strategic Plan (MGRC, 2020)

The proposed design and its mission are ethically compromised, however, if the local residents get minimal or no say at all in the final implementation. Community design such as this must rely on the correct stake holders to build a place that is genuinely helpful to the community. There can be no room for a designer's ego because the ego can lead to decisions that do things "to" a community instead of "for" a community.

Therefore, it is important to reiterate that the scope of this research and the provided designs is to simply provide ideas; to spark inspiration for changing an

essentially blank canvass of potential into a space that benefits not only Perry as a whole, but also, critically, all the little communities surrounding the project site.

We can briefly examine how Perry may go about identifying the proper stake holders. According to Umut Toker's *Making Community Design Work: A Guide for Planners*, there are certain role players that make the process.

"Leading group: The group of people requesting the community design process. The leading group may be composed of (1) members of a community; (2) community leaders, such as a group of active local business owners; (3) members of the local government; or (4) members of a nonprofit organization who would like to initiate change in the given community.

"Key informant: A community member who has strong insights into community functioning and a broad social network; someone who can provide the community designer with 'insider' information.

"Participant: Any individual who is likely to be affected by the outcomes of the community design process and the project; one who should be invited to participate in the community design process.

"Project champion: An individual who is particularly interested in the success of the community design process and genuinely believes in the project to be advantageous for the community," (Toker 2012, 50).

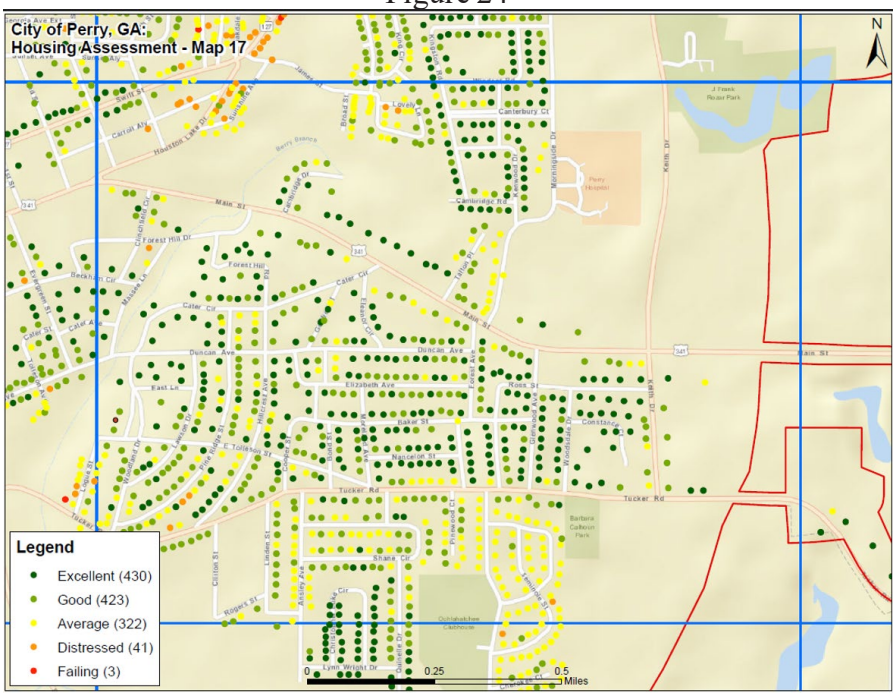
There is a hierarchy to participants in the leading group. Individuals including the people who live in and around the surrounding area of interest are a higher tier of participant as Toker explains, "In fact, despite their best intentions, the local government

or non-profit organizations may be surprisingly disconnected from the day-to-day realities of the communities they serve," (Toker 2012, 48).

Consulting the people affected by development is but one step towards combating gentrification. This can be facilitated by city policymakers, but policymakers are only human, and can be compromised in their priorities as Jared Green writes in *The Dirt.*

"One big problem, [Winifred] Curran said, is that city policymakers and planners are in effect encouraging gentrification, with results that exclude existing populations. 'Cities love higher property values, which means higher taxes.' In many cities, urban policies have been put in place to grow the tax base. This often involves tearing down what is there in favor of new condo towers that all look alike. And to generate appeal for these new buildings, city leaders use public private partnerships to create and manage public spaces. 'These public-private partnerships create landscapes without a democratic process. They may look better, but they aren't democratic.' (Green 2015, paragraph 3)

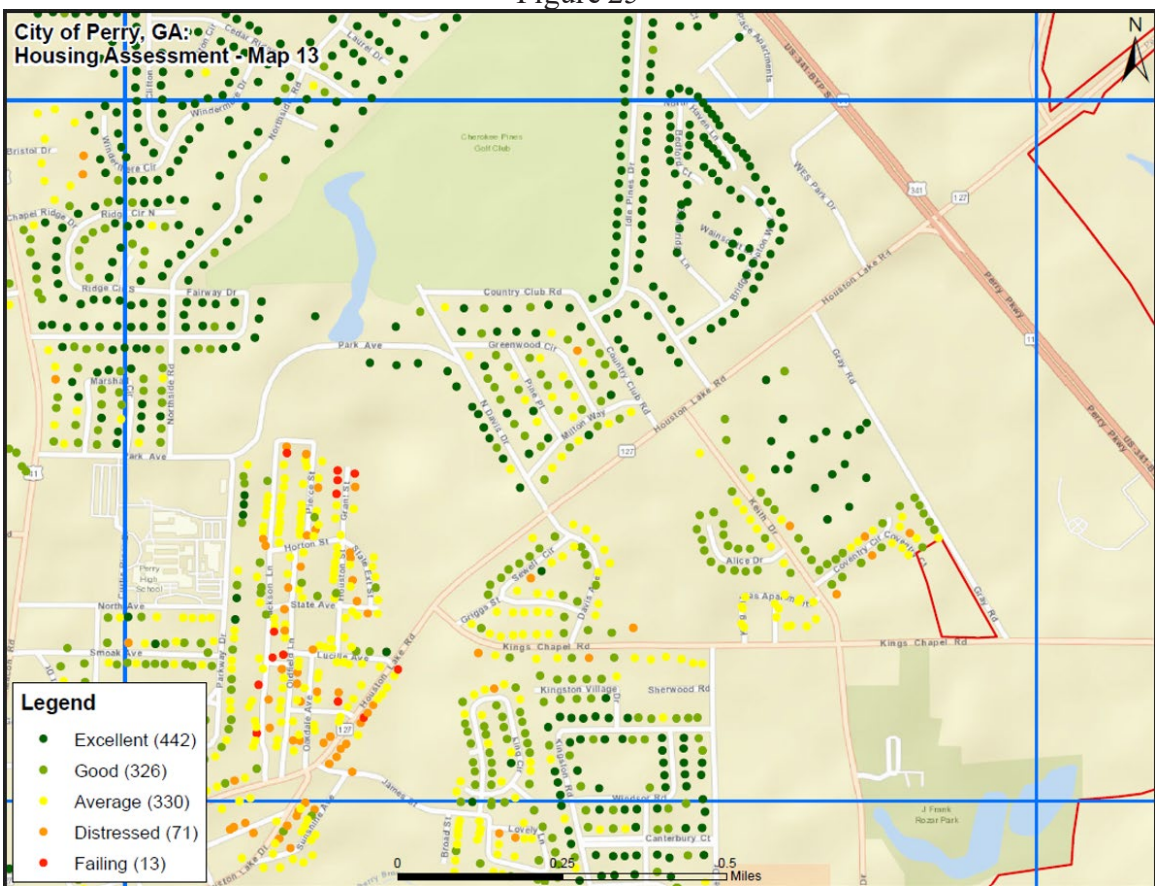
Figure 24



Housing Assessment-South of Design Site – Image Source: MGRC (2020).

Behold another existing conundrum, the disparity between housing quality to the north and south of the design site (Figure 24 & 25).

Figure 25



Housing Assessment-North of Design Site – Image Source: MGRC (2020.)

This is a clear difference highlighting the gulf between income levels. This is the reason for Set-Aside Requirements wherein 10% of the new housing must remain affordable, and for local government and citizens to join together to intervene as we have previously discussed in order to properly protect those homes to the north who are most likely to be affected by the rise in property values the new economic node will inevitably generate.

Affordable housing and gentrification are not a new problem. However, just like Climate Change, it is an issue that on a national level has been kicked down the road for decades. For example, Mr. Jack Shine in a hearing of the Committee on Banking, Housing, and Urban Affairs before the United States Senate Subcommittee on Housing and Urban Affairs so crassly put it: "It's a whole slice of people that can't buy. When you talk about affordable housing it's a matter of how you define it. If you define affordable housing as only housing that goes to the very, very lowest spectrum of the economic base of our population that's one thing, but the young people that are wearing thongs and jeans (I laughed too, don't worry) and carrying a kid under their arm are going to try and by their first house, find that the $18,000 house is now a $92,000 condominium and become part of a new group of people who can no longer afford their own homes. So, you have all these new family formations that are unsatisfied." (U.S. Senate Transcript, 1987).

Yes. 1987. More than 30 years have passed and not much has changed. In fact, things are much worse for prospective homebuyers (house or otherwise) than ever in recent years. Adjusted for inflation, the values Mr. Shine quoted as examples come out to $43,346.88 and $221,550.74 today respectively - a 140.8% increase. In 2015 the median sales price of a home was $289,200. That was pre-COVID-19 pandemic. Now, in the middle of COVID's second year the median price is $374,900 – a 16.2% increase from 2020 which was $322,600. In Georgia, the current, typical home value as of June 2021 is $245,778 (Daly,2021). These are outrageous numbers for people of all sorts and walks of life, but modern living categorizes these figures as "budget-friendly."

Failure to consult the proper stake holders can lead to the most damaging effects of gentrification, the displacement of the long-time residents of a given area due to the

increased cost of living gentrification brings about. the specter of which looms large over every facet of this research and, indeed, the entire field of landscape architecture. Therefore, the design criteria for the project site demands inclusive public engagement that has significant impact on final decisions. The results of which may end up rejecting most, if not all, the proposed design elements outlined in Chapter 5.

CHAPTER 5

The Site and Its Proposed Design Elements

In this chapter I will explore the project site in detail and reveal the proposed design solutions this research has informed. I will outline the design goals of the project

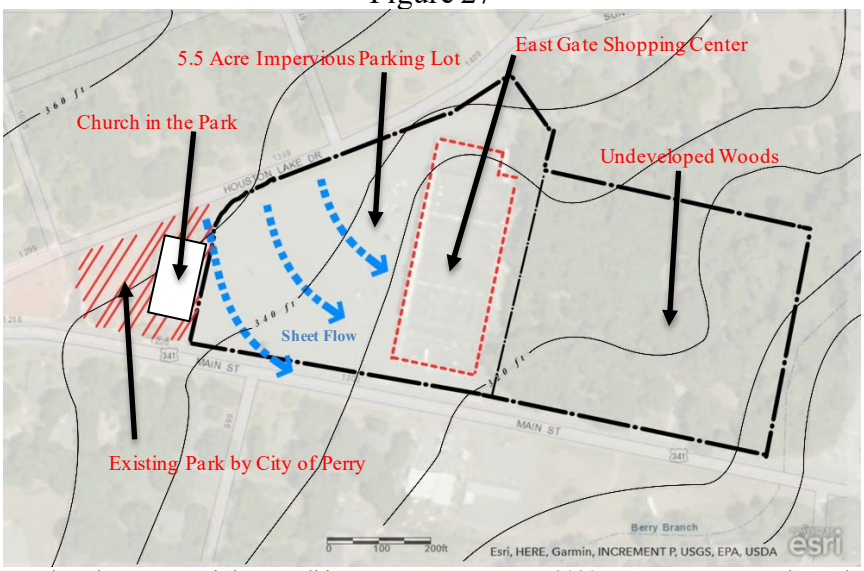
The Eastgate Shopping Center in Perry sits within a 5-to-10-minute walk to downtown depending on where one places the downtown boundaries. In its current condition, the site consists of a 5.5-acre asphalt desert that once served as a parking lot for a center that over time has hosted a (now defunct) Movie Gallery, a grocery store that changed hands from Piggly Wiggly to Harveys and then to a Habitat for Humanity donation and thrift store, a Family Dollar, and a haircut salon (Figure 26). Myriad commercial enterprises also rented space here at one time or another, but the only remaining operating entities on this site are the Family Dollar and adjacent Church in the Park. Behind the shopping center itself is another 5.5-to-6-acre plot of undeveloped land. Both are owned by the same party.

The site possesses a 5% grade (figure 27) towards the southeast where Berry Branch, a tributary of Big Indian Creek further south, runs beneath Main Street a.k.a. HWY 341.

Figure 26

East Gate Shopping Center -- Image Source: Microsoft Corporation, Maxar, CNES Distribution Airbus DS, 2021

Figure 27



East Gate Shopping Center Existing Conditions – Data Source: ESRI, 2020 – Image Source Google Earth, 2021

At the site's point is an existing re-greening development by the city. But it is mostly grass turf, and a large swale of terrain that carries rainwater towards the rear of Church in the Park. This area could use more site engineering to deflect storm water from collecting at the base of the structures. It may also be useful to radically increase the

planting diversity with species known for rain garden designs. In fact, the area used to have more trees (Figures 28 & 29) before Perry decided to clean up the point.

Figure 28

Intersection of Houston Lake Road & Main Street in 2012 – Image Source: Google Earth Street View

Figure 29

Intersection of Houston Lake Road & Main Street in 2016 -- Image Sourced from Google Maps Street View, 2021.

Beyond the point lies the expansive, asphalt parking lot (Figures 30, 31 & 32), which will be the primary design focus.

Figure 30

East Gate Shopping Center Parking Lot Existing Conditions South-Facing -- Image Source: Google Earth Street View, 2021

Figure 31

East Gate Shopping Center Parking Lot Existing Conditions North-Facing -- Image Source: Google Earth Street View, 2021

Figure 32

East Gate Shopping Center Parking Lot Existing Conditions East-Facing -- Image Source: Google Earth Street View, 2021

Clearly, this is a space that, to put it lightly, fails to live up to its potential, especially considering its size. It would be generous to call this wasted space. As it stands, Eastgate Shopping center remains an enormous concentration of impervious surface. Also, while the days where finding an available parking bay would take "a good-lookin'-for" are certainly gone, the Church and adjacent Family Dollar still receive traffic therefore continuing to accumulate vehicle effuse over time. This washes into the water system with first-flush rainfall as we have previously discussed. But even the much-diminished vehicle-use does not remedy the heat-island which the area remains.

Here are 3 design iterations that could replace this land with something more pleasing to look at and simultaneously useful for the city.

Welcome to Plaza 341, Canopy Park, and Canopy Homes (Figure 33, 34, 35).

Figure 33

Plaza 341 & Canopy Park – Where on-site parking and automobiles compromise the site's walkability.

Figure 34

Plaza 341 & Canopy Homes – Where on-site parking and automobiles compromise the site's walkability.

Figure 35

Plaza 341 & Canopy Homes – Where on-site parking is mostly eliminated in favor of maximum walkability

Plaza 341 is a multi-use development focused on encouraging more people to live, work, and grow locally.

Design Goals

- To create a social space that bridges the neighborhoods north of Houston Lake Road and south of Main Street / HWY 341 and fosters a blending of community.
- To increase the available, affordable housing supply in proximity to the core of downtown Perry, feeding the demand for housing.
- To jumpstart and motivate the influx of residential development within downtown Perry and the city limits; to combat the trend of outward suburban sprawl.

- To engineer a space that conforms to best practices managing storm-water runoff and the urban heat island effect.

The tension between automobiles and pedestrians is well-known. Jeff Speck's *Walkable City Rules: 101 Steps to Making Better Places* discusses how to change our development behaviors, especially when it comes to automobiles versus pedestrian outcomes. For example, because we are actively encouraging visitors to the site as well as permanent residents, speeding must be a top priority to control. We can accomplish this with speed-tables, not speed bumps, at major areas of pedestrian crossing such as from the north alley to the central roundabout.

Another solution is to remove painted centerlines. The design's plan includes these lines for visual representation. However, removing them in practice can make drivers reduce their speed about 6.9 mph (Cooper, Wright, 2014). All of this is in service of striking a balance between pedestrians and vehicles in Perry.

The examples contained within the book are more often than not middle-to-large-sized cities such as Macon, GA or Atlanta. Cities like Perry are small and spread out in comparisson so much of the wisdom contained within Speck's work must be reimagined for a small-town context. The book certainly provides an excellent framework on which Perry can build its future.

This is element of these designs that is most difficult to reconcile: the amount of pavement required. How is it that I can research and report on the downsides of pavement and then propose a design which relies so heavily upon it? The following sections

concern the issues of parking availability and the physical detriments of (and possible alternatives to) impervious surfaces.

Parking

For one thing, we cannot ignore nor wish away the reliance on cars this area demands. There is zero public transportation to speak of. Ride sharing exists to be sure - it may even reduce the number of people driving; however, Alejandro Henao conducted a study in Denver by driving for Uber and Lyft while earning his PhD. He found that for every 100 miles of transporting passengers, his car had to travel 169 miles. (Henao, 2017). The San Francisco Police Department found that Uber and Lyft drivers accounted for 64% of traffic violations (Brinklow, 2017). The rideshare business model relies on people using their own personal vehicles and we have previously noted that less than 3% of Americans own electric or zero-emission vehicles. So, knowing how often rideshare drivers are responsible for traffic violations combined with how much extra driving is done, cities would be wise not to rely on such services to fill the duty of public transportation.

We cannot dismiss how central automobiles have become to our daily lives and by extention our American culture – the need for parking alone discourages dense development. Indeed, the use of automobiles as our primary mode of transportation may yet be continued as electric vehicles (EVs) continue to develop, become more affordable, and therefore more common. After all, an emmissions-free mode of transportation that continues to uphold one's independence is an attractive prospect. I predict that as EVs will merely replace our old vehicles rather than diminish the number of automobiles on

the road. However, that is not to say that public transportation in a town like Perry, GA does not have its place in the future as I will examine later on.

Certainly there are ways to minimize the need for automobiles at Plaza 341. Perry possesses so much available parking (Figure 36) in its downtown already that even at its busiest times that 60% remains available (Boike, 2020). Modern zoning codes require on-site parking available for every resident and visitors, however, more than mandating larger expanses of impervious surfaces these codes discourage denser development while simultaneously adding nearly 40% to construction costs (Speck, 2018).

Figure 36

Occupancy by Time (all spaces)	Percentage Occupied
Early Morning	25%
Late Morning	42%
Early Afternoon	41%
Late Afternoon	29%
Overall	**34%**

Occupancy by Day (all spaces)	Percentage Occupied
Monday	34%
Tuesday	38%
Wednesday	38%
Thursday	37%
Friday	35%
Saturday	25%
Overall	**34%**

Parking Statistics - Image Source: Perry Strategic Plan (MGRC, 2020)

One iteration of the proposed designs have parking available for residents who choose to live in Plaza 341. In such a scenario the Plaza itself there will be 161 parking

spaces (including the lots connecting to Church in the Park and those in the Canopy Park lot) to service the commercial businesses and 56 apartments. If Canopy Park is substituted for Canopy Homes, 101 addtionaly parking bays are added, totalling 262 parking spaces.

However, a deal should be struck with the City that allows for visitors and residents to park their cars off site. My final iteration of Plaza 341 (Figure 34) assumes the elimination of onsite parking requirements in favor of striking a deal with City of Perry to make use of its ample available parking. These downtown lots (and the few available on site at Plaza 341) could be rented or otherwise used to generate more revenue for development.

Pavement Material

Therefore, we may attempt to compensate for these shortcomings by changing the materials that make up the parking/driving spaces.

First, all parking/driving spaces should be made with large aggregate to create a pervious surface. Some of the advantages that pervious concretes bring to cities are these (Yang, Jiang, 2003):

1. Pollutants are removed from the storm water as they collect on the sub-surface aggregate while storm water percolates and infiltrates into the soil beneath.
2. There is less infrastructure cost as the need for curbing and storm sewars are minimized.
3. Large aggregate improves road safety by providing better skid resistance
4. Water that infiltrates the soil helps to recharge local aquifers.

The trick is finding the right balance of void space and aggregate size in order to maximize water infiltration and preserve the compressive strength required to resist wear and tear by use over time. Ming-Ju Lee, Ming-Gin Lee, Yishuo Huang, and Chia-Liang Chiang published in the International Journal of Engineering and Technology, "The void content can range from 18 to 35% with compressive strengths of 400 to 4000 psi (2.8 to 28 MPa). The drainage rate of pervious concrete pavement will fall into the range of 2 to 18 gal./min/ft2 (81 to 730 L/min/m2). (Lee, et al. 2013). Their study and another by Choayang University of Technology also concluded that pervious concrete was also resistant to cracking, but a mixture that is too dry at application may result in surface raveling over time (Lee et at., 2009). They used an 8-inch surface layer of pervious concrete aggregate on top of a 4-inch base layer of gravel.

Another benefit of pervious surface systems is their healthy effect on trees and other plantings. Impervious surfaces make it difficult for plantings to thrive because air and water cannot reach the root systems which also become over time. However, pervious surfaces allow water and air to reach root systems, and the voids allow for those root systems to have more breathing room (Tennis et al, 2004). Thus, it is possible to plant more trees in such an environment which in turn help shade the area and reduce the heat island effect.

This brings us to the other method by which we may compensate for vehicle use in our site. By increasing the albedo (how much solar energy and light is reflected) of our driving surfaces, we may reduce the amount of heat absorbed and retained in the surface until nightfall when it is released. Unfortunately, it would seem that pervious pavement has a lower albedo than regular, dense Portland concrete. "Pervious Portland concrete has

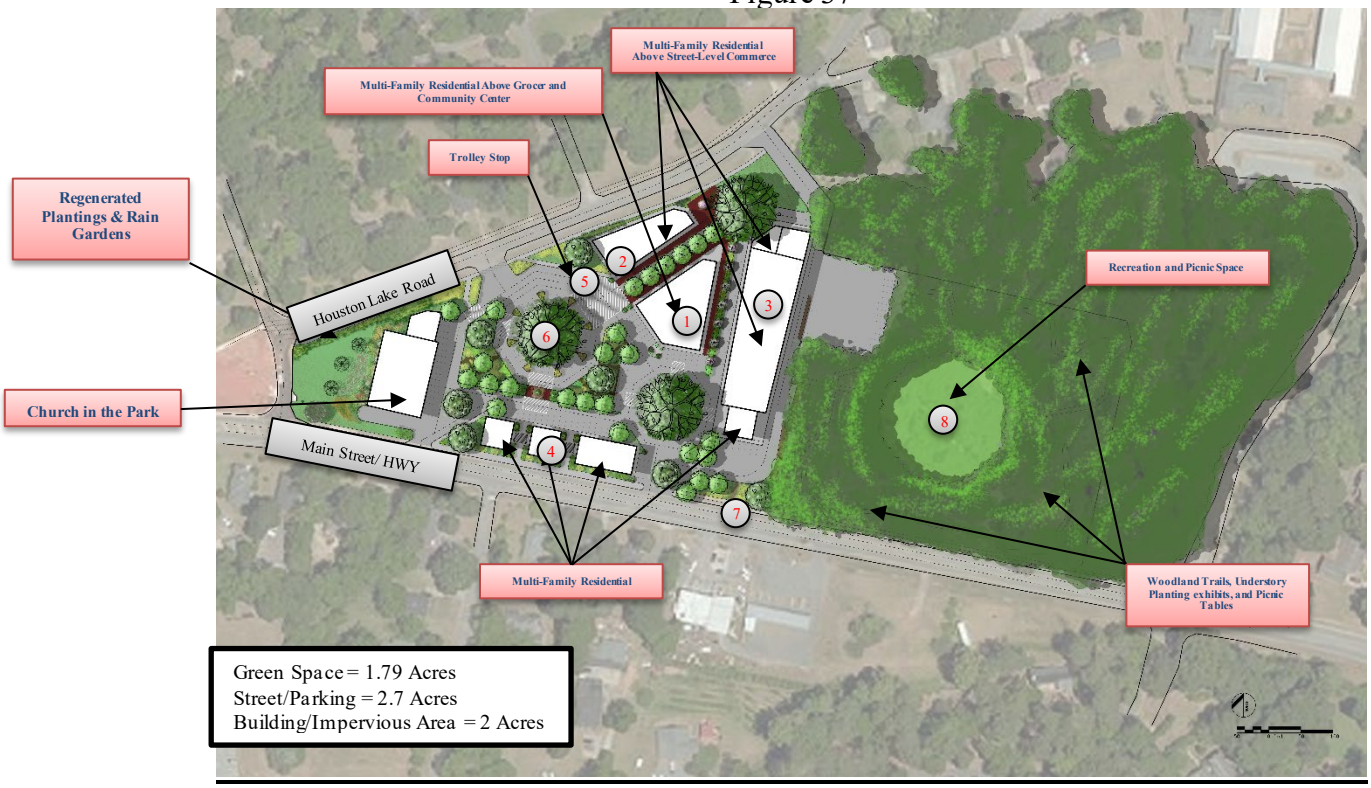
an albedo of about 0.25~ 0.35 at density of ~1700~1950 kg/m3, which is about 0.05–0.15 lower than the albedo of the dense Portland concrete. Pervious concrete albedo linearly decreases with the increase of porosity because the cavities at the porous concrete surface are absorptive," (Zhang, et al. 2015). Pervious concrete also requires cleaning overtime, as the pours become clogged with sand, dirt, and debris.

Perhaps the filtration and infiltration qualities of pervious surfaces along with the material's benevolence towards trees and root-systems can justify the lowered albedo and cleaning costs. There are gains and losses with each choice, and at the end of the day it comes down to people deciding how best to do the most amount of good.

Plaza 341, Canopy Park, and Canopy Homes Programming Elements

Here we will magnify the specific elements of Plaza 341. After I describe these elements, I will move on to the second design iteration that replaces Canopy Park with Canopy Homes, whose purpose is to intensify the available housing density in the area.

Figure 37



Plaza 341 & Canopy Park Annotated

1. Community Center and Grocery Store

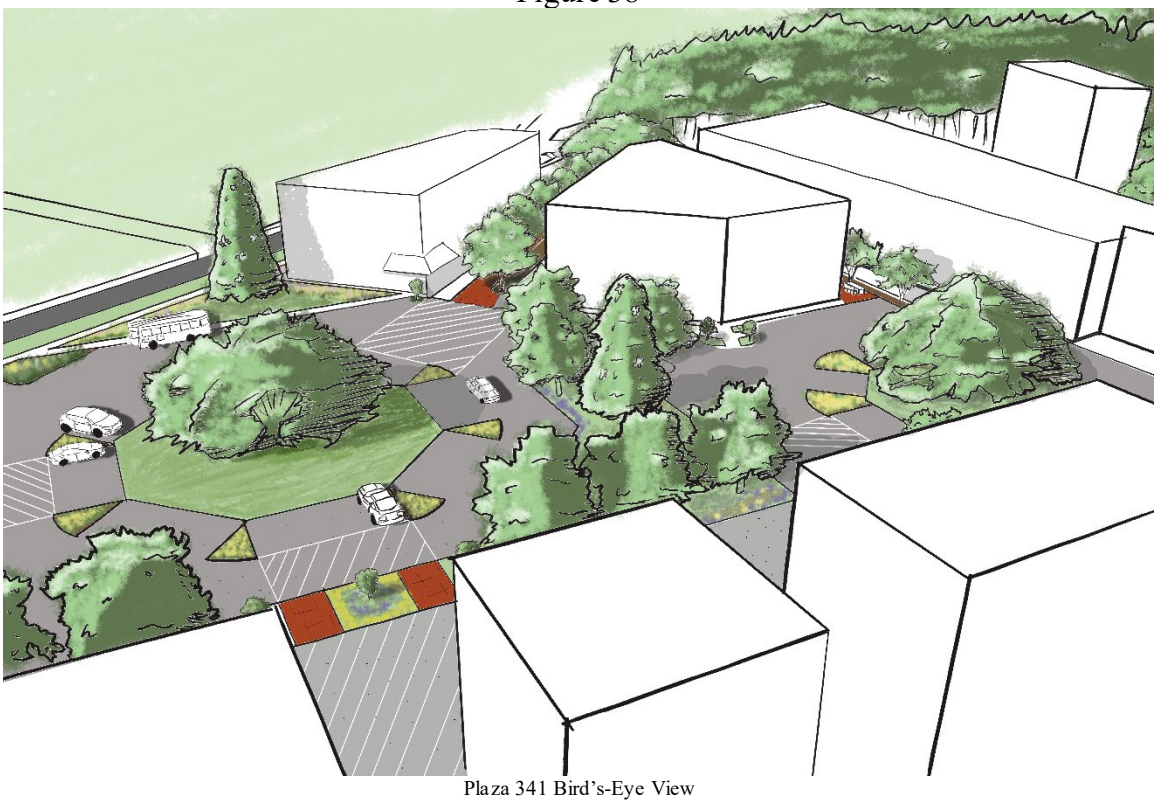
A centrally located, locally owned and operated grocery store (Figure 39 & 41). This grocery store will occupy the same building as the local community center/management offices. The objective for placing the community's operational center

with a grocery store is this: a grocer will, in theory, have constant foot traffic from people who live in Plaza 341 and neighborhoods from beyond since there will be a closer alternative to the Publix or Wal-Mart. I believe it advantages residents and administration to have easy, highly visible public interaction.

The leasing offices of so many apartment complexes across the nation are located quite separately from the people who rent their spaces. There is also little reason to visit these offices unless one is a prospective tenant or an existing tenant receiving mail or making a complaint.

Therefore: placing the main offices somewhere with a high amount of passive community interaction may foster a stonger communal bond between administration and tenants. This building is almost 10,283 sqft. and will have 1-to-2 stories for lofts above providing up to 10 new apartements.

Figure 38

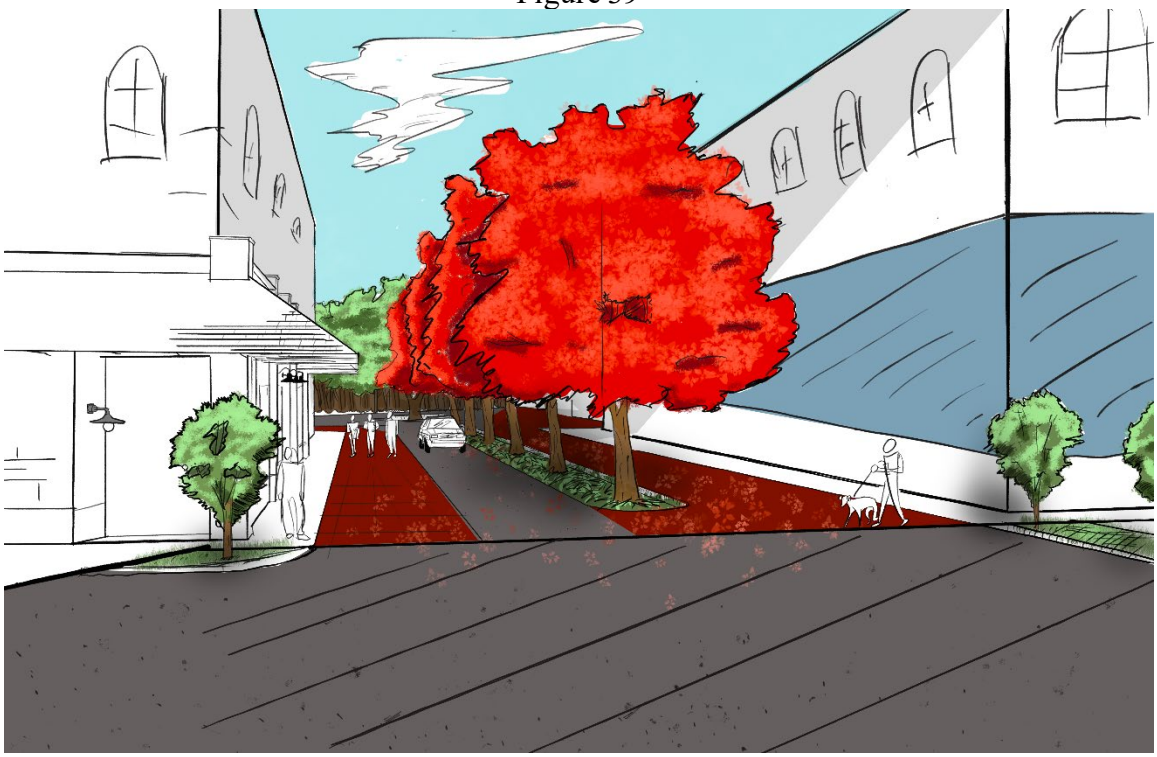


Plaza 341 Bird's-Eye View

2. The Alley Ways

Flanking the neighborhood grocer are two, small lanes shaded by trees appropriate for the microclimates there (Figures 39 & 40). The trees will occupy long planting beds designed to capture stormwater runoff. The water will infiltrate into the soil, and excess rainfall will be piped away, southeast, into rain gardens situated between the Plaza and Main St. to the south. These streets are designed to favor pedestrian movement, however, they each possess a one-way lane for automobiles in order to facilitate circulation throughout the site. The structures adjacent the neighborhood grocer will contain street-level commerce. The structure to the north, alongside Houston Lake Road, will have 1-to-2 stories of lofts above the street-level commerce, totalling 10 more added aparments. Here would be ideal locations for a pharmacy, and laundry.

Figure 39

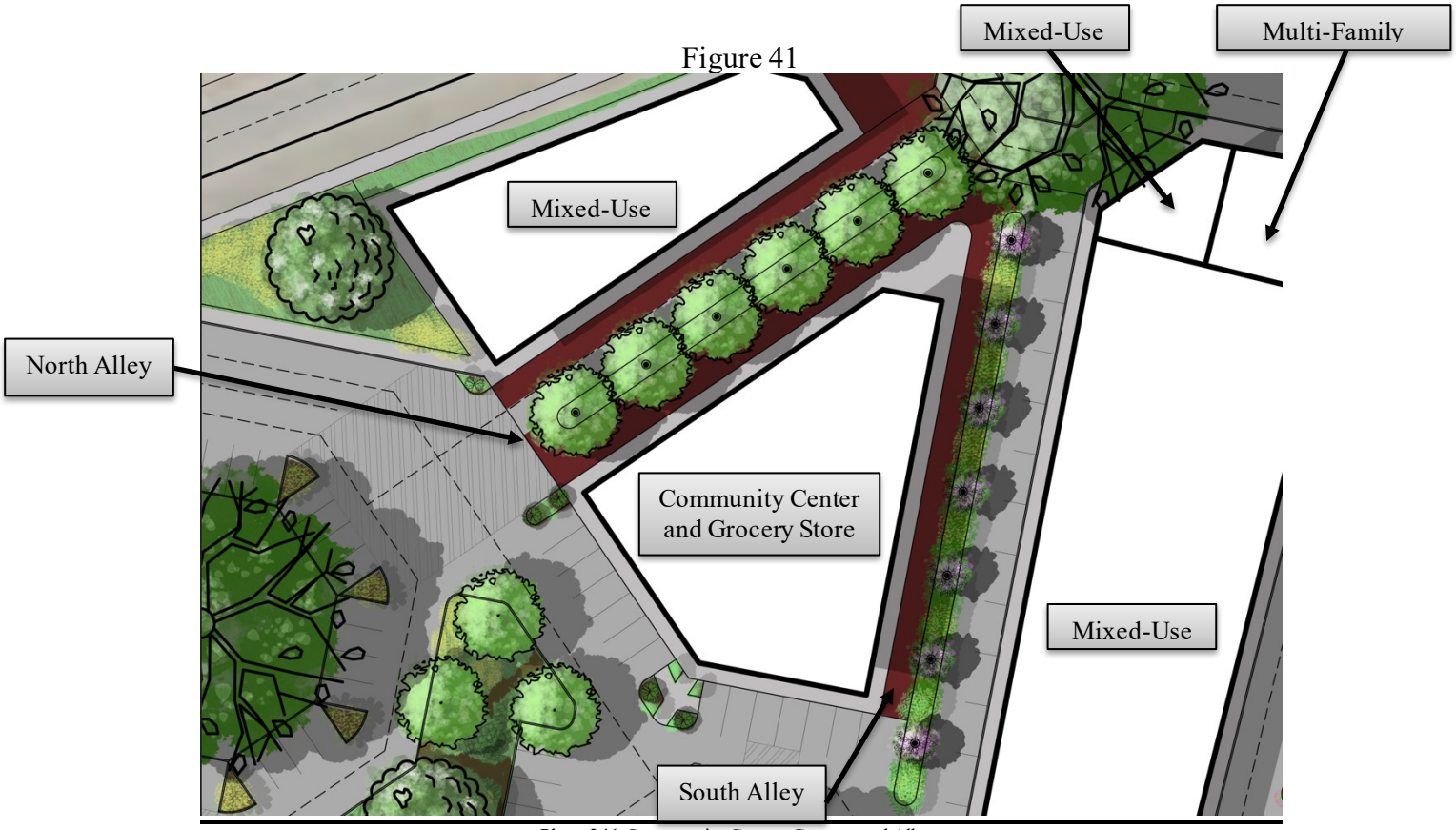


Plaza 341 North Alley

Figure 40

Plaza 341 South Alley

Figure 41



Plaza 341 Community Center, Grocer, and Alleys

3. Shopping Center Replacement

The strucutre built within the footprint of the former East Gate Shopping center will also hold street-level commerce below 2 stories of lofts. The main building itself can provide up to 16 apartments, and the two buildings bookending the north and south ends will be reserved for more; a mixed-use structure on the northwest corner with a streetlevel store and 2 levels of single apartments above and two 3-story add-ons without a streetside storefront totalling 8 more apartments. Here would be the most ideal location for restaurants and bars. All establishments that serve alcohol will remain at least 300 ft distant from the Church in the Park. A service lane for delivery trucks will be maintained behind this building, sparating Plaza 341 and Canopy Park. Both of these structures might benefit from the inclusion of hobby stores related to home crafts and tabletop gaming.

Why does the board-game industry merit special attention in this report? Recall that more than a quarter (26.9%) of people living in the city limits are ages 18 and younger (MGRC, 2020). As a former child resident of Perry, it is my experience that if one is not inclined to play sports, then there is little in this town that supports one socially. For the children and teenagers of this generation who have had their entire lives upended by the pandemic, it is this my belief that places that simultaneously cater to the imagination and social gaming will be a boon to the young people who live and grow up together here.

During the 2020 pandemic, tabletop gaming, normally associated with in-person demands averse to social distancing, ironically had a bit of a boom year thanks to the power of the internet and the ability to play boardgames virtually (Hall, 2021). However,

as the world becomes more vaccinated and people become more comfortable interacting in person with one another, I predict the tabletop gaming industry's popularity will carry over into the public space once again. Audience's have been broadened, and a well run gaming/hobby shop in the right location could have ripple effects to other nearby businesses, as these stores often host special event nights and tournaments, social events from which other enterprises here may benefit.

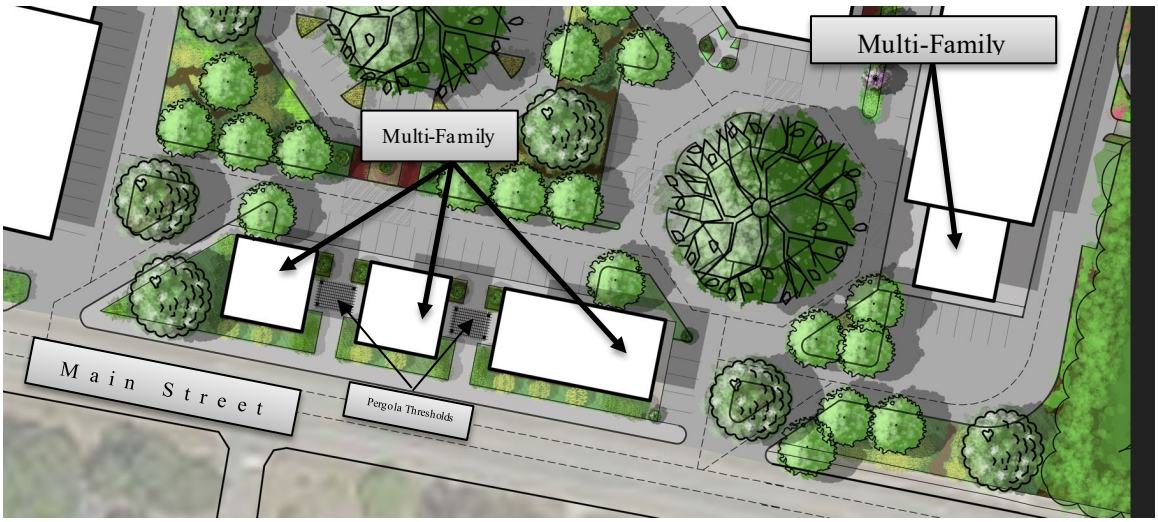
4. The South Side Apartments

On the south side there will be 3 multi-family residential buildings of 2-to-3-stories in height. In between are pergola-covered pathways through to Main Street. In order to prevent Plaza 341 from appearing as some walled in, exclusionary place there must be thresholds that give porosity to the space

Figure 42

Plaza 341 South to Main Street View

Figure 43



Plaza 341 South Apartment Homes

5. The Roundabouts

All three roundabouts are organized to promote vehicle circulation at a cautious pace. The octagon shapes do not allow swooping, gentle curves and open corners which promote a vehicle's speed through a given area over pedestrian safety. (Speck, 2018). The circulation design objectives are intended to slow all vehicles down. In fact, throughout the site all traffic lanes are err on the minimum size as to promote slow travel through what is intended to favor pedestrian traffic over the automobile.

During festivals throughout the year, the central roundabout (Figures 38 & 42) may be closed off from all vehicle entry to provide special event space. For example, the Peaches to Beaches yard sale stretches all the way from Middle Georgia down HWY 341 to the Golden Isles at the coast. Using this area for festivals allows for ready-made lots for vendor stalls, and 6,833 sqft to play in beneath a southern live oak. These trees take a long time to grow and mature, but they are iconic of this region whose care could be a

community investment. The pocket of greenspace in which the roundabout sits contains 14,526 sqft for pic-nic benches and other leisure.

"Make no mistake," says Speck "the best main streets, and the best city centers, have no cars. Being able to shop, stroll, dine on the sidewalk, and let your kids loose in an environment free of noise, exhaust, and constant risk of death is truly a blessing. So is the culture that springs up around the *passegiata*, the early evening see-and-be-seen community stroll that can oly take root when given ample space. For these reasons, creating car-free streets and zones in our towns and cities must be a goal and even a priority if we truly value walkability," (Speck 2018, 170).

Figure 44

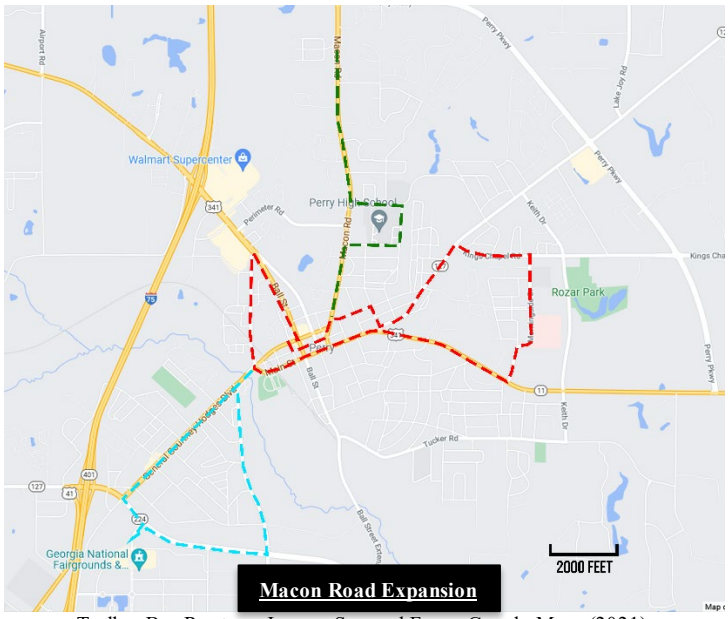
Plaza 341 Main Roundabout

6. Public Trolley

Speaking of reduced cars on the road, the Plaza presents an opportunity for Perry to experiment with public transportation (Figure 45). A solar-powered trolly that reaches to different corners of Perry with the goal of making Downtown Perry easy to reach without the need of a car. Even though Downtown Perry has ample parking spaces, many of those lots are other opportunities for in-fill developments. Every person who uses the trolley is one fewer car on the road contributing to air pollution and stormwater impediments.

The trolley route will keep to collector roads that service different neighborhoods, able to transport residents and visitors not only to Downtown and Plaza 341, but also to Rozar Park, the Ball Street (where the public library sits between Ball and Washington Street). Additional routes might include one that reaches north along Macon Road, which visits Perry Highschool, a couple multi-family residential properties, and a local assisted living community, and another that takes Gen. Courney Hodges Boulevard down south to the Georgia National Fairgrounds.

Figure 45



Trolley Bus Routes -- Images Sourced From: Google Maps (2021).

To make electric trolleys more attractive, EVs (Electric Vehicles) are generally less expensive to maintain. Because they don't have a lot of moving parts to break like sparkplugs or timing belts, scheduled mainenance costs can be up to 40% less than gas-powered alternatives (YCC, 2021). However, in the short term they may prove just as expensive as gas-powered vehicles at least temporarily because its not the parts but the knowledge, experience, and labor. EVs account for less than 3% of vehicles on American

roads (Tucker, 2021). “Even as sales of all cars accelerate in 2021, sales of new EVs are growing five times as fast as sales of gasoline-powered cars. EV repair is a specialized service at the moment. But it won’t remain a rare specialty forever,” (Tucker, 2021).

Figure 46

Plaza 341 Trolley Bus Stop

7. <u>Rain Garden Catchment</u>

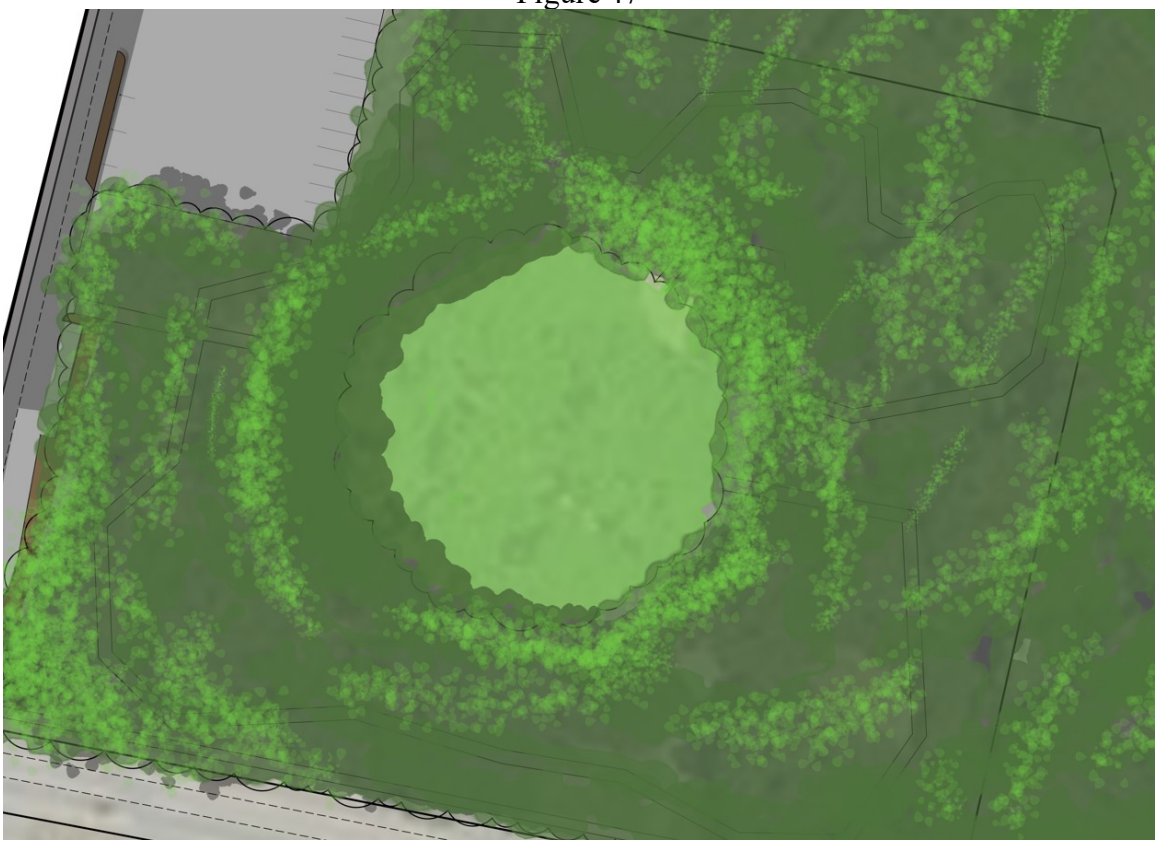
The southeast corner of the site is where all the water currently flows. This corner should be heavily dedicated to raingarden species and tecniques that promote stormwater infiltration. Excess can be drained into the municipal storm drainage sysem.

8. <u>Canopy Park</u>

Canopy Park will be a new recreation space to the area. It completes a archipelego of large parks on the eastern side of Perry. However, where most parks in Perry prioritize

wide open space, the majority of Canopy Park will consist of walking trails and sitting spaces amongst the trees. The goal will be to preserve as much of the existing canopy as possible. However, 30,639 sqft. of open sky can be made for more rambunctious recreation that cannot be had in Plaza 341. To wit: this is a place intended for anyone of all ages to run and play and sun themselves. It could also be reserved for other entertainment events.

Figure 47



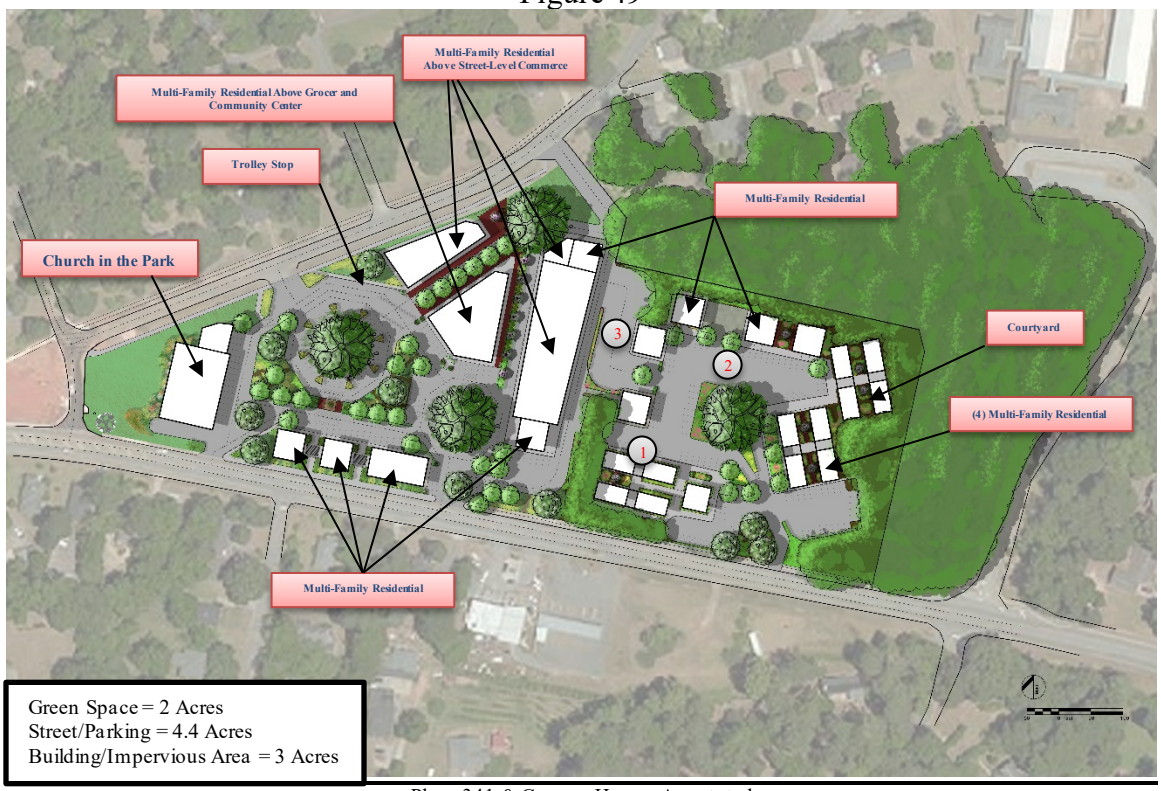
Canopy Park

The second iteration focuses on increasing housing. Canopy Park instead becomes Canopy Homes (Figure 48 & 52), a multi-family residential complex constructed in the same aesthetic style as Plaza 341. This complex adds 54 more dwelling units to the area serviced by 101 parking bays.

Figure 48

Plaza 341 & Canopy Homes

Figure 49

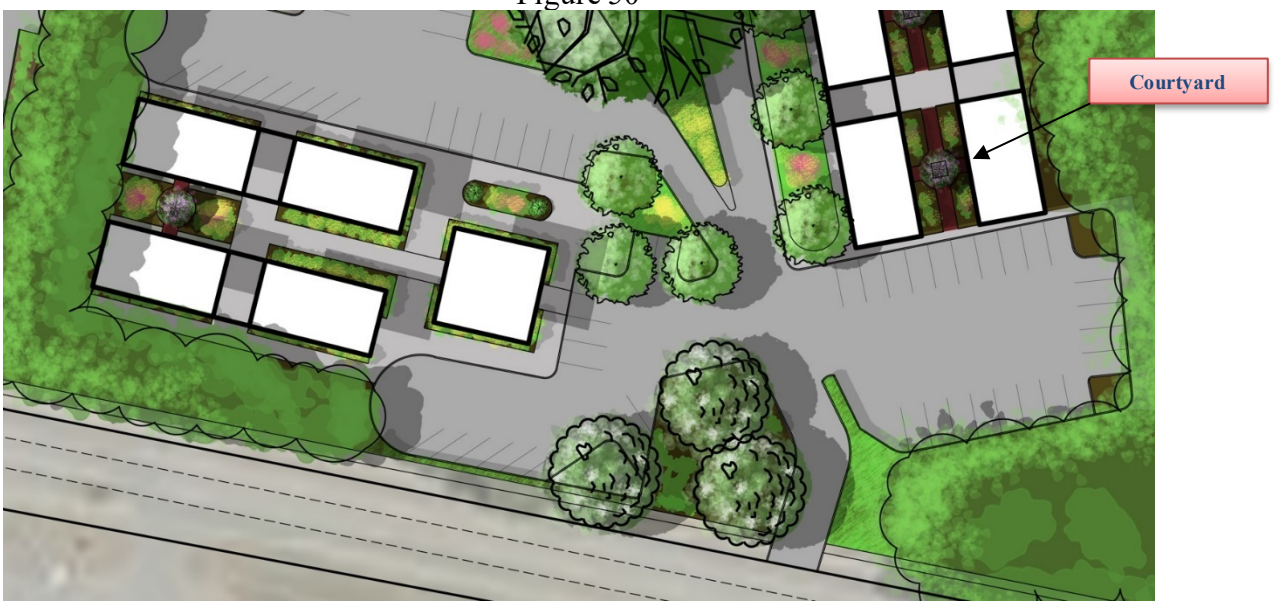


Plaza 341 & Canopy Homes Annotated

1. Canopy Homes

These buildings are purely residential. They shall be 3-to-4-stories high, depending on the canopy height. Roofs peaking above the tree line will look quite out of place for a town like Perry. There are two floorplan sizes as we mentioned in the previous chapter: 1,350 sqft. and 2025 sqft. All these apartment homes should be made available for homeownership; however, renting remains a practical option as we cannot assume every resident will choose to own a home over renting 100% of the time. Some people enjoy the flexibility a yearly lease provides. Therefore, the highest priority is for Perry to use all of its policy-making tools to ensure that everyone can afford to live here, whether just renting year-to-year or seeking to make more permanent ownership arrangements.

Figure 50



Canopy Homes Apartment Clusters

Figure 51

Canopy Homes Apartment Courtyards

Figure 52

Canopy Homes Bird's-Eye View

2. **Playground**

A playground sits across the median, a teardrop shaped partition that hosts a southern live oak to further tie Canopy Homes to Plaza 341. This partition allows for emergency vehicles to enter and exit the site, and its tapering nature cautions drivers against speeding as they enter and leave the site.

3. **Transition**

This transition is designed with 2 40'-radius curves to accommodate large vehicles and allows emergency vehicles to enter Canopy Homes from the north with plenty of space to turn.

The final iteration of Plaza 341 is deliberately hostile to automobiles (Figure 53). There will always be the need to ferry people and supplies into the site from further than people can walk, therefore, some space for vehicle circulation must exist (Figure 57 & 58). However, vehicles are not encouraged to stick around. There are some parking spots, but these are intended for contextual circumstances. For instance, they could be rented lots or reserved for the employees of the enterprises that set up shop here, or convenient places to unload a vehicle during such festivals as Peaches-to-Beaches (Figure 42).

Figure 53

Walkable Iteration Differences

1. **<u>Dedicate South Edge to Pedestrians</u>**

The southern through-way that in the previous iterations allowed for cars and on-site parking for the Main Street-side apartments has been completely removed and repurposed for pedestrian use. In this way, people can walk all the way from the farthest

Canopy Home to the Church in the Park. Dark pavers signify the crosswalks and speed tables used to, again, slow the speed of vehicular traffic to a crawl so that people may move in confidence and safety.

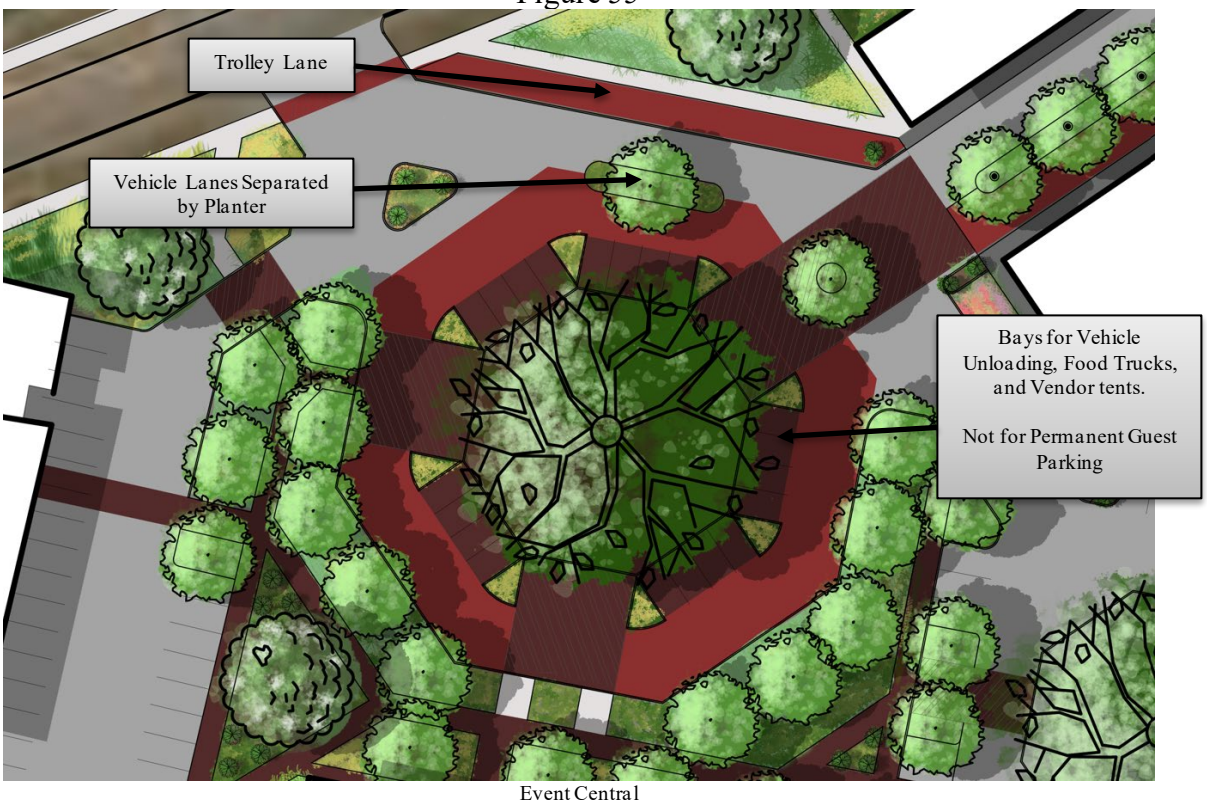
Figure 54

Southside Transformation

2. <u>Main Roundabout Restricted to Pedestrian and Cyclist Traffic</u>

By removing the vehicle access to the large, central roundabout we create a space better suited for multi-purpose use (Figure 53). We have a large surface utilizing permeable paver systems to allow an unmolested location for walking, browsing vendor tents, and access to all paths throughout the site. Parking bay lines exist to measure out lots for festival vendors and food trucks. To the north side of the roundabout, circulating vehicle lanes will be divided north and south by a planting bed. The north vehicle lane lies next to the trolley stop, which will be colored red to match the design motif and separate it from a normal lane.

Figure 55



Event Central

3. The Pedestrian-Only Alleyways

Both north and south alleys are also dedicated to pedestrian perusing (Figure 53). They are blocked off with bollards to prevent vehicles from entering. However, the north alley shall retain the option of allowing the occasional vehicle through-traffic depending on context such as events, or emergencies.

4. Canopy Homes Plaza and Playground Revised

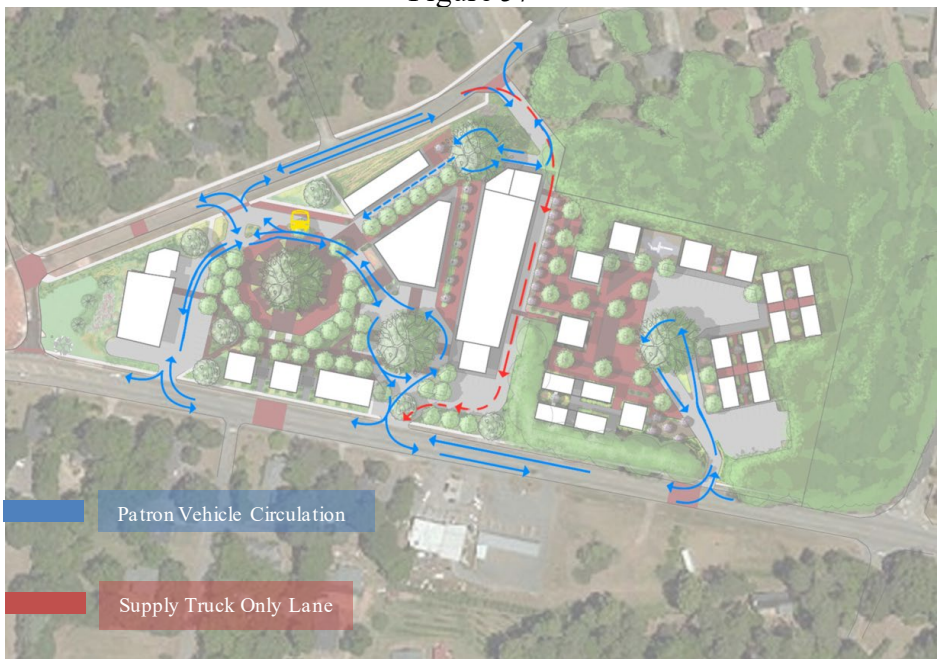
The parking lot of Canopy Homes has the most reserved parking from the previous iterations. However, a new zone where vehicles are forbidden has been created to blend Canopy Homes with Plaza 341 just beside. Here, residents and guests have ample room to exist outdoors and host their own gatherings. The parking lot for the zone

begins at the playground with an access point for maintenance vehicles to have easy access to playground equipment in a lot restricted to their use only.

Figure 56

Walkable Canopy Homes

Figure 57



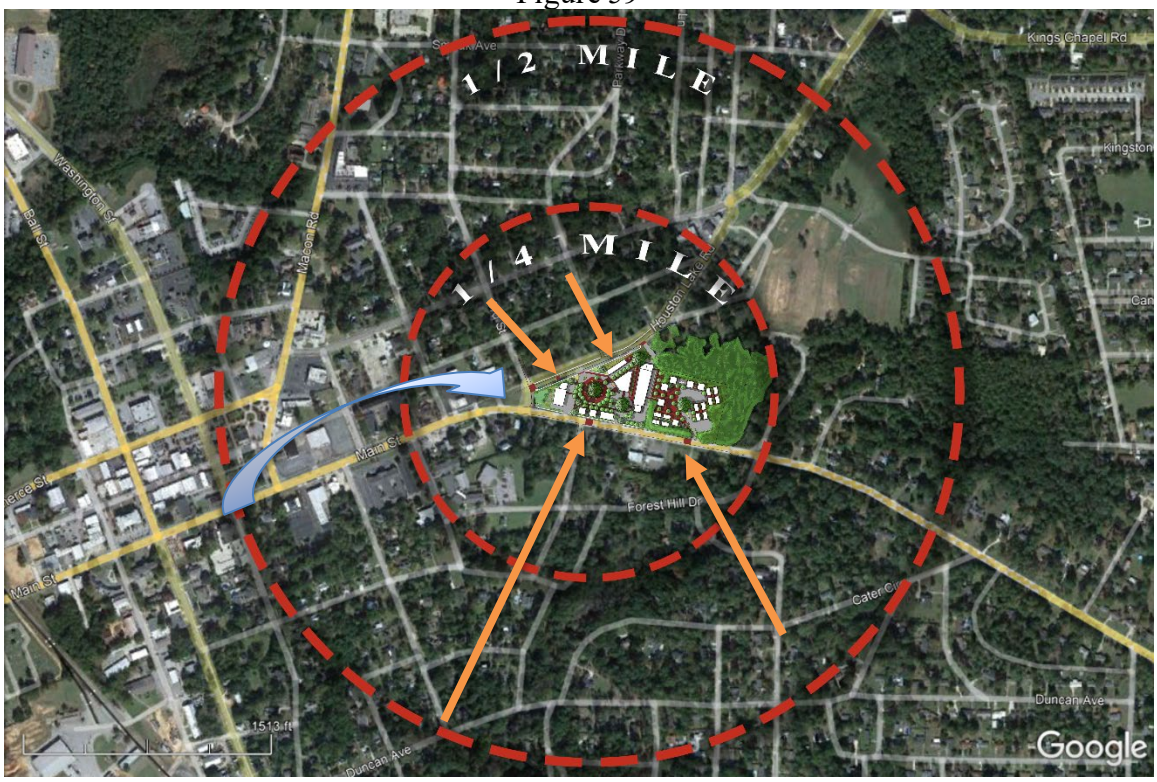
Vehicle Circulation

Figure 58

Pedestrian Circulation

Before we conclude, I would like to remind us of a little factoid contained around Figure 20: Georgia Conservancy found that a downtown with a commercial node of about 30,000 sq ft. requires 2,000 households to support it. The current existing strip mall on the site is 70,000 sq ft, and it is quite derelict. This would appear to doom Plaza 341 *et al.* on casual observation, but let's apply the ¼ and ½ mile radius introduced on Figure 20 to our site (Figure 59).

Figure 59

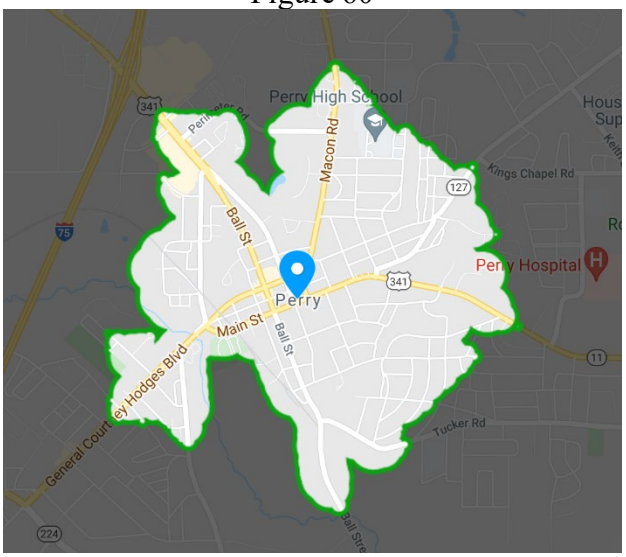


Catchment Area and Permeability of the Site

Within a ½ mile radius there are 483 existing homes. Still far, *far* short of the 2,000 required according to the Conservancy - barely even a quarter of the recommended density. However, if Perry continues to grow (and grows responsibly), using all of its available spaces for infill development and vacant lots downtown, that magical 2,000 residence figure is certainly atainable.

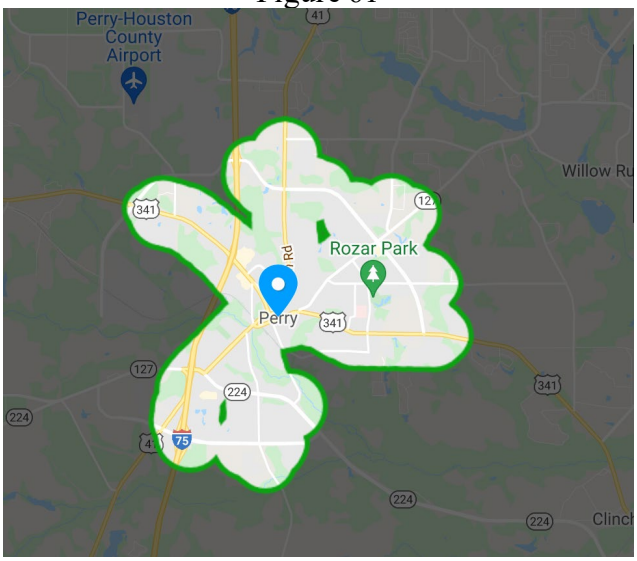
But, of course, Plaza 341 is intended as a destination as well as a dense living zone. With promotion and planning, its influence can reach beyond Perry's popular borders. Using Walkscore.com we can expand catchment to include a 20 minute walk, bike ride, and car ride, (Figures 60, 61, &62) and see that there are plenty of people within reasonable distance to make Plaza 341 a viable commercial node.

Figure 60



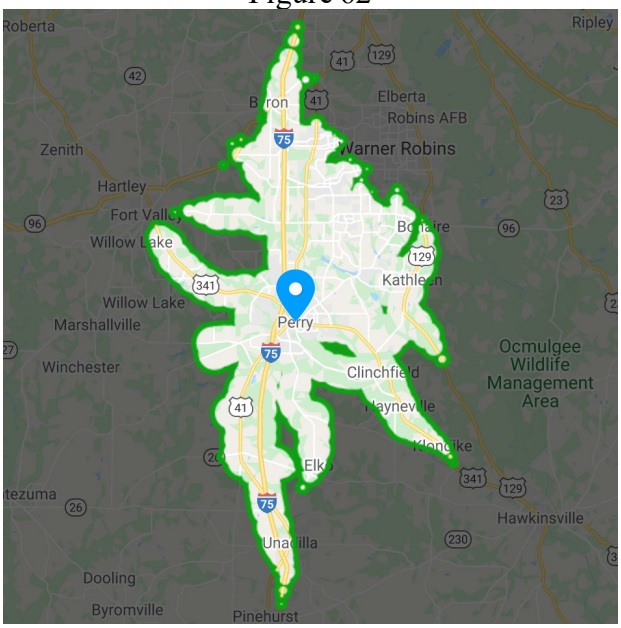
20 Minute Walk Catchment Area – Image Source: Walkscore.com

Figure 61



20 Minute Bike Ride Catchment Area – Image Source: Walkscore.com

Figure 62



20 Minute Driving Catchment Area – Image Source: Walkscore.com

Consider the many thousands of people who live within these 20 minute radii of Plaza 341. There are ample prospective visitors and customers to be found which can support this new economic node. However, Downtown Perry must simultaneously develop their other myriad infill locations as well as this plaza, and with each DDA meeting it certainly appears that City of Perry is wholly able to walk and chew gum.

Conclusions

Plaza 341 *can* reach a sustainable commercial threshold if it is promoted well to all those many thousands of people who travel up and down I-75 daily. Some design elements can be more accommodating for vehicular traffic, at least in the beginning while Perry continues to grow and develop. It's residential density *must* increase, no doubt, and there is ample opportunity within a close radius of the site to infill those developments.

Plaza 341 and Canopy Park/Canopy Homes are but an inkling of what is possible in the wasted spaces in Perry. The site, I believe, is too conspicuous to go without revival, and one day City of Perry will inevitably move beyond speculation and begin to transform the space into something productive. These designs and this research were conducted to help spark the imagination of those in positions of power; those who have the ability and responsibility to bring Perry into the 21st century. The future of our global climate is grim, as it stands, and it will take every one of us to help bring about the paradigm shift in design thinking we desperately need to ensure a clean and stable future for our way of life.

Of course, it remains unfair to put the burden of Climate Change on the individual when merely 100 companies are responsible for 71% of global carbon emissions (Griffin, 2017). However, we still must do everything within our power to change the momentum; exert influence: that *change is ok*, more than that, it's *necessary, vital*. In Perry's case change is inevitable. Its central location within Georgia and its proximity to major

population centers like Macon and Warner Robins Air Force Base, the largest employer in the region, and Interstate Route 75 make Perry's 30 years of continuous population growth appears all but guaranteed to continue. The question that remains is how will Perry respond?

What did not work, however, was designing against automobiles entirely. Our modern, American way of life has been dominated by the needs of the car over the needs of the pedestrian. Automobiles and the infrastructure catering to them are a source of a great many environmental issues as we will discuss later, and because Perry is so spread out already with zero public transportation to speak of, I had to accommodate visitors and shoppers and their vehicles to the site.

Moving forward, the main challenge facing this design and others like it with similar missions will be assuaging the fears of long-time residents of Perry who have loved and identified themselves with the small-town feel. These design proposals are a big change, and many will feel uncomfortable or even hostile to such a perceived departure from their idea of Perry. It may conjure images of mass produced, boxy, modernist buildings that have been springing up all over America, and residents may feel threatened by a sense of "placelessness" being imposed upon them, transforming the Perry they know and love into Anywhere, USA.

When everyone moves to a place expecting a small town, no one gets a small town, but with proper planning and foresight Perry can create new built environments that accommodate new residents, the current existing residents, and the environment without compromising its local identity. Perry seems poised to propel itself into a sustainable future, but right now, Perry has a wine bar, and I think that is amazing.

Another, more straightforward yet likely equally difficult challenge will be address zoning codes, especially single-use or use-based zone codes, to make cities like Perry more walkable and, therefore, denser. These will need to be adapted to allow for density solutions to even begin. As Jeff Speck writes in his book, *Walkable City Rules: 101 Steps to Making Better Places*, "It is clear why the city of zones is the exact opposite of the walkable city. If nothing is close to anything different, and the only connection is a single fat roadway, then the population is automatically conscripted into driving." (Speck, 2018, 21) However, in-depth examination of zoning codes is beyond the scope of this research.

Finally, and most importantly, these changes must come about in a way that does not push out or price out the people who already live in the surrounding area. We must endeavor to limit the negative consequences of gentrification. Displacement of some kind on any level is to be expected, but all measures must be taken to build a place of inclusion. We must act, through policy, in such a way as to preserve affordable housing and prevent as much displacement as possible.

For if we do not consider those who might be left behind or forced by circumstance to leave the homes and neighborhoods they love, then we as designers will have failed in our duty to create a better world on a moral level.

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