4. Neighborhood/Community-Level Development

Community-level development decisions determine the look and feel of a neighborhood as well as how it connects to the rest of the area. This report discusses some of the major issues involved in neighborhood design decisions:

- Overall community design, including a mix of uses and open space preservation;
- Transportation issues, including street design;
- Parking requirements; and
- Stormwater management strategies, including "Green Streets."

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Figure 11. The town green at Paynter's Mill, a recent development in Sussex County.

4.1 Overall Community Design

Putting a mix of land uses, like homes, workplaces, stores, schools, houses of worship, and recreational facilities, in close proximity has several benefits. People can walk or bike to more destinations instead of having to get in their cars for every errand and every recreation. As a result, they can choose to drive less, which reduces air and water pollution, as well as traffic congestion. Mixed-use neighborhoods can use parking lots and transportation infrastructure more efficiently, requiring less pavement and reducing stormwater runoff. When buildings contain more than one use, like offices or apartments above retail shops and restaurants, the roads and parking lots that support the building are used at different times of the day. This shared use is a more efficient use of resources and can reduce the costs of development, which in turn can reduce rents or sale prices.

By encouraging people to walk, bike, and use transit rather than drive, mixed-use development patterns reduce the number of miles people must drive. Reducing the miles we drive is a critical component in achieving energy security and cutting greenhouse gas emissions. On a more personal level, when you live in a community where you can walk or bike to daily activities, you spend less money on gas and other automobile-related expenses, and you can improve your health with more regular physical activity.

Open space in neighborhoods is important for encouraging physical activity, but also for environmental reasons. Parks and other open space incorporated into the fabric of a community can serve essential stormwater management functions. In addition, neighborhoods with parks are more appealing; people pay a premium to live near or next to

parks and open spaces.[15] Some municipalities require open space within walking distance of new development. For example, Davidson, North Carolina, requires all new housing to be within a five-minute walk of a park.[16]

4.2 Transportation

Traffic and transportation are at the top of many Sussex County residents' minds. With few arterial roads and little connection among non-arterial roads, drivers have few choices, so everyone ends up on the major roads. Summer tourism traffic compounds the problem.

On a regional level, the state and the county have considered many different options. Regional transportation solutions are beyond the scope of this report; however, the development patterns and neighborhood-level design discussed here are compatible with any future public transit that might come to the county. In fact, they might even make rail—which some participants in the public workshops wanted—more likely. Rail lines require a certain population concentration around stations; Sussex County isn't there yet, but if the county promotes development in towns, it might eventually have the population density to make rail feasible. Getting rail will require long-term planning.

This section of the report addresses streets in neighborhoods, not arterial roads. For traveling long distances around the county, residents will still not have many options besides the arterials. However, to make it easier for residents to get around a neighborhood or between two developments, the county could consider:

- Connecting streets within and between neighborhoods;
- Making streets safe and comfortable for pedestrians and bicyclists; and
- Designing streets that enhance the neighborhood feel.

Connecting streets within and between neighborhoods

Towns in Sussex County, like Georgetown or Seaford, generally have a grid network of local streets, as most places built before World War II do. If a resident wants to go from one end of town to the other and the main road is congested, he or she can choose from three or four parallel streets to reach the same destination. So can all the other local drivers, which means traffic is dispersed over several streets instead of being concentrated on one road.

On the other hand, many of the new developments built in Sussex County over the past several years are poorly connected. They have one or two entry/exit points to main roads, and within the development, cul-de-sacs and disconnected streets mean that traveling two blocks as the crow flies could require driving or walking many times that distance. Children can't easily walk to a friend's house, even if they can see it from their backyard. Instead, they have to find someone to drive them.

The goals that participants expressed in the workshop suggest that the county and its towns should think of traffic circulation in terms of a network, not just one road. One reason traffic gets heavy on the main roads is that most of the local traffic must use it, even for very short trips, because there are few other options.

The lack of connectivity isn't just inconvenient—it can be dangerous. Few entry and exit points to a development also mean that emergency response vehicles can take longer to respond to a call because they may have to take a circuitous route. Just as residents have no options besides

[15] de Brun, Constance T.F. (editor). *The Economic Benefits of Land Conservation*. Trust for Public Land. 2007. Available at *www.tpl.org*.

[16] EPA. *National Award for Smart Growth Achievement, 2004*. EPA 231-F-04-001. 2004. Available at *www.epa.gov/smartgrowth/sg_awards_publication_2004.htm*.

Figure 12. Many suburban developments are being designed in ways that make trips longer and make it difficult for residents to walk or bike.

the arterials, emergency responders can't take a different route if the main road is congested.

One option for addressing this issue is to create a more connected network of streets. Connected street networks help alleviate auto traffic on the main roads by:

- Giving local drivers more route choices;
- Giving bikers and walkers safer, quieter, and perhaps more direct streets to use; and
- Allowing more access from side and back streets to parcels along the main roads.

Giving locals a choice of other ways to get to stores, homes, and work means less time waiting in traffic for residents and for visitors. Tourist traffic could continue to use the major roads; locals could avoid the congestion.

Some developers noted during the workshop that they had tried to get more access points from main roads to their developments, but DelDOT did not allow them to do so. This is typical in places like Delaware, where the state DOT has control over all public roads through design and access management standards, as well as acceptance requirements (roads have to be built to requirements or DelDOT will not "accept" them from developers). It can be difficult for individual developers to obtain case-by-case exceptions to these standards. If the development is adjacent to destinations that are walkable (i.e., near an existing town, shopping center, or school), a case can be made that added connections will convert some auto trips to walking or biking and will reduce traffic on the main roads. Under current regulations, if developers also want to build narrower, more walkable streets, those streets generally have to remain private. Existing regulations were developed for reasons that were valid at the time. It is only relatively recently that research, modeling, and results from newly built examples have demonstrated that returning to a pattern of a connected grid of narrower streets will be safer and

more efficient, have less environmental impact, and provide more transportation choices.

Virginia, which like Delaware owns most local roads, realized that current development patterns were inefficient from a transportation perspective and has undertaken several related initiatives to change state regulations, require localities to consider more compact development patterns, and encourage development of a more cost-effective network of local roads. At the direction of the General Assembly, the Virginia Department of Transportation is nearing adoption of new Subdivision Street Acceptance Requirements, which will ensure connectivity of road and pedestrian networks with the existing and future transportation network.[17] The legislation also required provisions to minimize stormwater runoff and impervious surface area.

Making streets safe and comfortable for pedestrians and bicyclists

During the public meetings and in stakeholder interviews, residents said that they enjoyed being able to walk and bike around their neighborhoods. Many streets in the county's towns and in some of the newer developments near the coast, like Paynter's Mill and the Villages of Five Points, have sidewalks. The team saw several bicyclists on these streets as well, and even a few cyclists braving Route 1. But being physically able to walk or bike and feeling safe and comfortable doing so are two different things.

Narrower streets are safer and more comfortable for pedestrians and bicyclists. Not only are they easier to cross, which is especially important for children, older people, and others who move more slowly, but they also naturally slow down traffic. Slower traffic means drivers have more time to react if a pedestrian or bicyclist enters the travel lane, and it also increases the chance of a pedestrian surviving a collision (see Figure 13). Narrower roads also have less impervious cover, thereby decreasing runoff. Indeed, EPA now views narrowing streets and roads as a stormwater best management practice. In addition, some of the stormwater management solutions discussed in Section 5 could be used to narrow existing streets, thereby improving stormwater management and making pedestrians and bicyclists safer at the same time.

Vehicle speed	Chance of survival
20 mph	95%
30 mph	55%
40 mph	15%

Figure 13. A pedestrian's chance of surviving a collision with a vehicle decreases as the vehicle's speed increases. (Source: Charlier Associates)

EPA

Figure 14. Bicyclist on Route 1.

[17] Virginia Acts of Assembly — 2007 Session, Chapter 382. "An Act to amend the Code of Virginia by adding a section numbered 33.1-70.3, relating to taking certain streets into the state secondary highway system." [S 1181] Approved March 15, 2007. See *www.vdot.virginia.gov/projects/ssar.*

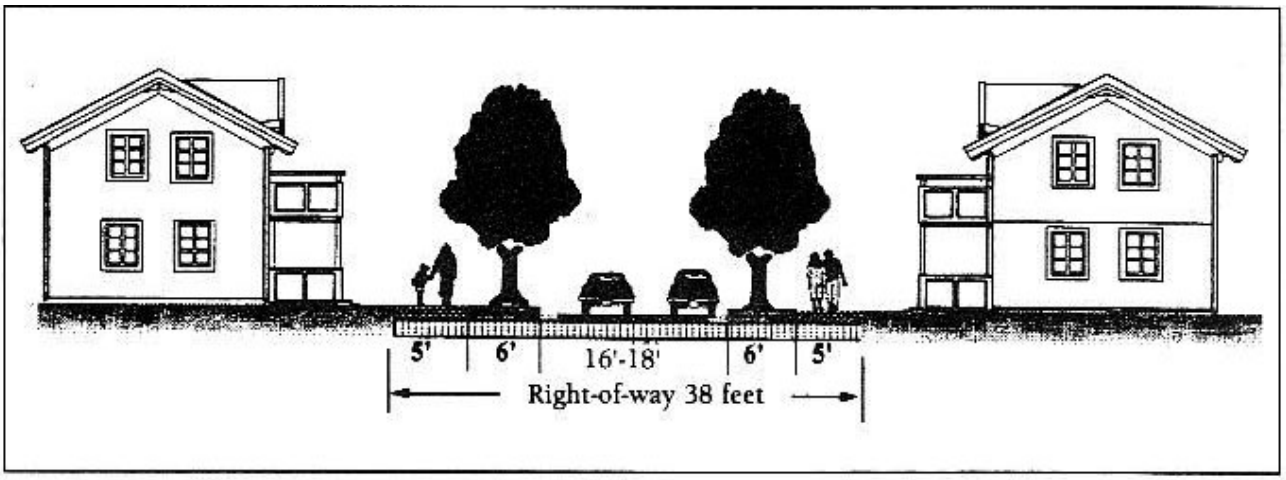

Figure 15. Sample cross-section of a neighborhood street. (Source: Dan Burden et al., *Street Design Guidelines for Healthy Neighborhoods*, Local Government Commission, 1999)

Designing streets that enhance the neighborhood feel

Residents can get nervous when they hear about plans to add new roads to their neighborhood. If the new roads are going to be like the existing roads—too wide to cross comfortably, no sidewalks, few or no trees along the road, designed to get cars where they're going as quickly as possible with little regard for people or aesthetics—then it's hard to see how a neighborhood could benefit from more roads. But if the new streets are quiet, attractive, and safe, while also offering more route choices and less congestion, residents may find the idea more appealing.

Good street design is crucial if the county decides it wants better-connected neighborhoods. Most of these new connecting streets could be narrow neighborhood streets, designed for a mostly residential area with low traffic volume at slower speeds. They could have sidewalks, on-street parking, and strips of grass, trees, or other vegetation between the sidewalk and the street. The vegetated strips could also serve as stormwater management (see Section 5 for more details).

Figure 15 shows how one of these streets might look. Each design element supports a more pleasant neighborhood street for both driver and pedestrian. The narrow lanes and on-street parking encourage drivers to drive slowly and look out for oncoming cars. The on-street parking and vegetation between the sidewalk and street protect the sidewalk to make bikers and pedestrians feel more comfortable. The street could be 8 to 10 feet wider if the county wants to allow parking on both sides of the street.

4.3 Parking

When a community has a mix of uses and a road network that allows shorter trips and makes walking and biking safer, it can also consider revising parking requirements to better balance parking supply with demand. Most of the United States is "overparked"—that is, there are more parking spaces than are needed, and these spaces require developments to be more spread out—creating longer distances between stores, roads, homes and businesses. Developers have to pay to create parking spaces—one estimate found that, depending on land and construction costs, engineering considerations, and other variables, it can cost anywhere from $20 to $200 per month to finance, build, operate, and maintain a parking space.[18] Reducing

[18] EPA. *Parking Spaces/Community Places*. 2006. EPA 231-K-06-001. pp. 9-10. Available at *www.epa.gov/smartgrowth/parking.htm*.

the number of parking spaces that developers are required to build could translate into lower housing prices for tenants. Reducing the amount of pavement for parking also helps better manage stormwater runoff by using less impervious surface.

Although probably everyone has had the experience of searching for a parking space in a full lot, what people perceive as too few parking spaces can actually be a misallocation of spaces. Correctly determining the demand for parking and exploring alternatives to the conventional way of designing parking can help reduce the number of parking spaces without inconveniencing people.

One technique being used more often in communities around the country is shared parking. With shared parking, two or more uses that need parking at different times of the day or week can share a parking area instead of having to each maintain separate parking lots. For example, offices need parking mainly on weekdays, so the same parking area can be used for restaurant traffic on evenings and weekends.

A "park once" strategy similarly relies on a mix of uses; a parking area is close enough to a variety of uses that users can park once and walk from there to several destinations. Neighborhoods with enough destinations to employ a park-once strategy can allow lower parking requirements per use, which saves property owners money. This strategy can be effective at reducing congestion in resort areas.

On-street parking can also be allowed to count toward a business or residence's parking requirement. Cars parked on the street buffer pedestrians from moving traffic. In some shopping districts, on-street spaces have relatively short time limits to encourage quicker turnover of the spaces, which brings more people into the area. Longer-term parkers can use parking areas behind the buildings and walk to different stores.

Design of parking areas is important for aesthetic and environmental reasons. No one likes a vast, unbroken parking lot with no vegetation—it's unpleasant to walk across and offers pedestrians no protection from the elements or the traffic. Likewise, these large expanses of asphalt do nothing to slow the rush of water after a storm; the runoff swiftly washes all the debris and pollutants off the lot and often into surface waters or a sewer drain.

By contrast, a parking lot with areas of trees and plants is not only more appealing, offering shade and a respite from gray pavement, it also handles stormwater better. The runoff can be channeled into vegetated areas that slow the water flow and filter out the pollutants. In many cases, an existing parking lot can be redesigned to use space more efficiently, allowing room for rain gardens without losing parking spaces. Specific ideas for parking lot design appear in Section 5.2.

4.4 Stormwater Management

These transportation and street design techniques are also stormwater management strategies. The narrower streets described above have less paved surface, and they provide vegetation along the road that can filter runoff. The new neighborhood development standards developed by the U.S. Green Building Council[19] set an objective of reducing impervious area and street runoff by 25 percent. Communities can meet this goal by reducing lane widths and by using natural infiltration techniques in medians, parking spaces, and lane edges to reduce runoff from streets.

[19] LEED ND—Leadership in Energy and Environmental Design—Neighborhood Development, *www.usgbc.org/DisplayPage.aspx?CMSPageID=148*.

One technique for designing streets that work well for people, cars, and stormwater management is "Green Streets," a streetscape design strategy with multiple functions that integrates the natural and the manmade to create a distinctive community identity. Green streetscapes facilitate natural infiltration wherever possible by using fewer impervious surfaces, such as concrete and asphalt, and allowing for more vegetation and other attractive materials, such as crushed stone and pavers. In addition to infiltration, green street practices also reuse, or evapotranspire (allow water to evaporate back into the air), stormwater runoff and can be less expensive than traditional methods of stormwater control.[20] This design approach, together with an interconnected street system and a properly funded maintenance program, can provide a streetscape that reduces the negative impacts typically associated with poorly designed streets—unappealing aesthetics, noise, and traffic congestion—and ensures long-term stewardship of natural resources.

Section 5.2 demonstrates how street-edge infiltration practices could be used on a range of street types in Sussex County, from small residential streets to busy commercial corridors. This captured runoff could serve many useful purposes, such as recharging groundwater resources where appropriate while providing aesthetic and traffic-calming benefits.

The Belle Hall study, by the South Carolina Coastal Conservation League, is an example of the water-quality and other benefits that comprehensive stormwater approaches at the neighborhood level can offer. The study examined the water quality impacts of two development alternatives for a 583-acre site in Mount Pleasant, South Carolina: one that used a conventional suburban pattern of large lots, wide roads, and separation of land uses; and one that incorporated traditional neighborhood patterns of higher densities, mixed uses, and narrower roads. In each scenario, the overall number of homes and the square feet of commercial and retail space were held constant. The results found that the conventional scenario consumed eight times more open space and generated 43 percent more runoff, four times more sediment, almost four times more nitrogen, and three times more phosphorous than the scenario that incorporated traditional neighborhood patterns.[21]

[20] Kloss, Christopher and Crystal Calarusse. *Rooftops to Rivers: Green Strategies for Controlling Stormwater and Combined Sewer Overflows*. Natural Resources Defense Council. 2006.

[21] South Carolina Coastal Conservation League, Environmental Protection Agency, National Oceanic and Atmospheric Administration, South Carolina Department of Health and Environment, Town of Mount Pleasant. 1995. *The Belle Hall Study: Sprawl vs. Traditional Town: Environmental Implications*. South Miami, FL: Dover, Kohl, and Partners.

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