Open space in Dupont Washington

Bonnie Chisholm Gee

The University of Montana

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OPEN SPACE IN DUPONT, WASHINGTON

by

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B.A. University of California, Santa Barbara, 1973

presented in partial fulfillment of the requirements

for the degree of

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Approved by:

Chairperson

Dean, Graduate School

December 8, 2003
Since the beginning of time, community builders have groped with the problem of how to arrange their settlements. In early times, the proximity of homes to agricultural fields satisfied the need of people to be close enough to their food source to be able to work their fields. Clusters of homes were often surrounded with open field and woodland. At that time, the cluster of homes also provided a defensible group, and the open land allowed the community to see enemies approaching. With the advent of modern transportation and modern governments, the location of housing units became less dependent upon proximity to growing food and providing self-defense.

Today, retaining open space in our communities is more dependent upon planned public recreation areas, greenways, conservation easements, density bonuses, and other economic incentives. In the public record, we see the community’s desire for open space often in conflict with the property-rights movement. How to fairly regulate what and how homes are erected on private land has become a conundrum for planning departments and elected officials everywhere.

This thesis examines the effect of open-space strategies used in one large intentionally-designed community, Northwest Landing, located in DuPont, Washington. New Urbanist Peter Calthorpe served as the primary designer for this community’s master plan. Northwest Landing has successfully built 3000 homes and has attracted major enterprises, including Intel and State Farm.
ACKNOWLEDGMENTS

In the seven years since I first began this odyssey, I have been encouraged by many people. I want to express my gratitude for the time and encouragement of Dr. Paul Wilson, Dr. Christiane von Reichert, Dr. Darshan Kang, and Dr. Len Broberg. I especially want to thank Dr. Jeffrey Gritzner for helping me complete the journey.
I first became interested in open-space preservation when I lived with my family for seven years on five acres of land outside of Boulder Creek, California, in the Santa Cruz Mountains. Our land was timbered with redwood trees, and bordered other large tracts—a winery, a state park, and other land preserved for watershed. Every day we shared this cool, treed landscape with wildlife ranging from rattlesnakes, field mice, bats, owls, eagles, and deer to the occasional bobcat.

Town was several miles down the valley, and consisted of three blocks, including an elementary school, a one-room library, a community center, volunteer fire department, the water company, grocery store, hardware store, beauty shop, gas station, two cafes, and two realtors.

Yet, just over the mountain from us, was the hot valley sprawl where several million people lived and worked. The communities ran into one another—Saratoga, Los Gatos, San José, Palo Alto, Redwood City, and so on until you hit San Francisco. The amazing thing about living those seven years in Boulder Creek was observing the hunger the “flatlanders” had for the green cool spaces of the hills. During weekends and in the summertime, hordes of people came over the mountain to experience a little of the feeling of our open space.

I wondered then, as I have wondered since, would those people have all come driving up our valley if they had pleasant, treed open land within walking distance of their homes? Can we do a better job of providing landscape amenities to make our communities more livable on a daily basis? Can we retain cooler microclimates by retaining more tree cover in neighborhoods and decreasing blacktop?
My work life has taken me many places since those years of bringing up children in the Santa Cruz Mountains. I have lived "semi-permanently" in seven locations—Cleveland, Ohio; White Plains, New York; Boca Raton, Florida; Atlantic Beach, Florida; Wellington, New Zealand; Salt Lake City, Utah; and Missoula, Montana. I spent eight years "on the road" consulting in locations from rural Arkansas and upper New York State to Puerto Rico and the Virgin Islands. I have spent considerable time in communities in Great Britain, continental Europe, and the Middle East. Over the years, I have observed different types of community open space, with what I observe to be different results in livability.

In addition, I spent five years serving on Missoula's City-County Planning Board, drafting and applying law regarding planning, zoning, and subdivisions, and have participated in landscape preservation projects in Northern Ireland. Now, in retirement, as part of my academic work toward a geography degree, I present the story of one community, intentionally designed, using open space strategies.
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GLOSSARY

Buildable Land: Land that is designated to meet requirements of residential or commercial building. In contrast, unbuildable land is often, steep, unstable, or located in floodplains.

Cluster Development: Development that closely groups buildings, limiting the costs for extensive infrastructure, such as roads, sewage, and utility delivery.

Density Bonus: Density refers to the number of units per acre that can be built. In some localities, an additional number of units, is allowed as a bonus when the developer clusters development and preserves open space.

Floodways: These are low areas surrounding active or occasional watercourses. A typical floodway is a riverbed that may be dry in the summer, but become filled with water in the wet season. These areas may also be dry for a number of years and only flood in certain years. Floodways are not usually considered as buildable land.

Managed Forests: These forests are typically lumber producing at some time in their growth cycle. Management practices may include thinning, wildlife conservation, runoff control, and water-quality monitoring.

Master Planned Community: A master planned community is developed with a regional outlook; with a vision of how each part fits the whole.

Mixed Use: A development that combines residential units with retail, government, schools, and or public services in close proximity is known as mixed. This is in contrast to zoned use where residences, businesses, and other public uses are strictly separated.

New Urbanism: Peter Calthorpe and Sym Van der Ryn led this design movement in the 1990s. New Urbanist design principles are now reflected in the standards of many municipalities.

Open Space: In land design, open space may include parks, managed forests, waterways, cemeteries, golf courses, and wildlife preserves. The uniting factor is that the land is preserved from commercial development.

Riparian Areas: These wet areas are typically adjacent to streams, rivers, lakes, or the ocean, and are often regulated to protect habitat and water quality.
Smart Growth: This movement varies by state and municipality, but generally uses clustered development and mixed use concepts to integrate work, school, and housing. Many of the principles espoused by New Urbanists are followed.

Traffic Calming: The intent of traffic calming is to slow traffic down, increasing safety for pedestrians and cyclists. Traffic calming often decreases noise. Methods used include decreasing road width and installation of roundabouts at four-way stops.

Viewshed: The area within sight, often reaching into the distance. A neighborhood's view of mountains, waterways, and natural preserves is often protected by regulations limiting building height.
Chapter 1

INTRODUCTION: OPEN SPACE DESIGN AND NEW URBANISM

Peter Calthorpe, architect of the master plan for Northwest Landing in DuPont, Washington, was one of the founders of the New Urbanist movement.¹ New Urbanism took root in the early 1990s following Calthorpe's collaborative work with landscape architect Sim Van der Ryn.² New Urbanist strategies attempt to adapt the best characteristics of bygone village, town, and city design to today's population, housing, and transportation needs.³

An Historical Look at New Urbanism

Many of the features of New Urbanism have their beginnings in European towns, where building space is limited. A number of these towns were built before the advent of the automobile. The design was dependent upon people's ability to get around by foot, horse, or boat. One example of this is Sloten, The Netherlands. This town, chartered in 1426, still shows the historic pattern of dense clustered buildings encircled by water and

fields. The town is bisected by a canal, and has two main roadways in the shape of a cross. A belt of trees shelter the town and all the homes are within walking distance of open land.4

These characteristics were echoed in Riverside, Illinois, in 1869. New York City's Central Park designers, Frederick Law Olmstead and Calvin Vaux, designed Riverside, which is situated just nine miles from Chicago. Residents had the benefits of gently curving tree-lined boulevards and the waterfront within walking distance of home. They could travel by train to Chicago for work or shopping.5

Radburn, New Jersey was designed by Clarence Stein and Henry Wright in 1928. Again, the railroad was an integral part of the transportation plan to carry residents to the city. At home, residents had walking paths safely segregated from roadways. Radburn consisted of three linked villages, each with its own school and parkland.6

In the second half of the twentieth century, planned communities such as Columbia, Maryland and Davis, California provide more complete models for New Urbanist designers. Columbia, Maryland, begun in 1963, is located approximately halfway between Baltimore, Maryland and Washington, D.C. Encompassing 14,000 acres, Columbia today has over 32,000 residential units, with 2800 businesses employing over 60,000 people. Over eighty miles of pathways connect parks, playgrounds, and natural areas on 4700

5 Ibid, 74.
6 Ibid, 80.
acres. Residential units and homes range in price from $160,000 to more than one million dollars.  

Village Homes in Davis, California, was designed by Michael and Judy Corbett and completed in 1981. Located near the University of California, this community has seen the positive results envisioned by New Urbanist planners. In contrast to the size of Columbia, Village Homes has only 240 homes clustered in groups of eight. Common space surrounds each cluster and pedestrian walkways connect them. Built as small passive solar homes, the surrounding green spaces provide garden plots and orchards growing oranges, almonds, apricots, pears, grapes, persimmons, peaches, cherries, and plums. Today, residents enjoy energy bills one-half to one-third the cost of the local standard. Lower crime rate, less automobile dependence, and longevity of residence have caused prices of these homes to rise. In 1995, they sold for ten to twenty-five dollars more per square foot than other homes in the area.  

New Urbanist Principles

Today’s New Urbanist projects have many features that run parallel to current movements that may be called Open Space or Smart Growth design. In this paper, I discuss principles excerpted from the Congress for New Urbanism Charter. Community and regional planners may take some lessons from the results achieved in DuPont.

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I have chosen to use the New Urbanism set of principles because of Peter Calthorpe's connection to the movement. Each new chapter in this paper is organized around one of these principles. First, I discuss the theory behind the principle; next, I describe how the design of Northwest Landing reflects that particular theory. The principles are listed below:

1. *Architecture and landscape design should grow from local climate, topography, history and building practice.* 9

2. *Neighborhoods should be compact, pedestrian-friendly, and mixed-use.* 10

3. *Concentration of civic, institutional, and commercial activity should be embedded in neighborhoods and districts, not isolated in remote, single-use complexes. Schools should be sized and located to enable children to walk or bicycle to them.* 11

4. *The physical organization of the region should be supported by a framework of transportation alternatives. Transit, pedestrian, and bicycle systems should maximize access and mobility throughout the region while reducing dependence upon the automobile.* 12

5. *In the contemporary metropolis, development must adequately accommodate automobiles. It should do so in ways that respect the pedestrian and the form of public space.* 13

6. *Streets and squares should be safe, comfortable and interesting to the pedestrian. Properly configured, they encourage walking and enable neighbors to know each other and protect their communities.* 14

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10 Ibid.

11 Ibid.

12 Ibid.

13 Ibid.

14 Ibid.
7. A primary task of all urban architecture and landscape design is the physical definition of streets and public spaces as places of shared use.\textsuperscript{15}

8. A range of parks, from tot-lots and village greens to ball fields and community gardens, should be distributed within neighborhoods. Conservation areas and open lands should be used to define and connect different neighborhoods and districts.\textsuperscript{16}

9. All buildings should provide their inhabitants with a clear sense of location, weather and time. Natural methods of heating and cooling can be more resource-efficient than mechanical systems.\textsuperscript{17}

\textsuperscript{15} Ibid.
\textsuperscript{16} Ibid.
\textsuperscript{17} Ibid.
Chapter 2

HISTORY: HOW WEYERHAUSER AND NEW URBANISM CAME TO DUPONT

The development of Northwest Landing, located on approximately 2800 acres between Tacoma and Olympia, owes much of its success to New Urbanist architect Peter Calthorpe. Equally responsible was the corporate foresight of Weyerhaeuser Corporation, which recognized the commercial possibilities of New Urbanism's open-space design concepts. Indeed, a government-required set-aside of land sullied by lead used in the DuPont Corporation's dynamite manufacture has provided open land that has been designated for a golf course and forest reserve.\textsuperscript{18} The views and recreational use of otherwise unbuildable land creates attractive amenities for the community.

Located just off Highway I-5, Northwest Landing is sited to maximize transportation access while limiting noise and creating a community where, at completion, it is estimated that 12,000 people will live, with job opportunities for 20,000.\textsuperscript{19} At this time, there are approximately 3000 residents and job opportunities for 3000 people.\textsuperscript{20}

Before Weyerhaeuser bought the development land, just 600 people lived in DuPont, which at that time consisted primarily of older cottage style homes and a few


\textsuperscript{20} Ibid.
historic public buildings, including the town hall. Features of the historic village have been protected through the National Historic Trust.\textsuperscript{21}

\textbf{DuPont, A Place with a Long History}

The coastal lowlands of Puget Sound, as discovered by British Captain George Vancouver in 1792, included the area now known as Northwest Landing. The Hudson's Bay Company built a trading post there in 1833 named Fort Nisqually. Their trade reached north to Russian outposts in Alaska, and around the Pacific Rim. In 1994, the site was donated to the Archeological Conservancy, a national preservation organization.\textsuperscript{22}

In 1841, the area known as Northwest Landing became an observatory for a major U.S. scientific expedition. Because the site overlooked the water, members of the expedition were able to chart lower Puget Sound. In 1869, the U.S. government bought the Hudson's Bay Company property and homesteaders moved in.

DuPont began as a company town after the DuPont Company purchased the property in 1906. They manufactured explosives in the community for almost seventy years. Environmental damage from that business is now being cleaned up under a consent decree.\textsuperscript{23}

\begin{flushright}
\textsuperscript{21} Northwest Landing \textlangle http://www.northwestlanding.com/ad_overview.asp\textrangle \textlangle 20 January, 2003\rangle.
\textsuperscript{22} Ibid.
\end{flushright}
Incorporation came in 1951. Residents were allowed to buy their homes, and the entire city became listed in the National Register of Historic Places. In 1976, the DuPont plant closed and 3200 acres were sold to Weyerhauser. These lands include the development named Northwest Landing, which wholly surrounds the historic village of DuPont.

Ibid. 6-7.
Fig. 1. Area Location Map
Fig. 2. Historic DuPont
Chapter 3

PROTECTION: PRESERVATION OF VIEWSCAPES, FRAGILE LANDS, AND HISTORIC SITES

Architecture and landscape design should grow from local climate, topography, history and building practice.25

In order to minimize damage and retain viewscape, many localities prohibit building on fragile lands and require protection of special historical and cultural features.26 This not only protects the land built upon, but also protects roads and waterways that are often affected by development. When landscape disturbance is minimized by a design that fits homes and roadways to the natural contour of the land, the developer generally has less cost per lot.27 It also means that maintenance is less costly for the community. It is very expensive to build and maintain sewer lines, roads, and foundations on land that is steep or fragile.28

When a builder designs a hillside development, he often transfers the underlying density of the whole property to the most buildable land areas, preserving the steepest

26 Samuel N. Stokes and A. Elizabeth Watson, Saving America's Countryside (Baltimore: Johns Hopkins University Press, 1989), 36-43.
28 Steve King, City and County Planning Amendments (Missoula, Montana: City County Planning Office, 1998).
slopes. This provides a winning proposal, reflecting good business for the developer while protecting the public interest in environmental preservation.29

Most places in the United States protect areas around running water and bodies of water. Planning laws generally require that building take place out of floodways. These lands are often eligible for special tax treatment when donated as preserves.30 Thirty percent of the land comprising Northwest Landing and historic DuPont is designated as open space in the form of parks, greenways, and preserves.31 This includes provision for wastewater and runoff.

Historic DuPont has been preserved through National Historic designation. Anthropological sites used by early settlers and Native Americans have been donated to charitable foundations.32

29 Stokes and Watson, Saving America's Countryside, 151.
DENSITY: THE BACKBONE OF OPEN SPACE

*Neighborhoods should be compact, pedestrian-friendly, and mixed-use.*

Density bonuses can provide additional density, beyond that originally allowed by zoning or comprehensive plan designation, to increase the number of units that can be built on specified land. This is an economic incentive allowing the developer to pay less per lot for development to help meet community goals through design. Open-space preservation, in some form, is generally part of the plan. Recent updates to the DuPont Comprehensive Plan allow high densities and require housing that encourages income diversity. Developers generally use some or all of the following features in their development plans:

**Cluster Development**

A cluster development is just that—it clusters buildings, typically on smaller or shared lots, in order to fit more units into an area to allow preservation of other landscape features. Cluster development can encompass homes and businesses, and can include stand-alone single-family homes or shared wall condominiums. A typical cluster

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development will have shared access, parking, and common green space.\textsuperscript{35} These features create economies for both the homebuilder and the homebuyer.\textsuperscript{36}

Northwest Landing uses cluster strategies at all levels of building. Single-family houses, cottages, and condominiums share driveways, mailbox structures, and sidewalks. Densities achieved support more cost-efficient government services.\textsuperscript{37}

Individual houses in DuPont range from cottages priced at $150,000 to view homes that exceed $250,000. Prices of the most expensive home sites appear to rise primarily because of community location or view, although many of the most expensive homes are also large enough to require larger lots.\textsuperscript{38} Many homes share alleyways that run between parallel streets providing access for garages and garbage pickup.

Fig. 3. City of Dupont Plan
Fig. 4 Condominiums
Fig. 5. Cottages
Fig. 6. House
Chapter 5

PROXIMITY: NEARBY SCHOOLS, JOBS, AND SHOPPING

Concentration of civic, institutional, and commercial activity should be embedded in neighborhoods and districts, not isolated in remote, single-use complexes. Schools should be sized and located to enable children to walk or bicycle to them.39

Mixed use is the concept of mixing appropriate land-development uses.40 For example, around the turn of the century, many downtown areas were built with apartments above stores.41 This allowed shop owners and workers to live where they could walk to work, and keep an eye on the business.

More recently, there has been a tendency to separate uses. Thus, we see residential neighborhoods that have been built all over the United States where it is not possible to get to a store or business without getting in a car.42

Now the planning pendulum has swung back. Many people see the value of mixing neighborhood commercial or small enterprises with residential areas.43 According to landscape architect Peter Calthorpe, at Northwest Landing mixed use is a key element.

42 Ibid, p.27-60.
The 2,800-acre Northwest Landing project in DuPont, Washington incorporates a mix of residential, commercial, and office uses into a single cohesive development. The project, located between Tacoma and Olympia, consists of five mixed-use villages situated on an expanse of land overlooking the Puget Sound, and adjacent to the old company town of DuPont. The site contains many archaeological and historically significant sites, including Native American settlements and one of the first trading forts in the Northwest.

The plan for Northwest Landing contains over 4,000 residential units, 150 acres of office development, and two "Main Street" retail areas. A common village green serves as a comfortable public space and gathering place.

Neighborhoods range from traditional single-family to alley-served cottages, each with small mini-parks. State Farm Insurance Company chose the site adjacent to the village green for its regional headquarters, demonstrating that well-designed mixed-use developments can be very attractive to large employers. Intel has also chosen Northwest Landing for a 192-acre campus for computer assembly and research and development.44

As noted above, Northwest Landing presently houses over 3000 people and jobs exist within the community for approximately 3000 people. At completion, approximately 12,000 people are expected to live in the community, with jobs for over 20,000 people available.45

The elementary school and jobs are located within walking or biking distance of residences. Sites have been reserved for future junior-high and high school buildings.

43 Arendt., Conservation Design for Subdivisions, 5-8.
Fig. 7. Elementary School
Fig. 9 State Farm Insurance
Fig. 10. Starbucks and Service Industries
Fig. 11. Better Business Bureau
TRANSPORTATION: LIMITING VEHICLE MILES DRIVEN

The physical organization of the region should be supported by a framework of transportation alternatives. Transit, pedestrian, and bicycle systems should maximize access and mobility throughout the region while reducing dependence upon the automobile.\textsuperscript{46}

In the contemporary metropolis, development must adequately accommodate automobiles. It should do so in ways that respect the pedestrian and the form of public space. Streets and squares should be safe, comfortable and interesting to the pedestrian. Properly configured, they encourage walking and enable neighbors to know each other and protect their communities.\textsuperscript{47}

Greenways: Links Supporting Car Safety, Walking, and Bicycling

What are “greenways?” Sometimes called greenbelts, or linear parks, greenways are strips of green space retained as a part of the landscape through parks and transportation planning. A greenway typically allows people to get from one place to another, often in urban areas, typically on foot or bicycle, in a narrow park-like setting.\textsuperscript{48}

Parkways

Parkways, or green roadways, are often designated on a map. Frederick Law Olmstead is credited with designing the first parkway in New York City in 1866, when he connected

\textsuperscript{47} Ibid.
\textsuperscript{48} Charles A. Little, \textit{Greenways for America} (Baltimore: Johns Hopkins University Press, 1995, 2.)
Prospect Park with the beaches on the Atlantic, and a returning parkway connecting to Central Park. Today, parkways may be located in areas of natural beauty, but in an urban area they are often boulevards—wider streets—with trees or greenery on both sides, and often with a planted median and sidewalks.49

Riverways, Canals, and Lakeshores

Today, most waterways have some amount of planning protection. Lakes, rivers, and canals often have pathways alongside them as a part of park planning, as a way for people to view wildlife, access water sports, or simply as a way to use the riparian corridor in its historical context. People and animals have always used riparian paths, which are usually in the lowest point in the landscape, and are the easiest travel corridor. These riparian greenways, although historical in nature, were first described in 1959.50

Walkways, Bicycle Paths and Trails

As mentioned above, walkways, bicycle paths, and pedestrian trails often parallel roadways and watercourses. They are also found as connectors from different neighborhoods, replacements for abandoned rail lines, or as recreational features of the landscape. Longer trails, such as the Appalachian Trail, which is a very long greenway,

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50 Little, Greenways for America, 2.
passes through many states and jurisdictions, primarily following the Appalachian Mountain chain for over 2000 miles from Maine to Georgia.\textsuperscript{51}

At Northwest Landing, sidewalks and bicycle routes invite residents to leave their cars at home. Bicycle parking at offices makes this convenient as well. Ten miles of rural trails can be found throughout the development's open space.\textsuperscript{52}

Drainage areas are protected and a greenbelt is designated for the coastal area paralleling Puget Sound.\textsuperscript{53} This provides a trail system overlooking the water, as well as protecting the view for all residents of the area.

A large park-and-ride facility opened in February, 2003. This allows residents to travel north and south along the adjacent freeway to Seattle, Tacoma, and Olympia.\textsuperscript{54}

\textsuperscript{51} Ibid, p. 102
Fig. 12. Transit Center
Chapter 7

VII. PUBLIC SPACES: PLACES THAT ENCOURAGE INTERACTION

A primary task of all urban architecture and landscape design is the physical definition of streets and public spaces as places of shared use.55

Providing public spaces as a feature of development can provide significant community benefit. In small developments, the public space can result from good street design. It can be something as simple as a common green space or square as a focal part of the design that can become a place where people gather. Public spaces support neighborhood identity and provide local open space.56

In a larger development, public spaces may include buildings and grounds of schools, libraries, community centers, churches, cemeteries, and fire departments.57 In Northwest Landing, the central clock tower is located on a two-acre green fronted by houses on two sides. The post office and Intel Corporation are on the other two sides.

The elementary school and childcare facility are located in neighborhoods bordered by housing. Every neighborhood has public greens and parks. Interaction is encouraged through porches fronting on the street and garages located with side entry or in alleys.


57 Arendt, Conservation Design for Subdivisions, 165-176.
Fig. 13. Duplexes on a Neighborhood Green
Chapter 8

INTEGRATING PARKS: NEARBY OPEN SPACES FOR PEOPLE AND ANIMALS

A range of parks, from tot-lots and village greens to ball fields and community gardens, should be distributed within neighborhoods. Conservation areas and open lands should be used to define and connect different neighborhoods and districts.58

Many localities require that a percentage of developed land be dedicated as parkland, or that the developer pay a fee in lieu of land. This fee can then be combined with other park monies. It is intended as a way to ensure that neighborhood parks are available to all. A developer may want to dedicate the least buildable land as parkland. This often fits the public need by preserving hillside land and special cultural or geographical features. Sometimes the dedication comes in the form of a greenline park, a narrow strip of land that connects to surrounding trail systems or wildlife corridors.59

Park dedication today is commonly looked at from a utility standpoint. In a small development, “pocket” parks are often part of the design. In the larger developments, city and regional park locations must be considered to determine how an individual development’s park dedication can augment the existing network of green spaces.60

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60 Arendt, Conservation Design for Subdivisions, 165-176.
In DuPont, roadways have sidewalks, street trees, and paved bicycle paths. A system of trails connects the neighborhoods and open-space lands. Parks with play equipment are located in every neighborhood.
Fig. 14. Clock Tower
Fig. 15. Park
Chapter 9

NEW URBANISM AND CLIMATE CONNECTIONS

All buildings should provide their inhabitants with a clear sense of location, weather and time. Natural methods of heating and cooling can be more resource-efficient than mechanical systems.\textsuperscript{61}

Resource-efficient recommendations from the U.S. Environmental Protection Agency (EPA) specifically address designing energy efficiency into both buildings and sites. The standards followed at Northwest Landing include Washington State's energy-efficiency construction requirements, including less glass exposure, double-paned windows, thicker exterior walls to accommodate more insulation, high efficiency furnaces and water heaters. Northwest Landing, like surrounding communities, follows the EPA's recommendations. This includes curbside recycling and charging for garbage pickup based upon the amount of garbage collected in order to encourage more recycling. In addition, the retention of significant numbers of trees and the reduction of blacktop is positive for air quality, and limits the formation of heat islands.\textsuperscript{62}

From an international perspective, scientists from all over the world have reached agreement through the Intergovernmental Panel on Climate Change. Their report detailing


\textsuperscript{62} Environmental Planning Agency. <http://yosemite.epa.gov/OAR/globalwarming.nsf/content/ActionsLocalSmartSavings> (20 January 2003).
response strategies states “We are certain emissions resulting from human activities are substantially increasing the atmospheric concentrations of the greenhouse gases.”

This report discusses response strategies for improving the earth’s carbon dioxide (CO₂) budget. They include cost-effective energy conservation and efficiency improvements as well as land-cover retention, which are supported by New Urbanist designs. Each tree retained in the landscape sequesters fifty pounds of carbon in a year.

There is evidence that incentives are causing an increase in land conservation. The Land Trust Alliance reports that more than 6.4 million acres in the United States have been put into land trusts through the year 2000. This demonstrates a steep rise in acres so designated. Until 1990, only 1.9 million acres had been protected by trusts.

The State of Washington recognizes the need for increased densities to maximize urban infrastructure and preserve open lands. Recent changes to state law require that municipalities build to urban densities and track and report the amount and type of open and buildable land available.

Energy efficiency, through retention of land cover and sensitive site planning can improve air quality, as well as limit urban heat islands and microclimatic change.

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64 Environmental Protection Agency. http://yosemite.epa.gov/OAR/globalwarming.nsf/content/ActionsIndividualMakesDifference (20 February 2003)


As noted above, new housing units in DuPont are built following energy efficiency standards of Washington State. In addition, high efficiency insulation and heating units that exceed the standards are offered as options to buyers.\textsuperscript{68} The effect of each housing unit on climate in DuPont is limited by the minimalist driveway and street design as well as the CO\textsubscript{2} benefits provided by the significant planted open space.

According to the National Association of Home Builders, including these design factors can benefit not only the homebuyer, community health, and the environment, but also the builder's own business bottom line.\textsuperscript{69}

\textsuperscript{68} Quadrant Homes. \url{http://www.quadranthomes.com/showroom.asp}

Chapter 10

CONCLUSIONS

We have looked at one community developed with the concepts of New Urbanism in mind. It is clear that building a new master-planned community simplifies public issues. It may be more difficult to use open-space land-planning concepts within an established community, where resistance to change is strong.\(^{70}\) Northwest Landing in DuPont was designed as a "Master Planned" community.

The DuPont Comprehensive Plan has been updated and changed as a result of the design created by Peter Calthorpe. This eases day-to-day public decision-making and approval processes for construction. However, as each new area is built, additional reviews are undertaken, and separate planning processes establish additional details within the overall plan for each neighborhood. This parallels the processes that occur in most communities.

The nine New Urbanist goals addressed in this paper have been met in DuPont. The community is being built with sensitivity to the local environment. The underlying density of housing areas, by limiting needed infrastructure, has made it economically possible to set aside open spaces, from the neighborhood greens and playgrounds to the extensive bicycle and jogging trails. Residents are able to walk or bicycle to school and many places of business. A regional park-and-ride system enhances travel choices. Large

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areas of forest and field have been preserved, as well as views of Puget Sound and Mount Rainier. Traffic calming devices include narrowed streets and roundabouts to slow traffic. An inviting network of walking paths and bicycle lanes traverse open space corridors and connect all parts of DuPont. Reclamation of chemically damaged lands being done under the direction of the State of Washington will result in a golf course modeled on an arsenic reclamation project in Montana.

Other regions and municipalities struggling with air quality, climate, and energy consumption issues may want to emulate at least four of the New Urbanist land-use goals employed in Northwest Landing. The following goals directly affect those issues:

- Community design with less blacktop and less driving through the use of convenient walkways, bicycle paths, and rapid transit

- Mixed use zoning that provides schools, jobs, and services in close proximity to housing

- Increased housing density and energy efficiency

- Planted open space retention in the form of greenways, forests, parks, agricultural lands, and wildlife preserves making use of conservation incentives or to recover damaged lands

Designing and building a complete community on a large piece of land may be easier than retrofitting New Urbanist goals in existing communities. The most likely locations for this model may well be communities similar to DuPont that are small edge communities for larger urban areas like Tacoma and Olympia. With sufficient available
open land, edge communities have the possibility of attracting sufficient businesses in advance of new housing. In turn, that business tax base can support needed services such as schools and infrastructure maintenance. Edge communities are also ripe for dense housing and transportation design that encourages fewer commute miles to be driven.

Future studies that could be useful include the following topics.

- Continued tracking to evaluate DuPont's future adherence to New Urbanist goals as buildout is reached
- A study of changing municipal costs and taxes relative to the community services and amenities provided
- Adequacy and local satisfaction of ongoing site chemical cleanup managed under the consent decree.
REFERENCE LIST


