

## **Postwar Growth in New Castle County is Defined by Suburban Pattern**

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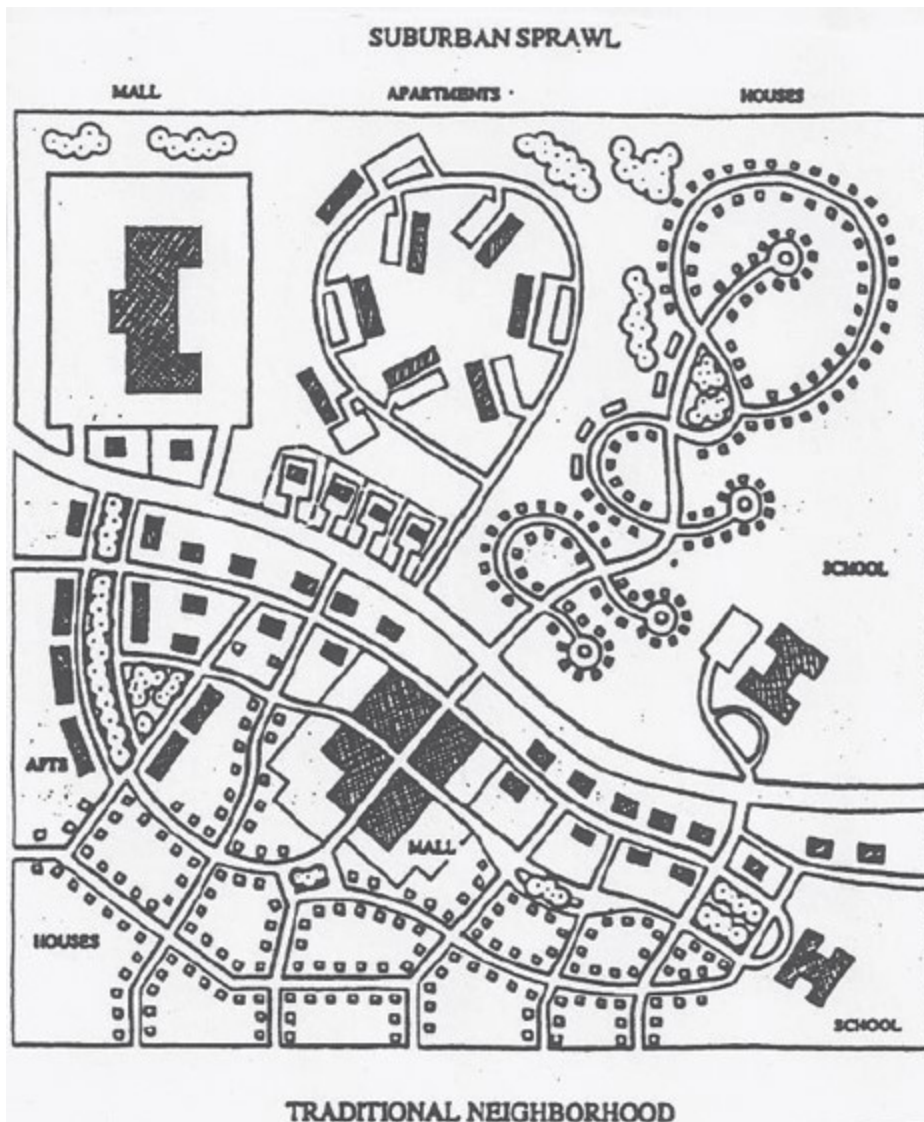
### **Abstract**

America's settlements have been carefully planned since colonial times. From the 1600s through the early 20th century our cities and towns were designed in compact, interconnected urban patterns modeled after the European cities known to early colonists. This settlement pattern is steeped in urban traditions that go back thousands of years and is very flexible and efficient. However, the rapid industrialization in the 19th century led to serious urban problems including pollution, poor sanitation, and abhorrent housing conditions for working class people. A new, uniquely American, form of development evolved in the early 20th century and greatly accelerated after World War II. This is known as the suburban pattern of development, which is characterized by the segregation of land uses, the dominance of single family detached housing, and nearly exclusive automobile access. While this development pattern has its benefits, and helped ease many of the problems of the previous era, it has created new social and health consequences. New Castle County's rapid growth since 1950 has followed, and even epitomized, this suburban pattern. Today's built environment in New Castle County (and indeed throughout the USA) has created several challenges for both planners and health professionals. These are beginning to be addressed in many creative ways to create modern, complete, and healthy communities.

### **Traditional Neighborhood Design vs. Suburban Neighborhood Design**

There are some significant differences between the design of a "traditional neighborhood" and a suburban neighborhood. Traditional neighborhoods are based on thousands of years of urban design traditions. The suburban neighborhood design evolved in the late 19th and early 20th century, and was adopted as the "default" style of development after World War II. Figure 1 shows the differences between these two development styles.

Figure 1. Comparing suburban sprawl to traditional neighborhood design<sup>1</sup>



Traditional neighborhoods, depicted in the bottom half of the diagram, can be found in any community in New Castle County planned and constructed prior to 1940. New Castle, Wilmington, Newark and Middletown are examples that we can all relate to. The various land uses (single family homes, apartment buildings, schools and the commercial district or mall) are located within a grid street pattern. The grid street pattern is “permeable,” which means that there are many routes or pathways to get from any point in the neighborhood to any other.

As such, all uses are interconnected for all users. Traffic is dispersed because there are many pathways, so it is safer for children, pedestrians, and cyclists. And because there are so many pathways to get to every single use, most trips can be short because the most direct path can be chosen.

Compare this to the suburban model of development, depicted in the top half of the figure. This reflects the way most suburban areas of New Castle County are developed. Each land use (single family homes, apartment buildings, schools and the mall) is conceived of and constructed as separate project. There are no connections between the land uses, except by way of the large arterial road. Traffic on this road is likely to be very high because every single trip requires a

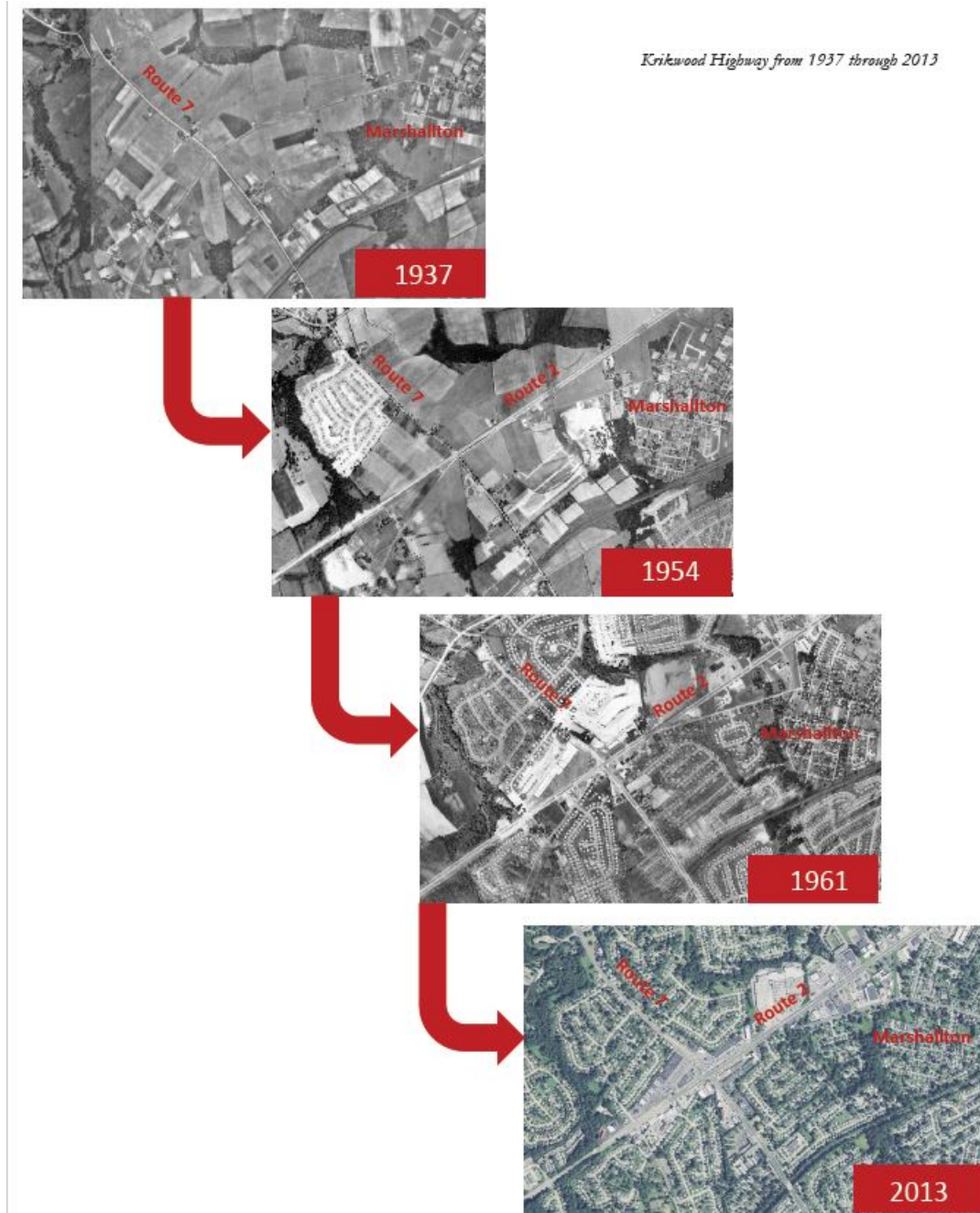
drive on this road. Even if sidewalks are provided on the arterial road (which is not a given, by the way), walking or bicycling along such a road would be dangerous due to high traffic and often high speeds. Automobile ownership or at least access is essential in this model.

There is one more distinction between the two urban design models which must be mentioned. In order for the traditional neighborhood design to work, it must be relatively compact. The term compact means, in this instance, that all of the various community components and land uses must be relatively close to one another to enable the synergies that occur between them that enable people to take advantage of that permeable street pattern with multiple routes to destinations. For example, imagine walking from work at the mall to pick up your children from school, then walking home. That is only possible if these land uses are in close proximity. Now, think back to our examples in New Castle County – Wilmington, New Castle, Newark and Middletown. All contain areas or neighborhoods where this is possible.

The suburban design pattern does not rely upon compactness. Because it is assumed that all travel between land uses will be by automobile (or bus or truck), there is no need for anything to be particularly close to one another. The school can be miles from the workplaces, shopping and homes requiring separate automobile trips to get to and from each one. This transportation flexibility allowed the continued growth of residential, commercial, and other uses all along high speed arterial road corridors.

In New Castle County, Kirkwood Highway, Route 13 and Route 896 are examples of this growth that we can all relate to. See Figure 2: growth along Kirkwood Highway (SR 2) through the decades. Prior to the highway's construction in the 1950s, this area around its intersection with Limestone Road (SR 7) was agricultural. The highway helped open the land for development though the 1960s, which occurred in a typical suburban style with commercial retail strip malls along the road with isolated residential neighborhoods behind it. Today, accessing the many shops and bus stops at the Kirkwood Highway and Limestone Road intersection with or without a car is uncomfortable and unsafe.

Figure 2. Kirkwood Highway from 1937 through 2013<sup>2</sup>



## The Emergence, and now Dominance of the Suburban Development Pattern

Traditional neighborhoods were designed based on urban patterns that had been honed over thousands of years of human settlements. The suburban development pattern is completely different, and very new – it emerged in the late 19th century and became the default pattern for new growth after World War II.

There were a number of factors which led to this change in our building patterns, but to understand them it is helpful to look back to the colonial roots of our traditional cities. Early

European settlements in America were designed based traditional urban patterns known to early colonists. This design can be best described as a "grid" street network, which is the historical basis for the design of the traditional neighborhood found in the diagram. Sometimes the grid was punctuated by squares, parks or other features. New Haven Connecticut (1630s), Philadelphia (1682), New Orleans (1718) and Savannah (1733) are examples of settlements designed based on this grid pattern.<sup>3</sup>

The grid style of development pattern has many advantages to the early settlers. It was simple to define lots or parcels of land to transfer for development. The street pattern was interconnected making it easy to access all parts of the community. And due to the fact that people moved about by foot and goods were transported by carts and wagons, sometimes horse drawn, the settlements were relatively compact. This compact, grid pattern of community design persisted through the 18th and 19th century. It was often used instead of more creative design patterns in order to simplify the subdivision and land development process, and maximize property values.<sup>3</sup>

Changing technology and economic influences exposed some serious problems in the design of American urban areas by the mid-19th century, if not before. These problems were exacerbated by the fact that local governments had a very limited role in regulating the private use of land until the early 20th century. As such, private land owners were free to do whatever they pleased on their land within the city. Rapid industrialization led to factories located near ports, rail lines and power sources often in close proximity to the residential areas where their workers lived. While this made it easy to walk to work, it also exposed the population to significant pollution. In addition, sanitation systems were sometimes rudimentary or non-existent, and fresh potable water was limited in some of these densely packed neighborhoods. Moreover, housing conditions for the migrants flooding cities were often deplorable, being widely recognized as overcrowded, dangerously designed, poorly built and unsanitary. Parks and open spaces were often rare or non-existent.<sup>3</sup>

As these problems became widely known, there were a wide range of efforts to address urban problems. The city planning profession did not exist as we know it today until the early 20th century, so these early urban reform efforts addressed specific issues. For instance, the rapid growth of New York City in the mid-1800s caused concern about the lack of open space in the original grid plan (which dated to 1811). An urban parks movement was born, culminating in the purchase and design of Central Park in 1857.<sup>3</sup>

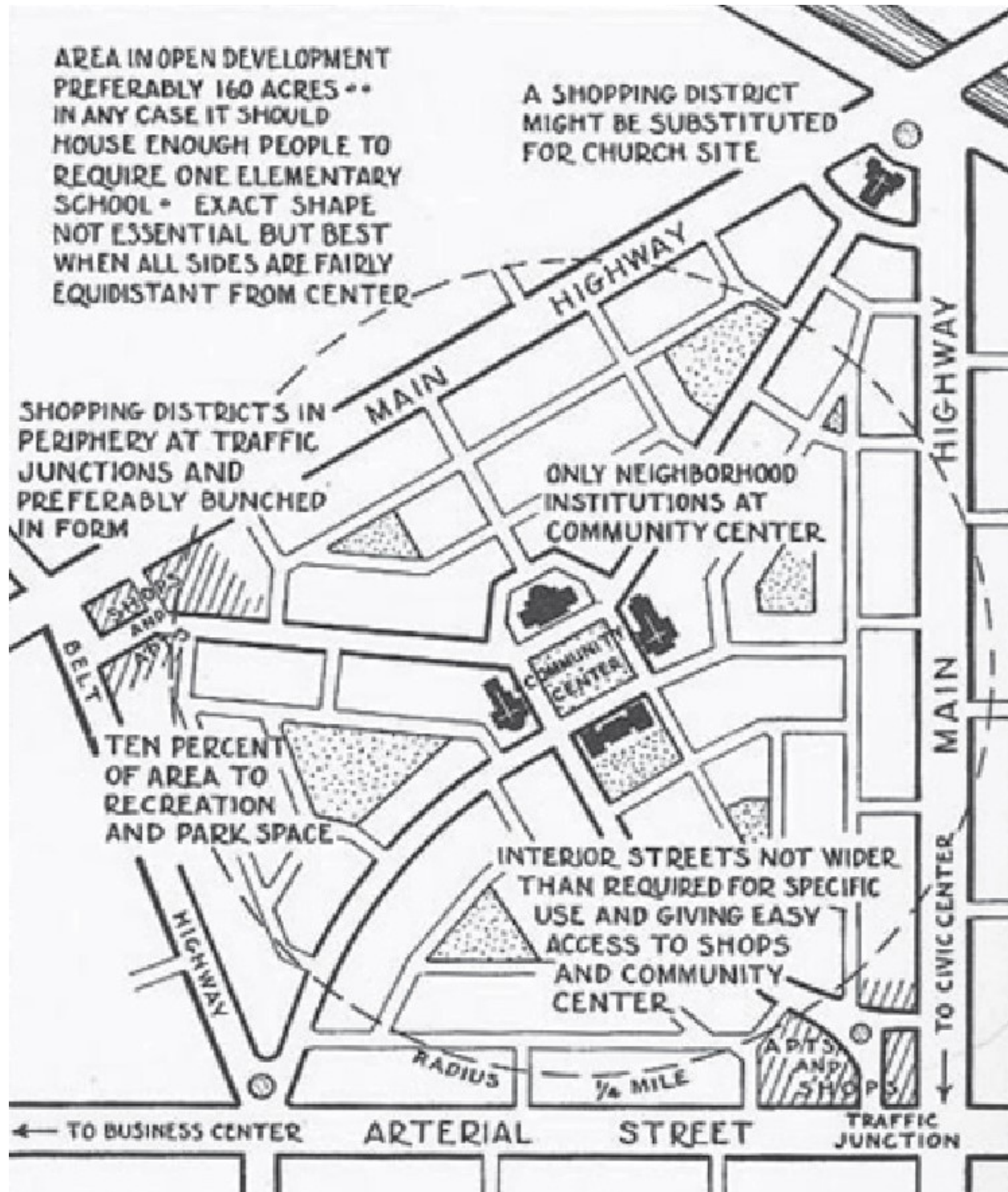
Housing reform was another significant reform movement in the late 19th century. Author Jacob Riis published two popular books (How the Other Half Lives, 1890 and The Children of the Poor, 1892) about housing conditions for the working class in New York City. The books outraged the public, and led to a congressional investigation into conditions in "slums" and ultimately to a series of laws governing housing construction, health and safety. The first laws were enacted by New York City, but soon became models and were widely copied.<sup>3</sup>

There were yet other movements that sought to solve urban problems through the redesign of cities. The most prominent example of this was the "City Beautiful" movement, which involved envisioning, and sometime implementing, large scale public works projects and civic buildings intended to beautify the city, reduce congestion and inspire economic growth. The 1893 World's Columbian Exhibition in Chicago is an example of this approach. Architect Daniel Burnham and others produced a monumental grouping of civic buildings and public spaces as part of this

exhibition that became a model demonstrating how a city could be beautiful as well as functional.<sup>3</sup>

What we know as the suburban design pattern (see Figure 3, top) was yet another reaction to urban problems of the era. Wealthy city residents seeking to escape the congestion and pollution of the city centers began to relocate to communities of detached single family homes on the periphery of the urban areas. The same landscape architect who designed Central Park in New York designed some prototype suburban communities on the outskirts of Chicago which contained curved streets and homes set in parklike garden settings in the late 1860s. These designs were widely replicated and living in a similar suburban area became a status symbol for the wealthy owner-manager class in many cities. These suburban communities were far enough away from the city center to be isolated and private, yet close enough to access the center easily by horse and carriage, and later by streetcar or rail.<sup>3</sup>

Figure 3. Clarence A. Perry's Neighborhood Unit Diagram, from *Regional Survey of New York and its Environs*, 1929v



In early 20th century America, the invention of the automobile created tremendous urban challenges as well as new opportunities for suburban growth. In 1910 there were 92 million Americans, and already 500,000 automobiles registered in the United States. By 1950, 151 million Americans owned 48 million automobiles.<sup>3</sup> Today, 91.3% of US households have a vehicle available, most more than one.<sup>4</sup> The integration of this new form of transportation was the topic of much discussion and innovation.

In the early decades of the 20th century it became clear that while automobiles provided unprecedented freedom of movement, they were also dangerous. The design of cities had never had to accommodate such mechanized, high-speed traffic. There were many innovative design concepts developed to help address continued population growth in this era, but one is relevant to the emergence of the suburban design that characterizes so much of New Castle County today. In the 1929 Regional Survey of New York and its Environs, Clarence A. Perry proposed the “neighborhood unit” as the basic building block for urban growth. The neighborhood unit was to be limited in size based on a population that would support an elementary school. The school was to be the center of the neighborhood, and the streets designed so that it would be safe for children to walk to the school from anywhere in the neighborhood. High traffic, arterial streets would define the boundaries of the neighborhood to avoid conflicts between pedestrians and cars. Commercial areas were to also be on the periphery of the neighborhood, along the arterial streets, to discourage cut through traffic.<sup>3</sup>

## **Post World War II Suburban Expansion**

Housing construction in America slowed greatly during the Great Depression in the 1930s, and shifted to housing for war workers during World War II. The cumulative effect was that there was a shortage of over 7 million housing units at the end of the war.<sup>3</sup> The Federal government recognized the need to stimulate housing construction in order provide housing for returning service members and others.

Federal Housing Administration (FHA) and Veteran's Administration (VA) housing programs were developed to stimulate private housing construction. These programs, which expanded on previously successful wartime programs, provided mortgage insurance for 90% of the loan for a period of 25 years. Embedded in this program were criteria for qualifying loans. These criteria were based upon Perry’s “Neighborhood Unit” concept, simplified to exclude all but single family detached housing. Curiously ignoring the entire "neighborhood" component of Perry’s initial concept, the standard for receiving mortgage insurance dictated that homes were to be located in exclusive residential districts, be on curved streets, with grass front yards and two trees per lot. These standards fueled massive suburban expansion outside of cities starting in the late 1940s, and continue today. Levittown, New York became the first large scale residential subdivision to be constructed to take advantage this program, and served as the prototype for an entirely new type of residential community.<sup>3</sup>

Another study that influenced the Federal mortgage criteria was a 1948 publication by the American Public Health Association, Committee on the Hygiene of Housing titled Planning the Neighborhood. This document reflected an acknowledgment that the nation was about to begin a massive postwar housing expansion. Its purpose was well described in the forward:

“The problem [of substandard housing and housing shortage] offers both a challenge and an opportunity. The city slum and the rural shack constitute grave threats to the physical and emotional health of their occupants; and they menace the social and economic structure of American life. We have the chance now to replace our substandard housing as well as to meet the need for new housing. With the application of new techniques in construction, of the growing science of planning, and sound methods of financing we can - if we will - rebuild our cities and our countryside. If we miss



this chance, no such opportunity may occur again. If we do not plan wisely and act promptly and courageously, new slums worse than any we have known before may arise.”<sup>5</sup>

The document is very thorough, and provides detailed recommendations about how to build healthy housing in healthy neighborhoods. It addresses site selection, land development and utilities, residential dwelling types, community facilities, density, and transportation. Perry’s “Neighborhood Unit” is referenced, and indeed the APHA document recommends centering new residential neighborhoods around schools and ensuring that there are adequate community facilities to meet the essential daily needs of the community. Although the document does suggest that “Predominantly single-family house developments have a place in outlying parts of the metropolitan area . . .”,<sup>5</sup> providing a diversity of housing types for all population groups in safe, healthy neighborhood settings was an overall recommendation. Unfortunately, as in Perry’s work, the only aspect that made it into the Federal mortgage standards was the preference for single family detached homes.

The pioneers of the planning movement provided many innovative models that could have shaped the massive postwar housing and suburban development expansion. The presence of these models, and the research and examples of well-designed communities that contain complete neighborhoods, did little to influence what became American suburbia, or more pejoratively labeled “suburban sprawl.” Federal mortgage standards (and may other influences not addressed here due to their complexity) fueled a mass production model among builders to produce primarily one product - the single family home in an isolated, suburban setting accessed almost exclusively by private automobile. Other land uses, such as shopping centers, office parks, and apartments, were similarly conceived as standalone “products,” financed separately, and constructed without much – if any- regard to how they contributed to the overall community design.

## **Suburbanization in New Castle County, 1920s - 1980**

Like many places across the United States, New Castle County experienced rapid growth in the postwar years which followed this suburban development model. New residents and new jobs began to settle outside the county's principal city, Wilmington. The population which left the city during this period were never replaced. Wilmington’s population contracted from 110,000 residents in 1950 to about 70,000 in 1980 through today (a decline of 27%). Meanwhile, its suburbs and small towns doubled in size, adding about 219,000 residents.

Suburban growth in New Castle County began during the 1920s. Before and around the Civil War, the county, like Delaware, was chiefly agricultural. Most residents lived outside of Wilmington, working on the farmland cleared and sowed during previous centuries. With industrialization a fresh wave of European immigrants and rural migrants flooded into Wilmington to work in its factories and their support services. The surrounding rural population stagnated through the turn of the century. By 1920, Wilmington’s population reached its peak of about 110,000--amounting to 74% of New Castle County’s total population. During the 1920s, this percentage dropped as early suburbs developed along an increasing network of all-weather roads. By 1930, 66% of New Castle County residents called Wilmington home—and that proportion has fallen steadily ever since. New waves of Wilmington migrants, most notably rural blacks from the American South around the war years, could not replace those lost. Today, at the peak of our suburbanization, only 13% of county residents live in Wilmington.

Following the Second World War, suburbanization accelerated across the county. Fresh straight highways, such as Kirkwood Highway (Route 2) in the 1950s and Interstate 95 in the 1960s, were laid down. The new highways, along with the availability of affordable personal cars, ushered in an era of unprecedented mobility. Now an average family was not tied to the ridged network of mass transit to make trips of some distance. Together with the expanding network of water and sewer infrastructure, the availability of affordable suburban housing, and a spike in population (the “baby boom”), the stage for a mass sprawl was set. This early sprawl occurred northeast of Wilmington towards the Pennsylvania line, along Kirkwood Highway (between Newark and Wilmington), and along US 13 southeast of Wilmington. By the 1970s more highway and water and upgrades enabled the valleys north of Route 2 to suburbanize, along with the patchwork of farms along the US 40 corridor.

The shift from a manufacturing economy to financial and services through the 1980s helped accelerate the suburbanization of work and shopping and everyday life. While many office jobs still located in Wilmington’s high rises downtown, they were not tied to railways, or waterways, or a transit dependent workforce as were the old manufacturing jobs. Isolated suburban office parks developed along major highways. So too did retail shopping markets. Some, notably the Christiana and Concord Malls, were concentrated clusters of retail, while most simply dropped alongside highways in strip-malls, largely cordoned off from the surrounding residential uses. Parks and other community services were placed in and around the ever-spreading residential and commercial developments.

### **Recent Suburbanization (1980s – today)**

Since the 1980s, suburban development has overtaken former farms along the US 40 corridor and across southern New Castle County. Like previous waves of suburbanization, it was triggered by enhancements to highways (such as the construction of Route 1 in the 1990s), the extension of the web of sewer and water infrastructure, and the continuation of general policy which favors the expansion of suburbs rather than redevelopment and the intensified use of existing cities, towns, and existing suburbs. Like the early waves of suburbanization beginning about 100 years ago, most of this new development south of US 40 is residential.

The Wilmington Area Planning Council (WILMAPCO), the transportation planning agency for the Wilmington region, has been tracking the southern wave of suburbanization. Between 2000 and 2011, over 11,000 new residents settled in rural areas outside of the I-95 corridor, mostly in southern New Castle County, and nearly 7,000 others settled in a county-targeted suburban growth zone just north and east of Middletown. In examining non-residential permitting data between 2008 and 2010, the agency found very weak corresponding growth within rural and developing areas. Most job and business development, then, still favored places around the I-95 corridor. Projecting out until 2040, the agency expects these trends to slow, but largely continue.<sup>6</sup> Rural areas and the targeted suburban growth zone are expected to add a further 5,000 new households each through 2040, with less than 2,000 new jobs between them.

### **Efforts to Improve Community Planning, and Reverse the Effects of Sprawl**

Planners and public health professionals have become increasingly aware of the drawbacks to our continued suburban expansion. As articulated by Patti Miller’s article in this issue, suburban

style development created numerous unforeseen health impacts. Deaths and injuries from car use – necessary to navigate suburbs – remain stubbornly high. Sprawling development patterns and isolated neighborhoods have been linked to a rise in inactive lifestyles and poor connections to jobs, retail, medical care, and healthy food. These have helped fuel several of the public health challenges of our day, which include: obesity, diabetes, cardiovascular disease, air pollution, global warming, and accidental vehicle deaths and injuries.

Strong efforts within and around planning to rethink and reverse prevailing suburban development patterns have occurred over the past half century. Nationally, growth management strategies began to take hold in the 1970s. These aimed to protect environmental resources from runaway land development.<sup>7</sup> The New Urbanist movement, a wave of pushback from within the allied professions which began in the late 1980s, sought to articulate the benefits of urban design based on the traditional model of development as well as refocusing growth within towns and cities.<sup>8</sup> Leading proponents, such as architect Jane Williamson, also seek to redevelop suburbs in a more traditional urban form. Though not tied in early years as a response to public health problems, these efforts have aimed to safeguard environmental resources from runaway land development and foster the development of diverse, mixed-use, and walkable places. There is even mounting evidence that this urban design style is one preferred by younger generations, leading to an economic and real estate development case for developing more complete communities.<sup>9</sup>

For the past two decades, Delaware’s Office of State Planning and Coordination (OSPC) has led high-level efforts to begin halting and reversing the prevailing sprawling development pattern. In 1999, it adopted the first Strategies for State Policies and Spending, which provided guidance on coordinating land use decisions with infrastructure and programming.<sup>10</sup> Updated continuously since then, the document maps which areas in Delaware are ripe for development or redevelopment (such as the I-95 corridor), and which areas should be off-limits to development (such as rural and natural areas). Development and infrastructure plans are reviewed for consistency to this statewide growth plan, and though it informs decisions, it does not have the force of law as land use decisions are made locally. More recently, the OSPC collaborated with the University of Delaware and the Delaware Department of Transportation to develop a “Complete Communities” toolbox.<sup>11</sup> The work provides exhaustive policy guidance for developing complete communities – which are described as healthy, sustainable, inclusive, and efficient places.

During the past few years, state funding to support complete communities has made available through the Downtown Development Districts program.<sup>12</sup> So far, this competitive program has awarded \$22 million to spur \$448 million in private and other investment in eight districts—from Milford to Wilmington.

Last year, New Castle County updated its Unified Development Code,<sup>13</sup> which sets out requirements for land development, to include principles which would better support healthy communities. Advice and participation from Delaware’s Healthy Eating and Active Living Coalition informed the principals. Placed in the appendix as, “Guiding Principles for Development,” the final language encourages the development of specific building, transportation, infrastructure, and civic features in different parts of the County. They encourage the development of mixed-use, walkable places while preserving the character of existing neighborhoods.

While not required of new development as would be desired, it offers specific and articulated design standards that should be considered.

This issue of the Journal details other more recent work across the state to support redeveloping existing places in a healthy and sustainable way. The Plan4Health initiative (see “Plan4Health – 7 Principals for Integrating Health into Local Government Comp Plans” on page 40) amplifies the complete communities’ framework through a public health and planning lens. Local plans, such as the Route 9 Corridor Master Plan (see “Example Delaware Planning Projects: Improving Health by Planning the Built Environment” on page 6) and program efforts (see “Growing a more Food Secure Wilmington” on page 72) are weaving these principles into long-term redevelopment recommendations and actions.

Still, while attention is growing around this issue and action is occurring to promote redevelopment and reverse sprawl, more work and attention is needed. Much of WILMAPCO’s approved spending on transportation projects has been in response to southward sprawl in New Castle County. Over \$1 billion is identified for ten major projects along or south of US 40 alone through 2040, or 60% of all planned transportation spending for new projects.<sup>6</sup> About half of that funding is going towards the construction of the US 301 Expressway, a new high-speed road north of Middletown. That project, along with major planned upgrades to Route 1 and US 40, are in direct response to growth pressures and the safety and congestion issues additional traffic volume creates.

These major transportation projects open the door for even more sprawling growth and development, as Kirkwood Highway did in the 1950s and Route 1 did in the 1990s, and raise serious concerns about the equity of transportation spending.

Autonomous (self-driving) vehicles (AV), on course to comprise much of our vehicle fleet within the next two decades, may also encourage more sprawl. The deployment of a mostly or fully AV traffic network holds great promise in significantly reducing vehicle crashes by eliminating human error from the equation. However, drivers are likely to tolerate a longer commute if they can engage in other activities while driving, such as work or play.<sup>14</sup> And the driving commutes of today are themselves poised to become shorter due to the promise of reduced congestion and higher speeds that AVs bring. Careful planning is needed to instead encourage the concurrent urban redevelopment opportunities that AVs will also open up – such as redeveloping the seas of parking lots and garages in our urban areas that will become less necessary with an AV-dominated system.<sup>15</sup>

As was detailed in this article, the suburban model development adopted in New Castle County (and throughout much of the USA) has been positive in some respects, but has had many unintended drawbacks that have urban planners, health professionals, and others in the allied professions calling for rethinking how we develop land. These efforts have been gaining momentum over the past two decades, but much of the underlying problems with land use policy and transportation spending remain. Ultimately, we must continue to work towards ending policy which favors expansion over the redevelopment and more intensified use of existing places.

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