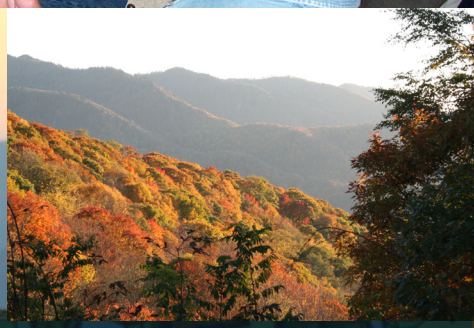
SOUTHWESTERN COMMISSION'S

REGION A TOOLBOX

A Pilot of the Mountain Landscapes Initiative

December 2009



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of The Community Foundation *of* Western North Carolina

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In recognition of the
Mountain Landscapes Initiative Toolbox

Given this 2nd day of October, 2009

Rod Jerus

Chapter President

Karen C. Smith

Awards Committee Co-Chair

APA NC

This Toolbox was prepared for

THE COMMUNITIES OF REGION A NORTH CAROLINA

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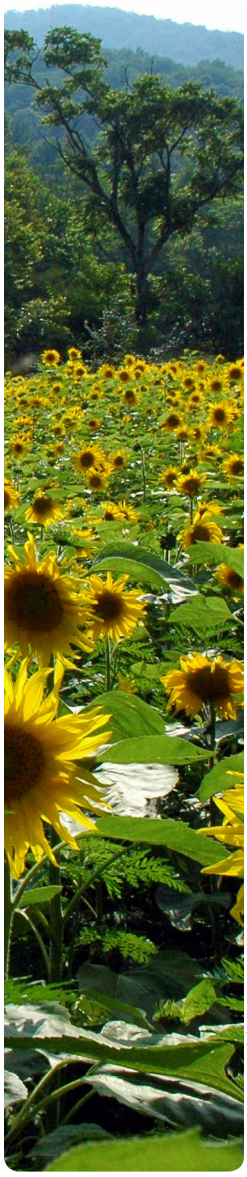

Image Source: Ralph Preston

Cover Photo Credits clockwise from top: Ralph Preston; PlaceMakers; Gabriel Cumming/Carla Norwood; Gabriel Cumming/Carla Norwood; Gabriel Cumming/Carla Norwood

ABOUT THE COMMUNITY FOUNDATION OF WNC

The Community Foundation is a non-profit organization established in 1978 to create a permanent pool of charitable capital that will always be available for the 18 counties of western North Carolina. It works with individuals, families, and businesses to create and manage charitable funds and then make grants to non-profits or public agencies in Avery, Buncombe, Burke, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, and Yancey counties.

The Foundation is now a collection of more than 750 individual funds, each with a specific charitable purpose as determined by the donor who created it. These funds total $170 million in assets earmarked for pressing needs and promising opportunities in western North Carolina. Over the years, The Community Foundation has distributed more than $90 million in grants.

WWW.CFWNC.ORG

ABOUT THE SOUTHWESTERN COMMISSION

The Southwestern North Carolina Planning and Economic Development Commission was created in November 1965 by joint resolution of the county commissioners of Cherokee, Clay, Graham, Haywood, Jackson, Macon, and Swain counties and the region's 16 town councils. The Southwestern Commission is one of 17 Regional Councils across North Carolina and among 500-plus such organizations around the country.

The Commissions' principal purpose: To provide administrative and technical support for member governments receiving grants from government agencies and foundations for everything from infrastructure improvement to senior citizen services. Council of Government staff facilitate planning, mediate disputes, and help governments find expert assistance.

WWW.REGIONA.ORG

Funding for the Mountain Landscapes Initiative has been generously provided by:

The Community Foundation of Western North Carolina

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Cherokee Preservation Foundation

Cowee Community Development Organization

Duke Energy

Land Trust for the Little Tennessee

McGill Associates

Murphy Power Board

North Carolina Rural Center

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United Community Bank

Western NC Alliance

Z. Smith Reynolds

Cherokee County

Clay County

Haywood County

Jackson County

Macon County

Swain County

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1 PURPOSE & INTRODUCTION

Image Source: Gabriel Cumming/Carla Norwood

Image Source: Gabriel Cumming/Carla Norwood

Can western North Carolina harness its growth to provide opportunity for its citizens and still be the place that has inspired residents and visitors for generations?

At our first meeting with representatives from The Community Foundation of Western North Carolina, I said this project could be the most important one we've ever done in the mountains. Now that we've created this Toolbox of growth and development guidelines for our region, I'm even more convinced of the opportunities before us.

I want to encourage those who read this document to consider it a set of supporting practices for regional sustainability. By that, I mean economic, environmental, and social sustainability—the triple bottom line.

Up until now, we may have considered growth management and certainly land use regulations as restrictions we put on ourselves to protect the environment and public health. We thought of them as defensive strategies, but you can't successfully compete in any arena by playing only defense.

We live in a time and place where the health of our economy is directly tied to the health of our natural landscapes and to the vitality of our communities. The industrial age is over. Instead of demanding the freedom to pollute the environment and displace local culture in return for creating jobs, those who drive our economy nowadays come into our region talking about quality of life, sense of place, and long-term sustainability. We hear that from tourists, real estate professionals, and location-shopping entrepreneurs. The better we make the places we love, the better we position ourselves in this new, still-evolving economy.

Our new Toolbox is a comprehensive guide to best practices and proven strategies for protecting the best of what we have and for making what we build even better. It's an economic development manual. And best of all, we created it together.

Let's don't miss this chance.

Bill Gibson
Executive Director
Southwestern Commission

We at The Community Foundation of Western North Carolina are proud to have launched the effort that produced this Toolbox. The Mountain Landscapes Initiative is the first step in our commitment, to support the 18 counties we serve in shaping more livable and more economically viable communities in the 21st century.

If the Toolbox were all that emerged from the Mountain Landscape Initiatives pilot, we would consider it a success. It's an inspiring product. But we're just as proud of the process that delivered it.

Over the course of the six months ending with our May 2008 charrettes, more than 1,000 people in the seven western North Carolina counties participated in workshops, community meetings and personal interviews that resulted in the "Seeking Balance" documentary. We are convinced that when participants see their interests and anxieties reflected in the content and organization of this document, they'll be proud of the investment they made.

We hope that's one of the big lessons of the pilot: When you engage citizens directly in a process that channels their concerns and rewards their participation with meaningful results, you can not only set ambitious goals, you can achieve them.

As we broaden the Mountain Landscapes Initiative into other counties, we are determined to build on this experience. We know citizens and builders throughout the region will use this Toolbox, and we will encourage them to emulate the collaborative process as well. What we have here is proof positive of what committed communities working in harmony with expert designers, engineers, and other specialists can accomplish together.

Pat Smith
President
The Community Foundation of Western North Carolina

Image Source: Gabriel Cumming/Carla Norwood

Image Source: Gabriel Cumming/Carla Norwood

When you engage citizens directly in a process that channels their concerns and rewards their participation with meaningful results, you can not only set ambitious goals, you can achieve them.

1.1 WHY A TOOLBOX?

"...we can grow in ways that add to our quality of life instead of threatening it."

-Vicki Greene

Image Source: Gabriel Cumming/Carla Norwood

What you'll see on these pages is a groundbreaking document.

It's not that the information itself is revolutionary. The best builders and developers in our region learned to build roads and to site homes so slopes don't erode and houses don't fall off the mountainside. Many of the best practices you'll see in our new "Toolbox" came from that old store of knowledge.

What is so different about this advice is that it has been collected and packaged as a response to a request from fiercely independent people who are not in the habit of telling their neighbors what to do. I know that because I am one of those people. I'm a native of these mountains, and I have worked with town and county governments here for more than three decades. So when I tell you there's a new willingness to talk about guidelines for growth, even rules for growth, you can believe me.

There's no doubt that part of the reason for the change in attitude is the growing awareness that a lot of what we took for granted is threatened. We'd better do something if we want to protect what we love for our children and grandchildren and their grandchildren.

People want to be in these mountains. And if we help them understand what these landscapes require in order to retain their appeal, we can grow in ways that add to our quality of life instead of threatening it.

How do I know there's support for this kind of thinking? It's my job.

In 2007, the Commission convened a Growth Management Workshop in Macon County, where local elected officials and their staffers came up with a wish list of tools for a new "Toolbox" for planning and building in the mountains.

Here, that wish list is fulfilled. It's a made-in-the-mountains product we can all be proud of.

Vicki Greene
Assistant Director
Southwestern Commission
Project Manager for the MLI Toolbox Pilot

Image Source: Gabriel Cumming/Carla Norwood

1.2 WHAT GOT US HERE? THE PLACE-BASED ECONOMY

Since humans first migrated to the highlands of western North Carolina, they have revered the landscape and valued its economic potential. The region's mountains and rivers, its wildlife, and its fertile lowlands engendered a distinctive culture and a succession of economies.

For most of that history, the livelihoods of the region's inhabitants had strong connections with place, beginning with farms in the valleys and evolving over time to businesses that prospered in hamlets, villages, towns and metropolitan areas.

For a time, the Industrial Revolution spawned industries not nearly so dependent upon place. These businesses could—and did—move across regional and, ultimately, international borders, chasing cheaper labor, more lenient environmental regulations, and government subsidies and tax relief. As investment from these migrating industrial sectors declined, our region has refocused on the "place-based economy" linked with location and landscape. Our sense of place and quality of life advantages have once again become our primary economic development assets. In the late 1900s, the economies of many mountain communities were powered by seasonal visitors, followed by second-home builders, and more recently by migrating retirees.

> *Our sense of place and quality of life advantages have once again become our primary economic development assets.*

Now these key assets are threatened by the unintended consequences of attracting so many people and so much development so quickly. Unparalleled growth and largely unregulated development have changed the look and feel of our landscape and our communities. They have strained commercial corridors, tightened access to affordable housing, and accelerated the rise in property taxes. Citizens justifiably fear a decline in the social, economic, and environmental attributes that define their quality of life and that attract and hold residents in the region. All of this has made land use planning the most hotly contested topic in western North Carolina.

Growth management issues fuel bitter debates, generate front-page news stories, divide communities, and dominate the agendas of public meetings. Decision makers on every level, from elected officials to developers and individual property-owners, are often perplexed by what seem to be competing demands from long-time landowners, newcomers, farmers, developers, realtors, environmentalists, property rights advocates, builders, and contractors.

These myriad demands need not be mutually exclusive, especially when we recognize that we all have stakes in preserving and enhancing the region's quality of life and its place-based economy. But our citizens and policy-makers need help. They need access to effective tools for sorting through alternatives and implementing approaches that support a healthy economy, strengthen our mountain communities, and assure quality of life for all citizens for generations to come. -*Contributed by Ben Brown, PlaceMakers*

GROWTH MANAGEMENT WORKSHOP, JUNE 28, 2007

Executive Summary

Of the estimated 50 western North Carolina leaders and staff experts at the June 28 Growth Management Workshop, more than 60 percent (32) completed two-page questionnaires about their concerns and about the questions they most wanted answered.

There was a clear undercurrent of support for a regional approach that addresses multiple challenges at the same time. The top two challenges listed by attendees were related to current hot-button topics: development on unstable slopes and the protection of rivers and streams. But "dealing with a combination of concerns while nurturing a strong local and regional economy" was a strong No. 3.

The most frequently mentioned questions that attendees wanted answered:

1. What are the best models/strategies for informing/engaging/achieving buy-in from the broadest cross-sections of our communities?
2. How can we effectively compile, organize, and distribute land use trend data that can aid decision-making?
3. What are current best practices/models for planning and building in ways that:
    - Grow the region while protecting watersheds, slopes and ridge tops, rivers and streams, farmlands, and other critical assets?
    - Harmonize long-range planning with long-range economic development strategies?
    - Encourage a range of housing choices to match a range of incomes?

1.3 GROWTH & CHANGE IN WESTERN NC

Before we get too deeply into a discussion of regional trends, we'd better address this question: What do we mean when we say "western North Carolina"?

The state-designated AdvantageWest economic development region includes the 23 westernmost counties of the state. The Community Foundation of Western North Carolina serves 18 of those counties. And the Southwestern Commission, the council of governments organization for Region A, serves the seven counties targeted by this Toolbox.

It makes a difference what we mean when we say "region" because the wider the geographic area we're talking about, the greater the likelihood that broad generalizations won't apply. Take the issue of growth, for instance.

Locality	% Change Median Household Income	% Change Per Capita Income	% Change in Poverty	% Population Change
Ashe	13.2%	28.1%	-19.7%	9.8%
Burke	2.5%	11.6%	23.4%	17.7%
Caldwell	3.5%	12.1%	8.9%	9.5%
Cleveland	-0.8%	9.0%	36.7%	13.7%
Mitchell	10.5%	16.0%	-6.1%	8.7%
Rutherford	-2.8%	7.3%	23.7%	10.5%
Yancey	13.8%	28.5%	-2.1%	15.3%
North Carolina	9.4%	17.3%	15.5%	21.4%

Locality	% Change Median Household Income	% Change Per Capita Income	% Change in Poverty	% Population Change
Cherokee	6.2%	27.1%	-9.6%	20.5%
Clay	26.1%	43.4%	-22.5%	22.6%
Graham	18.4%	19.4%	-13.6%	11.1%
Haywood	12.4%	17.7%	4.4%	15.1%
Jackson	12.6%	26.7%	15.3%	23.4%
Macon	17.0%	25.9%	-3.0%	26.9%
Swain	32.5%	22.2%	-23.2%	15.1%
North Carolina	9.4%	17.3%	15.5%	21.4%

Source: NC Rural Center, www.ncruralcenter.org/ databank/search.asp

If you're talking about the AdvantageWest region, overall growth for the 23 counties significantly lagged the state's growth between 1990 and 2000: 16.7 percent compared with North Carolina's ten-year growth rate of 21.4 percent. But don't try to make the slow-growth case in Macon County, which grew 26.9 percent during the '90s or in Clay or Jackson Counties, which also grew at faster rates than the state at large. In fact, between 1990 and 2000, four of the seven Region A counties grew at 20-plus percentage points.

Meanwhile, the companion AdvantageWest counties of Ashe, Caldwell, and Mitchell didn't break the 10-percent growth mark during that time. Graham County had the lowest growth rate of the seven counties in Region A.

One mountain county, therefore, may sense problems related to too much growth too fast. Another may feel the challenge is all about attracting more growth faster. So how can guidelines for responsible planning and development speak to both perspectives?

Maybe we should start the discussion by acknowledging up front how important growth is. In most of the high-growth counties in western North Carolina during the 1990-2000 Census period, median household income and per capita income rose at higher rates than state averages. And in most of those counties with better-than-average growth, poverty rates declined as state poverty averages increased.

In slow-growth AdvantageWest counties, on the other hand, the numbers tended to go in the opposite direction. In Cleveland County, where the population grew only 13.7 percent between 1990 and 2000, the median household income was essentially flat, and the poverty rate increased by

36.7 percent, more than twice the state average.

So what accounts for the growth and economic development gaps? There are a variety of causes, of course, particularly when we're talking about rural counties that might have been dependent upon manufacturing businesses that took jobs elsewhere. One connecting link for many of the high-growth counties seems to be fortunate geography. They are on key transportation corridors that serve as gateways to the region's national forests and to the Great Smoky Mountains National Park. They are selling ready access to spectacular natural amenities, whether it's a view of the mountain skyline or adventure on mountain bike trails or whitewater rivers.

People, especially those from cities to the south, arrive first as tourists, then as second-home investors, then as migrating retirees. A recent study by the U.S. Department of Agriculture's Economic Research Service says, "This kind of development has the potential to dramatically transform a stagnant rural community into a thriving community by attracting retirees, entrepreneurs, and young workers, diversifying the economy and improving the quality of life with a broader array of goods and services." *(Source: www.ers.usda.gov/publications/err7/ (complete study); excerpt in "Amber Waves," September 2005: www.ers.usda.gov/AmberWaves/September05/Features/RuralAreasBenefit.htm)* This sounds like a good goal, whether you live in Cleveland County or Macon County.

But, the report continues, this sort of development "comes with potential problems. Some problems are growth-related—such as congested roads, crowded schools, environmental strains, housing shortages, despoiled scenic views, and conflicts over land use and public policy."

The challenge is to maximize the chances for healthy growth without inviting all the unhealthy side effects. Which is why this "Toolbox" focuses on how to grow as opposed to whether to grow. "Growth itself is not the problem," says a strategic conservation plan by the North Carolina's Department of the Environment and Natural Resources. "It is the pattern of growth that is the issue" *(Source: "Future of Water Report" from Duke University's Nicholas Institute, 2007: www.nicholas.duke.edu/institute/waterreport.pdf).*

AdvantageWest Economic Development Group: www.advantagewest.com

Institute for the Economy and the Future—Western Carolina University's 2008 Regional Outlook Report: ief.wcu.edu

RESOURCES

PUBLIC OPINION ON GROWTH & DEVELOPMENT IN WESTERN NORTH CAROLINA

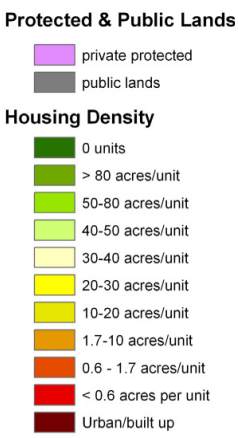
(The following are excerpted from results of a public opinion poll of 1,079 randomly selected respondents in the state's 23 westernmost counties conducted by WCU researchers for and reported in the 2008 Regional Outlook Report, www.ief.edu.)

- Most (62 percent) respondents do not view homes in WNC as affordable for people like themselves.
- While the majority (54 percent) of respondents perceive they are as well off financially as they were a year ago, a growing number reported being worse off and fewer reported being better off compared with findings from the 2003 study.
- The majority of respondents are somewhat or strongly in favor of land-use regulation in WNC. However, language surrounding the issue influences the level of support for regulation, with people more in favor of "land-use planning" than "zoning."
- Most respondents support ordinances that restrict steep slope development (76 percent) and ridge top development (72 percent) in WNC. Likewise, most respondents support the creation of public green space preserves (89 percent).
- Satisfaction with local government is fairly evenly split among respondents.
- Respondents primarily identify as American, followed by North Carolinian, Southerner, and Appalachian. People who identify as Appalachians are much less likely to support growth and development in WNC than people who show less identification with Appalachia.

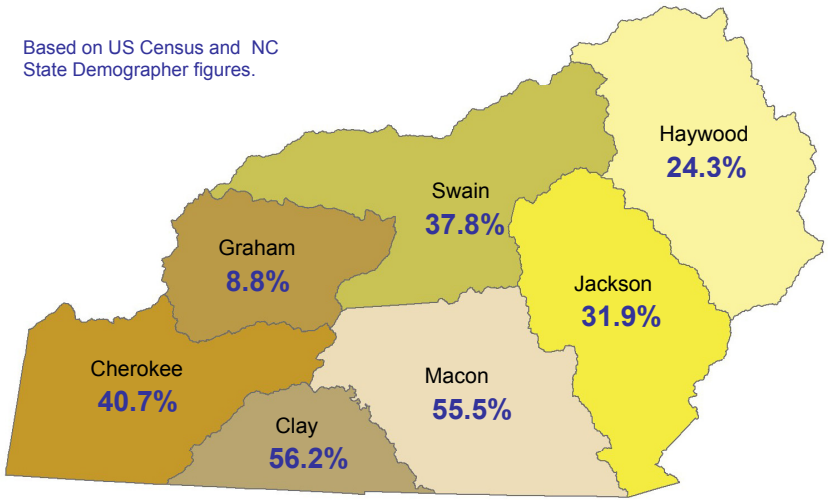
1.4 REGIONAL TREND DATA

Using the latest data sets and spatial geographic resources, a number of analysis maps were generated to better illustrate the pace and type of change in Region A. The maps on the next two pages show a variety of change-related information that is intended to inform both citizens and elected officials of the region.

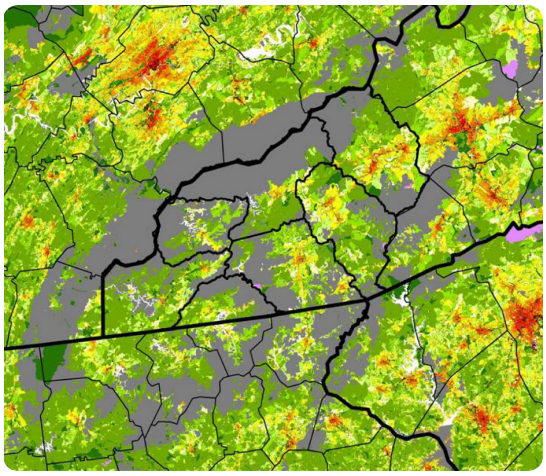
From increasing housing density to population growth to loss of farmland, change is evident throughout the region.



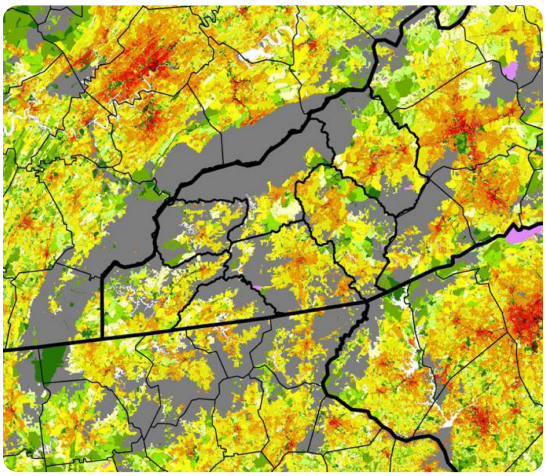
Projected Growth 2000 - 2030



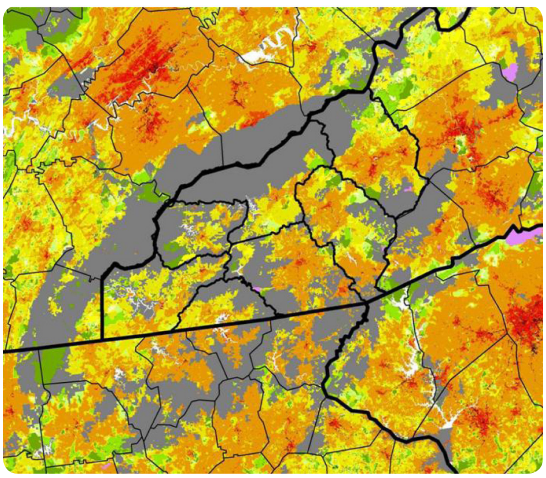
▲ *The growth projections over the next 20+ years show a significant increase in population in the region. Though much of the construction in the region has been for second homes and seasonal residences, the retirement of the "baby boomers" over the next two decades is expected to significantly increase the full-time population.*



1970 Regional Housing Density



2000 Regional Housing Density

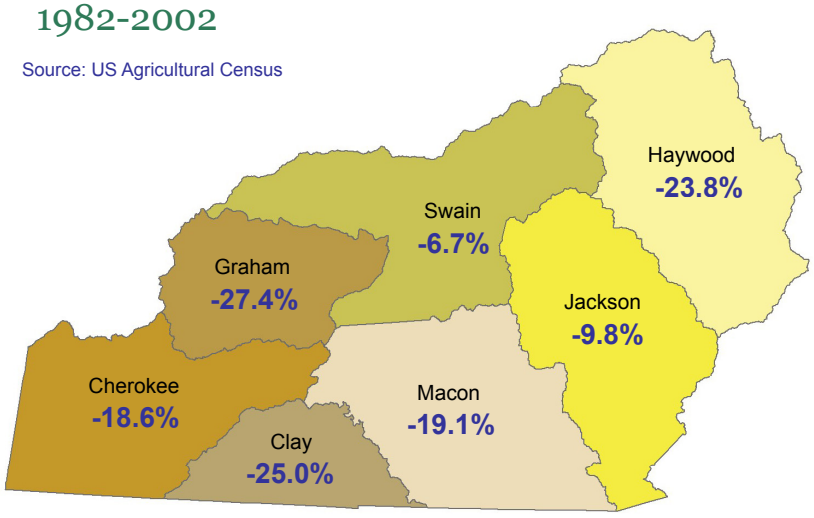


2030 Projected Regional Housing Density

Data produced using historic data and a growth model of housing density based on 2000 US Census blocks. Produced by Dave Theobald of Colorada State University (www.nrel.colostate.edu/~davet/) as part of the US Forest Service's Forests on the Edge project (www.fs.fed.us/openspace/fote/national_forests_on_the_edge.html)

Percentage Change in Number of Farms, 1982-2002

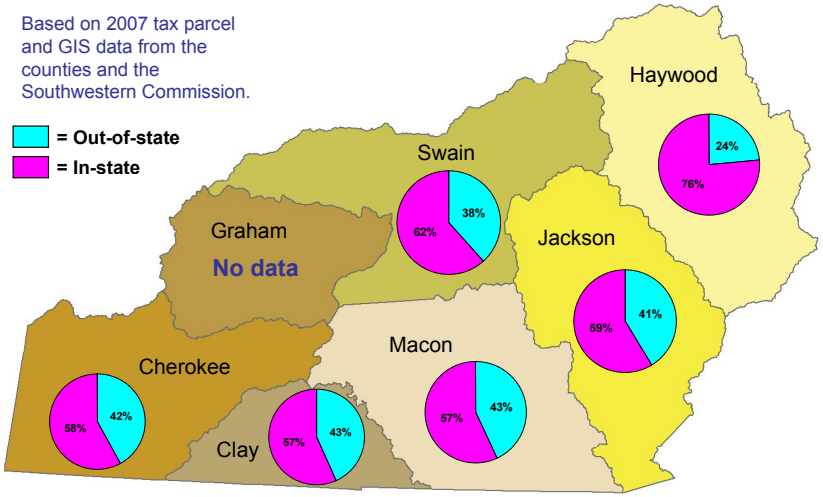
Source: US Agricultural Census



The 20 year trend for farmland shows steep declines in many of the Region A counties. Much of the farmland has been lost to development and can never be reclaimed as agricultural land.

In-state and Out-of-state Ownership

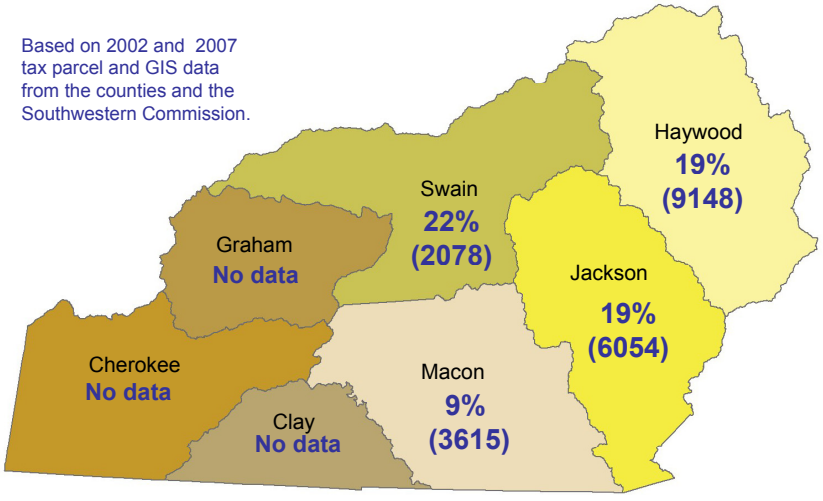
Based on 2007 tax parcel and GIS data from the counties and the Southwestern Commission.



Clearly, the large percentages of out-of-state ownership of individual parcels has been driven by the second home building market. Note: these are just for out-of-state owners and do not reflect ownership by North Carolina residents from outside the region.

Parcelization 2002 - 2007

Based on 2002 and 2007 tax parcel and GIS data from the counties and the Southwestern Commission.



The rapid subdivision of land (as noted by the change in the number of parcels) over a short five-year period in most of the counties is reflective of the impact of the second-home market.

The summary maps on this page and the previous page were prepared by Carla Norwood for the Community Outreach Forums

1.5 THE MOUNTAIN LANDSCAPES INITIATIVE

INTERVIEWS
Conversations with 75 citizens representing the diversity of the region

↓

DOCUMENTARY
20-minute video summarizes central themes from the interviews

↓

COMMUNITY FORUMS
All-day public forums, held in each county & the Qualla Boundary

↓

CHARRETTE
Week-long public workshop to design the Region A Toolbox

Image Source: Gabriel Cumming/Carla Norwood

Participants at the Cherokee County Community Forum.

THE HISTORY

Beginning in the fall of 2006 and continuing through the first six months of 2007, The Community Foundation of Western North Carolina convened a task force of a diverse group of leaders to develop a strategy for creating growth and development guidelines for the region.

On June 28, 2007, at the request of its Board, the Southwestern Commission staff and partners —including members of the CFWNC's task force— facilitated a "Growth Management Challenges Workshop" for more than 50 local officials in the seven western counties. Workshop participants ranked key issues and agreed that a regionwide approach to potential solutions made sense.

CFWNC, meanwhile, was drafting the proposal for the Mountain Landscapes Initiative for the 18 western North Carolina counties it serves. With a regional planning discussion already underway in the far western counties, The Community Foundation partnered with the Southwestern Commission to begin the MLI with the "Toolbox" pilot.

Within a year, the Community Foundation's first draft of its MLI proposal and the Southwestern Commission's June 2007 Growth Management Workshop, citizens and leaders in the seven western counties and on the Qualla Boundary now have a "how-to" manual for coping with growth.

By November of 2007, Gabriel Cumming, PhD, was busy with the first stage of the MLI pilot, conducting individual interviews with over 40 residents of the region about their connections to the landscape, their concerns, and their hopes for the future. This effort refined and expanded an earlier Macon County project that successfully used similar interview techniques.

Cumming and Carla Norwood, edited the interviews into a short documentary film. That documentary was the centerpiece for a series of community meetings held in April 2008 in the seven counties and on the Qualla Boundary of the Eastern Band of Cherokee Indians. At those meetings, facilitators helped citizens organize their reactions to the documentary into a to-do list for the May 2008 public workshop called a "charrette."

Within a year of the Community Foundation's first draft of its Mountain Landscapes Initiative proposal and the Southwestern Commission's June 2007 Growth Management Workshop, citizens and leaders in the seven western counties and on the Qualla Boundary now have a "how-to" manual for coping with growth.

Portions of this subsection have been contributed by Ben Brown with PlaceMakers, the communications consultant for the MLI.

The following is excerpted from The Outreach Final Report *prepared for the MLI: Region A Toolbox project by Dr. Gabriel Cumming and Carla Norwood, the project outreach consultants.*

A COMMITMENT TO PUBLIC ENGAGEMENT

How do you involve citizens and leaders across a seven-county area in addressing the challenges of rapid growth and development?

The purpose of the outreach portion of the Region A Toolbox effort was to gain an understanding of local views on land use and development and ensure that the concerns, values and visions that people expressed would guide the agenda of a regional planning charrette where tools for growth management would be produced. The intention of the outreach process was to incorporate local views and build public trust. Through interviews and public community forums, the outreach consultants heard from nearly 500 citizens from around the region.

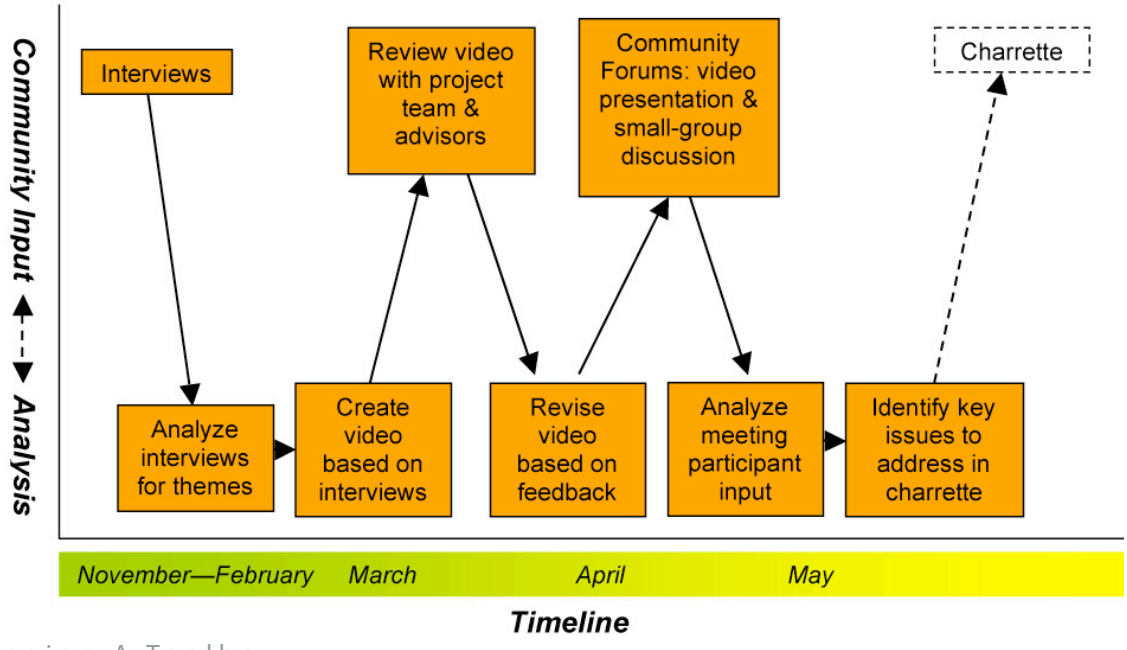
". . .it's crucial not only to listen to citizens' visions and concerns but also to design the charrette and the Toolbox... to demonstrate that we are responding to what we hear."

OUTREACH PROCESS

The outreach phase of the Region A Toolbox initiative took place from November 2007 through May 2008. The outreach team employed a participatory research model adapted from the Little Tennessee Perspectives project, which was conducted in Macon County during 2004-05. Key steps in the outreach process are described below.

Participants at the Cowee Community Forum.

Interviews: To gain an initial understanding of local perspectives on growth and development, the outreach consultants conducted interviews with stakeholders across Region A. Seventy-five people were interviewed over the course of 41 individual interviews and 6 group interviews, conducted from November 2007 through February 2008. The outreach consultants sought interviewees who reflected the diversity of the region in terms of gender, ethnicity, and age. They also wanted to ensure that the sample included both "locals" (those who were born in the region) and "non-locals" (those who have moved into the region), as well as



individuals with a range of positions on land use planning. Finally, the consultants identified interviewees who were involved in development/land use issues in a variety of ways: contractors, public officials, real estate agents, environmental advocates, farmers, etc.

The outreach team asked people throughout the region to answer these questions:

- *What do you value about living in this area?*
- *What are your perspectives on the growth and development taking place here?*
- *What is your vision for the future of your community and the region?*

Analyzing interviews and creating a video documentary: During February and early March, the video footage from all the interviews was coded by topic. By sorting and ranking these coded data, the consultants were able to identify the values, concerns, and visions that came up the most frequently across the interviews. They then selected interview excerpts in which those prevalent perspectives were effectively expressed. These video segments, along with pertinent photographs, were edited to create a 19-minute video documentary called *Seeking Balance in the Mountains*.

Community Forums: In April, the outreach consultants embarked upon a second round of stakeholder input-gathering—this time through a series of Community Forums that were held across the region. They conducted ten forums over the course of the month: one in each Region A county, as well as one each on the Qualla Boundary, in the Cowee Valley of Macon County and in the Cashiers community of Jackson County.

Analyzing meeting input and developing the charrette agenda: The input received from all Forum participants was compiled, coded, and sorted. By combining these Forum data with the interview data, the outreach consultants were able to construct a cumulative, ranked listing of the growth and development issues that Region A stakeholders saw as important.

The top ten identified issue areas were rephrased as questions, and the agenda of the Region A Toolbox Charrette was designed to address those questions. This way, we were able to ensure that the Toolbox would be relevant to the values, concerns, and visions of the communities it would be designed to serve.

REGION A TOOLBOX TOP 10 QUESTIONS

1. How can **mountainside and ridgetop development** be done **responsibly, safely, and in a visually sensitive** way?
2. How can new development **respect the character of local landscapes**?
3. How can **water quality** be protected?
4. How can the region's **natural beauty and open space** be protected?
5. How can **quality jobs** be created and sustained?
6. How can **quality affordable housing** be created?
7. How can the region's **infrastructure** keep up with the rate of growth?
8. How can **farmland and local markets for food** be protected and enhanced?
9. How can **natural resources** be protected?
10. How can growing communities honor **local cultural heritage**?

Image Source: Gabriel Cumming/Carla Norwood

Participants discussing development visions and concerns at the Clay County community forum.

Image Source: Ben Brown/Placemakers

Participants discussing development visions and concerns at the Clay County community forum.

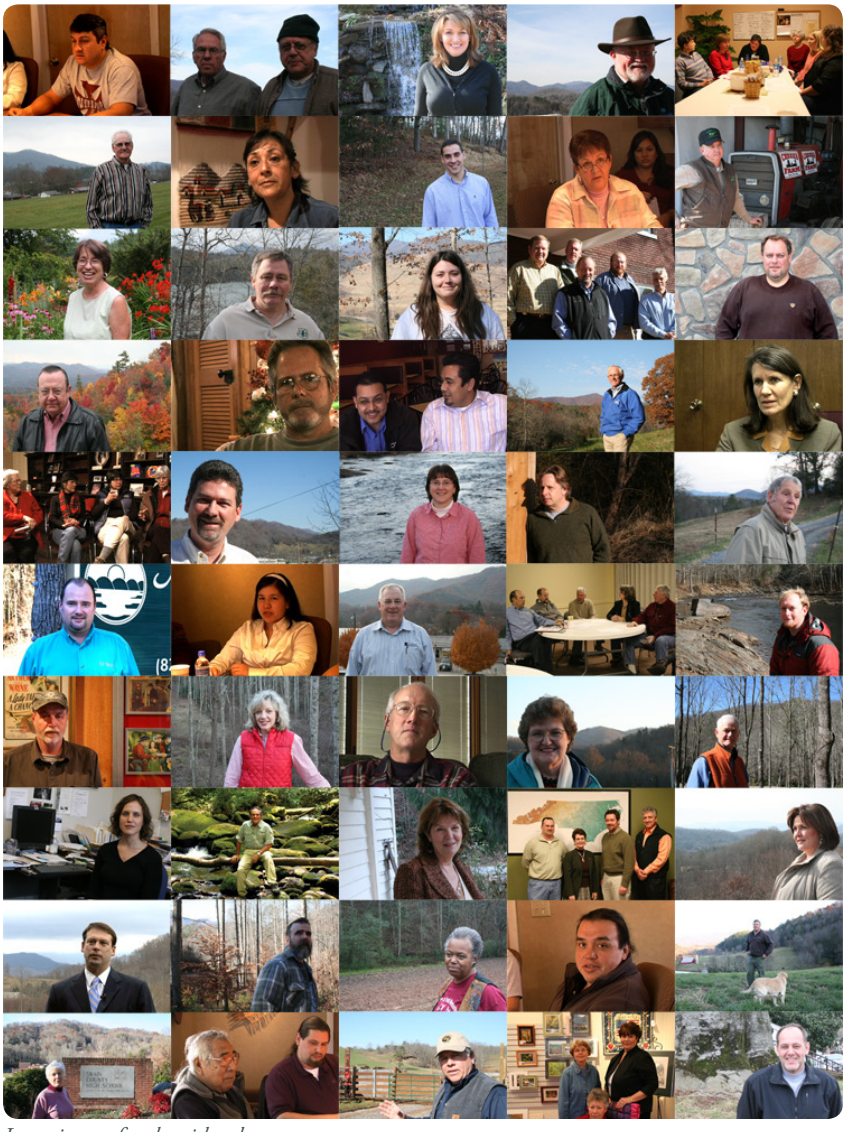


Image Source: Gabriel Cumming/Carla Norwood

Interviewees for the video documentary.

Participants at the Cashiers community forum.

COMMUNITY FORUMS

Location	Date	Forum Participants
Macon County	Apr 3	76
Haywood County	Apr 8	27
Swain County	Apr 10	32
Clay County	Apr 19	50
Cherokee County	Apr 22	89
Qualla Boundary	Apr 24	18
Graham County	Apr 26	9
Jackson County	Apr 29	46
Cowee Valley	Apr 28	35
Cashiers	Apr 30	75
TOTAL		**457**

Source: Outreach Final Report

1.7 THE REGION A CHARRETTE (MAY 13-20, 2008)

Listen: Participants at the Cowee charrette studio describing their visions for the community.

". . .They have this part where it's called 'pin-up'. . .The things you talked about . . .around that table they had taken and put on maps; they had taken and made sketches so that you could see what things would look like. And it happens right then, right there. . .It's totally like magic!" (Norma Ivey, Cowee resident)

Plan: Drawing development concepts at the WCU charrette studio.

Image Source: PlaceMakers

Review: Reviewing and commenting on the day's work during the daily pin-up session during the Cashiers charrette.

The keystone event of the MLI: Region A Toolbox effort was a week-long public planning and design workshop called a "charrette" (see full description of the charrette as a planning tool in Section 2). Over 500 interested citizens, regional stakeholders, and experts attended the charrette's dozens of topic meetings and presentations, and observed and commented upon the open design studio efforts, which were held in three locations in the region. Hundreds of other stakeholders and interested parties participated remotely through the project website (see below). This charrette was purported to be the largest ever in terms of geography covered—a distance of three hours driving time from one end of the region to the other.

CHARRETTE SCHEDULE/LOCATIONS

The charrette was designed to directly address the Top 10 Questions generated through the pre-charrette public outreach process. Charrette organizers scheduled meetings on specific topic areas for the Toolbox and focused sessions on four model projects identified by the MLI: Region A Toolbox Advisory Committee. A detailed list of the meetings and charrette locations appears on the facing page.

Running simultaneously with the larger "Toolbox" charrette were charrettes-within-the-charrette addressing representative projects that demonstrate how tools in the "Toolbox" might be applied in actual places and in actual situations. Sponsors of model projects, from a coalition of non-profits and property owners in Cashiers to a developer in Haywood County to a family farm in Cherokee County, proposed their projects as key challenges in the region. All intented to implement the charrette's concepts as soon as possible. Two of the model projects—a "village character" planning charrette for Cashiers and a "cultural landscape" strategy for the Cowee Valley in Macon County—held satellite charrettes on location in these communities.

Each afternoon, the charrette team staged a "pin-up" of work in progress for public and team member comment. A final presentation on the night of Tuesday, May 20 featured a public presentation of the week's work and an outline of the regional Toolbox.

CHARRETTE CONSULTANTS

A group of 27 professionals representing disciplines and expertise in planning, landscape architecture, architecture, urban design, transportation planning, engineering, farmland preservation, cultural resources, environmental resources, illustration, public outreach, public relations, and web outreach were the production team at the charrette. Together, these individuals logged more than 2,000 person-hours during the charrette week alone, listening, drawing, and refining concepts for the model projects and the Toolbox. These professionals were supported and augmented by dozens of local and regional experts in various fields whose advice and input were invaluable.

MLI: REGION A TOOLBOX CHARRETTE SCHEDULE
MAY 13-20, 2008

Main Studio: WCU University Center (May 13–20)

Tuesday, May 13th:
6:00 pm Charrette Kickoff Presentation

Wednesday, May 14th
9:00 am Haywood Waterways Association Resource Assessment Team Process
10:30 am Water Quality, Erosion Control & Watershed Protection
1:00 pm Mountainside Development & Steep Slopes
2:30 pm Viewshed & Ridgeline Protection
4:00 pm Utility Infrastructure and Generation
5:30 pm Daily Overview/Pin-Up & Open House

Thursday, May 15th
9:00–Noon Farmland Preservation & Local Food Systems
10:30 am Local Government Staff
1:00 pm Transportation & Context Sensitive Design for Roads
2:30 pm Affordable Housing
4:00 pm Revitalizing Community Centers
5:30 pm Daily Overview/Pin-Up & Open House

Friday, May 16th
9:00 am Cultural and Landscape Character
10:30 am Elected Officials
1:00 pm Realtors, Builders and Developers
2:30 pm Boards & Commissions
4:00 pm Economic Development
5:30 pm Daily Overview/Pin-Up

Saturday, May 17th
1:00 pm until 4:00 pm – Open Design Studio
4:00 pm Daily Overview/Pin-Up

Sunday, May 18th
1:00 pm until 5:00 pm – Open Design Studio

Monday, May 19th
Consultant Team Prepares for Closing Presentation

Tuesday, May 20th
5:00 pm Reception
6:00 pm Closing Presentation

Cashiers Studio: Jackson County (May 14 –17)

Wednesday, May 14th
6:00 pm Charrette Kickoff Workshop

Thursday, May 15th
9:00 am Vision Council
10:30 am Village Conservancy/Village Green Board
Noon Cashiers Historic Society
2:30 pm Utilities (Water, Sewer & Telecom)
4:00 pm Planning Council
5:30 pm Daily Overview/Pin-Up & Open House until 8 pm

Friday, May 16th
9:00 am Open House
10:30 am Cashiers Area Real Estate Stakeholders
2:30 pm Transportation & Circulation
4:00 pm Open House
5:30 pm Daily Overview/Pin-Up & Open House until 8 pm

Saturday, May 17th
9:00 am until Noon – Open House
1:00 pm until 2:30 pm – Open House
2:30 pm Daily Overview/ Pin-Up
4:00 pm Studio Closed and Moved to WCU Studio for Closing Presentation on Tuesday, May 20th

Cowee Valley Studio: Macon County (May 15–17)

Thursday, May 15th
6:00 pm Charrette Kickoff Workshop & Potluck Dinner

Friday, May 16th
9:00 am Transportation & NC 28 Planning
10:30 am Greenways, Trails & Water Access
1:00 pm Historic District & Cowee School Reuse
4:00 pm Open House
6:00 pm Daily Overview/Pin-Up & Open House

Saturday, May 17th
9:00 am Education, Social Services, Shopping
10:30 am until 4:00pm – Open Studio
4:00 pm Daily Overview/Pin-Up
5:30 pm Studio Closed and Moved to WCU Studio for Closing Presentation on Tuesday, May 20th

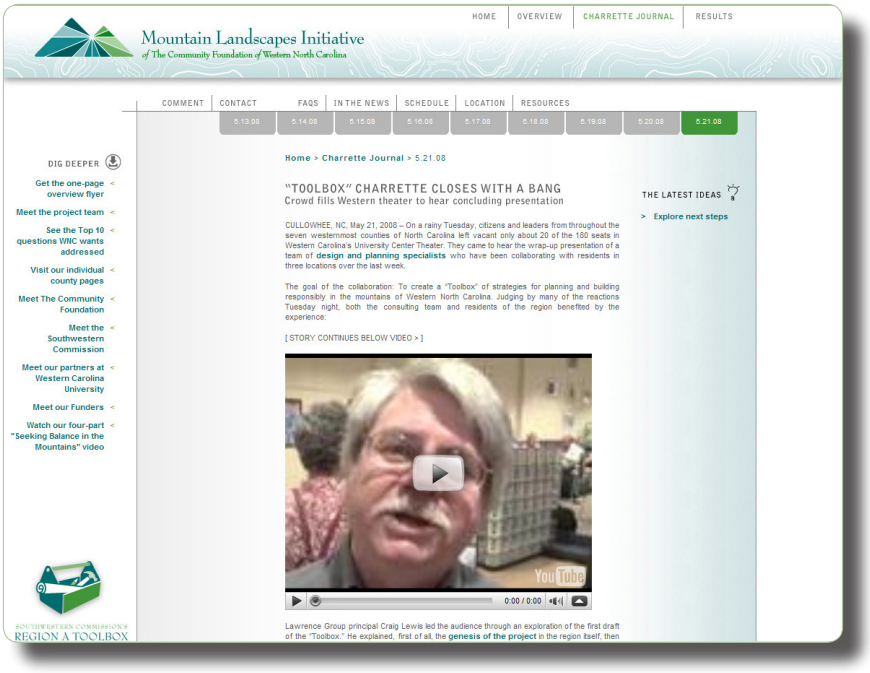
Image Source: PlaceMakers

Image Source: 180 Degree Design Studio

Image Source: PlaceMakers

Image Source: 180 Degree Design Studio

Image Source: PlaceMakers



THE MLI WEBSITE: THE iCHARRETTE

One unique aspect of the MLI: Region A Toolbox process was the degree to which timely information was made available to residents and others via the initiative's website. This proved valuable not only in the weeks leading up to the charrette, when healthy press coverage drove almost 3,000 site visits, but also during charrette week as well, when daily reports, photos and video summaries brought in nearly 2,000 more in the course of just 9 days.

Many visitors took advantage of the site's COMMENT function, submitting ideas, questions and concerns directly to the organizing team and, during the charrette, to the designers at work on the WCU campus. All in all, the Mountain Landscapes Initiative website, with its 23,000 distinct views, has been visited over 6,000 times.

Image Source: PlaceMakers

Image Source: PlaceMakers

2 COMMUNITY PLANNING

Image Source: Gabriel Cumming/Carla Norwood

"Folks who have bought land . . . I don't want things to get to such a point that they are regulated so much that they don't have the right to use their property the way they want to. It's a tough thing to balance out, with so many people here now that it's got past the point of just 'do whatever you want to, because it don't bother nobody.' You know, we really can't do that anymore . . . Without some kind of regulation, they could do anything to anybody . . . and then you have a really messed up piece of land, and your neighbor's land is messed up, and right on down the stream."

Raymond Bunn
Gunsmith/Security Guard
Jackson County

THE LAW OF THE INDIES (EXCERPT)

- *Those [Colonists] who should want to make a commitment to building a new settlement in the form and manner already prescribed, be it of more or less than 30 neighbors, (know that) it should be of no less than twelve persons and be awarded the authorization and territory in accordance with the prescribed conditions.*
- *Having made the selection of the site where the town is to be built, it must, as already stated, be in an elevated and healthy location; [be] with means of fortification; [have] fertile soil and with plenty of land for farming and pasturage; have fuel, timber, and resources; [have] fresh water, a native population, ease of transport, access and exit; [and be] open to the north wind; and, if on the coast, due consideration should be paid to the quality of the harbor and that the sea does not lie to the south or west; and if possible not near lagoons or marshes in which poisonous animals and polluted air and water breed.*
- *Within the town, a commons shall be delimited, large enough that although the population may experience a rapid expansion, there will always be sufficient space where the people may go to for recreation and take their cattle to pasture without them making any damage.*
- *The site and building lots for slaughter houses, fisheries, tanneries, and other business which produce filth shall be so placed that the filth can easily be disposed of.*

OVERVIEW

Land use planning in the United States dates back to the earliest European settlers of this continent, particularly those from Spain and England. With them came a history of planning that viewed the development of land as a means to provide property to individuals on which they could live or work (or both) and in turn return goods and taxes back to the mother country. They also saw planning as a means to regulate and balance the impacts of private ownership and development on the public realm.

The Laws of the Indies are a set of guidelines signed by King Phillip II of Spain in 1573 "to instruct Spanish colonists on how to create and expand towns in Spanish America." They codified the city planning process and represented some of the first attempts at a general plan. The last revision of the growing text was signed in 1573 and published in 1681 with the addition of design guidelines for colonists. (en.wikipedia.org/wiki/Laws_of_the_Indies) Many North American cities were founded using these principles including Sante Fe, NM; Albuquerque, NM; Tuscon, AZ, and Laredo, TX.

James Oglethorpe's famous plan of Savannah in 1733 laid out a rigid block pattern ordered around public squares in much the same way as the Laws of the Indies instructed—reserving the best locations for civic structures and parks for all to enjoy. The beauty of that southern city stands as a testament to the careful balance between private property and public space.

The Land Ordinance of 1784 established townships west of the Appalachian Mountains. By law, at least one of the 36 "Sections" (subdivisions of land of exactly 640 acres/1 square mile each) was reserved for public schools, typically in the center of the township area.

In 1790, under the authority of the first Federal Congress, surveyors were sent out to establish the boundaries for a 10 square mile "District" from previously platted private property along the shores of the Potomac that would become Washington, D.C. In the following year, Pierre L'Enfant created the plan for the construction of "the federal city" with its wide tree-lined avenues and prominent public spaces—a plan that has remained largely intact to this day.

The Law of the Indies, the Plan of Savannah, and L'Enfant's Plan for Washington, D.C., and even the Land Ordinance of 1784 all reflect both the success of a good plan in balancing public and private interests but also the fact that planning is very much a part of the history development of land in America.

In North Carolina, the fruits of good and thoughtful planning are evident in places like the Myers Park neighborhood in Charlotte (1911) and the

town plan of Asheville (1921), each laid out by noted town planner John Nolen.

North Carolina local governments have had the authority to regulate land use and construction dating back to Edenton in 1740. (Owens, David W., *Legislative Zoning Decisions*, 1999) The earliest enabling statutes for zoning for cities in North Carolina date to 1923 with more broad general enabling legislation for both cities and counties arriving in 1959. While current State legislation *does* require the formulation of a planning board to administer various planning-related tasks in a jurisdiction, there is no State mandate to develop a plan. Many of our neighbor states including South Carolina, Tennessee, and Georgia all require the adoption of a comprehensive plan as a necessary precursor to the adoption of zoning.

As there is no requirement for the enactment of a comprehensive plan at the county or municipal level in North Carolina, in both law and practice, the zoning map has become the de facto land use plan for many local governments. As a result, there is often a clear disconnect between the vision and intentions of the communities and the specific regulations.

And where there is no zoning enacted, as is the case for each of the seven counties in the Region A area, there is little, if any, long-range planning. There are a number of municipalities who have both adopted plans and enacted zoning and subdivision ordinances. However, the jurisdiction of these regulations is usually confined to the municipal boundary and does not apply to unincorporated areas that will ultimately tie into the municipal utility system and/or be annexed.

Finally, it is important to note that every local government enacts a budget that appropriates millions of tax dollars each year, a large percentage of which is from property taxes. For counties, much of their expenditure is based on federal or state mandates to provide certain services to residents such as a public justice system (courts, jails, and sheriff), social services (Medicare, Medicaid, welfare), and building permits. Yet within each of these budgets is a small but significant percentage of discretionary funds. More often than not, spending of these discretionary funds is decided on an ad hoc, politicized process rather than in the context of a greater plan. So, too, are decisions often made to allocate precious state and federal revenues in the absence of a more comprehensive plan.

A good plan, therefore, is one that balances the ability of individuals to develop land with the local government's ability to provide the necessary services in respond to that change. From stormwater to school population, every development has cumulative impacts that affect the quality of life for residents of the larger municipality and the region. Land use planning is simply the ability to envision change while avoiding or mitigating the negative effects of that change. Or, more broadly:

> *The goal of city and regional planning is to further the welfare of people and their communities by creating convenient, equitable, healthful, efficient, and attractive environments for present and future generations.*
> *—American Planning Association*

THE TEN RULES OF LAND USE FOR THE MOUNTAINS

1. Never assume that undeveloped land in your neighborhood will always remain so. Unless you own it, count on something else being built there.
2. Water runs downhill. Unless you live at the top, you will probably experience stormwater runoff problems.
3. Sprawl is the latest enemy of people and planners. Unfortunately, the only thing Americans hate more than sprawl is density.
4. Not all land is zoned. If property near you is not zoned, then think of the most obnoxious use conceivable and picture it in your community.
5. If you are not native to this area, whatever attracted you here will likely attract others. This phenomenon is known as growth.
6. Land values are driven by supply and demand. Taxes are based on land values. These things change.
7. There are significant differences between public and private roads. If you must live on a private road, be prepared to pay for it.
8. Wells and septic tanks tend to fail. Make no mistake about this.
9. If your land is so located that it is safe from annexation or incorporation, it is probably a prime candidate for a landfill, prison, utility tower, quarry or reservoir.
10. In land use issues, the common good usually prevails. Never assume that you know what the common good is.

Adapted from text submitted to the NC American Planning Association Newsletter by Karen Collins of Henderson County

2.1 PLANNING PRINCIPLES

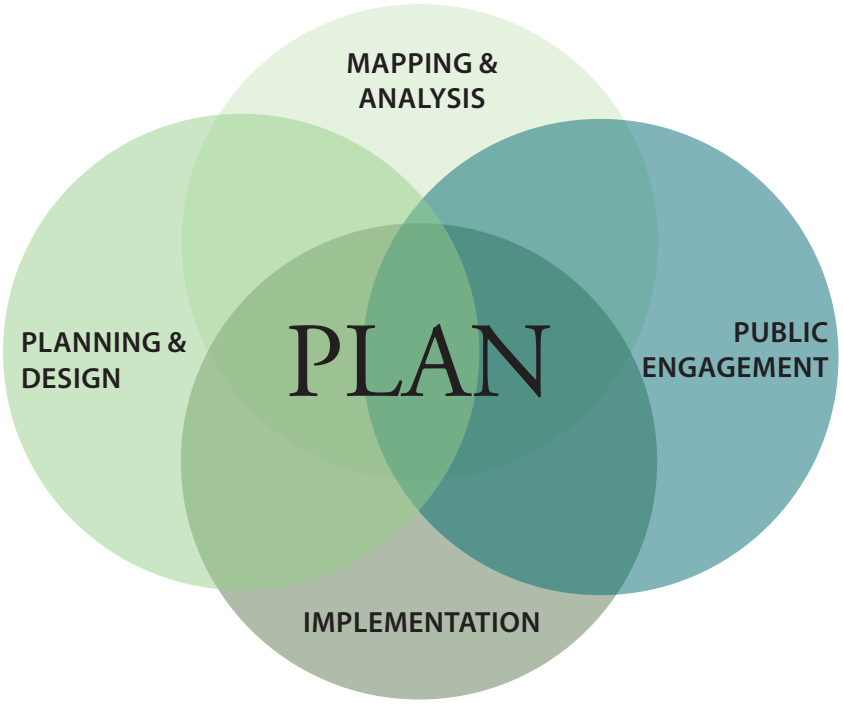
START WITH A GOOD PLANNING PROCESS

The keys to a successful plan include a balanced mix of careful analysis of the existing conditions and constraints; extensive and meaningful public engagement; visionary, but practical planning and design; and financially and politically feasible implementation. Regardless of the scale of the project—from a redevelopment of a block in downtown to a county-wide comprehensive plan —each effort must maintain this balance.

It is important to note that each of these components does not operate in a vacuum. There should be a substantial amount of overlap of each component throughout the process. For example, the public should be able to question the validity of the base mapping and quantitative assumptions to achieve the highest level of accuracy and consistency. Certain map layers in Geographic Information Systems (GIS) are based on aggregated data with generalized assumptions that often aren't specific to a parcel or property. Whenever design becomes specific to a tract or parcel, it will become necessary to field-verify all of the information.

In the same manner, a good process will have a high level of public engagement throughout the design process. And the financial or political constraints that will serve to focus implementation should be appropriately conveyed to the public and the designers throughout the process. If there is only $15 million to prioritize on infrastructure for the next five years, then this information must be promulgated from the beginning.

There are a number of basic planning philosophies that should be considered when developing the guiding principles for a project. These philosophies are described on following three pages. In general, each has overlapping interests and, when taken together, they compliment one another. Regardless of the guiding principles, the basic process should remain the same.



WHAT IS SMART GROWTH?

(Text adapted from www.smartgrowth.org.)

In communities across the nation, there is a growing concern that current development patterns—dominated by what some call "sprawl"—no longer in the long-term interest of our cities, existing suburbs, small towns, rural communities, or wilderness areas. Though supportive of growth, communities are questioning the economic costs of abandoning infrastructure in towns, only to rebuild further out.

Spurring the smart growth movement are demographic shifts, a strong environmental ethic, increased fiscal concerns, and more nuanced views of growth. The result is both a new demand and a new opportunity for smart growth.

The features that distinguish smart growth in a community vary from place to place. In general, smart growth invests time, attention, and resources in restoring community and vitality to existing communities, villages, and older suburbs. New smart growth is more town-centered, is transit- and pedestrian- oriented, and has a greater mix of housing, commercial, and retail uses. It also preserves open space and natural features.

Congress for the New Urbanism: www.cnu.org

Smart Growth America: www.smartgrowthamerica.org

Smart Growth Network: www.smartgrowth.org

Town of Franklin Principles of Growth: www.franklinnc.com/principles.html

US EPA Smart Growth Office: www.epa.gov/smartgrowth

RESOURCES

PRINCIPLES OF SMART GROWTH

1 **Create Range of Housing Opportunities and Choices**
Providing quality housing for people of all income levels is an integral component in any smart growth strategy.

2 **Create Walkable Neighborhoods**
Walkable communities are desirable places to live, work, learn, worship and play, and therefore a key component of smart growth.

3 **Encourage Community and Stakeholder Collaboration**
Growth can create great places to live, work and play—if it responds to a community's own sense of how and where it wants to grow.

4 **Foster Distinctive, Attractive Communities with a Strong Sense of Place**
Smart growth encourages communities to craft a vision and set standards for development and construction which respond to community values of architectural beauty and distinctiveness, as well as expanded choices in housing and transportation.

5 **Make Development Decisions Predictable, Fair and Cost Effective**
For a community to be successful in implementing smart growth, it must be embraced by investors and developers.

6 **Mix Land Uses**
Smart growth supports the integration of mixed land uses into communities as a critical component of achieving better places to live.

7 **Preserve Open Space, Farmland, Natural Beauty and Critical Environmental Areas**
Open space preservation supports smart growth goals by bolstering local economies, preserving critical environmental areas, improving our communities quality of life, and guiding new growth into existing communities.

8 **Provide a Variety of Transportation Choices**
Choice that provides people with more alternatives for access to housing, shopping, and jobs.

9 **Strengthen and Direct Development Towards Existing Communities**
Smart growth directs development towards existing communities already served by infrastructure, seeking to utilize the resources that existing neighborhoods offer, and thereby conserving open space and irreplaceable natural resources outside of developed areas.

10 **Take Advantage of Compact Building Design**
Smart growth provides a means for communities to incorporate more compact building design as an alternative to conventional, land consumptive development.

Image Source: Dan Burden/pedbikeimages.org

Photos from top: A compact village; Walkable downtown Waynesville; New housing in the Chesire neighborhood in Black Mountain, NC; Children and parents walking and biking to school.

CASE STUDY: PRINCIPLES OF GROWTH FOR THE TOWN OF FRANKLIN

The following Smart Growth-related principles have been adopted by the Town of Franklin (www.franklinnc.com/principles.html). They have been edited for length.

Principle #1. Mix Land Uses.

The Town of Franklin should continue to grow in a manner that encourages and rewards the integration of land uses.

- Ensure that zoning regulations allow a mix of uses in most classifications.
- Provide incentives, such as increased densities, to make it attractive for developers to undertake mixed-use projects.
- Permit planned urban village zoning districts, where appropriate, through special use zoning, thereby allowing the creation of entire communities consisting of an urban core and associated residential development.
- Allow live/work units, which are structures used for business purposes and which also serve as the principal residence of business proprietor in some zoning districts and exempt them from density calculations.
- Actively promote Franklin as a "Smart Growth" town. Consider partnering with the Chamber of Commerce and Board of Realtors in establishing a committee whose job is to promote Franklin as friendly to Smart Growth and to search for developers who are interested in developing mixed-use buildings.

Principle #2. Take Advantage of Compact Building Design.

The Town of Franklin should support compact building design, a principle which promotes the efficient use of land and resources by directing communities to grow vertically rather than horizontally.

- Ensure that zoning regulations facilitate compact building design by allowing multi-family and attached housing, by eliminating or reducing minimum lot sizes and minimum yard requirements, and by taking care that height and density standards are adequate to accommodate this principle.
- Educate the community, including the development community, of the benefits of compact building design, via public meetings and informational sessions.
- Adopt parking standards which encourage compact building design by reducing the amount of land needed for vehicular use. Examples include allowing shared parking and on-street parking to count toward minimum parking standards. Alternatively, the Town may wish to consider maximum parking standards in lieu of, or in addition to, minimum standards.

Principle #3. Create a Range of Housing Opportunities and Choices.

The Town of Franklin should work in partnership with private enterprise to create a range of housing opportunities and choices.

- Seek sources of funding, both public and private, which can be used to provide down payment assistance and rent subsidies, and to finance the acquisition, construction and rehabilitation of affordable housing.
- Ensure that the zoning ordinance allows auxiliary housing (e.g., garage apartments), both attached and detached. Investigate the feasibility of reducing impact fees for such units.
- Establish a housing committee, composed of stakeholders from the Town and the County, whose purpose will be to focus on public education and to investigate and recommend to the Town realistic solutions for affordable housing.

Principle #4. Create Walkable Neighborhoods.

The Town of Franklin should strive to make our town a walkable community.

- Adopt walkability standards designed to accommodate pedestrian connectivity, pedestrian safety and mixed land uses.
- Develop gateway corridor plans for major entrance ways into town which address pedestrian facilities, signage, landscaping and appearance.
- Ensure that new development contributes to the principle of walkability by installing pedestrian connections or, where that is not feasible, by contributing a fee-in-lieu thereof, into a pedestrian facilities fund.
- Adopt a master pedestrian facilities plan for the Town.

Principle #5. Foster Distinctive, Attractive Communities with a Strong Sense of Place.

The Town of Franklin should strive to maintain and create a high quality urban environment which reflects the unique character of our community. In doing so, we believe there is a greater likelihood that buildings (and, therefore, entire neighborhoods) will retain their economic vitality and value over time.

- Ensure that land use regulations encourage reusable, multi-generational buildings that instill pride over time and through a variety of owners and uses.
- Ensure that land use regulations permit the adaptive reuse of the best of our older buildings. Every historic building we save bolsters sense of place. Educate developers and property owners about the NC Rehabilitation Building Code and coordinate with the Macon County Building department on the administration of this Code.
- Conduct an inventory of historic resources and, if justified, establish a Historic Preservation Commission to help preserve historic structures and districts, thereby helping to sustain Franklin's architectural heritage.
- Develop design standards for the downtown business district in order to protect and enhance the sense of place provided by Main Street. Consider developing design codes for other neighborhoods as appropriate.
- Commit to building civic spaces and buildings that are lasting landmarks which distinguish Franklin. Public buildings should be built for their value over a lifetime, not for short-term capital savings.
- Protect the natural environment. Our sense of place is tied forever to the quality of our rivers and mountain landscapes. Sacrificing environmental quality for short-term economic gains spends down our legacy and puts us at a disadvantage in the competition for our best customers.

Principle #6. Preserve Open Space, Natural Beauty and Critical Environmental Areas.

As Franklin grows in population, open space and greenway availability will become even more important and potentially more difficult to preserve. Thus the Town of Franklin should commit today to ensure we have ample open space in the future.

- Create a working relationship with the county and FROGs (Friends of the Greenway) to complete the Greenway Project. At a minimum this should include extending the greenway to Suli Marsh in the north and Recreation Park in the south, bridging the Little Tennessee River, and providing opportunities for water recreation, physical exercise activities, picnic and playground facilities and an amphitheater.
- Develop a collaborative strategy between the city, county, and FROGs for developing, funding, operating, and maintaining the greenway system.
- Connect the greenway to other facilities by having walks to Southwestern Community College (SCC), the Macon County Library, and other areas that would benefit Greenway users.
- Adopt a master plan for developing and funding additional greenways, walking and biking paths throughout the city, linking businesses, open space, and recreational and other community facilities.
- Ensure that zoning and subdivision ordinances support the development of open space, and walking and biking areas.
- Establish minimum open space requirements for specific types of development including multi-family and mixed use developments. Ensure that these requirements provide for open spaces that are functional, and allow for recreation or conservation. Require inclusion of walking and biking trails in developments, where feasible.
- Analyze the potential for "pocket parks"—a series of small (approximately ¼ acre) parks throughout the city minimal facilities for relaxation, picnics, children's play, and as a gathering place for seniors.

Principle #7. Direct Development Toward Existing Communities.

The citizens of Franklin have made significant investments in the existing streets, sidewalks, utilities, schools, and public spaces which make up the Town's infrastructure. The Town of Franklin should ensure that new development is directed towards existing communities which are already served by this infrastructure.

- Review and, if necessary, revise the Town's Utilities Extension Policy to ensure that extensions of water and sewer are consistent with these Principles of Growth and with other land use plans and policies the Town may adopt.
- Maintain a brownfield redevelopment resource center whose mission will be to educate the development community about the benefits of brownfield redevelopment and the availability of qualifying sites.
- Adopt a fast-track policy whereby qualified redevelopment projects are given priority in the development review process.
- Locate and promote suitable areas for development in order to realize efficiencies from infrastructure and service investments. Provide incentives, such as density bonuses, to encourage development in such areas.
- Adopt a policy where governmental and community services are located and encouraged to locate downtown in the central business district, where feasible.

Principle #8. Provide a Variety of Transportation Choices.

The Town of Franklin should resolve to strive for a balanced, walkable community with a variety of transportation options.

- Ensure that transportation goals and needs are addressed in land use planning decisions by providing or requiring an analysis of traffic impacts as part of the development review process. Take care that transportation impacts are considered as well when evaluating petitions to rezone property.
- Infrastructure planning should include multiple modes of transportation and provide for growth and diversity.
- Road improvement plans should include safety planning for motorists, pedestrians, bicyclists and transit users.
- Future development should encourage connections to adjacent properties. Provide foot/cycle path connections to adjacent residential and business properties. Parking areas should provide safety and ease of access.

Principle #9. Making Development Decisions Predictable, Fair, and Cost-Effective.

The Town of Franklin should strive to make all of its development-related processes (zoning applications, rezoning, multi-family development applications, and sign applications) as simple and straightforward as possible, with known timeframes for making a decision.

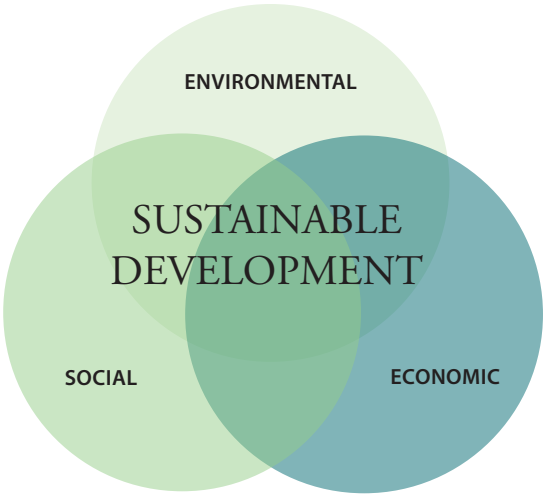
- Land use regulations should be written so that they can be understood by, or readily explained to, those who must abide by them. This material needs to be readily available in hard copy at the Town office and on the Town's web site.
- The Town should identify and remove any barriers that may exist to ensuring that the benefits of these initiatives accrue to all segments of the population, including women, racial and ethnic minorities, people of low income, and people who are developmentally disabled.
- The Town should work closely with Macon County regulatory officials to ensure that local ordinances are enforced and that information regarding permits and development is shared.

Principle #10. Encourage Community and Stakeholder Collaboration.

The Town of Franklin should engage all sectors of the community as partners early in the process of planning to ensure that they will have a continued say in changes that take place.

- Develop a more consistent dialogue with Macon County government, its elected officials and key staff, in order to work more closely on issues of mutual interest. The town should meet with the County Commission on a regular basis.
- Conduct periodic "planners luncheons" to educate and inform the public about planning initiatives and new development.
- For developments likely to have considerable impact, incorporate into the Zoning Ordinance a process whereby Town staff facilitate neighborhood compatibility meetings between developers and neighboring property owners and residents.

2.2 THE TRIPLE BOTTOM LINE



While many definitions for sustainable development have been put forward, the simplest test for sustainability may be "if we continue doing things this way, will future generations have food to eat, clean water to drink, a functioning natural environment and a functioning economy?"

– On Common Ground, *Summer 2008, a publication of the National Association of Realtors*

Coined by author John Elkington in 1994 and later expanded in his 1998 book ***Cannibals with Forks: the Triple Bottom Line of 21st Century Business***, the term "Triple Bottom Line" (TBL) has come to be known as a balance of environmental, social, and economic sustainability for organizations. Nearly every tool in this toolbox will correspond to two or more these sustainability elements.

EN **Environmental Sustainability**

SO **Social Sustainability**

EC **Economic Sustainability**

The practice has largely been popularized in the corporate world as an accounting method to quantify a company's responsibility not to just its "shareholders" but to its "stakeholders" as well. Today, many firms are adopting "3B" principles as part of a campaign to mitigate their environmental and community footprint while ensuring a positive bottom line.

This concept was adapted for Shell by SustainAbility (a consulting firm) and described more succinctly for the corporate world as "People, Planet and Profit."

"People" (Human Capital) pertains to fair and beneficial business practices toward labor, the community and region in which a corporation conducts its business. A TBL company conceives a reciprocal social structure in which the wellbeing of corporate, labor and other stakeholder interests are interdependent. A triple bottom line enterprise seeks to benefit many constituencies, not exploit or endanger any group of them.

"Planet" (Natural Capital) refers to sustainable environmental practices. A TBL company endeavors to benefit the natural order as much as possible or at the least do no harm and curtail environmental impact. A TBL endeavor reduces its ecological footprint by, among other things, carefully managing its consumption of energy and non-renewables and reducing manufacturing waste as well as rendering waste less toxic before disposing of it in a safe and legal manner.

"Profit" is the bottom line shared by all commerce, conscientious or not. In the original concept, within a sustainability framework, the "profit" aspect needs to be seen as the economic benefit enjoyed by the host society. It is the lasting economic impact the organization has on its economic environment. This is often confused to be limited to the internal profit made by a company or organization. Therefore, a TBL approach cannot be interpreted as traditional corporate accounting plus social and environmental impact.

Image Source: City of Boulder

Images from top: The Boulder Dushanbe Tea House in downtown Boulder, CO, with its hardscaped patio seating area; Boulder Creek as it passes by the Tea House patio area; Boulder Creek after it leaves the downtown area as it passes through a permanently conserved area purchased by the community.

HOW DOES THE TRIPLE BOTTOM LINE APPLY TO LAND USE PLANNING?

Many local governments have considered each of the Triple-Bottom-Line (TBL) elements in planning efforts, but rarely are they considered as a comprehensive approach to overall community sustainability.

For example, the image of the Dushanbe Tea House in Boulder, CO (upper left) is by most standards an economically and socially successful space with it adjacency to the rushing waters of Boulder Creek in downtown. But by today's one-size-fits-all environmental regulations, the lack of a sizeable buffer to the creek would make this scene illegal to replicate. In many regards this toolbox suggests that communities need to find an appropriate balance among all three elements. What is appropriate in one context may not be appropriate in others. (More discussion on this in Section 2.6).

This doesn't mean to suggest that environmental regulations should be disregarded in the name of economics. On the contrary, all planning should strive for the highest level of achievement for each element and then calibrate to adjust for various scenarios. What isn't shown in the image of Boulder is that the City has aggressively protected the headwaters and the entirety of the channel to the point that it enters and as it leaves the downtown (see image on lower left). This permits the otherwise pristine creek to receive some level of pollution in the short stretch it travels through the urban environment.

As will be discussed in greater length in the sections that follow, planning should be comprehensive in nature and even the most technically specific tool should be evaluated within the TBL framework to ensure its overall efficacy.

International Council for Local Environmental Initiatives—Local Governments for Sustainability: www.iclei.org

The Triple Bottom Line-The Blog: getsustainable.net/blogfiles/blog.html

Elkington, John. *Cannibals With Forks: The Triple Bottom Line of 21st Century Business*. Stony Creek: New Society Publishers, 1998.

Esty, Daniel C. and Andrew S. Winston. *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage*. Yale University, 2006.

Savitz, Andrew W. with Karl Weber. *The Triple Bottom Line: How Today's Best-Run Companies are Achieving Economic, Social, and Environmental Success—And How You Can, Too*. Jossey-Bass/Wiley, 2006.

RESOURCES

2.3 COMPREHENSIVE PLAN ELEMENTS

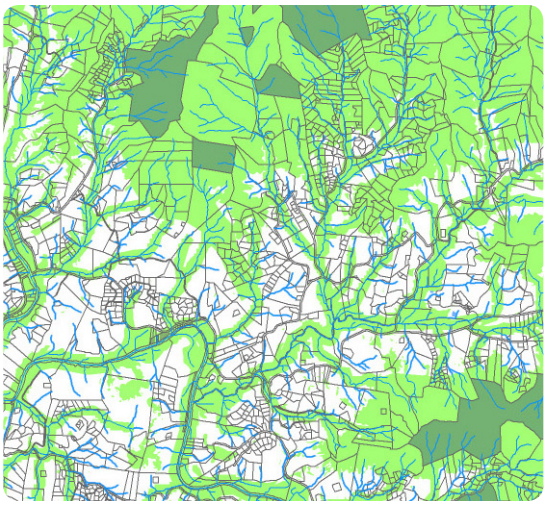


FIGURE 3-1D: REGIONAL ECONOMIC ACTIVITY INDEX WITH VARIOUS WEIGHTS

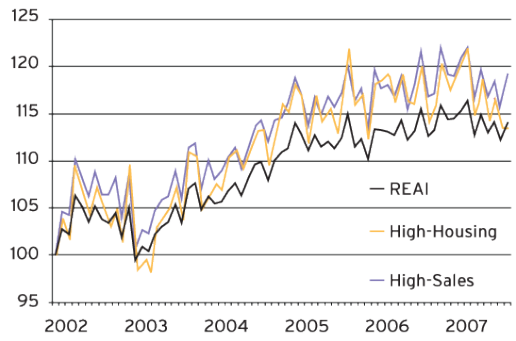
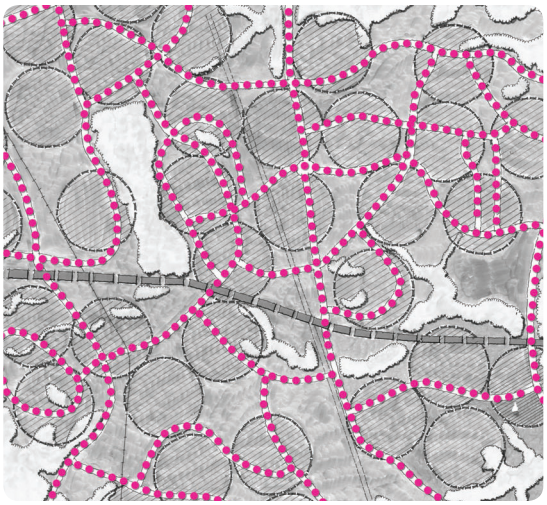


Chart by WCU-Institute for the Economy and the Future



Images from top: An analysis of existing green infastructure in Cowee Township, Macon County, NC; Regional Economic Activity Index from 2008 WNC Regional Outlook Report by WNC-IEF; Collector street plan with 1/4 mile neighborhood units from Leland, NC.

The first Comprehensive Plan in the United States was completed by Daniel Burnham and Edward Bennett for the City of Chicago in 1909. Interestingly, the plan was funded by the Commercial Club of Chicago, the equivalent of the local chamber of commerce. The plan itself had a major impact on development in 20th century Chicago, particularly along the waterfront. Inspired by the 1893 World's Fair, (also referred to as the Columbian Exposition and the "White City"), the Plan sought to incorporate the very best building practices from across the globe and across time into a vision that created the great public spaces and the waterfront that continues to fuel the economic engine of that great city.

> *"Good order and convenience are not expensive; but haphazard and ill-considered projects invariably result in extravagance and wastefulness" - Plan of Chicago, 1909*

The plan not only established locations for grand parks, beautiful new boulevards and streets, civic buildings, high-quality housing, and employment centers, but it also addressed housing slums and the plan's overall impact on revenues and expenditures for the entire City. In short, it was as much a plan for economic development as it was for civic grandeur. It is appropriate that now, 100 years after the adoption of that highly revered vision, we consider those very elements as fundamental to successful comprehensive plans in Region A.

GREEN INFRASTRUCTURE

First and foremost, a plan must adequately record and take measures to protect major ecological systems, including but not limited to legacy forests, surface water bodies, riparian corridors, viewsheds, historic landscapes, prime agricultural land, and endangered species habitats. Because the growth and development in Region A are so intimately tied to the inherent beauty and function of the natural environment, this element should be prioritized. It is also necessary to identify those areas where human trespass is permissible and where it should it be minimized. Most importantly, the plan should recognize that there is a continuum of green infrastructure that ranges from the national forest to the local playground and includes a variety of public spaces that serve to enhance the quality of life for visitors and residents alike.

DEMOGRAPHICS AND POPULATION TRENDS

In order to adequately plan for public improvements, it is necessary to understand the complex needs of the local population. Many communities in the region are experiencing the "graying" of their locales with growing numbers of recent retirees and empty nesters. However, there are a number of other key populations that are also seeing growth trends in Region A. Before making key decisions related to perceived trends, it is necessary to better understand how the actual trends affect housing needs, park space, shopping and other infrastructure needs in the future.

TRANSPORTATION

Beyond the conventional thoroughfare plan that seeks to move regional automobile traffic almost to the exclusion of all other modes, a transportation plan must balance circulation for public transit, automobiles, bicycles, pedestrians, and in some contexts personal aircraft, watercraft, and off-road trail systems. This "multi-modal" approach also assumes that many existing and future corridors will be balanced as well with many different user groups occupying the same right-of-way in a manner that is both safe and efficient.

CULTURAL & HISTORIC RESOURCES

A good plan must record the history and culture of the area so that its unique and defining characteristics can be preserved, protected, and in some cases serve to guide development design decisions. This is especially important in western North Carolina with its rich historical and pre-historical traditions. The purpose is not to replicate the past vernacular in new development but to understand how certain forms, patterns, and traditions, if sensitively incorporated, can improve basic development decisions.

HOUSING

Is the current housing stock able to accommodate the existing and future population? If not, what are the deficiencies and what is the best approach to address these needs? Demographic trends for the past 50 years and projections for the next 50 years show that the ubiquitous single family house on a large lot is becoming a thing of the past. Yet most housing policies and many zoning codes still favor this housing type to the exclusion of many others. Smaller households, fewer children, more childless households, stronger desires to be closer to existing communities, and now rising gas and energy prices have driven a radical shift in consumer housing preferences.

PUBLIC FACILITIES

The local government, either town or county, is charged with providing a minimum level of public services to all its citizens. In some cases, physical proximity to population centers necessitates the construction of new facilities (fire stations and parks). In others, the addition of new housing will create a demand for the extension of water, sewer, electric, and natural gas lines. The timing and phasing of these improvements or extensions often does not always follow governmental budgeting cycles. The result is that the local government always seems to be playing "catch up." The most prudent approach is to integrate the governmental budget process with the land development process so facility and service needs can be projected and budgeted over a five-year period.

LAND USE & DEVELOPMENT DESIGN

Conventional plans often default to an overly simplistic view of land use categorization that rigidly separates large categories of use such as "industrial" and "residential" with the stroke of a simple color swatch. Contemporary planning techniques use much more precision when creating a development plan. The plan should identify key nodes and other appropriate areas for development, but it should also conceptually detail the preferred physical form of the development in three dimensions. The public and the development community expects predictability with public plans. The best way to ensure a high level of predictability is to illustrate typical development patterns to the street, block, lot, and building level. Examples of such planning models can be found in the Appendix.

Detailed conceptual development plan for the Cowee-West's Mill area in Macon County, NC.

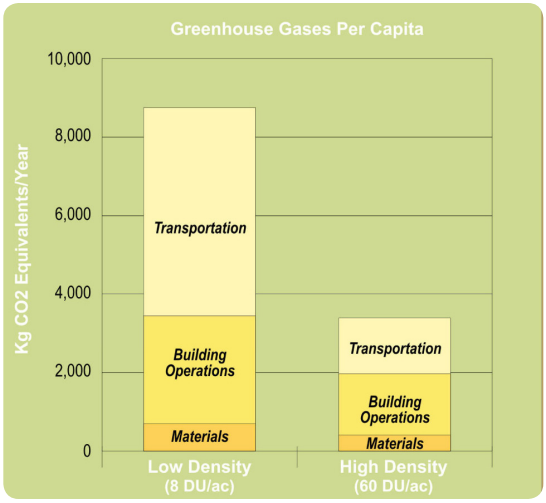
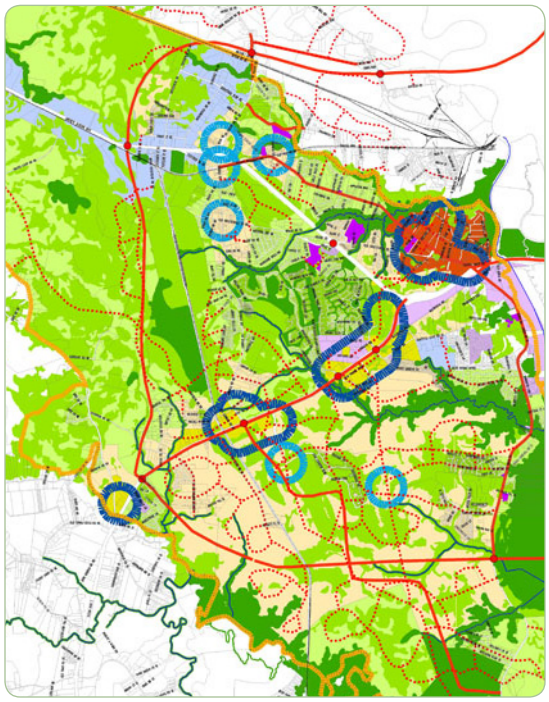


Chart by Criterion Planners / Source: Normal, et. al., ASCE, 2006



Images from top: An illustration of a small village center in Troutman, NC; Chart of greenhouse gases (GHG) per capita comparing low density and high density development patterns; A transect-based land use plan for Leland, NC.

CLIMATE CHANGE MITIGATION MEASURES

With the growing evidence of the impact of human activities on our environment, one of the most important plan elements will be measures to mitigate overall development footprints. This requires that the plan and its alternatives be measured against their relative "carbon footprints"—a unit that expresses the number of pounds of carbon dioxide that a development scenario will contribute to global greenhouse gas emissions. Like the Clean Water Act that focused attention on water quality issues, we are likely to see federal and/or state legislation in the next decade that will require compliance with certain carbon goals. Local governments in Region A would do well to begin folding this element into all their planning efforts in the coming years.

ECONOMIC IMPACT/PRIORITY INVESTMENT STRATEGY

In addition to a statement of fiscal and economic impact of a plan's various alternatives and assumptions, plans should also analyze the likely federal, state, and local funds available for public infrastructure and facilities during the next ten years; and recommend the projects for expenditure of those funds during the next decade for needed public infrastructure and facilities such as water, sewer, roads, and schools. It is strongly recommended that such expenditures be coordinated with adjacent and relevant jurisdictions and agencies.

> *"Planning is an entrepreneurial endeavor, not a passive task. For that reason, it is essential that proposed changes to the environment or economic fabric of a region have the power to be catalysts for a better future."* – Louisiana Speaks: Planning Toolkit *by Urban Design Associates*

IMPLEMENTATION TOOLS AND STRATEGIES

The output of the plan should be an implementation matrix that coordinates tasks with responsible parties and funding. Tasks that extend beyond a 10-year time horizon are typically more difficult to accomplish than those within a more constrained 5-year period. As a result, it is important to revisit the implementing task every 2 or 3 years to ensure that it is being fulfilled.

RESOURCES

American Planning Association: www.planning.org

Burnham, Daniel H. and Bennett, Edward H. *Plan of Chicago.* New York: Princeton Architectural Press, 1993.

North Carolina Department of Community Assistance (NCDCA): www.nccommerce.com/en/CommunityServices/CommunityPlanningAssistance/CommunityPlanningProgram/Comp+plans.htm

Planning Commissioners Journal: www.plannersweb.com/articles/compplan-articles.htm

Southwestern Commission: www.regiona.org

Walters, David. *Designing Community: Charrettes, Masterplans and Form-Based Codes.* Oxford: Architectural Press, 2007

WHAT'S A CHARRETTE?

A funny word, sure, but what else?

The term charrette comes from the French, meaning "little cart." The word's origins are traced to an art school tradition from 19th century Paris. A cart was sent around to students' studios to collect work to be graded by professors. Like most students, these artists and architects in training worked until the last minute and often followed the charrette through the streets making finishing touches on their work as the cart rumbled towards judgment.

The idea has been refined by architects to indicate a process on a fasttrack, undertaken in the presence of their clients. New Urbanist planning teams formalized the technique, creating a multi-day format with built-in feedback opportunities for both clients and the public. Now charrettes have become the processes of choice for many planners faced with complex, controversial projects on a tight deadline.

By involving everyone who can enable or block decisions and by committing to produce actionable plans within a set timeframe, charrettes can save months - even years - of tedious back-and-forth negotiations and redesign. They also provide an experience that's increasingly rare for most people: involvement in an activity organized to hear their ideas and act on them immediately.

A charrette raises expectations. It builds enthusiasm. It draws clear lines of accountability. Because everyone knows who made the plan, everyone knows who's responsible if the process goes sour. When a developer or a government body chooses a charrette process, it means investing resources to assemble and support a team of experts through four to ten days of near round-the-clock work sessions and community discussions. It's a leap of faith for the citizens, the design team, and the process itself. But the potential rewards are great. The pay-off is not only in terms of time and money saved but also in the benefits of partnering with an entire community on a project everyone can be proud of. *(Charrette description text courtesy of Ben Brown, PlaceMakers)*

	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday	Monday
8:00		Breakfast	Breakfast	Breakfast	Breakfast		Breakfast
9:00	11:00 Set Up Design Studio and Overview by Local Staff	9:00 Interest group meetings and interviews	9:00 Interest group meetings and interviews	9:00 Interest group meetings and interviews	9:00 Interest group meetings and interviews		DESIGN
12:00	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch	Lunch
1:00	1:00 Tour of the Study Area 3:00 Market Study Overview	1:00 Interest group meetings and interviews	1:00 Interest group meetings and interviews	DESIGN	DESIGN	DESIGN	Close-Up Studio and Prepare Final Presentation
5:00	Dinner with Stakeholder Committee	5:30 Pin-Up Session and Project Update	5:30 Pin-Up Session and Project Update	5:30 Pin-Up Session and Project Update	5:30 Pin-Up Session and Project Update		
6:00		Dinner	Dinner	Dinner	Dinner	Dinner	Dinner
7:00	**Opening Presentation & Facilitated Design Session**	7:00 Interest group meetings and interviews	DESIGN		DESIGN		**Reception and Closing Presentation**

A typical seven day charrette schedule. Note the high number of stakeholder meetings that occur while designers are working, as well as the regular "pin-up" sessions that occur every evening.

2.4 THE PLANNING & DESIGN CHARRETTE

Image of "le charrette" at the École des Beaux Arts in Paris during the 19th century, where proctors circulated a cart, or "charrette," to collect final drawings while students frantically put finishing touches on their work.

Key Recommendations

- ***Consider the use of public planning and design charrettes during any planning process, public or private.***
- ***In order to get at least four full feedback loops with the public, the minimum length for any charrette should be four days. In general, the length is determined by the size of the area, the complexity of the problem to be solved, the amount of change being contemplated, and the degree of expected public interaction.***
- ***Charrette teams should be multi-disciplinary. Charrettes where only one discipline is represented (e.g. transportation engineers) are not sufficiently diverse to solve problems in a comprehensive manner.***
- ***Commit resources so that planners in the region, particularly public planners, can attend National Charrette Institute (NCI) training.***

A charrette consists of an opening presentation, numerous public meetings, design sessions, evening pin-up sessions, and a closing presentation. Held over a multi-day period, a charrette gives a design team the most efficient opportunity to meet with a large number of interest groups and citizens, solicit their input, and produce a detailed series of high quality recommendations, plans and renderings that accurately reflect the vision of the community. There are four guiding principles for charrettes:

INVOLVE EVERYONE FROM THE START: Anyone who might have an opinion or be affected by the plan should be involved from the very beginning. By making people roll up their sleeves and work with the design team, the process gains mutual authorship and a shared vision.

WORK CONCURRENTLY AND CROSS-FUNCTIONALLY: The design team should have many different specialties, but during the charrette, participants become generalists, assimilating everyone's expertise and absorbing the wisdom of each participant.

WORK IN SHORT FEEDBACK LOOPS: The public needs to be able to propose an idea and see it designed for review in a short period of time. The charrette process typically includes pin-up critique sessions every evening to determine the preferred direction based upon what was learned during the day.

WORK IN DETAIL: Only through designing to a level of detail that includes both the details of building types, blocks, and public spaces as well as the big picture of circulation, transportation, land use, and major public amenities can fatal flaws be reduced or eliminated.

RESOURCES

National Charrette Institute: www.charretteinstitute.org

Charrette Center: www.charrettecenter.net

MLI Toolbox Charrette: www.mountainlandscapesnc.org

Lennertz, Bill and Aarin Lutzenhiser. *The Charrette Handbook: The Essential Guide for Accelerated, Collaborative Community Planning*. Chicago: American Planning Association, 2006.

2.5 LAND SUITABILITY ANALYSIS

Geographic Information Systems (GIS) has provided planners and the public with an array of graphically-oriented decision making tools. GIS contains layers of graphic information and their relational databases that may be projected into maps that allow the user to view a composite of a specific area. The most basic information is often comprised of aerial photography, parcels, topography and street names. More sophisticated data sets include utility lines, hydrology, floodplains, soil composition, slopes, aspects, tree cover, and impervious surfaces. The wealth of digital data, particularly as it relates to land form, environmental analysis, and emergency management, is rapidly expanding.

This type of analysis was first popularized by Ian McHarg in his 1969 book, *Design with Nature*. McHarg helped to institutionalize the use of mapping layers that identified a complex aggregation of both ecological and social information that "like a complex X-ray photograph with dark and light tones" (p. 35) showed the "sum of social values, physiographic opportunities and constraints" (p. 40).

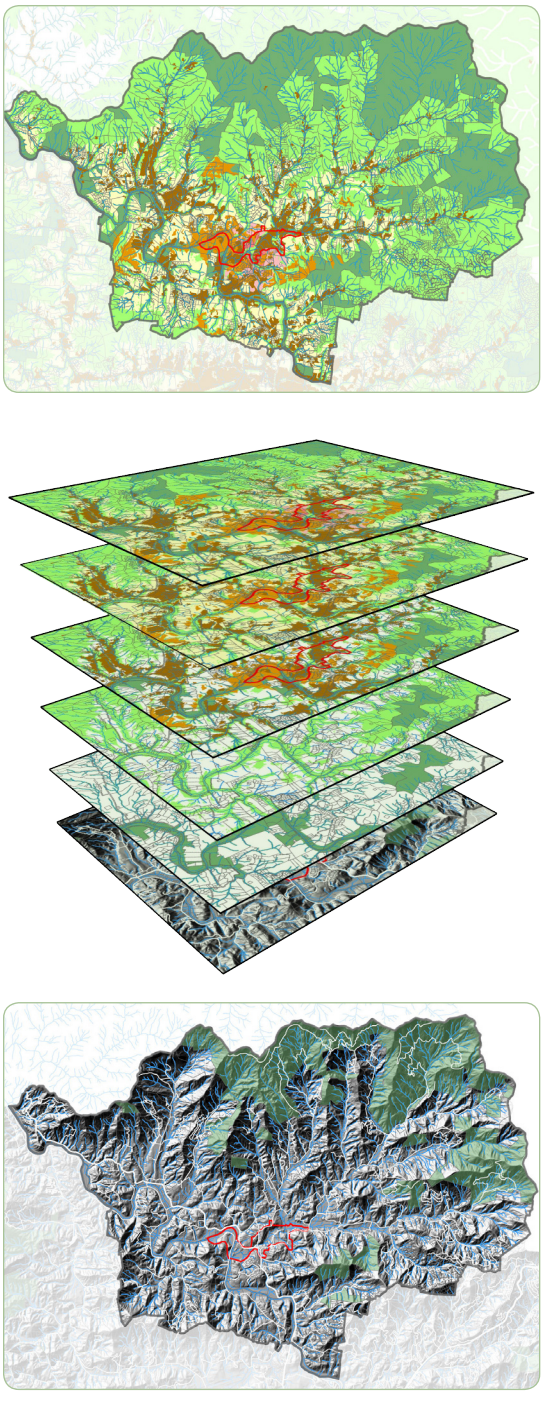
Prior to any design, a good planning process will include a thorough analysis of the existing conditions. For the Region A area, the most important piece of baseline information is the terrain, specifically slope, aspect, tree cover and hydrology. Other key information includes those lands which are currently in public ownership or otherwise restricted from development (e.g. conservation easements), utility infrastructure (the extents of service delivery), road networks, floodplains, cultural or historic resources, soils suitable for development and well drained septic systems. Finally, it is important to note where core activity areas such as downtowns and neighborhoods already exist and to identify key "pedestrian sheds" (walking distances to the heart of the area).

At the end of the analysis, the goal is to allow the land itself to dictate where development is appropriate and where it is not. Far too often, land is permitted to be developed in areas that are clearly too far from existing development, leading to increased vehicles miles traveled (VMT) for basic trips (a leading cause of greenhouse gas emissions), degradation of the environment through the disturbance of pristine areas, or construction activities in potentially hazardous areas such as steep slopes, landslide areas and in floodplains.

SOFTWARE FOR GEOGRAPHIC DECISION-MAKING

Today, with the ease of GIS and rapidly emerging data sets, basic analysis of an area can take just a few minutes. With more powerful applications like CommunityViz and INDEX, planners can now construct "What-If" scenarios to test the impacts of development decisions on ecological and infrastructure systems. When combined with three-dimensional rendering tools found in Google SketchUp and GoogleEarth, planners can construct a virtual world that may be used in more accurate decision making.

The most popular Geographic Information System is the ArcGIS platform by ESRI. This robust and sophisticated software allows users to perform spatial analysis, manage large amounts of spatial data, and produce cartographically appealing maps that aid in decision making.



The images above show various layers of GIS data and analysis produced by the Southwestern Commission for the Cowee Township in Macon County, NC, including: terrain, hydrology, floodplains, protected lands, steep slopes, endangered species habitat areas, appropriate soils, agricultural lands and key viewsheds from the Cowee Mound. The final combination of this information can be used to direct development to appropriate locations.

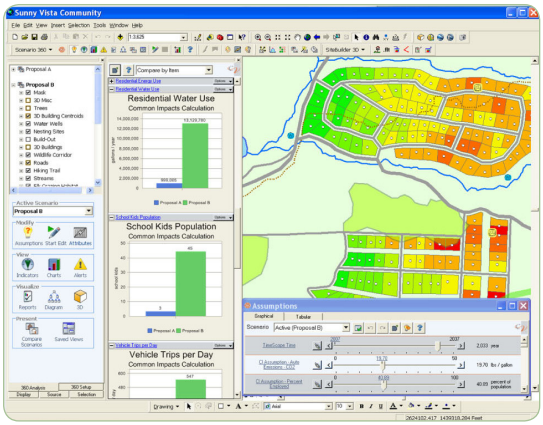


Image Source: Placeways (www.placeways.com)

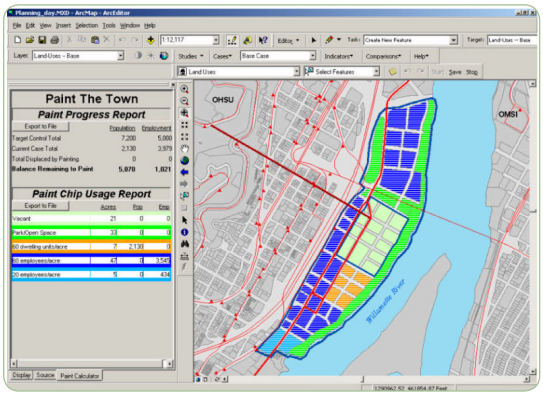


Image Source: Criterion Planners (www.crit.com)

Images from top: Community Viz; INDEX

NC ONEMAP

Organized by the NC Geographic Information Coordinating Council, NC OneMap is a valuable resource that aggregates GIS data from numerous partners throughout North Carolina, including local, state and federal government agencies, the private sector and academia, to provide free and comprehensive access to geospatial data resources. NC OneMap will eventually include data from all 100 North Carolina counties and every municipality that creates GIS data. Cherokee, Haywood, Macon and Swain counties currently participate in the program and have data available for download through the online catalog.

Another component to NC OneMap is a cost-share program for counties with out-of-date orthophotography. Since 2005, the GICC has worked through state and federal government agencies to provide $1 million in cost-share funding for acquisition of the data. Twenty-four counties, including Cherokee and Graham, applied for and received 2007-2008 cost-share dollars for new orthophotography to be flown.

CommunityViz is a plug in for ArcGIS that includes a number of tools that allow the user to envision alternate development scenarios and their potential impacts; create realistic, interactive 3D models of real places as they are or could be; and calculate the economic, environmental and social impacts of various geographic decisions.

INDEX is a suite of GIS planning tools by Criterion Planners that is used to benchmark existing conditions, create alternative scenarios, evaluate alternatives, and monitor change over time. It includes a number of integrated tools which aid in decision making, including build-out analysis, suitability analysis, urban design, travel impacts, stormwater runoff, energy efficiency, air quality/climate change, and fiscal impact analysis.

GEOGRAPHIC ANALYSIS CLEARINGHOUSES

A number of resources and institutions exist in Region A that are able to provide support for various planning initiatives with capacities to provide advanced geographic analysis.

Both Western Carolina University and the University of North Carolina at Asheville have geography departments that can assist communities with GIS needs. Specifically, UNC-A is home to the western NC office of the Renaissance Computing Institute (RENCI), a collaboration of universities across North Carolina. The RENCI-Asheville office focuses on disaster research, mitigation and preparedness, taking advantage of western North Carolina's expertise in weather and climate modeling, visualization and public outreach.

The Southwestern Commission provides a variety of GIS planning and implementation tools to local governments, including GIS training, GPS data collection, and mapping and analysis services. Many local governments also have staff that provide similar support to both citizens and other city and county departments.

GIS Software:

ArcGIS - GIS & Mapping Tools: www.esri.com

CommunityViz: www.communityviz.com

INDEX Software: www.crit.com/index/index.html

GoogleEarth: earth.google.com

Google SketchUp: sketchup.google.com

GIS Mapping and Analysis Services:

County GIS Departments

NC One Map: www.nconemap.org

Renaissance Computing Institute (RENCI) at UNC-Asheville: orgs.unca.edu/nemac/RENCIAsheville/

Southwestern Commission GIS: http://www.regiona.org/econdev/gis.htm

RESOURCES

2.6 THE TRANSECT AND SETTLEMENT PATTERNS

In recent years, a planning methodology called the "Transect" has been increasingly utilized as a tool for managing the growth, sustainability and revitalization of rural and urban areas. This method of visualizing and orchestrating change in the natural and built environments is based upon the physical character of places rather than on legal definitions of land uses. It can provide communities of any type and scale with an easily understood means of deciding how they want their neighborhoods, communities, villages and towns to grow while preserving their natural, historic, and community character.

This classification of rural and urban areas along a scale of varying development intensity has been formalized into a conceptual cross-section (or "transect").

The standard Transect in use today draws a cross section through an imaginary landscape, identifying different types of environmental zones, each defined by its morphological character, and (in its generic form) moving from T1 (rural preserve) through ascending scales of suburban and urban areas leading to the densest area T6 (urban core). A seventh classification, an "assigned" or "specialized district" similar to "special use districts," exists for uses such as airports and landfills, which by their very nature do not fit the basic neighborhood model.

This hierarchical scale enables designers, planners and the public to see the various kinds of rural and urban landscapes as a continuum that relates urban uses to the ecological factors of particular zones. This continuum assists planners, designers and the public in deciding where different types of buildings and different uses fit best.

The Transect model can be scaled to a planning effort as large and complex as a region or as limited as a single neighborhood. The methodology can be adapted to each new site condition and can be used as a mechanism for managing growth and preserving historic landscapes and townscapes in any location, rural as well as urban.

Zone	Rural Condition	Urban Condition
T-1	Great Smoky Mountains National Park, Conserved Lands, Floodplains	Conserved Lands, Floodplains
T-2	Farms and Scattered rural settlements along country roads	Lower density neighborhoods with some limited commercial activities (corner store)
T-3	Rural Crossroads (e.g. West's Mill area in the Cowee Valley)	Medium density neighborhood and limited neighborhood-scale mixed-use areas
T-4	Small downtowns (e.g. Hayesville or Robbinsville)	Urban neighborhoods and neighborhood-scale commercial
T-5	no rural equivalent	Neighborhood Centers (e.g. Cashier's Crossroads or Historic Dillsboro)
T-6	no rural equivalent	Community Centers (e.g. downtown Waynesville or downtown Franklin)

Image Source: Duany-Plater Zyberk & Company

An illustration of the Rural-Urban Transect as it moves from the city center (T6) to the rural countryside (T1).

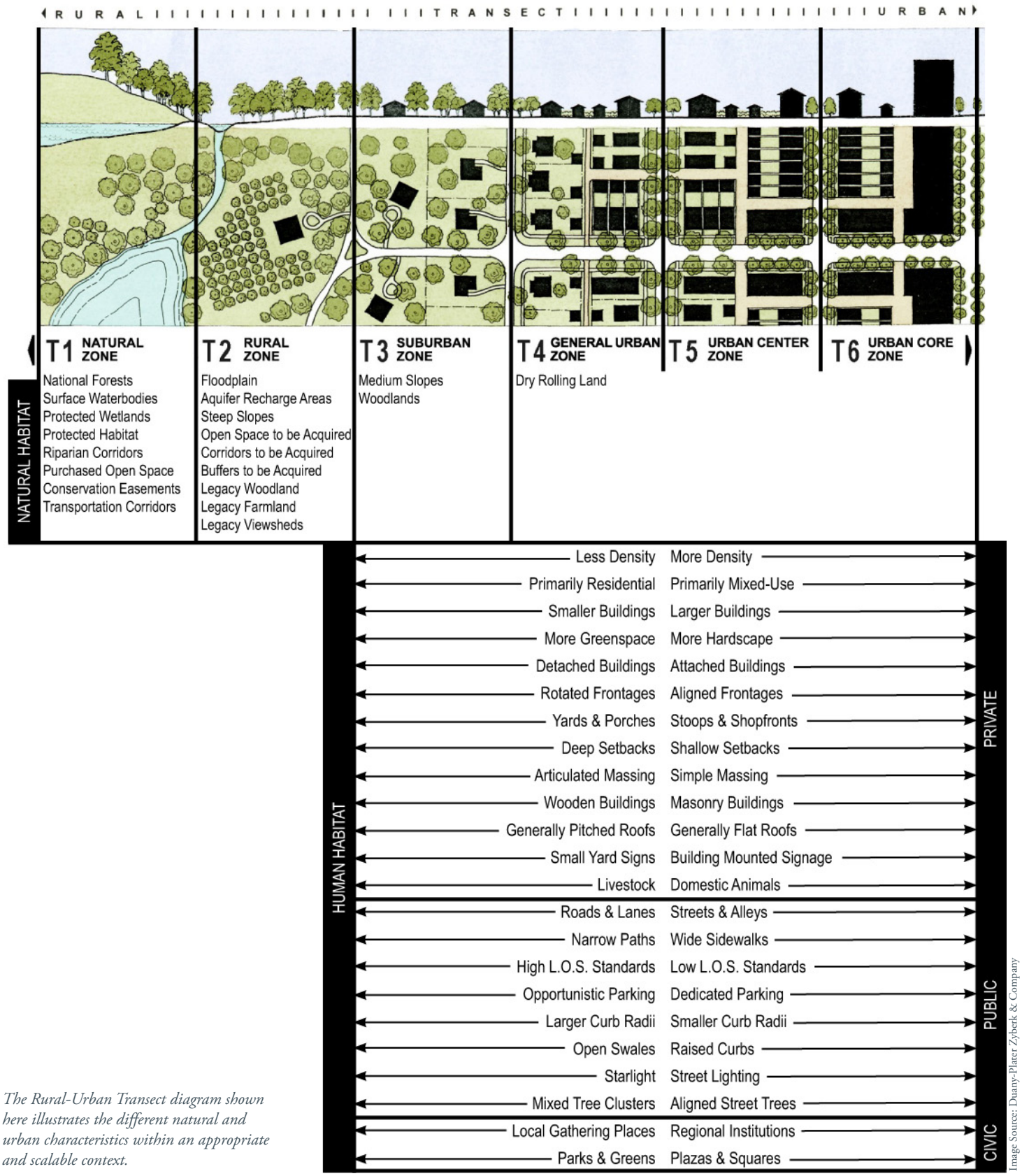


Image Source: Duany-Plater Zyberk & Company

The Rural-Urban Transect diagram shown here illustrates the different natural and urban characteristics within an appropriate and scalable context.

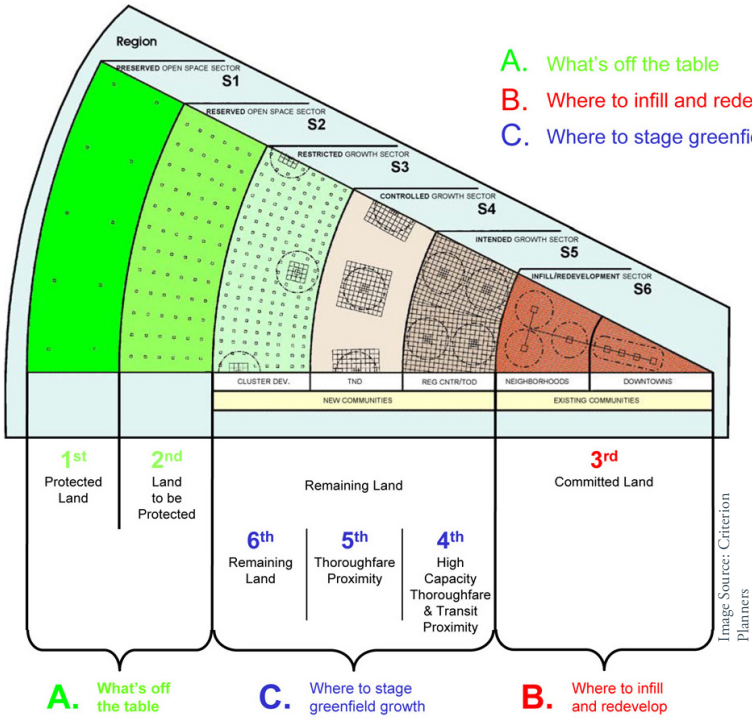
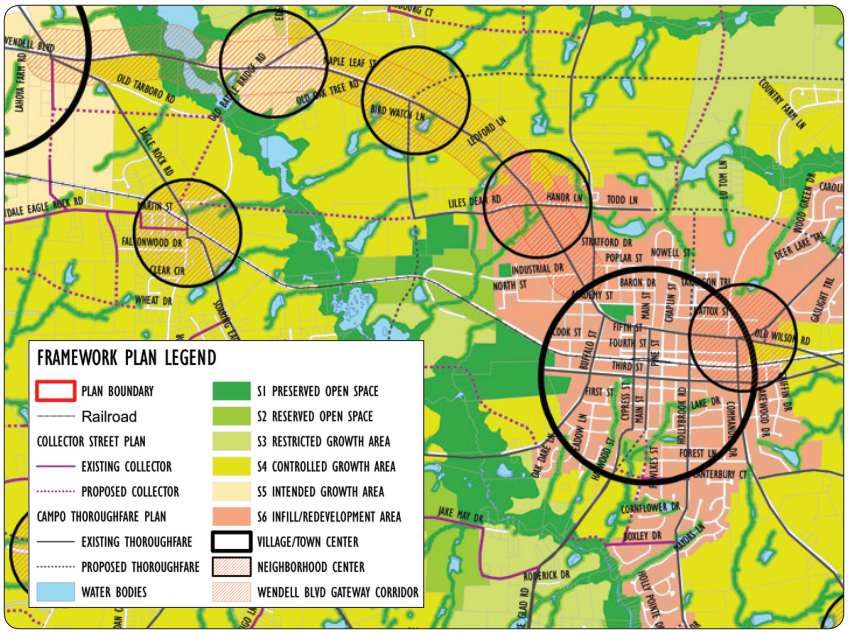


Image Source: Criterion Planners

Regional Sectors		Transect Zones		Pedestrian Sheds	Community Types
S1	Preserved Open Space	T1	Natural	N/A	N/A
S2	Reserved Open Space	T2	Rural	N/A	N/A
S3	Restricted Growth	T2	Rural	One standard shed per community	***New*** Cluster Developments/ Hamlets
		T3	Sub-urban		
		T4	General urban		
S4	Controlled Growth	T3	Sub-urban	Multiple standard sheds per community	***New*** Traditional Neighborhood Developments
		T4	General urban		
		T5	Urban center		
S5	Intended Growth	T4	General urban	One long and multiple standard sheds per community	***New*** Regional Centers/Transit-Oriented Developments
		T5	Urban center		
		T6	Urban core		
S6	Infill & Redevelopment	T3	Sub-urban	One or more long and multiple standard sheds per community	***Existing*** Neighborhoods/ Urban Villages/ Town Centers/ Downtowns
		T4	General urban		
		T5	Urban center		
		T6	Urban core		

Table by Criterion Planners



THE TRANSECT MAP

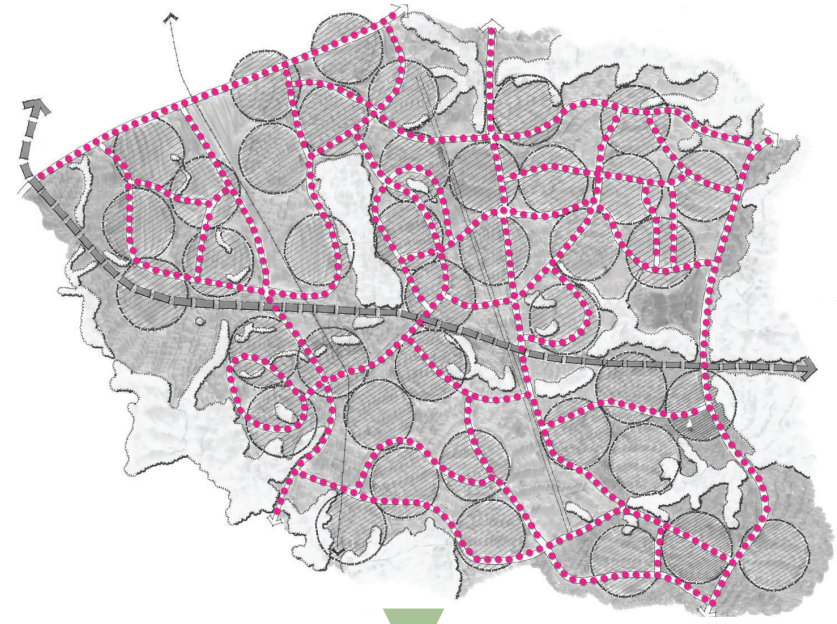
One of the more sophisticated tools for conservation and development mapping is a land planning process that follows the TransectMap land classification methodology developed by Criterion Planners. This methodology is based on the concept of the Rural-Urban Transect noted in Section 2.1. The TransectMap process identifies three major land categories and follows the following steps:

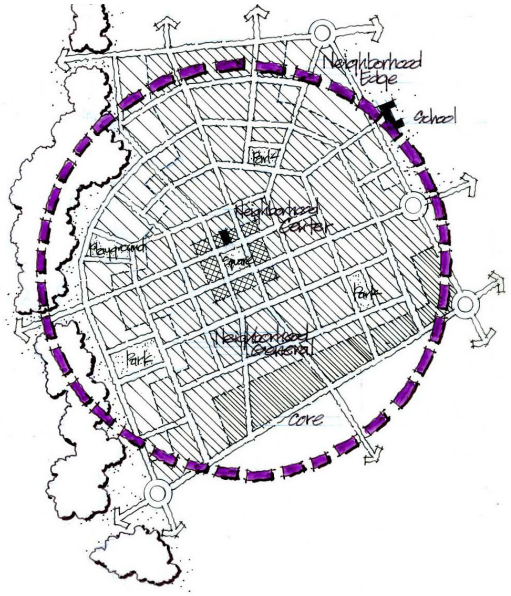
Areas to be Preserved or Reserved (S1 & S2) The first step is an environmental analysis to determine which areas should be preserved or conserved for environmental, agricultural, and/or viewshed protection purposes. This analysis would provide the basis for prioritizing land acquisition and protection efforts and development regulations for sensitive areas.

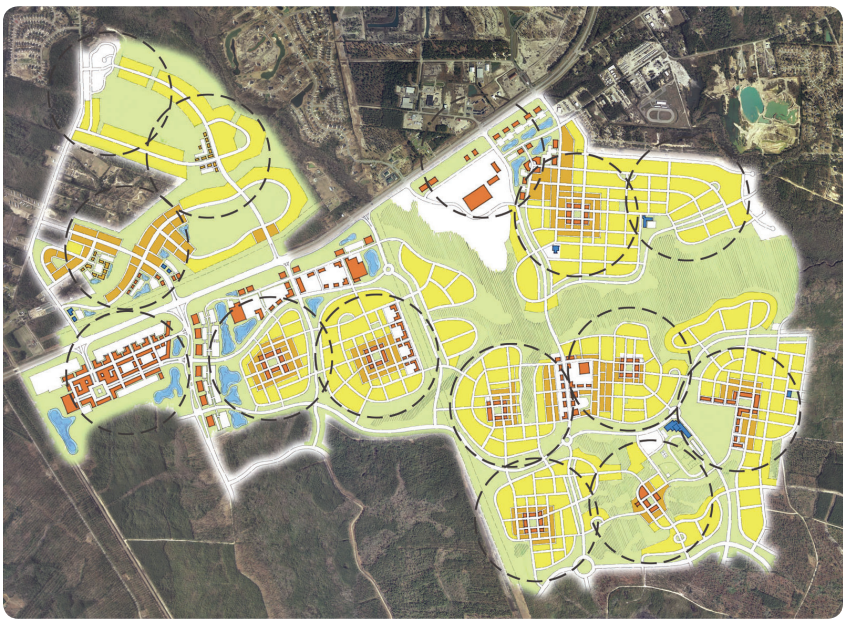
Areas for Infill and Redevelopment (S6) The next step is to determine areas that are appropriate for redevelopment or infill development, typically previously urbanized areas like downtowns and village centers.

Areas for New Growth and Development (S3, S4 & S5) The final stage is to define areas that are appropriate for new growth, including those areas that have good thoroughfare accessibility and existing or planned access to water and sewer utilities (S4 & S5). Other areas that are otherwise unencumbered but are further from urban services can be developed as rural neighborhoods or hamlets (S3).

Images from top right: Diagram of the TransectMap Land Classification System; Table of Transect zones by Sector allocations; Framework land use policy plan for Wendell, NC. Based on the TransectMap method of land use classification, the map shows areas that are to be preserved (in shades of green), areas for infill development (in salmon color) and areas for new development (in shades of yellow and taupe). Existing or proposed mixed-used nodes are shown as circles.







Images counter-clockwise from top right: Diagram of the neighborhood unit as the fundamental building block of our communities; A framework diagram noting preferred transportation and open space networks using the neighborhood unit; The detailed block structure (All images from a transect-based comprehensive plan for Leland, NC).

APPLYING THE TRANSECT

A land use master plan would identify with precision the type of development that is desired for each part of the community and appropriate locations, density, and design standards for such. As part of a community-wide plan, the Transect model should be applied at the "pedestrian shed" level (1/4 mile radius or a five-minute walk). The Transect specifies development and design details for each Transect zone based on an appropriate context. For example, a rural street typically has no curbs or sidewalks and its buildings are typically farmhouses or barns. An urban street, depending on the intensity of urbanism, may have curb and gutter, regularly placed street trees, sidewalks, and building forms such as common walls and flat roofs.

Each Transect category has detailed provisions for density, height, parking, design of buildings, streets, parks, neighborhoods, and other aspects of the human and natural environment. Transect zones can be used to define the type, intensity, and design of development for areas proposed for new development and areas proposed to remain essentially unchanged as well. The Transect concept ultimately provides the basis for Smart Growth regulatory standards.

Duany-Plater Zyberk & Company: www.dpz.com/transect.aspx

Transect Map: www.crit.com/documents/transect.pdf

New Urban News: www.newurbannews.com/transect.html

RESOURCES

CODES ARE NOT THE WORK OF THE DEVIL

But the devil is certainly in the details. In fact, codes of public conduct as are old as civilization itself. Our historic record is full of codes and ordinances that regulate the behavior of both people and buildings in the public realm for the good of the civilization. As mentioned at the beginning of this section, the regulation of the built environment literally came over on boats from the mother countries of America's earliest European settlers.

In North Carolina, all local governments are granted the authority to enact regulations for the built environment (see text to the left). In years past, when the population in Region A was sparse and those who lived here respected the heritage of the land, the axiom of low regulation probably served the communities sufficiently. Populations were typically concentrated near the many small towns where services could be delivered fairly efficiently. However, with the rampant development in what can best be characterized as mountain-style suburbanization, a host of issues have surfaced that necessitate a rethinking of the attitude that the "Z-word" isn't appropriate for the mountains.

WHEN TO CONSIDER IMPLEMENTING CODES

History has proven that the more humans live in closer proximity to one another, the more they tend to cause "impacts" and "annoy" one another. For example, rules aren't generally necessary if a landowner on a 100-acre tract decides to clear cut one acre for a home site. But the owner clear cuts one acre of a two-acre lot adjacent to another two-acre lot, there can be significant ramifications. And what if a landowner wants to subdivide the 100-acre tract into 50 two-acre sites and clear cut both sites? Clearly, there is a law of cumulative impacts. If everyone is allowed to do the worst conceivable act to a tract of land, then the character of the entire community is changed forever, and property values are eroded for everybody.

Cities and urban neighborhoods, as the densest settlements, require the highest level of scrutiny to ensure compatibility. Rural areas with very low density development patterns require the least. Rural areas that are transitioning to suburban areas often require a higher than expected level of regulation because their potential for economic, social and environmental degradation is highest. Traffic congestion, diminished water quality, and deforestation have historically been worse in rapidly developing rural and suburban areas.

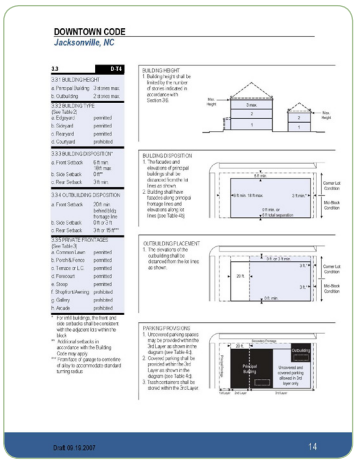
Development regulations, if comprehensively written and subject to a competent plan, offer predictability to everyone in the process—property owners, developers, administrators, elected officials, and neighbors—thereby ensuring a stable (and growing) fiscal environment for all involved. In Region A, where most of the unincorporated areas are effectively unregulated, local governments may need to take some "large baby steps" towards catching up with decades of inaction. However, it must be reiterated that the worst codes are those that are adopted as general standards across large, diverse geographies with little consideration of how they integrate with other goals. Therefore, the precursor to any regulation must be a comprehensive plan that considers collective impacts

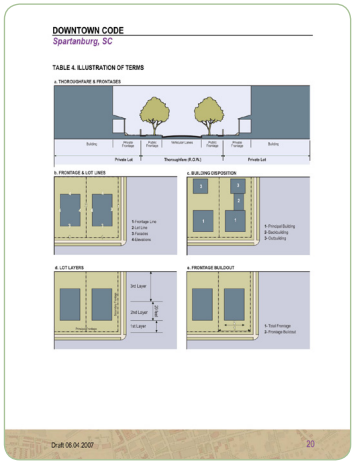
Enabling Legislation for Zoning in North Carolina

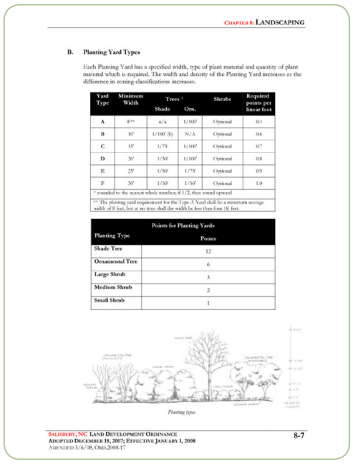
Zoning regulations shall be made in accordance with a comprehensive plan. Prior to adopting or rejecting any zoning amendment, the governing board shall adopt a statement describing whether its action is consistent with an adopted comprehensive plan and explaining why the board considers the action taken to be reasonable and in the public interest. That statement is not subject to judicial review.

Zoning regulations shall be designed to promote the public health, safety, and general welfare. To that end, the regulations may address, among other things, the following public purposes: to provide adequate light and air; to prevent the overcrowding of land; to avoid undue concentration of population; to lessen congestion in the streets; to secure safety from fire, panic, and dangers; and to facilitate the efficient and adequate provision of transportation, water, sewerage, schools, parks, and other public requirements. The regulations shall be made with reasonable consideration as to, among other things, the character of the district and its peculiar suitability for particular uses, and with a view to conserving the value of buildings and encouraging the most appropriate use of land throughout the city/county. In addition (for Counties), the regulations shall be made with reasonable consideration to expansion and development of any cities within the county, so as to provide for their orderly growth and development. (Source: §160A-383-Cities) / §153A-341-Counties)

"[Form-Based Codes are] a method of regulating development to achieve a specific form. Form-based codes create a predictable public realm primarily by controlling physical form, with a lesser focus on land use, through city or county regulations." – formbasedcodes.org







Images from form-based codes in Spartanburg, SC; Salisbury, NC; and Jacksonville, NC.

of various decisions as they relate to implementing a community's vision.

The community needs to decide if it is necessary to develop codes to regulate the form of the desired development. If so, the next step is to determine the scope of the ordinance—does it need to cover the entire jurisdiction or focus on certain areas? There is no easy answer to this question. In the end, if the plan shows that development is possible in a particular area because it is defined as an area for new growth and development (TransectMap Sectors S3-S6), then some regulation should be considered.

As an alternative to imposing a code on property from the beginning, communities might consider the use of a floating overlay or similar mechanism. A floating overlay becomes active only when the landowner seeks to develop land in a way that exceeds a certain threshold (e.g., the subdivision of land into more than 4 parcels each less than 10 acres in size). Once initiated, the alternate development standards would apply. Until that point, the landowner can continue living or working in a manner that is virtually "unzoned," permitting the widest variety of uses expected in the rural mountain region.

FORM-BASED CODES

This Toolbox recommends the use of form-based codes derived from the transect methodology as the state of the art in regulatory tools. A form-based code is the best tool for allowing a greater mix of uses while ensuring overall compatibility across a range of contexts. With their unyielding reliance on the strict segregation of uses and overlay of broad and generic development standards, these codes are superior in nearly every way to conventional zoning and subdivision ordinances.

> *Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another and the scale and types of streets and blocks. The regulations and standards in form-based codes, presented in both diagrams and words, are keyed to a regulating plan that designates the appropriate form and scale (and therefore character) of development rather than only distinctions in land-use types. This is in contrast to conventional zoning's focus on the micro-management and segregation of land uses and the control of development intensity through abstract and uncoordinated parameters (e.g., FAR, dwellings per acre, setbacks, parking ratios, traffic Level of Service to the neglect of an integrated built form. Not to be confused with design guidelines or general statements of policy, form-based codes are regulatory, not advisory.*
>
> *Form-based codes are drafted to achieve a community vision based on time-tested forms of urbanism. Ultimately, a form-based code is a tool; the quality of development outcomes is dependent on the quality and objectives of the community plan that a code implements.*
>
> *Source: www.formbasedcodes.org/definition.html*

Modern form-based codes seek to prescribe the physical design of buildings and infrastructure while permitting a greater flexibility in

the mixture of uses and activities. These codes recognize that many of our most cherished neighborhoods and downtowns were constructed during a period before zoning. As such, these areas have been much more adaptable to changes in demographics, retail trends, and technology (i.e., telecommuting) than new suburban subdivisions with rigid setbacks, narrow use requirements, and overbearing restrictive covenants that typically promote inflexible monotony.

Form-based codes are quickly becoming the preferred method of creating more human-friendly communities because they place the regulatory emphasis on those elements that impact the public realm. Most zoning codes are preoccupied with excessive parking standards and a heavily fractured use matrix and are generally silent on how the individual building will look. To satisfy the automobile, most codes have explicit design standards for each parking space but do not address those elements that promote the human habitat.

USING MODEL ORDINANCES

This Toolbox makes specific references to a number of model ordinances that have been implemented by local governments in Region A, taken from North Carolina and other parts of the country grappling with similar issues. These ordinances provide good technical guidance for the specific issues under consideration. They have been well considered by the appropriate discipline or stakeholder group charged with writing them to address a very narrow technical requirement and represent the "best practice" for a generic geographic and political environment.

Prior to adoption, care must be taken by the local government to ensure that every code is considered comprehensively. Taken alone, these model ordinances are proficient at implementing their stated goals. However, when taken in a larger context with other goals of the community, they are often cumbersome, inconsistent, and even contradictory. To avoid these pitfalls, it is critical that a code be preceded by a good plan.

Such is the case with the model Floodplain Protection Ordinance that is required for adoption prior to entering the National Flood Insurance Program (NFIP) or the recent Phase 2 Stormwater Management Ordinance.
For example, a carefully crafted watershed protection ordinance can incorporate both water quality and water quantity, eliminating the need for a separate floodplain and stormwater ordinance. And a plan that directs development away from these sensitive areas renders the need to aggressively protect them far less important.

The same can be said for ordinances that seek to protect views along ridgelines and mountainsides when they intersect with wildfire protection standards. Wildfire standards recommend that more than 200 feet be cleared around homes on slopes greater than 25percent. This recommendation runs counter to a desire to maintain a natural buffer around the home to protect it from winds and minimize its visual impact in the landscape. Regulations can be written with precision to ensure that they address a range of issues simultaneously and are calibrated to differing contexts (or transect zones, as introduced in previous sections).

THE SMARTCODE

The SmartCode is a model transect-based development code available for all scales of planning, from the region to the community to the block and building. It is one of the family of "form-based codes" addressing primarily the physical form of buildings and communities. It folds zoning, subdivision regulations, urban design, public works standards and basic architectural controls into one compact document.

The SmartCode enables the implementation of a community's vision by coding the specific outcomes desired in particular places. It allows for distinctly different approaches in different areas within the community, unlike a one-size-fits-all conventional code. To this end, it is meant to be locally customized by citizens, planners, architects, and attorneys in accordance with a community plan. This gives the SmartCode unusual political power, as it permits buy-in from stakeholders.

SmartCode Central (www.smartcodecentral.com) provides all the important components of transect-based planning in one place. It provides files of the latest versions of the model SmartCode and supplementary modules, including new sustainability standards. It also links to calibrators, attorneys, and town planners who do significant work with the SmartCode. Additional modules and plug-ins that are compatible with the SmartCode are available. If stronger architectural guidelines are desired, a community may adopt one of the Pattern Books correlated to the Transect.

The SmartCode was released by Duany Plater-Zyberk and Company (DPZ) in 2003, after two decades of research and implementation. The code is open source and free of charge.

GERMANTOWN, TN, SMART GROWTH PARTNERSHIP PROGRAM & MATRIX

In 2007, the City of Germantown, TN, adopted a plan to encourage the redevelopment of 700 acres in the center of their community into a walkable, sustainable downtown area. Once the plan was complete, the City adopted a new zoning ordinance which granted significantly more development opportunities than permitted under the previous regulations. In turn, the code issued new standards for building design, public improvements, and sustainability guidelines.

Subsequent to the Code, the City adopted a decision making guide that grants additional development incentives ranging from streamlined permitting to Tax Increment Financing (TIF) over a 15-year period. To this end, the City has established the following priorities when considering the use of the development incentives:

1. The Public is a Partner in Development Decisions: Germantown has had a long standing tradition of active citizenry. Developers should work to include the public early in the development process.
2. A Balanced Environmental Footprint: All developments are acknowledged to have an impact on the natural realm. To the greatest extent practical, Smart Growth projects should balance their urbanism with an appropriate level of environmental sensitivity. In designated Smart Growth areas, the balance between the human habitat and the natural habitat should generally favor the former.
3. A High Quality of Life for the Entire Community: Each new development should be welcomed as a new addition to the life of the entire community through its contribution to the public realm of the City. Public spaces, particularly those with new amenities not found elsewhere or nearby, are

continued on next page

This Toolbox supports the use of model ordinances, following the adoption of a comprehensive plan, with the following recommendations:

- ***Begin by separating the administration of the model ordinance from the actual regulation—it will streamline review and eliminate a lot of redundancy. Administration sections can generally by consolidated.***
- ***Understand the science or rationale behind the regulation and be prepared to question each. Many model ordinances have been replicated so many times, they no longer carry with them an institutional knowledge of "why," only "how."***
- ***Is the ordinance context sensitive or a one-size-fits-all? If the latter, then spend time calibrating it for various contexts.***
- ***Test the ordinance with design in different contexts to ensure that you are not creating unintended consequences or inconsistencies with other community goals.***
- ***Improve the ordinance with graphics and diagrams that are localized.***

DEVELOPMENT INCENTIVES

In areas that have developed largely in the absence of regulation such as is the case in Region A, it will likely be necessary to assist the local development community in making the transition to a more regulated development environment. There are a number of approaches that can be employed when considering the enaction of new codes.

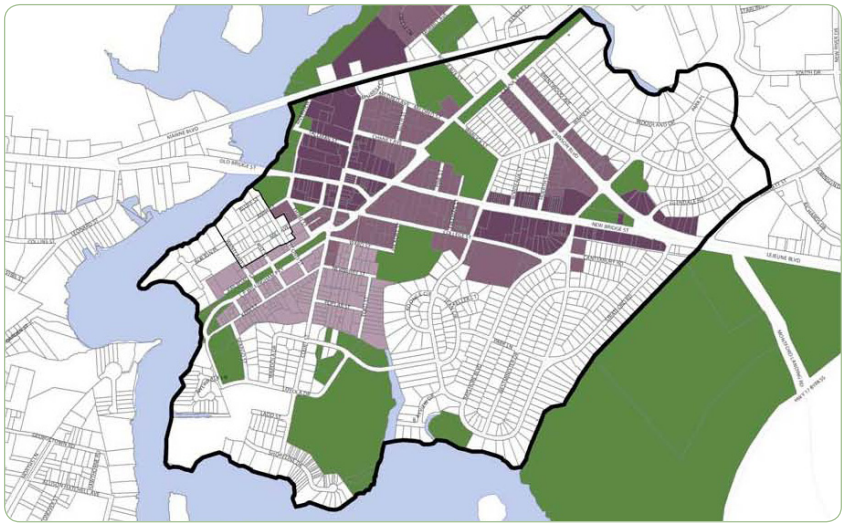
Education and Outreach: Above all else, the community must make a commitment to provide the necessary education to assure smooth implementation of the regulation. Presentations to local homebuilder groups, websites with resource information and well-produced case studies illustrating the actual implementation of the new practice will be very valuable.

Streamlined Permitting: The least expensive thing that a local government can do to incentivize a behavior is to cut the length of time it takes to get a permit. Unfortunately, for most development applications, the most time in Region A is spent processing state permits for sedimentation/erosion control and water/wastewater treatment with some more complex systems taking in excess of 18 months for permitting. By comparison, local government permitting is already wellwithin acceptable tolerances for permitting.

Density Bonuses: In certain areas identified on a comprehensive plan, it may be appropriate to permit a baseline density with opportunities for increases subject to compliance with higher standards. For example, a certain zone may permit 1 unit per acre as a baseline but could increase that to 2 units per acre by incorporating low-impact design standards in the design of their infrastructure and usable public park land or common spaces. *(Note: This tool is only valuable for zoned areas that limit density.)*

Financial Incentives: For certain types of development, particularly those that are "pioneering" new regulations, local governments could

consider tax rebates, grants, government-backed financing, and/or direct financial products as a means to assist developers in adapting to a changing regulatory environment. Because the expertise for new technologies or new methods often trails regulations, there is often a time lag between when new standards are put in place and when the development community can build up its efficiencies to absorb the change. This is certainly true for many "green" construction practices where the core expertise is still not prevalent in the marketplace. In areas of high green building activity like Portland, Chicago, and Austin, the costs have been normalized and no longer represent a significant barrier to implementation. Unfortunately, the low tax rates in many Region A communities leave little in the way of discretionary funds available for development assistance. In this regard, priority funding should be placed on projects seeking to incorporate affordable housing for full-time residents.



A Regulating Plan, such as this one for Downtown Jacksonville, NC, is keyed to development standards and can identify priority investment and development areas for local governments.

Form-Based Codes Institute (FBCI): www.formbasedcodes.org

SmartCode Central: www.smartcodecentral.com

Arendt, Randall. *Crossroads, Hamlet, Village, Town: Design Characteristics of Traditional Neighborhoods, Old and New.* American Planning Association. Planning Advisory Service Report Number 487/488, 1999

Emerson, Chad. *The SmartCode Solution to Sprawl.* Washington, DC: Environmental Law Institute, 2007.

Owens, David W. *Land Use Law in North Carolina*. Chapel Hill: Institute of Government, UNC Chapel Hill, 2006.

Parolek, Daniel G., Karen Parolek, and Paul Crawford. *Form-Based Codes: A Guide for Planners, Urban Designers, Municipalities, and Developers***.** Hoboken: John Wiley & Sons, 2008.

RESOURCES

continued from previous page

favored over private spaces. Likewise, mixed-use areas should provide an appropriate balance of "things to go do" and "things to go buy."

4. A Balanced Tax Base: The City desires to ensure its long-term economic viability with a tax base that avoids the need for significant increases in the property tax rate, particularly its residential rate. In this manner, new development is generally expected to provide more in long-term revenue than the services that it will require. Exceptions to this are expected in an effort to promote other goals.

The Smart Growth Matrix is a tool to assist the Mayor and Board of Alderman in analyzing development proposals within certain designated areas (Smart Growth zones). It is designed to provide a quantitative measure of how well a development project accomplishes the City's Smart Growth priorities. The matrix incorporates criteria that reflect the Smart Growth goals described above. These criteria include the location of development, sustainable development practices, parking, urban pattern & design, neighborhood support, employment opportunities, increased tax base and other policy priorities.

If a development project, as measured by the matrix, significantly advances the City's Smart Growth Initiative, certain public-private partnerships may be available to help offset the higher cost of developing in an urban area. These partnerships may include the reduction or reimbursement of development fees; public investment in new or improved infrastructure; and accelerated infrastructure investments, which would include available, but unassigned, Capital Improvement Program (CIP) resources related to on- and off-site project improvements. A maximum value for partnerships is set based on the project matrix score and the increase in property tax revenue related to the project. (*For more information please reference www.germantown-tn.gov)*

3 SITE & BUILDING DESIGN

Image Source: Gabriel Cumming/Carla Norwood

"We need real first-class second-home developments that are done in the right way. What that would look like to me is good road networks that are on an accessible grade, developments that conserve a certain amount of area in conservation, that they don't develop every piece of it. Those developments would have a network of things that relate back to our Appalachian mountain culture…. It takes some real good planning."

—Randy Jordan Contractor/Developer

OVERVIEW

Historically, the settlement patterns in the western North Carolina landscape derived in large part from the topographic conditions that limited development zones to the flatter, more easily accessible areas. Development in the last fifty years aside, the predominant patterns in this area of the state have been either rural farming settlements or small towns. Waynesville, Franklin, Murphy, Robbinsville, Hayesville, Bryson City and Sylva served as centers of commerce and government for their respective counties. Other towns like Dillsboro and Andrews grew from their adjacency to the rail corridor, while Highlands and Cashiers provided weekend respites for their seasonal populations. Suburbanization and mountainside development are largely recent entrants to the overall patterns in the area. With modern heavy equipment and new technologies, there is now little terrain that is inaccessible.

Because true sustainability combines the very best in development location, site planning and building design, it is necessary to provide a comprehensive approach to development decisions. The benefits of an energy efficient home on the side of a mountain are negated if every trip away from the home is by automobile, particularly if that automobile is not fuel efficient. The goal, therefore, should be to encourage development into patterns that are comprehensively sustainable.

Within the context of a neighborhood, town or village, the focus must be on walkability. Walkability is about places to walk on (routes) such as sidewalks and trails, and places to walk to (destinations) including parks and shops. As such, these standards will place a strong emphasis on the relationship of the storefront (for commercial buildings) or the porch or stoop (for residential buildings) to the public realm (the street, park or open space). In general, buildings should be close enough to the street to create an interaction between those sitting on a porch and people walking by on the sidewalk. It is this interaction that encourages pedestrian and bicycle activity as viable alternatives to the automobile and creates and reinforces the bonds of the social network.

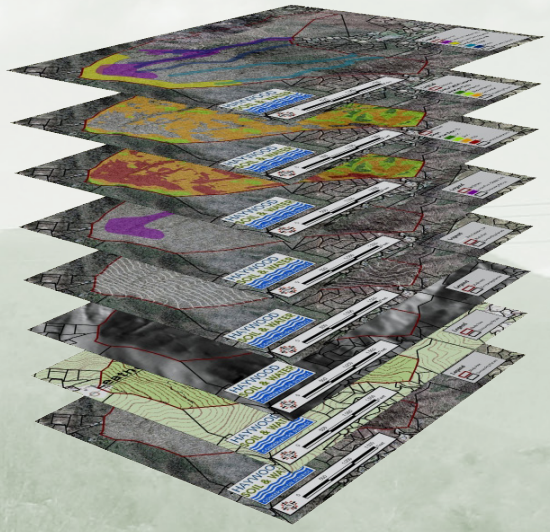
Once a community establishes the most appropriate locations for new development, as outlined in the previous section, individual developers, builders, and their designers must take a careful approach to the development of land in forms that best compliment the context. From the mountainside subdivision to the downtown infill building, appropriate building typologies and site placements will help achieve a sustainable site and building pattern for the greater community.

This section provides recommendations that follow the traditional hierarchy—beginning with site selection, moving through development design, infrastructure construction, and finally ending with building construction. While not comprehensive, this section is intended to provide new ideas for more sustainable development patterns appropriate for this region.

SITE RESOURCE ASSESSMENT (SRA)

While a community-wide geographic analysis will serve a larger study area well, it often becomes deficient in determining site-specific decisions about street alignments, lot configurations, and building sites. As a result, a more specific assessment is necessary to thoroughly evaluate a tract that is being prepared for development.

The Haywood Waterways Association (HWA) developed a pilot program in partnership with the Haywood Soil & Water District, USDA Natural Resources Conservation Service, a retired NRCS Soil Scientist, the SWNC Resources Conservation & Development Council, and Haywood Community Council to assist landowners in the assessment of their properties. This project is intended to provide pre-development assessments by experienced resource professionals, including soil scientists, soil conservationists and geologists, to identify the most suitable areas for development, as well as the most limited use or hazardous areas on any property.

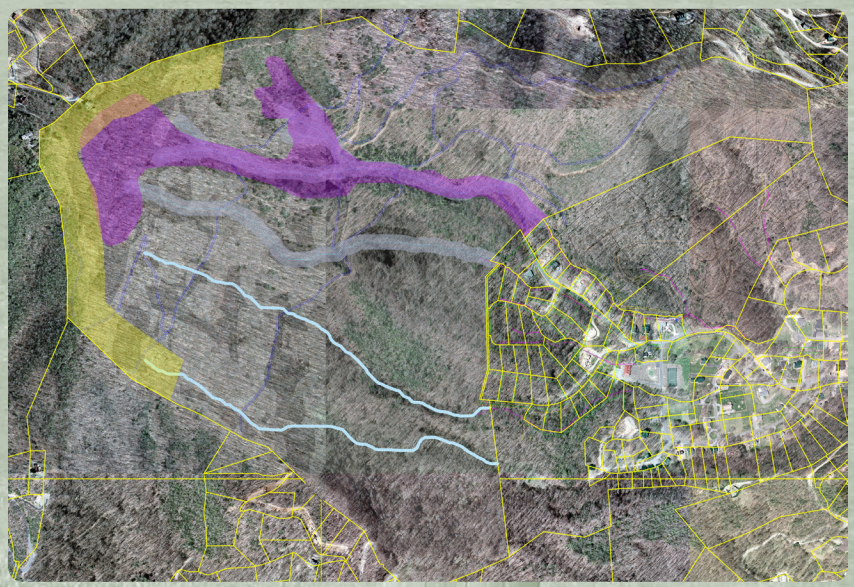


A proper SRA includes a series of overlays or layers that provide the designer with a final description of places appropriate for development and areas for conservation.

The assessment correlates a variety of factors—including the nature and depth of the soils, slope and terrain; the presence of streams, seeps, and other water sources; the location of rock outcrops; the geology; and features of interest (such as special resource values or attractions)—to identify the most suitable home sites and access road locations. The assessment is provided within a watershed perspective that addresses the impacts from the proposed development, possible downstream impacts and the potential effects of future upstream developments. The results are mapped in a 3D GIS model and provided to the developer, along with a written report.

We have refined this valuable initiative to create a more comprehensive site resource assessment process that can provide both the landowners and the HWA with a predictable outcome and usable product that is "design-ready."

The proposed Site Resource Assessment (SRA) has been broken into two distinct Tiers which will provide developers valuable information regarding a site's resources and different phases of the development process. An SRA is a critical step in the planning process and should serve as the basis for all future planning and design. A Tier 1 SRA collects the most basic information, which will help promote better development practices in the region by enabling the property owner to better identify major site constraints early in the process. A Tier 2 SRA utilizes more detailed information collected from both available databases and on-site field reconnaissance. A Tier 2 SRA is the recommended assessment model to complete prior to design and formal entitlements to

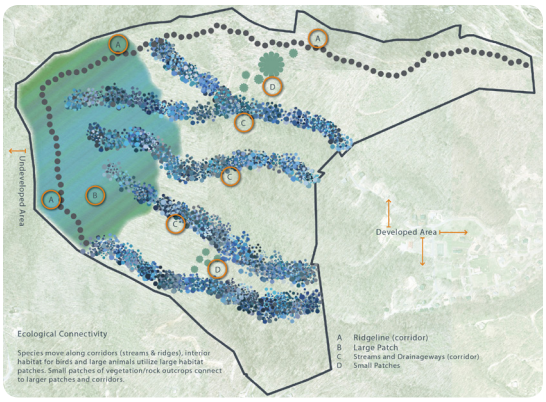


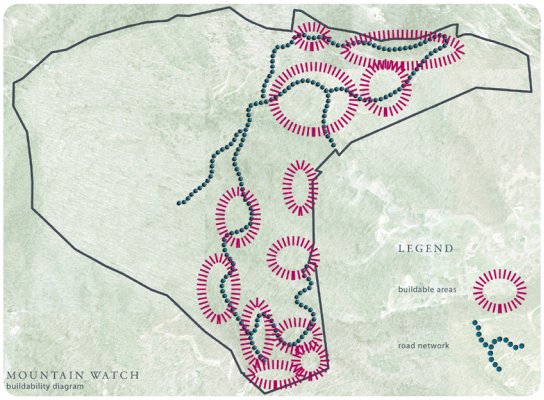
A Tier 1 SRA showing basic analysis of existing conditions (aerial photography), streams, drainage ways, poor soils and an important ridgeline using information from a brief field visit and commonly available GIS data.

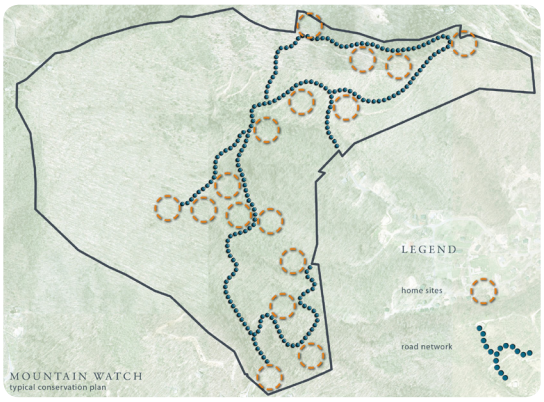
promote better patterns for sustainable development in the region. To supplement decision making regarding the appropriate design of homes, a model solar aspect (path of daylight) study and wind study (to help shelter homes from high winds) are included. The SRA will not necessarily include direct design solutions or recommendations. Rather, it will provide direction for areas more suitable for building and areas to be protected or left undesturbed. It does not involve lot layout, road layout or home site locations. Ultimately, the Site Resource Assessment produces a Suitability Assessment Map designers may use to begin preliminary layouts and design.

To ensure more widespread application of this tool, communities should consider the following:

- *Work with local governments to adopt the SRA as part of the subdivision ordinance and provide a streamlined permitting process, including fee waivers, fast-track reviews, etc.*
- *Establish an education component of the program that markets the process and encourages best development practices.*
- *Create a funding source which provides grants to developers who use the SRA Tier 1 and Tier 2 process prior to design.*
- *Urge the Southwestern Commission and the Land-of-Sky Council of Governments to develop a list of approved professionals qualified to perform an SRA (soil scientists, botanists, biologists, ecologists, geologists, etc.) and encourage Haywood Community College to establish a program to train professionals in SRAs.*
- *Provide documentation to share with developers regarding the cost/benefit of performing Tier 1 and Tier 2 SRAs. For example, document the costs for the SRA and compare with the cost of building a failed/deficient road; fines for sediment and erosion control violations; downstream wetland or stream impact violations; discovering lots are unsuitable for septic.*
- *Include the SRA in the development certification process under consideration by the Western North Carolina Green Building Council (WNCGBC).*







Images from top: Typical SRA maps showing ecological corridors (top), buildable areas (middle), and possible home sites (bottom).

McHarg, Ian L., *Design with Nature*, Hoboken, NJ: John Wiley & Sons, Inc. Wiley Series in Sustainable Design. New Ed edition, 1995.

Haywood Waterways Associations: www.haywoodwaterways.org

Western North Carolina Green Building Council: www.wncgbc.org

National Park Service Guidelines for Sustainable Site Design: www.nps.gov/dsc/dsgncnstr/gpsd/ch5.html

Sustainable Sites Initiative-Proposed Site Assessment: www.sustainablesites.org/SustainableSitesInitiative_PreliminaryReport_110107.pdf

RESOURCES

Site Resource Assessment (SRA) Tier 1 Study Checklist

Goal: To obtain a basic overview of the essential site conditions and the relationship of a property to the surrounding context based on readily available data

Required Process Mapping

- ❑ Project Boundary and Site Aerial (from County GIS)
- ❑ Slopes (in percent for ranges 0-5, 5-10, 10-15, 15-20, 20-25, 25-30, 35-40, 40-50, 50-60, over 60) based on LIDAR topographic data or 2'/5' flyover contour intervals
- ❑ Map to illustrate project context and connectivity beyond property boundaries
- ❑ NRCS Soils Data
- ❑ US Geological Data (landslide data and general geological features)
- ❑ Viewshed Exposure (map of surrounding areas from which the site is visible)
- ❑ Natural Resource Inventory
  - Hydrology (floodplains, floodways, streams, springs, wetlands, seeps, and drainages)
  - Database Search (Element Occurrence Database, Natural Heritage Database, and NC One Naturally Database)

Field Visit Required: Field visit to the site verifies the Tier 1 data.

Deliverables: Tier 1 General Suitability Assessment Map (composite map of process maps) that shows the following elements:

- ▶ Primary Conservation Areas (riparian corridors, unique geological formations, rock outcroppings, rare plants, rare plant communities, rare habitats, wetlands, and prime agricultural areas/farmland
- ▶ Unbuildable Areas (areas that have all of the following: highly erodible soils, slopes in excess of 60%, soils not suitable for septic)
- ▶ Prime Buildable Areas (slopes less than 25%, slopes with soils suitable for septic and soils not highly erosive and not within the primary conservation areas)
- ▶ Notation of areas which need further study and attention, such as soils for appropriate roads or septic systems.

Site Resource Assessment (SRA) Tier 2 Study Checklist

Goal: Detailed, scientific assessment of specific site conditions that will address design opportunities and constraints for a given site

Required Process Mapping

- ❑ All Mapping produced for SRA Tier 1 Study
- ❑ Property Survey showing boundary, existing logging roads, trails, roadways, previous building sites, utilities and other infrastructure, R.O.W.
- ❑ Regional Suitability Map (watershed, transportation, infrastructure, access to services)
- ❑ NRCS Soils Data verified with on-site soil sampling
- ❑ Viewshed Exposure (map of surrounding areas from which the site is visible)
- ❑ Natural Resource Inventory (on-site inventory)
  - Botanical Inventory (including rare plants)
  - Plant Community Inventory (including rare & sensitive communities)
  - Wildlife Habitat Inventory
  - Ecological Landscape Inventory (large patches, small patches, corridors, overall matrix)
- ❑ Cultural and Historic Landscape Inventory (structures/bridges, farms, gathering spaces, heritage sites, Native American sites, etc.)

Field Visit Required: A thorough site tour and inspection to collect and verify all data.

Deliverables: Tier 2 Detailed Suitability Assessment Map (composite map of process maps) that shows the following elements:

- ▶ Primary Conservation Areas (riparian corridors, unique geological formations, rock outcroppings, rare plants, rare plant communities, rare habitats, wetlands, and prime agricultural areas/farmland)
- ▶ Unbuildable Areas (areas with highly erodible soils, slopes in excess of 60%, soils not suitable for septic)
- ▶ Prime Buildable Areas (slopes less than 25%, slopes with soils suitable for septic and stabile soils not within the primary conservation areas)
- ▶ Notation of areas for further study and attention, such as soils appropriate for roads or septic systems.

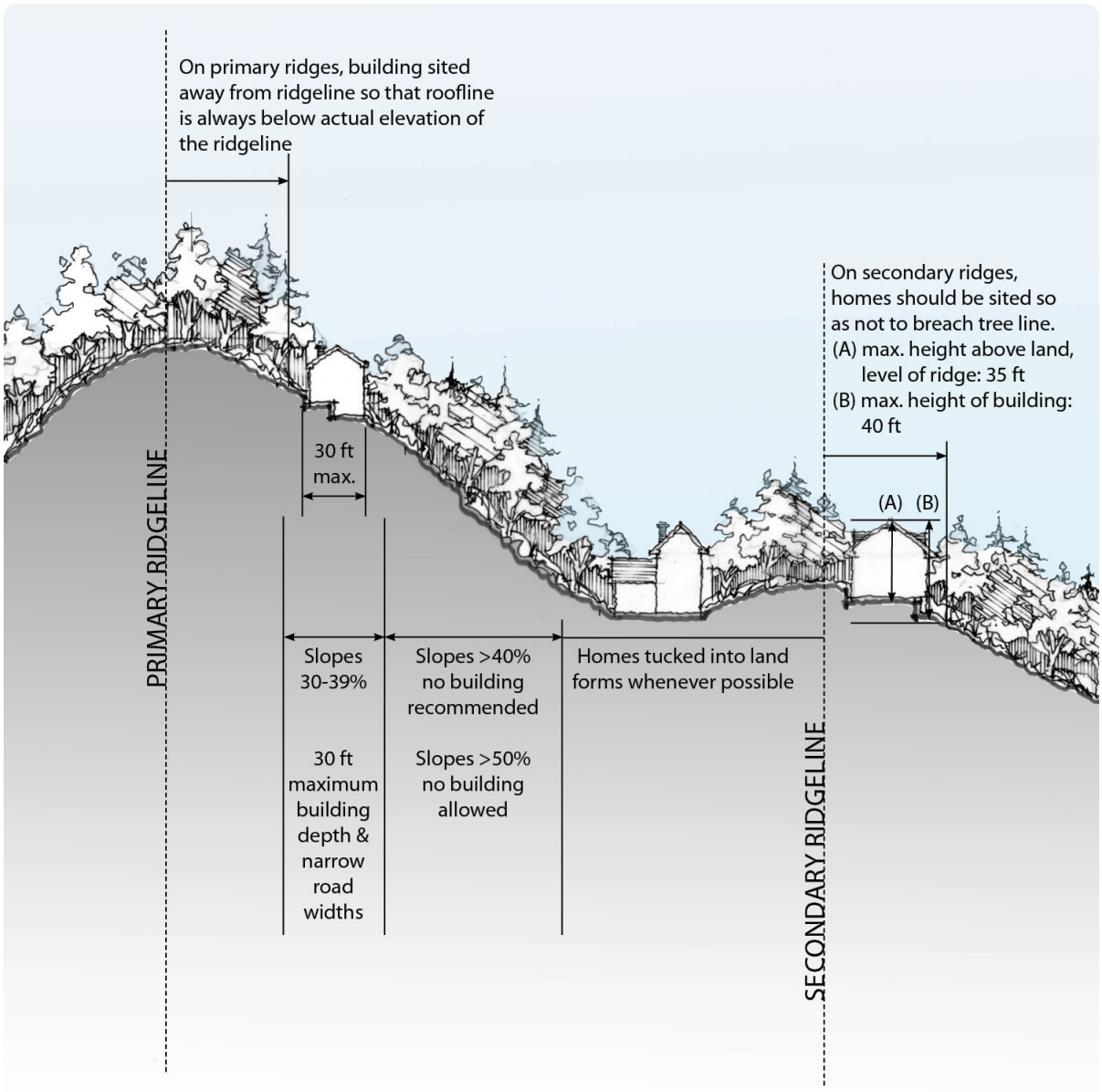
General Notes

1. The source of data for a Resource Assessment for Tier 1 should be readily available GIS data (except for Viewshed Exposure mapping). Tier 2 places more responsibility on the professional to obtain accurate and useful data as a result of field verification and data that will be obtained through on-site work.
2. All maps and data should be at the same scale and coordinate system.
3. NRCS Soils data does not provide the detail needed to make good decisions for developers, land-use planners, and landowners. It is recommended that efforts be made to generate better soils data for the region.

3.2 GENERAL DEVELOPMENT LOCATION

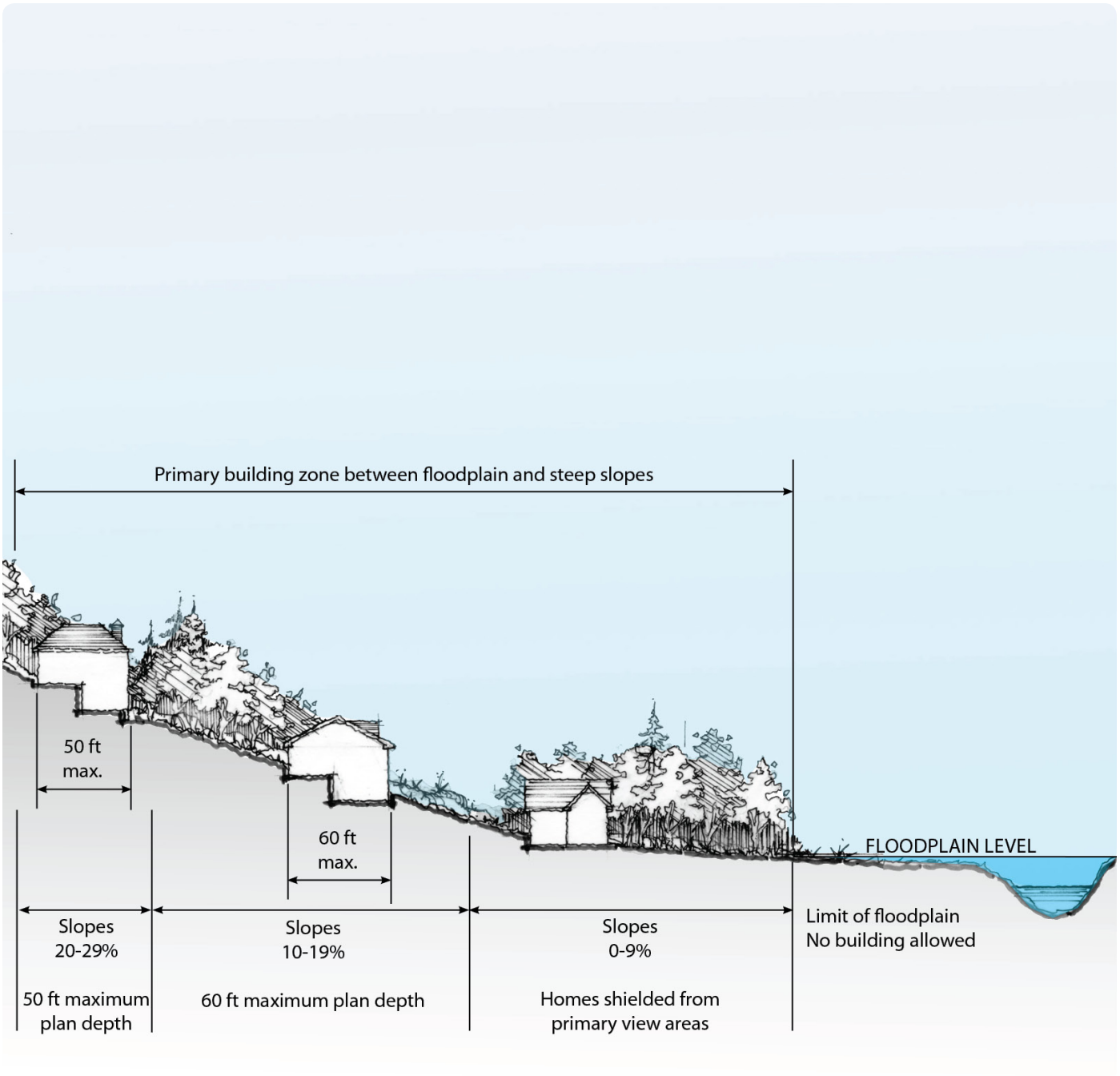
The diagram on these two pages is a conceptual illustration of "best practices" as they relate to site selection for both neighborhood and house siting, design and construction. While not to scale, this diagram illustrates appropriate building zones based on the two predominant geographical features of this region—the steep slopes and the floodplains.

As noted in the diagram, best development practices recommend avoiding construction on primary ridgelines and in floodplains and



carefully considering development on steep slopes. It also shows how mountainside development can fit within the tree canopy and use natural land forms to minimize overall disturbance.

As with all generalized diagrams, there are always site-specific conditions that may require carefully studied exceptions. This should be used as a basic guidebook. Further guidance on specific siting should also follow the Site Resource Assessment in Section 3.1.



3.3 SITE DEVELOPMENT ON STEEP SLOPES

GENERAL SITE DEVELOPMENT

Development on steep slopes should generally be avoided. Although there is no single definition of "steep slope," those over 35% have historically proven to be at risk for most landslides in western North Carolina. The North Carolina Geological Survey maintains a database of historical landslides. Based on its data, a threshold of 35% (approximately 20° slope) would include the initiation points of nearly all historic landslides for which accurate slope measurements are available.

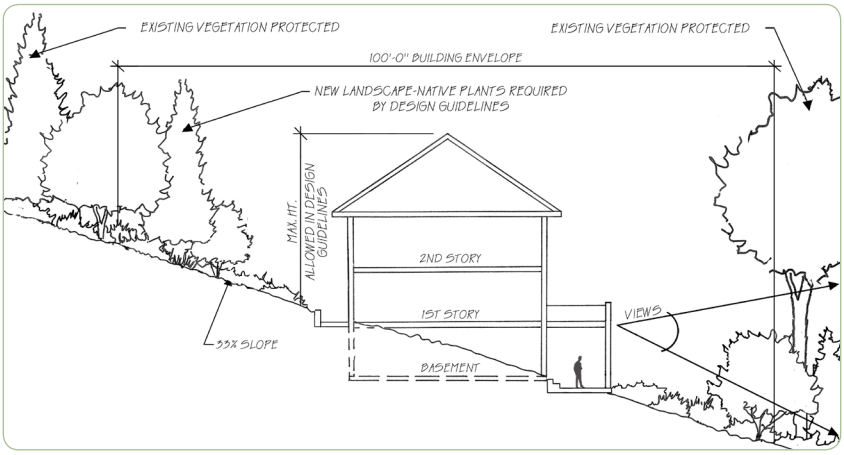


Image Source: LandDesign

Image above illustrates a typical home construction on a 33% slope, including development clearance areas and supplemental plantings to minimize fire risk.

However, when the full database of NCGS landslide records is considered, a threshold of 25% is needed to ensure that nearly all historic landslides would be included in the scope of the ordinance. For example, a threshold of 25% would be needed to capture 94% of all historic slides in Macon County. It is recommended, therefore, that any development on slopes over 25% should undergo a detailed geotechnical analysis.

In addition, it is generally accepted that septic systems do not function properly on slopes in excess of 30%. Likewise sewer systems should not be constructed within slopes that exceed 40%. A summary of best management practices for building on slopes is illustrated by the diagram in Section 3.2.

MINIMIZING FIRE RISK

As part of designing on steep slopes, great care should be taken to minimize fire risk. The key is providing "defensible space" around all structures in a development, that is, an area around each building defined by the steepness of the slope and the type of vegetation.

Within this zone of defensible space, for example, trees within 200 feet of a home built on a slope of more than 40% should be cleared or extensively pruned. This amount of clearing runs counter to the requirements for landscape preservation deemed suitable under aesthetic and ecological criteria and is a strong argument, based on the public safety fire risk, against building on slopes that steep.

Recommended defensible space distances			
	Steepness of slope		
Vegetation type	Gentle slope 0-20%	Moderate slope 21-40%	Steep slope +40%
Grass	30 feet	40 feet	50 feet
Shrubs	30 feet	30-60 feet	60-100 feet
Trees	30 feet	30-100 feet	100-200 feet

Source: Minimizing Wildfire Risk, 2003

MOUNTAIN RIDGE AND STEEP SLOPE PROTECTION STRATEGIES REPORT

This document, prepared by the Land of Sky Regional Council with financial support from the Z. Smith Reynolds Foundation, is perhaps the most comprehensive set of research and design strategies for development on mountain ridges and steep slopes in North Carolina. Using a broad cross-section of technical advice, advocacy groups, and developer interests, the report encapsulates the full range of issues and presents a series of key recommendations for better managing these valuable resources. This document should be considered as a companion to this Toolbox; where one leaves off the other begins. The combination of the two documents provides a full approach to the development of land in these contexts.

The report covers the following key areas:

- Economic Impacts of Development and Preservation
- Public Safety Issues
- Public Health (water supply, wastewater, air quality)
- Water Quality/Quantity and Impacts (fish and aquatic species)
- Loss of Natural Areas, Forests, Wildlife and the Role of Land Conservation
- Preferred Development Processes and Best Management Practices

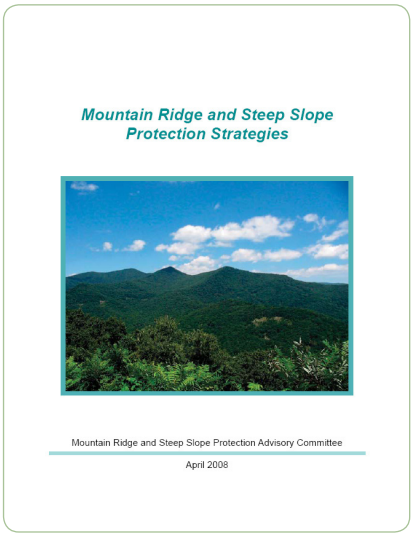
There are three major findings and recommendations that should be highlighted here:

- ***Policies need to be based on the best available scientific data*** *(e.g., geotechnical analysis, landslide hazard maps, etc.)***.**

- ***Governments across the mountain region need to work together to ensure policy consistency.*** *Without coordinated actions by governments, we will likely not see an amelioration of the problems associated with mountain ridge and steep slope development but rather a shifting of the problems across the landscape. For example, if one city/county chooses to enact relatively more strict regulations on steep slope development than other areas, then some developers may shift to other cities/ counties.*

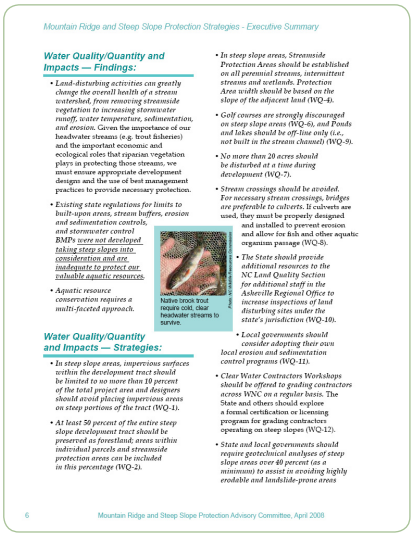
- ***Decision-makers need to consider the inter-relatedness of these development-related issues and acknowledge that trade-off exists among policy recommendations, and trade-offs will occur as a result of a particular recommendation*** *(e.g. public safety versus environmental protection considerations regarding road design).*

Images Below: Pages from the Mountain Ridge and Steep Slope Protection Strategies report published by the Land-of-Sky Regional Council.


Mountain Ridge and Steep Slope Protection Strategies

Mountain Ridge and Steep Slope Protection Advisory Committee

April 2008

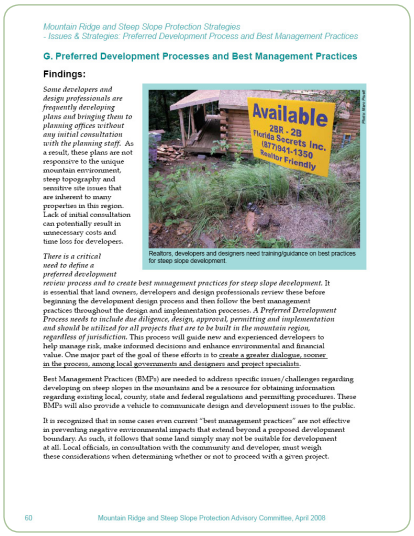

Mountain Ridge and Steep Slope Protection Strategies - Executive Summary

Water Quality/Quantity and Impacts — Findings:

Water Quality/Quantity and Impacts — Strategies:

Native brook trout require cold, clear headwater streams to survive.

6 Mountain Ridge and Steep Slope Protection Advisory Committee, April 2008


Mountain Ridge and Steep Slope Protection Strategies
- Issues & Strategies: Preferred Development Process and Best Management Practices

G. Preferred Development Processes and Best Management Practices

Findings:

Realtors, developers and designers need training/guidance on best practices for steep slope development

60 Mountain Ridge and Steep Slope Protection Advisory Committee, April 2008

AUDUBON SIGNATURE PROGRAM

The Audubon Signature Programs provide comprehensive environmental planning assistance to new developments. The programs help landowners and developers design for the environment so that both economic and environmental objectives are achieved. Once construction is complete, involvement in an Audubon Signature Program ensures that managers apply sustainable resource management practices in the long-term stewardship of the property.

Three programs, Gold, Silver, and Bronze, are available. Membership is based on the stage at which the project applies for membership, the complexity of the project, and the level of Audubon International involvement in planning, design, and oversight.

Audubon Signature Program members currently include golf courses, residential communities, churches, schools, and multi-faceted developments (e.g., commercial, residential, and recreational components). The program begins when the development project registers and continues through construction, grand opening, and long-term management. The program involves:

- An initial site assessment conducted by Audubon International staff
- The development of a Natural Resource Management Plan (NRMP) that serves as a construction and operations manual for the property
- Implementation of the NRMP
- Site visits during major phases of the project
- Training and education for construction and operational personnel
- An on-site Environmental Audit to assess compliance with program and site-specific requirements
- Certification as an Audubon Signature Sanctuary
- Long-term management in accordance with Audubon Signature standards

Text adapted from www.audubonintenational.org/programs/signature/

REGULATIONS & INCENTIVES

Conservation-based development plans should either be required through regulation or encouraged through incentives, depending on the wishes and political climate in each community. Regulations should specify items noted as best management practices and other design features that protect the scenic, environmental, and economic assets of the region's landscape. Incentives (which can be incorporated into regulations or can stand alone where only limited regulatory frameworks exist) can include a faster permitting process for designs that comply with best practices, allowances for increased density in less sensitive areas of the site, and reduced fees.

As noted in the report, any new regulations and/or incentives would need to be reinforced by improved education resources on ridgetop and steep slope developments for developers, landowners, and the public. This may be done through website initiatives, distance learning opportunities through regional universities and colleges, and specific "Steep Slope Development 101" workshops.

As part of a market-based approach to improving the standard of developments on wooded slopes, the creation of a "Mountainside Conservator Certification Program," similar to the Audubon International Signature Program, could publicly award certification to developers who follow the best practices for building on mountain slopes. This public acknowledgement of environmental stewardship incorporated into the design of new development could add significant market value to a project.

The Audubon International Signature Program helps landowners and developers "design for the environment" so that both economic and environmental objectives are achieved. Once construction is complete, continued involvement in the program ensures that managers apply sustainable resource management practices in the long-term stewardship of the property. This format provides a good precedent for a similar locally-based program.

Audubon International Signature Programs: www.audubonintenational.org/programs/signature/

Firewise Landscaping in NC: www.ces.ncsu.edu/forestry/pdf/ag/firewise_landscaping.pdf

Minimizing Wildfire Risk—A Forest Landowner's Guide: www.ncfirewise.org/pdf/MinimizingWildfireRisk.pdf

Mountain Home Guide: www.themayberrygroup.org/Site/Home.html

Mountain Ridge and Steep Slope Protection Strategies by Land-of-Sky Regional Council (2008): landofsky.org/downloads/LandofSky-MRSSPS-report.pdf

RESOURCES

3.4 NEIGHBORHOOD DESIGN

Once a site has been thoroughly evaluated, the process of careful site design should proceed. Prior to selecting an approach, the context of the location should be considered. Specifically, is it near an existing community? Does it have access to public utilities? Is there sufficient transportation infrastructure to support the proposed neighborhood?

This Toolbox suggests the use of four new or otherwise innovative development types that are inherently more sustainable than the conventional development patterns: the Conservation Subdivision, Rural Neighborhood, Appalachian Hilltown and the Traditional Neighborhood. Each approach is context-sensitive and should generally be used in the location recommended in the diagram below.

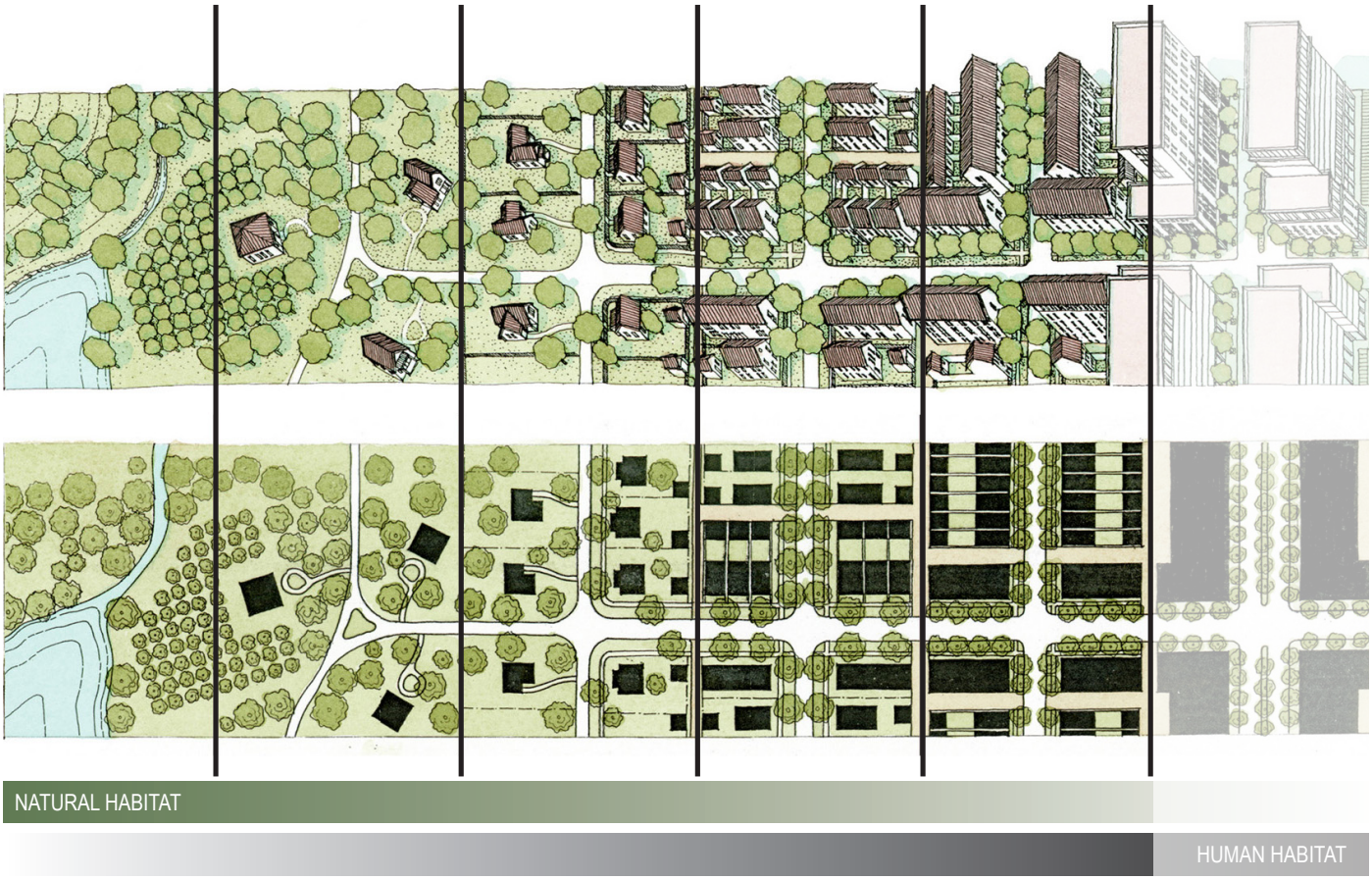


Image by Duany Plater-Zyberk and Company

Adapted and modified from a diagram by Duany Plater-Zyberk and Company

THE CONSERVATION SUBDIVISION

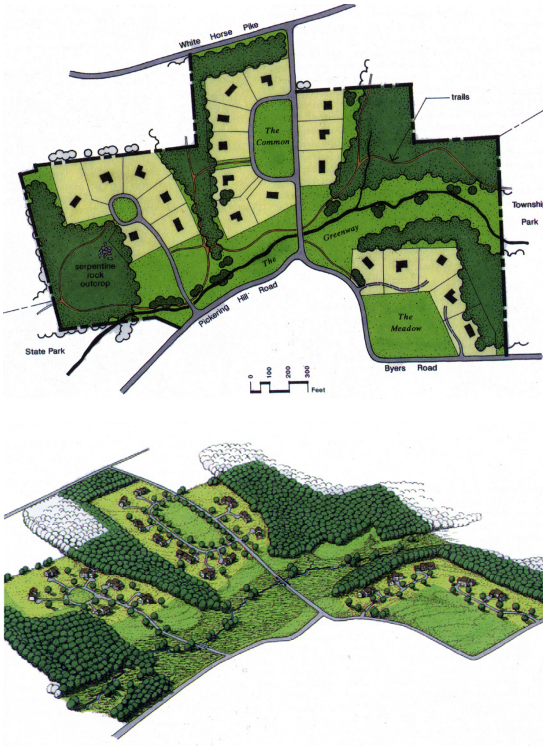
The most basic of the proposed models, the design of Conservation Subdivision (also referred to as Open Space Subdivisions and Cluster Subdivisions) favors the natural habitat or the human habitat and typically involves the permanent protection of a large majority of the site (more than 50%). The area selected for protection will generally have valuable environmental or ecological resources such as creeks, wetlands, forest stands, threatened wildlife habitats, or irregular/extreme topography. Ideally, the conserved areas should be linked to a broader network of conserved lands (e.g., floodplains, forest stands) to preserve the larger ecosystems. The resultant lots are often clustered on a small percentage of the site and can comprise a variety of lot sizes and densities. The housing market has shown conclusively that house lots with access to preserved landscape command a price premium and higher resale values than conventional subdivision homesites.

Randall Arendt, a landscape architect from New England, has written extensively on this technique. In his book *Conservation Design for Subdivisions*, he outlines five key steps in designing a Conservation Subdivision. They are as follows:

- Identify all potential conservation areas
- Identify all potential development areas
- Locate the house sites
- Design the street alignments and trails
- Draw in the lot lines

Conservation Subdivisions often utilize individual wells and septic fields for on-site water and wastewater treatment. Where it is appropriate and permitted, septic fields and their associated repair areas may be located in common areas rather than on the lot itself. This permits the protection of trees on the individual lot and encourages the use of the open septic field area as a common open space such as a green or a meadow.

Conservation Subdivisions perform best where there are significant environmental resources on a site that are worth preserving for biological or ecological reasons. Ideally, the preserved area should be connected to other adjacent conserved areas to preserve a larger regional system. In this manner, the potential negative side effects of an otherwise auto-dependent, albeit very low-density development pattern are trumped by the protection of the broader natural environment.



Open Space Subdivision Case Study

The images above From Conservation Design for Subdivisions by Randall G. Arendt illustrate a conservation-based design for a 63 acre site in the rolling Pennsylvania countryside that includes upland pasture, a small creek and its associated floodplain. The developed area, including 21 lots, comprises 23 acres or 37% of the site. Images above reproduced by permission of Island Press, Washington, D.C. Copyright © 1996 by Island Press.

Wood Farm (Cherokee County, NC)

This conceptual plan for a 200-acre conservation subdivision near Andrews, NC, contains 22 lots, a hilltop lodge with 11 cottages and 125+ acres of conservation area.

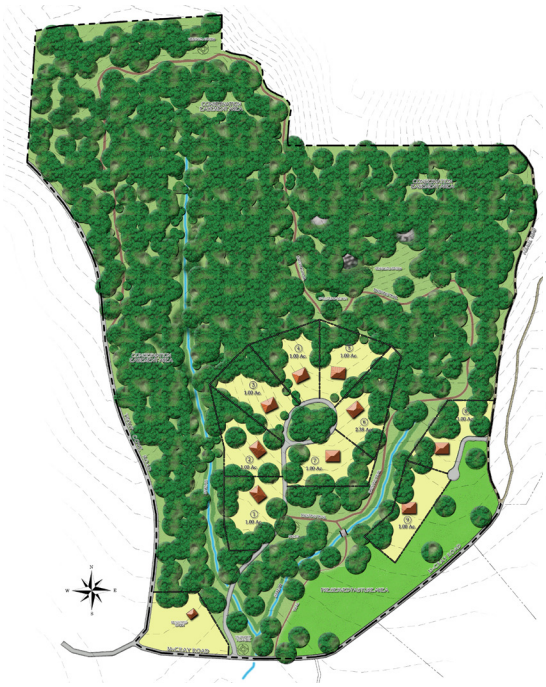


Image Source: Equinox Environmental

North Hill at Staurolite (Clay County, NC)

This 60.36-acre conservation subdivision near Murphy, NC, in the Brasstown Township contains 10 lots and 38+ acres of conservation area.

Conceptual Rural Neighborhood (Macon County, NC)
The clustered pattern of homes creates an intimate street setting while maintaining the area's rustic, rural character.

An image of the Carpenter hamlet in Cary, NC, with shops offering small-scale convenience goods surrounded by a rural neighborhood.

THE RURAL NEIGHBORHOOD/HAMLET

In the transition from rural to urban, the Rural Neighborhood/ Hamlet typology strikes a balance between the two poles. It encourages community interaction and sociability along a highly walkable network of roads, lanes and other smaller scale public spaces.

Homes are typically clustered around common open spaces such as a greens or parks, and the overall developed area looks and feels more like a neighborhood. The balance of the site is preserved like a conservation subdivision or is used for other common purposes such as a community garden or farming cooperative.

Because of the expected number of homes necessary to create a truly walkable environment, the provision of water and the treatment of wastewater need to be thoughtfully considered. In most cases, water would be provided through a common well. Wastewater could be treated using individual septic fields, common septic fields, community package treatment plants, or some other technology, such as the innovative "living machines" (see page 77), that permits the homes to be placed in closer proximity to one another. In areas where public utilities may be available, such as the rural boundaries of towns, the densities can be increased with the priority being given to the reservation of open spaces that are of significant environmental benefit.

The detailing of the public infrastructure is naturalistic with bio-engineered swales in lieu of curbs, multi-use paths instead of sidewalks, and informal tree plantings. Buildings are generally detached and can include some limited commercial spaces for convenience goods, artisans, professional services, and similar neighborhood-scaled goods and services.

Conceptual Agriculture-Oriented Neighborhood (Macon County, NC)
A conceptual plan for 100 homes oriented around small subsistence and organic hobby farms, one to five+ acres in size, to create the ideal arrangement for social and agricultural sustainability.

THE APPALACHIAN HILLTOWN

Historically, development in the mountains of western North Carolina tended to avoid the hillsides because of the difficulty of construction on steep topography and the availability of otherwise developable land on the flatter terrain. Downtowns were often built either next to the railroad or on the lower hills.

In many places in Europe where developable land was given over to the farmers or where security concerns dictated a higher elevation, a number of very dense towns were constructed on very severe terrain. Italy is rife with such examples, but other countries have similar building traditions. These highly walkable communities are beloved by tourists and residents alike and stand as a testament to the solid construction practices of those cultures.

The Grove Park Inn in Asheville is built on this model, with the Inn and all its related facilities nestled into the hillside.

The basic premise of this development type is to provide an alternative to individual house lots subdivided across an entire ridge. While the development impact is indeed more intense within a hilltown, the footprint is compact and the development envelope is far less invasive than a conventional mountainside layout.

An image of a typical European hilltown street overlooking the valley below and the mountains beyond

In developing a hilltown, there are a number of important elements that must be considered in the design:

- The provision of a reliable water source and a coordinated treatment of wastewater is essential. Public water and sewer because of its general reliability is preferred, though other technologies could also be considered including community wells, package treatment plants, and new technologies that incorporate advanced biological treatment of wastewater.

- The higher ratio of impervious surface requires a thoughtful approach to the collection and treatment of stormwater. Water must be collected and retained along a series of structures ranging from rain barrels to underground cistern and conveyed to its final destination through filtration devices such as bio-swales and rain gardens.

- The urban densities of the development pattern require a much more sophisticated approach to the design of individual buildings. These should be articulated to take maximum advantage of views without disrupting the views of others. In this manner, not every unit will have an infinite view, with some having a field of vision equivalent to a window and others having a view from their entire balcony or deck.

Image Source: Daryl Rantis

Conceptual Hilltown (Maggie Valley, NC)
A plan for a 208-unit hilltown on 40 acres of a 233-acre tract, preserving more than 82% of the site. The plan above illustrates the complex arrangement of buildings that afford each a share of the view. The image to the left is of the plaza with a view of the mountain beyond. Note: Public sewer is available to this site.

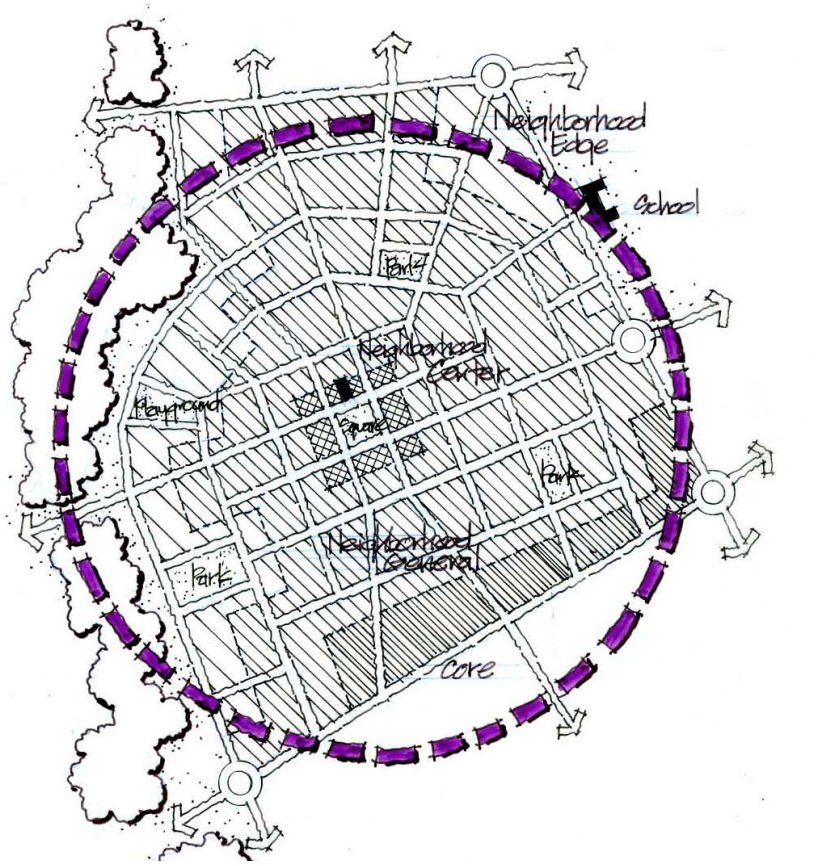
THE TRADITIONAL NEIGHBORHOOD

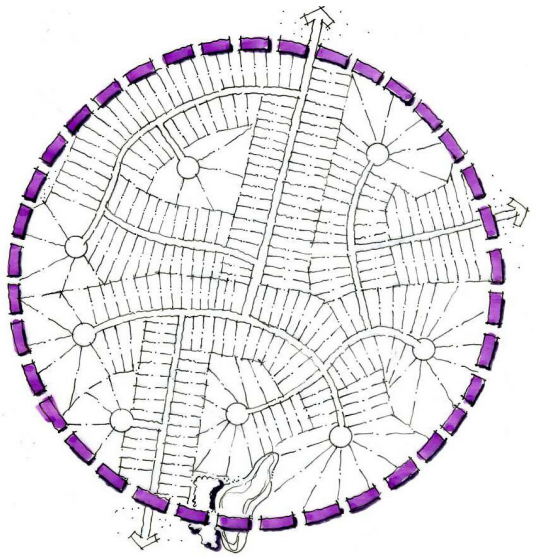
The Traditional Neighborhood marks the most urban end of the rural to urban spectrum and has a long and distinguished planning history. As part of the 1929 Regional Plan for New York City, Clarence Perry suggested that the ideal neighborhood size was one that was of sufficient population to support an elementary school. Perry also suggested that the preferred distance from the center of the neighborhood (where the school was located) was not more than a five-minute walk to any residence. This influential model has been adapted in recent years into what has become commonly referred to as the "Traditional Neighborhood."

Traditional Neighborhoods are compact, pedestrian-friendly, mixed-use and form the basic units of settlement in nearly any context. In its rural form, an isolated traditional neighborhood in the landscape is a hamlet. When two or more neighborhoods aggregate, they begin to create a village or town. According to the Charter for the New Urbanism, there are five basic standards for neighborhoods:

1. The neighborhood has a center and an edge.
2. The neighborhood has a balanced mix of activities: shopping, work, schooling, recreation, and all types of housing.
3. The ideal size of a neighborhood is a quarter-mile from center to edge.
4. Neighborhood streets are designed to provide equally for the pedestrian, the bicycle, and the automobile.
5. The neighborhood gives priority to the creation of public space and to the appropriate location of civic buildings.

The common thread in these standards is walkability. A quarter-mile is the distance that a typical adult can walk in approximately five minutes. The





CUL-DE-SAC NEIGHBORHOOD MODEL

Limited Connectivity (and limited mix of uses): The diagram of the quarter-mile radius (5-minute walk; 125 acres) circle superimposed on the typical suburban subdivision plan shows limited connectivity and virtually no meaningful preservation of natural spaces except in backyards. Because of numerous cul-de-sacs, more walking has to be done on the busier collector streets, forcing pedestrians to deal with higher traffic speeds and volumes. This pattern is further aggravated when extreme topography (such as mountainous terrain) is introduced.

TRADITIONAL NEIGHBORHOOD MODEL

Connectivity and a mix of neighborhood-serving uses: The concept includes playground, parks, school, neighborhood retail, and 850 housing units at approximately 3 units/acre. This preferred neighborhood design has an identifiable center organized around a small public square or green, a connected network of local, slow-speed streets, and a pattern of collector streets and preserved open space along its boundaries. Certain collector streets might become the location for denser, mixed-use development as neighborhood centers.

Sanctuary Village (Franklin, NC)
This traditional neighborhood by the Sanctuary Communities in Macon County reflects a balance between the topographic conditions of the site (hillside) and the proximity to the historic core of the downtown (within a 1/2 mile). The neighborhood includes a wide variety of housing types, some limited civic and commercial, an interconnected network of streets, and usual common parks and open spaces.

Town of Franklin, NC, in adopting standards permitting the construction of Traditional Neighborhood Developments, recognized the linkages between livability and walkability. These principles are summarized in the purpose and intent section of the Traditional Neighborhood Development Overlay District where they conclude that "pedestrian orientation should be achieved using, among other techniques, the following:

(a) By providing safe walking conditions which can be achieved through: the reduction of street widths and turning ratios from those conventionally utilized, encouraging parking along streets in order to slow traffic and protect pedestrians, providing mostly alley access to reduce vehicular/pedestrian conflicts and bringing dwellings closer to the street;

(b) By providing walking destinations within the typical range of pedestrians in the form of civic buildings and spaces such as parks and limited commercial areas meeting residents' daily needs; and

(c) By providing enjoyable walking environments, by reducing the amount of parking in the fronts of sites, and providing for a streetscape appropriate in scale and design for pedestrian use."

Each Traditional Neighborhood within the quarter-mile radius circle would, in its "pure" form (unrestricted topography), house a minimum of 2,500 residents at an average density of at least seven dwellings per acre (in a mix of single-family detached, town homes, and apartments). In more rural contexts, a Traditional Neighborhood would provide homes for a much smaller number, depending on the proximity to the community and the availability of utility infrastructure, but generally not fewer than 850 people at an average density of approximately two-three dwellings per acre.

Cheshire (Black Mountain, NC)
One of the first constructed projects to incorporate the basic principles of a traditional neighborhood, Cheshire features a network of streets, a variety of housing styles and types, and a large green flanking a small neighborhood center.

Cashiers Village (Cashiers, NC)
Proposed as the first infill neighborhood in the crossroads area of Cashiers, this traditional neighborhood is immediately adjacent to the center of the community and includes a network of streets and lanes, a variety of housing types, and small shops within a two-minute walk of every residence.

Image Source: Aerial Dimensions reproduced courtesy of the Town of Huntersville, NC

Images from top: Aerial view of The Villages of Rosedale, (Huntersville, NC); the Country Store in the West's Mill Historic District (Macon County, NC); Mixed-Use Building in the Village of Baxter (Fort Mill, SC); Downtown Waynesville, NC.

MIXED-USE DEVELOPMENT

As noted in Section 2.6, mixed-use development should be permitted throughout the community. This is not to suggest that commercial uses should be permitted to sprawl throughout the countryside. On the contrary, commercial and residential development should be designed in a manner and scaled such that they can coexist in close proximity to one another (adjacent to or above) in nodes of activity. Residents near these businesses benefit from the close access to daily needs, reducing potential car trips and/or providing opportunities for walking and bicycling. Having shops, medical services, and other conveniences in close proximity increases the independence of the elderly for whom driving is either not convenient or no longer an option.

In some areas, this type of development will take the form of tightly integrated uses mixed horizontally rather than vertically. This pattern provides a hybrid model that creates a walkable network of streets (see the Villages of Rosedale in Huntersville, NC, image top left), but otherwise has uses that are more conventional in format (in single use buildings).

In the hamlet, mixed-use development usually takes the form of a residential-styled structure (siding, pitched roof, front porch) that houses shops or services (a country store, a restaurant, or professional offices) to meet the daily needs of the neighborhood.

Within the context of the Traditional Neighborhood, the amount of commercial development is a function of the population of the neighborhood, the population of the community within a 1-and 3-mile radius, and the amount of traffic on the fronting thoroughfares. Mixed-use development in this context could range from small corner stores to a "main street" of shops, restaurants, and services.

And finally, development within downtowns and commercial corridors should be strongly encouraged to be mixed-use. The presence of residential development has a stabilizing effect on commercial areas by providing an evening and weekend population that shops and ensures the ongoing safety and cleanliness of a business district. In these areas, nearly all buildings should be at least two stories in height to maximize the long-term value of the land, provide residences and offices above ground-level retail, and concentrate intensities in pedestrian-friendly nodes.

It is important to note that this section does not advocate encouraging or permitting conventional single-story, strip commercial development near every neighborhood. The scale, massing, and design of such development must be physically and visually compatible with the surrounding neighborhood. In concert with this, the street network must provide safe paths such as sidewalks and bike trails/lanes for pedestrians and bicyclists to travel to these buildings.

True vertical mixed-use development can be more complicated in the permitting process, but the International Building Code, adopted by North Carolina in 2003, has helped to smooth out any issue. In addition, the International Building Code Council has recently ratified changes to permit the construction of live-work units that utilize residential construction codes with some minor adjustments to accommodate small increments of lower cost mixed-use development.

Traditional Neighborhood Design

Congress for the New Urbanism. *Charter for the New Urbanism*. McGraw-Hill, 2000.

Duany, Andres and Elizabeth Plater-Zyberk. *Towns and Town-Making Principles*. Harvard Graduate School of Design, 1991.

Nolen, John. *New Towns for Old: Achievements in Civic Improvement in Some American Small Towns and Neighborhoods*. University of Massachusetts Press, 2005.

Steuteville, Robert, Phillip Langdon et al. *New Urbanism: Comprehensive Report & Best Practices Guide*. New Urban News Publications, 2008.

Walters, David. *Designing Community: Charrettes, Masterplan & Form-Based Codes*. Architectural Press (Chapter 6), 2007

The TND Town Paper: www.tndtownpaper.com

Conservation Subdivisions

Arendt, Randall G. *Conservation Design for Subdivision: A Practical Guide to Creating Open Space Networks*. Washington, DC: Island Press, 1996

Growing Greener - Conservation by Design: www.natlands.org/uploads/document_33200515638.pdf

Rural Neighborhoods/Hamlets

Arendt, Randall G. *Crossroads, Hamlet, Village, Town: Design Characteristics of Traditional Neighborhoods, Old and New*. Chicago: American Planning Association Planning Advisory Service #487/488, 1999

Rural design guidelines for Washington State:

www.nisquallyriver.org/planning/Nisqually_Guidelines.pdf and

www.stewardshippartners.org/downloads/lid_03.pdf

Dutchess County, NY Hamlet Design Guidelines, Rural Development Guidelines, and Building Form Guidelines: www.dutchessny.gov/CountyGov/Departments/Planning/PLpublications.pdf

Hilltowns

Rossi, Aldo et al. *La Costruzione Del Territorio*. Milan: Clup Milano, 1986.

Carver, Norman F. (Jr.) *Italian Hilltowns*. Documan Press Limited, 1995.

Mixed-Use Development

Project for Public Spaces: www.pps.org/mixed_use

National Association of Home Builders: www.nahb.org/page.aspx/category/sectionID=628

RESOURCES

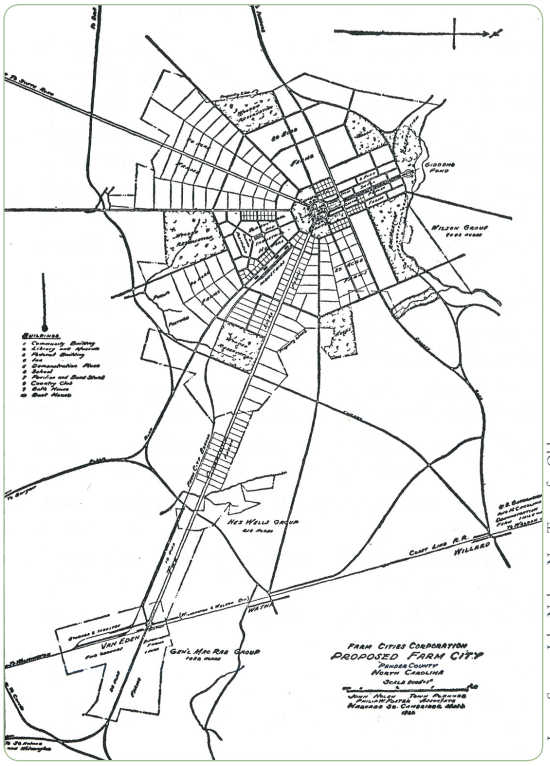


Image Source: John Nolen - New Towns for Old

Image Source: John Nolen - New Towns for Old

*The plans shown above for a 10,000 acre tract in Pender County, NC, illustrate a proposed "Farm City" by John Nolen in his book, **New Towns for Old**. "The purpose of the farm city is to provide means whereby owners of small farms may, by the practice of scientifically-directed, intensified, and diversified agriculture, supply themselves with good living and a profitable education. The community center and industrial section will bring the social and economic advantages that are usually associated only with life in the larger cities."*
(Nolen, p.12)

3.6 ARCHITECTURAL VERNACULAR

In many cases, building in scenic landscapes means being sympathetic to the local vernacular styles. However, more adventurous modern aesthetics can be appropriate in carefully selected instances. In the Carolinas, the predominant aesthetic style has been a restrained vernacular classicism for domestic structures, where vertical proportions dominate over horizontals and relatively steep roof pitches fit over simply-shaped volumes.

As with site design issues, the appearance, massing and materials of new buildings can either be controlled through regulation based standards or promoted through "best practice" design guidelines. (See also Section 3.8.)

The local vernacular styles and precedents can provide useful examples of sympathetic massing and proportions. These can then form the basis of contemporary buildings that provide for modern amenities and lifestyles while fitting in to the built and natural landscape.



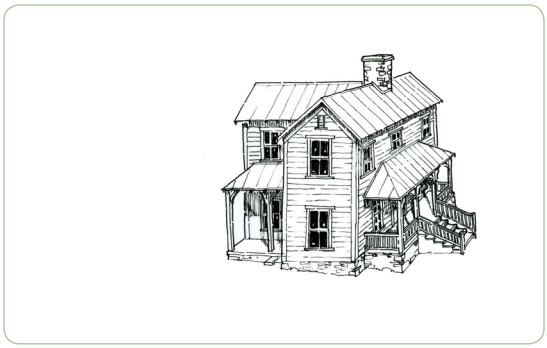





Image Source: Daryl Rantis, Architect

Image Source: Place-


Images above: Top two rows - Various architectural and landscape elements found in traditional homes and lots throughout western North Carolina; Bottom row - Images of contemporary design using vernacular forms, materials, and proportions.


Images above: Large homes can best be created by the assembly of several one- and two-story volumes to create a disciplined plan arrangement that can be roofed over easily with style and restraint. In this way, the large ungainly roof masses of many contemporary tract and custom homes can be avoided where enormous roof volumes with multiple gables have to be fitted awkwardly over a sprawling plan arrangement of rooms.

RESOURCES

Alexander, Christopher et al. **A Pattern Language**. Oxford University Press, 1977. www.patternlanguage.com

Bishir, Catherine W. et al. **A Guide to the Historic Architecture of Western North Carolina**. Chapel Hill: University of North Carolina Press, 1999.

Cusato, Marianne and Ben Penreath. **Get Your House Right: Architectural Elements to Use & Avoid**. New York: Sterling, 2007.

Mouzon, Stephen A. **Traditional Construction Patterns: Design and Detail Rules of Thumb**. McGraw-Hill, 2004.

3.7 GREEN BUILDINGS & COMMUNITIES

"The more high technology something is, the quicker it breaks. The things that really work brilliantly are the simplest design decisions—integrating workers with housing, integrating mixed-use, reducing the need for travel, reducing private car use, and providing access to locally produced food, local goods and services. Then reduce the demand for heat and power using a high level of insulation, passive solar orientation, good daylighting, good shading strategies, natural ventilation, a passive heat-recovery ventilation system. Once you've reduced demand using those techniques, then create basic renewable energy systems like solar electric panels, wood-pellet boilers, and solar thermal collectors. No technological innovation required," he adds.

-Bill Dunster, founder of ZEDfactory
Urban Land Magazine, June 2008

The introduction of energy efficiency in the design of buildings is an important facet to the overall sustainability of any community. As has been mentioned previously, a sustainable building built ten miles from the nearest services negates any energy savings the moment the car must be used as the sole means of transportation. Energy efficiency and environmental friendliness must marry the building, the site and its location, and the greater community.

With the substantial advances in building construction technologies over the last ten years and the rapid integration of new "green" products into the marketplace, the incremental cost of construction has all but been eliminated for new construction.

The US Green Building Council (USGBC) estimates that the slight increase in building costs that incorporate green standards are absorbed into lower utility bills and decreased maintenance over a relatively short period of time (often 2-5 years). Also, building occupants report a range of other secondary benefits including lower absenteeism, lower illnesses, and a more productive workforce.

There are a number of third-party rating systems that seek to quantify the level of energy efficiency and environmental friendliness. The two most popular in western North Carolina are the LEED program promulgated by the USGBC and the NC HealthyBuilt Homes Program. Though there are a number of other similar green rating programs, these two are the most well-respected and most well-established in this region.

The use of these programs supplements the 2030 Challenge, "a global initiative stating that all new buildings and major renovations reduce their fossil-fuel GHG-emitting consumption by 50% by 2010, incrementally increasing the reduction for new buildings to carbon neutral by 2030." Started by architect Edward Mazria in 2002, the 2030 Challenge's mission is "to rapidly transform the U.S. and global building sector" through shifts in building planning, design, and construction practices and techniques.

Whether it be for global concerns of climate change, national concerns of energy independence, community concerns for environmental sustainability, or household concerns about the cost of energy, the use of green building practices can have significant impacts with some often very subtle and inexpensive changes to conventional approaches.

- ***All new construction is encouraged to use one of these ratings systems to evaluate the level of environmental-friendliness and energy efficiency.***

LEED

Managed by the US Green Building Council, the LEED (Leadership in Energy and Environmental Design) certification program provides independent, third-party verification that a project's location and design meet accepted high levels of environmentally responsible, sustainable development.

Under the LEED umbrella of rating systems are programs for

certification of Home, Neighborhood Development (pilot), Commercial Interiors, Core & Shell, New Construction, Schools, Healthcare, Retail, Schools, and Existing Buildings Operations & Maintenance. Using a 69-point scale, projects qualify for either Certified (26-32), Silver (33-38), Gold (39-51), or Platinum (52-69) status through meeting certain performance-based criteria in the following categories:

- Sustainable Sites
- Water Efficiency
- Energy & Atmosphere
- Materials & Resources
- Indoor Environmental Quality
- Innovation & Design Process

The Orr Admission and College Relations Building on the campus of Warren Wilson College is a LEED NC-Gold (New Construction) project completed in June 2006. As of July 2008 there were more than 24 registered projects in western North Carolina that were using this program.

LEED-ND (NEIGHBORHOOD DEVELOPMENT)

According to the USGBC web site, "the LEED for Neighborhood Development Rating System integrates the principles of smart growth, urbanism and green building into the first national system for neighborhood design."

Unlike the primary LEED-NC (New Construction) program, LEED-ND places heavy emphasis on how development intersects with the community. It is entirely possible for a LEED-NC building to be built in a remote location that is accessible only by car. LEED-ND evaluates development within the context of a walkable environment that provides both places to walk and places to walk to.

Currently in its pilot period, LEED for Neighborhood Development is a collaboration among USGBC, the Congress for the New Urbanism, and the Natural Resources Defense Council. The pilot program exceeded its planned sample of 150 projects with 238 projects from 39 states and 6 countries volunteering to participate. The post-pilot version of the rating system, which will be available to the public, is expected to launch in 2009.

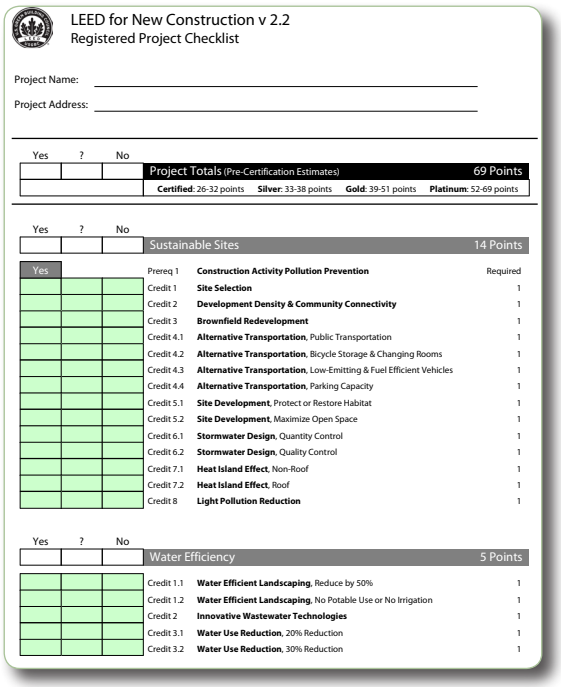
At present the major categories for LEED-ND certification are:

- Smart Location & Linkage
- Neighborhood Pattern & Design
- Green Construction & Technology
- Innovation & Design Process

Like the other LEED programs, levels of compliance include Certified, Silver, Gold, and Platinum.

NC HEALTHY BUILT HOMES (HBH)

NC HealthyBuilt Homes is a voluntary, statewide green building certification program supported by the North Carolina Solar Center,



LEED for New Construction v 2.2
Registered Project Checklist

Project Name: _____

Project Address: _____

Yes	?	No		
			Project Totals (Pre-Certification Estimates)	69 Points
			Certified: 26-32 points Silver: 33-38 points Gold: 39-51 points Platinum: 52-69 points	

Yes	?	No	Sustainable Sites	14 Points
Yes			Prereq 1 **Construction Activity Pollution Prevention**	Required
			Credit 1 **Site Selection**	1
			Credit 2 **Development Density & Community Connectivity**	1
			Credit 3 **Brownfield Redevelopment**	1
			Credit 4.1 **Alternative Transportation**, Public Transportation	1
			Credit 4.2 **Alternative Transportation**, Bicycle Storage & Changing Rooms	1
			Credit 4.3 **Alternative Transportation**, Low-Emitting & Fuel Efficient Vehicles	1
			Credit 4.4 **Alternative Transportation**, Parking Capacity	1
			Credit 5.1 **Site Development**, Protect or Restore Habitat	1
			Credit 5.2 **Site Development**, Maximize Open Space	1
			Credit 6.1 **Stormwater Design**, Quantity Control	1
			Credit 6.2 **Stormwater Design**, Quality Control	1
			Credit 7.1 **Heat Island Effect**, Non-Roof	1
			Credit 7.2 **Heat Island Effect**, Roof	1
			Credit 8 **Light Pollution Reduction**	1

Yes	?	No	Water Efficiency	5 Points
			Credit 1.1 **Water Efficient Landscaping**, Reduce by 50%	1
			Credit 1.2 **Water Efficient Landscaping**, No Potable Use or No Irrigation	1
			Credit 2 **Innovative Wastewater Technologies**	1
			Credit 3.1 **Water Use Reduction**, 20% Reduction	1
			Credit 3.2 **Water Use Reduction**, 30% Reduction	1

The image above is a page from the checklist for LEED for New Construction v. 2.2

In the United States alone, buildings account for:

- *70% of electricity consumption,*
- *39% of energy use,*
- *39% of all carbon dioxide (CO2) emissions,*
- *40% of raw materials use,*
- *30% of waste output (136 million tons annually), and*
- *12% of potable water consumption.*

Source - USGBC

BENEFITS OF DEVELOPING A LEED-ND COMMUNITY

Reduce Urban Sprawl. In order to reduce the impacts of urban sprawl (unplanned, uncontrolled spreading of urban development into areas outside of the metropolitan region), and create more livable communities, LEED-ND communities are:

- locations that are closer to existing town and city centers
- areas with good transit access
- infill sites
- previously developed sites
- sites adjacent to existing development

Typical sprawl development, low-density housing and commercial uses located in automobile-dependent outlying areas, can harm the natural environment in a number of ways. It can consume and fragment farmland, forests and wildlife habitat; degrade water quality through destruction of wetlands and increased stormwater runoff; and pollute the air with increased automobile travel.

Encourage healthy living. LEED-ND emphasizes the creation of compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities. Research has shown that living in a mixed-use environment within walking distance of shops and services results in increased walking and biking, which improve human cardiovascular and respiratory health and reduce the risk of hypertension and obesity.

Protect threatened species. Fragmentation and loss of habitat are major threats to many imperiled species. LEED-ND encourages compact development patterns and the selection of sites that are within or adjacent to existing development to minimize habitat fragmentation and help preserve areas for recreation.

Increase transportation choice and decrease automobile dependence. These two things go hand-in-hand; convenient transportation choices such as buses, trains, car pools, bicycle lanes and sidewalks, for example, are typically more available near downtowns, neighborhood centers and town centers, which are also the locations that produce shorter automobile trips.

From the USGBC web site: US Green Building Council: www.usgbc.org/LEED/ND/

the State Energy Office, Home Builder Associations, and other professional building organizations. The WNC Green Building Council (WNCGBC) and the Asheville Home Builder Association (AHBA) offer the NC HealthyBuilt Homes Program to builders in the Greater Asheville Area and the following NC counties: Buncombe, Cherokee, Clay, Graham, Haywood, Henderson, Jackson, Macon, Madison, McDowell, Mitchell, Polk, Rutherford, Swain, Transylvania, and Yancey. As of July 2008 there were 157 certified HealthyBuilt Homes and 722 "in progress" in the western North Carolina area.

This program offers a recognized green certification, technical and marketing assistance, design reviews, workshops, and field consultation services that enable builders to increase their green building expertise, gain market share of home buyers interested in high-performance building techniques, and boost companies profitability.

The NC HealthyBuilt Homes (HBH) Program encompass all aspects of environmental design and construction including:

- Site and Landscape: healthy outdoors by using erosion control and saving existing trees
- Water Efficiency: lower water bills by using high efficiency irrigation and plumbing fixtures
- Building Envelope: lower utility bills by using high efficiency windows and insulation
- Heating and Cooling Systems: higher comfort with efficient equipment and sealed air ducts
- Appliances and Lighting: lower utility bills by using Energy Star appliances and lighting
- Indoor Air Quality: a healthy interior with non-toxic finishes and minimizing mold
- Materials: a low maintenance home using durable, local, and recycled content materials

Progress Energy, the electric utility company serving the eastern part of North Carolina, currently offers a permanent 5% discount on utility bills for HealthyBuilt Homes.

NC HealthyBuilt Homes: healthybuilthomes.org

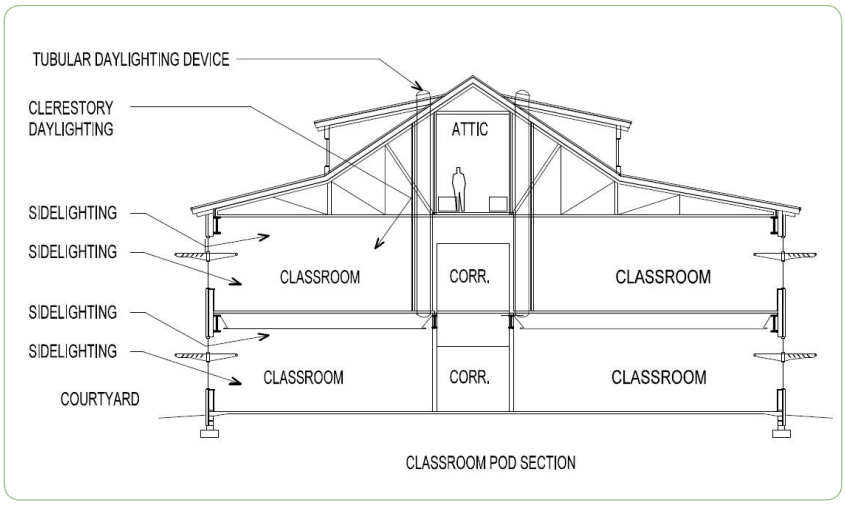
The 2030 Challenge: www.architecture2030.org

US Green Building Council LEED Rating System: www.usgbc.org/LEED/

Understanding the Relationship Between Public Health and the Built Environment: www.usgbc.org/ShowFile.aspx?DocumentID=1736

Western NC Green Building Council: www.wncgbc.org

RESOURCES



CLASSROOM POD SECTION

CASE STUDY: CHEROKEE CENTRAL SCHOOL CAMPUS

The Eastern Band of the Cherokee Indian Central School Board is constructing a new PreK-12, 1,900-student Central School Campus that is designed to achieve a LEED Silver Certification. When completed in 2009, this facility was recognized as the largest LEED certified school project east of the Mississippi River.

Included among the many sustainable building techniques are a sophisticated daylighting program for each classroom and corridor; a rainwater harvesting cistern that will capture and store a total of 60,000 gallons for irrigation and toilet flushing in public areas; and a closed-loop geothermal system supported by five 450-foot deep wells that will provide a low maintenance mechanical system that utilizes the constant temperature of the earth for efficient heating and cooling. *For more information go to www.bekbuildinggroup.com/mar_eduK12_cherokee.html.*

Images counter-clockwise from top: The front facade; a diagram of the daylighting program, the rear facade highlighting the cafeteria; the gathering area; photo of the typical wall showing a light shelf to diffuse direct sunlight. All images courtesy of Padgett & Freeman Architects, PA.

3.8 DESIGN GUIDELINES & PATTERN BOOKS


ARCHITECTURAL DETAILS
Gutters and Downspouts
4.7

Gutters and downspouts are often necessary and we don't readily often notice them. That is, until we see a situation where they impose upon the architecture or simply aren't installed well.

An unnecessary number of turns on the street facing facade cause the architecture to suffer due to this installation of a downspout.

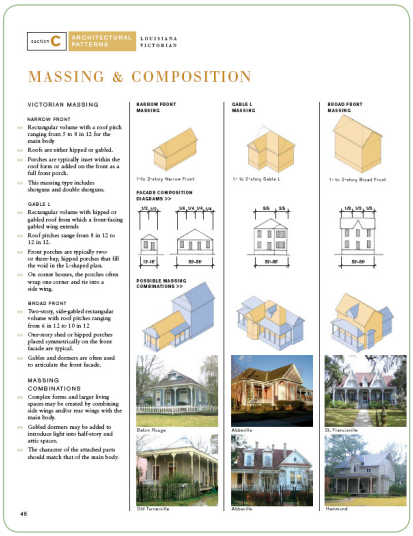
Right: Here, the downspout wasn't extending to the proper height and a cheaper fix was employed.

Far right: Two examples of how a downspout should come below the horizontal ledge before either discharging water into a trough or connect to a pipe.

GUIDELINES

1. Gutters shall be ogee or half-round profile with rectangular or round metal downspouts.
2. Copper gutters and downspouts shall be allowed to age naturally with no painting or sealing.

PATTERN BOOK | 7


section C ARCHITECTURAL PATTERNS LOUISIANA VICTORIAN

MASSING & COMPOSITION

VICTORIAN MASSING

NARROW FRONT
- Rectangular volume with a roof pitch ranging from 5 to 8 in 12 for the main body
- Roofs are either hipped or gabled.
- Porches are typically inset within the roof form or added on the front as a full front porch.
- This massing type includes shotguns and double shotguns.

GABLE L
- Rectangular volume with hipped or gabled roof from which a front-facing gabled wing extends
- Roof pitches range from 8 in 12 to 12 in 12.
- Front porches are typically two- or three-bay, hipped porches that fill the void in the L-shaped plan.
- On corner houses, the porches often wrap one corner and tie into a side wing.

BROAD FRONT
- Two-story, side-gabled rectangular volume with roof pitches ranging from 6 in 12 to 10 in 12.
- One-story shed or hipped porches placed symmetrically on the front facade are typical.
- Gables and dormers are often used to articulate the front facade.

MASSING COMBINATIONS
- Complex forms and larger living spaces may be created by combining side wings and/or rear wings with the main body.
- Gabled dormers may be added to introduce light into half-story and attic spaces.
- The character of the attached parts should match that of the main body.

NARROW FRONT MASSING
1½ Story Narrow Front

GABLE L MASSING
1½ Story Gable L

BROAD FRONT MASSING
1½ Story Broad Front

FACADE COMPOSITION DIAGRAMS >>

POSSIBLE MASSING COMBINATIONS >>

Baton Rouge
Abbeville
St. Francisville
Hammond

46


2.4.4 RURAL NEIGHBORHOOD CENTERS
DEVELOPMENT TYPES

The CORE Planning and Design Workshop Report identified a site for a Rural Neighborhood Center in the historic Carpenter Community.

A Rural Neighborhood Center is equivalent in size to the Convenience Center noted earlier, but scattered in buildings generally not exceeding 6,000 square feet in footprint area around a central public space such as a prominent intersection or open space.

The following recommendations are specific to the existing Carpenter Historic District, but provide a general template for dealing with other small scale rural centers that may be developed in the future.

Guidelines

1. New buildings should be consistent with the existing historic character and built fabric.
2. New commercial or mixed-use development should be in detached buildings at a scale compatible with existing development and historic precedents, generally not exceeding the 6,000 sq. ft. limit previously noted. They should be residential in scale and character for example by using pitched roofs and front porches. New buildings generally should not exceed 2 stories.
3. A significant public open space, like, for example, a village green, should be constructed within the area created by existing and new buildings. The space should be large enough to accommodate civic festivities and events such as a farmers' market. For these purposes, the green should not exceed 1 acre in size, and have an informal aesthetic in plan and planting design.
4. To reinforce the importance of such a special rural place, a new public building, like a library, museum or community center should be sited on or immediately adjacent to the green, and in harmony with the existing historic buildings and other new construction. A transit stop for future local bus transit should also be located adjacent to the new green.
5. To ensure the continued relevance and public use of this historic rural crossroads, the green should be connected into the proposed greenway system for the area. New medium-density housing, between 2 - 6 units per acre, should be constructed between the historic center and the adjacent Carpenter Village development. The streets in this new housing development should be connected into Carpenter Village and to the historic rural crossroads area. The rural character of the crossroads should be preserved by shielding this new housing from the viewshed along Morrisville-Carpenter Road. This can be done by means of careful site planning to locate new housing behind existing tree lines and ridge lines.

Historic Carpenter in Cary, NC

18

CENTER OF THE REGION ENTERPRISE
General Development Guidelines

Images from top: O'Neal Village Neighborhood Pattern Book, Greer, SC; Louisiana Speaks Pattern Book prepared by Urban Design Associates; Center of the Region Enterprise General Development Guidelines, Research Triangle Region, NC.

Design standards and guidelines come in several forms and have a variety of uses. They may be used by master developers to regulate the work of different home builders and maintain consistent quality across different areas and stages of development. Alternatively, they may be developed by local government as part of a new regulatory framework. In either instance, they may be advisory or prescriptive, depending on appropriate circumstances.

In communities wishing to use zoning as a tool of public policy, design standards can be written into zoning ordinances or subdivision ordinances as preferred. This public policy is supported by law under the general principles of:

- Encouraging municipal action to guide the appropriate use or development of land in a manner which will promote the public health, safety, and general welfare;
- Providing adequate light, air and open space;
- Promoting a desirable visual environment through creative development techniques and good civic design and arrangements;
- Encouraging planned developments which incorporate the best features of design and relate the type, design and layout of residential, commercial, industrial and recreational development to the particular site.

Zoning codes regulate the use of property and set density and dimensional requirements. Design standards are specific requirements and add another layer of regulatory control and provide a tool by which communities can establish and guide the desired character through uniform design. Design guidelines, while dealing with similar issues, remain advisory, specifying best practices that government wishes developers to follow; but precise details may be open to negotiation as part of the approval process.

Standards and guidelines describe the desired architectural features such as type of exterior materials, front porch requirements, arrangement and design of windows, placement of garages, etc. They also address location, orientation and relationships of buildings and parking lots; pedestrian circulation and safety; and character and qualities of landscaping. Although architectural styles have changed decade by decade, the principles of good design can be identified and applied to future development.

Architectural design standards and guidelines are not always a part of a jurisdiction's regulations, however. Some jurisdictions are short on resources to develop, adopt, and implement them. Many citizens do not want government to dictate design and add another layer to the regulatory review process.

Others, however, want to include environmental and aesthetic design as an integral part of the planning process in order to preserve, protect or create a "sense of place" that evokes either the history or uniqueness of their community. These opposing attitudes should therefore be the subject of intensive local discussion, with each local community within the study area having the opportunity to decide the level of regulation or guidance appropriate to its situation.

While many urban communities have architectural design standards and/or guidelines in place, some rural communities have also established design control through various planning documents. In the absence of a framework of detailed zoning, any public use of guidelines is likely to be advisory, offered as "best practices" in discussions with developers. Developers themselves, if operating as master developers of large projects, are likely to make them mandatory and legally binding through their contracts with home builders. In this instance, the guidelines become more like "pattern books," such as the one used by the master developer at Baxter, in Fort Mill, SC.

In situations such as these, the pattern book embodies detailed design regulations that are legal documents between private consenting parties; there is no public local government role in their formulation or implementation. The regulations can thus become very specific, with very detailed stipulations about style, materials, and construction details.

Rural design guidelines in Washington State: www.nisquallyriver.org/planning/Nisqually_Guidelines.pdf and www.stewardshippartners.org/downloads/lid_03.pdf

Dutchess County, NY Design Guidelines for Small Scale communities, publishing *Hamlet Design Guidelines, Rural Development Guidelines,* and *Building Form Guidelines*: www.dutchessny.gov/CountyGov/Departments/Planning/PLpublications.pdf

Crossroads, Hamlet, Village, Town, by Randall Arendt: www.greenerprospects.com/chvt_d.html

The National Alliance of Preservation Commissions at the University of Georgia provides an extensive collection of municipal design guidelines for historic preservation from all over the country: www.uga.edu/sed/pso/programs/napc/guidelines.htm

Development pattern book for the Village of Baxter, Fort Mill, SC: www.urbandesignassociates.com/baxt_pb_architectural_patterns.html

Louisiana Speaks Pattern Book: www.louisianaspeaks.org/static.html?id=39

Mississippi Renewal Forum Book Pattern Book: www.mississippirenewal.com/documents/Rep_PatternBook.pdf

Mountain Home Guide: www.themayberrygroup.org/Site/Home.html

Urban Design Associates. **The Architectural Pattern Book: A Tool for Building Great Neighborhoods**. New York: W.W. Norton & Company, 2004.

Walters, David. *Designing Community: Charrettes, Masterplans & Form-Based Codes*. Architectural Press. (Chapter 5), 2007

RESOURCES

CASE STUDY: ANDREWS VALLEY INITIATIVE DESIGN GUIDELINES - TOWN OF ANDREWS, NC

The mission of the design guidelines is to promote the educational, cultural, economic and general welfare of the public through the preservation and restitution of buildings and by creating design standards for the development and growth of the Town of Andrews as a place that is economically viable for its businesses and residences. The following is the table of contents:

To view a draft of the Design Guidelines, visit: www.andrewsnc.com/improvements.php

For more information about the Andrews Valley Initiative, go to: andrewsvalley.org

4 ENVIRONMENTAL PROTECTION

Image Source: Gabriel Cumming/Carla Norwood

"The accelerated rate of development that's been going on—and the lack of any kind of real regulation associated with that—has caused a lot of water quality problems and continues to."

Callie Moore
Hiwassee River Watershed Coalition

THE AHWAHNEE PRINCIPLES FOR SUSTAINABLE WATER PRACTICES

1. Community design should be compact, mixed-use, walkable and transit-oriented so that automobile-generated urban runoff pollutants are minimized and the open lands that absorb water are preserved to the maximum extent possible.

2. Natural resources such as wetlands, floodplains, recharge zones, riparian areas, open space and native habitats should be identified, preserved and restored as valued assets for flood protection, water quality improvement, groundwater recharge, habitat, and overall long-term water resource sustainability.

3. Water holding areas such as creek beds, recessed athletic fields, ponds, cisterns and other features that serve to recharge groundwater, reduce runoff, improve water quality, and decrease flooding should be incorporated into the urban landscape.

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The natural environment with its beautiful mountain ranges, clear flowing streams, and rolling farmland is perhaps the single most important factor driving the second-home market in western North Carolina. The splendor of nature's backdrop is very much the essence of this region and must be protected fervently.

Yet despite their value, these natural resources have not always been fully appreciated. From the days of the earliest settlers, deforestation was a direct result of the need to create trade routes, farm land, and harvest lumber. According to James Rogers, a Watershed Policy Committee member working on a master's degree in hydrology at the University of Georgia, "the deforestation that occurred around the turn of the century was one of the most environmentally devastating events ever to affect western North Carolina. Very few people realize that this whole area was cut over," he says, "all the way up to Mount Mitchell. The flood [of 1916] was a direct result."[1]

Thus, for more than a hundred years, the vaunted allure of this region has been slowly degraded with little consideration for the long term primary and secondary impacts—denuded slopes, silted rivers, reduced aquatic life, and so forth. This Toolbox specifically recommends that citizens and local governments reach an accord that makes the protection of the environment the single most important mission for this region.

In 2005, the Local Government Commission created the Ahwahnee Water Principles for Resource Efficient Land Use (www.lgc.org/ahwahnee/h2o_principles.html). These nine principles were intended to be adopted by local governments to help them focus their attention on key environmental principles. Similar principles should be considered across Region A.

In addition, the many environmentally-oriented non-profits (e.g., land trusts, watershed protection groups, environmental action groups) should convene a "congress" to ensure that each is working on goals that are complimentary and to create a clearinghouse of information. In many ways, this Toolbox is the beginning of a consolided and comprehensive approach to a more sustainable future for all of the residents of Region A.

[1] *Bowe, Rebecca. Clear as Mud: Science, Politics and the Future of Our Waterways. Mountain Express, Vol. 14 / Iss. 39 published on 04/23/2008: www.mountainx.com/news/2007/042308waterquality/*

Ecosystems are critical reservoirs of biological diversity and provide habitat for thousands of species. Additionally, western North Carolina is home to a particularly diverse ecosystem. The biggest threat to ecosystems in the Little Tennessee River Basin is habitat degradation as a result of development accelerating runoff and muddying streams with sediment (NC Office of Environmental Education). In addition to the practices discussed in watershed planning and stormwater management, there are a number of practices to promote ecosystem protection.

ECOSYSTEM PROTECTION PRACTICES

Preserve Ecologically Sensitive Areas. Identifying and mapping sensitive resources is the first step towards protecting them. In addition to accurately mapping features and characteristics, it is also important to understand the role of the physical landscape in providing biological diversity and the habitat for thousands of species. Identifying these resources and creating an inventory of them are first steps towards protecting flora and fauna that are important contributors to the region's natural beauty, the area's primary economic resource and a foundation of its cultural landscape.

The NC Natural Heritage Program (NC NHP) has taken the lead in creating these inventories and has identified more than 2,000 Significant Natural Heritage Areas (SNHA) across the state. A Significant Natural Heritage Area is an area of land or water identified by the Natural Heritage Program as being important for conservation of the State's biodiversity. SNHAs contain one or more Natural Heritage elements: high-quality or rare natural communities, rare species, and special animal habitats.

These inventories benefit a wide range of users, from individual landowners to government agencies. For example, landowners of natural areas can obtain guidance on best management practices. County governments and municipalities can use inventories to help plan for growth in balance with the natural environment. State agencies and land trusts use Natural Heritage data to make informed decisions about land and water conservation. Finally, discoveries of new plant and animal populations benefit researchers who study natural habitats in this region.

NC NHP provides information about sources of conservation dollars, potential conservation partnerships, and changes in policy or legislation that will influence conservation opportunities. Jackson and Haywood County inventories are complete and are available online. Additional Region A counties will be completed.

Use Native Plants. Humans have introduced hundreds of non-native plants to the region over the years. Non-native plants, or exotics as they are often called, usually come from other countries or parts of the US. They thrive and typically overtake native plants in the natural environment due to a lack of natural controls, such as diseases and

continued from previous page

4. All aspects of landscaping from the selection of plants to soil preparation and the installation of irrigation systems should be designed to reduce water demand, retain runoff, decrease flooding, and recharge groundwater.

5. Permeable surfaces should be used for hardscape. Impervious surfaces such as driveways, streets, and parking lots should be minimized so that land is available to absorb storm water, reduce polluted urban runoff, recharge groundwater and reduce flooding.

6. Dual plumbing that allows graywater from showers, sinks and washers to be reused for landscape irrigation should be included in the infrastructure of new development.

7. Community design should maximize the use of recycled water for appropriate applications including outdoor irrigation, toilet flushing, and commercial and industrial processes. Purple pipe should be installed in all new construction and remodeled buildings in anticipation of the future availability of recycled water.

8. Urban water conservation technologies such as low-flow toilets, efficient clothes washers, and more efficient water-using industrial equipment should be incorporated in all new construction and retrofitted in remodeled buildings.

9. Ground water treatment and brackish water desalination should be pursued when necessary to maximize locally available, drought-proof water supplies.

For more info see: water.lgc.org/ahwahnee-water-principles

Image Source: Ralph Preston

Egret populations in North America were reduced by more than 95% in the late 1800s and early 1900s by plume hunters. Populations recovered after the birds were protected by law and none are considered threatened today. However, the species is vulnerable to loss of wetlands. (Source: Cornell University Lab of Ornithology)

REGION A'S FEDERAL LIST OF THREATENED AND ENDANGERED WILDLIFE

Fish
spotfin chub

Mollusks
Cumberland bean pearly mussel
little-wing pearly mussel
Appalachian elktoe mussel
noonday snail

Arachnids
spruce-fir moss spider

Mammals
gray bat
Indiana bat
eastern cougar
Carolina northern flying squirrel

Plants
small whorled pogonia
green pitcher plant
swamp pink
Virginia spiraea
rock gnome lichen

As of July 9, 2007, the bald eagle was removed from the Federal List of Threatened and Endangered wildlife; however, it remains protected through the Bald and Golden Eagle Protection Act. The US Fish & Wildlife Service has developed National Bald Eagle Management Guidelines for land managers, landowners and other as to how to avoid disturbing bald eagles. More information can be found at www.fws.gov/migratorybirds/baldeagle.htm

climate. In addition to threatening the ecosystem, non-native plants also have an economic impact as they reduce crop yields.
It is recommended that exotics or invasive plants be removed prior to excavation, as they will increase dramatically after excavation because of light on fresh soils (K. Caldwell). Using native plantings reduces maintenance. Plants require less watering, pesticides, and fertilizer. In addition, native plants help to preserve the ecosystem as they provide food and shelter for wildlife. Local nurseries and North Carolina Cooperative Extension Service offices are a good resource for native plant recommendations.

Promote Healthy Forest Activities. Certain diseases and insects are threatening ecosystems. More information can be found in the Tree Protection & Forest Management sub-section.

Educate. In addition to school programs, there are a number of nature centers in western North Carolina that educate citizens on ecology. To find a center and/or learn more about your ecological address, visit www.eenorthcarolina.org/public/ecoaddress/riverbasins/riverbasinmapinteractive.htm and select the river basin you live in from the interactive map.

Caldwell, Kevin. WNC Green Building Directory. 2008 Edition. Pgs. 32-33. *Erosion Control for Green Building*.

Ecosystem Education in NC Schools: web.eenorthcarolina.org/net/content/search.aspx?s=0.0.108.37430&db=system&load=1&btid=3&tid=38000.

Educational Resources: www.eenorthcarolina.org/public/ecoaddress/riverbasins/riverbasinmapinteractive.htm

Endangered Species Program: www.fws.gov/endangered/

Haywood County Inventory of Significant Natural Areas: www.ncnhp.org/Images/Haywood10-03-05.pdf

Jackson County Inventory of Significant Natural Areas: www.ncnhp.org/Images/JacksonExecsummary2007.pdf

Lists of invasive and native plants to North Carolina: www.ncwildflower.org

NC Cooperative Extension Service: www.ces.ncsu.edu

NC Natural Heritage Program: www.ncnhp.org

NC Office of Environmental Education: www.ee.enr.state.nc.us

One NC Naturally, Conservation Planning Tool: www.onencnaturally.org/Conservation_Planning_Tool.html

RESOURCES

4.2 WATER RESOURCE PLANNING

Water resource planning includes a myriad of critical issues to western North Carolina. Human and natural activities within a watershed impact a number of sensitive resources. These resources supply our drinking water, provide critical habitat for plants and animals, create areas of natural beauty, and provide opportunities for recreation and relaxation. Proper planning and protection can ensure that these resources will be available for future generations. Some of the critical issues are:

Non-point Source Pollution. Sediment, nutrients and waste carried by stormwater are typically the biggest pollutants in a watershed. A result of poor land use practices and unplanned growth, non-point source pollution usually originates from construction sites and poor stormwater management from developed areas.

Inadequate Preservation of Ecological Areas. In addition to impacting water quality, destruction of critical ecological areas destroy plant and animal habitats.

Impervious Surfaces. Studies have shown that as little as 10% impervious surface within a watershed can impair water resources (Schueler, 1995; Caraco, 1998; Montgomery County, 2000). Impervious surfaces not only remove the ability for natural vegetation to filter pollutants from stormwater, but they also increase water temperatures. This can be devastating to certain animal and plant habitats (e.g.,native brook trout which require cold, clear streams to survive).

Groundwater Recharge Loss. Human activity, such as construction of impervious surfaces and forest removal, affects the overall water cycle in which surface water is absorbed and becomes groundwater. Limiting groundwater recharge results in a reduced water availability. Western North Carolina is already challenged with a limited amount of groundwater recharge due to shallow soils and bedrock.

Land Disturbance. The amount of land disturbed during construction can significantly contribute to the amount of stormwater runoff from a site. Limiting the disturbed area to smaller phases can assure that stormwater runoff can be filtered through part of the site.

Lack of Riparian Buffers. When natural areas adjacent to waterways are destroyed, the ability for sediment and nutrients to be filtered out of stormwater is removed. It is critical that vegetated buffers remain intact along streams and rivers.

Improperly Functioning Septic Systems. The majority of homes in western North Carolina are on septic systems, and the number of failing septic systems is on the rise. Contaminated groundwater degrades water quality.

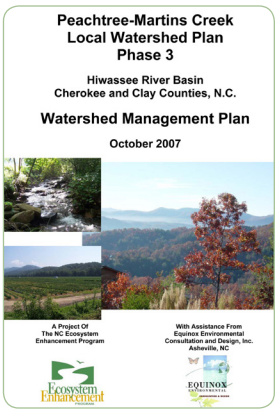
Flooding. Development in the floodplain decreases the ability for intense rainfall events to be handled naturally and results in increased flooding.

WATERSHED MANAGEMENT STRATEGIES

The Environmental Protection Agency (EPA) recommends utilizing the following steps to create a watershed plan:

- Build Partnerships
- Characterize Watershed
- Set Goals & Identify Solutions
- Design Implementation Program
- Watershed Plan
- Implement Watershed Plan
- Measure Progress & Make Adjustments

Regional Planning. Most watersheds cover several political jurisdictions and it is essential that watershed planning be a regional planning effort. Planning, zoning, and transportation officials from the region should be included so that the watershed plan may be integrated into other long-range planning efforts. Stakeholder and public participation is also critical.



Peachtree-Martins Creek Local Watershed Plan for the Hiwassee River Basin in Cherokee and Clay counties.

Mapping of Critical Areas Within Watershed. Specific areas can be identified as future preservation or conservation areas based on their sensitivity. It is important at the same time to identify areas that would be best suited for infill and redevelopment as well as new development.

Watershed Wide Impervious Surface Limits/ Reduce Setbacks. 60%-70% of impervious surfaces are the result of transportation-related infrastructure, mainly streets and parking areas (Schueler, 1995). There are many ways impervious surfaces can be reduced, through site design, regulations, and construction Best Management Practices. Street widths and parking space minimums can be reduced to allow for less impervious surface. Reducing setback requirements also helps to limit the amount of impervious surface on a site.

Infill Development/Brownfield & Greyfield Redevelopment. Infill development and brownfield/greyfield redevelopment not only reduce sprawl and impervious surfaces by redeveloping existing sites but they can also provide cost savings to the developer due to reuse of existing infrastructure on site.

Water Protection Overlay Districts. Creating a Water Protection Overlay District helps to ensure that new development within the district follows a Best Management Practice to protect water resources.

Water Conservation Practices. Water Conservation is an important topic in western North Carolina. Use of native, drought tolerant plants and reduction of the amount of lawn at home enables the environment to naturally water vegetation. In some cases, simple fixes in the home can help conserve water.

Low-Impact Development Strategies. Low Impact Development (LID) practices can be used in a variety of scales to help protect water quality. These practices manage stormwater through various design practices to conserve natural resources. LID not only works to minimize the impacts of development but also reduces infrastructure costs in most cases.

RESOURCES

Center for Watershed Protection: www.cwp.org

Handbook for Developing Watershed Plans to Restore and Protect Our Waters: www.epa.gov/nps/watershed_handbook/pdf/handbook.pdf

Low-Impact Development: www.epa.gov/owow/nps/lid/

Low Impact Development Center: www.lowimpactdevelopment.org

North Carolina Floodplain Mapping: www.ncfloodmaps.com

North Carolina Watershed Planning & Public Involvement: www.ces.ncsu.edu/depts/agecon/WECO/publication/LWPguidebook.pdf

Online Catalog of Federal Funding Sources for Watershed Protection: www.epa.gov/owow/funding.html

Protecting Water Resources with Higher-Density Development: www.epa.gov/smartgrowth/water_density.htm

Supplemental Guide to North Carolina's Basinwide Planning: Support Document for Basinwide Water Quality Plans: h2o.enr.state.nc.us/basinwide/SupplementalGuide.htm

Surf Your Watershed: cfpub.epa.gov/surf/locate/index.cfm

Watershed Management: www.epa.gov/owow/watershed/

Watershed Plan Builder: iaspub.epa.gov/watershedplan/planBuilder.do?pageId=51&navId=39

Watershed Planning Process: iaspub.epa.gov/watershedplan/planningProcess.do?pageId=33&navId=33

Working for the Watershed: A Partnership in North Carolina: www.nceep.net/Video_files/videostream.htm

Watershed Education for Communities and Officials: www.ces.ncsu.edu/depts/agecon/WECO/publication.html#watersheded

Caraco, Deb. *Rapid Watershed Planning Handbook – A Comprehensive Guide for Managing Urban Watersheds*. Ellicott City, MD: Center for Watershed Protection, 1998.

Montgomery County Department of Environmental Protection. *Stream Conditions Cumulative Impact Models for the Potomac Subregion*. MD, 2000.

Schueler, Tom. *Site Planning for Urban Stream Protection*. 1995. www.cwp.org/SPSP/TOC.htm

Schueler, Tom. *The Compaction of Urban Soil*. Center for Watershed Protection, 2000.

Non-point pollution is the number one contributor to water quality issues in the United States. When stormwater moves over the ground, it picks up pollutants on the surface and deposits them into lakes and rivers. Fertilizers, oil, sediment from improperly managed construction sites, bacteria from livestock, and faulty septic systems all contribute to non-point source pollution.

BEST MANAGEMENT PRACTICES

Best Management Practices (BMPs) are an excellent way to deal with sensitive environmental issues on sites during construction and post-construction. Typical issues that BMPs address are: site planning and management, soil and erosion control, grading and stormwater management controls. The following is a listing of typical BMPs for water quality.

Stream Buffers. Stream buffers, which serve as vegetated boundaries between waterways and development, are critical to filtering pollutants before entering waterways. They also supply flood control and mitigate warming and erosion. Depending on the stream, soils, and topography, buffers should be between 50-200 feet.

Streambank Stabilization. In addition to filtering pollutants, vegetated buffers stabilize banks and prevent erosion. Removal of streamside vegetation greatly increases the rate of bank erosion. Soil Bioengineering Practices, Native Material Revetments and In-Stream Structures can all be used to help restore bank stabilization and sustainability.

Erosion Control. According to Ken Caldwell, an Environmental Scientist for Macon County, "In new developments that lack proper erosion controls, a few thousand years of topsoil are lost in a single rainfall." Under the NC Sediment Pollution Control Act, a sediment-control plan is required on any site that disturbs one or more acres. However, sites less than one acre should utilize erosion control measures as well, such as silt fences with wire backing on steeper slopes and seeded fiber mats and straw bales for ditches.

Impervious Surfaces. There are a number of ways to reduce impervious surfaces, such as to allow clustering of units and narrower street widths or to reduce the number of parking spaces, overall size of parking spaces, or permit uses with different hours to share parking where appropriate. Often lawns act as impervious surfaces due to compaction of soil through the construction process (Schueler 1995, 2005).

Pervious Surfaces. The use of pervious surfaces, such as gravel or pervious paving blocks, can allow for the absorption of stormwater. It is recommended that pervious surfaces be used on the flattest slopes possible to avoid freezing on steeper slopes.

Green Roofs. Rooftops are another impervious area where runoff can be heated and accelerated while gathering sediments and pollutants. Green roofs are partially or completely covered with vegetation so stormwater may be filtered and released more slowly.

Image Source: Gabriel Cumming/Carla Norwood

An example of a home site under construction without erosion or sediment control.

Image Source: Gabriel Cumming/Carla Norwood

A muddy Little Tennessee River, most likely the result of sediment being carried by stormwater from nearby construction sites.

THE CLEAR WATER CONTRACTOR TRAINING PROGRAM

The program is an eight-hour training session provided to operators and contractors conducting earth-moving activities. The purpose is to educate those individuals, for a relatively low-cost, on tools to protect waterways from sediment damage while conducting land disturbing activities.

Six workshops, which were presented by Mayberry Group and sponsored by the NC Division of Water Quality, were held around the state in 2008. For future dates, visit www.themayberrygroup.org/The_Mayberry_Group,_LLC/Clear_Water_Contractor.html or h2o.enr.state.nc.us.

An example of a bio-retention area in a mall parking lot in Charlotte, NC. The curb cuts allow stormwater to enter the retention area.

Image Source: Equinox Environmental

Constructed wetlands used as a stormwater management control measure.

Image Source: NCSU

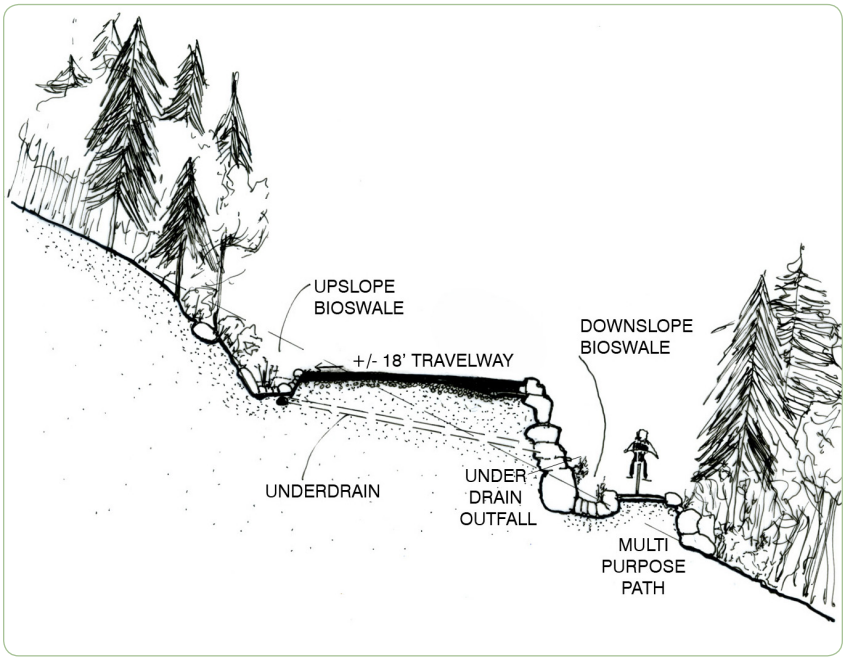
A demonstration of how water is being absorbed with pervious pavers.

Image Source: Padgett & Freeman Architects

Cistern to store 60,000 gallons of rainwater for irrigation and toilet flushing at a new school on the Qualla Boundary.

Constructed Wetlands & Infiltration Systems. These systems, which include trenches, drainfields, drywells, bio-retention systems, and level spreaders, can help to filter sediments and pollutants from stormwater. For example, bio-retention systems are depressed, vegetated areas that capture and filter stormwater when provided in parking lots. When trees are planted in these areas, benefits increase as shade lowers surface temperatures, thus reducing any warming effects of the runoff. Existing landscaped areas can also be retrofitted into bio-retention areas.

Rainwater Barrels & Gardens. Rain barrels and gardens are easy and inexpensive ways to collect and reuse stormwater. Not only do they conserve water, but they can also help filter sediment and pollution from runoff.



Schematic of how stormwater filtering bio-swales can be constructed along hillside roadways

Improve stormwater quality at home: www.hrwc.net/NCDWQ_Improving%20WQ%20in%20your%20own%20Backyard.pdf

Infiltration Systems: www.huduser.org/Publications/PDF/practLowImpctDevel.pdf.

Low-Impact Development: www.lid-stormwater.net

NC Division of Water Quality: h2o.enr.state.nc.us

NCSU, Water Quality Group: www.bae.ncsu.edu/programs/extension/wqg/

WNC Stormwater Partnership: www.wncstormwater.org

WNC Clean Streams Program: henderson.ces.ncsu.edu/content/cleanstreams

RESOURCES

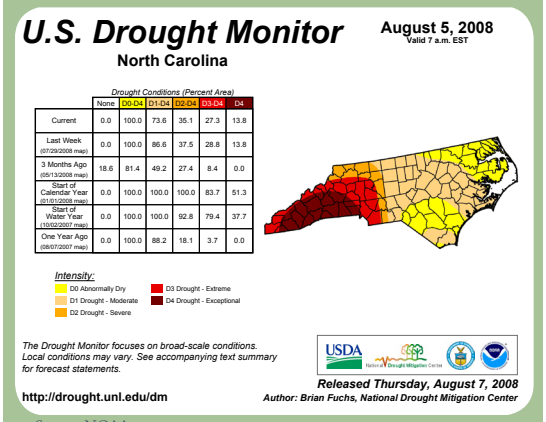
STORMWATER BMP STRATEGIES	URBAN/HIGH DENSITY SETTINGS	SUBURBAN/ URBANIZING AREAS	RURAL AND CONSERVATION AREAS
Watershed-wide or regional strategies	Transfer of development rights, waterfront restoration, participation in regional stormwater management planning/ infrastructure	Regional park and open space planning, linking new transit investments to regional system, participation in regional stormwater management planning/infrastructure	Regional planning, use of anti-degradation provision of Clean Water Act, sending areas for transfer of development, watershed wide impervious surface limits, water protection overlay zoning districts, water supply planning and land acquisition
Design strategies	Transit districts, parking reduction, infill, improved use of curb side parking and rights-of-way, brownfields, urban stream clean-up and buffers, receiving areas for transfer of development	Infill, greyfields redevelopment, parking reduction, policies to foster a connected street system, open space and conservation design and rural planning, some impervious surface restrictions, stream restoration and buffers, targeted receiving areas for transfer of development, planned unit developments	Regional planning, use of anti-degradation provision of Clean Water Act, sending areas for transfer of development, watershed wide impervious surface limits, water protection overlay zoning districts
Infrastructure	Better use of gray infrastructure: repair and expansion of existing pipes, installation of stormwater treatment, fix it first policies, improve street and facilities maintenance	Priority funding areas to direct development, better street design, infrastructure planning to incentivize smart growth development, improve street and facilities maintenance	Smart growth planning for rural communities using onsite systems
Low impact development (LID) or better site design strategies	Ultra-urban LID strategies: high-performing landscape areas, retrofitting urban parks for stormwater management, micro-detention areas, urban forestry and tree canopy, green retrofits for streets	Swales, infiltration trenches, micro-detention for infill projects, some conservation design, retrofitting of parking lots for stormwater control or infill, tree canopy, green retrofits for streets. Depending on location, larger scale infiltration.	Large scale LID: forest protection, source water protection, water protection overlay zoning, conservation, aquifer protection, stormwater wetlands
Structural BMPs	Commercially available stormwater control devices, urban drainage basins, repair of traditional gray infrastructure	Rain barrels, bio-infiltration techniques, constructed wetlands	
Strategies for individual buildings and building sites	Bio-infiltration cells, rooftop rain capture and storage, green roofs, downspout disconnection in older residential neighborhoods, programs to reduce lawn compaction, stormwater inlet improvements	Disconnecting downspouts, green roofs, programs to reduce lawn compaction, bio-infiltation cells, rooftop rain capture and storage	Green roofs, housing and site designs that minimize soil disruption

Source: EPA

A series of Stormwater BMPs organized according to development context. The above table is from Using Smart Growth Techniques as Stormwater Best Management Practices, by the Environmental Protection Agency. The full manual can be found at www.epa.gov/smartgrowth/pdf/sg_stormwater_BMP.pdf.

DROUGHT IN NORTH CAROLINA

Every county in Region A was under a drought advisory as of August 5, 2008. Clay, Haywood, Jackson, Macon, and Swain counties were under Exceptional Drought status, the worst conditions in the state, while Cherokee and Graham counties were at Extreme Drought status. Water conservation practices are essential to preserving water availability in the region. For weekly updates, check www.ncdrought.org.



Source: NOAA

NC AGRICULTURE DROUGHT RECOVERY PROGRAM

NC Agriculture Drought Recovery Program is a cost-sharing project, which will assist farmers with restoring drought-damaged pastureland and providing additional water supply for livestock and crops. Grants cover 75% of project costs, with applicants contributing 25%.

The program is administered through the Soil and Water Conservation Division of the NC Department of Environment and Natural Resources in its 96 district offices. Farmers may contact their local district office to learn if they are eligible and how to apply. See www.enr.state.nc.us/dswc/pages/district%20offices.html.

Water availability is increasingly becoming a bigger issue in North Carolina as the state's population, currently 8.5 million, is expected to exceed 12 million by the year 2030. This population growth is taking place in areas with limited water resources. Emphasis should be placed on conserving water as an everyday practice as well as ensuring water availability for all in the event of an emergency.

REDUCING DEMAND

Water Conservation. Water conservation practices should be the first-line response to preserving water availability. One of the easiest ways to reduce water consumption at home is through Xeriscape, a method of planting drought tolerant landscaping, which began in Denver, CO, in the early 1980s as a result of water restrictions. It is most widely practiced in the southwestern United States; however, it is gaining ground in the southeast. "Xeriscape can reduce landscape water use by 50 - 75%" (Eartheasy).

Rainwater Harvesting/Water Recycling. Rainwater harvesting techniques can provide a free, higher-quality source once the initial investment in collection and storage systems is recouped. The parts of a complete system include the catchment area (a roof), a rainwater conveyance system (gutters and downpipes), holding vessels (cisterns), a roof-wash system (usually the first 10 -20 gallons of rain are diverted from the cistern), a delivery system (pumps) and a treatment system (filters and/or purifiers). Systems can be custom designed and built or purchased as a package. Uncoated stainless steel or galvanized steel with a baked-enamel finish that is certified as lead-free are considered the best choices for rainwater catchment.

Collecting and reusing rainwater means less water is used from the public system. As fresh water becomes more scarce, this system allows people to extend their use of rainwater that is otherwise typically absorbed into the ground. These systems can help in times of drought by providing water harvested during periods of rain. Plants necessary for environmental stability can be watered and, in some cases, fresh drinking water can be created.

The cost varies depending on the chemical qualities of the rain and the roof and the end use of the water. A complete system with sophisticated filtering and purification components (not including the roof) can cost $20,000, while a system used for watering plants may run only $200.

The installation effort depends on whether the roof and/or drainage system need to be modified or replaced. Check the composition and condition of the roof and/or drainage system and the intended use of the water. Drinking water requires a leach-free metal or fiberglass roof and drainage system in addition to filtration or other purifying components. The majority of the components simply bolt-on. A roof-wash system, for instance, is relatively easy to attach to a gutter.

Systems are most cost-effective in parts of the country where the water supply is of poor quality, erratic, or expensive. In areas not served by a public water supply or in drought-prone areas, installing a rainwater

catchment system may actually be the most convenient and economical option. In regions where the public water quality is questionable, filtered rainwater can be a sales asset for the home builder. Groundwater is more vulnerable to environmental contamination than rainwater, although the acid rain affecting parts of the North Carolina mountains requires appropriate filtration and purification prior to reuse.

Codes and restrictions regarding water supply tend to be less restrictive than those governing water disposal. The local building or health department should always be contacted prior to installing a rainwater harvesting system.

High Efficiency Bathroom Fixtures. Toilets are by far the main source of water use in the home, accounting for nearly 30 percent of residential indoor water consumption. Toilets also happen to be a major source of wasted water due to leaks and/or inefficiency. WaterSense, a program sponsored by the U.S. Environmental Protection Agency (EPA), is helping consumers identify high performance, water-efficient toilets that can reduce water use in the home and help preserve the nation's water resources.

Recent advancements in design and technology have allowed toilets to use 20 percent less water than the current federal standard, while still providing equal or superior performance. The WaterSense label is used on toilets that are certified by independent laboratory testing to meet rigorous criteria for both performance and efficiency. Only high-efficiency toilets that complete the third-party certification process can earn the WaterSense label.

Over the course of your lifetime, you will likely flush the toilet nearly 140,000 times. If you replace older, existing toilets with WaterSense labeled models, you can save 4,000 gallons per year with this simpler, greener choice. If every American home with older, inefficient toilets replaced them with new WaterSense labeled toilets, the nation would save nearly 640 billion gallons of water per year, equal to more than two weeks of flow over Niagara Falls.

WaterSense labeled toilets are available at a wide variety of price points and a broad range of styles. The EPA estimates that a family of four that replaces its home's older toilets with WaterSense labeled models will, on average, save more than $90 per year in reduced water utility bills and $2,000 over the lifetime of the toilets. In many areas, utilities offer rebates and vouchers that can lower the price of a WaterSense labeled toilet.

Unlike some first generation, low-flow toilets, WaterSense labeled toilets combine high efficiency with high performance. Design advances enable WaterSense labeled toilets to save water with no trade-off in flushing power. In fact, many perform better than standard toilets in consumer testing.

INCREASING SUPPLY

Interbasin Transfers. In 1993, the NC Legislature adopted the Regulation of Surface Water Transfers Act. The intention of the law is to regulate large surface water transfers between river basins by requiring a certificate from the Environmental Management Commission, a branch of the NC State Department of Environment and Natural Resources. Three types of transfers are currently allowed by law: registered, low-volume transfers; certified, high-volume transfers; and exempt transfers.

Interbasin transfers are a very complicated and typically controversial method to transfer water availability to other areas; therefore, they should only be used in instances where no other alternative exists.

RESOURCES

Eartheasy Xeriscape: www.eartheasy.com/grow_xeriscape.htm

Interbasin Transfers in North Carolina: www.ncwater.org/Permits_and_Registration/Interbasin_Transfer/

NC Division of Water Resources: www.ncwater.org/Water_Supply_Planning/Water_Conservation/

Rainwater Harvesting: www.toolbase.org/Technology-Inventory/Sitework/rainwater-harvesting

Save Water NC: savewaternc.org

The Online Rainwater Harvesting Community: www.harvesth2o.com

Water Conservation Ideas: www.ncwater.org/Reports_and_Publications/hb1215/HB1215_Sec5_Report.pdf

Water Conservation Level Status: www.ncwater.org/Drought_Monitoring/reporting/displaystate.php

WaterSense Labeled Toilets: www.epa.gov/watersense/pubs/toilets.htm

Water Use Reduction Resources: www.wncgbc.org/links/water.php

Xeriscape: www.ncsu.edu/wrri/uwc/xeriscape.pdf

4.5 WASTEWATER

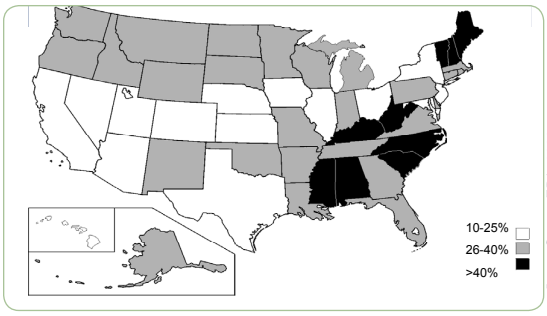


Image Source: EPA, 2002

Percentage of Residents using On-site Wastewater systems (OSWW) by state. Nearly 48% of NC residents (EPA, 2002) and approximately 75% of western NC residents use OSWW (WNCT).

Image Source: SR Consulting, Inc.

Community wastewater system in Dawn, Virginia, a rural community in Caroline County.

"The second most frequently cited contamination source (of ground water) is septic systems." (EPA, 2003)

"Properly designed, installed, and maintained on-site wastewater treatment systems can cost effectively treat wastewater and protect the watershed from pollutant overload" (HUD).

More than 40% of NC residents use on-site wastewater systems or OSWW (EPA, 2002) compared with approximately 25% nationally. The former Western North Carolina Tomorrow (WNCT) organization estimated that approximately 75% of homes in western North Carolina depend on OSWW. The same organization also noted that a large percentage of land in the region (up to 90% in some counties) has severe limitations for conventional septic systems. Yet in this challenging environment for on-site systems, Macon County saw a 25% increase in septic system installations between1999 and 2007 (Patterson).

Not surprisingly, an increasing number of septic systems in the mountain region are failing. Well-maintained septic systems have a 25-30 year life expectancy. However, many are not well maintained and many suffer from structural failure. "Few systems receive proper maintenance [and] . . . most regulatory programs do not require homeowner accountability for system performance" (EPA, 2003). According to Barry Patterson of Macon County's Environmental Health Department, 7% of new home septic systems fail and 15% of septic systems for manufactured housing fail. Malfunctioning systems disproportionately affect people of color, the elderly, and those below the poverty line. Additionally, Patterson says building lots in the region are getting smaller and steeper and thus less suitable for septic systems and more prone to fail.

Septic system failures have grave public health and ground water contamination risks. Septic systems are the second most-cited source of groundwater pollution (EPA, 2003), which impacts wells and eventually surface waters. Ultimately, this natural resource issue impacts western North Carolina's economy, which is dependent on clean, available water for economic development and tourism.

The North Carolina Department of the Environment and Natural Resources (NCDENR) says that on-site wastewater systems are a source of nutrients (including phosphates and nitrates, which can lead to such issues as harmful algae blooms, surface water pollution, etc.), pathogens, viruses, bacteria, worms, endocrine disruptors (chemicals with hormonal effects in humans), and pharmaceuticals in ground and surface waters. The Chesapeake Bay's watershed protection program "determined that between 55 and 85 percent of the nitrogen entering an on-site wastewater treatment system could be discharged into groundwater" (HUD, 56).

The costs of installing OSWW in mountain environments is also a major issue, both for developers and the natural environment. Rough estimates for conventional septic systems in mountainside developments can run as high as $10,000-15,000 per house. This drives up developer costs and consequently impacts affordable housing in the region. The provision of individual OSWW systems also limits developers' ability to cluster homes for reduced infrastructure costs and reduced land cover impact. Additionally, the environmental costs of grading to prepare mountain sites for septic systems can be acute in regards to loss of forest cover, stormwater runoff, and related impacts.

WASTEWATER TREATMENT TOOLS AND BEST PRACTICES

Comprehensive Planning. Planning for wastewater systems should ideally begin at a level beyond the individual site. Comprehensive planning at the watershed, county, and community levels will assist in determining the appropriate locations and intensity of development. The basis for comprehensive planning should be land use suitability mapping which among other things would identify appropriate locations for regional, community and individual wastewater systems.

Land Use Suitability Mapping. General land use suitability mapping, as described in Section 2, will in most cases be consistent with mapping for suitable areas for OSWW systems. Such mapping should ideally be done at the county level and would take into account the factors listed below as a starting point. Soils may be unsuitable for conventional septic systems if the following conditions exist (WNCT):

- Bedrock is shallow
- Slope is excessive (over 30%)
- Water table is high
- Area is subject to flooding (floodplains)
- Soils are too dense

Soil Suitability Mapping. Currently, there is a consistent need across the region for community- or county-level information on soil suitability for OSWW systems. Most permitting is done at the individual site level, and there is little or no digital mapping information that captures septic suitability information across larger areas. While county soil surveys do provide information on septic suitability, these surveys are primarily designed for agricultural needs and not wastewater needs. According to Patterson, soil surveys are concerned with the first 4-6 inches of soil, while septic suitability is concerned with the first 4-6 *feet* of soil.

GIS- and GPS-based Tracking. There is a regional need for a GIS- and GPS-based system to track soil suitability for septic systems across counties and the region. For example, in Macon County the current septic permitting process tracks soils information using paper copies for individual sites. This information needs to be digitized to provide information for trends and projections across the county. Future planning can take advantage of these efficient and relatively inexpensive technologies to provide useful information for new permitting procedures.

Regulatory Limits for Septic Suitability. Counties or municipalities can choose to limit development in non-septic suitable areas through ordinances based on factors such as those listed above and based on soil-suitability mapping. Floyd County in Kentucky's Appalachian mountain region proposed a zoning ordinance amendment that limited residential density based on appropriateness of soil conditions for septic systems. In the worst soil and topographic conditions, density was proposed to be limited to 1 residential unit per 20 acres (HUD, 65). The National Onsite Wastewater Recycling Association (NOWRA) is working with the US Environmental Protection Agency to develop a model code for Onsite Wastewater Treatment Systems. The model code is currently under review in various states.

Alternatives to Conventional Septic Systems. There are a number of alternatives to conventional septic systems that can contribute to community and regional environmental and development goals. These alternative systems can
can facilitate use of smaller house lots (HUD, 59), which is consistent with other objectives including preserving open space and promoting compact development. Such systems can also promote infill development in existing communities where existing sewer systems may be at or beyond capacity (EPA, 74). Some alternative systems may also provide higher quality effluent for sensitive environmental areas and require less excavation than conventional systems typically provide (HUD, 64). One such system, the Living Machine®, is profiled on the following pages.

Community Wastewater Management
The Town of Warren in Vermont's

Green Mountains won an EPA award and implementation grant for its work on community wastewater management.

Faced with the dual challenge of an immediate wastewater crisis and updating its town plan, Warren opted to challenge the traditional one-system-fits-all wastewater paradigm and replace outdated parcel-sized septic systems with a coordinated mix of traditional and alternative decentralized technology. Warren built one of Vermont's first alternative technology systems for its elementary school, helped raise awareness for coordinated planning, and was also among the first to conduct a detailed needs assessment as a precursor to systems design. Project financing included the demonstration grant in tandem with an EPA State and Tribal Assistance Grant (STAG) and State Revolving Fund (SRF) monies. An elaborate program of public outreach was critical to achieving buy-in from town residents and state regulators.

Dawn, Virginia, an impoverished rural community in Caroline County, used an innovative, but inexpensive decentralized community wastewater system to service homes in an area with poor soils and many failing private systems.

Regional Sewer Systems

Regional sewer systems are another option worth exploring in developing mountain communities. Often, in growing but unincorporated areas of Region A (e.g., Cashiers in Jackson County), there are numerous separate sewer treatment systems being operated by private owners/developers and/or non-profit organizations or agencies.

In order to provide for efficient and environmentally sound sewage treatment operations, private and non-profit operators may consider coordinating and consolidating their operations into a regional sewer system. This system might only serve a limited area and may be run as a private or non-profit utility. In any case, such a utility would provide a means for greater and more cost effective sewer treatment options, as well as increase economic development opportunities and greater regional oversight, coordination, and protection of economic and environmental issues in the area being served.

RESOURCES

Decentralized Wastewater System, Dawn, VA: www.yorkwatershed.org/yrscb/Eldon%20James_files/frame.htm

Guilford County Case Study: www.livingmachines.com/docs/guilford_county_northern_middle_and_high_schools_case_study_final.pdf

HUD, "The Practice of Low Impact Development:" www.huduser.org/Publications/PDF/practLowImpctDevel.pdf

Living Machines: www.livingmachines.com

NCDENR OSWW Non-point Source Update: On-going and Emerging Issues (Centralized Intern Training Fact Sheet): www.deh.enr.state.nc.us/osww_new/new1/images/NPS_emergingissues.pdf

National On-Site Demonstration Program: www.nesc.wvu.edu/wastewater.cfm

On-site Water Protection: www.deh.enr.state.nc.us/osww_new/new1/index.htm

The National Onsite Wastewater Recycling Association Model Code Framework for the Decentralized Wastewater Infrastructure: www.modelcode.org/publications.html

Wastewater Management and Community Planning, the story of Warren, VT: www.onsitewater.com/ow_0607_wastewater.html

US EPA, 2002. Onsite Wastewater Treatment Systems Manual: www.epa.gov/nrmrl/pubs/625r00008/html/625R00008.htm

US EPA, 2003. Voluntary National Guidelines for Management of Onsite and Clustered (Decentralized) Wastewater Treatment Systems: www.epa.gov/owm/septic/pubs/septic_guidelines.pdf

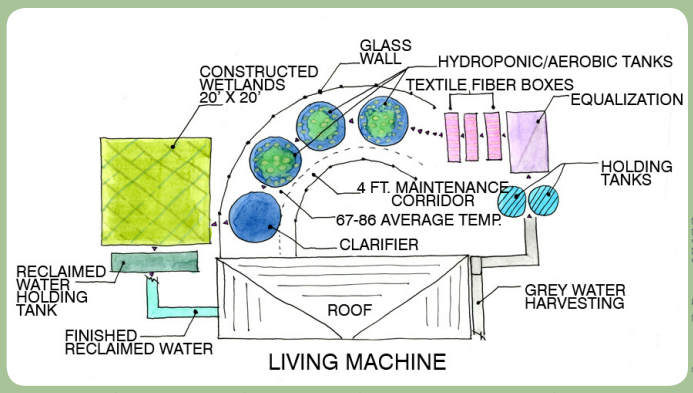
US EPA, Sustainable Infrastructure for Water & Wastewater: www.epa.gov/waterinfrastructure

WNCT, "9 Important Factors Before Buying Mountain Property or Building a Mountain Home:" www.timberframemag.com/Mountain_Home_Guide_for_mountain_property_and_building_mountain_homes_information.pdf

B. Patterson, R.S., Macon County Environmental Health Dept, June 28, 2007 presentation, "Planning and Environmental Health" prepared by Wesley Bintz, R.S.I.

THE LIVING MACHINE

There are a number of alternative wastewater systems that not only dispose of waste, but also treat it to create clean, reusable water. One of these is a proprietary technology called the Living Machine® by Worrell Technologies, which takes wastewater and converts it through a series of natural systems to purified water, which can be reused for some household and irrigation uses and potentially even for drinking water. These systems are in use in institutional and residential settings throughout the world, including a relatively new system at the North Guilford school complex in Guilford County, NC.



Source: C. Puera, UNCC

Diagram of a Living Machine® system for on-site treatment of wastewater. The system uses natural systems to create reusable water for household uses and irrigation.

Benefits

- Allows tertiary treatment for water reuse
- Provides excellent nitrification and good nitrogen removal
- Eliminates 99% of residual biosolids
- Minimizes energy cost (10-25% of equivalent activated sludge systems)
- Offers compact footprint compared to other wetland treatment methods
- Eliminates clarifers
- Reduces labor cost


Source: C. Puera, UNCC

Constructed wetland that is part of the Living Machine® wastewater treatment system at North Guilford Middle School in Guilford County, NC. The system saves 5 million gallons of water per year by reusing treated water for irrigation. (Worrell Technologies)

High Potential Locations

- Resorts and residential communities
- Educational institutions, campuses, military bases
- Industrial organic waste streams
- Agriculture (food processing or aquaculture, dairy production, feed lots)

CASE STUDY

The Guilford Hybrid Wetland Living Machine® system uses plant-based strategies to cleanse 30,600 gallons of wastewater per day from the middle and high school buildings and produces enough clean water to irrigate three athletic fields. Using the water twice saves an additional 5 million gallons per year.

This environmentally sound, onsite treatment strategy costs less than other secondary treatment strategies and helps to reduce the amount of nitrogen entering the watershed. The Living Machine™ system was implemented because there are no central sewer lines within miles of the site. The cost of extending the city waste lines to the site would have been significantly more expensive to the school system.

See www.worrellwater.com for more information.


Source: C. Puera, UNCC

The constructed tidal wetland that is part of the Living Machine installation at North Guilford Middle School. This aerobic system functions on alternating fill and drain cycles.

Haywood Waterways Association. HWA is dedicated to maintaining and improving the water quality of the Pigeon River through the reduction of non-point source pollution through a variety of voluntary initiatives including educational programs, gathering water resource information, sharing information to increase public awareness, and greenway efforts. *haywoodwaterways.org*

Hiwassee River Watershed Coalition. HRWC facilitates water quality improvements in lakes and streams throughout the upper Hiwassee River watershed within Cherokee and Clay counties in NC and Towns and Union counties in north GA by providing water quality education, funding for and implementation of voluntary watershed restoration projects, services in coordinating communication among various agencies working in the area, watershed planning, and opportunities for citizens to volunteer. *www.hrwc.net*

French Broad Watershed Education Training Center. The Center provides educational programming to landowners, citizens, natural resource managers, and public officials in Haywood and other neighboring counties. *www.bae.ncsu.edu/programs/extension/wqg/frenchbroad/*

Macon Soil and Water Conservation District. The mission of the Macon Soil and Water Conservation District is to cooperatively assist in the development and implementation of conservation programs that promote and encourage the wise management and use of soil and water resources for rural, urban, and agricultural lands of Macon County. *www.maconnc.org/Soil/index.html*

Natural Resources Conservation Service. The NRCS provides products and services that enable people to be good stewards of the nation's soil, water, and related natural resources on non-Federal lands. Staff assist landowners in the development of conservation plans, conduct soil surveys, conservation needs assessments, and update the National Resources Inventory. *www.nrcs.usda.gov*

North Carolina Clean Water Management Trust Fund. The Clean Water Management Trust Fund makes grants to local governments, state agencies, and conservation non-profits to help finance projects that specifically address water pollution problems. *www.cwmtf.net*

North Carolina Conservation Network. NCCN is a statewide network of over 120 community and environmental justice organizations focused on protecting North Carolina's environment and public health through support, training, and coordination of diverse groups and advocacy in achieving equitable and sustainable solutions for our environment. *ncconservationnetwork.org*

North Carolina Ecosystem Enhancement Program. The EEP mission is to restore, enhance, preserve, and protect the functions associated with wetlands, streams, and riparian areas including but not limited to those necessary for the restoration, maintenance and protection of water quality and riparian habitats throughout North Carolina. *www.nceep.net*

Little Tennessee Watershed Association. The mission of the Little Tennessee Watershed Association is to protect and restore the water quality and habitat of the Little Tennessee River and its tributaries upstream of the Fontana Reservoir. *www.ltwa.org*

The Southern Appalachian Highlands Conservancy. The mission of the Southern Appalachian Highlands Conservancy is to conserve the unique plant and animal habitat, clean water, and scenic beauty of the mountains of North Carolina and east Tennessee for the benefit of present and future generations. *www.appalachian.org*

Upper Cullasaja Watershed Association. The Upper Cullasaja Watershed Association is a grassroots citizens-based group focused on protection of water quality and water resources on the Highlands Plateau in Macon County, NC. *www.ucwatershed.org*

Watershed Association for the Tuckasegee River. WATR is a grassroots organization working to improve the water quality and habitat of the Tuckasegee River. *watrnc.org*

Western North Carolina Alliance. WNCA is a grassroots organization which aims to promote a sense of stewardship and caring for the natural environment. The Alliance's primary goal is to protect and to preserve our natural land, water and air resources through education and public participation in policy decisions at all levels of business and government. *www.wnca.org*

Western North Carolina Clean Streams Program. WNC Clean Streams is an inter-disciplinary, multi-county initiative of the NC Cooperative Extension Service to provide training, resources, and support for best practices in a variety of business and residential applications to protect and improve water quality throughout the region. *henderson.ces.ncsu.edu/content/cleanstreams*

ADDITIONAL WATER RESOURCES

The adverse health effects of polluted air are well documented. In addition to the effects on humans, air pollution leads to acid rain that has substantial and grievous impacts on the forests of western NC, affecting not only ecosystems but also striking a blow at the region's tourist economy.

The overarching problem appears to be acid rain and ozone. Research by Dr. Robert Bruck of NC State University proves that acid rain and cloud deposition are the primary culprits in the loss of spruce and fir forests. Large amounts of ozone and acid rain surround trees in the form of clouds or fog or hoarfrost. Basically, cloud formations have a pH in the range of 2.5-3.5, which is very acidic. Normal rainfall is slightly acidic at 5.6 on the pH scale. When this figure drops to 2.6, the decline of three pH points means 1000 times the acid because the measure is a logarithmic scale. Cloudy water is 100 times more acidic than unpolluted rainwater.

Ozone and acid rain are worse in the higher elevations because more precipitation occurs there and cloud water is more prevalent. Places like the Smokies can get 80-100 inches of rainfall a year. Mount Mitchell, the highest peak west of the Mississippi River, is surrounded by cloud water 60-80 days a year.

The fact that ozone levels don't drop at night in the mountains adds to the problem. In the higher elevations, the ozone levels are constant; the trees are bathed in ozone for 24 hours a day. The effect of acid rain and ozone on trees has been compared to the effect of AIDS on humans.

In addition to damaging trees, acid rain causes acidification of lakes and streams and sensitive forest soils. It also accelerates the decay of building materials and paints and damages historic and irreplaceable buildings, statues, and sculptures that are part of the region's cultural heritage.

www.appvoices.org/index.php?/site/voice_stories/acid_rain_other_stressors_wreaking_havoc_in_mtns/issue/543

A large part of the problem is the downwind effect from power plants in neighboring states, notably Tennessee. Power plants emit 82 percent of all sulfur dioxide air emissions, 45 percent of nitrogen oxides, and 65 percent of mercury. Automobiles and other mobile sources emit 48 percent of the nitrogen oxides. In many important ways these sources of pollution raise issues that can only be dealt with by collaborative action by NC and neighboring states in accord with the federal government. However, local communities and individuals can do their part to reduce acid rain by conserving energy, using alternative sources of energy and forms of transport, and by promoting public awareness through education.

Image Source: Allen Tate Photography
www.picasaweb.google.com/allentatephotography

An example of acid rain damage to trees in Maggie Valley.

Appalachian Voices: www.appvoices.org/index.php?/site/voice_stories/acid_rain_other_stressors_wreaking_havoc_in_mtns/issue/543

Canary Coalition (A grassroots clean air movement based in Sylva): www.canarycoalition.org

NC Division of Air Quality: www.ncair.org

Ways to Reduce Air Pollution: www.epa.gov/air/caa/peg/reduce.html

RESOURCES

4.7 TREE PROTECTION & FOREST MANAGEMENT

Image Source: Gabriel Cumming/Carla Norwood

Beautiful western North Carolina forestland is threatened by invasive plants, fragmentation from development, wildfires, and insect and disease outbreaks.

"Forests are being permanently converted to non-forest uses at a rate of 1 million acres per year. By 2030, an estimated additional 26 million acres will be converted to developed uses" (National Association of State Foresters).

Forests in western North Carolina promote clean air and water. They are vital to recharging groundwater and provide employment and recreation opportunities, habitat for plants and animals, and are sources of energy produced from forest products (bioenergy). Pisgah National Forest, Nantahala National Forest, and the Great Smoky Mountains National Park constitute over 1.3 million acres of forestland in western North Carolina.

Over and above the effects of acid rain described in the previous section, a number of issues in the region are threatening forestland, including invasive plants, fragmentation from development, wildfires, and insect and disease outbreaks.

Invasive plants. Invasive and non-native plants have the ability to spread quickly since they are often immune to the disease and climate of their new region. When invasive plants spread, they displace native plants, disrupting the balance of local ecosystems.

Fragmentation."Fragmentation has caused the average size of private forest holdings in the US to shrink. This fragmentation of forestland makes it more difficult to manage and maintain forest values like wildlife habitat and clean water and air" (National Association of State Foresters).

Wildfires. Fires are influenced by three major factors: weather, topography and vegetation. In 2007 wildfires burned 13,128 acres in the region. As development continues adjacent to forestlands and on steep slopes, the wildland-urban interface increasingly threatens homes and forests.

Insect & Disease Outbreaks. Insect infestations are causing tree mortality in otherwise healthy trees, ultimately impacting ecosystems in western North Carolina. Forest diseases are an issue as well, typically as a result of long-term drought, overstocked conditions, and/or aging forests (National Association of State Foresters).

PROTECTION & MANAGEMENT STRATEGIES

Conserve Large Forested Areas. "Ninety percent of family forest owners have fewer than 50 acres; over half own 1-9 acres. Preliminary data shows that the number of owners of these small forest tracts increased by 17% in the 10-year period from 1993 to 2004" (National Association of State Foresters). Conserving large tracts of land protects these areas from future fragmentation. To learn more about methods and strategies for preserving forests and other undeveloped land, see Section 7, Open Space Conservation.

Utilize Forest Management Practices. More information on forest management programs and financial incentives is available from the NC Division of Forest Resources. If needed, seek the assistance from a registered forester. A list of registered foresters can be obtained from the NC Board of Registration for Foresters.

Create a Wildland/Urban Interface Fire Hazard Assessment. The National Wildland/Urban Interface Fire Protection Program recommends five steps to creating a hazard assessment. Such assessments would ideally be completed at the county level:

- Select areas to be evaluated
- Select hazard components to be considered in the assessment
- Rank hazard components
- Compile hazard rankings in a usable format
- Develop action/implementation steps

Map High-Risk Wildfire Areas. If a full hazard assessment is not feasible, communities can map lands that are at high-risk for developing a wildfire. Areas that are at risk for potential wildlife fires are:

- Dense vegetation
- Continuous "ladder-like" vegetation, such as vines and small trees, that allow fires to climb
- Hazardous buildup of vegetative fuel
- Lack of firebreaks throughout the property

Develop Forest Stewardship Plans. Since 1991, the U.S. Department of Agriculture's Forest Service Forest Stewardship Program has assisted over 200,000 landowners in preparing multipurpose management plans for areas encompassing more than 20 million acres of nonindustrial private forestland. These plans promote the long-term sustainability of private forests by balancing future public needs for forest products with the need for protecting and enhancing watershed productivity, air and water quality, fish and wildlife habitat, and threatened and endangered species.

Creating a Forest Stewardship Plan: www.fs.fed.us/spf/coop/library/Forest%20Stewardship%20deskguide.pdf.

Financial Incentives, NC Division of Forest Resources: www.dfr.state.nc.us/starting/starting_incentives.htm

Firewise: www.firewise.org. NC Firewise: www.ncfirewise.org/
For information how to create a Fire Hazard Assessment, visit www.firewise.org/resources/files/wham.pdf.

Forest Health Protection, Southern Region: www.fs.fed.us/r8/foresthealth/programs/index.shtml

National Association of State Foresters. *A National Policy for Sustainable Forests*. www.stateforesters.org/issues/issues_and_policy/sustainable_forestry

National Park Service: www.nps.gov

NC Board of Registration for Foresters: www.ncbrf.org/list.htm

NC Division of Forest Resources: www.dfr.state.nc.us

Sustainable Forestry, National Association of State Foresters: www.stateforesters.org/issues/issues_and_policy/sustainable_forestry

US Forest Service: www.fs.fed.us

RESOURCES

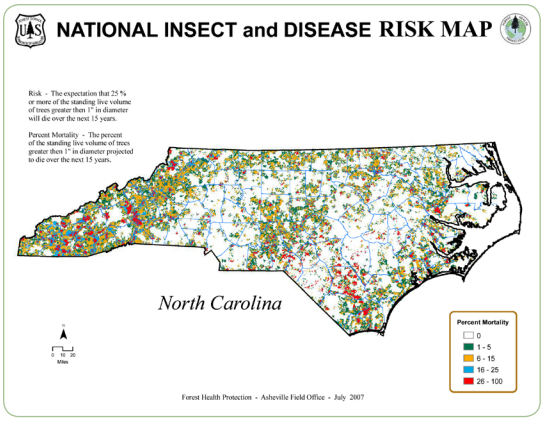


Image Source: US Forest Service

National Insect and Disease Risk Map from the US Forest Service. The map shows tree mortality, which is the percent of standing live volume trees greater than 1" in diameter projected to die over the next 15 years due to insect and disease infestations.

"A fire on a 30% slope can produce flames twice the length and travel as much as one and one half times as fast, as a fire on flat ground" (FireWise).

FOREST MANAGEMENT FINANCIAL PROGRAMS

North Carolina Forest Development Program is a reforestation cost-sharing program that partially reimburses landowners for the costs of site preparation, seedling purchases, tree planting, release of desirable seedlings from competing vegetation, or any other work needed to establish a new forest. Contact your County Forest Ranger, www.dfr.state.nc.us/contacts/contacts_main.htm

The Forest Land Enhancement Program provides educational, technical, and financial assistance to help private forest landowners implement their sustainable forestry management objectives. www.fs.fed.us/cooperativeforestry/programs/loa/flep.shtml

Federal and North Carolina tax laws allow a landowner to partially or totally exclude cost-sharing payments received under the FDPand FLEP programs from taxable income.

4.8 LANDSLIDE PROTECTION

Image Source: NC Geological Survey

Debris flow caused by remnants from Hurricanes Frances and Ivan in 2004 (Macon County, NC).

Image Source: NC Geological Survey

One of 27 homes destroyed by the debris flow in 2004 (Macon County, NC).

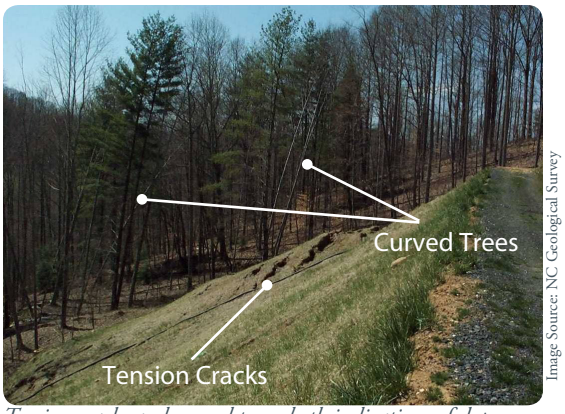


Image Source: NC Geological Survey

Tension cracks and curved trees, both indications of slope instability, can be seen in this photo from western North Carolina.

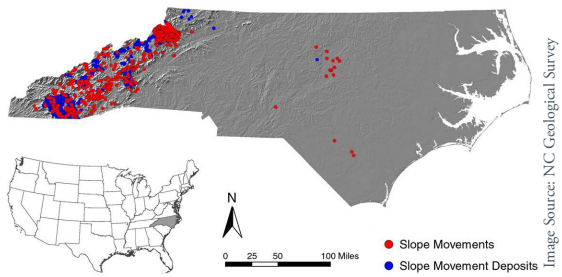


Image Source: NC Geological Survey

The NC Slope Movement-Slope Movement Deposit database currently has a total of 5,343 entries. However, entries usually increase weekly as mapping in a county progresses.

Landslides, or mudslides as they are sometimes called, are an increasing threat to western North Carolina as development continues on unstable slopes and in the paths of past landslides. Development occurring on steeper slopes (generally above 40%), causes mountainsides to destabilize, threatening not only those properties but also properties downslope. Modified slopes can be more susceptible to landslides than unmodified or "natural" slopes. "Unless carefully done, slope modifications such as excavations, embankments and drainage systems can destabilize slopes that are marginally stable in the unmodified or natural state" (Wooten, et al).

Heavy precipitation in combination with steep slope development in potentially hazardous areas are a public safety issue. "High-intensity summer storms and single tropical depressions can trigger slope movements" (Wooten, et al). Deforestation can further destabilization due to the removal of root systems that strengthens soils. In addition to the public safety hazard landslides pose, they also lead to soil and forest loss; sedimentation of streams, river and lakes; and increased erosion and habitat destruction (Land-of-Sky Regional Council, 2008).

In general, underlying causes of landslides include underlying geology, geomorphology, hydrology, weather-climate, slope modifications and deforestation. Possible triggers involve earthquakes, blasting, freeze and thaw, precipitation and water (back-to-back storms), and slope modifications. Region A has seen historic back-to-back heavy rainfall events in 1916, 1940 and most recently in 2004.

"In September 2004, intense rainfall from the remnants of Hurricanes Frances and Ivan triggered at least 145 slope movements that caused five deaths, destroyed 27 homes, and disrupted transportation throughout western North Carolina" (Wooten, et al). Remnants of Hurricane Frances dumped 10 to 15 inches of rain in portions of the higher mountains of Transylvania and Macon counties, causing widespread flooding.

A little over one week later, Hurricane Ivan passed through western North Carolina. Regional rainfall amounts reached 8 to 12 inches across portions of the higher elevations. This caused severe flooding and damage in many mountain counties and a major landslide in Peeks Creek Community in Macon County. The debris flow was 30 feet deep and 250 feet wide at some points and traveled downhill as fast as 33 miles per hour (North Carolina Geological Survey).

In most cases, insurance does not cover loss or damage to homes caused by landslides. Four homeowners in the Hunters Crossing condominiums in Haywood County have been forced from their homes by a slow moving landslide and are still paying mortgages (Land-of-Sky Regional Council, 2008).

LANDSLIDE PROTECTION STRATEGIES

Utilize Available Information. The North Carolina Geological Survey in Swannanoa is leading a multi-year effort to study counties for potential and known landslide hazards. "Macon County was chosen as the pilot study to develop the maps because of the five fatalities and 16 homes destroyed in the September, 2004 Peeks Creek debris flow" (Latham, et al., 2005). This study is available at www.geology.enr.state.nc.us/Landslide_Info/MaconCounty.html. Geologists currently working on Buncombe County were expected to be finished by fall, 2008. Hazardous landslide areas in Henderson and Jackson counties will be mapped after the completion of Buncombe County's study. Nineteen western counties (excluding Cherokee, Clay, and Graham) are to be mapped by 2014.

Do Your Homework. Landowners, developers, and local governments should be knowledgeable about potential landslide hazards in their areas. NC OneMap has various geological and landslide shapefiles available for download free of charge. In general, areas with slopes greater than 40% are more prone to landslides (NC Geological Survey). Indicators of slope failure include tension cracks, scarps and curved trees, steep slopes with poor soils, past landslide, and sparse vegetation cover all contribute to instability. Another indicator of instability is graphitic-sulfidic bedrock, prevalent in western North Carolina.

"The graphitic-sulfidic bedrock is a well-documented problematic rock type prone to acid runoff and instability in embankments (Bryant and others, 2003; Schaeffer and Clawson, 1996; Wooten and Latham, 2004). Road construction can further destabilize slopes that contain graphitic-sulfidic rock types. When this rock type is exposed in cut slopes and embankments, the potential for movement is increased. In addition, runoff from these acid-producing rocks can impair aquatic habitat and cause water to become unsuitable for consumption.

As part of 401 Water Quality Certification, the NC Division of Water Quality may require applicants to determine potential impacts if it is known that certain rock types exist. This can be discovered by conducting a site investigation with a licensed geologist or geotechnical engineer. Individuals can also consult geological maps completed by the US Geological Society or the North Carolina Geological Survey.

Complete Geotechnical Analysis. Slope stability analysis is a useful tool to determine whether proposed development will jeopardize slope stability on the site and surrounding properties. Geotechnical Analysis should be required on slopes greater than 40% or in landslide hazard areas (Land-of-Sky Regional Council, 2008). These analyses are best done by the cooperative efforts of qualified geotechnical engineers, geologists, and soil scientists.

Minimize Site Disturbance/Maximize Site Design. Where possible, it is best to limit cut and fill, stormwater runoff and vegetative loss during construction. These adversely affect and contribute to slope instability. See more on Site Design Best Management Practices in Section 3.

RESOURCES

Geologic Hazards in North Carolina - Landslides, NC Geological Survey: www.geology.enr.state.nc.us/Landslide_Info/Landslides_main.htm

Mountain Ridge and Steep Slope Protection Strategies. Land-of-Sky Regional Council. www.landofsky.org/downloads/LandofSky-MRSSPS-report.pdf. April 2008.

Bryant, L., Mauldon, M., and Mitchell, J.K. *Geotechnical Problems with Pyritic Rock and Soil*. 2003.

Schaeffer, M.F., and Clawson, P.A., 1996, *Identification and treatment of potential acid-producing rocks and water quality monitoring along a transmission line in the Blue Ridge Province, southwestern North Carolina*: Environmental & Engineering Geoscience, v. II, no. 1, 1996.

Wooten, R.M., Latham, R.S, Witt, A.C., Gillon, K.A, Douglas, T.D., Fuemmeler, S.J., Bauer, J.B., and Reid, J.C. *Landslide hazards and landslide hazard mapping in North Carolina*. 2007.

Wooten, R.M., and Latham, R.S. 2004. Report of May 5-7, 2003 *Debris Flows on Slope Underlain by Sulfidic Bedrock of the Wehutty, Nantahala, and Copper Hill Formations, Swain County, North Carolina*; North Carolina Geological Survey report of investigation.

Renewable energy not only creates jobs it also provides clean, energy independent alternatives that will be sustainable for future generations. Bioenergy, geothermal power, solar power, and wind energy are some of the alternatives that provide homes and businesses with electricity, power vehicles and support agricultural practices in an environmentally sustainable way.

ENERGY CONSERVATION APPROACHES

Design Strategies

Site Design. Planning and site design greatly impact a home's power efficiency. Homes situated to maximize solar and wind cut down on energy consumption. Shading from trees, using windows with a low-solar-gain low-emissivity coating and maximizing daylighting ability are just two of the ways this can be achieved. See Section 3, Site & Building Design for more information.

Passive Environmental Design. Passive environmental design involves the design and selection of appropriate technologies and materials to maintain the building environment at a desired temperature (usually based around human thermal comfort) and cycles. This approach to building design is characterized by the effective use of "passive" technologies and materials that adapt to external conditions by maximizing heating, natural ventilation and evaporative cooling without resorting to "active" technologies to produce energy.

Design strategies include the positioning and sizing of windows, skylights, and shutters to control the amount of direct sunlight reaching the interior spaces. Solar radiation warms the air and surfaces within the building in the winter. Roof overhangs, louvers, and shutters reduce heat gain in the summer. The use of sun-facing windows and high-mass floor and wall materials are examples of this approach. Siting the building to maximize natural cross ventilation without artificial, energy intensive systems is another important design strategy.

The Blue Ridge Parkway Destination Center near Asheville blends state-of-the art computational analysis with passive environmental design. The Center's mission is to orient visitors to the history, culture and resources of the Parkway and surrounding region, while demonstrating high-performance, ecological design. Nestled into a hill, the building evokes a tree-house-like atmosphere that allows visitors to experience the majestic vistas and surrounding woodlands for which the Parkway is known. The facility's passive solar design, along with other design strategies, is estimated to reduce energy use by 75 percent.

ZERO ENERGY HOMES

A Zero Energy Home (ZEH) combines energy-efficient construction with renewable energy to produce zero energy consumption from utility providers. Features typically include climate-specific design, passive solar heating and cooling, energy-efficient construction, energy-efficient appliances and lighting, solar water heating system, and small solar electric system.

Zero Energy Homes can provide improved comfort as energy efficient building envelopes reduce temperature fluctuations, provide reliability during blackouts, and increase environmental sustainability.

For more information, visit: www.toolbase.org/ToolbaseResources/level4CaseStudies.aspx?ContentDetailID=2470&BucketID=2&CategoryID=58

BUNCOMBE COUNTY LANDFILL GAS PROJECT

Large municipal and industrial landfills produce methane and carbon dioxide as a result of decomposition of waste. The Buncombe County Landfill Gas Project, which was created in 2006, is designed to create electricity by tapping methane gas produced at the landfill as a "green" energy source. The project will allow for significant reductions in greenhouse gas emissions, develop a renewable resource of energy that creates a safe and cleaner landfill environment and provide a stable and reliable source of energy (NC GreenPower).

For information on the process of how power is created from these gases, visit: www.ncgreenpower.org/types/landfill_methane.html

Alternative Energy Sources

Bioenergy. With oil prices soaring, bioenergy is gaining popularity as a renewable energy source that can be used for heat, electricity, fuel and farming. Biofuel and ethanol are the two main types of bioenergy currently used in the United States. While solar power is the most sustainable way to heat a home, new oil furnaces that run on higher blends of biodiesel are energy wise alternatives. Bioheat consists of a mixture of conventional heating oil and biodiesel.

Hydro Power. Falling water is used to produce hydropower. Large-scale hydropower can cause environmental impacts; however, small-scale hydro systems offer several advantages because power generation produces no pollution and doesn't require a large dam or reservoir.

Solar Power. Solar power involves the conversion of sunlight into electricity. This can be done more easily and affordably on a small-to medium-sized scale through solar panels, modules, charge controllers, batteries, inverters, and power centers. Solar thermal technologies can be used for water heating and space heating. Solar and other renewable power generation can also be sold to the North Carolina Green Power program.

Wind Energy. Not only does wind power create jobs and reduce air pollution, it is also an affordable, clean and sustainable way to harness and reuse energy. The costs of installing a small wind energy system typically ranges from $3,000-5,000 per kilowatt for a grid-connected installation. Many variables affect the time it takes to break even, depending upon the wind resource at the site, the power provider's electricity rates, financing, and incentives. Small wind owners with strong average wind speeds can usually recoup their investments within fifteen years (American Wind Energy Association). In general, the prime location for these systems would be higher elevations in western North Carolina. NC OneMap has free GIS downloads of wind power data, which maps the entire state's potential to provide wind power.

Conduct a Do-It-Yourself Home Energy Audit

The United States Department of Energy outlined an energy audit that homeowners can conduct on their own. In general, the audit looks for air leaks, and checks insulation, heating/cooling equipment and lighting. www.eere.energy.gov/consumer/your_home/energy_audits/index.cfm/mytopic=11170

"In 2004, energy saving measures and energy-efficient homes allowed Americans to cut their energy bills by more than $7 billion and save enough energy to power 15 million homes. The avoided greenhouse gas emissions were equal to removing 14 million cars from our nation's highways" (US Dept. of Energy).

A Consumer's Guide to Energy Efficiency and Renewable Energy: www.eere.energy.gov/consumer/your_home/

American Wind Energy Association: www.awea.org

Appalachian Institute for Renewable Energy, Boone, NC: www.aire-nc.org

Bioenergy: www.ers.usda.gov/features/bioenergy/

Database of State Incentives for Renewables & Efficiency, NCSU, Solar Center: www.dsireusa.org

Energy reducing ideas for specific building types: www1.eere.energy.gov/buildings/commercial/building_type.html

Learning about Renewable Energy, National Renewable Energy Laboratory: www.nrel.gov/learning/

NC Sustainable Energy Association: www.ncsustainableenergy.org

NC GreenPower: www.ncgreenpower.org

Southern Alliance for Clean Energy: www.cleanenergy.org

Small-scale hydropower systems: www.ncgreenpower.org/documents/29065%20-%20Small%20Hydropower%20systems.pdf. US

Department of Energy, Energy Efficiency and Renewable Energy: www.eere.energy.gov

Coyle, William. "The Future of Biofuels: A Global Perspective". Amber Waves. 2007. www.ers.usda.gov/AmberWaves/November07/Features/Biofuels.htm

RESOURCES

5 SUSTAINABLE TRANSPORTATION

Image Source: Gabriel Cumming/Carla

"My fantasy would be to not see it change much more than what it is, but to be able to do that, you have to be able to give people options..."

Lisa Leatherman (second from right),
Friends of Rickman Store
Macon County

The extreme topography of the mountains limits travel options in the region to automobiles. And as development continues to sprawl into the countryside and mountains, automobile travel is getting longer.

The question is, can a system that relies so heavily upon the automobile serve the population for the next twenty years and beyond?

In combination with key land use considerations, this Toolbox suggests that there are indeed approaches to provide people with options in getting around the community. It starts with maximizing the proximity of development so that many destinations are within short, even walkable distances; providing different modes of transportation; and then ensuring that every increment of development, from the neighborhood to the downtown, are walkable with safe, accessible routes to key destinations.

TRANSPORTATION DESIGN PRINCIPLES FOR MOUNTAIN LANDSCAPES

1 Reinforce and Support the Natural and Built Environments

- Preserve and enhance views.
- Minimize the use of new landscaping in rural areas.
- Preserve the rolling and mountainous terrain by introducing safety enhancements that reduce speed and calm traffic.
- Enhance shoulder treatments with materials such as reinforced or structural turf in lieu of asphalt.
- Delineate transitions from rural to village contexts with entry features, differentiating materials, selective curbing, and roadside treatments.
- Utilize alternative stormwater collection and treatment techniques such as rainwater planters and "green streets."

2 Reinforce Historically and Culturally Significant Elements

- Provide access to historic and cultural sites through development of pull-offs and trails.
- Enhance compatibility with local architecture and landscape in facility design.
- Utilize traditional materials and methods in facility design.
- Use local/indigenous landscape and construction materials.
- Consider securing State and National Scenic Byway status for historically and culturally important routes.

3 Create Safe and Attractive Roads

- In sensitive areas use design elements such as traffic calming to enforce desired or existing design speeds instead of altering the roadway alignment or profile to satisfy higher design speeds.
- Develop a continuous and seamless pedestrian network in villages.
- Elevate pedestrians and cyclists in the overall user hierarchy through the rebalancing of design parameters.
- Increase the visibility of pedestrians to motorists.
- Buffer/protect pedestrians from moving vehicles.
- Provide connectivity for all modes through connection and completion of local networks.
- Enhance safety in accessing local roadways through use of intersection treatments such as medians/turn lanes, flush medians, or roundabouts.
- Consider roundabouts in locations where new signals are proposed.
- Use landscape elements to blend traffic intervention measures into the surrounding context.
- Reinforce driver expectations through design enhancements.
- Accommodate service and emergency vehicles, but do not allow their potential presence to drive the design parameters.

4 Support Multiple Uses and Users of the Roadway

- Introduce pedestrian crosswalks where needed.
- Add on-street parking where practical within towns, villages, and hamlets.
- Design new streets within developments as "complete streets" designed to accommodate all roadway users: motorists, pedestrians, and cyclists.
- Design new streets and enhancements to existing streets to be "transit-ready."
- Use different materials to delineate various roadway "realms": motor vehicle, pedestrian, bicycle, parking, and transit.
- Maintain visual prominence of buildings; the roadway should blend into the environment and not be a focal point.

5 Enhance Quality of Life through Facility Design

- Develop appropriate transitions and entries to define the town-and-country interface.
- Have community groups and stakeholders partner, collaborate on, and influence all designs for new and retrofit facilities.
- Use curbing (flush and/or raised) to define village roadway context.
- Provide logical and safe pedestrian crossings, including textured and raised crossing features.
- Provide sidewalks or paths in villages and hamlets.
- Maintain views of important buildings or vistas.

These critical principles are the basis for the transportation planning tools that follow.

Image Source: Gabriel Cumming/Carla Norwood

Image Source: Kubilins Transportation Group

Images from top: A typical seasonal resident on a country road; a beautiful winding mountain road; a typical auto-oriented state highway going through Maggie Valley in Haywood County.

5.1 TRANSPORTATION PLANNING

Image Source: Kimley-Horn Associates

Stakeholders reviewing recommendations at the US 441 Small Area Plan charrette.

Like other elements of the Toolbox, providing for transportation needs in Region A begins with planning. Transportation planning should begin with "the big picture" —the state, the region and the county, then concentrate to the municipality, the corridor, the district, and eventually a specific site. When it comes to planning for roads in North Carolina, counties and municipalities have little responsibility or authority. Nearly 85% of roads in the State are under the jurisdiction of the North Carolina Department of Transportation (NCDOT). Communities across the state are discovering that to get the transportation infrastructure they desire, they must engage NCDOT before plans are finalized.

Currently, the Rural Transportation Planning Organizations (RPO) of the Southwestern Commission and Land-of-Sky Council of Governments provide regional transportation planning services to the counties in the Toolbox region. These organizations work with local governments and NCDOT to plan and prioritize transportation infrastructure investments. Currently, these RPOs are working with NCDOT to update countywide comprehensive transportation plans.

(NCDOT will not initiate its comprehensive transportation planning process until a county has a land use plan or, at minimum, an adopted vision for the county.)

Access Management Concept Map

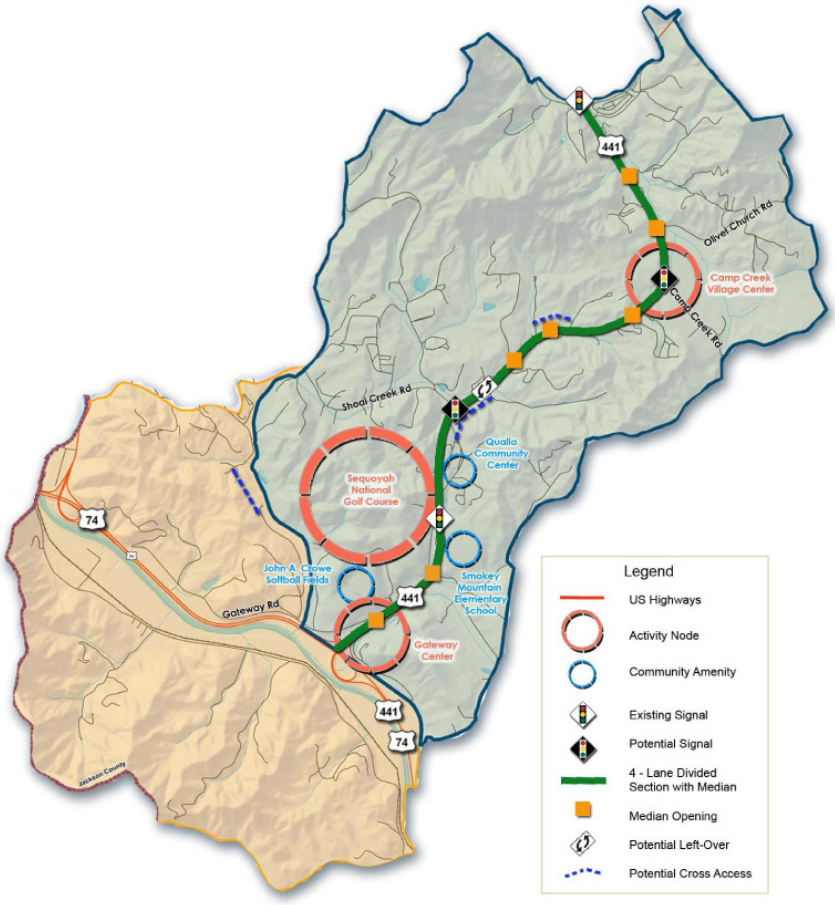


Image Source : Kimley-Horn Associates/Jackson County, NC

Proposed access management recommendations from the US 441 Small Area Plan.

Southwestern Rural Transportation Planning Organization (RPO) for Cherokee, Clay, Graham, Jackson, Macon and Swain Counties: www.regiona.org/rpo.htm

Land-of-Sky RPO (includes Haywood County): www.landofsky.org/planning/p_ruraltrans.html

NC Association of RPOs Funding Sources: www.nctransportationanswers.org/

US 441 Small Area Plan
planning.jacksonnc.org/

Complete Streets: www.completestreets.org

RESOURCES

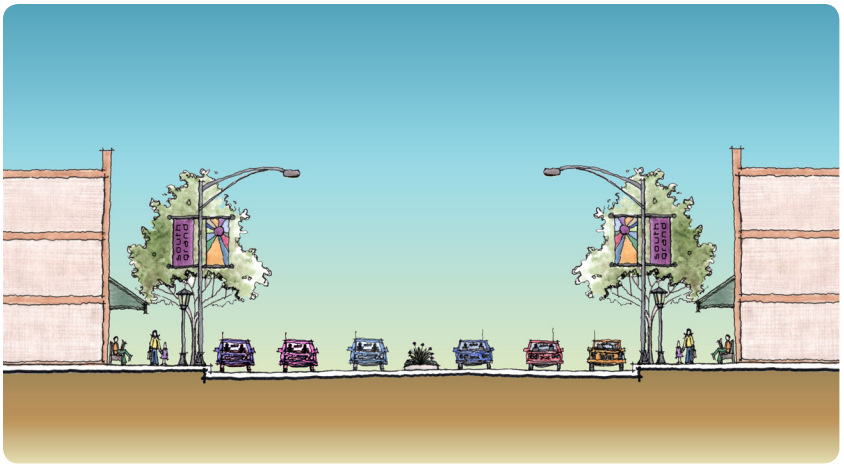
The most significant role for local governments in the transportation planning process involves the integration of land use planning with transportation planning. This means ensuring that the type, number, location, and design of roads are appropriate to the areas traversed. It also means that standards for roadway connectivity, access management, roadway design, streetscape standards, and the intensity and type of development be appropriate to the roads that serve various areas of the community. Local government transportation plans must also provide for transportation choices, including walking, bicycling and transit.

US 441 SMALL AREA PLAN

Recently, Jackson County completed an integrated land use and transportation planning project for the US 441 corridor between US 74 and the Qualla Boundary. Developed through a public design charrette process, the *US 441 Small Area Plan* includes a market analysis; a recommended land use framework plan for the corridor, including identification of sensitive and significant environmental features; recommendations for appropriate transportation facility improvements and designs to match the land use recommendations; and detailed design concepts for land development at key locations along the corridor. The Small Area Plan recommendations and process are detailed in the Appendix of this document.

FRANKLIN MAIN STREET PROGRAM

The Town of Franklin in Macon County has coordinated detailed planning for transportation and streetscape improvements in the downtown area. Plan recommendations include designs for new context-sensitive enhancements to existing streets; adding or improving sidewalks; adding trees, pedestrian-scale lighting, and medians and traffic calming measures, where appropriate; as well as recommended locations for new streets and trails.



Proposed streetscape and transportation enhancements should be appropriate to the land use context of the roadway. This includes providing for safe and attractive walking and bicycling facilities and ensuring that amenities such as on-street parking are provided for landowners/business owners and customers.

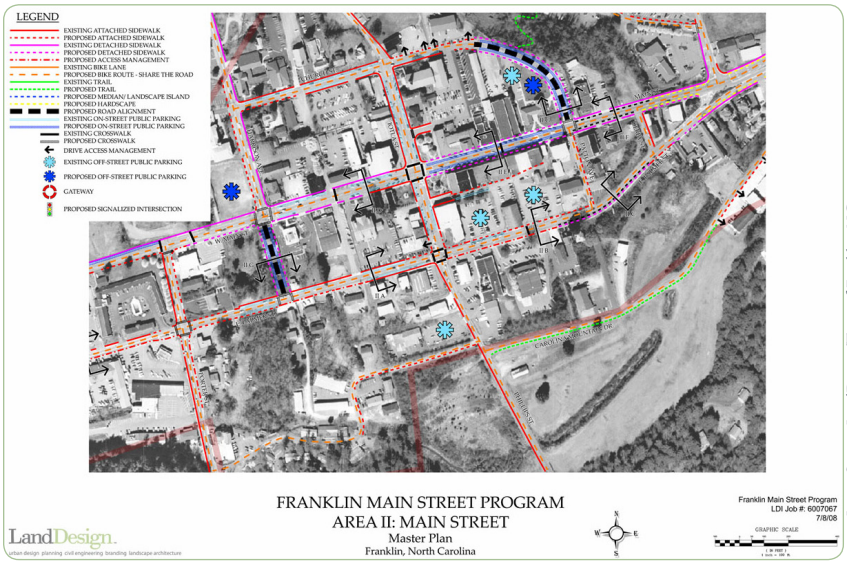


Image Source: LandDesign/Town of Franklin, NC

Recommended transportation and streetscape improvement for downtown Franklin from the Franklin Main Street Master Plan process.

5.2 CONNECTIVITY

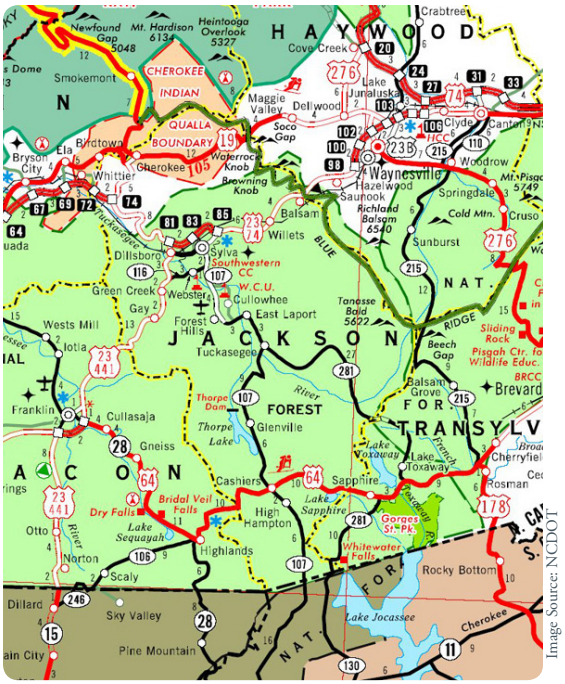


Image Source: NCDOT

Like many rural areas, most of western North Carolina is connected by a series of sparsely spaced state roadways and US highways. This leads to a number of issues, including increasing congestion due to the lack of alternative routes.

Like many rural areas, most of western North Carolina is connected by a series of sparsely spaced state roadways and US highways.

- The number of vehicle miles traveled is high as there are limited numbers of direct routes between major destinations and residential areas.
- As development continues, traffic congestion is expected to worsen due to the lack of alternative routes.
- With an aging population in the mountains, emergency response times are a key issue that could be addressed by a greater number of routes.
- Cycling and walking are difficult, with long distances between roadway segments and very few connections between developments.
- Some town and village centers are difficult to access being commercial strip centers located on multi-purpose arterial roadways without a parallel grid of streets.

REGIONAL PLANNING

On a state level, the Virginia Department of Transportation, in conjunction with its Commonwealth Transportation Board, is currently leading an effort to redefine the way transportation planning and engineering for new facilities are accomplished. Their research on road connectivity sets firm the benefits of a connected street network:

- Reduced vehicle miles traveled through more direct routes
- Reduced congestion through alternative routes
- Alternative routes during road closures and accidents
- Increased capacity of the local and regional transportation network
- Reduced emergency response times
- Better access by car, transit, bicycling or walking
- Enhanced opportunities for community interaction through connections between developments
- Improved access to community facilities and shopping centers
- More effective use of transportation infrastructure

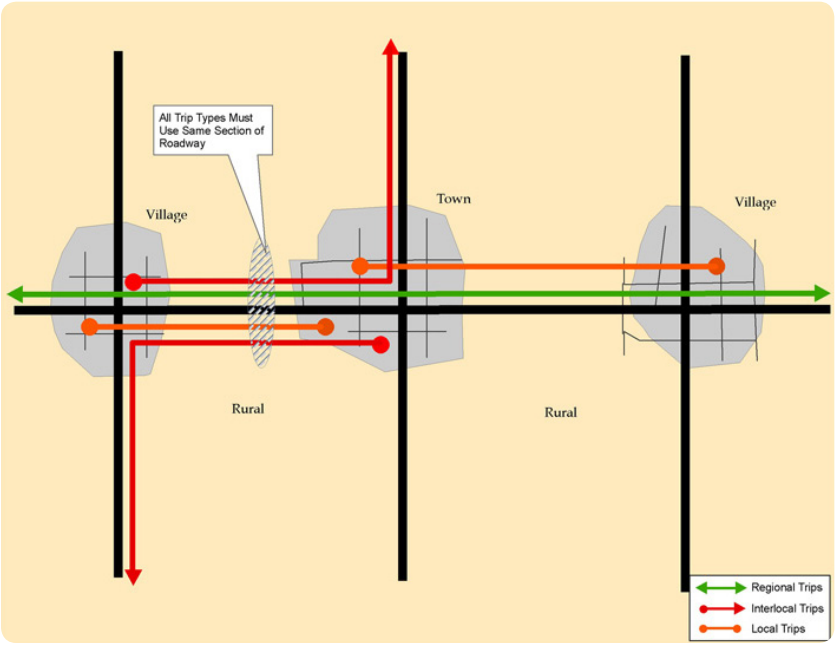


Image Source: Kubilins Transportation Group

With limited route options, trips of all types (regional, local, and interlocal) are forced to use the same roadways. This leads to congestion and other issues.

RESOURCES

Virginia Commonwealth Transportation Board Secondary Street Acceptance Requirements, July 2008, www.virginiadot.org/projects/ssar/default.asp

Institute of Transportation Engineers, *Traditional Neighborhood Development Street Design Guidelines*, 1999.

Urban Land Institute, *Creating Walkable Places: Compact Mixed Use Solution*, 2006.

NEIGHBORHOOD CONNECTIVITY

A link-node ratio is a metric used by many localities to begin to measure the connectivity of a road network. The link-node ratio is calculated by dividing the number of links (street segments) by the number of nodes (intersections or dead ends). A perfect grid of streets will have a link-node ratio around 2.5, whereas a network of complete cul-de-sac or dead end streets with only one way in and one way out will have a link-node ratio of 1.0. A minimum ratio of 1.4 or 1.5 is much preferred. Although there are many topographical constraints that limit opportunities to link roadways in the mountain region, strategic application and heightened connectivity ratios in developing areas will lay the groundwork for easy access within towns and village areas as well as across the overall region.

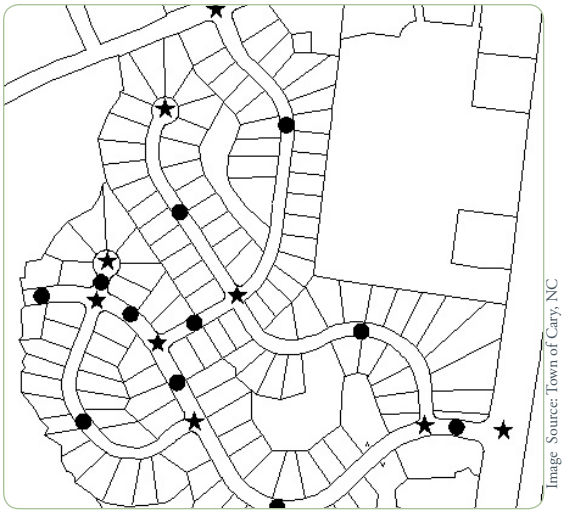
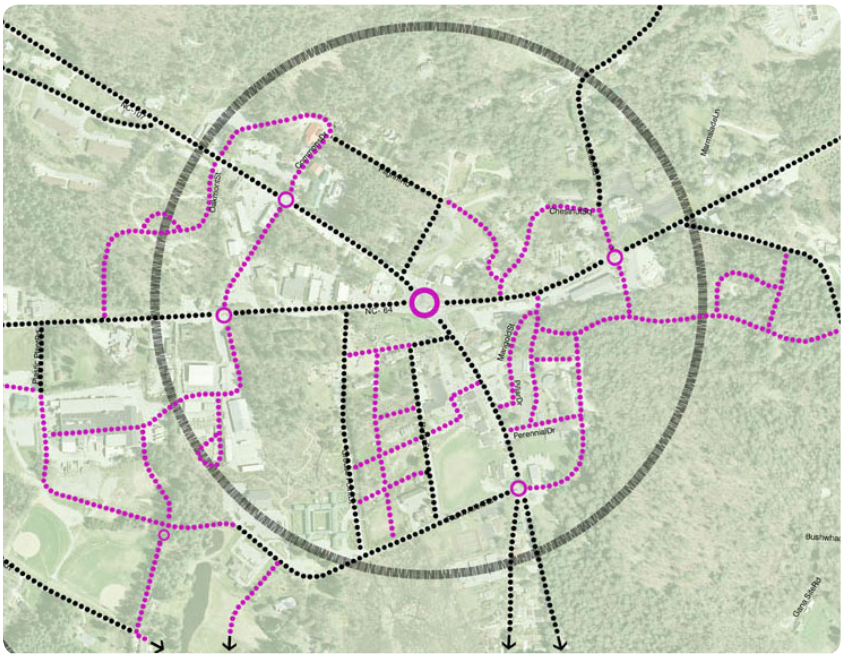


Image Source: Town of Cary, NC

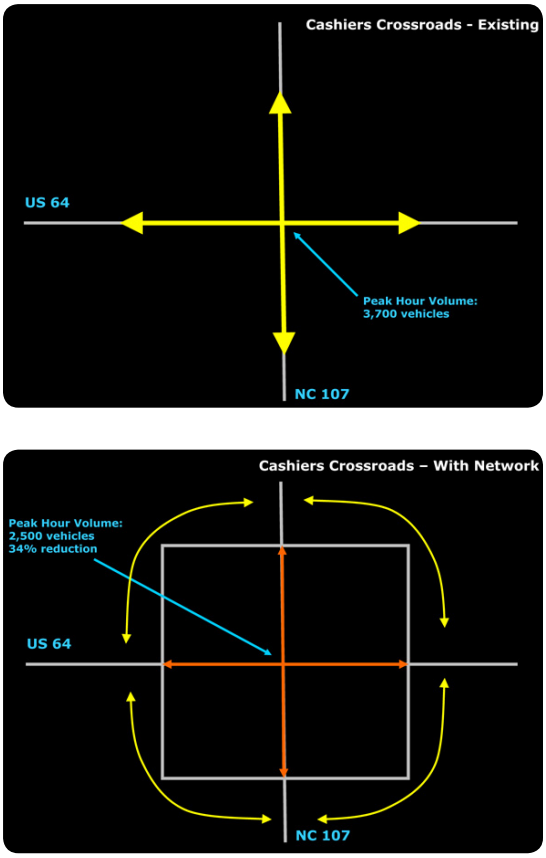
Illustration of the link-node ratio concept for measuring connectivity. Links (street segments) are shown as dots. Nodes (intersections) are shown as stars. This example gives a ratio of 1.22 (dividing 11 links by 9 nodes). If the two cul-de-sacs were eliminated and the streets extended to connect with adjacent streets, the revised layout would have a better ratio of 1.44.

CASE STUDY: CASHIERS VILLAGE CROSSROADS

The model project in Cashiers (Jackson County) presents an opportunity for enhanced road network connectivity. The concept plan proposes the development over time of a series of connected two-lane roads forming a "loop" around the central crossroads area where US 64 and NC 107 intersect. The new streets will create a network of route options for local and through traffic. The additional connectivity will allow for a potential 34% decrease in traffic at the crossroads intersection in the Village. By relieving this amount of traffic at the crossroads, the area within the "loop" can be enhanced for walkability through the narrowing of lanes and addition of on-street parking and pedestrian facilities. An added benefit will be easier access to businesses via the parallel road network.



Proposed roadway network from the Cashiers master plan. The existing roadway segments are shown in black. Proposed new streets and roundabouts are shown in magenta. The dark grey circle represents a 1/4 mile radius (5 minute walk) from the crossroads intersection of NC 107 and US 64.



Conceptual diagrams of existing conditions (top) and proposed future conditions with new street network (bottom) for the crossroads area of Cashiers. The diagrams show how new street network can reduce traffic volumes at the crossroads by 34%.

5.3 CONTEXT SENSITIVE DESIGN

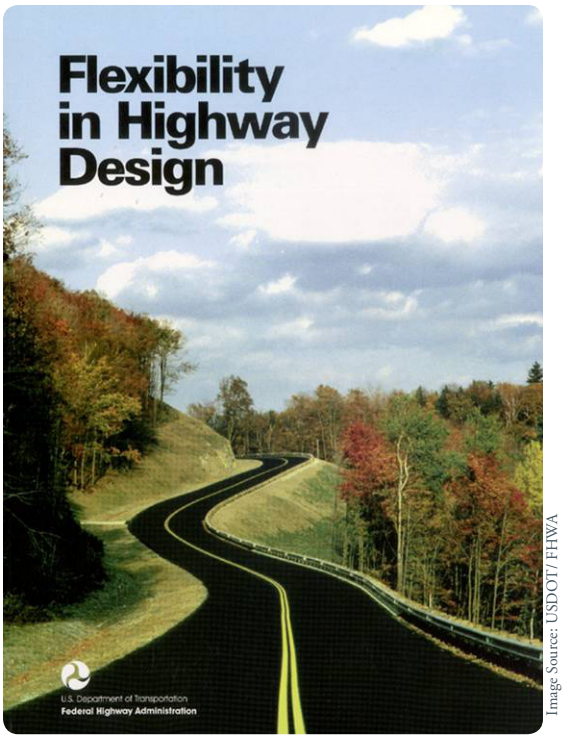


Image Source: USDOT/ FHWA

The Federal Highway Administration has emphasized the practice of context-sensitive design for roadways in sensitive environments.

NC Department of Transportation, Office of Environmental Quality: www.ncdot.org/programs/environment/oeq/

North Carolina State University, Center for Transportation and the Environment: itre.ncsu.edu/CTE/index.asp

Institute of Transportation Engineers and Congress for New Urbanism, *Context Sensitive Solutions in Designing Major Urban Thoroughfares*, 2006: www.cnu.org

Federal Highway Administration, *Context Sensitive Solutions Program*: www.fhwa.dot.gov/context/index.cfm

Online Resource Center for Context Sensitive Solutions: www.contextsensitivesolutions.org

Project for Public Spaces (PPS), Transportation: www.pps.org

RESOURCES

Strict adherence to conventional roadway design "standards" can often result in facilities that significantly damage the surrounding context, both the natural and the built environments. Examples of this unfortunate outcome can be seen in such roadways as US 441 through Macon and Jackson Counties and NC 107 through the Sylva area. In these instances, well-intentioned processes to improve a road to deal with traffic growth led to unintended consequences with regard to inefficient land uses (resulting in sprawling, strip commercial development on NC 107 in Sylva); spoiled scenic views (resulting in mountainside scarring rock cuts associated with widening projects on NC 107 and US 441); and compromised water quality (resulting in the additional collection and treatment of runoff associated with the five-lane section of US 441).

In recent years, the Federal Highway Administration (FHWA) has emphasized the practice of context-sensitive design (CSD) in an effort to show roadway designers the flexibility that is available when designing roadways in sensitive environments such as the mountainous region of western North Carolina. In its 1997 publication *Flexibility in Highway Design* FHWA states the following:

> *If highway designers are not aware of opportunities to use their creative abilities, the . . . use of [national] and related state standards, along with a lack of full consideration of community values, can cause a road to be out of context with its surroundings. It may also preclude designers from avoiding impacts on important natural and human resources. This Guide encourages highway designers to expand their consideration in applying [these standards].*

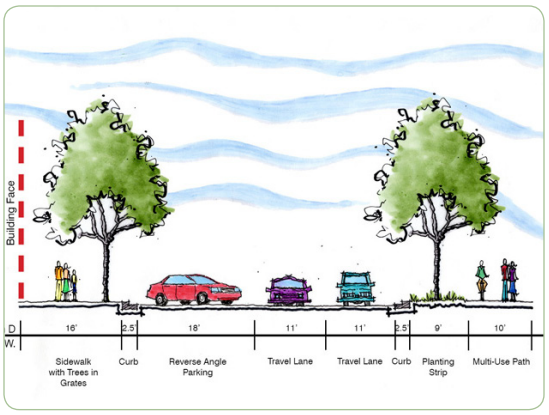
In the practice of context-sensitive design, a balance must be struck among the various goals for a roadway project, such as improved travel service; safety (for both motorized and non-motorized users); natural preservation; environmental concerns such as water quality, historic building preservation, and community cohesiveness in the villages that dot the countryside. Roadway designs cannot be completely given over to improving travel for the motorist without impacting the intrinsic surroundings and environment. With the application of context-sensitive design principles, engineers, planners, and citizens can strike a balance that allows for facilities to provide safe and reasonably efficient level of service for motorized travel while preserving the aesthetics that make an area unique.

TOOLS AND BEST PRACTICES

Some of the tools and best practices available to roadway designers are derived directly from FHWA's re-interpretation of how to properly design facilities to fit within a given context. The following initiatives employ measures of context sensitive, roadway design:

- "Complete Streets" design and implementation that balances the needs of the motorized and non-motorized users of a roadway facility. (website on page 89)

- Traffic calming measures, including both urban and rural measures to reinforce desired driver behavior. Urban measures include pavement narrowing, addition of on-street parking, planted medians or splitters, roundabouts, and use of textured and/or raised pedestrian crossings. Rural measures are geared toward reinforcing a desired speed by motorists and enhancing safety; they include wide splitter islands, turn lanes at intersections, roundabouts, natural material/rusticated guardrail, and scenic and interpretive pull-offs. Recommended measures include:
- Lower design speeds in areas that would be visually degraded by being held to a higher design speed.
- Addition of bicycle and pedestrian facilities such as sidewalks, bike lanes, and multi-use paths either adjacent to a roadway or off-road within a corridor. Such facilities can be combined with interpretive trail or eco-tourism opportunities.
- Stakeholder-inclusive collaborative design process for any proposed transportation facility (new or improved).
- Partnerships between public agencies such as counties/municipalities and NCDOT geared toward solving issues presented by development or redevelopment.



Context-sensitive street section for downtown Cornelius, NC, including wide sidewalks for future mixed use development; reverse angle parking; street trees; and a parallel multi-use path along a railroad frontage.

CASE STUDY: CASHIERS VILLAGE CROSSROADS

In Cashiers, the model project presented an opportunity for a community-led design process in keeping with the tenets of context-sensitive design. Through this process, solutions to the NC 107/US 64 crossroads issue were developed including the proposal to replace the signal at NC 107 and US 64 with a single-lane roundabout. Additional proposals included the development of a four-quadrant series of two-lane connected streets and roundabouts that allowed for a potential 34% decrease in traffic at the crossroads intersection in the Village. Curtailing traffic at the intersection enables Cashiers to narrow lanes and add on-street parking and sidewalks.

Roundabouts and new street connections provide context-sensitive solutions for increasing safety and walkability and decreasing traffic volumes in the Cashiers crossroads area.

CASE STUDY: COWEE VALLEY

In the Cowee Valley model project, a similar community-led design process led to the development of an initial concept for the NC 28 highway corridor. Change included preservation of the existing cross section, reinforcement of a lower design speed through the use of rural traffic calming elements such as splitter islands, and development of an off-road interpretive bicycle and pedestrian trail system that allows access to and education about the historic Cowee Mound. These roadway design concepts should be tested and refined through a corridor management plan. See Appendix A3 for more information on the corridor management plan process.

Image Source: Kubilins Transportation Group

Stonework on the bridge, a traffic-calming splitter island, and textured pavement on the bridge deck provide elements of context-sensitive solutions for a rural highway in a historic corridor in Virginia. Similar design concepts could be applied in the NC 28 corridor in the Cowee Valley or other regional locations, as appropriate.

5.4 SCENIC HIGHWAYS & BYWAYS

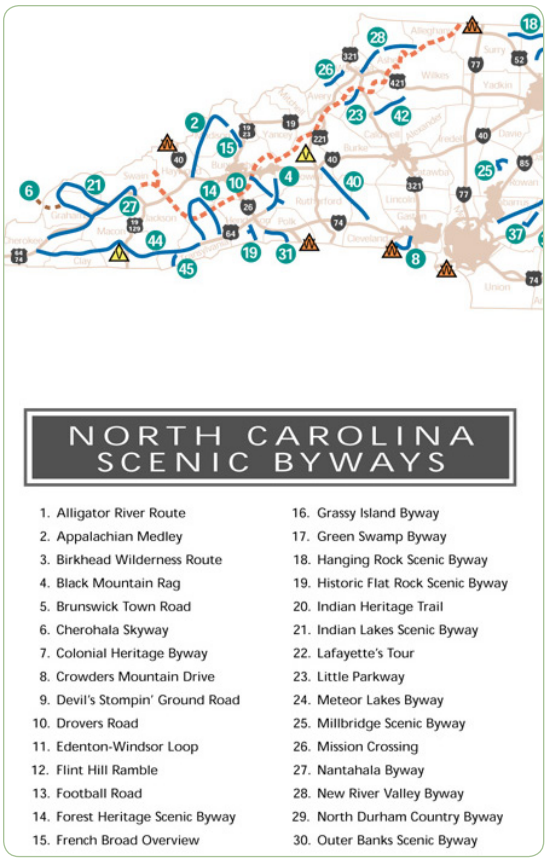


Image Source: NCDOT

North Carolina Scenic Byways in western NC.

Image Source: Kubilins Transportation Group

Scenic Byway wayfinding sign in Highlands, NC.

Many roadways within the western North Carolina mountains serve as both traffic routes and access to some of the most scenic and historic areas in the country. Roadways are to be experienced rather than simply traversed, as the increasing amount of motorcycle tourism around the communities of Franklin and Robbinsville suggests. Historic, scenic, and economic considerations often trump behicle level-of-service standards.

Scenic Byways that traverse the western North Carolina region include:

- NC 281 between Sapphire and South Carolina State Line (State Scenic Byway);
- US 19/74/129 between Marble and Whittier (State Scenic Byway);
- NC 28/US129 between Almond and Topton in Graham County (State Scenic Byway);
- US 64 between Murphy and Rosman (State Scenic Byway);
- Blue Ridge Parkway between Charlottesville, VA and Cherokee, NC (National Scenic Byway); and
- Cherohala Skyway between Santeetlah Gap and Tennessee State Line (National Scenic Byway).

The State and National Scenic Byway Programs have the following requirements for corridor consideration:

- All users of the roadway and all contexts must be considered.
- Roadway improvements must take into account all aspects of the roadway and its surrounding environs.
- Flexibility must be used in addressing pertinent design issues and conflicts.

SCENIC BYWAY DESIGNATION

The process of qualifying a corridor for National and State Scenic Byway status is described below:

1. Formation of a Corridor Management Committee to evaluate corridors within the framework of the National Scenic Byways process.
2. Committee prepares the Corridor Designation Reports (CDR) for State and National Scenic Byway status.
3. The CDRs must include an inventory of the intrinsic (natural and scenic) resources that would potentially qualify the corridor for status.

The scenic beauty along many mountain routes coupled with significant Cherokee Nation and American Revolution history suggest that many roadways within the seven county Region A area could be considered for Scenic Byway status. Pursuing these designations will afford additional protection to them.

Scenic Byway designation also carries funding to assist in implementing a Corridor Management Plan (CMP). The CMP must meet the following objectives:

- Identify context-sensitive safety improvements.
- Identify methods of historic and scenic resource preservation.
- Balance the interests of all users of the roadway.
- Locate potential areas for interpretive trails and scenic pull-offs. Enhance economic development and tourism in the surrounding areas.
- Create a unified experience of travel and environmental experience.

CASE STUDY: NC 28, COWEE VALLEY

The Cowee model project shows that care must be taken when looking at improvements on NC 28 through the Cowee Valley. Public dissatisfaction has already surfaced with NCDOT's proposal to add paved shoulders to NC 28 just north of the Town of Franklin. Due to the topography, even relatively minor widening to meet highway-level design speed quidelines will significantly impact scenic quality.

There are several ways to soften the design with context sensitive design principles:

- Acceptance and reinforcement of a lower design speed to preserve the natural terrain;
- Inclusion of rural traffic calming elements such as wide splitter islands, corten steel or rusticated guardrail, interpretive pull-offs, and landscaping to reinforce the desired lower design speed and address safety issues;
- Consideration of an off-road interpretive trail system for bicycle and pedestrian travel if the provision of such facilities within the NC 28 right-of-way results in unacceptable impacts to the visual and natural environment along the corridor; and
- Nomination and designation of the NC 28 Corridor between the Town of Franklin and US 74 through the Cowee Valley as a State and National Scenic Byway.

As part of the US 50 Traffic Calming Project, many similar elements are currently being constructed in Loudoun and Fauquier counties, Virginia, under the auspices of the Virginia Department of Transportation.

Image Source: Kubilins Transportation Group

US Route 50 in Upperville, Virginia. Sections of this roadway were improved to highlight the scenic and historic quality and to lower traffic speeds along the corridor.

RESOURCES

Federal Highways Administration, National Scenic Byways Program: www.bywaysonline.org

North Carolina Department of Transportation, State of North Carolina Scenic Byways Program: www.ncdot.org/doh/operations/dp_chief_eng/roadside/scenic/

Virginia Department of Transportation, Virginia's Route 50 Traffic Calming Project: www.virginiadot.org/projects/northernvirginia/route_50_traffic_calming_measures.asp

5.5 MOUNTAIN ROADWAY & DRIVEWAY DESIGN

Image Source: Gabriel Cumming/Carla Norwood

Insensitive road building practices can lead to unsafe roads and unattractive mountainside cuts.

"I truly understand the point of the roads being too narrow for fire trucks. I know there are several (places) where fire trucks have to back up and turn and back up and turn trying to get around curves."
– Betty Morris,
Cashiers Rotary member

Mountain Driveway Best Management Practices Manual: www.npscolorado.com/MountainDrivewaysBMPs.pdf

Innovative Land Use Planning Techniques: A Handbook for Sustainable Development, Steep Slope and Ridgeline Protection: www.nh.gov/oep/programs/MRPA/conferences/documents/IIA-Fall06-ILU-SteepSlopes.pdf

Low Volume Roads Engineering - USDA Forest Service/USAID: ntl.bts.gov/lib/24000/24600/24650/Index_BMP_Field_Guide.htm

The Layman's Guide to Private Access Road Construction: www.dfr.state.nc.us/publications/laymans_guide_to_access_road.pdf

RESOURCES

The unique topography and natural assets have made western North Carolina a desirable place to live. However, roads and driveways constructed in this area make working difficult for rescue, public safety, and fire crews. As new residential developments are constructed in the mountain region, it is important to provide adequate emergency access.

TOOLS AND BEST PRACTICES

The *Low Volume Roads Engineering: Best Management Practices Field Guide* offers guidelines to ensure the roadway will offer safe passage while reducing the impacts on the surrounding environment. Recommended practices for roadway location include:

- Approach stream crossings at the least gradient possible.
- Locate roads to avoid steep slopes and provide distance between roads and bodies of water.
- Roads should be located on well-drained soils and slope so drainage will move away from the right-of-way.
- Locate roads, switchbacks, and landings on bench areas away from hillsides.
- Avoid steep terrain (over 60%) and flat terrain where drainage is difficult to control.

To ensure mountain roadway and driveway designs are safe and accessible for emergency vehicles, the Colorado Nonpoint Source Council and the New Hampshire Department of Transportation have developed suggested design parameters. Based on the research of both states local standards for design of accessible driveways and roads for emergency vehicles include:

- **Grades:** in the range of 8 to 15%;
- **Roadway Width:** 10-12 foot minimum
- **Turn-Arounds** to accommodate large vehicles; required for roads more than 300 feet long or at the end of a road
- **Radius of Switch-backs:** 30 feet minimum
- **Radius of Curvature:** 30–60 foot radius in steep terrain
- **Drainage:** 15-inch diameter culvert or designed for 10- to 25- year storm
- **Angles of intersections:** shallowest approach angle of 75 degrees; first 20–50 feet not to exceed a 6% grade.
- **Turn-outs/Pull-outs:** Every 400–600 feet

In addition, communities and developers should collaborate with emergency services and utility providers to better understand current vehicle fleet constraints and guide future purchase decisions.

5.6 ACCESS MANAGEMENT

As the commercial areas of mountain communities develop, the safety and functional integrity of arterial corridors is compromised with poor intersection spacing, frequent driveways, left turning traffic, and poor bicycle and pedestrian accessibility (resulting in unnecessary car trips). The quality of the town experience worsens with increased traffic.

TOOLS AND BEST PRACTICES

According to the Transportation Research Board's Access Management Committee, access management is a proven strategy to improve safety and preserve the functional integrity of arterial streets while promoting a street system and unified access and circulation systems for development. The result is a roadway system that functions safely and efficiently.

The following design considerations will improve access, roadway efficiency, and safety for western North Carolina communities.

- **Intersection Locations in Town Areas:** Consistent spacing of intersections enhances the ability to coordinate signals and to ensure continuous movement of traffic. In town settings where pedestrian accessibility is encouraged, ¼ mile signal spacing and 400-600 foot block spacing typically support an environment that is suitable for walking.
- **Driveway Locations:** Commercial strip type development with separate driveways for each business and driveways too close to intersections force short trips onto arterial roadways resulting in more crashes and congestion. Driveway spacing of 245-440 feet would be appropriate for speeds of less than 45 mph. On 2-lane urban roads, driveway connections could be every 125 feet.
- **Restriction of Left Turns:** Research has shown that the majority of access-related crashes involve left turns. Therefore, medians and other techniques that minimize or consolidate left turns can be effective in improving roadway safety.
- **Pedestrian Access:** Well-defined crossings are a key component to a walkable environment. Crossing a multi-lane roadway can be difficult for pedestrians. Where a multi-lane roadway crossing cannot be avoided, pedestrian refuges and other pedestrian crossing facilities should be provided to reduce the crossing distance for those on foot. Traffic signals should also be timed to accommodate pedestrian traffic.
- **Road Connectivity:** Interconnected street and circulation systems provide alternative routes for bicyclists, pedestrians, and drivers.
- **Cross-Access:** Connections between commercial parking and circulation areas and shared driveways can reduce vehicle turning movements on roadways and provide convenient access.
- **Implementation Opportunities through Development:** Opportunities to implement many of these measures described are often only available over time as properties develop or redevelop. Benefits such as density bonuses can be used as incentives to encourage property owners to incorporate driveway reductions and cross-access or side street access into their proposals.

Image Source: Kubilins Transportation Group

Lack of access control in Sylva, NC, along NC 107 results in unpredictable turning movements and dangerous conditions for motorists, pedestrians, and cyclists.

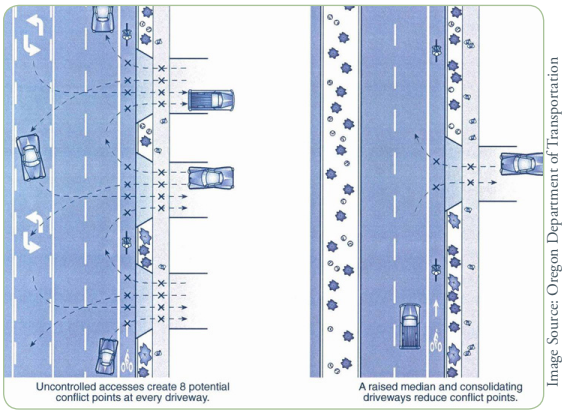


Image Source: Oregon Department of Transportation

The graphic above shows the high number of potential conflict points for pedestrians, cyclists, and motorists on an uncontrolled, 5-lane roadway with frequent driveways (left) versus a median-controlled section with fewer driveways (right).

NCDOT Access Management Info: www.ncdot.org/doh/preconstruct/traffic/Safety/TOI/AM/

Transportation Research Board, Access Management Committee: www.accessmanagement.info

Safe Access is Good for Business: www.accessmanagement.info/AM2006/PrimerWeb.pdf

RESOURCES

5.7 TRANSPORTATION OPTIONS

Image Source: City of Waterbury, CT

Paratransit is a public, pre-scheduled transit service that provides curb-to-curb transit service upon request for the elderly and disabled citizens who may not have access to personal transportation or regular transit service.

With the rising cost of gasoline and a growing aging population in the region, there is a desire for enhanced local and regional transportation options, including transit, paratransit, and ridesharing. Paratransit is a public, pre-scheduled transit service that provides curb-to-curb transit service upon request for the elderly and disabled citizens who may not have access to personal transportation or regular transit service. Ridesharing involves shared use of a car, in particular for commuting to work or school, to save costs and travel in a more efficient manner.

All counties in Region A offer daily paratransit service, rural general public, employment, and human service transportation with an additional out-of-county trip service available on a pre-arranged basis. In addition, the Ridgerunner Line, an on-demand, paratransit service is available for patrons traveling between Hayesville and Asheville (with stops in Macon and Jackson counties) for medical appointments. In addition, trips for medical needs are made daily as far away as Durham and Chapel Hill as are airport trips to Asheville and Atlanta. A vanpool to serve employees of Harrah's Hotel and Casino and other employment sites in Cherokee and along the routes is expected to begin in late 2009 from all 7 counties.

Statewide funding for paratransit is currently disbursed within the seven-county region based on population. The paratransit funds originate from the Elderly and Disabled Transportation Assistance Program, the Federal Transit Administration, and the rural general public. This funding covers all human services including dialysis transportation for the mountain region.

TOOLS AND BEST PRACTICES

Consolidation of County Transit Services: The Western Piedmont Regional Transit Authority has recently consolidated transit entities in the cities of Hickory, Newton and Conover and the counties of Catawba, Burke, Caldwell, and Alexander. The organization will become the first regional public transportation authority with consolidated urban-rural transit service in the state. Additionally, a regional inter-city bus service could help relieve pressure on the state highway system while providing a local spine of bus transportation that could link to the statewide transportation system.

Rideshare/Trip Matching Program: The development of a web-based ride matching program would have particular benefits to employees of regional employment centers and institutions, such as students and employees commuting to Western Carolina University from other cities in the region. Students and faculty/staff could post their willingness to carpool or vanpool and coordinate with colleagues to share the ride. The expansion of ride matching websites such as Sharetheridenc.org could benefit commuters in the entire seven county region who travel to other employment destinations.

Incorporation of "Transit-Ready" Principles into New Developments: By incorporating concentrated areas of density (fixed route bus service requires at least 4-6 dwelling units per acre) into new developments; arranging sites and land uses to encourage walking; and providing an

RESOURCES

North Carolina Elderly and Disabled Assistance Program:www.nctreasurer.com/LGC/compsup2007/state/DOT-16cl-2007.pdf

Share the Ride NC Website: www.sharetheridenc.org

Regionalizing Public Transportation Services, ITRE, NCSU for NCDOT: www.itre.ncsu.edu/ITREmain/research/documents/2002-11FinalReport.pdf

Western Piedmont Regional Transit Authority, Western Piedmont Council of Governments: trans.wpcog.org/programs_transit.asp

Getting Around Western NC: www.landofsky.org/getting_around/

5.8 PEDESTRIAN FACILITIES

A good quality pedestrian system can encourage walking as a viable mode of transportation and recreation in and around mountain communities. In general, pedestrians need safe, comfortable, and accessible routes. Several variables affect community walkability and need thoughtful consideration:

- Distance and travel time
- Conditions, including topography
- Safety at traffic signals and pedestrian crossings
- Availability/presence of services and amenities
- Lighting
- Attractive places to walk
- Trip purpose

TOOLS AND BEST PRACTICES

Key components of a pedestrian system include:

Strategic Planning: Strategic planning for pedestrians will include:

- Identifying projects, funding and budget and implementation timetable
- Actively encouraging the development of pedestrian facilities
- Adhering to the Americans with Disabilities Act (ADA) Design Standards

Trails and Greenways: Trails and greenways are off-road rail-trails, multi-purpose paths, and grade-separated treatments that are separate from a roadway.

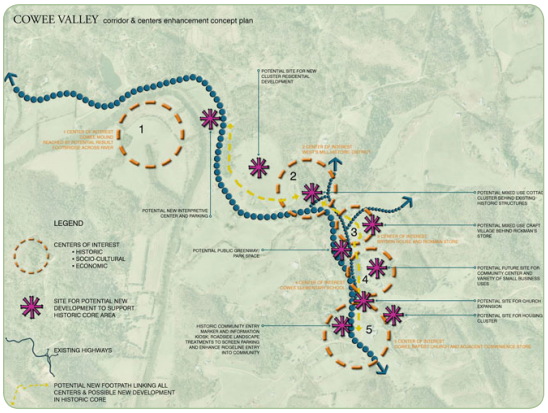
Sidewalks: Consideration should be given to selective modification of existing roadways to include sidewalks. Consideration is also needed to ensure that new local, collector, and arterial roads are designed to include pedestrian facilities. This includes providing connections between stub outs and cul-de-sacs to the road network.

Safe Crossings: Crosswalks and other pedestrian infrastructure will be particularly important in towns, villages, and corridors where many destinations exist in close proximity.

Proposed pedestrian network for Cashiers including paved walkways (magenta) and trails (orange). The circle represents 1/4 mile radius (5 minute walk) from the main intersection.

Image Source: Kubilins Transportation Group

The Village of Cashiers is in the process of signing and clearing a town-wide rustic trail system that would provide access throughout the community.



Concept for an interpretive trail along the Little Tennessee River through the West's Mills Historic District in the Cowee Valley connecting to the Cowee Mound. The trail could serve pedestrians and cyclists for recreation/tourism and transportation.

FHWA's, *A Resident's Guide for Creating Safe and Walkable Communities*: safety.fhwa.dot.gov/PED_BIKE/ped/ped_walkguide/residentsguide.pdf

NCDOT, Bicycle and Pedestrian Planning Grant Initiative: www.ncdot.org/transit/bicycle/safety/programs_initiatives/planninggrant.html

Pedestrian and Bicycle Information Center: www.walkinginfo.org/

Safe Routes to School Guide, April 2008: www.saferoutesinfo.org/guide/

RESOURCES

5.9 BIKEWAYS, TRAILS & GREENWAYS

Image Source: Franz Loewenherz

A wider travel lane allows a motorist to safely pass a bicyclist while remaining in the same lane. A "sharrow" marking indicates a shared lane.

Image Source: pedbikeimages.org/Burden

Bicycle lanes are designated by striping, signing, and pavement markings for the preferential or exclusive use by bicyclists.

Image Source: Kimley-Horn & Associates

Multi-use paths (or trails) serve cyclists and pedestrians either adjacent to or completely independent of the street system (such as a greenway along a stream corridor).

Signed bicycle routes are most appropriate on residential collector and local streets and short stretches of arterial roads as needed to maintain continuity of a suggested bicycle route.

In order to establish a functional, efficient, and usable bikeway system in the mountain region, a network of bicycle facilities is needed linking on-road bicycle lanes, shoulders, and signed routes with off-road paths, trails, and greenways. As part of this effort, several key variables for cyclists and other path users need consideration, including:

- Road safety, including intersection design and signage
- Connectivity of routes and facilities
- Directness of routes
- Attractiveness of routes and facilities
- Comfort for all types of cyclists

TOOLS AND BEST PRACTICES

A network of on-road and off-road bicycle facilities will enhance the quality of life in the mountain landscapes. A range of facility types will permit bicyclists of all types to travel safely and comfortably throughout the region.

Key components of a bicycle network should include:

- **Paths, Trails, and Greenways:** Trails and greenways include rail-trail conversions, multi-purpose paths adjacent to or parallel to roadways, and greenways along stream corridors or other natural features.
- **On-Road Bikeways:** The On-Road Bikeway System will facilitate travel connections for bicyclists, including movement between destinations. Consideration should be given to selective modification of existing roadways to include bicycle accommodations that are appropriate to traffic levels and to the type of traffic. Consideration is also needed to ensure that new local, collector, and arterial roads are designed to include bicycle facilities. An extensive on-road system of bikeways should be developed to provide interconnections to major destinations and to trail systems. Examples of suitable facilities include bicycle lanes, shoulders, signed bicycle routes, and shared roadways.

Strategies to Develop Bicycle Facilities

Strategic planning plays a vital role in the planning of a connected network of bikeways. Key aspects of a bicycle network strategic planning effort include:

- Establishing local Bicycle Facilities Committees (BFC)
- Developing local and regional bicycle plans for transportation and recreation (State funding is available to assist in this effort)
- Identifying projects, funding and budget and implementation timetables
- Establishing local programs to educate, encourage, and enforce appropriate bicycle usage among citizens, including providing places to park bicycles at destinations
- Following appropriate federal and state design guidelines and standards for bicycle facilities, including Americans with Disabilities Act (ADA) and American Association of State Highway, Transportation Officials (AASHTO) and Manual of Uniform Traffic Control Devices (MUTCD), as well as guidance from other expert sources.

PATHWAYS TO PROSPERITY: ECONOMIC IMPACT OF INVESTING IN BICYCLE FACILITIES

North Carolina Department of Transportation's Division of Bicycle and Pedestrian Transportation commissioned a study to assess the value of investment in bicycle facilities. The Institute for Transportation Research and Education (ITRE) at North Carolina State University conducted the study in the northern Outer Banks region because of its existing high levels of bicycling activity and presence of an extensive system of special bicycle facilities.

Researchers surveyed bicyclists riding on the bicycle facilities—paths and wide paved shoulders—and also obtained data from self-administered surveys of tourists at three visitors centers in the region.

Over the past ten years, an estimated $6.7 million of public funds were spent to construct off-road paths and add wide paved shoulders to roads in the region, from Corolla south to Nags Head and west to Manteo.

The economic impact study concludes that:

- Bicycling activity in the northern Outer Banks provides substantial economic benefits to the area, an estimated $60 million annually.
- The bicycle facilities in the area are an important factor for many tourists in deciding to visit the region.
- Three-fourths of study respondents indicated that more bicycle facilities should be built, and nine out of 10 surveyed believe state and federal tax dollars should be used to do it.

Excerpted and adapted from the NCDOT project website: "Pathways to Prosperity: The Economic Impact of Investments in Bicycle Facilities: A Case Study of the North Carolina Northern Outer Banks, Technical Report", *July 2004: www.ncdot.org/transit/bicycle/safety/safety_economicimpact.html*

Image Source: Richard F. Masoner (www.cyclelicio.us)

In some locations, bicycle/pedestrian paths parallel to a road or highway may be appropriate and feasible.

Image Source: www.pedbikeimages.org/Lux

On rural roads, wide shoulders like the one above can make for safer and more comfortable travel for motorists and cyclists.

Funding Sources for Pedestrian and Bicycle Planning and Implementation

The cost of constructing pedestrian and bicycle networks in the mountain region is substantial yet achievable with an appropriate funding and phasing strategy. Many bicycle and pedestrian facilities can and should be constructed in the context of other transportation projects. Potential funding sources include:

- North Carolina Department of Transportation (NCDOT) Bicycle and Pedestrian Planning Grant Initiative
- Surface Transportation Funds (through NCDOT)
- National Scenic Byways Funding (through NCDOT and/or FHWA)
- Local Funds
- Safe Routes to School Funds (through NCDOT)
- Open Space Dedication
- Developer Contributions

Pedestrian and Bicycle Information Center: www.bicyclinginfo.org/

Bicycle Facility Selection: A Comparison of Approaches: www.bicyclinginfo.org/pdf/bikeguide.pdf

On-Street Bikeways definitions: www.planning.org/puds/pdf/PUDSbikeways.pdf

NCDOT, Bicycle and Pedestrian Planning Grant Initiative: www.ncdot.org/transit/bicycle/safety/programs_initiatives/planninggrant.html

RESOURCES

6 PRESERVING LANDSCAPES & CULTURE

Image Source: Gabriel Cumming/Catia Norwood

"I was born and raised here in Graham County. The land that we live on here was bought by the Crisps in the state land sale in 1839. . .We care for each other, we bear each other's burdens—it's just a mountain lifestyle that we've always known and want to keep."

Shirley Crisp (seated, center)
also pictured Lynn Shields (left) and Martha Atwell (right)
Graham County

SUMMARY OF ISSUES

Three of the top ten issues or questions identified by participants in the Toolbox outreach effort (see Section 1) were related to preserving the visual and cultural character of the region:

1. How can mountainside and ridgetop development be done . . . in a visually sensitive way?
2. How can new development respect the character of local landscapes?

10. How can growing communities remain respectful of local cultural heritage?

The new development that has been associated with. . .in-migration. . .has brought new economic life to the region, but it has also created stresses—environmental, visual, economic and social—in the cultural landscape.

The combination of physical locations, buildings and memories that create places that resonate with historical significance are best described by the term "cultural landscapes." This term embraces history and culture, scenic beauty, architectural quality, economics, environmental management and biodiversity, patterns of kinship, neighborhood associations and community life. And though the term "visual and cultural character" is perhaps the most subjective of all land use considerations, it often evokes the strongest emotions.

Federal guidelines define cultural landscapes as a "collection of features organized in space," ranging from small-scale elements such as fountains and statues to single buildings and groups of structures to larger scale patterns of fields and forests that define the spatial character of the terrain (National Park Service). Each piece should always be viewed in relation to the whole, never in isolation.

Above all, cultural landscapes provide a record of human settlement and the attitudes of the people who live and work in a particular location. It is these patterns that are changing quickly in western North Carolina. A result the landscapes that have served as an economic and environmental resource for generations are transforming at a rapid pace.

From 1995 to 2000, 63,000 more people moved into North Carolina's Appalachian counties than left them (Brennan and Cooper, 1). The new development that has been associated with this in-migration, often second homes of people living in distant urban areas, has brought new economic life to the region, but it has also created stresses—environmental, visual, economic and social—in the existing cultural landscape, a landscape that is valued in different ways by long-time residents of the area and in-migrants.

Locally based research in western North Carolina has shown that the differences of attitudes between newcomers and existing residents are more complex than previous stereotypes would suggest, due to the impact of globalizing technologies and the Internet. In spite of the change that is occurring, this research indicates that the feeling of community in western North Carolina's rural areas remains strong and is adaptive to the transformations that are taking place (Brennan and Cooper, 16).

However, while in-migration and its associated development may be inevitable (Brennan and Cooper, 15), this pattern of change imposes long-lasting alterations to the physical landscape that are not as easily assimilated, and which can cause lasting damage to this precious resource.

Insensitive development that pays little or no attention to the physical, environmental, cultural or historic heritage of a location is harmful to the long-term prosperity and ecology of the region; such development diminishes the scenic beauty and environmental qualities that make this region so attractive and on which rests its future prosperity and economic development.

There are a variety of tools for mitigating this damage to the precious cultural assets of a community. These range from voluntary conservation easements to new zoning initiatives and prescriptive legislative designations of different kinds of historic districts and local landmarks. Additionally, a variety of planning and design methodologies can reveal the essential attributes of a cultural landscape as the precursor to inserting new development into an existing context. This wide range of voluntary and legislative tools is summarized in the pages that follow.

(Reference: Brennan, K. M. and Cooper, C. (2005, Aug) "Rural Mountain Natives and In-Migrants and the 'Cultural Divide:" www.allacademic.com/meta/p22899_index.html)

Image Source: Gabriel Cumming/Carla Norwood

"Our legends and stories… these things happened in a specific place, and we can still go there. . .That's the connection that's constantly present—places that are still here."

TJ Holland (right)
Junaluska Museum
Graham County

And though the term "visual and cultural character" is perhaps the most subjective of all land use considerations, it often evokes the strongest emotions from those who discuss it.

Downtown Waynesville today with its wide walkable sidewalks, trees canopy, and fine grained mix of shops and restaurants is revered by many for its visual character.

Image Source: Gabriel Cumming/Carla Norwood

Is this picture of Russ Avenue in Waynesville the cultural landscape of the future? In fifty years, will the Secretary of the Interior declare this corridor worthy of protection and preservation as a Historic District?

6.1 PROTECTING SCENIC RESOURCES

Image Source: Gabriel Cumming/Carla Norwood

Hub Cheeks, Farmer/County Commissioner, Clay County: "I get my strength, I guess, from looking up on those mountains . . .Let's do the best with the resources we've got. . .leave them in better shape than whenever we got them."

Image Source: Gabriel Cumming/Carla Norwood

Autumn hillsides in western North Carolina.

Mountain slopes and ridgelines are the defining elements of the landscape in western North Carolina. The goals of protecting hillsides and ridgetops are to support aesthetically pleasing conservation and development while increasing safety from landslides and erosion that can occur on mountainous terrain. This protection was the number one issue for this Tool Box effort to address, as revealed by responses to the project outreach effort. As a further indication of public support for protecting ridgelines and mountainsides, the *Western North Carolina Regional Outlook Report 2008* (Brennan, Cooper and Ha, pp. 21-2) documents that more than 70% of residents in western North Carolina favor ordinances that restrict development on ridgelines and steep slopes.

Some basic protection of ridgetops from unsuitable development is supplied by North Carolina's *1983 Mountain Ridgetop Protection Act*, passed in response to public outcry over a a highrise resort building on Sugar Top Mountain in Avery County in the late 1970s. This legislation protects ridges that are 3,000 feet elevation or higher, or ridges that are 500 feet above an adjacent valley floor. In these areas building heights are limited to 40 feet, and no building can project above the crest of a ridge more than 35 feet.

However, this legislation leaves lower elevations unregulated from development, and as a result many scenic views in the region are being scarred by inappropriate development that diminishes the natural beauty of the area. As this natural beauty is inextricably tied to the region's economic prosperity, it is therefore appropriate and necessary to consider other protection tools that marry public safety concerns about landslides and erosion with aesthetic concerns about ridgeline and viewshed conservation.

Furthermore, as the 1983 legislation provides some protection against the worst excesses of development, it is clear that even smaller homes along a ridge that breach the skyline can significantly diminish the quality of the landscape. The region is rife with incidents of forty foot tall trees cleared along a segment of a ridgeline for a home creating a "gap tooth" in the overall viewshed.

To minimize the damage to the natural landscapes that comprise western North Carolina's precious economic and environmental resource and to protect local property values, there are three broad categories of tools available: 1) Permanent Land Conservation; 2) Development Regulations; and 3)Best practices for site-sensitive development and viewshed protection (as described in Chapters 2 and 3). However, all of these tools should ideally only be used after planning at the regional or site level has been completed, as described below and further detailed in Sections 2 and 3.

An outstanding resource entitled *Mountain Ridge and Steep Slope Protection Strategies* has recently been published by the Land-of-Sky Regional Council in Asheville, NC. Additional details and tools are available on the Land-of Sky-website at www.landofsky.org.

Mountain Ridge and Steep Slope Protection Strategies: www.landofsky.org/downloads/

The U.S. Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* (www.nps.gov/history/hps/hli/landscape_guidelines/index.htm) and related *Preservation Briefs* (www.nps.gov/history/hps/TPS/briefs/brief36.htm) are the most comprehensive resource for assessing cultural landscapes.

Cultural Landscape Manager's Handbook www.nps.gov/csi/csihandbook/home.htm

RESOURCES

MAPPING TOOLS FOR SCENIC AND CUTURAL LANDSCAPES

Underlying many tools for protecting visual and cultural landscapes are geographic information system (GIS)-based mapping and analyses available from regional organizations such as the Southwestern Commission.

These "Land Suitability Analysis" tools are described in Section 2 and 3 of this document. Analysis maps can depict a range of conditions, including soil conditions, slope characteristics, floodplains, farmland quality, ridgelines, viewsheds and other key sites of historic and/or cultural importance. By overlaying these maps, preferred sites for development and cultural and/or natural conservation can be identified.

The U.S. Secretary of the Interior's *Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* and related Preservation Briefs are the most comprehensive resource for assessing cultural landscapes. These sources emphasize the importance of initial mapping and research.

These documents advocate a multi-disciplinary approach for the planning, treatment, and maintenance of cultural landscapes. The guidance notes stress the potential economic, environmental and social benefits from the preservation of cultural landscapes. The ongoing preservation and careful stewardship of cultural resources and landscapes can yield an improved quality of life for all, and, above all, a sense of place or identity for future generations and new residents.

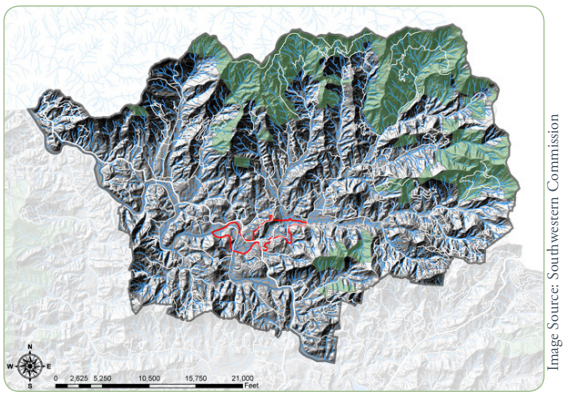


Image Source: Southwestern Commission

Three dimensional topographic map of the Cowee Township in Macon County showing ridges, valley, and hillshade. The Cowee West's Mill Historic District is shown in red.

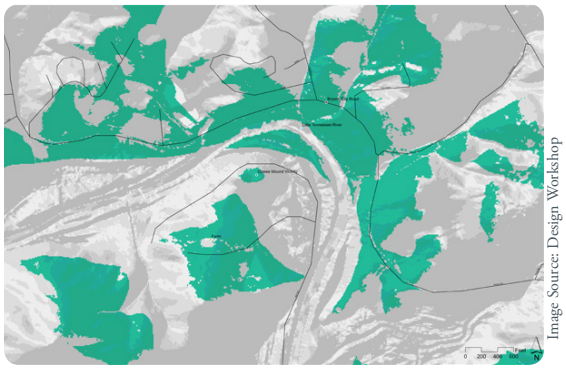


Image Source: Design Workshop

A viewshed analysis showing the areas visible from the historic Cowee Mound in the Cowee Valley. The mound is shown as the oval in the center of the image in a bend in the Little Tennesee River. The areas in green are areas visible from that point, typically areas of higher elevation that face the mound.

Viewshed Analysis

Viewshed protection is one of many cultural factors that should be considered in mapping areas for conservation or protection. A viewshed is generally defined as an area of land, water, and other environmental elements that is visible from a fixed vantage point. Viewsheds are often spaces that are readily visible from public areas such as public roadways or public parks.

Viewshed maps are created by a combination of a GIS-based techniques supplemented by empirical site data from personal observation. Initially, viewsheds are created using a software that allows the user to create a three-dimensional topographic model of the area in question using GIS data. Once the model is generated, a point or line (such as a highway) can be identified and the software can determine what is visible from the point(s) by factoring in the surrounding topography.

This type of viewshed analysis can be a useful tool in determining which areas might be classified for protection as important scenic attributes. For instance, if the analysis is intending to classify land under the category of "Open Space for Scenic Enjoyment" (one of the criteria for validating conservation easements), the GIS software would allow the designer to create a line of points along a public road. With multiple points, the program will apply a gradation, meaning that areas visible from multiple points would have a darker color compared with an area visible only from one point. This computer analysis should be supplemented by on-site validation that examines the landscape from more subjective visual criteria that prioritize views and vistas. This can be combined with local public input regarding the specific cultural value of certain landscapes and features.

Image Source: Gabriel Cumming/Carla Norwood

View of hillside development from the interstate near Waynesville, NC.

Image Source: Gabriel Cumming/Carla Norwood

Fall colors from the Blue Ridge Parkway.

NON-REGULATORY SCENIC PROTECTION MEASURES

The federal government traditionally has been at the forefront of scenic protection, but states and local governments have also enacted many important measures. Organizations at both the federal and state level tend to rely on a combination of regulation, land acquisition, and conservation easements to meet their goals.

Local governments, in contrast, generally have much less funding available for land acquisition. Instead, they tend to rely on land use regulations and strategic uses of capital improvement programs to reach their scenic protection goals. For example, a local government might create a zoning overlay district restricting tall structures in a scenic corridor, or it might withhold extension of public infrastructure (e.g., public water and sewer) into sensitive viewsheds in order to discourage development.

Non-governmental organizations involved in scenic protection, including land trusts, may collaborate to support one or more of these governmental programs or may choose to work independently with private property owners by making targeted land acquisitions.

Permanent Conservation and Scenic Easements

The first and best tool for the scenic protection of ridges and mountain sides is to place such areas under permanent conservation easements. This may be achieved either through purchase of land and/or development rights by federal, state, or local agencies, sometimes in collaboration with national organizations such as the Trust for Public Land (www.tpl.org), the Land Trust Alliance (www.lta.org), or private landowners working with one of the outstanding local land trusts in western North Carolina. One of the valid purposes of conservation easements is for scenic protection. Additional information about scenic easements and conservation easements is contained in Section 7 of this document.

Conservation easements are also used in conjunction with development to protect areas of the development as permanent open space. Usually called "conservation subdivisions," this type of development restricts building to the less sensitive areas of the site while protecting the most critical areas. In this way, a hillside development could place the ridgeline under a permanent conservation easement while developing on the lower slopes in ways that minimize visual and physical disturbance to the landscape.

For communities with development regulations already in place, amending local ordinances to require or motivate conservation subdivisions to protect ridgelines while allowing appropriate development on lower or shallower slopes is a very useful tool.

Scenic Highways

State Scenic Byway designation provides a way for communities to protect some of the most visible portions of their scenic and cultural heritage. Designation means that the highway can be at least partly protected from insensitive engineering and widening projects (for more information on this designation and its process see Section 5.4).

Scenic America: www.scenic.org/byways/state_programs

Information on the National Scenic Byway program: www.scenic.org/byways/state_programs

Information on North Carolina's Scenic Byway program: www.ncdot.org/doh/Operations/dp_chief_eng/roadside/scenic/

RESOURCES

Communities typically seek out scenic byway designation by submitting a nomination application to the NC Department of Transportation. This locally-based approach encourages communities to work closely with local and state agencies such as their state department of transportation, tourism office, and department of natural resources to preserve and promote unique local beauty and distinctive community character.

Criteria for the designation of a scenic byway are based on the road's scenic, cultural, historic, archaeological, recreational, and/or natural qualities. These elements are intrinsic features that contribute to the character of the roadway and the communities it traverses.

Communities along a proposed scenic byway should create a corridor management plan (CMP) to address local needs as well as user services. CMPs outline strategies for conserving and enhancing a byway's intrinsic qualities, as well as plans for the corridor's marketing, visitor management, and economic development. The Cowee Valley model project identified North Carolina State Highway 28 through the Cowee Community as a prime candidate for this protective designation. State Scenic Byway designation is also the first step in applying to the FHWA for National Scenic Byway designation.

DEVELOPMENT REGULATIONS FOR SCENIC PROTECTION

[This section is derived, in part, from "A Study of Ridgeline and Steep Slope Regulations in Mountain Communities Throughout the United States," prepared by Richard Houck for the Land-of-Sky Regional Council.]

The case studies below illustrate a number of regulatory tools used by communities across the country to protect ridgelines and related steep slopes from inappropriate development.

Sensitive Area Overlay Zone Regulations
Park City, Utah
The *Sensitive Area Overlay Zone Regulations* in Park City, Utah, (home of the Sundance Film Festival) have worked effectively to protect wetland areas, steep slopes, ridgelines, and vantage points. Its provisions include:

- The requirement of dedicated open space in environmentally and aesthetically sensitive areas;
- Encouraging preservation of large expanses of open space for wildlife habitat and in environmentally sensitive areas;
- Allowing a reasonable use of the property by the promotion of cluster development;
- Prohibition of development on ridgelines, steep slopes, and wetlands.

The stated intent of Park City's ordinance is to ensure that development near and along ridgelines blends with the natural contours of the land forms. It requires that the "Ridge Line Area" be retained in a natural state, and development should be sited in such a manner so as not to create a silhouette against the skyline or mountain backdrop as viewed from designated "Vantage Points."

The regulations require that 100% of the Ridge Line Area be preserved as open space, but it does allow for up to 25% of the densities that would otherwise be allowed in the Ridge Line Area to be transferred to developable land elsewhere on the site.

As incentives to promote good environmental design, the Park City authorities may grant up to a further twenty percent (20%) increase in transferrable densities if the applicant:

1. Offers to preserve open space to ensure the long-term protection of a significant environmentally or visually sensitive area in an approved manner; or
2. Provides public access for trails, as shown on the community's Trails Master Plan; or
3. Restores degraded wetlands or environmental areas on the site or makes other significant environmental improvements.

Hillside Developing District
Telluride, Colorado
The intentions of *Telluride's Hillside Developing District* are to "allow undeveloped hillside land to be used for residential and accessory purposes while preserving and enhancing the outstanding scenic vistas, open spaces, and foot trail corridors which characterize the hillside areas." Provisions include the requirements that:

> *"Residential units, roads and utilities shall be located with extreme sensitivity to site conditions and to the protection of visual and aesthetic resources within and without the district. Clustering of units, reduced visibility of development, minimization of environmental impacts and geohazard risks, construction of affordable housing, and enhancement of open areas and overall development flexibility are encouraged, particularly through the planned unit development (PUD) review process."*

These are fairly conventional development regulations that place an emphasis on development that works in harmony with the landscape rather than on landscape preservation.

Visual Impact Regulations
Ouray County, Colorado
Ouray County, CO, by contrast, has developed more innovative "Visual Impact Regulations." The purpose of these regulations is specifically tied to the protection of property values. Their stated intention is to "minimize the visual impact of both individual structures and development as a whole so that development does not compete with the existing physical environment for the viewer's attention, thereby preserving the unique physical environment that has traditionally characterized and defined the County and protecting the County's property values."

The regulations specifically protect ridgelines by requiring that "no structure shall break the skyline as seen from any viewing point within any . . . viewing window" (while allowing some very tightly controlled minor exceptions). Viewing windows are defined in the code by a complicated series of geometrical projections from specified highways.

In addition, "all structures falling within a viewing window and/or located along a ridgeline or escarpment shall be set back a minimum of fifty feet from the ridgeline or edge of escarpment"; and all public or private roads and driveway cuts and fills are also required to be "revegetated and/or reforested utilizing materials native to the disturbed area."

Hillside Development Standards & Guidelines Los Gatos, California
The *Hillside Development Standards & Guidelines* from Los Gatos, California, acknowledge that:

- *The rural, natural open space character of the hillsides is an important component of the Town's character and charm.*
- *The hillsides are geologically and environmentally sensitive areas.*
- *Development in the hillsides has the potential to affect, and be affected by, the environment. Awareness of a site's natural constraints will result*

in development that is sensitive to the environment, incorporates safeguards to maximize public safety, and minimize changes to the visual quality of the hillsides.

The code says that "property owners should have the opportunity to build, expand, or remodel. However, such changes must recognize and respect the constraints associated with hillside development." Accordingly, the code requires that "buildings shall be located in a manner that minimizes the need for grading and preserves natural features such as prominent knolls, ridgelines, ravines, natural drainage courses, vegetation, and wildlife habitats and corridors. . ." Moreover, development should avoid areas subject to severe fire danger. In order to achieve this, the regulations require that development:

1. Be set back from the crest of a hill
2. Not be located at the top of a canyon
3. Not be located on or adjacent to slopes greater than 30%
4. Not be located within densely wooded areas.

Western North Carolina Examples

Local examples of regulatory approaches to improving standards of hillside development and ridgeline protection include significant work by the City of Asheville. That city's revised hillside ordinance provides a well-organized set of regulations covering most aspects of site design and environmental protection. The Town of Boone in Watauga County, the Town of Waynesville, and Transylvania County all have local mountainside development regulations that focus on protecting viewsheds and/or ridgelines.

It bears mentioning one last time that the *Mountain Ridge and Steep Slope Protection Strategies* manual completed in June 2008 by the Land-of-Sky Regional Council is perhaps the most exhaustive evaluation and set of recommendations promulgated for the North Carolina mountains. It should be considered as a companion document to this Toolbox.

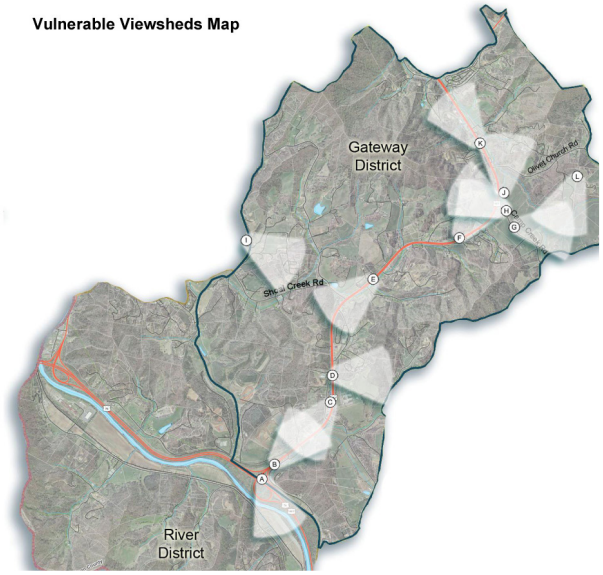


Image Source: Kimley-Horn Associates/ Jackson County, NC

The US 441 Small Area Plan for Jackson County identified vulnerable viewsheds along the US 411 corridor.

RESOURCES

Asheville, NC, *Steep Slope and Ridgetop Development Requirements*: www.ashevillenc.gov/ordinances/steep_slope_071007.pdf

A Study of Ridgeline and Steep Slope Regulations in Mountain Communities Throughout the United States, prepared by Richard Houck, for the Land-of-Sky Regional Council: www.landofsky.org/downloads/index.html

Los Gatos, CA, *Hillside Development Standards & Guidelines:* www.losgatosca.gov/documents/Community%20Development/Planning/Hillside/III-SitePlanning.pdf

Ouray County, CO, *Visual Impact Regulations:* ouraycountyco.gov/landusecode/Section%209.pdf

Park City, UT, *Sensitive Overlay Zone Regulations*: www.parkcity.org/government/codesandpolicies/title_15_c_2_21.html

Telluride, CO, *Hillside Developing District*: www.telluride-co.gov/home/index.asp?page=362

6.2 HISTORIC DISTRICTS & LANDMARKS

Pleasant Hill Church and Cemetary (c. 1929), Cowee-West's Mill National Register Historic District, Macon County. Once the worship place of a thriving African-American community.

Image Source: 180 Degree Design Studio

Zachary Tolbert House, Cashiers, NC (c. 1852). A National Register historic property, it is now maintained as a museum by the Cashiers Historical Society.

Some of the most meaningful elements of historic cultural landscapes are the buildings constructed in that location over time; they can tell vividly the story of the origins, growth and sometimes decline of urban and rural communities. Besides being the repository of historical and community memory, historic clusters of buildings can also function as an engine for economic development. They can often stimulate a profitable growth in heritage tourism to support the local economy.

To protect such groups of buildings and individual landmarks, there are two distinct types of historic districts:

1. The National Register of Historic Places, a federal program administered by the North Carolina Department of Cultural Resources
2. Local historic or preservation districts created by individual towns or counties in accordance with North Carolina state enabling legislation General Statute (General Statutes 160A-400.1-400.14)

The information below is largely derived from the resources on the North Carolina State Historic Preservation Office, Department of Cultural Resources website (www.hpo.dcr.state.nc.us).

THE NATIONAL REGISTER OF HISTORIC PLACES

The National Register, established in 1966, is the nation's official list of buildings, structures, objects, sites, and districts worthy of preservation for their significance in American history, architecture, archaeology, and culture. The Cowee-West's Mill Historic District in the Cowee Township of Macon County is a good example of this designation.

The listing of a property in the National Register places no obligation or restriction on a private owner using private resources to maintain or alter the property, unless the owner undertakes work that qualifies for federal and state income tax credits. In those cases, building work has to conform to federal preservation and rehabilitation standards.

Tax Credit Incentives

A privately owned building that is listed in the National Register or is a contributing building in a National Register historic district may be eligible for a 20% federal income investment tax credit claimed against the costs of a qualifying rehabilitation of the building. North Carolina tax law provides a 20% "piggyback" credit for such projects. Federal and State credits apply only to income-producing, depreciable properties, including residential rental properties. Federal tax credits do not apply to owner-occupied residential properties.

Additional North Carolina tax credits introduced in 1998 provide a 30% credit for certified rehabilitations of non-income-producing historic buildings, including private residences. The work must meet a $25,000 investment threshold and must comply with the same rehabilitation standards as income-producing projects.

In addition to these credits, the Tax Treatment Extension Act of 1980 provides federal tax deductions for charitable contributions of easements in historically significant properties for conservation purposes.

RESOURCES

North Carolina State Historic Preservation Office, Department of Cultural Resources: www.hpo.dcr.state.nc.us

The National Register of Historic Places www.hpo.dcr.state.nc.us/nrhome.htm

Local historic or preservation districts www.hpo.dcr.state.nc.us/localdes.htm

The Secretary of the Interior's Standards for the Treatment of Historic Properties, with *Guidelines for Preserving, Rehabilitating, Restoring and Reconstructing Historic Buildings:* www.nps.gov/history/hps/tps/standguide/index.htm

Protection in Public Planning
National Register listing does not provide absolute protection from government actions that may affect the property, but it does mean that if a federal or state project (such as highway construction and Community Development Block Grant projects) is in conflict with the preservation of a National Register property, the North Carolina Historic Preservation Office will negotiate with the responsible agency in an effort to eliminate or minimize the effect on the historic property. The Office's recommendations are advisory only.

Owner Consent
A privately owned property may not be listed in the National Register over the objection of its owner or the majority of its owners. A district may not be listed in the National Register over the objection of a majority of owners of private property within the proposed district.

LOCAL HISTORIC DISTRICTS AND LANDMARKS

This program of local designations is an option available to local governments under North Carolina enabling legislation (G.S. 160A-400). Properties and districts listed in the National Register sometimes also receive local designation in jurisdictions where local preservation commissions have been established according to the state enabling legislation. However, there is no direct correlation between National Register listing and local designation.

Local Historic or Preservation Districts
State legislation enables municipalities to create historic preservation commissions and to designate local historic districts and landmarks. In the statute, the General Assembly recognized the economic importance of historic properties, noting that: "The historical heritage of our State is one of our most valued and important assets. The conservation and preservation of historic districts and landmarks stabilize and increase property values in their areas and strengthen the overall economy of the State."

Local designation is conferred by a local government following a recommendation by a preservation commission created by the county or town in accordance with State law. This preservation commission can then exercise design review over designated districts and properties. Historic district designation may be either a type of overlay or special use zoning that applies to entire neighborhoods or other areas that include many historic properties. The zoning provides controls on the appearance of existing and proposed buildings, and in this way the heritage of the community can be protected from unsympathetic or damaging changes to the built character of a community. Local historic districts have no tax advantages, but they do enjoy more protection under law from any threats that may compromise their historic integrity.

Although there are relatively few local historic districts in the mountain region of North Carolina, there are more than 2,300 in the United States. Municipal preservation commissions exist in Asheville and Black Mountain in Buncombe County, in Clyde and Waynesville in Haywood County, and in Hendersonville in Henderson County. County preservation commissions also oversee historic sites in Transylvania, McDowell, and Buncombe Counties.

> *"The historical heritage of our State is one of our most valued and important assets. The conservation and preservation of historic districts and landmarks stabilize and increase property values in their areas and strengthen the overall economy of the State." –NC General Assembly*

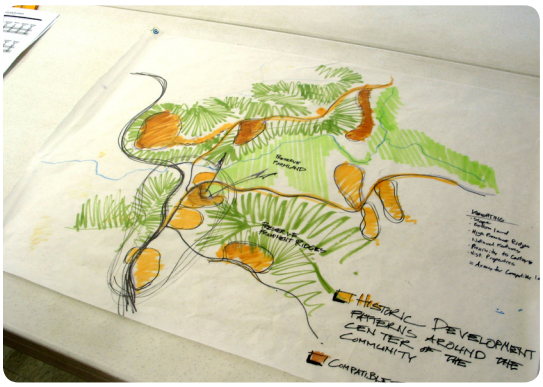
Local historic district designation and administration can only occur at the request of a local community. Such designation is often controversial as it imposes legal requirements for design standards on all property owners within the local district. However, in almost all cases, the level of protection offered to buildings within a local historic district translates into higher property values as the market desirability of the neighborhood increases.

Historic Buildings and Landmarks
In locations where there is not a critical mass of buildings to qualify for historic district designation, it is still possible to protect individual buildings through designation as a local landmark and render the same protections as are enjoyed by historic districts.

Local landmark designations may apply to individual buildings, structures, sites, areas, or objects which are studied by the commission and judged to have historical, architectural, archaeological, or cultural value.

6.3 LAND DEVELOPMENT IN HISTORIC LANDSCAPES

Stage 1: Mapping historic patterns of settlement and cultural landscapes with members of the Cowee Valley community.



Stage 1: Analysis diagram of historic settlement patterns in the Cowee Valley prepared at the charrette.

The Cultural Landscape Manager's Handbook includes eight case studies of the integrated management of cultural, natural, and scenic resources in cultural landscapes. These case studies identify appropriate methodologies for study, analysis and the management of cultural landscapes:
www.nps.gov/csi/csihandbook/home.htm

National Park Service guidelines for mapping cultural landscapes:
www.nps.gov/history/hps/hli/landscape_guidelines/organization.htm and
www.nps.gov/history/hps/TPS/briefs/brief36.htm

RESOURCES

This tool outlines an appropriate methodology for integrating new development into fragile and/or scenic landscapes rich in cultural history and visual beauty. The methodology describes five stages of work covering a full spectrum of planning and design activities. The Cowee Valley model project from Macon County provides a good illustration of ways to preserve and enhance the historic and cultural landscape of a community while encouraging appropriate new development.

1 Analyze The Physical and Historic Patterns of Settlement and Landscape

This mapping and analysis exercise allows community members, planners, designers, and developers to understand more clearly the human and physical context in which they live and work. This analysis creates a useful record of local history and culture as it relates to the landscape.

In places where new development is proposed, the recording and analysis of the physical and social networks can provide the opportunity for new development to focus on locations that reconnect with the historic roots of settlement in a community while preserving sites that have special cultural significance.

Where new buildings are planned in a previously undeveloped landscape, it is even more important to study carefully the environmental, ecological, and visual attributes of the site and to harmonize new development with the landscape.

Outreach into the community through meetings with large-scale maps of the area can unearth a large amount of local knowledge that may not otherwise be easily accessible. This information can be plotted on the maps to create a physical record of the relationships among history, culture, family settlement, and landscape. Such information should be supplemented by research from a variety of historical sources such as published local and regional history texts, Inventory / Nomination Forms for the National Register of Historic Places, and academic papers.

Sites should be evaluated with reference to the common sense development principles handed down by earlier generations, namely: avoid mountaintops, steep slopes and floodplain bottom land; and build on the middle zone near existing infrastructure, if possible. These traditional principles can be made more site specific by using GIS-based Land Suitability Analysis tools described in Sections 2 and 3 of this report. These analysis maps depict a range of conditions, including soil types, slope characteristics, floodplains, farmland quality, and viewsheds in key areas of historic and/or cultural importance. By overlaying these maps, preferred sites for development and/or conservation can be identified.

This computer-based analysis should be supplemented with detailed visual analyses to identify appropriate sites within the community. New development should be minimally invasive to the historic and cultural landscape and viewsheds. Sites that meet this criterion may be prioritized for new "infill" development

2 Develop a "concept plan" for conservation, development, and transportation from this series of analyses.

This concept plan identifies locations where new development may be suitable and others where it may not. Additionally, it can organize any changes to the patterns of transportation so that they fit appropriately with the land use. In this way, not only may the physical heritage be protected, but the fabric of kinship and connections between neighbors and community life may be more easily maintained.

Reinforcing this historic pattern provides residents and newcomers to the community the opportunity to both celebrate the community's historic heritage and to relate new development sensitively to the landscape. In concert with the analysis and concept plan, develop a strong mix of potential new uses, programming, and services catering to residents, visitors, and entrepreneurs as appropriate.

Stage 2: Concept plan for conservation and sensitive infill in the heart of the Cowee-West's Mill Historic District.

3 Design illustrative projects.

Planning and design concepts can be tested under real site conditions. In terms of the arrangement of groups of new buildings, traditional ways of relating structures to the land provides useful guidance. Arranging new buildings in ways that make the most of site views or take advantage of landscape screening is generally better than rigid formal layouts. Such informal arrangements can also take their inspiration from groups of traditional farm building clusters or other rural development patterns.

Stage 3: Illustrative of new development interspersed with existing buildings in the Cowee-West's Mills Historic District. Building in the foreground is the C.N. West store (c. 1927).

4 Define appropriate architectural character and vocabulary.

As noted above, defining architectural character and a vocabulary for new buildings means being sympathetic to the local vernacular styles, although in certain carefully selected instances modern aesthetics can be appropriate. For new buildings constructed in the context of historic structures and landscapes, it is always advisable to study the vernacular styles and precedents, particularly in relation to their massing and proportions. These can then form the basis of contemporary buildings that provide for modern amenities and lifestyles while fitting into the built and natural landscape.

In the mountains, for example, the predominant historical styles include relatively steep roof pitches fit over simply shaped volumes with vertical proportions predominant over horizontal configurations. In the context of a community's historic architectural heritage, more recent ranch-style homes, with their low-slung horizontal proportions, strike a discordant note in the landscape. The building traditions of the region could be more easily honored and reinforced by closer attention to the lessons provided by the older structures in the landscape.

Stage 4: Architectural styles and forms consistent with the historic buildings in the Cowee Valley area.

5 Develop and Administer Design Standards or Guidelines (optional)

Design standards and guidelines come in several forms and have a variety of uses. They may be used by master developers to regulate the work of different homebuilders and maintain consistent quality across different areas and stages of development. Alternatively, they may be developed by local government as part of a new regulatory framework. In either instance, they may be advisory or prescriptive, depending on appropriate circumstances. See Section 2 for additional information on Design Guidelines.

6.4 LIGHTING CONTROL & DARK SKIES

Image Source: Gabriel Cumming/Carla Norwood

"Back in the day, when I moved [to] the mountains, you didn't see many lights on [the mountains]. Now, it looks like a Christmas tree!"

Adrian Fernandez
Restaurant owner
Haywood County

Effective "Dark Sky" lighting: Village Square of Sapphire Valley. First Place for Lighting Design, International Dark Skies Association, 2006; Designer: Shirley Insoft, Bald Rock, NC; Lighting Manufacturer: Steel Partners, Tuscon, AZ.

One of the main attractions of living in rural areas for many people is the absence of urban paraphernalia; and, after dark, the absence of city lights is a major factor for the enjoyment of the night sky. As development encroaches on previously natural areas, the incidence of light pollution becomes an important issue. Adequate lighting is essential for security and public safety, but the careful design, selection, and placement of lighting fixtures can minimize the spread of lighting into previously dark landscapes.

It is important to realize that "dark skies" does not mean dark ground. Rather it means adequate yet subtle lighting to illuminate public spaces for safety by avoiding typical bright, glaring light fixtures and their associated pockets of shadow that can shelter potential assailants. An informative article by Peter Strasser, a landscape architect, suggests many effective techniques and ideas in this regard. See the Resources box below.

The appropriate selection of light fixtures and their correct placement in public spaces can do much to promote safety as well as a desirable ambience. The International Dark-Sky Association has produced a comprehensive *Outdoor Lighting Code Handbook* that contains much "best practice" advice.

In many mountain communities, the effect of light pollution can be experienced by residents living on upper slopes looking down to village centers below. In cases such as these, (for example, Cashiers in Jackson County) excessive light spill can be avoided by the selection of appropriate fixtures and shielding devices for luminaires. Commercial lighting should be
designed by a certifed and trained lighting professional.

On private property, it is important to avoid the "sun on a stick" phenomenon of excessively bright lighting raised high and glaring into neighbors' property, thus ruining their view of the nighttime landscape. Security and aesthetic concerns can be well addressed by careful selection and placement of appropriate fixtures. On private property and in terms of voluntary action, dark sky goals can best be met by a program of community outreach and education and community covenants.

A "dark sky" lighting code can be very effective, but the administration and enforcement of such a code can impose burdens on local governments in terms of staff costs and training. The City of Asheville is currently developing a dark sky ordinance and Dr. Daniel Caton at Appalachian State University is working with communities and organizations in western North Carolina on dark sky ordinances and covenants.

RESOURCES

Dark Sky Lighting: Simple but Effective by Peter Strasser, International Dark-Sky Association: www.landscapeonline.com/research/article/10521

The International Dark-Sky Association's comprehensive *Outdoor Lighting Code Handbook*: www.darksky.org/

North Carolina Section of the International Dark-Sky Association www.ncdarksky.org/

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7 OPEN SPACE CONSERVATION

Image Source: Gabriel Cumming/Carla Norwood

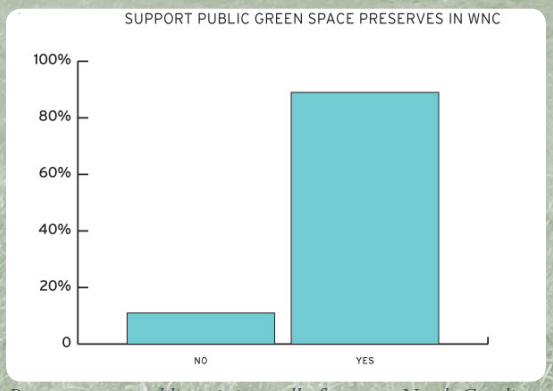
"I would still like to be able to look out my window and see unspoiled mountains… beautiful layers of mountains. I'd like to be able to drive in any direction and see open fields, beautiful streams."

Evelyn Owens
Realtor
Macon County

Image Source: Gabriel Cumming/Carla Norwood

"You really get a great connection, especially the outdoors, when you're a young kid being able to hike and fish… and that connection, I think it's part of our heritage. It's part of what has molded people into who they are and what they are today and being able to protect… this wonderful, beautiful place that God's given us."

Heath Shuler
U.S. Congress
Haywood County



Responses to a public opinion poll of western North Carolina residents indicate 89% support creation of public green spaces (Source: Western North Carolina Regional Outlook Report 2008, *www.ief.wcu.edu).*

Nestled within some of the oldest mountains on earth, southwestern North Carolina possesses a unique—yet threatened—natural and cultural heritage.

Whether one considers the ancient and still-visible Cherokee fish traps along the upper Little Tennessee River, the virgin timber of the Joyce Kilmer Memorial Forest, the high-quality waters of Panthertown Creek, or the inter-generational mountain farms of Upper Crabtree, the diversity and ecological integrity of these southern Appalachian highlands is second to none within the earth's temperate zones.

Notwithstanding these superlatives, the ownership and management patterns of the region's land and water resources represent a dichotomy of extremes.

From the conservation perspective, more than 50% of this region is already in some form of permanent protection—e.g., the Great Smoky Mountains National Park, the Nantahala and Pisgah National Forests and two national wilderness areas. Yet the area's private land and water currently enjoy very little protection. Local land use controls (zoning, subdivision rules, etc.) are practically non-existent outside the region's 16 incorporated towns.

Pressures to develop seem insatiable. A full 20% of the US population and four of the five fastest growing cities in the US are within a five-hour drive. The fast sprawling metropolis of Atlanta is only two hours south. Unplanned growth threatens to overwhelm the region. Poor air quality and huge stream sediment loads are but two direct impacts. The spiraling financial costs of residential and commercial sprawl (public safety, solid waste, water and sewer, new schools) are growing exponentially, placing extreme pressures on local government budgets.

Public resistance has pushed back most growth management measures. County-driven efforts have mostly failed, as have state-sponsored initiatives.

Since the turn of the new millennium, however, there has been a perceptible shift in public sentiment in the southern Blue Ridge around [the issue of land and water conservation]. People of all persuasions are publicly lamenting the loss of rural community. We are struggling with our fractured connections to the land . . . Our citizens are calling our leaders to stem the conversion to development of our few remaining large private land tracts.

Excerpted and adapted from the Southwestern Commission's webpage on Land and Water Conservation (www.regiona.org/econdev/land-water-conservation.htm)

7.1 PLANNING FOR OPEN SPACE

Open space conservation begins with a plan. The starting point of any community land planning project ought to be an indication of the areas that should be preserved as natural areas, areas for agriculture, and/or passive or active recreation space. These could be areas that a town, a county, the state or a private conservation organization (or a combination thereof) would target for protection or that a local government would negotiate with developers to preserve as new development occurs.

Such open space planning should include plans for future greenways or linear parks that could serve both to protect natural areas along streams and floodways and provide important non-motorized transportation linkages.

Recently, this planning approach was used in Jackson County's *US 441 Small Area Plan*. The map at right represents the basic "green infrastructure" of the planning area providing critical habitat for wildlife; protection of water quality and protection from flooding and erosion; and needed recreation, agriculture, and greenspace for the human habitat. The areas in dark green on the map represent lands that are already non-developable, including parks, floodplain, and stream buffers.

The areas in lighter green represent lands that are prime candidates for moving into permanent protection through various open space acquisition/protection measures. These areas may be legally developable based on current federal, state, and local regulations. However, based on factors of environmental quality, agricultural or scenic value, and developability/urban service factors (difficulty of providing sewer and water service and roadways, for example), these areas should be lightly developed or left undeveloped, remaining in a rural or natural state. In the case of the US 441 plan area, these lands consist of existing agriculture, mature tree stands, and areas with slopes greater than 30%.

These same concepts can be applied at the scale of an individual development or a whole region. Ultimately, such planning would get to the detail of small parks, playgrounds, and open spaces at the community level.

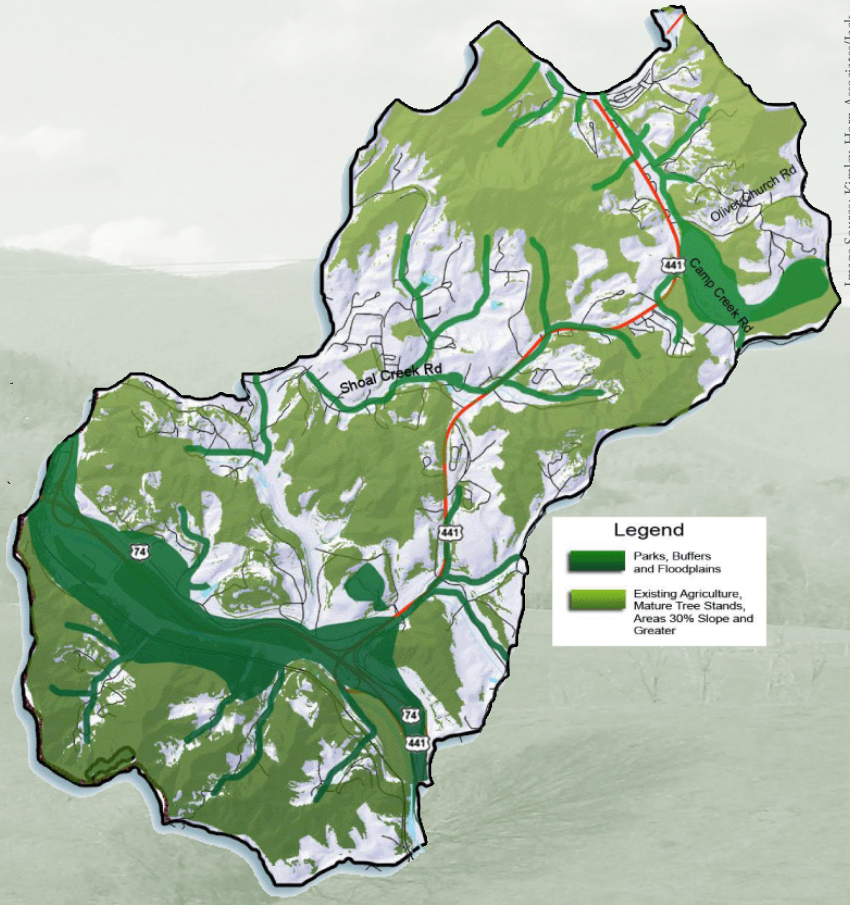


Image Source: Kimley-Horn Associates/Jackson County, NC

Green Infrastructure plan for the US 441 Small Area Plan in Jackson County identifying areas that are already in permanent protection (dark green; including floodplains, parks, and stream buffers) and areas that should be targeted for conservation (light green; including existing agricultural lands, mature tree stands, and steep slopes).

US 441 Small Area Plan: planning.jacksonnc.org

Growing with Green in Our Minds: Strategies for Land Conservation in Jackson County: planning.jacksonnc.org

Open Space Planning in North Carolina: www.onencnaturally.org/pages/int/ncint.html

RESOURCES

7.2 CONSERVATION EASEMENTS

Image Source: Southwinds/ R. Preston/LTLT.

The Little Tennessee River in northern Macon County. Many acres have been placed under conservation easements in this area which is rich in natural and cultural resources.

PERMANENT CONSERVATION EASEMENTS

One method of open space conservation is for land to be purchased for public recreation and preservation by federal or state agencies, such as the U.S. Forest Service. However, this possibility applies only to a small proportion of land in America, and other important ecological or scenic land can be best protected by being placed under "permanent conservation easements" by the property owner, most likely in collaboration with a local land trust.

To understand an easement, let us first define "ownership" of a piece of property. This may best be described as a "bundle of rights," which includes the right to occupy, use, lease, sell, and develop the land. An easement thus involves the exchange of one or more of these rights from the landowner to the holder (someone who does not own the land). An easement permits the holder certain rights regarding the land for specified purposes while the ownership of the land remains with the private property owner.

An easement is either voluntarily sold or donated by the landowner and constitutes a legally binding agreement that prohibits certain types of development (residential or commercial) from taking place on the land while protecting its underlying conservation value. Easements are drawn up as permanent deeds and are recorded with the county Register of Deeds. Easements correlate with the title of the land in perpetuity or for a specified period of time, so present and future owners of the land will be required to respect the terms of the easement.

Typically, the landowner conveys the easement to a qualified organization such as a local land trust, local government agency, or other non-profit organization designed to hold it as a long-term stewardship responsibility and guarantee that the terms of the easement will be respected. (An example of such an organization is the Land Trust for the Little Tennessee in Macon County.) The landowner retains ownership of the property, with the rights to sell the land or pass it along to his or her heirs.

Since the monitoring and maintenance of easements require personnel inputs in perpetuity, easement donors may be required to provide financial support for the easement if it is held by a non-profit organization. Designating both a government agency and a non-profit or land trust as co-holders of the easement is an alternative selected in many easements and may be required in certain public programs wherein the easements are purchased by a government preservation program or organization.

Whether the easement holder is a public or non-profit organization, the holder has the responsibility to enforce the requirements stipulated in the easement. This responsibility generally includes:

1. Establishing baseline documentation through ensuring that the language of the easement is clear and enforceable; and developing maps, property descriptions, and baseline documentation of the property's characteristics.
2. Monitoring the use of the land on a regular basis. This may require

personal visits to the property to ensure that easement restrictions are being upheld.
3. Providing information and background data regarding the easement to new or prospective property owners.
4. Establishing a review and approval process for land activities stipulated in the easement.
5. Enforcing the restrictions of the easement through the legal system if necessary.
6. Maintaining property/easement related records.

If an easement is granted in perpetuity as a charitable gift, some federal income and estate tax advantages usually accrue. These tax savings may be substantial and are often cited as a major factor in landowners' decisions to donate easements. The 1997 federal tax law specifies estate easement donation options for farms within 25 miles of a metropolitan area; however, the Economic Growth and Tax Relief Reconciliation Act of 2001 expanded an estate tax incentive for landowners to grant conservation easements by removing the geographic eligibility requirements. Property tax benefits are state and locally determined and may vary. The easement may also lower or eliminate federal estate taxes and state inheritance taxes after the death of a landowner.

Federal regulations regarding tax benefits from conservation easements require that conservation values be associated with the donation. The four values are:

1. Wildlife habitat
2. Open space
3. Scenic easements, and
4. Agriculture.

Easements donated for tax deductions must also fall within five categories outlined by the Internal Revenue Code:

1. Public Recreation and/or Education
2. Significant Natural Habitat
3. Open Space for Scenic Enjoyment
4. Open Space pursuant to local governmental policy (may include farmland and forest land), and
5. Historic Preservation.

Image Source: Kimley-Horn Associates/Jackson County, NC

The US 441 Small Area Plan for Jackson County identifies areas that should be targeted for conservation, including steep slopes (over 30%), agricultural lands, and mature tree stands.

2008 Farm Conservation Tax Update: farmlandinfo.org/documents/37116/2008_Conservation_Tax_Update.pdf

Agricultural Conservation Easements Fact Sheet: farmlandinfo.org//documents/27762/ACE_06-2008.pdf

Conservation Easements Fact Sheet: ohioline.osu.edu/cd-fact/1261.html

Conservation Easements: attra.ncat.org/attra-pub/PDF/coneasements.pdf

"Conservation Easements" by the Land Trust for the Little Tennessee: www.ltlt.org/easements.html

Conservation Agreements: www.ctnc.org/5easement.htm

NC Conservation Tax Credit: www.openspaceprotection.org/tax_nc.htm

Protecting Your Farm with a Conservation Easement: ctnc.org/downloads/factsheet1.4c.web21.pdf

The Southwestern Commission: Land and Water Conservation: www.regiona.org/econdev/land-water-conservation.htm

RESOURCES

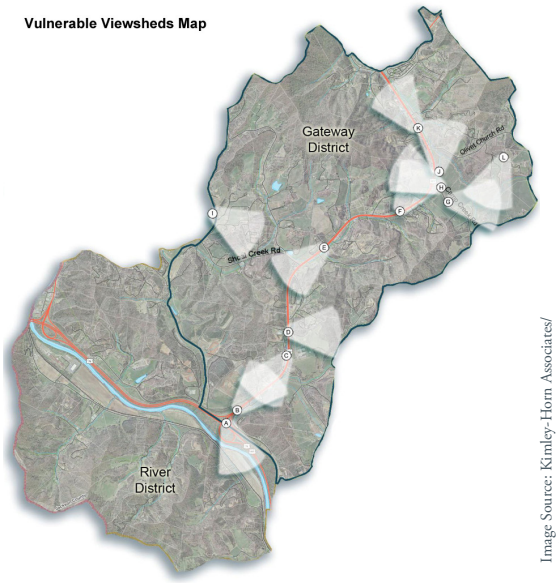


Image Source: Kimley-Horn Associates/ Jackson County, NC

Image Source: Kimley-Horn Associates/ Jackson County, NC

The US 441 Small Area Plan for Jackson County identified vulnerable viewsheds (top map) along the US 411 corridor. The photograph below shows the view from the roadway from one of the points on the map.

SCENIC EASEMENTS

When a conservation easement includes the primary goal of preserving desirable views of an area, it is said to have a scenic conservation purpose. If preservation of scenic resources is the sole purpose of the conservation easement, it may be referred to as a scenic conservation easement or simply a scenic easement. Scenic easements are one tool among many used by both government and non-governmental organizations to protect the visual environment.

The precise title and scope, however, can vary depending on the authorizing law of the state in which it is created and the relevance of any particular resource protection program. Regardless of title, the federal *Uniform Conservation Easement Act* expressly allows conservation easements that retain or protect natural, scenic, or open-space values of real property. As of 2000, the laws of at least 24 states, including NC, expressly allowed conservation easements that protected scenic values.

Scenic protection is a popular conservation goal in and of itself. The goal of scenic protection, however, often overlaps with other popular conservation goals such as protection of open space, wildlife habitat, forests, or wetlands. Given the overlap, many conservation easements are drafted not as single-purpose scenic easements but as mixed-purpose easements. This approach has the benefit of ensuring that if a conservation easement fails to qualify for scenic purposes under the Internal Revenue Service's definition, it can still be supported under the definition of another permitted conservation value.

There are drawbacks to creating a mixed-purpose conservation easement when a sole-purpose scenic easement would suffice. Mixed-purpose easements are often more complex and difficult to understand, and the tendency to list every possible applicable value can result in little more than a litany of standard conservation values. To avoid complications, it may be advisable to rely on the simplicity of a single-purpose scenic easement when there is a sole or primary value the landowner seeks to protect.

Conservation easements are also used in conjunction with development to designate areas as permanent open space. Usually called "conservation subdivisions," this type of development design restricts building to the less sensitive areas of the site while protecting the most critical areas. In this way, a hillside development could place the ridgeline under a permanent conservation easement while permitting development on the lower slopes in ways that minimized visual and physical disturbance to the landscape. For communities with zoning in place, amending the zoning ordinance to require or incentivize conservation subdivisions to protect ridgelines while allowing appropriate development on lower or shallower slopes is a very useful tool and is described further in Section 3.

Scenic America: What is a Scenic Easement?: www.scenic.org/easements

Acquisition of Scenic Easements using NCDOT Enhancements funds: www.ncdot.org/planning/development/enhancement/easement/

RESOURCES

LAND TRUSTS

Land trusts are local, regional, statewide, or national organizations that are established to protect land and its resources. They may also be referred to as conservancies, foundations, or associations. Their main purpose is to protect land that has natural, recreational, scenic, historic, or productive value. They are the fastest growing arm of the conservation movement today, with approximately 1,200 established and 50 new ones being formed every year in the United States.

Land trusts are different from other conservation or preservation organizations by means of their direct involvement in land transactions. They initiate, implement, and monitor land protection devices for individual pieces of property or for larger land areas, depending on the trust's specific goals. Sometimes their land protection efforts are combined with other conservation organizations, but their major objective is the preservation of the land itself so that it may continue to be a resource for future generations. Land trusts often are formed to protect particular land related resources: forests, farmland, open space, wetlands, or historic districts.

Land trusts protect land through several tools including: conservation easements, acquisition of land through direct purchase or bargain sale, land donation, life estate plans, and limited development strategies. Some land trusts own land outright and are responsible for its preservation and management while others own no land, but are primarily involved in monitoring easement restrictions. Land trusts also provide technical assistance to landowners deliberating on land preservation options as well as planning and educational services for local communities and the general public.

A land trust is usually organized as a private, non-profit, incorporated organization. This enables the land trust to hold titles to real estate and to accept charitable donations. The private, non-profit land trust has the advantages of prompt response time, fewer regulatory/statutory restraints, confidentiality, a tax exempt status, and professional stewardship services. In some states, including North Carolina, public agencies can perform a similar function as private land trusts; for example, the state of NC holds the conservation easement to the historic Cherokee Cowee Mound in Macon County. The advantages of the public agency include less time and paperwork to get the organization started and a greater likelihood that it will continue to exist to serve its function in perpetuity.

Sometimes publicly supported land preservation programs require that both a private, non-profit land trust and a public local or state agency hold conservation easements to provide maximum protection for preservation strategies.

Land trusts are usually started by a group of citizens in a community where an interest in the preservation of land has emerged as an issue with local significance. Technical help is available from several national land conservation organizations including: the Land Trust Alliance, the Nature Conservancy, American Farmland Trust, and the Trust for Public Land. In many states, a statewide land trust network or organization is available to provide continuing advice and support to the emerging land trust.

Community organizers must recognize that they are establishing an organization that is designed to function in perpetuity, thus the legal and organizational structure should be formed carefully and will require a great deal of volunteer time. Most land trusts are funded by membership dues, fundraisers, private contributions, grants, donations from businesses and foundations, consulting fees, and contracting their services to other agencies.

This information is adapted from Ohio State University's "Extension Fact Sheet /Land Trusts," CDFS 1262-98, Land Use Series, by Peggy Schear and Thomas W. Blaine, available at ohioline.osu.edu/cd-fact/1262.html

LAND TRUST RESOURCES

Conservation Trust for North Carolina: www.ctnc.org

The Nature Conservancy: www.tnc.org

American Farmland Trust: www.farmland.org

Land Trust Alliance: www.lta.org

Trust for Public Land: www.tpl.org

Land Trust for the Little Tennessee: www.ltlt.org

7.3 PURCHASE OF DEVELOPMENT RIGHTS

Image Source: Land Trust for the Little Tennessee

This farm in northern Macon County was preserved using Purchase of Development Rights by the Land Trust for the Little Tennessee.

In many ways Purchase of Development Rights (PDR) is the ultimate conservation tool for farmland or open space preservation, but the most expensive for public or non-profit agencies. Farmers or other landowners voluntarily sell conservation easements that limit the future land use to agricultural purposes to either a government agency or a private conservation organization. Farmers receive in cash the difference between the value of the land for agriculture and its value calculated for its "highest and best use," usually commercial and/or residential development.

PDR is a voluntary program where a land trust or government agency makes an offer to a landowner to buy the development rights on the parcel. The landowner is free to turn down the offer or to try to negotiate a higher price. Once an agreement is made, a permanent deed restriction is placed on the property which restricts the type of activities that may take place on the land in perpetuity. In this way, a legally binding guarantee is achieved to ensure that the parcel will remain agricultural or as open (green) space forever. This is because the agency involved retires the development rights upon purchase. The deed restriction may also be referred to as a conservation easement or, since most PDR programs are designed to preserve agricultural use, an agricultural conservation easement. As a result, PDR programs are occasionally called PACE programs (Purchase of Agricultural Conservation Easements). In all such instances, the purchase of development rights provides landowners with liquid capital that can enhance the economic viability of farming and help maintain family tenure on the land. These programs also help farmers share some of the costs of protecting agricultural land with communities that benefit from that preservation.

The value of the development rights is a matter of detailed real estate appraisal and market demand, but the principle can be illustrated as follows: To obtain a fair market value for land that generates a net income of $100 per acre per year in agriculture, that annual income flow is divided by the interest rate, say 5%. This procedure, called income capitalization, yields a value of $2,000 per acre in this example. Now suppose that this parcel comes under development pressure as a place to build housing or some type of retail establishment. A developer may be willing to pay $5,000 an acre for it. In this case the development value of the parcel would be $3,000 per acre, simply the difference between the overall market value and the agricultural value.

If the agency in charge of operating the PDR program makes an offer of $3,000 an acre to the landowner, then that landowner has the opportunity to realize the economic benefits accrued from the development potential of the land, while having the ability to keep the land in agricultural use. At any time after selling the development rights, the landowner may sell the property itself, lease it, or pass it on to heirs with the deed restriction attached.

This is a significant change from the situation that farmers usually face as being "cash poor but land rich" and limited to the option of selling the land for development versus owning a valuable piece of property while realizing none of the financial benefits.

RESOURCES

Ohio State University PDR Fact Sheet: ohioline.osu.edu/cd-fact/1263.html

Purchase of Agricultural Conservation Easements factsheet: farmlandinfo.org//documents/27751/PACE_2006.pdf

Purchase of Agricultural Conservation Easements, Sources of Funding factsheet: farmlandinfo.org//documents/27750/PACE_Sources_of_Funding_06-11.pdf

NC Agricultural Development and Farmland Preservation Trust Fund: www.ncadfp.org/index.htm

Programs that provide tax breaks for farmers, such as current agricultural use valuation, have been in place for years. They have not, however, been able by themselves to keep the land, particularly at the rural-urban fringe, from being converted from agricultural to nonagricultural uses. This is because the tax breaks received by the landowner may be small compared to the price differentials between the development and agricultural land use values.

PDR has several advantages over these other policies. First, since it is completely voluntary, no landowner is coerced into giving up or selling the land or the development rights. Second, it involves a permanent agreement that guarantees that the deed restriction will apply in perpetuity.

Another benefit of PDR is that it makes it much easier for a farmer to pass the farm on to an heir interested in continuing to farm. Once the development rights have been separated from the land, the value of the parcel typically declines to its agricultural value. This generally has an enormous effect on reducing the inheritance tax liability. If taxed at the full development value, many parcels are simply taxed out of agriculture, because the heirs are not able to pay the taxes without selling the land.

The primary disadvantage of PDR is the cost involved. In all of the states with PDR programs, these purchases are funded by some sort of tax. The topic of instituting new taxes for virtually any program is always controversial. However, in the regions of the country that have instituted PDR, the program has received generally favorable responses from the public.

The establishment of a PDR program can begin at the state or local level, accompanied by enabling and/or funding legislation by elected officials. A broadly representative board from the impacted community will act as volunteers on the board, to guide the program administration through government staff. The board is in charge of reviewing applications of landowners who wish to sell development rights, obtaining appraisals, prioritizing parcels, negotiating agreements, and ensuring that deed restrictions are enforced.

The PDR programs which have had the most success have been those where the objective has been to use this tool to create large contiguous areas with permanently preserved open space and farmland as opposed to selecting individual parcels piecemeal. This type of strategy has several advantages. One is that it allows for a "critical mass" of farms which have the potential to preserve agriculture as a viable industry—if the number of farms in an area becomes too small, there is not enough demand for agricultural supplies (fertilizer, equipment, etc.) to sustain the industry. Another advantage to this approach is that the preservation of large contiguous areas maintains open space and the sense of place that many Americans believe are the goals which are most appropriate for farmland protection programs.

This section is excerpted and adapted from the Ohio State University Fact Sheet: "Purchase of Development Rights," CDFS-1263-98 Land Use Series by Joe Daubenmire and Thomas W. Blaine.

FUNDING SOURCES FOR OPEN SPACE CONSERVATION

Besides local funds, funding sources used most often in North Carolina include:

Clean Water Management Trust Fund
The Clean Water Management Trust Fund (CWMTF) offers grants to local governments, state agencies, and qualified non-profit conservation groups for water quality protection and improvement projects.

Natural Heritage Trust Fund. The Natural Heritage Trust Fund (NHTF) provides supplemental funding to select state agencies for the acquisition and protection of natural areas.

North Carolina Agricultural Development and Farmland Preservation Trust Fund
The North Carolina ADFP Trust Fund provides financial assistance to communities trying to secure conservation easements or agricultural agreements or to implement programs that result in more sustainable or viable agriculture.

Parks and Recreation Trust Fund. The Parks and Recreation Trust Fund matches grants awarded to local government agencies for public park and recreation projects.

Federal Land and Water Conservation Fund. FLWC is the primary funding source of the National Park Service, Department of the Interior, for the outdoor recreation land acquisition and development projects of municipalities and state agencies.

North Carolina Ecosystem Enhancement Program. The North Carolina Ecosystem Enhancement Program provides funding to mitigate, restore, and enhance local steams and degraded watersheds. This money is earmarked in mitigation funds for the North Carolina Department of Transportation.

Excerpted and adapted from "Strategies for Land Conservation in Jackson County" : planning.jacksonnc.org

7.4 TRANSFER OF DEVELOPMENT RIGHTS

One of the most current and definitive documents on TDR, including case studies from around the U.S., is available online from Resources for the Future (www.rff.org).

TDR IN MONTGOMERY CO., MD

In 1980, Montgomery County, Maryland, downzoned agricultural land from a maximum density of one house per five acres to one house per 25 acres. The County also designated this land the Rural Density Transfer Zone (sending area), allowing landowners to sell one development right per five acres. The County established an initial receiving area, which could accommodate up to 3,000 development rights. Each development right purchased entitled receiving area landowners to build one more housing unit than otherwise would have been allowed.

Prior to 1980, Montgomery County lost an average of 3,500 acres of farmland per year to development. In the ten years following establishment of the TDR program, the county lost a total of 3,000 acres to development, a drop of approximately 92 percent. By the end of 1997, the program had protected 39,180 acres out of a total sending area of 89,000 acres. The program was successful because development restrictions on sending area properties created a strong incentive to sell development rights. Moreover, demand was strong due to the County's rapid growth rate and the desire for greater densities in receiving areas. Finally, the County was proactive in educating landowners, developers, realtors, and attorneys about the program.

The Transfer of Development Rights (TDR) refers to a method for protecting land by limiting development in some areas and directing development instead to areas defined for growth by public policy. This conservation of rural areas and the support of localized urban development is achieved by transferring the "rights to develop" from one piece of property and selling them to the owner of another site where they take the form of a density "bonus" to spur more intensive development. The development right is independent of land ownership; it becomes a separate article of private property that can be shifted from one area to another and can have economic value.

Land is traditionally thought of as real property, where ownership extends to all aspects of the land, including the minerals below the ground surface, air above it, and other resources located on the land. Owners of real property also own development rights, which allow development of that land in accordance with local land use regulations. Like mineral rights, development rights can be bought, sold, donated, or otherwise transferred. Restrictions over a property's development rights are usually recorded in a conservation easement after the value of those development rights is determined.

Implementation of an effective TDR program requires a sophisticated planning system and a stable real estate environment where the financial value of transferable credits can be easily ascertained. In general, determining the value of a property's development rights requires a real estate appraisal, which first determines the fair market value based on maximum development under current zoning. The value of the property if development is restricted is then determined. The difference between these two figures is the value of the development rights.

TDR programs are similar to the more commonly known purchase of development rights (PDR) programs (see previous section). The main difference is that PDRs require that a governmental agency or land trust purchase the development rights to a particular property. The development rights on the piece of property are then "retired" through deed restriction in order to preserve land as open space. They are not transferred to any other location.

A TDR program operates in a more controlled and predetermined setting as defined by a detailed community plan that defines certain locations as "sending" or "receiving" areas. Private developers or local governments purchase the development rights from within the "sending" areas and transfer them to an area to be developed; this area is known as the "receiving" area. The owner of the preserved site retains existing use rights while receiving cash compensation for the development value of the land. As a result, the development potential of the property is, in effect, frozen at a low or minimal basis and the owner is able to recoup the economic value of the property's frozen potential. By selling the development rights at market value, the TDR concept is designed to minimize any objections to such zoning strategies.

Thus, TDR makes it possible for there to be a free exchange (buying and selling) of development rights without having to buy or sell land. The effective down-zoning a government entity may impose on a sending area (changing the allowed density to a lower number of units per acre, for example, going from one home per five acres to one home per 40 acres) does not necessarily reduce the economic value of the property within that area, because the development rights remain in the landowners hands and can be sold to others for use elsewhere.

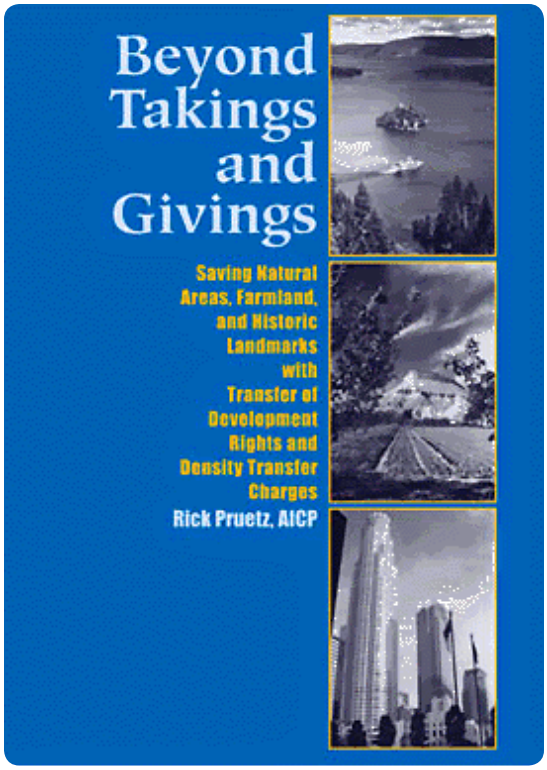
The most common TDR program allows the landowner to sell the development rights to a developer who then uses those development rights to increase the density of houses on another piece of property at another location (e.g., going from 4 units an acre to 6 units an acre). The higher density that developers are thus able to realize is the incentive for them to buy development rights.

A second method allows a local government to establish a "TDR Bank" to transfer development rights. In this method, developers who wish to develop at a higher density than current zoning allows would purchase development rights from the local government, which had previously purchased them from property owners in "sending" areas. Again, achieving higher density is the incentive for the developer to purchase the development rights. The local government could then use these funds to purchase more development rights of properties in areas it wants to protect from urban development. The receiving areas could not increase in density higher than some maximum set within the comprehensive land use plan.

TDR programs can be an effective tool in the preservation of farmland and natural resources; however, they are complex and can be difficult to administer. Staff members must be versed not only in the fundamentals of planning but also in public relations to explain the program to politicians, landowners, developers, and the public. A detailed study by planning staff in Boone County, Kentucky, in 2001 evaluated the applicability of TDR and PDR programs in that largely rural county as methods of preserving farmland and managing growth. The conclusion was at that time that while PDR programs could play an important role, the time was not yet ripe for the extra layers of complexity in zoning and administration involved in TDR.

While many states have Transfer of Development Rights (TDR) legislation on the books, North Carolina does not, and there is a difference of legal opinion as to whether the practice is legal in the state. However, there are efforts underway in the state to establish this technique as a legal and effective tool for managing growth in rural areas under threat from suburban expansion. Local jurisdictions considering a TDR program would need to get specific authorization from the General Assembly. In 2008, Orange County, NC, drafted a TDR-based regulatory instrument for consideration.

(Notes for this section are taken, in part, from the Ohio State University Fact Sheet: "Transfer of Development Rights," CDFS-1264-98, Land Use Series, by Timothy J. Lawrence.)



Ohio State University TDR Fact Sheet ohioline.osu.edu/cd-fact/1264.html

TDR for Farmland Protection: farmlandinfo.org/documents/37001/TDR_04-2008.pdf

Transfer of Development Rights in U.S. Communities: www.rff.org/Publications/WPC/Documents/07_09_Transfer_of_Development.pdf

Beyond Takings and Givings: www.beyondtakingsandgivings.com

Boone County, KY Case Study: www.boonecountyky.org/PC/PDR_TDR.pdf

Transfer of Development Rights: www.serconline.org/tdr/background.html

Montgomery County, Maryland, TDR Program: www.mc-mncppc.org/community/plan_areas/rural_area/planning_process/about_the_process/tdr.shtm

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7.5 PARKS & COMMUNITY OPEN SPACE

Image Source: Boone Communities

Image Source: Boone Communities

Image Source: Boone Communities

(Above) Community parks and open spaces in a new neighborhood in Davidson, NC act as the social focal points for the community, whether for group festivities or simply families socializing at a corner playground.

The emphasis of this section has been on the preservation and conservation of open space under a variety of environmental and economic scenarios. The scale of these protected open spaces is generally large: whole valleys, watersheds, mountain ranges, and ecosystems. However, open space plays an important role in people's lives at a smaller, more local level, at the scale of community and neighborhood parks and even local playgrounds.

A focal public open space for the community has a long history in the United States, vividly demonstrated by the New England village green and the courthouse square of towns in the South and Midwest. These are not "natural" spaces, but ones that, although they may contain extensive landscape features , have been created through the process of development. Civic pride and developers' self interest combined to create spaces that not only came to symbolize the community but also added value to the surrounding properties and neighborhoods.

Davidson, North Carolina, provides a good precedent with its Town Green at the heart of the small downtown area. Framed by Main Street, the town library and Davidson College, the space acts as a community outdoor "living room" during all seasons, becoming the site of formal and informal festivities. Because the town's zoning ordinance requires new residential development provide such dedicated public open spaces, new development in Davidson follows this precedent, creating small parks and playgrounds within new subdivisions as part of the development process. These spaces are required to be like small outdoor rooms, that is, designed in a way that they feel spatially contained, with surrounding buildings acting like walls to the open space. These spaces in turn act as the social focal points for the community, whether for group festivities or simply families socializing at a corner playground. New parks are built by the developer according to zoning design standards, but immediately become selling points for the new community and a lasting source of neighborhood identity.

CASE STUDIES

The case study for Cashiers, North Carolina, also illustrates the potential for creating a public park as a focal community space. The Cashiers Crossroads Concept Plan illustrates a potential design for an enhanced Village Green, attractively landscaped and framed by new residential buildings and the existing post office. This public space would provide a

Image Source: Kris Krider

Davidson, North Carolina's Town Green at the heart of the small downtown area. Framed by Main Street, the town library and Davidson College, the space acts as a community outdoor "living room" during all seasons, becoming the site of formal and informal festivities.

welcome civic counterpoint to other private commercial and residential development that may take place in the community and would function, like the Davidson precedent, as the green living room for the community.

Another case study example comes from the Cowee Community, where a new small linear park can be constructed as part of a street improvement scheme and heritage trail system. The land in question, between Highway 28 and Snow Hill Road is narrow and steep, with a perennial stream flowing through it that feeds into Cowee Creek at the bottom of the hill. These factors render the land almost impossible for any meaningful development; but it is well located for a small public park, providing recreational space for the community adjacent to the playground and ballfield at the elementary school. Selective clearing, stream refurbishment , enhanced planting and footpaths, and other pedestrian areas can create a pleasant addition to community facilities. The linear park provides an important element of the network of community heritage trails featured extensively in the overall community plan.

The Cashiers Crossroads Concept Plan illustrates a potential design for an enhanced Village Green, attractively landscaped and framed by new residential buildings and the existing post office. This public space would function as the green "living room" for the community. The Village Green was established by a local community conservancy organization.

Selective clearing, stream refurbishment and enhanced planting and footpaths could create a pleasant but informal addition to community facilities in this space in the center of the Cowee Community in Macon County.

Project for Public Spaces: www.pps.org

Village Green Conservancy, Cashiers, NC: www.villagegreencashiersnc.com/

Ten Principles for Creating Successful Squares: www.pps.org/parks_plazas_squares/info/parks_plazas_squares_articles/squares_principles

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8 AFFORDABLE HOUSING

Image Source: Gabriel Cumming/Carla Norwood

"I think if you look at trying to keep the local people here, you're going to have to come up with some opportunities for employment, affordable housing—provide the young couples that are starting out means to be able to afford land here. The prices have gone so high."

Donna Seay, center
Member of 24-7 women's group
First Baptist Church
Bryson City

The *Western North Carolina Regional Outlook Report 2008* (prepared for the Institute for the Economy and the Future at Western Carolina University) notes that western North Carolina has a serious problem of affordable housing in terms of availability, location and type of accommodation. Although more respondents to IEF's public opinion poll own their homes (86%) than rent (11%), most respondents (62%) do not view homes in the region as affordable for people like them. Not surprisingly, people who rent are less likely to view owning a home as affordable for people like themselves. In addition, younger people, women, people with lower incomes and less education are particularly likely to believe that homes in western North Carolina are not affordable for people like themselves.

The IEF Report also found:

- Per capita personal income in WNC is lower than in North Carolina as a whole and below the national average. In 2004, the regional per capita personal income in AdvantageWest's service area (the state's designation for North Carolina's 23 westernmost counties) was $24,350—lower than the statewide average and only 79% of the national average.

- Median household incomes in North Carolina in 1997 and 2003 were $35,320 and $38,234 respectively. In WNC, the actual incomes were $29,742 and $32,862, the second-lowest in the state both years.

- In 2003, the percentage of people in the region living below the poverty level was 14%, slightly higher than the statewide average of 13.4%. The average weekly wage rate in the region was $519.26, the second-lowest in the state.

While affordable housing is generally related to the housing needs of households with incomes that are typically 80% or less of the area's median household income, North Carolina's most critical housing need is improving rental housing opportunities for households earning less than 30% of median income. Also a shortage exists for housing for middle-class families (those earning above $38,000 and less than $50,000). A wide range of users (families, single-parent households, retirees and seniors) rely on affordable housing/workforce housing options, as do a wide range of employers.

Developers are hesitant to build houses in remote areas because a low population limits the market. As a result, many people end up in substandard housing or manufactured homes. The relatively lower incomes of residents in many rural counties also contribute to the difficulty of affording a home.

Affordability also touches formerly rural communities on the fringe of urban areas where development sprawl has inflated land prices. Another hard-hit group are residents of rural areas that become favored vacation spots for wealthy outsiders (Adler).

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Western North Carolina Regional Outlook Report 2008: ief.wcu.edu

Adler, Jane. *Realtor* Magazine. 08/01/2003. "Housing Opportunity: Real-Life Solutions" www.realtor.org/archives/featureaugust03affordable

According to the Housing Assistance Council in Washington, D.C., about 5 million rural households pay more than 30% of their incomes for housing. Of these, more than 2.1 million rural households spend more than half their incomes for housing (Adler).

The need for affordable housing continues to deepen while the public resources to address this need continue to decline. In this context, the following strategies present ways of attacking the continuing problem of providing housing that is affordable to members of the regional workforce and their families.

STRATEGIES FOR THE REGION:

1. Establish a regional goal to provide more affordable/workforce housing and encourage local governments to establish the goal as well.
2. Embrace regional differences in housing demands, supply, and patterns.
3. Assess housing conditions within the context of regional watersheds as well as political boundaries.
4. Encourage alternative approaches for addressing the affordable housing issue, such as building smaller units, providing non-conventional dwellings (duplex, triplex, quadruplexes), in-home rentals (boarders), co-housing and cottage housing.
5. Promote community infill (in towns, villages, other settlements and crossroad communities) by targeting improvements specific toward those locations.
6. Expand the purview of regional organizations (i.e., Area Agency on Aging, Workforce Development) to include issues associated with affordable housing.
7. Support local municipalities' efforts to establish affordable housing programs and to adopt specific development strategies to meet local needs.

STRATEGIES FOR TOWNS AND VILLAGES:

1. Where subdivision rules are in place, adopt specific minimum and house size standards for individual application of affordable housing that meets regional goals.
2. Work to provide sewer allocations and service to a proportional number of affordable housing units.
3. Where zoning rules are in place, consider a density bonus (as done in the Town of Franklin; 4 dwelling units per project) for affordable housing.
4. Where zoning rules are in place, promote infill and area re-development by adding specific zoning categories that enable small homes, cottages, and other forms of housing that are designed to be affordable and supportive of workforce development.

STRATEGIES FOR RURAL AREAS:

1. Where subdivision rules are in place, adopt specific minimum lot and house size standards for individual or small-scale application of affordable housing designed for meeting regional housing goals.
2. Where subdivision rules are not in place, identify multiple locations for a scattered site approach to affordable dwellings so that pockets of poverty can be avoided and reinvestment into those and surrounding areas encouraged.
3. Work with state and local permitting agencies to develop rules and design standards for alternative sanitary systems (such as "living machines," package plants, or other small systems) so that a more efficient land use can be established in rural areas (For more information see Section 4: Protecting Our Environment).
4. Work with NC Rural Center and other state organizations to improve the ability of local agencies and government entities to secure funds for water and wastewater improvements to meet affordable housing goals in specified locations.
5. Target activity associated with job growth and industry creation and challenge organizations to contribute to improvements in workforce housing for new workers.

The following sections indicate a range of possible policies and organizational frameworks to assist the provision of affordable housing in Region A.

8.1 NON-PROFIT HOUSING RESOURCES

Creekside Corner, affordable apartments in four buildings, developed by the Davidson Housing Coalition, Davidson, NC.

Most rural communities are in dire need of both single family and multifamily affordable housing. In urban areas, affordable units can often be cross-subsidized by higher-cost housing within a development; in rural areas, this is generally not an option, and more subsidies are needed. Cost writedowns, such as those provided through self-help housing programs and Low Income Housing Tax Credits (LIHTC) represent excellent mechanisms for providing affordable housing in rural areas.

As with community facilities, non-profit loan funds can play an integral role in both single family and multifamily affordable housing development. Non-profit loan funds are particularly important in providing financing for raw land acquisition and predevelopment expenses. But they can't do it alone. Bank funding is often needed to provide the larger loans necessary for site development of a single family subdivision or construction of a multifamily project. And, in most instances, funding is also needed from federal or state programs that can provide forgivable loan or grant funds needed to write-down single family mortgages or rents in multifamily housing projects.

There are opportunities for banks, non-profit loan funds and federal and state programs to work together to finance the various elements needed not only to sustain the viability of our rural communities but also to provide opportunities for economic growth. Creation of high-wage jobs and retention of youth in rural areas are critical and are all the more likely if essential services and housing are available. Innovative partnerships between various lending sources can ensure that rural areas will have the facilities and infrastructure to support a vibrant future.

As an example of how the non-profit sector can work in the area of affordable housing and rural revitalization, the Rural Preservation Companies (RPC) Program was established in 1980 in New York State. The Rural Preservation Companies Program serves villages, towns, and cities with a population below 25,000 that have significant unmet housing needs of persons of low income, defined as not exceeding 90 percent of median annual income for the region. This work has been cited as a program model that should be emulated by other states. The guiding strengths for this program include a strong commitment to developing affordable housing and collaboration across public and private sectors with a shared vision.

The network of rural preservation companies is able to partner with philanthropic organizations, for-profit firms, and other local community groups to acquire the financial tools to rehabilitate and build affordable housing. This unique partnership gives RPCs the ability to leverage multiple dollars for affordable housing development for every dollar provided by the state.

Other resources include Rural LISC, a part of the Local Initiatives Support Corporation that aids community development initiatives, and Stand Up for Rural America, a four-year-old initiative to promote new funding sources, legislative action, and grassroots networking for rural community development organizations.

Rural Local Initiatives Support Corporation: www.ruralisc.org

Local Initiatives Support Corporation: www.lisc.org

Lending for Rural Development Projects: www.frbsf.org/publications/community/investments/0705/lending_rural_development.pdf

Rural Preservation Companies: ruralhousing.org/aboutrp.html

Stand Up for Rural America: www.ruralamerica.org

NC Housing Coalition: www.nchousing.org

National Center for Homelessness and Poverty: www.nlchp.org

National Housing Institute: www.nhi.org/online/issues.html.

National Housing Trust: www.nhtinc.org

National Low Income Housing Coalition: www.nlihc.org

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WESLEY COMMUNITY DEVELOPMENT CORPORATION

Wesley Community Development Corporation opened its doors in January, 2002, in Statesville, NC, and is an affiliate of the Western North Carolina Conference of the United Methodist Church. The primary mission of this non-profit organization is to build affordable homes in western North Carolina. These affordable homes are not for Methodists only, but for those who qualify regardless of religion, race, creed, gender, handicap, age, or national origin. To many people the term affordable housing means cheaply constructed, poorly built, small homes. In reality this term means a layering of financing through grants, low cost loans and subsidies so that a good quality home can be built. *www.wesleycdc.com*

CAROLINA CROSS CONNECTION

Carolina Cross Connection is a Christian outreach ministry in western North Carolina. It is an opportunity for youth, youth groups, college-age students, and adults to spend a week of their summer serving families in need. Campers perform a variety of home repairs, such as building wheelchair ramps, repairing porches, painting, yard work, and much more. Campers also strive to meet the social, emotional, and spiritual needs of those they serve. *www.carolinacrossconnection.org*

HABITAT FOR HUMANITY

Habitat for Humanity International (HFHI) is a non-profit, ecumenical Christian housing ministry. HFHI seeks to eliminate poverty housing and homelessness from the world and to make decent shelter a matter of conscience and action. Habitat invites people of all backgrounds, races and religions to build houses together in partnership with families in need. Habitat for Humanity's work is accomplished at the community level by affiliates—independent, locally run, non-profit organizations.

Each affiliate coordinates all aspects of Habitat home building in its local area—fund raising, building site selection, partner family selection and support, house construction, and mortgage servicing.

Several Habitat affiliates exist in western North Carolina:

- Buncombe County
- Jackson County
- Haywood County
- Hinton Rural Life Housing Partners in Cherokee & Clay Counties

Contact HFHI headquarters for information on establishing a Habitat affiliate or contact the Habitat Help Line at 800-422-4828. *www.habitat.org*

Duplexes and triplexes can be designed to look like single family bungalows. These affordable apartments were designed to fit into an existing single family neighborhood in Davidson, NC by the non-profit Davidson Housing Coalition.

These affordable townhomes were developed in a mixed use development in Chapel Hill, NC, by a non-profit housing organization.

Mountain Projects, Inc., Community Action Agency: www.mountainprojects.org

Macon Program for Progress: www.mppnhc.org

New Homes Loan Pool: www.nchfa.com/Nonprofits/HPnewhomesloan.aspx

Single-Family Rehabilitation Program: www.nchfa.com/Nonprofits/HRRsinglefamily.aspx

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8.2 FOR-PROFIT HOUSING RESOURCES

Image Source: Poplar Wellington, LLC

The Wellington Neighborhood in Breckenridge, CO, provides affordable and market-rate housing on a site that was once dredge-mined. The project recycles land, houses working families, and provides free transit to the nearby downtown. It helps the region avoid mountain sprawl by creating an attractive, compact neighborhood, a design that has fostered a strong sense of community in a short time.

LOW-INCOME HOUSING TAX CREDITS

Federal Low-Income Housing Tax Credits now finance virtually all the new affordable rental housing being built in the United States. Housing Credit rental properties are privately owned and privately managed. In exchange for the financing provided through the tax credit, owners agree to keep rents affordable for a period of 15 to 30 years for families and individuals with incomes at or below 60% of the local median income.

The North Carolina Housing Finance Agency monitors the properties during the compliance period to ensure that rents and residents' incomes do not exceed federal limits and that the properties are well maintained. Owners are eligible to take a tax credit equal to 9 percent of the "Qualified Cost" of building or rehabilitating the property (excluding land). The tax credit is available each year for 10 years, as long as the property continues to operate in compliance with program regulations. Generally, the privilege of using the credit is sold to an investor or group of investors (syndicated), and the funds are used to provide equity in the new rental development. Residents are responsible for their own rent payments, unless rent subsidies are available from other programs.

EMPLOYER ASSISTED HOUSING (EAH)

Recognizing the potential benefits that homeownership has on the stability, morale, and productivity in the workplace, employers across the country have worked to build Employer Assisted Housing (EAH) programs and assist families striving for homeownership. Successful case studies are included in the publication *Understanding Employer-Assisted Housing: A Guidebook for Employers*. The guidebook also includes a detailed "how-to" section to help employers begin to create their own EAH programs.

Working with a non-profit group with affordable housing experience, private companies with EAH programs provide a financial incentive to homeownership. This assistance can take several forms, but typically it may be in the form of a zero percent interest, three-to five-year forgivable loan in amounts ranging from $1,000 to $5,000. Some organizations offer financial incentives in the form of grants.

Companies benefit by building employee loyalty and see cost savings associated with decreased employee turnover. Companies also reap less tangible benefits from a positive public image or in increased productivity that results from happier, more stable employees. Employees gain access to homeownership, education and down payment assistance to purchase a home. The community benefits from increased real estate tax revenues, a growing population of stable homeowners, and less traffic and air pollution as workers buy homes closer to work.

HOUSING OPPORTUNITY PROGRAM

The National Association of REALTORS® (NAR) participates in innovative activities, programs, and events that help increase the availability of housing in their communities. Created in 2002, NAR's Housing Opportunity Program helps REALTORS® and REALTOR® associations to position themselves as leaders in identifying, developing, advocating for and promoting business opportunities, programs, products, and resources that expand housing availability in both the rental

Low-Income Housing Tax Credits: www.nchfa.com/About/financingfrom.aspx#federallowincome

Understanding Employer-Assisted Housing: A Guidebook for Employers: www.homesforworkingfamilies.org/solutions/housing/guidebook/

Employer Assisted Housing Resources: www.metroplanning.org/ourwork/

Housing Opportunity Program: www.realtor.org/government_affairs/housing_opportunity/index

Affordable Housing Success Stories: www.realtor.org/rmomag.nsf/pages/featureaugust03affordable

Housing Assistance Council: www.ruralhome.org/services.php

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8.3 LOCAL GOVERNMENT HOUSING RESOURCES

And more ownership section of the poor quality and condition of homes were the primary housing concerns facing rural areas in the United States. Today, drastically increasing housing costs and affordability have replaced poor housing conditions as the greatest problem facing low-income rural households and communities. Despite the fact that housing costs are lower in non-metro areas than in cities and suburbs, many households find it difficult to meet their basic housing costs. Most cost-burdened households have low incomes, and a disproportionate number are renters. At the same time, housing quality problems persist in rural places.

RURAL HOUSING & ECONOMIC DEVELOPMENT GATEWAY

The US Dept. of Housing and Urban Development has established a "Rural Housing and Economic Development Gateway" website that provides information on affordable housing and economic development in rural areas, with funding summaries and case studies for users to learn about rural housing funding opportunities and the experiences of rural housing developers. The Gateway connects rural organizations with information, technical assistance, training, and investment capital to help them develop, rebuild, and preserve affordable housing, local economies, and essential infrastructure. It also engages private sector organizations to establish economic development initiatives in rural areas and provides training in the development of rural housing, infrastructure, and economies.

NC HOUSING FINANCE AGENCY

A self-supporting agency, the North Carolina Housing Finance Agency sells bonds, administers tax credit programs, and uses state and federal funds to produce affordable housing in partnership with local governments, non-profit housing producers, and for-profit developers. The financing is used to build rental apartments and homes, to rehabilitate rental and owner-occupied housing, to provide rent subsidies, and to assist home buyers.

HOUSING AUTHORITIES

Housing authorities generally exist to provide high quality rental and affordable housing that provide home ownership opportunities and promote economic integration. Most housing authorities receive and administer federal funds and focus on three integral parts of the affordable real estate market:

- Rental product development
- Rental product acquisition
- For sale product development

Housing authorities are currently operating in the following Region A communities: Andrews, Murphy, Jackson County, Waynesville, and Canton.

Affordable housing developers that choose to do business with housing authorities can enjoy the benefit of a ready source of below-market financing and a per-unit subsidy.

The other main federal program administered by housing authorities

Image Source: Harry Teague Architects

Benedict Commons in Aspen, CO, was a joint effort between the City and two developers to provide affordable housing in Aspen for local workers. Most cannot afford to live in the city due to the average home prices rising to over $1.75 million, so many commute long distances to work.

NC HOUSING FINANCE AGENCY HOUSING REHABILITATION PROGRAMS

Single-Family Rehabilitation Program (SFR). Households in need of major repairs with incomes below 80% of the area median income may qualify for SFR. Funds are available to local government and non-profit agencies to facilitate the comprehensive rehabilitation of single-family homes owned and occupied by low-income, elderly or disabled people in their area. Funds are in the form of an interest-free, deferred-forgiven loan, forgiven at $3,000 per year, to pay for the necessary rehabilitation of a home. The local organization providing the loan contracts and supervises the work. More information can be found at: www.nchfa.com/Nonprofits/HRRsinglefamily.aspx

Urgent Repair Program (URP). Funds under the Urgent Repair Program are used by local organizations to provide grants for emergency home repairs for elderly homeowners and other homeowners with special needs whose household incomes are below 50% of the area median income. The funds also may be used for accessibility modifications that enable homeowners to continue living in their homes after an injury or illness. Financed through the Housing Trust Fund and other Agency resources, a total of $2.2 million per year was made available in 2007 and 2008 to non-profit organizations, local governments, and regional councils through a competitive application process. More information can be found at: www.nchfa.com/Nonprofits/HRRurgentrepair.aspx

is the Section 8 Voucher program. Section 8 is the federal government's major program for assisting very low-income families, the elderly, and the disabled to afford decent, safe, and sanitary housing in the private market. Since housing assistance is provided on behalf of the family or individual, participants are able to find their own housing, including single-family homes, townhouses and apartments. The participant is free to choose any housing that meets the requirements of the program and is not limited to units located in subsidized housing projects. In addition to the housing authorities noted above, community action agencies in six of the seven counties provide Section 8 housing services. Jackson County government operates the program in its county.

HOME INVESTMENTS PARTNERSHIP PROGRAM

HOME is the largest federal block grant to state and local governments designed exclusively to create affordable housing for low-income households. HOME provides formula grants to states and localities that communities use—often in partnership with local non-profit groups—to fund a wide range of activities that build, buy, and/or rehabilitate affordable housing for rent or homeownership or provide direct rental assistance to low-income people.

Participating jurisdictions may choose among a broad range of eligible activities, using HOME funds to provide home purchase or rehabilitation financing assistance to eligible homeowners and new homebuyers; build or rehabilitate housing for rent or ownership; or for "other reasonable and necessary expenses related to the development of non-luxury housing," including site acquisition or improvement, demolition of dilapidated housing to make way for HOME-assisted development, and payment of relocation expenses. With certain conditions, HOME funds may also be used to fund rental housing within subsidy and purchase price limits.

INCLUSIONARY ZONING

As housing prices escalate and the federal government retreats from the business of funding affordable housing, the pressure on state and local government intensifies. Faced with this challenge, many local governments have turned to inclusionary housing. More than 200 local governments across the country are making inclusionary housing strategies a central component of their efforts to meet community development needs. Dare County and the Town of Davidson developed and utilize inclusionary housing strategies.

Inclusionary zoning is a local government requirement for home builders and developers to provide a certain percentage of units in every new market-rate development at an affordable level for people identified as having low or moderate incomes. This determination is made verifying qualifying persons household income as being, typically, 80% of the area's median household income.

Inclusionary zoning is an innovative, fiscally prudent tool that harnesses the power of the real estate market and preserves public resources. Through creative use of their local zoning powers, local governments can create and preserve affordable homes and generate land or dollars for a wide variety of affordable housing initiatives—even in extremely expensive markets—without a massive new public funding stream from the state or federal government. Community officials typically will enact inclusionary zoning with several goals in mind, including establishing a larger housing stock,

creating more affordable homeownership opportunities and integrating instead of concentrating affordable units throughout a jurisdiction.

Programs can be mandatory or voluntary, and most programs contain cost offsets (e.g., density bonuses, expedited permitting processes, or fee waivers) that help developers meet the cost of producing affordable homes. Many programs also include in lieu of alternatives that allow developers to contribute money or land in lieu of building affordable homes within the development. These in lieu of provisions, if used properly, can be an excellent method for ensuring some flexibility for developers within a local program, while also generating land and dollars that can be used to help meet the full range of affordable housing needs in a community.

According to *Easing the Affordability Crunch: The Inclusionary Housing Option*, "recent studies have examined the advantages and limitations of different types of inclusionary housing programs. Three key lessons emerge:

1. Mandatory programs, on the whole, appear to be more effective than voluntary programs.
2. Although originally implemented in the suburbs, inclusionary housing programs can work well in urban centers.
3. Inclusionary housing strategies do not stifle development."

HOUSING LINKAGE FEES

A linkage fee is a housing impact fee, a means for local governments to collect monies from new commercial and industrial development to provide affordable housing. Linkage fees are premised on the basis that lower-wage workers who are needed to build and work in new nonresidential development should also be able to afford adequate housing within the community. In the same way that local governments require residential developers to offset the school impacts caused by their development with impact fees, businesses are required to mitigate the new housing needs created by their new job development. Provision of such housing near employment centers helps reduce the economic and environmental costs of transportation where there is no public transit available.

Most Jobs/Housing Linkage Programs require a business to contribute fees to mitigate its housing impacts, but some require business developers to actually provide market-rate and/or affordable housing directly (see also Employer Assisted Housing). Sometimes local governments provide the developer with regulatory relief (e.g., density bonuses or reduced parking requirements) to offset the cost to the developer of meeting the linkage requirement.

Linkage fees are most successful in jurisdictions that expect to attract substantial new business development and have land available for such development. Linkage fees can provide a substantial boost to the production of affordable housing. Also, because linkage fees directly link new job creation with the provision of appropriate workforce housing, they help create a better jobs-housing balance with the resulting benefits of less traffic congestion and reduced air pollution. Employees who can afford to live near where they work spend less time commuting and have more time for their families and their community (See also Section 10.2).

RESOURCES

HUD Rural Housing & Economic Development Gateway: www.hud.gov/offices/cpd/economicdevelopment/programs/rhed/gateway/housing.htm US Department of Housing and Community Development (HUD): www.hud.gov

North Carolina Housing Trust Fund: www.nchfa.com/About/financingfrom.aspx#nchousingtrust

NC Housing Finance Agency: www.nchfa.com/

HOME Investments Partnership (HOME) Program: www.nchfa.com/About/financingfrom.aspx#federalhome www.hud.gov/offices/cpd/affordablehousing/programs/home/

State Housing Credit: www.nchfa.com/About/financingfrom.aspx#statelowincome

Inclusionary Zoning: www.fanniemaefoundation.org/programs/hff/pdf/HFF_v8i1.pdf

Inclusionary Housing Advocacy Toolkit: www.nonprofit housing.org/actioncenter/toolbox/ campaigntools/InclusionaryTool.pdf

Easing the Affordability Crunch: The Inclusionary Housing Option. Nicholas Brunick. 2006. www.fanniemaefoundation.org/programs/hff/pdf/HFF_v8i1.pdf

Smart Growth, Smart Choices Series: The Builder's Perspective on National Association of Home Builders: www.nahb.org/fileUpload_details.aspx?contentID=50726

Linkage Fees: www.nonprofithousing.org/actioncenter/toolbox/policy/jobshousinglinkage.pdf

8.4 APPROPRIATE LOCATIONS/CRITERIA

Permanently affordable, owner-occupied units are interspersed with market-rate units in this mixed use development in Davidson, NC. From the outside, the affordable units are indistinguishable from the market-rate units except in size.

There are two major issues that affordable housing must address if it is to be sustainable economically and politically acceptable: location and design.
Affordable housing is a controversial reality of contemporary life, for gains in affordability often result from expanding the supply of land available for housing or increasing the density of housing units in a given area. The process of weighing the impacts of locating affordable housing is quite contentious and can be laden with implications of race and class. This makes the twin policies of dispersal throughout communities and similarity to market units in appearance extremely important. Minimum design standards of site layout and housing design can help in achieving these twin objectives.

According to the report "Making Affordable Housing Truly Affordable: Advancing Tax Credit Incentives for Green Building and Healthier Communities," there are locational factors regarding affordable housing that must be addressed in addition to the cost of the housing itself. Since the cost of transportation is a major factor in most low-income household budgets, priority locations for affordable housing include locations with good access to services and jobs and transportation options, including transit.

When affordable housing is built in compact, mixed-use areas, the community and affordable housing residents both benefit:

- Residents of compact communities drive 20-40% less per day, resulting in safer and less polluted communities.
- Local stores and businesses do best when more people live within walking distance or a short drive away.
- When more people work and live in the same town, civic organizations are stronger and residents can participate better.
- Residents of compact communities spend less on cars and have more time and resources for families and communities *(adapted from the Affordable Housing Design Advisor).*

In terms of design, affordable housing units should be similar to market-price units in exterior appearance, proportion of attached and detached units, bedroom mix, and proportion of rental and owner-occupied units. The units also must be dispersed throughout communities and developments and must come on the market on a schedule similar to that of the market units.

Making Affordable Housing Truly Affordable: www.frontierassoc.net/greenaffordablehousing/Feature/GGUSA%20QAP%20Report.pdf

Affordable Housing Design Advisor: www.designadvisor.org

RESOURCES

8.5 GREEN STANDARDS FOR AFFORDABILITY

Chapter 3 of the Toolbox document provides general guidance regarding the incorporation of energy efficient design features into buildings and developments, but the design of single-and multi-family affordable housing presents a specific opportunity for improving the design standards and environmental performance of this important element of the region's housing stock.

Starting with Habitat for Humanity International in 1995, Global Green USA, an affiliate of the Green Cross organization, has developed guidelines, policy recommendations, and partnerships focused at the local, state, and federal level. The design and planning approach highlighted by Global Green USA focuses on four areas: smart growth, energy efficiency, resource conservation and health protection. They have worked with community development organizations, affordable housing developers in the San Francisco Bay Area, and the California State Tax Credit Allocation Committee (TCAC) to encourage green affordable housing throughout the state of California. Using this model, the organization has worked with other groups and state agencies in New Jersey, Georgia, and other locations in the last several years to help put in place similar incentives to create healthier homes for those in need.

The report "Making Affordable Housing Truly Affordable" presents an analysis of the tax credit allocation policy for all fifty states and identifies existing green building requirements in affordable housing projects. Greening affordable housing provides direct benefits to needy residents by lowering utility costs and creating healthier living environments. In addition, project developers and operators gain both directly and indirectly through higher quality, more efficient, and more durable projects.

The top five states for encouraging green building practices in affordable housing in 2005 are: California, Georgia, Arizona, Maryland, and Texas. However, there is no reason that North Carolina, especially the mountain counties, should not capitalize on these same initiatives.

Image Source: Ben Brown/PlaceMakers

These affordable, modular duplex homes were designed by Daryl Rantis Architects for an infill site in Asheville. They provide a model of building in an accessible, low-impact location, using affordable and green materials.

Global Green USA, Green Affordable Housing: www.globalgreen.org/greenurbanism/affordablehousing/

Green Design Standards: www.frontierassoc.net/greenaffordablehousing/Feature/GGUSA%20QAP%20Report.pdf

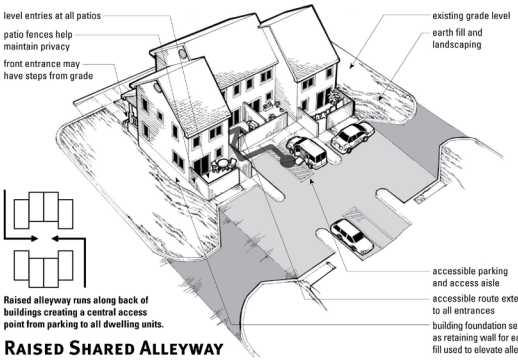
Green Affordable Housing Coalition: www.frontierassoc.net/greenaffordablehousing/index.shtml

Energy & Affordable Housing in California: www.frontierassoc.net/greenaffordablehousing/Feature/LISC%20Energy%20and%20Affordable%20Housing%20in%20California.pdf

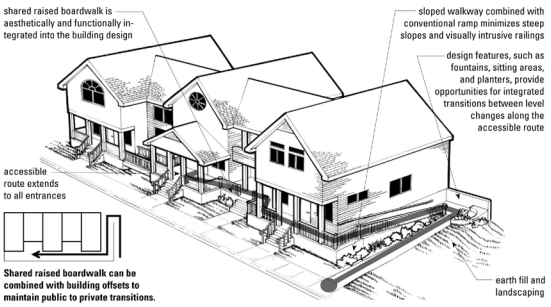
Affordable Housing/Green Building Example: www.stopwaste.org/docs/case-saraconner.pdf

RESOURCES

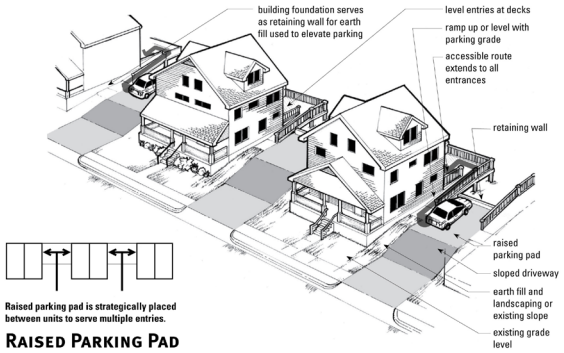
8.6 VISITABILITY/ ACCESSIBILITY



RAISED SHARED ALLEYWAY



SHARED BOARDWALK



RAISED PARKING PAD

SHARED WALKWAY

Image Source: NCSU

Examples of zero-step entries from "Stepless Entrances for Multifamily Housing" from The Center for Universal Design at North Carolina State University. The full publication can be accessed at: www.design.ncsu.edu/cud/pubs_p/docs/Stepless_Entrances.pdf

The intent of Visitability and Universal Design standards is to simplify life for everyone in society by making products, communications and homes more usable by as many people as possible, including people with disabilities. Visitability standards may be seen as the first step towards an accessible home and include the following three elements:

- At least one no-step (or zero-step) entrance
- Doors and hallways at least 32 inches wide
- A bathroom must be on the first floor of the unit, and it must be big enough to accommodate a wheelchair with the door closed.

Universal Design is a higher standard of accessibility than Visitability. It refers to a home that accommodates the widest range of potential users, including small children, the frail and elderly, people with mobility and visual impairments (disabilities), and other special needs. Universal Design homes are much easier to use by people of all ages and abilities without adaptation or specialized design features.

The following are principles associated with Universal Design:

- Equitable Use
- Flexibility in Use
- Simple and Intuitive
- Perceptible Information
- Tolerance for Error
- Low Physical Effort
- Size and Space for Approach and Use.

This information is adapted from "Visitability and Universal Design Standards" and "the Principles of Universal Design".

Visitibility and Universal Design Standards: www.road2la.org/rental-docs/Universal_Design_and_Visitibility_Guide%20_41207.pdf

A Pattern Book for Neighborly Houses: www.classicist.org/resources/habitat-pattern-book/housing-patterns/

Visitability: www.visitability.org

The Center for Universal Design: www.design.ncsu.edu/cud/

Principles of Universal Design: www.design.ncsu.edu/cud/about_ud/udprincipleshtmlformat.html#top

Creating Stepless Entrances in Multifamily Housing: www.design.ncsu.edu/cud/pubs_p/docs/Stepless_Entrances.pdf

RESOURCES

8.7 COTTAGE HOUSING

According to the Smart Growth Network, "Cottage houses are single-family detached units, usually less than 1,000 square feet in size, that incorporate many of the amenities associated with conventional single-family detached housing. Because of the size and style of cottage housing, developers can cluster the homes on smaller parcels of land without sacrificing the feel and character of detached housing."

This housing type has received national attention with the Katrina Cottage prototype developed in response to the need for small but efficient, affordable and attractive homes that could be built on small spaces in a short amount of time for victims of the gulf hurricanes. The Katrina Cottages were conceptualized as attractive and permanent alternatives to trailers or traditional manufactured homes. These cottages are now available as kits from major distributors such as Lowe's and provide elegant small, expandable spaces sized from a few hundred square feet to just over a thousand.

In a cottage housing development, cottage homes are arranged around a common area and developed with a coherent plan for the entire site. Such developments have gained popularity in recent years as a type of infill development on small sites within existing developed areas. The cottage units may have other shared amenities; the shared common area and coordinated design may allow densities that are somewhat higher than typical in single family neighborhoods while minimizing impacts on adjacent residential areas. As a result, cottage housing can offer its owners a quality living experience that is less expensive than traditional single family housing. It also offers a degree of privacy and some of the benefits of single family housing combined with the lower cost and maintenance of attached housing. The clustered arrangement can contribute to a sense of community.

Municipalities and counties in Region A could promote this type of housing by amending zoning requirements to allow cottage housing developments with design requirements in specific zoning districts or in overlay zones; or by encouraging individual infill cottage houses by-right in certain locations by permitting small enough parcels to make them affordable.

Image Source: Ross Chapin, AIA, cottagecompany.com

Eight cottage houses form a cottage housing development in Shoreline, WA.

Image Source: Allison Ramsey Architects

Cottage-style housing designed for the Sanctuary Village development in Franklin, NC. This unit is designed to be approximately 1250 square feet.

Cottage Housing in *Getting to Smart Growth II* by the Smart Growth Network: www.smartgrowth.org/library/articles.asp?art=870&res=1024

The Housing Partnership in Seattle, Washington has produced useful guides to the concept of cottage housing and to drafting a cottage housing ordinance. They can be accessed at:
www.mrsc.org/subjects/planning/cottagehousing.aspx
www.mrsc.org/govdocs/S42CottageHousDev.pdf
www.mrsc.org/GovDocs/S42CottageHousOrdGuide.pdf

Cottage Home designs:
Lowes.com (Katrina Cottages)
cottagecompany.com

RESOURCES

9 FARMLAND PRESERVATION

Image Source: Gabriel Cumming/Carla Norwood

"You have someone that has had land in their family since the government land grant...faced with the idea of selling the 20 acres that they've held so dear, with their farm house on it... They've grown collard greens to feed their kids all these years, (and are)...faced with having to give that property up or split it in half or sell the whole thing because we want them to take more [tax burden]...supporting building our schools... We need to really address that as well."

Kelly Hopkins (far left), Realtor

Image Source: Ben Brown/PlaceMakers

"Tourism, the region's number one industry, is driven largely by the scenic farm landscapes and natural beauty of the region."

Notes on this 2-page spread by Gerry Cohn of the American Farmland Trust. Excerpted and adapted for the MLI: Region A Toolbox from "Planning for an Agricultural Future: A Guide for North Carolina Farmers and Local Governments." www.farmland.org/resources/publications/default2.asp

If you fail to plan, you're planning to fail. This is common wisdom to any farmer who has ever attended a workshop on business management. Farmers know that foresight and the management of the farm business are just as important as the ability to produce a consistent yield. With uncertainties about weather, markets, labor and production, farmers use planning to minimize risk and evaluate their progress toward long-term goals.

Local governments also appreciate the importance of planning. While citizens and leaders create a vision of what they would like their future to be, it is the role of local government to develop plans to achieve that vision. Local policymakers must not only provide for the current needs of their citizens, they must also understand how economic, demographic, and land use trends will affect their jurisdiction in the future. Since these changes will create the need for additional services, governments must balance economic growth with their capacity to ensure the amenities necessary to maintain the quality of life for all residents. Healthy and productive farms and forests provide North Carolina's citizens with many amenities, including fresh, local food, open space, and economic activity.

Planning for agriculture is just as important as planning for development. It establishes a framework for an economically and environmentally sustainable agricultural industry. Planning for agriculture protects farm and forest lands from other uses and provides support for the businesses that rely upon the land for their economic survival.

Most North Carolina farms include forestland along with the agricultural operation. The challenges, benefits, and importance of planning for the future apply equally to privately held forestland. Therefore, we use the term "agriculture" broadly, and landowners and planners can use the tools described in this chapter to address concerns about the larger landscape of working lands. With growing consumer concerns about health, national security and the value of supporting local economies, farmers have the chance to capture a larger share of the local food dollar, while communities have a window of opportunity to strengthen the links between their citizens and agricultural sectors. However, it will take a collaborative effort to achieve these objectives.

CHALLENGES AND OPPORTUNITIES FOR FARMING IN WNC

Land: Land in western North Carolina can cost anywhere from $2,000-50,000 or more per acre. Land that is flat, fertile, and accessible enough to grow any type of marketable product will be on the high end of the scale. Farmers are unable to compete with developers for most mountain land as it is impossible to pay the mortgage on this land through returns from agricultural operations, no matter how well they're managed.

What to Grow: Farmers must make annual decisions about what mix of crops and livestock to produce, based on their time and resources, marketing opportunities, and their tolerance for risk. Commodities such as corn, soybeans, and wheat are fairly non-perishable and can be marketed through well-established channels, but farmers have no control

over their price and are competing on a global marketplace. Efficient production of these commodities requires significant capital investment in planting and harvesting equipment (upwards of $100,000 for even a small operation), and the small farms that the western North Carolina landscape creates can't create the economies of scale to be found in eastern North Carolina, Iowa, or Brazil. Fruits and vegetables present the possibility of higher prices, but their perishability requires an immediate market outlet, and there is little safety net in the case of weather or price catastrophes. Labor requirements are also much greater. Savvy growers can try direct market sales through farmer's markets or restaurants, but the lack of population density in western North Carolina creates limited opportunities in this area. Cattle offer a dependable option and don't require an enormous amount of daily labor, but profit margins tend to be slim, particularly in a year when drought limits the amount of grass and hay available.

In farming, input costs and output prices are closely interconnected. Growing economies in Asia and development of biofuels have raised the demand for grains and hence their prices (corn prices have tripled in the past two years). However, farmers are also seeing skyrocketing costs for petroleum based fertilizers and livestock feed. For most farmers, the bottom line at the end of the year is the same, but they have to borrow more money and take on more risk just to get their crop in the ground.

Costs: Farmers typically put their crop in the ground or their animals on the land in the spring and don't receive any return until the fall or later. Therefore, they must borrow significant amounts of money every year just to continue to operate. Many lenders have limits as to the loan amounts they can underwrite. It may be difficult for farmers to find financing for new types of enterprises that don't have an established track record in the area.

Risk Management: Farmers face tremendous risks on a daily and yearly basis. The past few years have seen the full range of weather-related disasters, from floods to drought to hailstorms to late frosts. These can wipe out years of effort and investment overnight. Prices for inputs and outputs can swing wildly, depending on world trade agreements or weather on the other side of the globe. A field that has been rented and improved for many years can be sold to a developer and eliminated from the farming operation, with nowhere to take grazing cows but to a livestock sales market in Georgia or Tennessee. Farmers can use several tools to help them manage risk: federal government commodity support, crop insurance, and conservation programs. However, all of these risk management tools require additional investment of time by the farmer to understand the programs and determine eligibility requirements, as well as the price of premiums or cost-share investment.

Families: Farming can place many challenges on family life. In farming, there is no health insurance, no retirement program, no paid vacation, and no quitting time. Uncertain annual income may not provide the steadiest support for aging parents, long term health care needs, or the kids' college fund. Farming is amongst the most dangerous occupations in the country, and its physical nature means that it is impossible to keep it up full-speed up to the typical retirement age. When a developer comes knocking at the door offering huge sums of money for long-held family land, it should come as no surprise that resisting the temptation to cash out is extremely difficult, regardless of one's attachment to the land and the community.

In spite of these challenges, communities and individuals in western North Carolina have a vested interest in keeping farms intact and ensuring that farming can be an economically viable endeavor. The primary reason is that everyone in North Carolina must eat. While it is estimated that only 1% of food consumed in this region is currently produced here (Appalachian Sustainable Agriculture Project), rising costs of food and distribution as well as growing interest in local food is creating increased demand for regional food production. According to the Appalachian Sustainable Agriculture Project's (ASAP) report "Growing Local: Expanding the Western North Carolina Food and Farm Economy" (August, 2007):

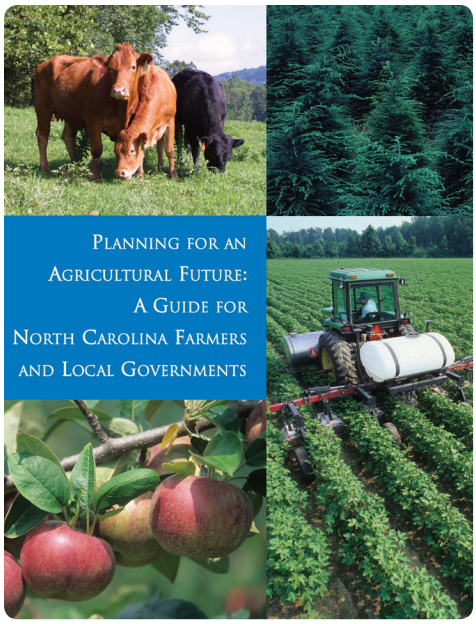
> *Direct Sales – the USDA category used to describe transactions directly between farmers and consumers – have more than doubled and are expected to continue growing, bolstered by strong demand for locally-grown food. For the region of WNC, the research finds a desire by consumers and businesses for $36.5 million for fresh fruits and vegetables and nearly $452 million for all foods including meat, dairy, and processed products.*

The second reason is that agriculture is so critical to western North Carolina's economy. ASAP's report finds that:

> *[The 23 counties of western North Carolina are] home to over 12,000 farms . . . Farms occupy a third of the privately owned land in the region and in 2002 the region's farms earned $543 million in cash receipts. Tourism, the region's number one industry, is driven largely by the scenic farm landscapes and natural beauty of the region . . . In the decade between 1992 and 2002, the region experienced a 16 percent increase in fruit and vegetable crops and a 25 percent increase in acres devoted to non-food crops.*

It is expected that this chapter will assist individuals and communities with tools and resources to meet these challenges and take advantage of opportunities to preserve farming in this region.

9.1 IMPLEMENTATION & PLANNING TOOLS



Planning for an Agricultural Future: A Guide for North Carolina Farmers and Local Governments outlines tools, from planning and zoning to taxes and information relating to conservation easements and agricultural districts as well.

COCS studies in five North Carolina counties have determined that residential properties actually cost each county more in needed services than they provide in revenue, while farm and forest landowners pay more than their fair share of taxes.

Information in this subsection is taken from the Farmland Information Center Fact Sheet: The Farmland Protection Toolbox at http://farmlandinfo.org/documents/27761/fp_toolbox_02-2008.pdf

A crucial requirement for an agricultural future is an adequate supply of affordable productive land. North Carolina offers a range of programs for landowners to ensure that their land will not be converted to non-farm uses. These programs require local partners to help landowners achieve their goals, and they can also help local governments meet their objectives of directing growth, protecting natural resources, and supporting local agricultural businesses. Protected farmland gives localities a good sense of where their stable agricultural communities are located, helping them craft policies to steer appropriate services toward those areas.

FARMLAND PROTECTION PLANS

County agricultural development and farmland protection plans are valuable tools that can help focus county priorities and resources on the needs of the farm sector. Local plans take an objective snapshot of current agriculture and offer long-term direction on future policy and initiatives. They help local governments quantify the importance of farming and forestry to their local economy and quality of life; identify threats, recognize opportunities for future viability; and make recommendations for public and private sector leadership to ensure a thriving working landscape. A completed plan will also lower the cost-share requirements for county applications to the state Agricultural Development and Farmland Preservation Trust Fund.

COMPREHENSIVE PLANNING

Comprehensive plans allow counties, municipalities, and townships to create a vision for their future by identifying areas for a variety of different land uses. They provide a rationale for zoning and promote the orderly provision of public services. As such, these plans can form the foundation of a local farmland preservation strategy incorporating one or more of the tools mentioned in this section of the report.

COST OF COMMUNITY SERVICES

Cost of Community Services (COCS) studies are a simple type of fiscal impact study that takes a snapshot of local government budgets in a given year, comparing revenues and costs for different types of land uses.

COCS studies in five North Carolina counties have determined that residential properties actually cost each county more in needed services than they provide in revenue, while farm and forest landowners pay more than their fair share of taxes. There is a simple explanation for this surprising result: cows don't dial 911. Farms don't require much from their counties, while new housing developments spread out across the countryside require a great deal of public funds for new infrastructure and services.

COCS studies have important implications for policy makers charting a future course for their communities. It doesn't mean that communities should pursue a single type of land use only for fiscal health, but it is important for them to consider the importance of balancing various community goals that include a range of housing and employment options, as well as open space and working lands. With good planning, these goals can be balanced for the benefit of all citizens.

GROWTH MANAGEMENT LAWS

Growth management laws are intended to control the timing and location of urban growth and as such can have a big impact on maintaining the viability of farm operations. These laws represent some of the most comprehensive forms of planning in the USA and regulate the pattern and rate of development within an "urban growth boundary." Growth boundaries have often been drawn to exclude prime farmland, thus providing the opportunity for long-term farmland operation.

However, the comprehensiveness of effective growth management laws and urban growth boundaries has been fiercely challenged by property rights advocates across the USA, and thus one of the most effective tools for farmland preservation has only limited political support and effectiveness.

MITIGATION LAWS AND POLICIES

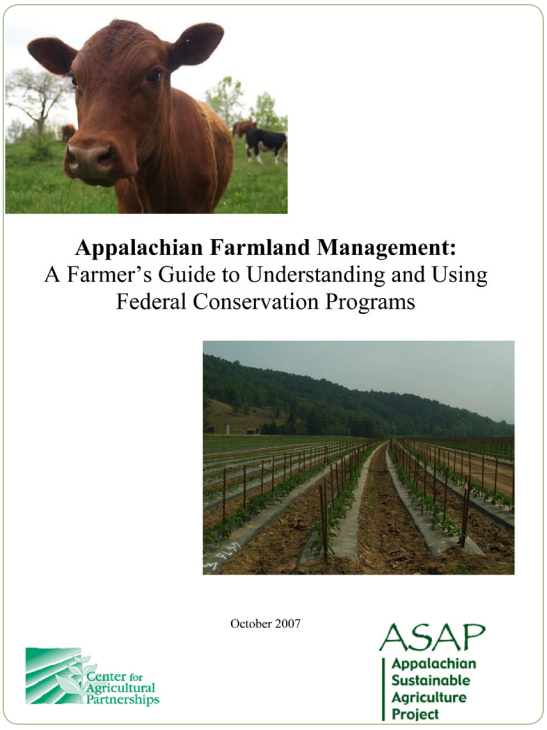
Mitigation actions try to compensate for the conversion of agricultural land into suburbs by requiring permanent preservation of comparable agricultural land elsewhere in the community or local region. Developers can place a conservation easement on available farmland elsewhere in the locality or pay a fee in lieu of direct protection. The appropriate county or municipality can then use this money to fund farmland conservation easements as they become available.

PURCHASE OF DEVELOPMENT RIGHTS

In many ways Purchase of Development Rights (PDR) is the ultimate conservation tool for farmland preservation, but also the most expensive for public or non-profit agencies. Landowners can voluntarily sell agricultural conservation easements, which limits the future land use to agricultural purposes only to either a government agency or a private conservation organization. Farmers receive in cash the difference between the value of the land for agriculture and its value calculated for its highest and best use, usually commercial and/or residential development.

PDR or Purchase of Agricultural Conservation Easements (PACE) programs provide landowners with liquid capital that can enhance the economic viability of farming and help maintain family tenure on the land. These programs also help farmers share some of the costs of protecting agricultural land with communities who benefit from that preservation.

North Carolina has several opportunities for landowners to receive cash compensation for placing an agricultural conservation easement on their farm. Funding for these programs can come from the state, local or federal level. Each of these programs has different goals and eligibility requirements, and funding is generally in short supply. On the state level, the NC Agricultural Development and Farmland Preservation Trust Fund, the Clean Water Management Trust Fund, and the Tobacco Trust Fund have all provided money to purchase development rights on farms. On the local level, Orange, Buncombe, Currituck, Durham, Forsyth, Alamance and Rowan counties have all provided some funding. Together, state and local funds can be used to leverage federal dollars from the United States Department of Agriculture's Farmland Protection Program.



Appalachian Farmland Management: A Farmer's Guide to Understanding and Using Federal Conservation Programs
www.asapconnections.org/special/2007/AppFarmMan.pdf

Landowners interested in these programs should contact their local land trust or Soil and Water Conservation District. For additional information on this tool, see Chapter 7: Open Space Preservation.

TRANSFER OF DEVELOPMENT RIGHTS

TDR programs are designed to accomplish much the same ends as the publicly funded PACE and PDR programs. The program allows landowners to transfer the right to develop one parcel of land to a different parcel, generally but not always under a different ownership. Generally established through local zoning ordinances, TDR programs can help protect farmland by shifting development from agricultural areas to areas planned for growth.

Like PACE and PDR programs, TDR programs can provide farmers with liquid capital to improve farming profitability. However, these programs require a local government to have in place strong and sophisticated development regulations so that TDRs can be used successfully as both a growth management and farmland preservation tool.

While almost every state has TDR legislation on the books, North Carolina does not, and there is a difference of legal opinion as to whether the practice is legal in the state. Currently, Orange County, NC, is drafting local regulations that will operate like a TDR mechanism. For additional information see Chapter 7: Open Space Preservation.

VOLUNTARY AGRICULTURAL DISTRICTS

Local Voluntary Agricultural District (VAD) programs allow farmers to form areas where commercial agriculture is encouraged and protected. Implemented at the county level, VADs form partnerships among farmers, counties and land use planners.

When a local jurisdiction passes a VAD ordinance, commissioners appoint a board of people who are familiar with local agriculture to administer the program. Landowners receive a locally determined set of benefits in exchange for restricting development on their land for a 10-year period. They maintain the right to withdraw from the program at any time. Enhanced Voluntary Agricultural District programs offer additional incentives to landowners willing to waive their right of immediate withdrawal.

In exchange for enrollment, farmers receive a package of benefits which typically includes: the creation of farmland protection plans; differential tax assessments or tax credits; and enhanced protection from government regulations that may restrict farm practices and from private nuisance lawsuits.

Other benefits include raising awareness about the importance of agriculture and the needs for working open space within a community's planning jurisdiction. Depending on how the ordinance is written, agricultural districts also offer increased protection from nuisance actions for farm, forestry, and horticultural operations; increased participation from members of these industries in planning efforts; and, conversely, increased participation from planners and other professionals in the promotion and protection of working open space. Voluntary agricultural districts can give flexibility to local governments when it comes to zoning of farming operations.

For both counties and municipalities a voluntary agricultural district program can be one piece of a larger overall program for land conservation; particularly with regards to working open space. Many of the VAD ordinances list as a responsibility of the agricultural advisory board the development of a farmland protection plan, which can be used as a blueprint for promoting and protecting agriculture within planning jurisdictions and assist with obtaining better funding percentages under the North Carolina Agricultural Development and Farmland Preservation Trust Fund. These plans can also be referenced within a county or municipality's broader land use plan as the sections that address working open space.

Ashe County has a very popular Voluntary Agriculture District encompassing more than 14,000 acres. Within Region A, Cherokee and Clay counties have VADs and Jackson County is working on passage of a VAD. From a planning perspective, a VAD's biggest benefit is

that farmers use it as a way to make their voice heard.

CLUSTER ZONING

Cluster zoning, sometimes known as open space zoning, requires buildings to be grouped together on small lots to preserve surrounding open space that, at least theoretically, can be used for continuing some farming operations. This undeveloped land is usually protected by a conservation easement but is normally owned by a homeowners' association representing the community housed in the cluster subdivision. Homeowners are often not sympathetic to commercial farming on their doorstep, and thus this provision has had more success in preserving open space that can act as a transitional area between farms and residential areas.

RIGHT-TO-FARM LAWS

State right-to-farm laws are intended to protect farmers from nuisance lawsuits from new neighbors who moved in after the agricultural operation was established. Some also prohibit local governments from enacting ordinances that impose unreasonable restrictions on farming. Local municipalities in some states have sometimes enacted their own right-to-farm laws that strengthen state laws. These additional local right-to-farm laws can usefully serve as bold policy statements that agriculture is an important and valued part of the local economy and culture. Some local legislation goes so far as to require notices to be placed on all property deeds in agricultural districts cautioning potential buyers that they may experience inconveniences due to farming operations.

TAX RELIEF

Differential assessment laws direct local governments to assess agricultural land at its value for agriculture, instead of its fair market value based on its development potential. As the land value for farming is generally considerably less than that for development, this usually results in a worthwhile tax savings for the farmer.

Since high taxes reduce profits and lack of profitability for farmers is a major reason for selling land to developers, differential assessment laws help preserve the land base for farming. The lower tax rates also tend to bring farmers' taxes in line with what it actually costs local governments to provide services to the land.

ACQUISITION IN FEE

Towns and counties may own and acquire land for a multitude of conservation reasons: water quality protection, open space, parks and recreation, and future development possibilities. When publicly owned land is suitable for agricultural production, the local government may decide to lease this land out to local farmers. This provides income for the county, eliminates its management costs for mowing and other upkeep, and stimulates the agricultural economy, while still allowing the county to achieve its conservation goals. There are a number of logistical issues that must be addressed to make this lease arrangement work for both parties, but there are a number of success stories that North Carolina local governments can draw on to develop a working protocol.

AGRICULTURAL PROTECTION ZONING

Zoning is a common land use planning tool. This local law divides a county or town into districts or zones that specify allowable or conforming land uses. According to North Carolina state law, bona fide farms are exempt from county zoning, but cities and towns still retain the right to exercise zoning powers.

Agricultural zoning designates areas where farming is the desired land use, generally on the basis of soil quality and a variety of locational factors. Other land uses are discouraged. Ordinances vary in what activities are permitted in agricultural zones. The most restrictive regulations prohibit any uses that might be incompatible with commercial farming.

While farmers often worry that zoning will result in a loss of equity and freedom, some communities have found agricultural protection zoning actually supports their farm economy. Agricultural protection zoning can keep land affordable for farming purposes, keep incompatible development away from the borders of farms and help streamline the

regulatory process for buildings associated with the agricultural operation.

Agricultural Protection Zoning (APZ) refers to county and municipal zoning that protects farming by designating areas where farming is the primary land use and limits or prohibits uses incompatible with commercial farming, such as non-farm residential development. Such zoning stabilizes the agricultural land base by conserving a critical mass of agricultural land so that farms do not become isolated islands in a sea of residential neighborhoods. By restricting the development potential of large properties, APZ can limit land speculation and thus keep land relatively affordable for farmers. It also benefits farmers and the general public alike by protecting scenic landscapes and maintaining open space.

CONSERVATION EASEMENTS

An agricultural conservation easement is a voluntary deed restriction that landowners can place on their land. It permanently limits subdivision and nonagricultural development. Landowners retain ownership of the property and can continue to farm however they choose. Public access is not required, and the land can be sold or passed along to heirs. However, future owners must abide by the terms of the easement. This ensures that the land always will be available for agricultural use.

Landowners who place an agricultural conservation easement on their land are known as easement grantees. The grantee must find a government entity, such as the county, or a conservation organization, such as a land trust, to agree to monitor the property to be sure that the terms of the easement are fulfilled. This organization is known as the easement holder.

Landowners who donate an agricultural conservation easement may receive a federal income tax charitable deduction, as well as a reduction in the value of the property for estate tax purposes. North Carolina also has a unique state conservation tax credit available for donations of property or easements for conservation purposes. See Section 7: Open Space Preservation, for additional information.

GREEN PAYMENTS AND OTHER ECONOMIC INCENTIVES FOR AGRICULTURE

For the last decade or more, public and political support has been building to shift farm policy towards rewarding farmers for their overall stewardship of land, rather than rewarding the production of a few commodities. Green Payments is the phrase coined to describe incentives that help farmers on working lands perform conservation practices that result in environmental benefits for everyone.

Green payments are designed to encourage farmers to provide more environmental services than they might otherwise provide under existing market and regulatory conditions. In the United States, the term green payments refers to agricultural programs with primarily environmental goals. Although all U.S. green payments programs focus on the environment, the types of payments range from cost-sharing for specific conservation practices to incentives for whole-farm management of environmental resources and rewards for good actors for past environmental stewardship.

Modern U.S. agri-environmental programs began in 1985 by paying farmers to retire land and focus on a single agricultural benefit, limiting erosion. Since then, these programs have expanded in number and overall funding and now pay farmers to provide additional conservation benefits either while maintaining agricultural production on working lands or by retiring land from production. These environmental benefits include stemming wetland loss and wildlife habitat deterioration, protecting farmland from conversion to other uses, and improving water and air quality. U.S. agri-environmental policy is thus evolving from programs focusing primarily on land retirement to programs encouraging sound environmental management on working farms.

The majority of U.S. agri-environmental programs are voluntary in nature and are funded through the federal Commodity Credit Corporation (CCC). They are known as either farm bill programs or Title II programs because they are authorized by the farm bill, a multi-year act authorizing federal commodity, farm support, and agricultural conservation programs.

Conservation Reserve Program (CRP). Farmers may submit bids to enroll land in CRP for 10-15 years. Bids are based on an Environmental Benefits Index (EBI) score, which reflects the impact enrollment would have on various environmental measures (ground water and surface water quality, wind erosion, wildlife habitat, etc). CRP also includes a number of subprograms, the most visible of which is the Conservation Reserve Enhancement Program or CREP. CREPs are developed by states who contribute additional funds so that higher payments can be offered to retire additional land in environmentally sensitive watersheds.

Wetlands Reserve Program. WRP, administered by the Natural Resources Conservation Service (NRCS), provides long-term protection to agricultural wetlands by requiring participants to implement approved wetland restoration and protection plans. Most lands enrolled in WRP are flood-prone agricultural lands. Because the goal is long-term wetland restoration, most land is enrolled under a permanent easement or a 30-year easement. Land may also be enrolled for ten years without any easement.

Working Lands Programs. These programs provide green payments to farmers for increased environmental services on working lands. Below is a description of four of the largest working lands programs all administered by the Natural Resources Conservation Service. These programs have been very popular with farmers. While they each received substantial funding increases in the 2002 farm bill, requests to participate have continued to far outpace available funding, resulting in a large backlog.

Environmental Quality Incentives Program. EQIP has been described as the first major U.S. green payments program specifically designed to pay farmers for environmental benefits while allowing continued agricultural production. EQIP provides cost-sharing and technical assistance for implementing specific conservation measures (such as installing buffer strips near streams) to remedy environmental problems on farms and may also provide incentive payments, all to encourage producers to adopt certain practices, so producers can keep lands in production rather than retiring them. NRCS distributes funds at the national level based on national environmental priorities, including reduction of non-point source pollution, reduction of air pollution, and control of soil erosion. Each state determines how to allocate the funds it receives, based on its own environmental priorities. EQIP is the only large conservation program targeted to livestock production, as 60% of the funds each year must be spent on practices that address associated problems, such as waste management.

Wildlife Habitat Incentives Program. WHIP provides cost-sharing to landowners to develop or restore wildlife habitat on their agricultural operations. In exchange, landowners voluntarily limit incompatible activities on the land. WHIP targets at-risk species, declining habitats, and conservation practices that are ineligible for other agricultural conservation program funds (e.g., fish passages). Agreements range from 5 years to 15 years or more in duration.

Farm and Ranch Lands Protection Program. FRPP helps farmers keep their land in production by providing matching funds to state, tribal, local, or non-governmental organizations that have existing farmland protection programs to purchase permanent conservation easements from willing sellers. The easements usually restrict non-farm development and subdivisions on the land, although the landowner retains the right to farm the land. The landowner must also implement a conservation plan to reduce soil erosion on any highly erodible land. NRCS state officials decide which applications to fund.

Grasslands Reserve Program. The GRP targets grasslands that historically have been grasslands and have potential to provide habitat for animal or plant populations of significant ecological value. GRP also targets grasslands threatened with conversion to other uses. GRP offers landowners a choice of easements (lasting 30 years or permanently) or rental agreements (lasting 10 to 30 years). In exchange,

landowners protect and, if necessary, restore grasslands in accordance with an NRCS restoration agreement. GRP has a total funding limit of $254 million and a total enrollment limit of 2 million acres between FY2003 and FY2007.

Conservation Security Program. CSP rewards producers who proactively conserve environmental resources across their entire agricultural operation, and encourages them to integrate whole-farm planning. This is in contrast to EQIP, which helps producers address existing environmental problems. This contrast has caused some analysts to characterize CSP as the most comprehensive U.S. green payments program. The eligibility criteria for CSP reward a producer's historic record of conservation and provide incentives to do more conservation in the future. It uses a three-tiered system that rewards increased levels of conservation on enrolled lands with increased payments. For the lowest level, protecting one natural resource on part of their operation, producers may earn up to $20,000 annually; while for the highest level, protecting all natural resources on all of their operation, producers may earn up to $45,000 annually.

This section on Green Payments is excerpted and adapted from: "CRS Report for Congress, Green Payments in U.S. and European Union Agricultural Policy," Updated November 22, 2005 by Charles E. Hanrahan and Jeffrey Zinn.

9.2 FARM TRANSITION PLANNING

The future of North Carolina's family farms lies in the current generation's ability to effectively transition its farm business assets to the next generation of producers, either within or outside the farm family. Effective farm business transitions require advanced and sustained planning, a process many farm families are slow to begin.

Equally important to our state's farming future is the ability of young and other beginning farmers to overcome the barriers they face in starting and operating a profitable farm business. Prospective new farmers need creative equity-building opportunities and strategies designed to give the entering farmer the assets and management skills he or she needs to run a successful farm business.

The North Carolina Farm Transition Network (NCFTN) was formed to help slow the trend of farm business exits that are caused by poor business succession planning or by the absence of an identified successor. The NCFTN mission is to ensure that working farms remain in agricultural production by assisting retiring and aspiring farmers in the effective transition of farm businesses. It provides a range of educational and technical assistance services to farm families, prospective farmers and professional advisors on their business decisions and management of productive agricultural assets for the future.

As part of the MLI: Region A Toolbox charrette process, members of the project consulting team, including representatives from the American Farmland Trust and NCFTN and local land trust experts, worked with Cherokee County farmers Ed and Keith Wood to prepare a farmland transition plan. The transition plan includes conservation, development and business concepts for lands that the family owns that are not best suited for agricultural production. A detailed case study on the charrette outcomes and the farmland transition plan are included in the appendix of this report.

Image Source: Ben Brown/PlaceMakers

As part of the MLI: Region A Toolbox charrette process, members of the project consulting team, including representatives from the American Farmland Trust, NCFTN and local land trust experts, worked with Cherokee County farmers Ed and Keith Wood to prepare a farmland transition plan.

Concept for conservation-oriented tourist lodge development on hillside land owned by the Wood family above their bottom land.

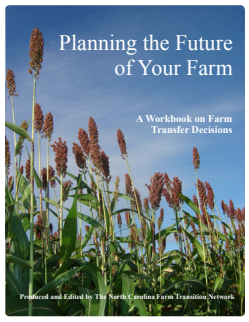
RESOURCES

North Carolina Farm Transition Network: ncftn.org

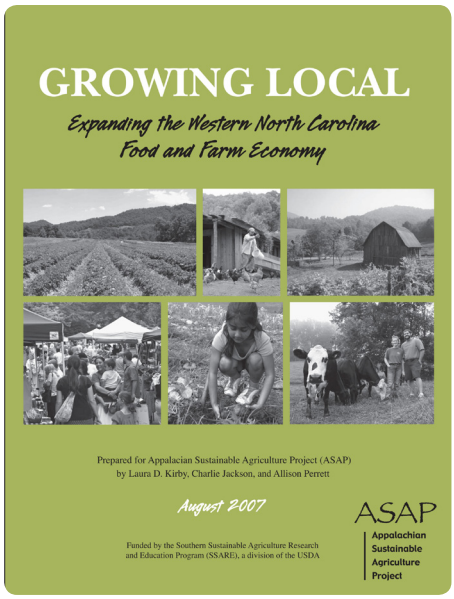
"Building a Framework for Decisions About the Family Farm": www.ncftn.org

Succession Planning Resource Library: www.ncftn.org/planning

Sustaining Working Farms Through Conservation: www.ctnc.org/downloads/126771_ctnc_ttfc_brch.pdf



From the North Carolina Farm Transition Network, "Planning the Future of Your Farm" can be found at: www.ncftn.org



Growing Local: Expanding the Western North Carolina Food and Farm Economy can be accessed at www.asapconnections.org/special/research/Reports/GrowingLocal.pdf

"The resurgence of interest in local food is gradually reshaping the business of growing and supplying food . . .the number of small farms, after declining for more than a century, has increased 20% in the past six years."

Image Source: Ben Brown/PlaceMakers

Farmers market vendor in Franklin, NC.

The resurgence of interest in local food is gradually reshaping the business of growing and supplying food to Americans. The local food movement has already accomplished something that seemed unlikely a few years ago: a revival of small farms. An article in *Business Week* in May 2008, reported another set of figures from the U.S. Department of Agriculture, namely that the number of small farms, after declining for more than a century, has increased 20% in the past six years to 1.2 million.

Food production, preparation, and consumption play a crucial role in virtually all aspects of our lives: health, economy, culture, and environment. Healthy local food systems are central to a strong local community.

The National Association of Counties defines local food systems as all the interdependent steps and actors that go into producing the food that is grown and raised in a region. Steps include: planting, raising, harvesting, storing, transporting, processing, packaging, marketing, and retailing of food; actors include farmers, suppliers, buyers and government.

Increased sale of locally grown food makes sense to farmers, consumers and local governments as a way to keep more dollars at home and improve the quality of life for everyone in the community. Local food can also help the environment by reducing a meal's food miles or the distance it travels to reach one's plate and the energy consumed in getting there. Individual citizens, government institutions and private businesses can all play a role in supporting local farmers by changing traditional buying habits, identifying logistical barriers and examining regulations that hinder the development of local sales.

The recent rise of interest in the economics and ecology of local food production has provided a contemporary opportunity to reconnect the economics of farming with local cultural landscapes. Research published in the May 2008 issue of the *American Journal of Agricultural Economics* suggests that the average supermarket shopper is willing to pay a premium price for locally produced foods, providing some farmers an attractive option to enter a niche market that could boost their revenues.

The study also showed that shoppers at farmer's markets are willing to pay almost twice as much extra as retail grocery shoppers for the same locally produced foods. Both types of shoppers will also pay more for guaranteed fresh produce and tend to favor buying food produced by small farms over what they perceive as corporate operations, according to the study. The rising cost of energy and transportation costs add an edge of urgency and opportunity to the economics of local food production and consumption.

As evidence of this potentially dramatic shift in American tastes, the U.S. Department of Agriculture noted the number of local farmer's markets reached 4,692 in 2006, its most recent year of data, up 50% from five years earlier. Sales from those markets reached $1 billion.

SUSTAINABLE EATING: WHY AND HOW TO BUY LOCAL

STOP! Before you take another bite, you might want to consider that your food choices have a much bigger impact than you could ever imagine. Food choices CAN make a difference! Eating food grown locally can help to preserve our remaining family farms and our rural landscape. Eating food grown locally means that food dollars stay in the local economy, that the food we eat is fresher, more nutritious, that we are caring for our environment, and that we're thinking of our future and our children's futures!

Eating seasonally as much as possible will help to ensure that you are eating food that is locally grown. Ask the vendor/farmer where the food comes from. Get to know the farmers in your area. Actually knowing the person who grows your food is a powerful way to take control of the quality and character of the food you consume. There are many opportunities to support local communities and eat fresh healthy food across the region by buying locally.

Community Supported Agriculture (CSA) is a direct connection between the farmers and the consumers. To join a CSA is to buy a share of the season's harvest. The farmer gains the security of knowing he or she has been paid for a portion of the harvest and the farmer's community participates in how and where their food is grown.

Tailgate Markets - There are nearly three dozen tailgate markets throughout western North Carolina. Each market is unique in that it reflects the desires of the local community and the farming conditions of the area. They all provide a direct connection between the farmer and the consumer and have the freshest, healthiest food available.

U-Pick Farms - The region is blessed with many U-Pick farms. Apple orchards thrive in the mountains and are great fall fun for the whole family. There are also many berry farms growing strawberries, blueberries, blackberries, raspberries and more with fresh fruit available throughout the season.

Local Food Campaign Partners (restaurants, grocers, B&Bs, bakers and caterers) - The area has some fine restaurants and food establishments. Great cooks know that the best food is made with the freshest ingredients. The freshest ingredients, of course, are local. Ask for locally grown wherever you buy food. If a restaurant or store says it sells local produce, ask where it came from and thank them for supporting local farms and serving only the freshest foods. Ask that they carry even more locally grown items. Support from the consumer is often the most important factor for change. In western North Carolina, you can seek out Local Food Campaign Partners. These businesses have partnered with local farmers and the Appalachian Sustainable Agriculture Project (ASAP) and have agreed to increase purchases of local sustainably grown food and to feature locally grown food. They have made the special effort to connect with local farms and to serve the freshest and healthiest food available. Enjoy!

Adapted from www.buyappalachian.org/index.php?page=why

Appalachian Sustainable Agricultural Project: www.asapconnections.org/index.html

Community Food Security Coalition: www.foodsecurity.org

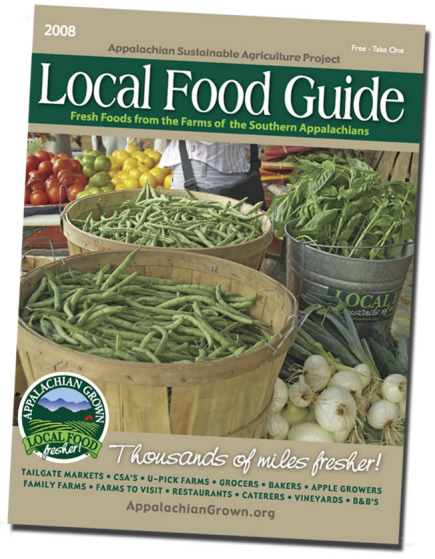
Counties and Local Food Systems: www.naco.org/Template.cfm?Section=technical_assistance&template=/ContentManagement/ContentDisplay.cfm&ContentID=24784

"Decomposing Local: A Conjoint Analysis of Locally Produced Foods." *American Journal of Agricultural Economics*, May 2008: www.blackwell-synergy.com/doi/abs/10.1111/j.1467-8276.2007.01111.x

Local Food Guide for the Southern Appalachians: www.buyappalachian.org

"The Rise of the 'Locavore," *Business Week*, May 20, 2008: www.businessweek.com/bwdaily/dnflash/content/may2008/db20080520_920283.htm

RESOURCES



Appalachian Sustainable Agriculture Project's Local Food Guide for western North Carolina Blue Ridge and the southern Appalachian mountains directs you to locally grown, fresh food from your neighbor farmers who grow it and those markets, grocers, and restaurants that are committed to using locally grown food (www.buyappalachian.org).

10 REASONS TO BUY LOCAL FOOD

1 Locally grown food tastes better. Food grown in your own community was probably picked within the past day or two. It's crisp, sweet and loaded with flavor. Several studies have shown that the average distance food travels from farm to plate is 1,500 miles. In a week-long (or more) delay from harvest to dinner table, sugars turn to starches, plant cells shrink, and produce loses its vitality.

2 Local produce is better for you. A recent study showed that fresh produce loses nutrients quickly. Food that is frozen or canned soon after harvest is actually more nutritious than some fresh produce that has been on the truck or supermarket shelf for a week.

3 Local food preserves genetic diversity. In the modern industrial agricultural system, varieties are chosen for their ability to ripen simultaneously and withstand harvesting equipment; for a tough skin that can survive packing and shipping; and for an ability to have a long shelf life in the store. Only a handful of hybrid varieties of each fruit and vegetable meet those rigorous demands, so there is little genetic diversity in the plants grown. Local farms, in contrast, grow a huge number of varieties to provide a long season of harvest, an array of eye-catching colors, and the best flavors. Many varieties are heirlooms, passed down from generation to generation, because they taste good. These old varieties contain genetic material from hundreds or even thousands of years of human selection; they may someday provide the genes needed to create varieties that will thrive in a changing climate.

4 Local food is GMO-free. Although biotechnology companies have been trying to commercialize genetically modified fruits and vegetables, they are currently licensing them only to large factory-style farms. Local farmers don't have access to genetically modified seed, and most of them wouldn't use it even if they could. A June 2001 survey by ABC News showed that 93% of Americans want labels on genetically modified food; most so that they can avoid it. If you are opposed to eating bioengineered food, you can rest assured that locally grown produce was bred as nature intended.

5 Local food supports local farm families. With fewer than 1 million Americans now claiming farming as their primary occupation, farmers are a vanishing breed. And no wonder—commodity prices are at historic lows, often below the cost of production. The farmer now gets less than 10 cents of the retail food dollar. Local farmers who sell direct to consumers cut out the middleman and get full retail price for their food—which means farm families can afford to stay on the farm doing the work they love.

6 Local food builds community. When you buy direct from the farmer, you are re-establishing a time-honored connection. Knowing the farmers gives you insight into the seasons, the weather, and the miracle of raising food. In many cases, it gives you access to a farm where your children and grandchildren can go to learn about nature and agriculture. Relationships built on understanding and trust can thrive.

7 Local food preserves open space. As the value of direct-marketed fruits and vegetables increases, selling farmland for development becomes less likely. You have probably enjoyed driving out into the country and appreciated the lush fields of crops, the meadows full of wildflowers, the picturesque red barns. That landscape will survive only as long as farms are financially viable. When you buy locally grown food, you are doing something proactive about preserving the agricultural landscape.

8 Local food keeps your taxes in check. Farms contribute more in taxes than they require in services, whereas suburban development costs more than it generates in taxes, according to several studies. On average, for every $1 in revenue raised by residential development, governments must spend $1.17 on services, thus requiring higher taxes of all taxpayers. For each dollar of revenue raised by farm, forest, or open space, governments spend 34 cents on services.

9 Local food supports a clean environment and benefits wildlife. A well-managed family farm is a place where the resources of fertile soil and clean water are valued. Good stewards of the land grow cover crops to prevent erosion and replace nutrients used by their crops. Cover crops also capture carbon emissions and help combat global warming. According to some estimates, farmers who practice conservation tillage could sequester 12-14% of the carbon emitted by vehicles and industry. In addition, the patchwork of fields, meadows, woods, ponds and buildings is the perfect environment for many beloved species of wildlife.

10 Local food is about the future. By supporting local farmers today, you can help ensure that there will be farms in your community tomorrow and that future generations will have access to nourishing, flavorful, and abundant food.

From www.buyappalachian.org/index.php?page=ten
(Adapted from ©2001 Growing for Market)

9.4 FARM-TO-SCHOOL PROGRAMS

Farm-to-school programs were first created in North Carolina in 1997 through a partnership between the Department of Defense and the Marketing and Food Distribution Divisions of the North Carolina Department of Agriculture and Consumer Services as a way to bring locally grown food into school systems while also teaching children about the origin of food.

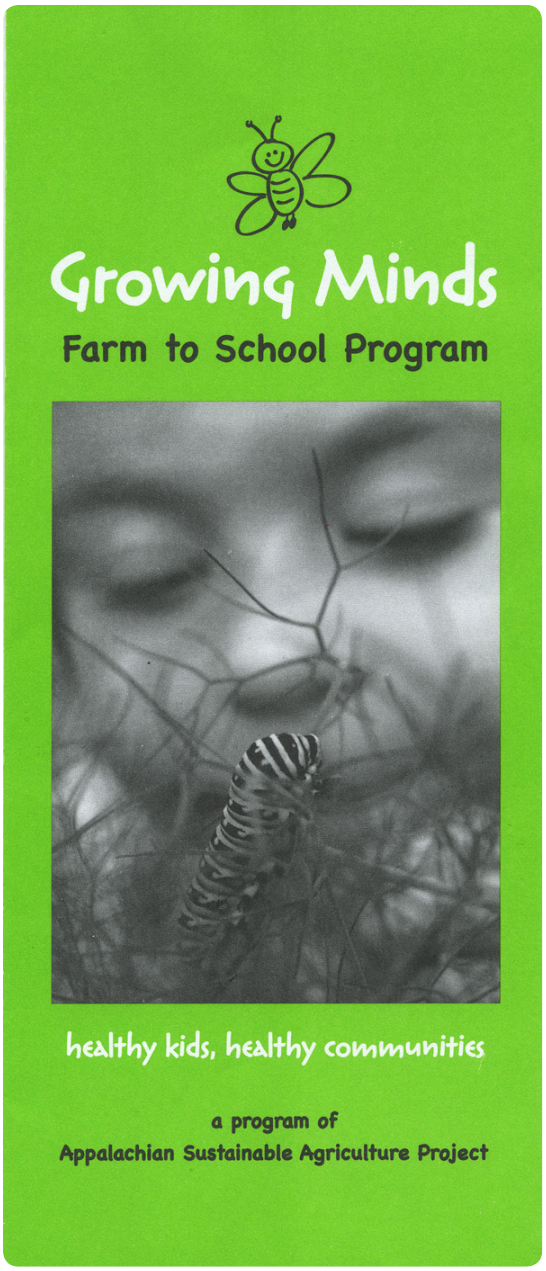
For instance, Haywood County Schools purchase produce from a local farm, have school gardens, composting and waste management programs, conduct nutrition education in the classroom, and provide students learning opportunities outside the classroom such as tours to farms and farmer's markets. Farm-to-school programs have demonstrated to students that farms are still alive and well in their local community at the same time that parents and school administrators are showing increasing concern about obesity and the health of our children.

Through their Growing Minds program, the Appalachian Sustainable Agriculture Project (ASAP) has taken a four-pronged approach to connect farms to schools:

1. Working with farmers, educators, and communities to serve local food in schools,
2. Expanding opportunities for farm field trips,
3. Experiential nutrition education,
4. Developing school gardens.

Asheville City and Madison County Schools currently participate in farm-to-school programs in collaboration with ASAP. It is estimated that there are over 60 farm-to-school programs across North Carolina.

County committees composed of school nutrition directors, farmers, teachers, health departments, cooperative extension, and interested parents can help to identify opportunities and overcome logistical barriers to increased use of local foods in schools, as well as providing opportunities to get students a more direct connection to area farms.



RESOURCES

National Farm-to-School Online: www.farmtoschool.org

NC Farm-to-School Program www.ncfarmtoschool.com

ASAP Growing Minds Program: growing-minds.org

General Tools

American Farmland Trust research site: aftresearch.org/

American Farmland Trust Farmland Information Center: farmlandinfo.org/

Cost of Community Services Studies: farmlandinfo.org/documents/27757/COCS_09-2007.pdf

Cost of Community Services Studies in NC: www.cals.ncsu.edu/wq/lpn/cost.html

County Farmland Protection Plans: www.ncadfp.org/documents/CountyFarm-ForestlandProtectionHandout.pdf

Farmland Preservation Tools: www.ncadfp.org/FarmlandPreservation.htm

Farmland Protection Toolbox factsheet: farmlandinfo.org/documents/27761/fp_toolbox_02-2008.pdf

Guide to Planning for Agriculture for NC Farmers and Local Government: farmlandinfo.org/farmland_preservation_literature/

NC Agricultural Development and Farmland Preservation Trust Fund: www.ncadfp.org/index.htm

North Carolina Cooperative Extension: www.ces.ncsu.edu

Agricultural Conservation Easements

Purchase of Agricultural Conservation Easements factsheet: farmlandinfo.org//documents/27751/PACE_2006.pdf

Purchase of Agricultural Conservation Easements, Sources of Funding factsheet: farmlandinfo.org//documents/27750/PACE_Sources_of_Funding_06-11.pdf

Agricultural Zoning

Agricultural Protection Zoning factsheet: farmlandinfo.org//documents/29478/FS_APZ_9-98.pdf

Enhanced Farmland Protection for North Carolina Landowners: www.ncadfp.org/documents/EVADBrochure_000.pdf

Model local right-to-farm law for communities: www.mass.gov/agr/docs/farmbylaw.pdf

North Carolina Agricultural Development and Farmland Preservation Trust Fund: www.ncadfp.org/VoluntaryAgriculturalDdistricts.htm

The Impact of Zoning on Farm Businesses: farmlandinfo.org/documents/30864/AFT_What_About_My_Equity.pdf

Voluntary Agricultural District Programs: www.farmland.org/programs/states/nc/NorthCarolinaVAD.asp

Green Payments

Green Payments in U.S. and EU Agricultural Policy: www.nationalaglawcenter.org/assets/crs/RL32624.pdf

Agriculture & Water: Green Payments & The Farm Bill: www.mnproject.org/ag-greenpayments.html

Alternative Green Payment Policies When Multiple Benefits Matter: findarticles.com/p/articles/mi_qa4046/is_200404/ai_n9396958

RESOURCES

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10 ECONOMIC DEVELOPMENT

Image Source: Gabriel Cumming/Carla Norwood

"The quality of life and the quality of growth and businesses can be very intertwined.... with a very vibrant economy based on small businesses—and even large companies, manufacturing companies—but they all have a commitment to the conservation and preservation of resources."

Rose Johnson
President
Haywood Community College

Workforce development is an integral part of economic development. For information on the state of the Workforce in Region A and local, state and regional workforce studies, go to www.regiona.org/workforce/WDB%20Resources.htm

Through the 1950s, economic development in western North Carolina was based on natural resources: timber, agriculture, mining, pulp and paper. In the 1950s, the area's economic growth was based on the large number of low-wage, low-skill laborers. Cut-and-sew textiles and furniture became dominant. Also, electronic products assembly gained a respectable percentage of the area's gross product. The middle of the last century also brought the first waves of middleclass tourists and destination entertainment facilities such as Ghost Town, gem mining businesses and tourism related to the Eastern Band Cherokee Reservation. The end of last century saw the growth of water, nature and heritage-based recreation businesses such as whitewater sports, mountain biking, and crafts promoted by Handmade in America and other professional craft organizations. .

Today, the economy is dominated by the second-home industry and recreation/entertainment. The most popular tourist destination in North Carolina is the Blue Ridge Parkway which travels through Jackson and Haywood Counties in the region. The eleventh most visited destination in the state is Harrah's Casino in Cherokee and the thirteenth most popular destination is The Great Smoky Mountains National Park. Nantahala Outdoor Center (an ESOP – employee owned company) is now the largest employer in Swain County and one of the region's largest employers.

Today, travel and tourism is the major driver in the growth of the retail/services sector in the region, as well as in the state. In 2005 travel and tourism's impact was $14 billion statewide and has continued to grow. It is the largest industry in western North Carolina and is expected to be the largest state industry early in the 21st century. According to a joint study by Appalachian State University and Western Carolina University, the Blue Ridge National Heritage Area has created over 46,000 tourism-related jobs and in the Smoky Mountain Host region (the EDD) , tourism has generated over 7,400 jobs.

Aside from concerns regarding social impacts and possible transfer of tourism dollars, a growing concern for the region is that a retail/services based economy means generally low wages and seasonal employment. The casino is one of the few tourist industries to offer year-round employment. In 2005 the average weekly tourism-related job in the District paid just over $16,000, significantly lower than manufacturing job wages. With the shrinking number of manufacturing jobs and an increasing number of service industry jobs, the average weekly wage is falling even more.

Adapted from the Comprehensive Economic Development Strategy 2008 Update prepared by the Southwestern North Carolina Economic Development District September 2008 (www.regiona.org/PDF%20Files/2008%20CEDS%20post.pdf)

SOUTHWESTERN COMMISSION

The Southwestern Commission, as the regional council of governments, provides an array of technical services and expertise related to economic development in the region.

These services include the packaging of public infrastructures from grants to construction. This includes the annual maintenance and updating of the Comprehensive Economic Development Strategy (CEDS), which lists current infrastructure needs across the region. In partnership with the NC Rural Center's Water 2030 blueprint, staff manage a dynamic data base of local water and sewer system attributes, including state of repair and necessary capital improvements.

In addition, the Commission's Workforce Development Board charters JobLink Centers to provide services to jobseekers and employers. According to the website "the purpose of the JobLink Centers is to create a highly skilled and motivated workforce and to promote economic growth of the region." The Workforce Board also promotes economic growth by providing services to employers such as an employer resource room located in the JobLink Career Centers, labor market information, and human resource expertise.

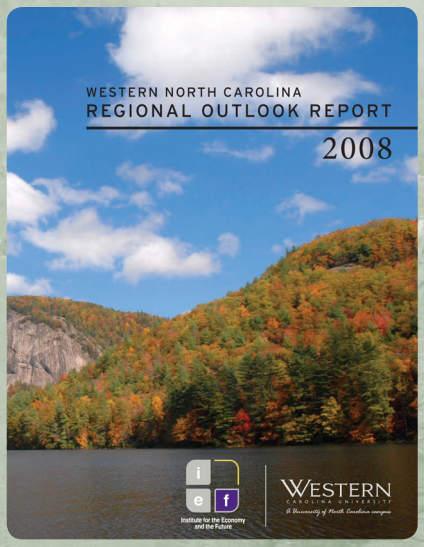
The Workforce Board promotes a trained workforce by providing basic and intensive services to individuals looking for work, providing access, funding and/or referral for training for those who need it to obtain and retain employment; and providing assessment and technology for career development.

ADVANTAGEWEST

The AdvantageWest Economic Development Group is western North Carolina's regional economic development commission. Chartered by the North Carolina General Assembly in 1994, AdvantageWest is a non-profit public-private partnership whose primary focus is marketing the North Carolina mountains to corporations seeking to relocate or open a new facility, expand an existing business within our region, and those who might otherwise improve the quality of life for citizens within our region through activities such as filmmaking, entrepreneurship and tourism.

INSTITUTE FOR THE ECONOMY & THE FUTURE

Western Carolina University's Institute for the Economy and the Future (IEF) is a regional think tank with capacities for rigorous research, economic base analysis, issue polling and employment trend analysis. The IEF conducts economic policy analysis and applied research and administers public service projects on economic and community capacity building and strategic development. The IEF is multidisciplinary with faculty, students and staff from various academic departments. Senior Policy Fellows are selected to serve on one year or longer terms from the private sector and other academic institutions.



The Western North Carolina Regional Outlook Report 2008 was completed to provide a comprehensive overview of the major economic, social, and political issues and trends for policy makers and interested citizens.

The economic development mission of the IEF is to attract, identify, qualify, and assist regional businesses and to leverage the university's extensive resources of research, science, engineering, arts and humanities faculty and students, as well as the core staff of the Institute (analysts, planners and faculty fellows), for business growth, including the transfer and application of new technologies and the commercialization of ideas.

The IEF also has responsibility for developing the strategy and implementation plans for Western's Millennial Initiative, a state legislative mandate which allows rural comprehensive universities to take several critical actions to support economic development.

NC RURAL ECONOMIC DEVELOPMENT CENTER

The N.C. Rural Economic Development Center is a private, non-profit organization whose mission is to develop sound economic strategies that improve the quality of life in rural North Carolina, with a special focus on individuals with low to moderate incomes and communities with limited resources. The center operates a multifaceted program that includes conducting research into rural issues; testing promising rural development strategies; advocating for policy and program innovations; and building the productive capacity of rural leaders, entrepreneurs and community organizations.

A region's goal is to encourage household production in jobs-rich areas and to attract "New Economy" jobs in housing-rich areas.

The **Clean Water Partners Infrastructure Fund** was established by the N.C. General Assembly in the summer of 2007. Lawmakers directed the Rural Center to invest $100 million in water and sewer grants to correct public health and environmental problems in rural and economically distressed communities. Of the total, $10 million was set aside to address crisis needs in drinking water supplies, including drought-related problems.
www.ncruralcenter.org/grants/water.htm

The **Economic Infrastructure Fund** was created by state lawmakers in 2004 to help rural communities devastated by manufacturing job losses. The program helps lay the groundwork—water, sewer and buildings—needed to attract and sustain business development. To be eligible for EIF funding, projects must be tied directly to job creation. Local governments in rural and distressed counties are eligible for funding.
www.ncruralcenter.org/stimulus/index.html

The **Building Reuse and Restoration Program**, a component of the Economic Infrastructure Fund, helps communities restore and renovate vacant commercial buildings for use by new and expanding businesses. The program helps companies reduce the overhead costs associated with relocating or expanding and stimulates the local economy through job growth and infrastructure development. There are two categories for funding—planning and implementation. Local governments are eligible to apply, with priority given to towns with a population of 5,000 or less.
www.ncruralcenter.org/stimulus/index.html

The **Economic Innovation Grants Program** funds innovative local and regional economic development projects that spur business activity, create jobs and further public and private investment in rural North Carolina. It has two categories for funding: Economic Stimulus Investments, for large-scale economic development projects; and Community Innovations Investments, to jump-start or expand innovative development projects that show potential for diversification and sustainability.
www.ncruralcenter.org/grants/cdc.htm

Information in this section adapted from the following source: www.regiona.org/econdev/revolving-loan-fund.htm & www.ncruralcenter.org.

AdvantageWest: www.advantagewest.com

Western Carolina University's Institute for the Economy and the Future (IEF): ief.wcu.edu

Southwestern Commission: www.regiona.org

JobLink: www.regiona.org/joblink/index.htm

NC Rural Economic Development Center: www.ncruralcenter.org

RESOURCES

MAIN STREET

More than twenty-five years ago, the National Trust for Historic Preservation began to focus attention on creating a comprehensive, incremental approach to revitalizing America's main streets and commercial business districts. In North Carolina there are presently 57 participating Main Street communities implementing the Four Points of the Main Street Approach™ (organization, promotion, design, and economic restructuring) including Waynesville (since 1986), Franklin (since 1990), and Sylva (since 1995). The Main Street program is implemented at the state level through the North Carolina Department of Commerce.

Providing technical assistance in downtown revitalization, the North Carolina Main Street Center offers two programs that work with selected towns across the state: Main Street, which focuses on communities under 50,000 that have downtown managers, and Small Town Main Street, which provides guidance to local committees in communities under 7,500 that do not have downtown managers.

The Small Town Main Street Program addresses the increasing number of small, rural towns that need downtown development support. Selected communities receive on-site technical assistance from the Small Town Main Street staff including: organizational development, market analysis, business assistance, promotions, and design.

Since the program began in 1980, North Carolina Main Street downtowns have experienced:

- A gain of $1.1 billion in new investment,
- A net gain of 12,400 jobs,
- Renovation of 2,900 buildings, and
- A net gain of 3,000 businesses.

The North Carolina Main Street Center (NCMSC) provides:

- Program Guidance: Assists communities in developing a local program to manage the process of revitalization and helps them to develop a community-based vision for action. This includes assisting in organizational development and board training as well as supporting the development of goals, objectives and work plans. The Center provides on-going program evaluation and manager and board guidance.
- Technical Assistance: Provides technical assistance in the areas of organizational development, real estate development, market analysis, business retention and creation, promotions, and design, among others. The Main Street designer provides consultation and renderings to property owners to encourage facade renovation and reinvestment.
- Training: Offers training in the Main Street four-point approach, real estate and business development, design, and organizational development. Courses are held around the state and are offered to Main Street and non-Main Street communities alike.
- Networking: Through participation in the North Carolina Main Street program, communities have access not only to other in-state programs but also to over 1,200 communities across the country that

Waynesville, NC

Franklin, NC

Image Source: Gabriel Cumming/Carla Norwood

Murphy, NC

THE MAIN STREET FOUR-POINT APPROACH™ TO COMMERCIAL DISTRICT REVITALIZATION

The National Trust Main Street Center offers a comprehensive commercial district revitalization strategy that has been widely successful in towns and cities nationwide. Described below are the four points of the Main Street Approach which work together to build a sustainable and complete community revitalization effort Coincidentally, the four points of the Main Street Approach correspond with the four forces of real estate value, which are social, political, physical, and economic.

1. **ORGANIZATION** involves getting everyone working toward the same goal and assembling the appropriate human and financial resources to implement a Main Street revitalization program. A governing board and standing committees make up the fundamental organizational structure of the volunteer-driven program. Volunteers are coordinated and supported by a paid program director as well. This structure not only divides the workload and clearly delineates responsibilities, but also builds consensus and cooperation among the various stakeholders.

2. **PROMOTION** sells a positive image of the commercial district and encourages consumers and investors to live, work, shop, play and invest in the Main Street district. By marketing a district's unique characteristics to residents, investors, business owners, and visitors, an effective promotional strategy forges a positive image through advertising, retail promotional activity, special events, and marketing campaigns carried out by local volunteers. These activities improve consumer and investor confidence in the district and encourage commercial activity and investment in the area.

3. **DESIGN** means getting Main Street into top physical shape. Capitalizing on its best assets—such as historic buildings and pedestrian-oriented streets—is just part of the story. An inviting atmosphere, created through attractive window displays, parking areas, building improvements, street furniture, signs, sidewalks, street lights, and landscaping, conveys a positive visual message about the commercial district and what it has to offer. Design activities also include instilling good maintenance practices in the commercial district, enhancing the physical appearance of the commercial district by rehabilitating historic buildings, encouraging appropriate new construction, developing sensitive design management systems, and long-term planning.

4. **ECONOMIC RESTRUCTURING** strengthens a community's existing economic assets while expanding and diversifying its economic base. The Main Street program helps sharpen the competitiveness of existing business owners and recruits compatible new businesses and new economic uses to build a commercial district that responds to today's consumers' needs. Converting unused or underused commercial space into economically productive property also helps boost the profitability of the district.

Source: www.mainstreet.org

are participating in Main Street. By sharing the lessons learned, communities can avoid many of the pitfalls and invest their resources more wisely.

- Advocacy and Leadership: Functions as a clearinghouse for ideas and success stories from which all can benefit. Staff members participate in local, regional, and national events to promote the importance of downtown revitalization and many successes of the North Carolina participants.

INSTITUTE FOR LOCAL SELF-RELIANCE

Locally owned retail businesses selling local goods and services are a vital part of the region's economy, particularly in times of high energy and transportation costs. Unfortunately, there are many issues that challenge local retailers. In response to this challenge, The Institute for Local Self-Reliance (ILSR) proposes a set of new rules that builds community by supporting humanly scaled politics and economics. The rules call for:

- Decisions made by those who will feel the impact of those decisions,
- Communities accepting responsibility for the welfare of their members and for the next generation,
- Households and communities possessing or owning sufficient productive capacity to generate real wealth.

These are the principles of "new localism." They call upon us to begin viewing our communities and our regions not only as places of residence, recreation, and retail but also as places that nurture active and informed citizens with the skills and productive capacity to generate real wealth and the authority to govern their own lives.

STRATEGIES FOR ENCOURAGING LOCAL RETAIL

- The chambers of commerce and economic development organizations should continue to take the lead in helping existing businesses thrive, and should enhance services and products for these businesses, including training through mentoring, youth entrepreneurship,

physical incubators, and links with colleges; and investing by developing mechanisms for mobilizing local capital into startup businesses.

- Direct technical assistance should include loan packaging, small business education, help with merchandising and marketing, staff training, identification of financial support programs, and regulatory assistance.
- New retail should be proactively targeted by noting gaps in the store mix, identifying expiring leases, recruiting retailers, and working to create agglomerations in categories such as apparel, which benefit from co-locating.
- A formula retail ordinance to ban chain shops and restaurants is a blunt instrument that would divert political energy. The objectives of such an ordinance could be met through other means such as incubation and nurturing local businesses.
- Pedestrian enhancements such as crosswalks and bulb-outs to slow traffic should be encouraged or enhanced.
- One-way streets wider than 32 feet should be changed to two-way. This would slow traffic, decrease congestion, improve connectivity—and would make roadways safer for pedestrians.
- A parking management district could handle shared parking arrangements between landowners, valet parking, insurance, and other maintenance costs for lot owners that agree to participate in a shared-use program.
- Small-scale retail depends on foot traffic: urban dwellers shop on foot far more often than people in the suburbs or town settings, and car use decreases markedly as density increases. If managed properly, density would enhance the area by creating greater transit choice, housing options, and customer bases for retailers.
- Encouraging air rights development over existing one-story structures worthy of preservation is another way to gain more density without tear downs. These upper floors also could be set back from the property line if necessary to block distracting views from street level.
- Downzoning reduces teardowns and increases community control over development decisions; but the fiercer competition for space and reduced economies-of-scale results in higher rents and housing costs and makes it harder for local businesses to compete against chain retail.

Information in this section is from the Urban Land Institute Technical Assistance Panel in Chicago and the Campaign for Sensible Growth.

ANDREWS VALLEY INITIATIVE

The Andrews Valley Initiative, AVI, is a North Carolina community organization whose mission is to create a public-private collaborative process that builds on trusting relationships and friendships between business interests and the entire community. AVI will develop personal networks that explore economic opportunities that anticipate and meet the needs of the community. Its goals are to assist the people of the community to clearly understand its situation and determine what to do about it; to guide our local rural community into the emerging global marketplace, exploring its opportunities while retaining its character and heritage.

Through a collaborative and interactive process with the community that began in 2003, AVI has formulated an overall strategy that we have termed "the three-legged stool:" a growing green initiative to address community environmental issues and self-sustainability; a multi-media art museum; and a concept we call "safe haven" to act as the communities economic engines. For more information, please visit www.andrewsvalley.com.

National Main Street Center: www.mainstreet.org

North Carolina Main Street Center: www.nccommerce.com/en/CommunityServices/CommunityPlanningAssistance/NCMainStreetCenter/

Small Town Main Street Program: http://www.nccommerce.com/en/CommunityServices/CommunityPlanningAssistance/NCMainStreetCenter/WhatistheSmallTownMainStreetProgramjlitem.htm

The New Rules Project: www.newrules.org

RESOURCES

10.3 TOURISM & ECOTOURISM

"Environmentally responsible travel to natural areas, in order to enjoy and appreciate natural and cultural features, that promote conservation, have a low visitor impact and provide for beneficially active socioeconomic involvement of local peoples."

www.nature.org/aboutus/travel/ecotourism/about/art667.html

People are becoming increasingly aware of the finite, interconnected, and precious nature of the natural environment; and tourism is becoming an increasingly popular expression of this awareness. In fact, tourism is now the world's largest industry, with nature tourism the fastest growing segment. In response to this increasing appreciation of nature experiences, a new travel ethic has arisen which is now called ecotourism. This term has become increasingly popular in both conservation and travel circles; however, it must be noted that most tourism in natural areas today is not ecotourism and is not, therefore, sustainable. A walk through the forest is not ecotourism unless that particular walk somehow benefits that environment and the communities who live there. A rafting trip is only ecotourism if it raises awareness and funds to help protect the watershed. Ecotourism can thus be distinguished from nature tourism by its emphasis on conservation, education, traveler responsibility, and active community participation. Specifically, ecotourism possesses the following characteristics:

- Conscientious, low-impact visitor behavior
- Sensitivity towards and appreciation of local cultures and biodiversity
- Support for local conservation efforts
- Sustainable benefits to local communities
- Local participation in decision-making
- Educational components for both the traveler and local communities

While increased tourism must be managed to avoid damage to the landscapes and ecologies people come to visit, this same growth creates significant opportunities for both conservation and local community benefit. Ecotourism can provide much-needed revenues for the protection of national parks and other natural areas, revenues that might not be available from other sources. Additionally, ecotourism can provide a viable economic development alternative for local communities with few other income-generating options. Rural communities are often rich with local knowledge and a strong appreciation of their natural and cultural heritage. Local lore and storytelling fascinate visitors, and the cultural history is conserved in the process. Moreover, ecotourism can increase the level of education and activism among travelers, making them more enthusiastic and effective agents of conservation.

Ecotourism is most publicized in remote and spectacular parts of the globe, but it can also be relevant to more local landscapes, rich in their own history, culture and scenic beauty. Much of the landscape in western North Carolina has much to offer under these locally-based criteria. In the case study of the Cowee Valley, in Macon County, the history of Native Americans, early settlers, and other local pioneers is written in the landscape and historic buildings. By relating new development to this cultural landscape, the local built and landscape heritage can be preserved to create a critical mass of facilities and visible history that can form the foundation of a new localized tourist economy.

Marrying preservation with appropriate new development can be replicated in other parts of the region and serves a basis for local tourist industries and a source of community revenue. Ecotourism based on local

history, culture, and scenic beauty can sustain farming and other rural or internet-based businesses and contribute to a successful conservation strategy. Ecotourism creates jobs in food service, accommodation, transportation, and other industries. Because it relies on healthy ecosystems, ecotourism provides a powerful incentive to protect the environment. People who earn their living from ecotourism are more likely to protect local natural resources and support conservation efforts.

One of the tenets of ecotourism is to engage local communities so they benefit from conservation, economic development and education. By embracing the business of ecotourism, local people not only meet their economic needs, but they also can maintain and enhance the "sense of place" that is critical for guaranteeing long-term conservation. Titusville, Florida, provides one useful example of how the natural beauty, history, and economy of an area (in this instance, space exploration) can be developed and branded for ecotourism.

Organizations such as the Nature Conservancy work closely with local groups to establish community businesses, provide tourism training and marketing assistance, and develop compatible economic activities such as handicraft production and tour guiding. This focus on people reflects a necessary commitment to work "across landscapes," incorporating a concern for human populations as well as for the natural world we inhabit.

Image Source: Gabriel Cumming/Carla Norwood

Image Source: Gabriel Cumming/Carla Norwood

NC Agritourism: www.agr.state.nc.us/markets/agritourism/index.htm

Handmade in America: www.handmadeinamerica.org

Entertainment Farming and Agri-Tourism: www.attra.org/attra-pub/entertainment.html

Titusville, FL Community Guide: www.nbbd.com/ecotourism/

Community-based Ecotourism: www.nature.org/aboutus/travel/ecotourism/about/art14829.html

RESOURCES

10.4 LOCAL ARTS & CRAFTS

Western NC is rich in local arts and crafts that include earthenware, baskets, weapons, bead work, stone and wood carving, paintings, quilts, and textile and performing arts.

CREATIVE ECONOMY: THE ARTS INDUSTRY IN NC

Creative workers, creative enterprises, and creative communities bring the entrepreneurial strengths of the private sector to economic development. In 2006, arts industry wages alone infused more than $3.9 billion into North Carolina's economy, according to research by Regional Technology Strategies (RTS). Creative sector employment is estimated at more than four percent of total employment in North Carolina.

HANDMADE IN AMERICA

HandMade in America has made enormous contributions to the economy, culture, and heritage of the region. Founded in 1993 and based in Asheville, North Carolina, the nationally recognized non-profit stresses economic revitalization driven by the heritage of craftspeople in western North Carolina rather than through industry recruitment. HandMade has forged creative collaborations in education, small town revitalization, and community and economic development; spearheaded environmentally sutainable strategies; promoted heritage tourism; enhanced opportunities for the makers of handmade objects; and incorporated WNC crafts into building design and furnishings.

Information in this section is adapted from www.handmadeinamerica.org.

NORTH CAROLINA ARTS COUNCIL

North Carolina had long been recognized for its rich traditions in crafts, literature, historical drama, and music. By executive order in 1964, Governor Terry Sanford created the North Carolina Arts Council to strengthen North Carolina's creativity, invention, and prosperity. The Arts Council became a statutory state agency in 1967 and operates today as a division of the North Carolina Department of Cultural Resources, the nation's first cabinet level state agency for the arts, history, and libraries.

The mission of the Arts Council is to make North Carolina a better state through the arts. The Arts Council provides technical assistance, information resources, and over 1,000 grants each year to non-profit organizations and artists. It has a 24-member board appointed by the Governor, a 26-member staff, and serves as the steward of state and federal funds appropriated for the arts.

The Council's Fellowships Program provides grants to artists to set aside time to work or for the purchase of supplies and equipment. Specific awards include:

- NC Folk Heritage Awards recognize folk artists for their outstanding contributions to their artistic tradition and to the State's cultural heritage.
- Regional Artist Project Grants Program provides funds to local arts councils to award artist project grants.
- Residency Center Opportunities for visual artists and writers.
- Grants for Nonprofits for arts education, management and technical assistance, multicultural programs, and professional development.

Information in this section is adapted from the North Carolina Arts Council at www.ncarts.org.

10.5 PROJECT DEVELOPMENT FINANCING

Project Development Financing, or Tax Increment Financing (TIF), is an economic development tool that local governments use to finance public improvements to a designated area without having to rely on the state or federal government for funding. Using project development financing, local governments may issue bonds to pay for a variety of activities (e.g., buying and selling land, installing utilities, and constructing streets) that encourage development of private land that might not otherwise occur.

Tax increment financing allows local governments to issue bonds to finance improvements in order to stimulate blighted areas or designate urban renewal districts (TIF districts). Revenues collected from the bonds issued are then invested in infrastructure improvements or other projects within the area. As property values increase due to reinvestment in the area, the property tax gains, the "tax increment," are placed into a Revenue Increment Fund and later used to reimburse the bondholder. Essentially, local governments are able to induce investment by borrowing against the incremental tax revenue they expect to receive.

In North Carolina, a TIF district may be established if the local government and relevant property owners determine that the area is eligible for redevelopment because it is blighted, deteriorated, undeveloped, underdeveloped, or inappropriately developed. The total land area used to define the TIF district may not exceed five percent (5%) of the total land area of the local government proposing the development project.

Traditionally, Project Development Financing is used to attract businesses for job creation. However, in North Carolina a variety of projects are available to local governments using Project Development Financing, including housing developments.

By N.C.G.S. § 159-48, the General Assembly authorizes cities and counties to issue bonds for the purpose of "providing housing projects for persons of low or moderate income." This includes the construction or acquisition of projects and the provision of loans, grants, interest supplements, and other programs of financial assistance. However, these housing developments may provide housing for persons other than low or moderate income if at least 20% of the dwellings in the case of cities, or 40% of the units in the case of counties, are exclusively reserved for persons of low or moderate income. This statute prohibits the use of bond proceeds to pay for rent subsidies.

Project Development Financing may be a useful tool for local governments with an interest in promoting economic development. Affordable housing developments may result from Project Development Financing, but they would not commonly be the reason to initiate development. Affordable housing on its own is not likely to increase the tax value of a land parcel; however, affordable housing could be included as part of mixed-use developments where an appropriate proportion of the housing in that development would be affordable.

Information in this section is adapted from a memo prepared for the Mayor's Task Force on Affordable Housing in Asheville, NC, by Carrie R. Knight, dated February 14, 2008.

RESOURCES

Draft Buncombe County Project Development Financing Policy: www.buncombecounty.org/governing/commissioners/ArchivedAgenda/20070403/web_PDF/Taxincrementfinancingpolicy.pdf

The North Carolina Tax Increment Finance Website: nctifuse.com/history.htm

NC Department of State Treasurer: www.nctreasurer.com/NR/rdonlyres/C8CAD967-611C-46B8-A9A4D69A8B74E5CE/0/AmendmentOne.pdf

Self-Financing Bonds: Charlotte's Experience: www.nccda.net/pdf/Self_Financing_Bonds.pdf

Tax-Increment Financing: www.housingpolicy.org/toolbox/strategy/policies/tif.html?tierid=141

Use of Project Development Financing in Buncombe County: www.buncombecounty.org/visiting/news_Detail.asp?newsID=4043

10.6 THE IMPACT OF THE DEMOGRAPHIC SHIFT

Information in this section is from "Looking Ahead: A Baby-Boomer Perspective" excerpts from a Segmentation Analysis by the American Association of Retired Persons. usinfo.state.gov/journals/itsv/0699/ijse/aarp.htm

As the oldest baby boomers begin retiring in the next several years, the implications for the workforce and the region's economy could be enormous. The "Baby Boom" generation is that component of the U.S. population born between 1946 and 1964, in the wake of World War II. For many decades, it has attracted the attention of demographers, politicians, marketers, and social scientists as the years have passed—from the postwar boom of the 1950s to the counterculture of the 1960s, then on to the dual-income households and the "me" generation of the 1970s and 1980s, through the present decade.

The oldest baby boomers are into their 60s, and, as such, are approaching retirement. Some, in fact, already have retired. Many will do so well before 2010, although recent economic downturns have raised the specter of deferred retirement and a longer working life.

A 1999 study by the American Association of Retired Persons (AARP) surveyed expectations of the baby boom generation in a number of areas. Information gathered through focus groups, extensive telephone interviews and other polling mechanisms revealed the following:

- Eight in 10 boomers planned to work at least part-time during their retirement. Only 16% said they do not expect to work at all.
- Six in 10 felt confident in their ability to prepare adequately for the future. Only 23% believe they will have to struggle to make ends meet.
- Only about two in 10 had the attitude that "the future will take care of itself," and only 9% believed in dependence on their family for assistance during retirement.
- Two-thirds were satisfied with the amount of money they were depositing today for retirement. Fewer than half (48 percent) were counting on Social Security as a source of retirement income, and of these just 15% expected to rely on it for most or all of their retirement needs.
- Nearly half (49%) expected to devote more time to community service or volunteer activities during retirement.
- More than seven in 10 (73%) planned to become involved in a hobby or special interest to which they will dedicate considerable time when retired.
- More than eight in 10 (81%) of those who claim to have given considerable thought to retirement said they felt optimistic about those years.

Since the date of the trial study, economic circumstances have changed. A dismal labor market and the ongoing financial credit crisis have hindered prospects for economic growth and put a greater burden on those remaining in the workforce, forcing many to postpone retirement and work longer hours. In occupations that require "soft skills," the levels of service may suffer and needs could go unmet unless older workers can be retained or other sources of workers can be found quickly.

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A1

CASE STUDY
WOOD FARM
CHEROKEE COUNTY

Image Source: PlaceMakers

The Wood brothers' Cherokee County farm encompasses approximately 700 acres. They desire to continue farming operations while also allowing for certain development on their land.

INTRODUCTION

The Wood Farm, operated by brothers Eddie and Keith Wood, is approximately 700 acres located on either side of Highway 19/74, between Andrews and Murphy. With over two and one-half miles of Valley River frontage, the tillable ground is approximately 400 acres. A majority of the property is bottomland with some uplands. The Andrews-Murphy Airport sits in the middle of the bottom land portion of the property. Much of the property is highly visible from the major road. Currently, the farm produces soybeans, pumpkins, corn, and beef cattle on approximately 69% of the acreage.

The issues they face, while certainly unique to their family, are nonetheless typical of those faced by farm operators and landowners in the region. The Wood Family agreed to work with the Mountain Landscapes Initiative: Region A Toolbox project as a case study to demonstrate how families can approach these issues.

REGIONAL APPLICABILITY

This property has been in the Wood family for generations and in general represents the typical farmer's struggle of being "cash poor" but "land rich" and the tension that families experience between a desire to protect family land and a need for some development. The property also has a number of other characteristics that make it a model for farmland preservation issues in Region A:

- It is very visible and likely to influence future development in the area;
- It is adjacent to a major road and therefore emphasizes the importance of transportation corridor planning/road access/etc.;
- It is working farmland and therefore offers an opportunity to delve deeply into a range of tools that can be used for farmland preservation;
- It is located in the far western portion of Region A (see Regional Map) and represents an opportunity to work closely with stakeholders who might not otherwise travel to the main charrette location; and
- It allows for modeling different development and conservation choices on an individual property and the consideration of voluntary measures as part of an estate and business plan that protect landscape integrity and working lands while accommodating well-planned development.

The Wood brothers, land trust representatives and consultants discuss development options the MLI: Region A Toolbox charrette held at WCU in May 2008.

Image Source: PlaceMakers

Image Source: Ben Brown/ PlaceMakers

Image Source: PlaceMakers

Images from the Wood Farm area and planning process.

KEY ISSUES

The Wood brothers were very interested in participating in the creation of a comprehensive plan for their property that would allow conservation and continued farming on the rich bottomland while allowing for some well-planned subdivision and development. Their commitment to farming and the community is evidenced by activities such as restoring stream frontage with the Hiwassee River Watershed Coalition and serving as an educational site for NC Cooperative Extension classes. Development of a portion of the property is necessary to generate retirement funds for the brothers and as a way to make preservation of the productive bottomland possible.

The land comprising the Wood Farm is put together in four tax parcels totaling ~700 acres. The farm sprawls along a valley running southwest from the town of Andrews. The tillable ground of the farm is bordered on the north by Airport Road, with approximately 200 acres extending up the north mountain face of the valley. The flat part of this tillable section of the farm is bisected by the four-lane US-19/74. The Andrews-Murphy Airport borders the northeast section of the farm property. Approximately ¾ of the farm's southern boundary is bordered by Valley River. One hundred thirty-two acres of the farm lie in a block extending south of the Valley River to Creek Stone Drive.

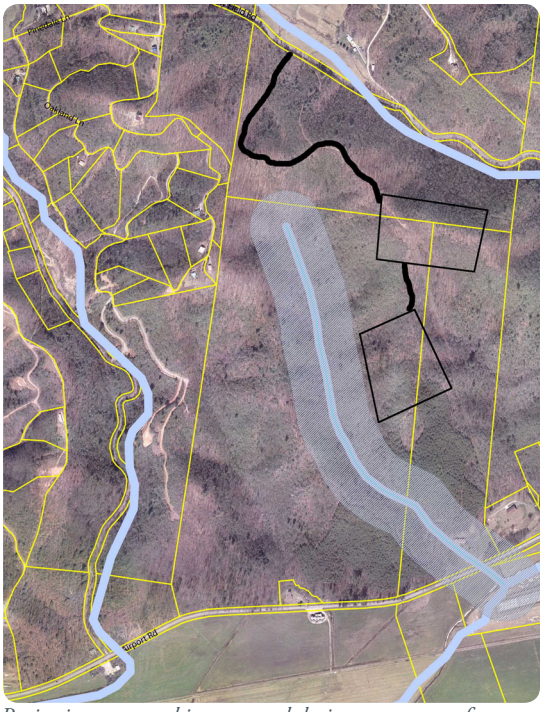
The farm has been in production in the Wood family for three generations. Eddie is the primary operator; he is not employed "off the farm," thus drawing more income from production revenues. Keith, who works as a NC Cooperative Extension agent for Cherokee County, has a lesser role in daily operation and thus draws less income. Eddie and Keith co-own the machinery, making joint decisions on production.

Eddie and Keith's oldest children are in their teens, and none have yet expressed an interest in taking an active role in the farm. Although the Woods employ local help, there is no one working on the farm from outside the family who is being currently considered for working into an equity position.

As a starting point to developing their plan, Eddie and Keith used the *Planning the Future of Your Farm* workbook (available from NCFTN) for values assessment and goal setting. The purpose of these exercises, as noted above, is to help landowners articulate their vision for the future of their farm. While not necessarily providing absolute answers, responses tend to reflect the mindset of participants in their current environment, incorporating family history, realities of farm and land economics, and feelings on family harmony.

First, Eddie and Keith ranked the importance of a series of value statements. They reviewed and ranked each statement from one (not important) to three (very important), including "I want the farm to remain in our family's possession," "I want to have the financial resources to do new things after farming," and "I would like everyone in the family to be satisfied with the way the farm/estate is handled." Ranking the statements gave the brothers an opportunity to consider how they felt about sometimes conflicting values, and they were made more acutely aware of choices they will have to make. As Eddie Wood remarked, "They really made me think."

Images around the Wood property, front top: bottom land farm looking southeast; farmland looking southwest; the hillside in family ownership; Airport looking east.



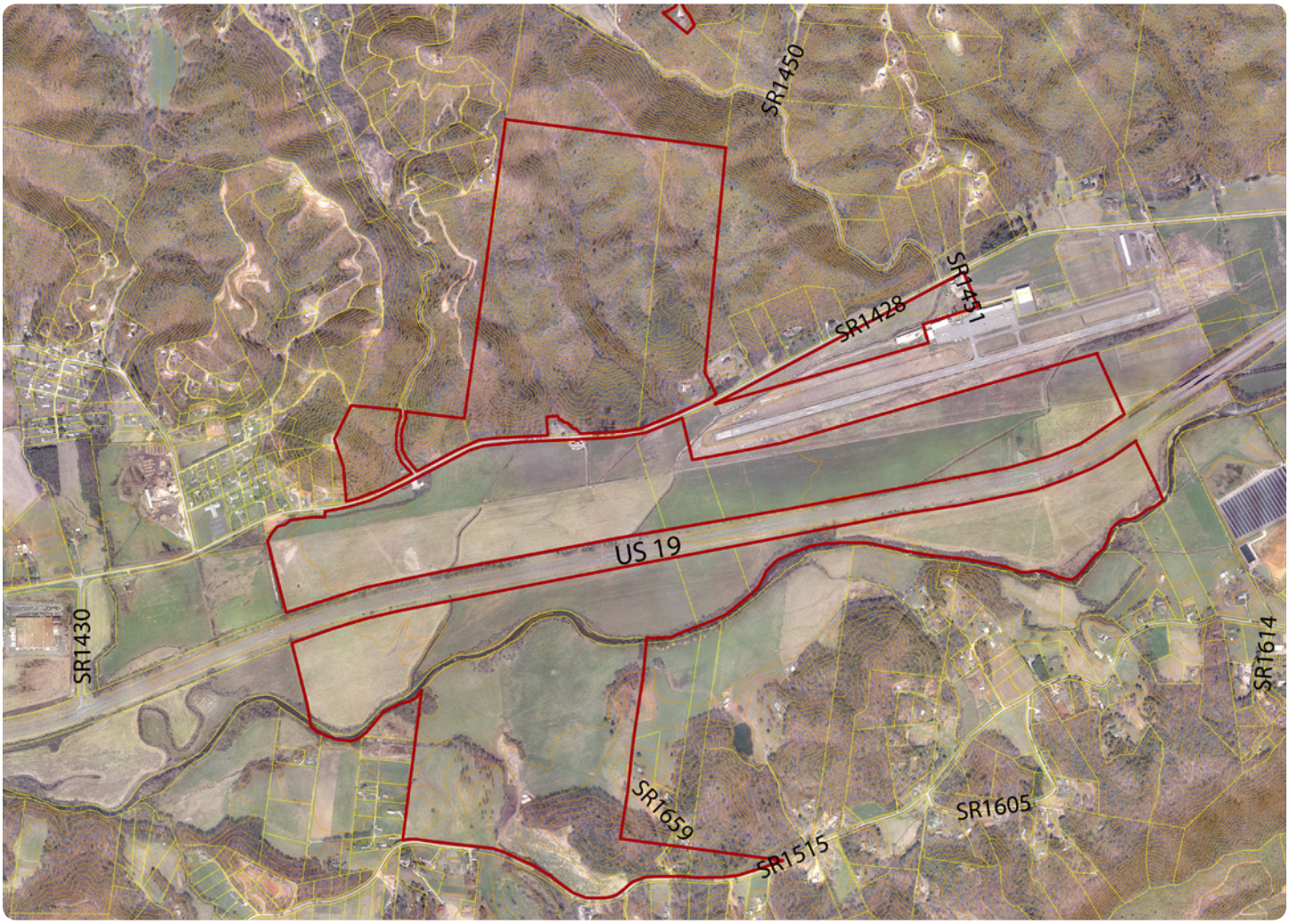
Reviewing topographic maps and drainage patterns of the acreage, the designers were able to determine the best potential development and access sites (shown in black) on the hillside portion of the Wood property. The map above shows the streams and stream buffers (light blue).

Following the values exercise, the Woods completed worksheets on setting goals and objectives. They were first asked to list up to five long-term goals for both their personal and professional lives for the next five to ten years. They were then asked to identify up to five shorter-term objectives to help them achieve those goals. If anything, this exercise compelled the brothers to write down what is often never written down, and it provided each an opportunity to assess whether each ones personal and business goals were compatible with the other's. As the Woods continue with the ongoing transition process and assess their resources and opportunities, they now have a set of goals to orient them, as well as some written ideas they can articulate to professional advisers.

DEVELOPMENT OPPORTUNITIES

Partly through their participation as a pilot project in the Mountain Landscapes Initiative: Region A Toolbox project, the Wood brothers were able to explore options for using part of their equity in the land while being able to control how the land is used in the future.

Because their farm is bisected by a state highway, the opportunity has always existed for commercial development along the road corridor. However, this would require giving up some of the most agriculturally productive acres of the Wood Farm. The Woods also have a strong sense



Existing conditions and surrounding properties. The Wood's property is outlined in red.

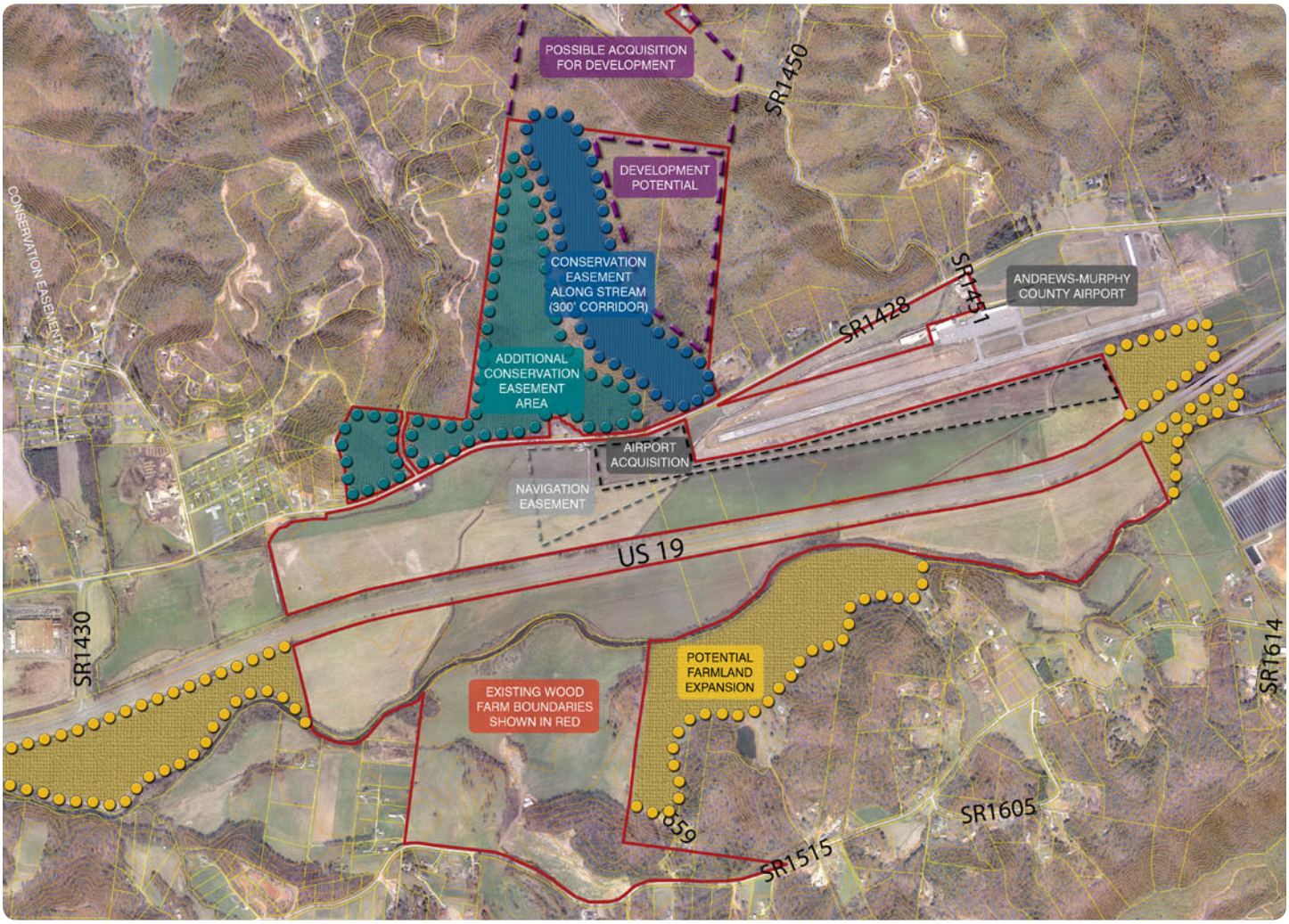
of how such development would alter the scenic beauty of the valley landscape along the highway. Participation as a case study in the MLI project offered the Woods a look at how they might develop some woodland acreage while preserving the productivity and scenic beauty of their farm.

As part of what could be considered a "resource assessment investigation," the brothers were provided a demonstration of what a conservation-oriented development might look like in the woodland acreage on the "back" slope of the valley ridgeline, which is up the mountain on the north side of their pasture and cropland. MLI landscape designers walked the wooded acreage for an assessment of its accessibility. Reviewing topographic maps and drainage patterns of the acreage, the designers were able to determine potential house sites in a planned conservation development pattern, whereby significant acreage could be set aside to protect the water quality, wildlife and scenic beauty of the property, for residents and for the public driving along the valley floor.

The designers were able to show the Woods several concepts for development. One intriguing design called for a development with a central lodge as a retreat center, which could take advantage of both the proximity of the Andrews-Murphy Airport and local recreational opportunities, such as trout fishing in the Valley River running through the farm or whitewater boating in the nearby Nantahala Gorge.

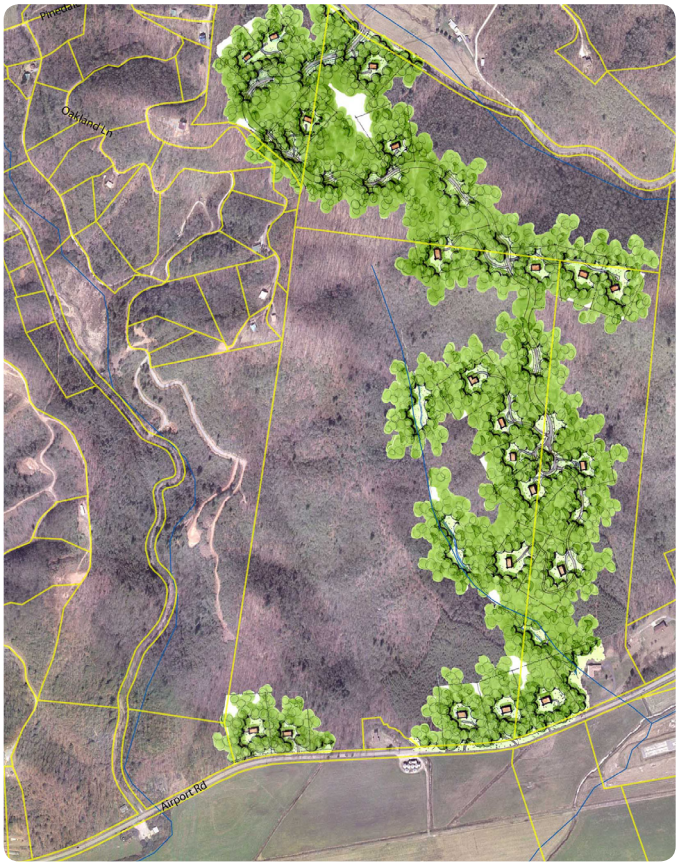
DEVELOPMENT CONCEPT PLANS

As a means to stabilize the fluctuating farm economy and ensure a stable income stream for the family, the preferred development concept plan (shown below) balances both development and conservation opportunities. The remaining land would likely be eligible for a conservation easement funded by a combination of a Clean Water Management Trust Fund grant (for the 600 foot corridor around the mountain stream totaling approximately 45.5 acres) and tax credits for the donation of a conservation easement for the balance of the preserved site (approximately 72 acres). As an alternative, a more conventional conservation subdivision can be developed yielding 17-21 lots (shown on next page).



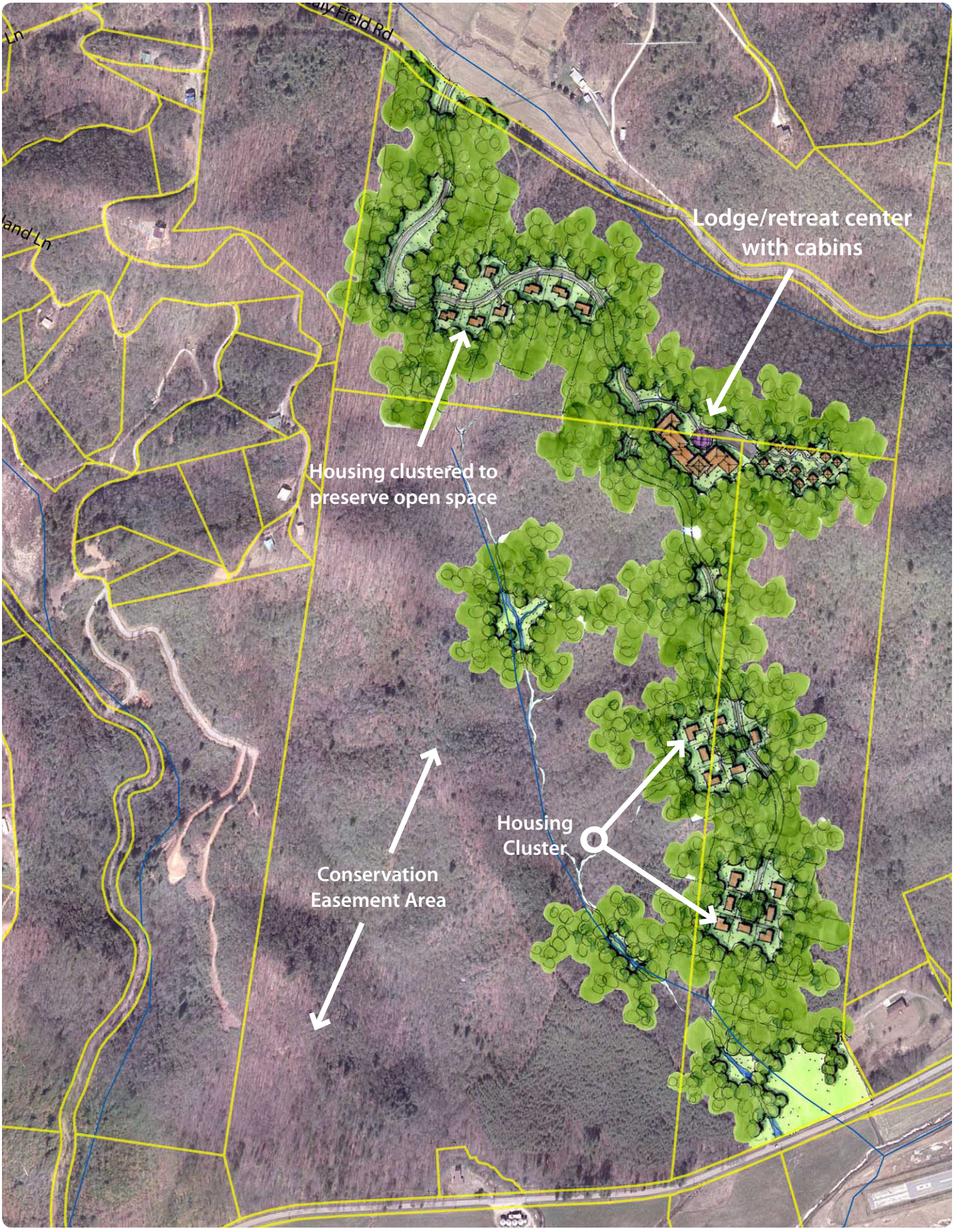
Proposed Master Plan for the Wood Farm property.

Alternative 1: The subdivision "maximum" yield concept plan illustrating the potential for 50 lots. This "theoretic build-out" scenario is used to determine the potential land value for conservation easement purposes.



Alternative 2: A typical conservation subdivision concept plan illustrating 21 lots.

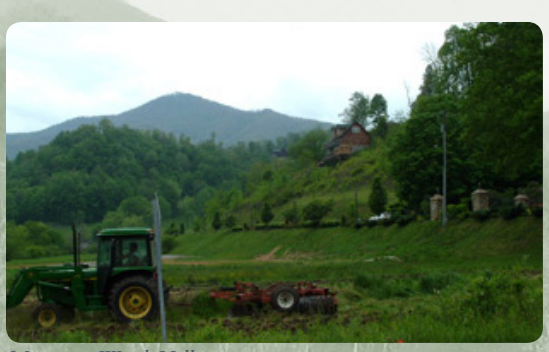
Bird's eye view of the proposed lodge and retreat center depicted in the preferred development plan on the next page.



The preferred concept plan showing 21 lots in small clusters to minimize land disturbance and a proposed conference facility/lodge with accessory cottages. The balance of the site could be donated/sold as a conservation easement.

A2

CASE STUDY
MOUNTAINWATCH
HAYWOOD COUNTY



MountainWatch Valley

A stream through the property.

A site visit by the design team during the charrette aided in confirming analysis data and also revealed additional areas of interest to be protected and preserved.

INTRODUCTION

Much of this region is experiencing growth, particularly in areas popular with the second home market for that special "mountain get-away." Mountainside development on very steep slopes with fragile soils has potential hazards that are not always properly assessed prior to laying out roads and home sites. The MountainWatch project provides pre-development assessments by experienced resource professionals, including soil scientists, soil conservationists and geologists, who identify the most suitable areas for development, areas for limited use, or hazardous areas on property being considered for development.

To identify the most suitable home site and access road locations, the initial assessment (conducted by the Haywood Waterways Association) correlates a variety of factors, including the nature and depth of the soils, slope and terrain; the presence of streams, seeps, and other water sources; the location of rock outcrops; the geology; and features of interest (such as special resource values or attractions). This is provided within a watershed perspective that addresses not only the impacts from the proposed development, but also possible downstream impacts and the potential effects of future upstream developments. The results were mapped in a 3D GIS model and provided to the developer, along with a written report.

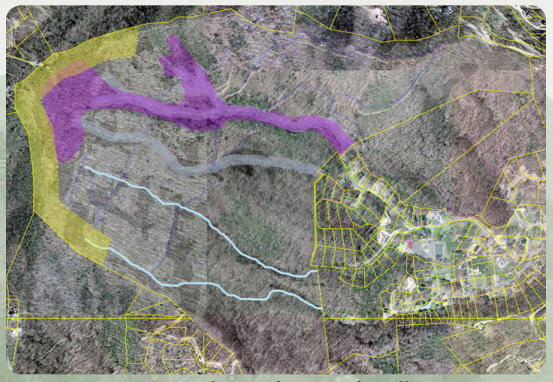
The location of the Resource Assessment for the 270-acre MountainWatch Development in the Jonathan Creek area of Haywood County near the Town of Maggie Valley. Planning and design for the 37 acre first phase are complete.

REGIONAL APPLICABILITY

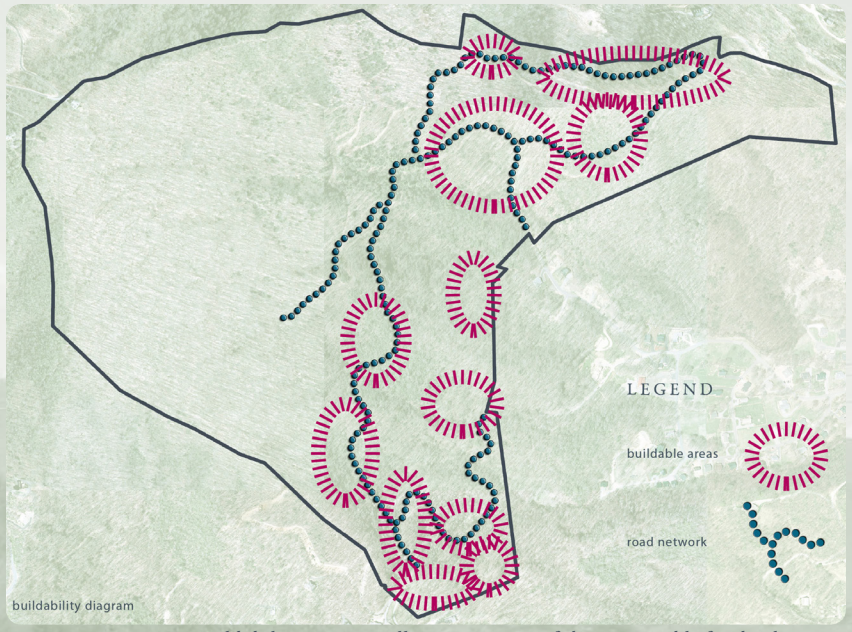
Can this model be replicated across the region with permit "fast-tracking" given to developers who conduct the resource assessment? Are there adequate numbers of resource professionals available to do the work, considering the amount of development underway and planned in western North Carolina? Can the resource assessment process be institutionalized within a current county, state, or federal agency charged with protecting and/or managing natural resources?

SITE RESOURCE ASSESSMENT (SRA) METHODOLOGY

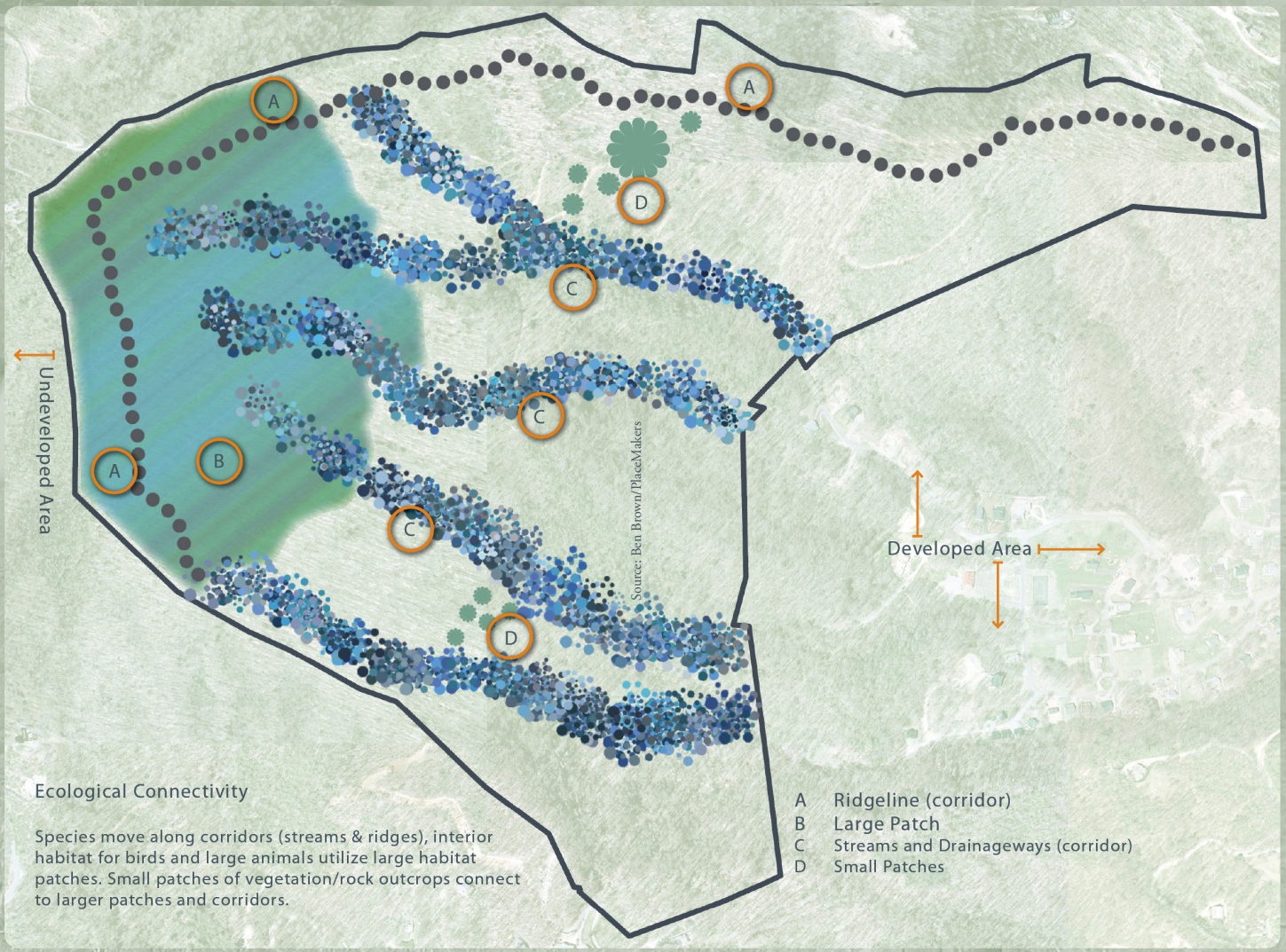
In studying this project and the methodology used by the Haywood Waterways Association to complete the original site assessment, this Toolbox recommends a more comprehensive set of protocols (see Section 3.1). Phase 1 of these new protocols, referred to as the Site Resource Assessment (SRA), was used by the team during the charrette to further analyze the site for development opportunities and constraints.



An existing conditions diagram that illustrates streams, buffers, and floodplains to be avoided.



Buildability Diagram illustrating areas of the site suitable for development.



Ecological Connectivity Diagram

THE DEVELOPMENT CONCEPTS

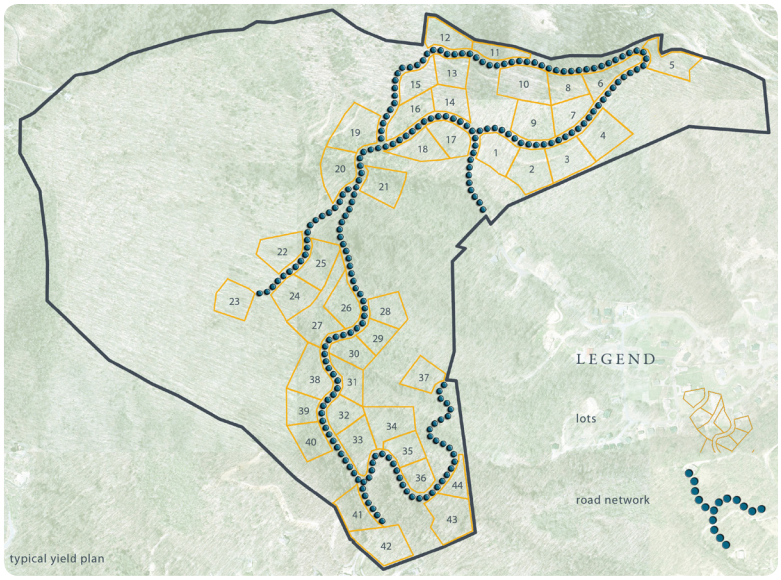
The MountainWatch site is typical of much of the development in Region A. What makes this site unique is its easy access to both Maggie Valley and Waynesville as well as its proximity to public sewer. The presence of public sewer opens up a number of possibilities for site development which argued for a design that favors the clustering of development and the preservation of open space.

The plans shown offer two unique approaches. The first is a clustered development pattern that minimizes overall site disturbance and increases the potential yield over the conventional subdivision approach.

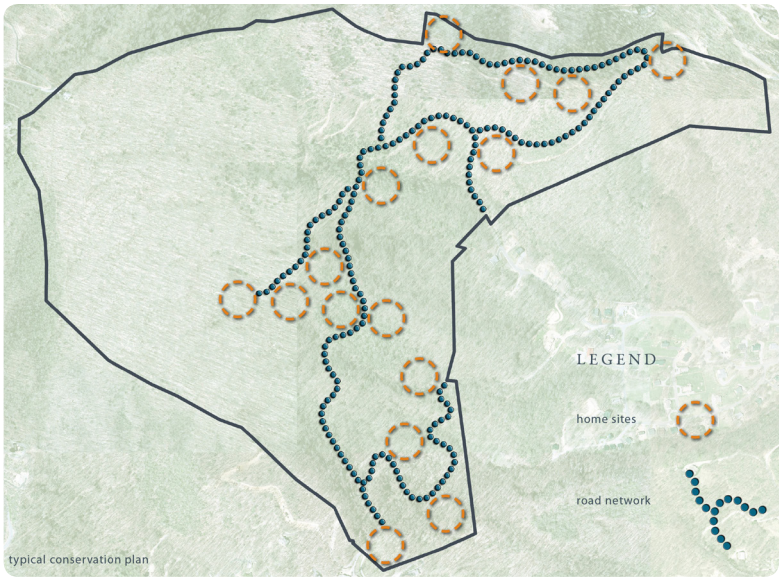
The other more radical proposition suggests the construction of the Blue Ridge equivalent of an Italian hilltown. Though this second approach would impact the portion of the site in which the development is located in a much more significant way, it would preserve a much higher percentage of the site as a large, cohesive open space. In turn, this approach would also provide a wider variety of housing options because of its intricate block structure, providing highly coveted views, a walkable community, and opportunities for affordable housing mixed with market rate housing.

Again, it is important to underscore that this approach is predicated on public sewer. One of the most pressing issues related to growth in this region is the inability to adequately provide utilities to both current and future development sites. And with the increased protections being sought for many waterways, the conventional waste treatment systems will likely become "old" technology.

A work in progress during the charrette of a design option for the MountainWatch property.

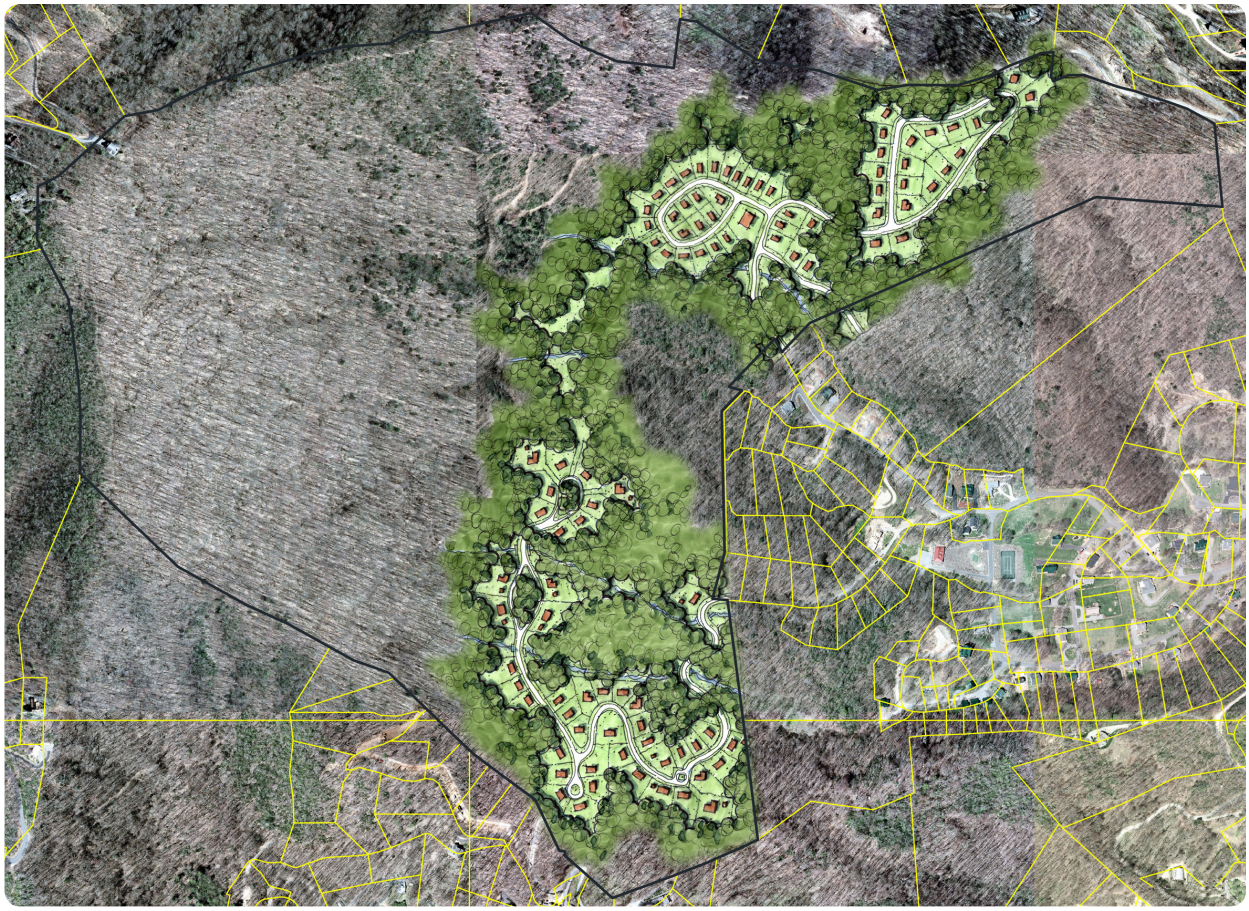


Typical Yield Plan illustrates the conventional development pattern often associated with sprawl.

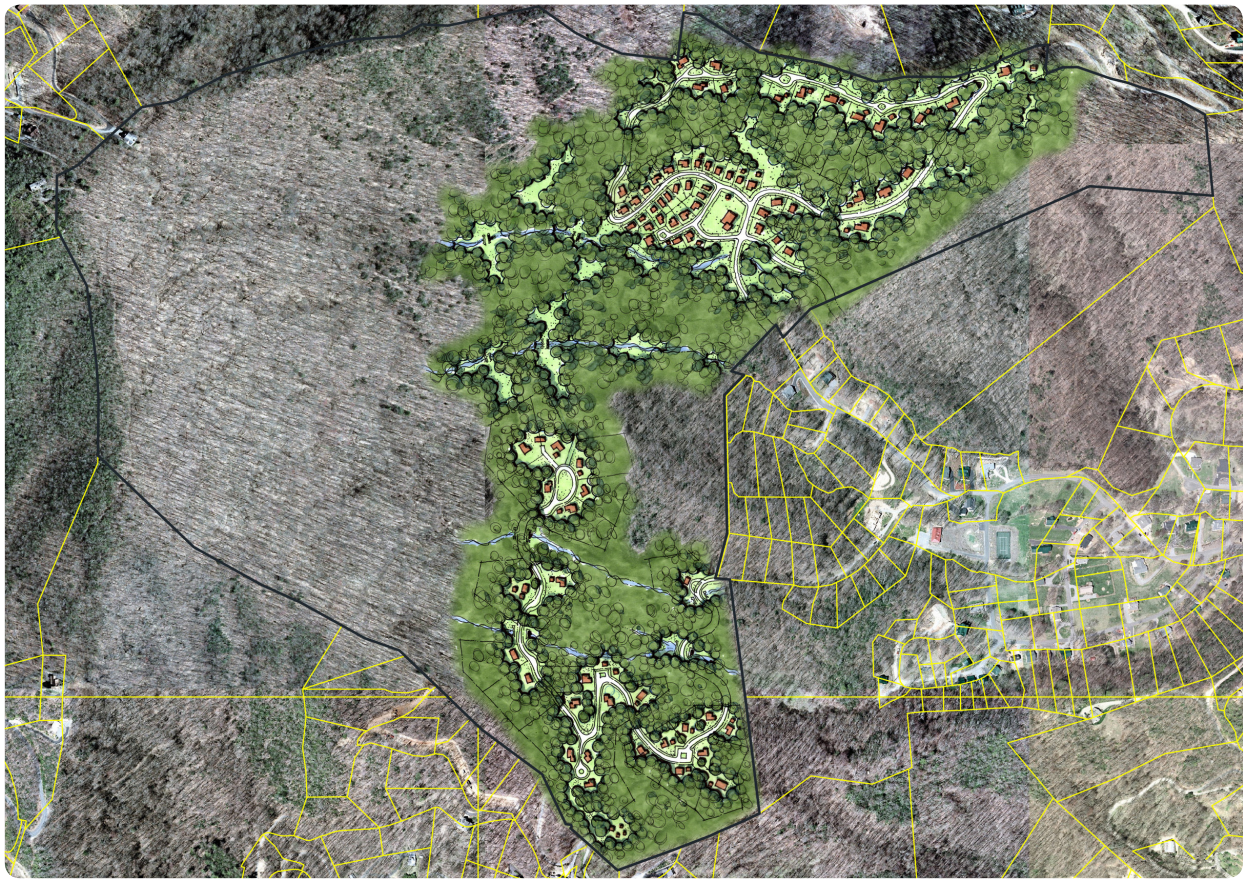


Typical Conservation Plan clusters development areas and preserves more open space.

Replatting of 38 acres of Phase 1 to accommodate the units from both phases (super cluster).



The Conservation Neighborhood, Option A, includes 97 lots on 40 acres. The homes are clustered in suitable and buildable areas of the site.



The Conservation Neighborhood, Option B, illustrates 78 lots within 40 acres. The clusters are smaller, compared to Option A, which provides more tree preservation open space on the site.

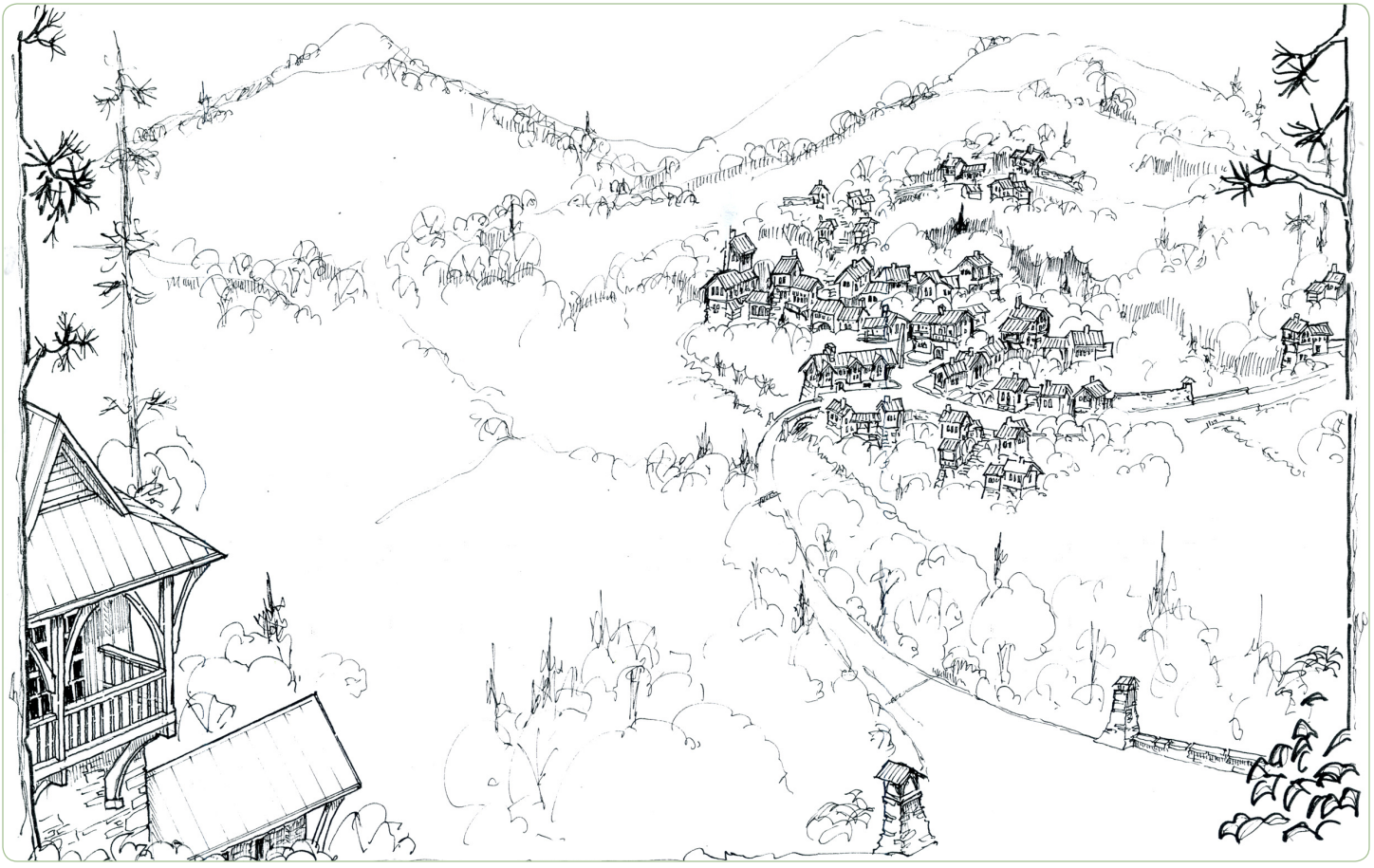
The Hilltop Plan illustrates 208 lots on the same 40 acres. The plan features a total of 208 units, including 159 detached units and 49 attached units.

MountainWatch
Development Pattern Comparison

	Conventional Subdivision (CSD) Plan:	Hilltown Plan:	Conservation Plan A:	Conservation Plan B:	Same # of CSD Units in Hilltown Form:
Developed Area:	65 acres	40 acres		40 acres	40 acres
8 acres					
LF of Streets:	11,400	15,100	7,700	8,900	3,000
Attached Units	0	49	0	0	
7					
Detached Units	45	159	97	78	38
Total Units:	45	208	97	78	45*

*Compares same number of units from conventional plan clustered into the *hilltown* form.

Observations:
1. Hilltown plan develops 38% less area than the conventional plan.
2. Same program from conventional plan configured in the *hilltown* form occupies 85% less area.



Bird's eye view of the hilltown neighborhood.

Street section through cluster subdivision and hilltop plan.

View of plaza in the hilltown neighborhood.

A3

CASE STUDY
COWEE VALLEY
MACON COUNTY

". . .They have this part where it's called a 'pin-up'. . .The things you talked about . . .around that table they had taken and put on maps; they had taken and made sketches so that you could see what things would look like. And it happens right then, right there. . .It is . . . It's like magic!"

Norma Ivey, Cowee resident

INTRODUCTION

With its rich history, the Cowee Valley has connections to roots with both early American settlers and native Americans. The landscape of the valley retains its distinctive rural mountain character. The valley runs broadly east to west, where it meets the valley of the larger Little Tennessee River, flowing northward into Fontana Lake. These wide, fertile valleys are framed by sweeping, forested mountain ranges, towering 2,000 to 3,000 feet above the valley bottoms, themselves at an average elevation of some 1,900 feet above sea level. Most of the fertile bottom land is now covered with fescue pastures or hayfields, although in past decades the landscape would have been more extensively cultivated. Currently, approximately half the land within the historic district is divided into open fields, with the other half in forest.

Since the early nineteenth century, what is now Highway 28 (formerly Hwy 286) has been the primary north-south route through the Cowee community, generally heading northwest, following the major river valley. However, earlier trading and military paths aligned themselves differently, leading northeast from the area around the Cowee Mound towards Alarka and other Indian settlements.

The challenge for this area is to find a balance that maintains the historic rural character but permits enough development to support needed community services.

REGIONAL APPLICABILITY

As a case study for the preservation of cultural and physical landscapes, a proposed "Past and Future Plan" for the Cowee Valley illustrates the methodology of plan preparation for integrating new development into fragile and/or scenic landscapes, that are rich in cultural history and visually attractive. The methodology describes five stages of work:

1. Analyze historic patterns of settlement and landscape
2. Identify the networks of local history and culture in the community and develop strategies for their preservation and enhancement
3. Develop concept plan(s)—conservation / development / transportation
4. Evaluate specific sites for conservation and/or development
5. Test and refine concept plan(s) by designing illustrative projects
6. Define appropriate architectural character and vernacular.

HISTORIC OVERVIEW[1]

European settlers arrived in the Cowee Valley in what is now Macon County, NC, in the early 1800s, but for more than a thousand years the valley had been home to various groups of native peoples. The earliest residents, the Mississippi Mound Builders, created the large earthwork today known as the Cowee Mound, nestled in a sweeping bend of the Little Tennessee (Tanase) River. When the Cherokees settled the area, they proclaimed the mound a sacred site and founded an important regional settlement, Kaw'yi, on and around the topographical feature. By the eighteenth century, this town had become the most important civic and commercial center of the mountain Cherokee.

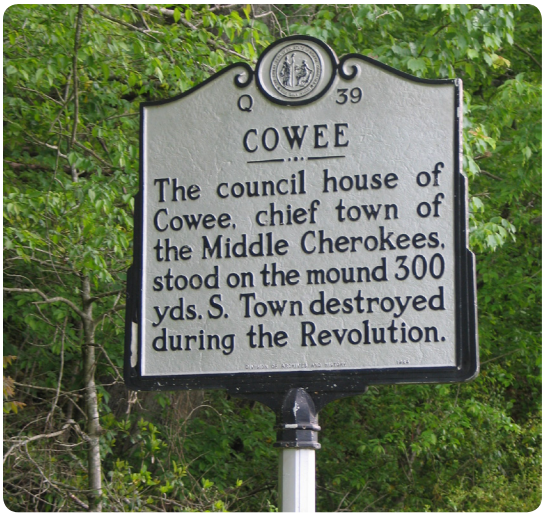
British traders made their way up from Charleston and Savannah in the 1760s to trade with the Cherokees, bartering blankets and beads for fine deerskins that were shipped across the Atlantic to factories in England. In the years prior to the Revolutionary War, British and American colonial troops fought with the Cherokee for control of the important trade routes through the area; and after independence, new settlers, predominantly Scots-Irish, began to arrive, taking advantage of the fertile farmland in the valley bottoms along the creeks and Little Tennessee River. With the expulsion of most of the Cherokee from their lands east of the Mississippi by the American government in 1838, settlement and agricultural activity by white settlers in the area increased, leading eventually to the development of commerce and the construction in the 1880s of mills, several stores, and a post office along the banks of Cowee Creek, especially near its junction with the larger river. In this location, West's Mill and its associated businesses and homes became an important trading and community center for the northern part of Macon County.

The surrounding hills yielded rich deposits of silver, mica, clay and gemstones, especially rubies, increasing the area's prosperity. After the Civil War and as late as the early 1900s, the Cowee Valley was also home to a significant population of African-Americans, although no black residents remain in the community today.

The historical significance of the area was acknowledged in 2001 by the designation of 369 acres at the western end of the Cowee Valley as an historic site and the placement of the district on the National Register of Historic Places. The historic district stretches from the junction of Caler Fork and Cowee Creek in the east to the Cowee Mound and Euchella farm (the site of a citizen Cherokee farm taken over by a white settler in 1819) in the west, including the historic settlement nucleus around West's Mill.

[1] This summary is based on material contained within the National Register of Historic Places Registration Form for the Cowee Valley (dated 10-01-2000) and the National Register of Historic Places Multiple Property Documentation Form for Macon Co., NC (no date). Additional material obtained from the Cowee-West's Mill Historic District brochure, sponsored by the Cowee Community Development Organization and the Land Trust for the Little Tennessee.

Images from the satellite studio in Cowee illustrating the process of receiving feedback from the community about their goals; designers drawing concepts and diagrams to illustrate those goals; and pin-up sessions where discussion of design ideas took place.



Cowee was the most important civic and commercial center of the mountain Cherokee during the 18th century.

CREATION OF THE "PAST AND FUTURE PLAN"

1 Analyze Historic Patterns of Settlement and Landscape

The aim of this analysis is to record the historic patterns of settlement and communication in the Cowee Valley as a basis for creating a conceptual strategy map to direct conservation and development efforts to appropriate locations. The most salient feature from this analysis is the existence of cultural and historic sites that fall within a corridor moving northeast from the area of the Cowee Mound and historic center and following old trails across the mountain ridge to the north. This historic pattern provides a counterpoint to the contemporary focus on the Hwy 28 corridor and presents the opportunity for new development in the community to focus on sites that reconnect with the historic roots of settlement in the Cowee Valley. In this way, the fabric of kinship, i.e., connections between neighbors and community life, may more easily be maintained. As a corollary to any new development, a strong mix of uses, programming, and services catering to residents, visitors, and entrepreneurs can be established with the help of new development.

Reinforcing this historic pattern provides residents and newcomers to the community the opportunity to both celebrate the community's historic heritage and to relate new development sensitively to the landscape.

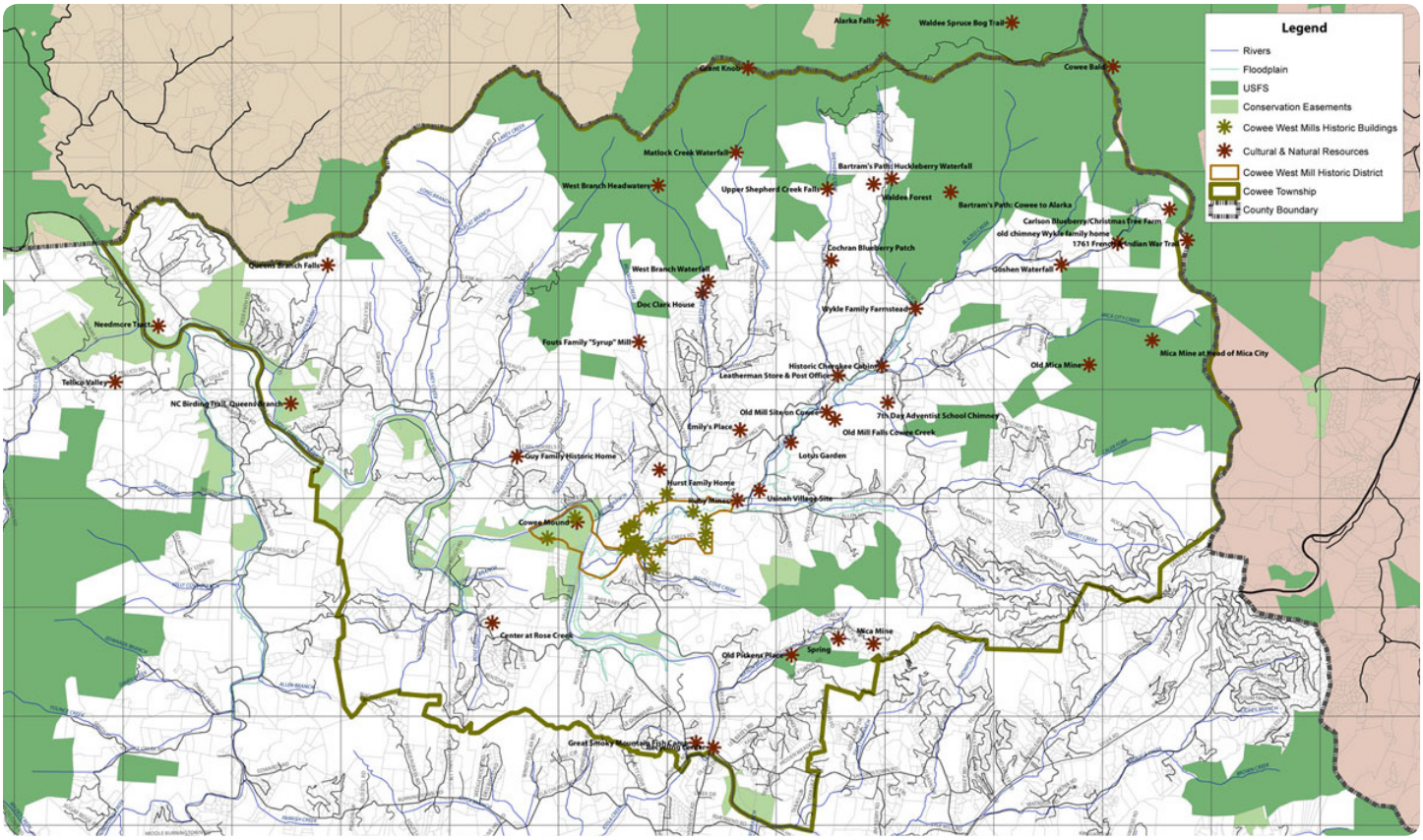
A detailed physical analysis using sophisticated GIS mapping techniques reveals the physical form of the land for close study—such as degrees of slope and riparian buffers along with hidden factors such as soil type. Other GIS-based software can provide viewshed analysis, showing those parts of the landscape that are visible from particular viewing points. These analytical maps may be overlaid to highlight prime areas for conservation and also to indicate those areas that are suitable for development.

2 Identify the Networks of Local History and Culture in the Community and Develop Strategies for their Preservation and Enhancement

Any plan for adding new economic energy and buildings to rural locations such as the Cowee Valley has to begin by understanding and reinforcing the unique set of cultural and physical relationships that

exist in the community. In partnership with the physical and visual analyses, the "invisible" structure of the community needs to be explored, understood, and strengthened where possible. This includes identifying the patterns and family histories of land ownership, kinship structures and hierarchies, local leaders, economic initiatives, constraints and opportunities. It also involves actively listening to and recording the memories of older residents. In this way, the richness of a community's heritage can be identified, recorded, and used as the springboard for changes necessary to confront new challenges and opportunities.

Conversations and analyses gave rise to a central question from the community: As development pressures gravitate to the valley, how will the community grow in a manner that sustains the *"transformative experience"* of living in Cowee—a function of the place's history, scenic beauty, environmental quality, kinship/community life, and economic structure?



Cowee Valley Cultural, Natural, and Historic Inventory Map. Based on an asset mapping process conducted by the Cowee Community Development Organization, March-April 2008

Panoramic Photograph of the sacred Cowee Mound.

The following objectives and initiatives were developed through an intensive public design workshop with Cowee residents.

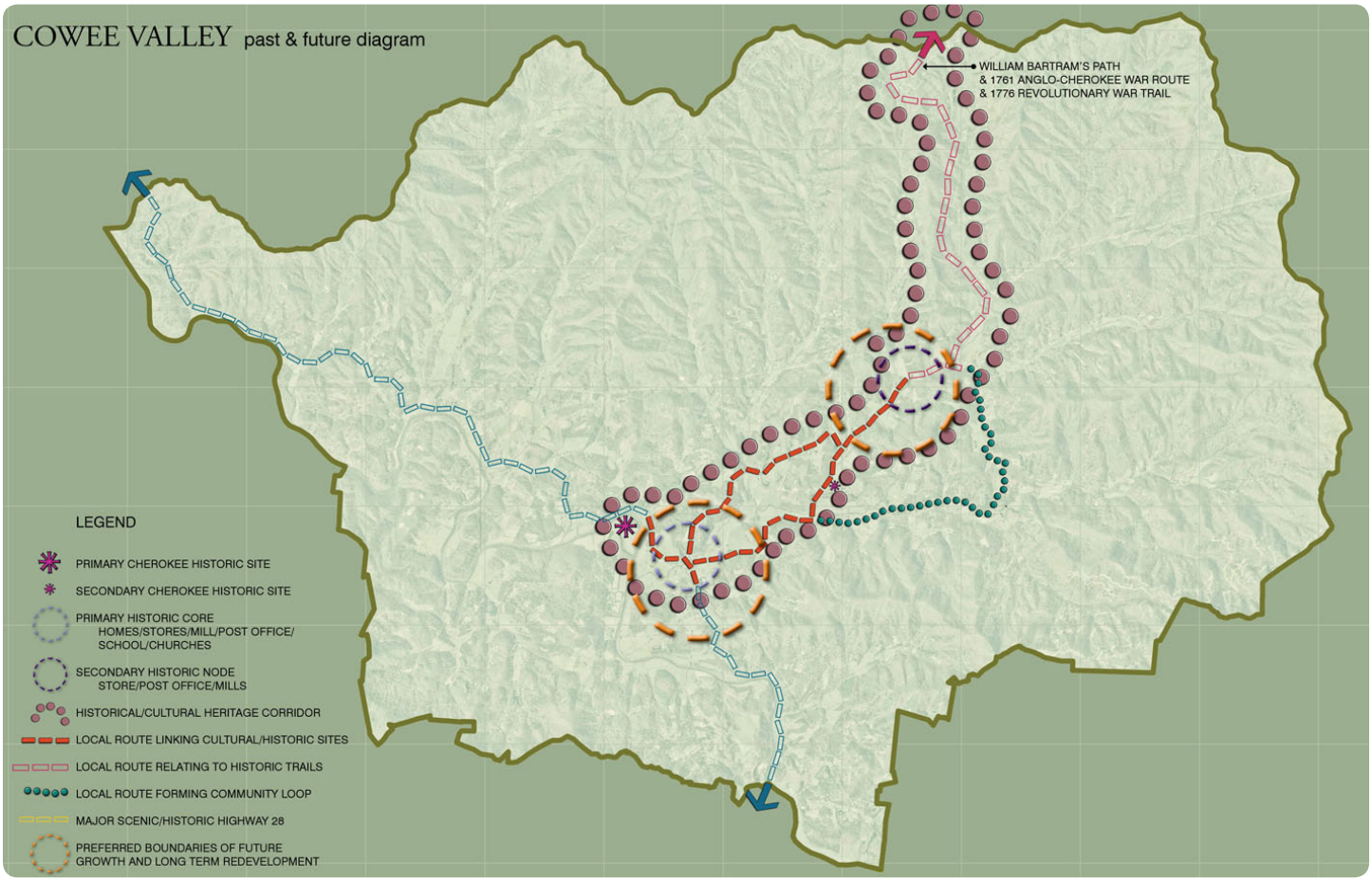
Preserve History / Culture

- Develop education and cultural awareness programs for youth, residents
- Create incentives for historic preservation
- Integrate Cherokee heritage and historic resources
- Preserve farmland
- Find new and compatible uses of historic structures
- Maintain and enhance patterns of circulation and development that supports community life: clustered development near community center(s)
- Develop trails, interpretative routes, gateway signage

Potluck dinners illustrate the community's kinship.

Sustain Kinship and Community Life

- Continue development patterns clustered around existing road networks and near community centers / hubs
- Enhance and build community ties with existing community/ civic institutions: churches, fire department, Cowee Community Development Organization, etc.
- Promote affordable, attractive housing opportunities for new residents, especially young families



Cowee Past and Future Diagram highlighting historic routes and nodes as well as local routes and boundaries.

Sustain Cowee Valley's Timeless Scenic Beauty

- Preserve historic properties
- Establish Design Guidelines for compatible infill within the valley
- Develop plan for landscape treatment and signage for Route 28 Corridor
- Preserve farmland
- Encourage cluster development outside scenic corridors and agricultural lands

Sustain the Valley's Rich Biodiversity and Natural Features

- Manage water quality of creeks, streams and rivers
- Focus development outside flood potential areas
- Harvest rainwater for reuse
- Identify best practices for well and septic design and maintenance; use emerging technologies such as "living machines" for cleansing waste water
- Model best practices for development on various terrains

Sustain Community Economic Systems

- Develop crafts/local produce markets
- Reuse Rickman store for community/economic ventures
- Preserve the Cowee School for public use as school or retrofit for restaurant, culinary education/uses, business incubator
- Establish strong mix of uses, programming and services/ economic opportunities catering to residents, visitors, and entrepreneurs
- Promote local enterprises, including local food production

See www.asapconnections.org for useful information about local farming, food production and marketing.

The main themes of bringing "new blood" into the community while preserving its heritage, relating any new development very sensitively to existing patterns, taking care of the environment, and sustaining the local economy by means of local initiatives and adaptive reuse of existing buildings informed all future stages of work. Many of the illustrative projects explored as part of the process were developed from ideas originating from members of the Cowee community.

3 Develop Concept Plan(s) for Conservation / Development / Transportation

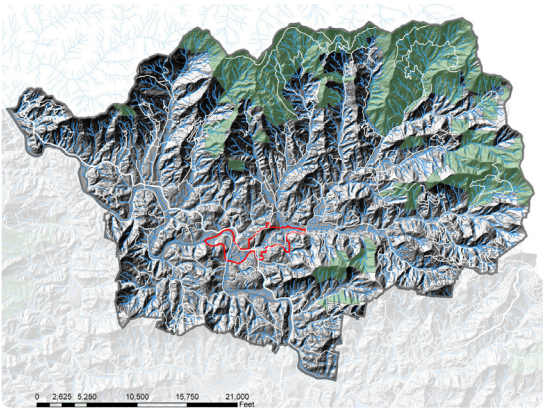
The analysis revealed a pattern of centers and corridors within the Cowee Valley. The primary settlement nucleus was focused around West's Mill, with homes, stores, churches, a post office, and a school. A small secondary node was historically located around the old Leatherman store and post office, approximately two and one-half miles to the northeast along what is now Leatherman Gap Road at its junction with Shepherd Creek Road. Beyond this point, the passage known as Bartram's Path (followed by Philadelphian naturalist William Bartram in 1775) splits north, following an old Cherokee trail heading for Alarka, a route that also saw prior service during the Anglo-Cherokee War in 1761 and during the Revolutionary War.

Other significant historic and cultural sites contained within this heritage corridor are a smaller Cherokee settlement site at Usinah Village, near the junction of Cowee Creek Road and Ruby Mine Road; Perry's Water Garden, a commercial enterprise that grows exotic water plants and sells them nationwide; an old ruby mine; and several home sites.

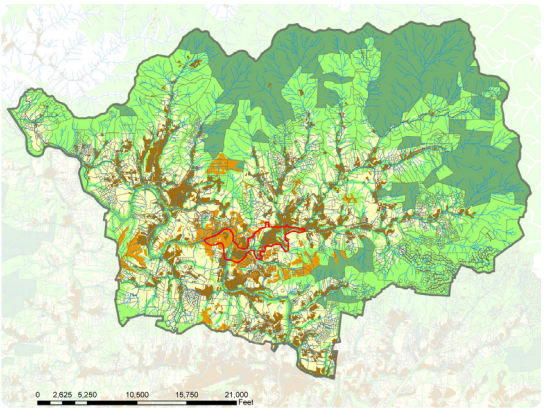
In contrast to this north eastern orientation, today's lines of communication follow Highway 28 along the valley of the Little Tennessee River, as they have since the early nineteenth century. This provides the contemporary visitor with only a partial view of the historic settlement as the highway skirts the historic core and passes the Cowee Mound, now effectively screened by trees. However, the views experienced while travelling along Hwy 28 provide rich visualizations of the landscapes that formed the backdrop to thousands of years of human occupation in the valley. As such, the length of Hwy 28 as it passes through the Cowee Township is worthy of designation as a NC Scenic Highway. In this way, the highway can be at least partly protected from future insensitive engineering and widening projects (see Section 4 for more information on this designation and its process).

The strategy for orchestrating patterns of future growth thus takes shape around the confluence of these historic and modern corridors, all of which contain areas defined as "suitable for settlement" by the GIS-based analysis of slopes and topographical and environmental features discussed in Sections 2 and 3 of this report. The main principle is that

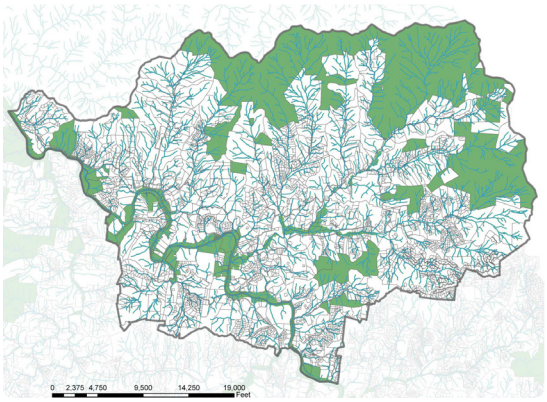
Photograph of Cowee's Scenic Beauty: Cowee Creek.



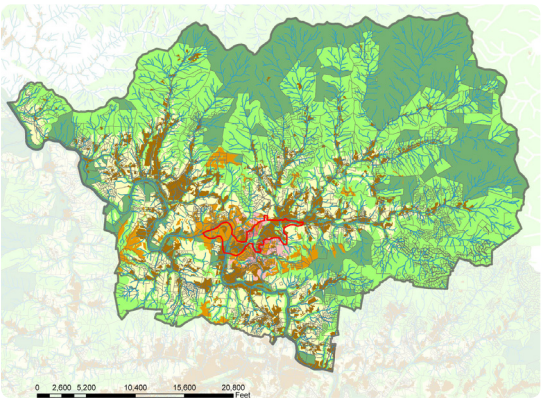
Cowee Township 3-D topographic map. Historic District in red. Base map for layering process.



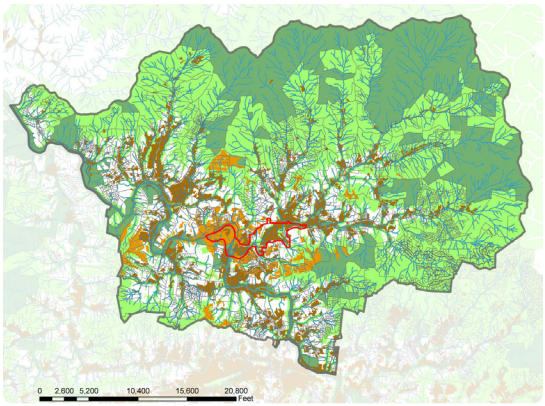
Areas suitable for development (light yellow) significant properties: not shown).



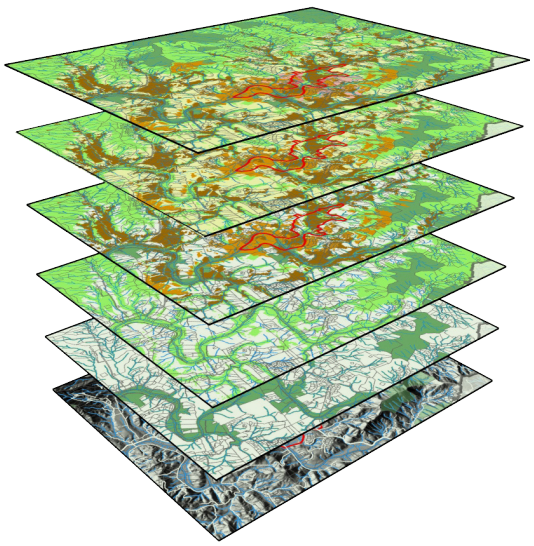
Permanently Preserved (dark green; 50' riparian buffers; delineated floodplain; Federal and State land; conservation easements and conservation areas) and Strategic Natural Conservation Areas (light green; Primary ridge-tops; Slopes >30%; Highly erodible soils; Prime wildlife habitat; Endangered/ sensitive plant communities; Soils not stable for septic; Areas prone to landslides).



Areas for infill/concentrated development (pink; ½ mile radius from Rickman Store).



Strategic Cultural/Economic Conservation Areas (Agricultural Lands: dark brown; Viewshed from Cowee Mound: orange; National Register Properties & Locally significant properties: not shown).



The images on these pages show various layers of GIS data and analysis produced by the Southwestern Commission for the Cowee Township in Macon County, NC including: terrain, hydrology, floodplains, protected lands, steep slopes, endangered species habitat areas, appropriate soils, agricultural lands, and key viewsheds from the Cowee Mound. The final combination of this information can be used to direct development to appropriate locations.

new settlement patterns take their cue from those of the past, that is, located primarily on land that is close by the historic roads and centers of habitation. This strategy enables other key landscapes to be conserved, either by property owners' intentions, tax incentives for continued agricultural operations, or other voluntary legal easements for the protection of farming and open space.

In locations where new development might be appropriate, specific sites should be evaluated with reference to the common sense development principles handed down by earlier generations of Cowee residents, namely avoid mountaintops, steep slopes and floodplain bottom land and build on the middle zone near existing infrastructure if possible. These traditional principles can be made more site specific by using GIS-based Land Suitability Analysis tools described in Section 2 of the toolbox. These analysis maps depict a range of conditions, including soil conditions, slope characteristics, floodplains, farmland quality, and viewsheds in key areas of historic and/ or cultural importance. By overlaying these maps, preferred zones for development and or conservation can be identified.

This diagram highlights two primary areas of preferred potential expansion on sites within a 1/2- to 3/4-mile of the historic core at West's Mill and within1/4- to 1/2-mile of the secondary node at the old Leatherman Store. These two focal points form "bookends" to other potential development sites within the valley and the lower ridges that define it.

4 Evaluate Specific Sites for Conservation and/or Development

Between the "bookends" of this historic corridor lie several sites that have significance for a variety of historic, socio-cultural, or economic reasons. These sites thus present the first set of criteria for locating new development: Are they places that should be preserved, such as the Cowee Mound, with little or no development in the vicinity; or are they sites where future development might usefully take place?

In locations where conservation is the main objective, and in addition to the continued use of conservation easements and land purchases, the current designation of the West's Mill Historic District on the National Register of Historic Places (with its advantageous tax credits) may usefully be extended by seeking the more substantial protective powers derived from further designation as a local historic district. The differences between the two types of historic district are described in detail in Section 5 of this Toolbox.

In addition to the map-based analysis, localized visual surveys can help determine one further important criterion for site selection, namely the degree to which new development has a disruptive visual impact on the landscape. In principle, new development should be minimally invasive to the historic and cultural landscape, and sites that meet this criterion may be prioritized for new "infill" development. From these various analyses, a more detailed Concept Plan for the study area can be developed.

5 Test and Refine Concept Plan(s) by Designing Illustrative Projects

Within the overall area, the diagrammatic Concept Plan identifies as key locations and potential development sites locations that conform to the site analyses and selection procedures outlined above. These sites are then used as the settings for illustrative designs for the layout and architectural character of new development across a range of conditions. In this way the planning and design principles can be tested under real site conditions.

In this case study, it should be stressed that the designs for potential developments created by this process are intended as illustrations only; they are used to demonstrate the methodology for selecting appropriate sites and to highlight key development principles for the layout and design of new buildings. They do not represent concrete proposals for development; rather, their purpose is primarily educational and as a catalyst for community discussion and consensus. The Cowee Illustrative Plan shows the overall assemblage of potential projects which are described in detail below.

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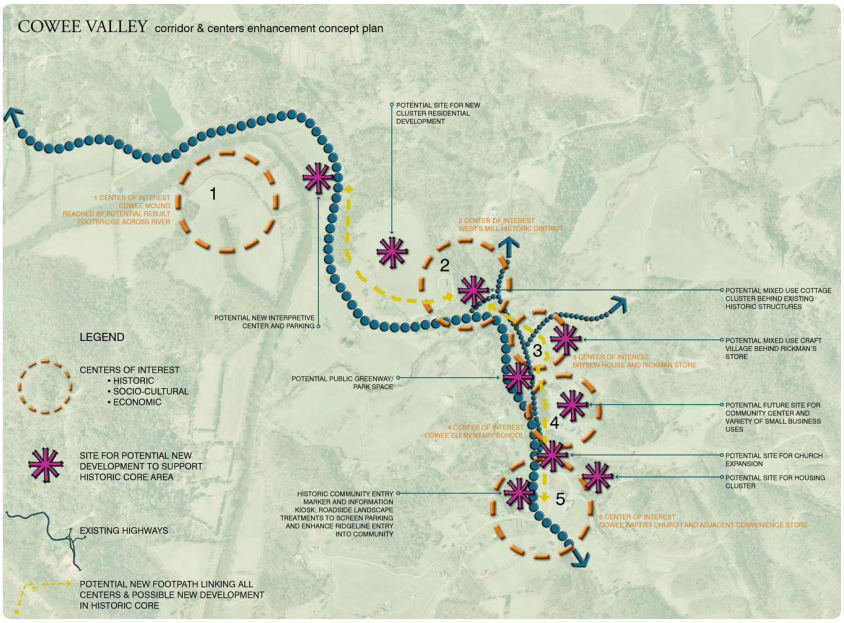
Cowee residents listen intently during the open discussions.

Designers work on illustrative projects for the Cowee Valley.



Cowee Corridor and Centers Enhancement Concept Plan Diagram.

CENTER OF INTEREST 1: COWEE MOUND

This is a key site for preservation by the Eastern Band of the Cherokee, according to their wishes and priorities. Plans made for this site should originate from the Eastern Band in discussions with the local community.

Potential Development Site #1: Land adjacent to Highway 28

Any new development suggested in this case study at this site is limited to the potential for an interpretive kiosk with a small amount of parking on land owned by the Eastern Band adjacent to Hwy 28. There is also the potential for the replacement of a pedestrian footbridge destroyed in a flood during the 1990s across the Little Tennessee River. This would provide visitor access to Cowee Mound, if this were desired by the Eastern Band at any time in the future.

Potential Development Site #2:
Cluster Housing on Meadow adjacent to Hwy 28

This large open meadow between the Mound and historic core is screened from Hwy 28 by a steep bank approximately 25 feet high and from the Mound by a belt of mature trees. This quality of relative invisibility provides an excellent opportunity for infill development to support the regeneration of the historic district in line with the principle that new development should be minimally invasive to the historic and cultural landscape.

The design (which provides only one illustration of possibilities) provides for 22 detached homes on the approximately 32.5 acre site, arranged informally in clusters around shared social spaces, including a community vegetable garden and orchard. Existing homes on adjacent lots are screened from new development by new landscape and tree plantings. Footpaths that can become part of a future heritage trail system are incorporated into the site, leading from the West's Mill Historic District (with a negotiated easement from adjacent property owner[s]) to land owned by the Eastern Band—which in turn can provide for a possible

new interpretation kiosk or center for the Mound. The design also provides for a second footpath, which in the future may lead up the lower flank of Snow Hill to the Jessie and Pallie West House.

CENTER OF INTEREST 2: CORE OF THE HISTORIC DISTRICT

This small cluster of buildings comprises the most vivid part of the community's built heritage from the late nineteenth and early twentieth centuries. The appeal of this historic area would be improved by landscape enhancement efforts to the general site area and renewed investment in the buildings, using tax credits available for properties within the historic register district.

Potential Development Site #3: Slope behind Historic Core

Refurbishment of the buildings in the core of the historic district could be complemented and enhanced by the selective insertion of a mixed-use "cottage cluster" of six or seven small-scale buildings in a compatible architectural vernacular style, fitted into slope immediately behind the historic buildings on West's Mill Road. Such a development could create a critical mass of buildings and activity at the historic epicenter of the community.

This potential development is characterized here by a series of intimate pedestrian-scaled spaces reminiscent of historic village clusters of buildings. The buildings can serve as housing or as live/work units where work spaces for crafts or other small business ventures are integrated on the lower floors with living accommodation above.

These two-story buildings also incorporate parking on their lower level to allow them to fit tightly to a narrow lane taken along the contours off Snow Hill Road. This lane could be extended for foot and bicycle traffic only into the potential residential development on the nearby meadow (site #2, above) with potential future links to the Cowee Mound by means of negotiated easements with property owners. This section of a potential heritage trail system could also be supplemented by steps up from the lane leading to a second potential future footpath link up the wooded slope to the Jessie and Pallie West House.

CENTER OF INTEREST 3: BRYSON HOUSE AND RICKMAN STORE

These two structures, dating from 1871 and 1895 respectively, sit on either side of Cowee Creek Road, forming a loose grouping of interesting structures. Areas adjacent to both sites provide opportunities for small-scale development that can be largely or partly obscured from views by the slope of the land.

Potential Development Site #4:
Properties adjacent to the Bryson House and Rickman Store

Because of its semi-screened location from local roads and relatively flat topography, the meadow behind the Rickman store provides another site that holds possibilities for future development. Twelve or thirteen new homes or live/work units can be fitted onto the site as a cluster of cottage-scale buildings. In concert with other development opportunities in the core of the historic district, these buildings can either provide new homes

Sketch of West's Mill Historic District sensitive infill with vernacular relevance

Sketch of West's Mill Historic District sensitive infill.

Historic Rickman Store

Birdseye rendering of potential craft village concept.

Cowee Illustrative Concept Plan.

at affordable prices or they can include studios and/or workspaces for local businesses. Such development can provide an energetic setting for the refurbished Rickman Store, perhaps with an emphasis on local crafts, music or local farmers market. If any low-key commercial or cultural uses are developed on this site, parking can be provided on the adjacent school property within easy walking distance.

Across Cowee Creek Road, additional small cottages or buildings for local crafts can be accommodated on the slopes adjacent to the Bryson House. Both of these locations can be linked along a potential future footpath connection between the Cowee Elementary School and the historic core as part of a developing heritage trail system.

Potential Development Site #5:
New Public Park

As part of the overall historic corridor enhancement, a new public park can be developed on the sliver of land between Highway 28 and Cowee Creek Road / Snow Hill Road. This land is characterized by narrow dimensions and steep slopes, with a perennial stream flowing through it that feeds into Cowee Creek at the bottom of the hill. All these factors combine to render the land almost impossible for any meaningful development, but it is well located for a small public park, providing recreational space for the community adjacent to the playground and ballfield at the elementary school. Selective clearing, stream refurbishment, and enhanced planting plus footpaths and other pedestrian areas can create a pleasant addition to the existing community facilities. The linear park can also provide another element of the network of community heritage trails featured extensively in this overall concept plan.

The design of the park also provides the opportunity for improvements to the difficult junction of Snow Hill and Cowee Creek Roads. Snow Hill Road can be swung approximately ten to fifteen feet to the west (to the edge of the right-of-way boundary), thus allowing a softer radius curve to be formed in the acute angle between the two historic roadways. A new historic marker may be incorporated into these road and park improvements, close to the Rickman store.

Design Concept for Proposed Public Park.

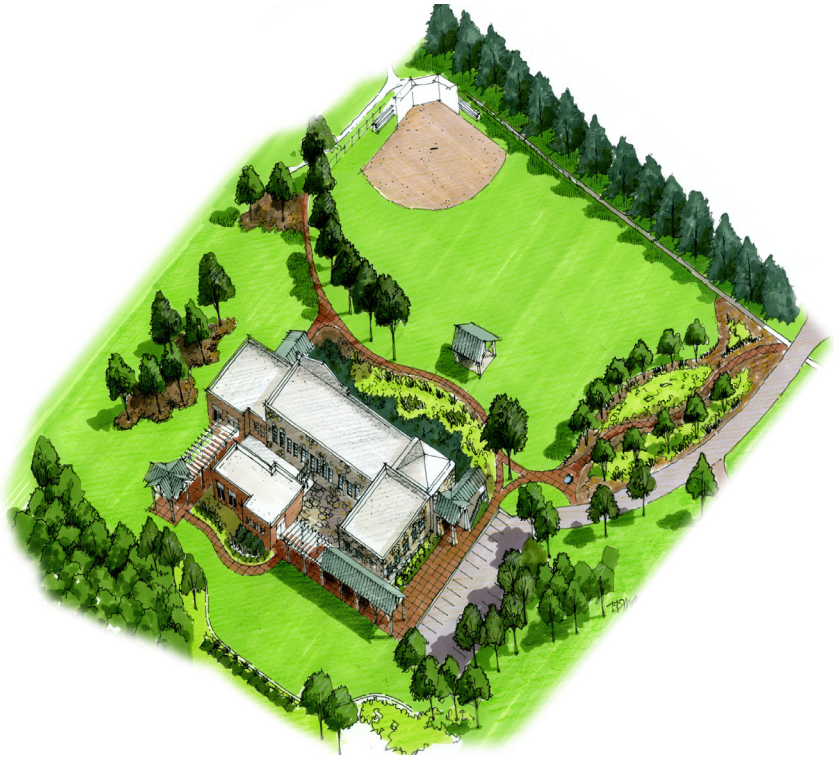
CENTER OF INTEREST 4: COWEE ELEMENTARY SCHOOL

The existing elementary school building dates from 1943 and was constructed in local stone by the federal Works Progress Administration (WPA). It currently houses grades 3 through 5; but the school's future is currently (2008) under discussion for closure and consolidation with larger, neighboring schools. The school provides a valuable community function, and the first priority of the community has been for it to remain in operation. In the event that closure does proceed, it is very important that new community uses be found for the buildings and site.


Design Concept for School Property Enhancements.

Potential Development Site #6: Cowee "Community Center"

If the school does close, the elementary school buildings and grounds have a potentially rich future use as a community center, possibly incorporating



Proposed Improvements to School Property: Native plantings, removal of mobile units, enhanced courtyard space and walkways.

a variety of small business uses. For example, the presence of a full commercial kitchen and dining space suggests future possibilities as a speciality restaurant linked with community college catering programs and local organic farming. An interesting and exciting precedent for this exists on the Enka Campus of Asheville Buncombe Technical Community College. Blue Ridge Food Ventures, jointly sponsored by AdvantageWest Economic Development Group and the state's Department of Agriculture, maintains an 11,000-square-foot commercial kitchen for use by culinary entrepreneurs who might not have the capital to create a production facility. Another kitchen incubator was launched in Tennessee in a renovated elementary school. These facilities have hatched hundreds of businesses and generated millions of dollars in organic local sales.

Other potential uses include the ability to show movies, host community events, provide a sheriff's substation and incorporate some small business incubator spaces. The interior and exterior spaces would be refurbished and redesigned to maximize the potential of the building; for example, the underdeveloped space between the classrooms and the dining hall could become an attractive paved and planted courtyard for outdoor dining and cooking demonstrations.

The ballfield and playground can easily be refurbished as a community park providing active uses to complement the more passive uses suggested in the adjacent potential linear park between Hwy 28 and Snow Hill Road.

Existing view as you enter the Cowee Valley.

Enhanced view with gateway signage, information kiosk, landscaping, and vernacular canopy.

CENTER OF INTEREST 5: COWEE BAPTIST CHURCH AND ADJACENT COWEE CONVENIENCE STORE

These two buildings and their large surface parking areas form the first impression of the Cowee community as a visitor crests the ridge traveling north on Highway 28. The road climbs through beautiful wooded areas up from the Little Tennessee River, but the first views of the community are two large, rather bleak areas of asphalt unrelieved by any landscape treatment. In their location and function, the church and convenience store contribute importantly to an active community life; they are valuable assets that would only be improved by means of some sensitive development of both properties.

Potential Development Site #7: Site for Cowee Baptist Church Expansion

Any new development on this site should respect and enhance the highway corridor that forms the entrance into the historic district. For example, the street edge should be landscaped to screen parking, and the building itself should present a main facade to the street view.

Potential Development Site #8: Cleared Site Behind Church Property
This site provides an opportunity for a small housing cluster nestled into the topography that supports the historic core with little visual impact.

Potential Development Site #9: Entrance to Historic Community
The fine church buildings and the adjacent thriving business provide some key elements for a positive entrance into the historic community, but they can be dramatically enhanced by simple landscape treatments along the edges of Highway 28 and within the individual parking lots. In the case of the convenience store, this enhancement can be further increased by the addition of a "Welcome to the Historic Cowee Community" sign integrated with the BP gas station sign.

Additionally, an historic district information kiosk, similar to the one at West's Mill, can easily be located against the rear wall of the service station forecourt, directly in the line of sight of motorists cresting the ridge in a northerly direction. The standard canopy over the pumps could also be renovated to provide a structure that is more fitting to the community's historic architecture, thus highlighting the convenience store's major role as an entry place into the community.

Future additions to the Baptist Church buildings and parking areas could easily be designed to compliment these improvements and to contribute in a major way to the significance of entry into the unique historic community. Landscaping to the Baptist Church parking lot would screen the parking and create a notable entrance gateway into the community seen immediately by drivers going north as they crest the ridge. This landscaping can incorporate a pedestrian path protected from traffic by a landscape buffer that would connect with other segments of a heritage trail within the historic district.

Potential Development Site #10: Trail System
As part of almost all the potential development projects noted above, most projects include one or more segments of a heritage walking and biking trail that could be pieced together from the Cowee Baptist Church in the south to the Cowee Mound to the west. In many cases this trail could be developed as part of the site works for each private development or as negotiated easements. Such a trail system would provide a local recreational facility, a small scale alternative transportation system, and a boost to the heritage tourism on which some large part of community's future economic growth may depend.

6 Define Appropriate Architectural Character and Vocabulary

For new buildings constructed in the context of historic structures and landscapes, it is always advisable to study the local vernacular styles and precedents. Attention should be paid to the massing and proportions of historic structures, which can form the basis of contemporary buildings that provide for modern amenities and lifestyles while fitting in to the built and natural landscape. In the Carolinas, the predominant aesthetic style has been a restrained vernacular classicism for domestic structures, where vertical proportions dominate over horizontals and relatively steep roof pitches fit over simply shaped volumes. The building traditions of the community could thus be more easily honored and reinforced by closer attention to the lessons provided by the older structures in the landscape.

Large homes can best be created by the assembly of several of these one and two-story volumes to create a disciplined plan arrangement that can be roofed over easily with style and restraint. In this way, the large ungainly roof masses of much contemporary tract and custom homes can be avoided where enormous roof volumes with multiple gables have to be fitted awkwardly over a sprawling plan arrangement of rooms.

In terms of the arrangement of groups of new homes, the traditional manner of relating structures to the land in ways that create informal layouts provides useful and appropriate guidance. Locating new homes in ways that make the most of site views or take advantage of landscape screening are to be preferred over rigid formal layouts. Such informal arrangements can also take their inspiration from groups of traditional farm buildings that form clusters of human habitation in the landscape.

For more information about the Central Appalachian Network and the kind of rural projects it supports, visit www.cannetwork.org/project/rural_policy.php and www.yesmagazine.org/article.asp?ID=2284

RESOURCES

A4

CASE STUDY
CASHIERS CROSSROADS
JACKSON COUNTY

"My family has been in this area for generations…what I'd like to see today come out of this project is when we see the inevitable growth that's coming, that we can embrace that in a positive way. That there's an awareness about what makes this community unique, the historic buildings and sites, the unique landscapes...particularly the green spaces and hedges—that all those things are a part of the new plan, that they're not just forgotten with all the initiatives moving forward. "

Ann Austin, Cashiers resident

Button created by the Cashiers Historical Society.

The text in this section was excerpted from the ***2027 Cashiers Crossroads Plan*** *which was developed as a companion document to this Toolbox. For a full copy of report go to www.mountainlandscapesnc.org.*

INTRODUCTION

Cashiers is an unincorporated community in southern Jackson County, NC. With just a few hundred full-time residents, this area's population swells in the summertime as thousands flock to its beautiful scenery high in the mountains. The community is centered on the intersection of US 64 (from Highlands to Rosman) and NC 107 (from Sylva to Walhalla, SC) in an area that is referred to as the crossroads. Because of the geography of the region, the two primary roads carry a significant amount of traffic year round. As a result, the intersection is very congested.

Begun largely as a summer retreat for prominent low-country SC area families, including Confederate General Wade Hampton III in the 19th century, Cashiers began to enter a growth period at the turn of the century but was slowed by the Great Depression. Growing slowly but steadily through the 20th century, it began to experience explosive growth in the last 20 years with large-tract subdivisions opening up land for thousands of mostly second-homes and vacation rentals.

The buildings along both NC 107 and US 64 today are an eclectic mix of historically significant structures, late 20th century strip centers, and contemporary infill. There is no consistency to the streetscape and the random placement of buildings and parking lots blur the line between the public and private realm, often in a manner that leads to a visual collision of car-oriented driveways and resort-level pedestrian traffic. In addition, the community grapples with an incomplete utility system and a dearth of housing for full-time residents of limited means and for season workers.

Today, because of the historic and natural amenities of Cashiers, development pressure is high. In the crossroads area in particular there are several large undeveloped or underdeveloped parcels. A unique partnership between the developers of these large tracts and leaders of many of the community's active non-profit organizations has endeavored to craft a shared vision that ensures that future development decisions are made within the context of the bigger picture. In short, they hope to "Keep Cashiers, Cashiers" with each increment of new development.

REGIONAL APPLICABILITY

The Toolbox process emphasizes the role that good planning can play to help a community shape its future. Too often our communities take themselves down a path of not planning, thinking that by doing so it allows for creative individual identity and the protection of property rights. This may work in a very rural area, with little or no development pressure; but as regions or villages begin to develop, the importance of thoughtful, coordinated planning grows. Our individual decisions begin to have a much more significant impact on others as there are more of us as neighbors. It therefore behooves us to consider how the future can be envisioned and built. The Cashiers model project is a case study to illustrate a method of planning for a crossroads area that has grown into

a village. How does a community account for the design and policy issues associated with increased development when there is little formal regulatory or governance structure in place?

Cashiers is a classic case study of a place that has grown from a rural hamlet into a village and faces consistent development pressure. It is a desirable community and location that will only continue to attract more attention in the foreseeable future. The question for such areas is, "How do we get started, and what do we need to accomplish?"

The Toolbox process utilized a 3-day on-site design charrette in Cashiers to illustrate one method of contemporary planning. The charrette in this case is an example of a public participation and design technique that can be used to formulate a community plan.

KEY ELEMENTS OF THE PLAN

In recognition of the original incorporation date of 1927, this plan strives to provide a blueprint for leadership and development decisions over the next 19 years—just in time for Cashiers' centennial anniversary. There are seven key elements to this plan:

1. Provide Choices and Lessen Congestion in the Crossroads Area: The current network of roads is enhanced with additional connections in every quadrant around the crossroads. Traffic will pass through roundabouts at key gateway nodes and at the primary crossroads intersection to help slow traffic, creating the slow speed "village feel" that better manages the cars and provides a safer, more relaxed environment for the pedestrian strolling from shop to shop.

2. Construct a Layered Pedestrian Network: The current village trail should be expanded into a recreational greenway system for pedestrians and bicyclists that encircles the crossroads and connects the Village Green to Cashiers Lake. This network should intersect the more conventional sidewalk system along the street frontages that connects the storefronts and provides a more rational and safer system for pedestrians.

3. Direct Growth into the Core: Currently, zoning in the crossroads permits miles of disconnected, commercial development. This sprawling pattern is unsustainable and must be redirected. Successful commercial environments are mixed-use, walkable, and compact. Development should be focused in small-scale nodes that are supported by neighborhoods within walking distance. Shoppers should be able to park once and walk around the community.

4. Provide Affordable Housing for Full-Time Residents and Seasonal Workers: Using a Toolbox of approaches including garage apartments, small cottages, residences over stores, and land trusts, the community should provide and maintain an attractive stock of homes and living quarters for those with more limited means.

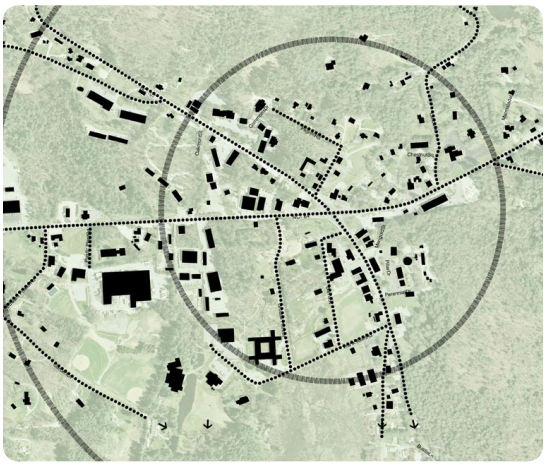
5. Coordinate Water and Wastewater Utilities: The current fragmented system of public and independent water and wastewater system

Study area illustrating the five minute and ten minute walking distances surrounding the village crossroads area; the purple line represents the district boundary and the orange lines are the topography.

Looking east on US 64.

The center of the village - the Exxon Station.

Areas with the potential for change in the short term future.



Existing buildings and road network illustrating the relatively small size of most of the buildings and the limited street connections.

THE "BUSINESS AS USUAL" PLAN ▶

Given the current planning requirements, the lack of a suitable mechanism to plan infrastructure, and little governance structure, the future build-out of the Crossroads area, if left to incremental decision making, can be bleak. Continued lack of connectivity will choke future transportation improvements. Oversized buildings will cast shadows over the quaint shops widely regarded as provided the Cashiers aesthetic.

Though it represents a potential extreme build-out scenario, this graphic is intended only to illustrate the potential for failure in absence of a larger planning effort and coordinated governance structure.

providers should be coordinated to ensure that the existing community and the proposed reasonable level of growth depicted in this plan can be economically and efficiently served while minimizing the pressure on the pristine creeks that surround Cashiers. This issue must transcend the potential for new development and must also address the aging infrastructure serving existing development that was built over the last century. The debate should not be about whether to grow but how to grow smarter.

6. Encourage the Development of Economically and Environmentally Sustainable Buildings that are Sensitive to the Community Aesthetic: Cashiers is comprised of buildings in what can best be described as mountain rustic eclectic style. Each new generation introduces new interpretations on this vernacular. New buildings should incorporate the modest scale, natural materials, eclectic styles, rooflines, and lush natural vegetation around their sites.

7. Institutionalize a Coordinated Decision-Making Process: The philanthropy amongst a wide variety of groups in Cashiers is impressive for an unincorporated community. To help improve communication, focus resources and coordinate efforts, a Village Council should be created to serve as an umbrella organization and a civic clearinghouse. This Council is envisioned to function in a manner that helps groups move out of their silos and work together to achieve greater goals. In short, it should be more like a United Way than a Board of Aldermen, with a focus on community advocacy and project accomplishments rather than legislation and decision making.

The 2027 Concept Plan overlaid with aerial.

Crossroads birds-eye rendering.

THE BOTTOM LINE

EXISTING CONDITIONS

Retail/Office: +/- 345,000 sf
Residential: +/- 75 Units
Lodging: +/- 80 Rooms

PROPOSED ADDITIONS

Retail/Office: +/- 125,000 sf
Residential: +/- 245 Units
Lodging: +/- 80 Rooms

2027 PLAN TOTAL

Retail/Office: +/- 470,000 sf
Residential: +/- 320 Units
Overall Density: 1.28 Units/Acre
Lodging: +/- 160 Rooms

Improvements along Village Green with cottages and walking trail.

Improvements along gravel lane with vernacular infill housing.

Figure Ground Diagram illustrating the 2027 Concept Plan of infill development, new road connections, and public open spaces.

STROLLWAYS, TRAILS AND PATHS

One of the key deficiencies within the Village is a lack of continuous pedestrian connections. This is both a frustration for residents and visitors and also a safety issue. While the Village Trail network helps in certain areas, it is too informal and incomplete to be of use in anything more than a limited recreational fashion. Some people expressed an aversion to formal sidewalks in the center, but this needs to be balanced with critical issues of safety and business viability.

R1: ***Complete an expansion of the Village Trail network.*** This system should be more consistent in terms of the surface material, signage, and lighting and should be extended to Cashiers Lake. The surface material should be accessible to accommodate all users but can still have a rustic feel to it.

R2: ***Connect the various businesses and activities along the highways and future secondary streets in the village center.*** In most cases, the recommendation would be for a formal sidewalk network. For Cashiers, the actual implementation might have more the character of a trail system in terms of design but would effectively function as sidewalks along the streets. Call it a "stroll-way" for lack of a better term, but it is critical to improve pedestrian safety throughout.

R3: ***Create a boardwalk system through the wetlands and around Cashiers Lake.*** Boardwalks should be constructed through or near wetland areas between the Village Green and Cashiers Lake. This connectivity to the southern portion of the community provides an intriguing experience in the landscape. The boardwalks will provide the needed connectivity while respecting and preserving the fragile wetland ecosystem.

R4: ***Establish a community-wide bicycle network that centers on the Crossroads but makes connections to the surrounding neighborhoods.*** The community should work with the Rural MPO and Jackson County to plan safe and effective bicycle routes through Cashiers. Once planned, they can work with individual developments or obtain state and federal grants or local funds to complete the system.

IMPROVING TRANSPORTATION CHOICES

R5: ***Increase choices and options into the network to reduce congestion by requiring the construction of new street as part of the development process.*** A fundamental component of smart growth is a connected network of streets. This need not be a simple grid, but it should be a series of interlaced streets with relatively short blocks. The reason is fundamental: a network of streets allows for automobile traffic to spread out more evenly in a neighborhood, thus reducing the pressure on any one road or intersection. All roads can then be "downsized," which makes integrated design for pedestrians and cyclists much easier. In the case of Cashiers, a more complete network of alternate routes could reduce traffic by as much as 34% at the primary highway intersection. By relieving this amount of traffic, both US 64 and NC 107 within the crossroads area can be enhanced for walkability through the narrowing of lanes and addition of on-street parking and pedestrian facilities. An added benefit is easier access to businesses via the parallel road network.

R6: ***Work with Jackson County and NC DOT to adopt a "complete streets" policy for all new street construction.*** Once the fundamental aspect of a connected street network is in place, the streets themselves must be designed for all modes of travel. That is, they should be thought of first and foremost as places for everyone—whether walking, riding or driving. In general, this means slower design speeds and accommodation for pedestrians. How this happens can vary greatly in the details, to ensure that a place reflects its own unique character. For more information on this issue, please refer to www.completestreets.org.

R7: ***Work with NC DOT to complete conceptual design of a roundabout at the crossroads and other roundabouts at key gateway nodes.*** In the case of Cashiers, the one primary intersection presents both a challenge and an opportunity. The intersection is challenging because of the high volumes of traffic that are required to go through it (no alternate routes) and the variation by season. Also, with a constrained right-of-way, there is little to no opportunity for further expansion. However, the design team illustrated how a single-lane roundabout could fit easily within the current right-of-way of the crossroads, and accommodate both current and future traffic needs. In addition, single-lane roundabouts work very well for pedestrian safety, which is a substantial liability in the current configuration.

The design team further recommends the placement of 4 additional roundabouts at the entry points to the village center, tying into future street connections. These "entry" roundabouts will signal a change in the environment for drivers and allow for the highways to be redesigned to a slower, multi-modal configuration.

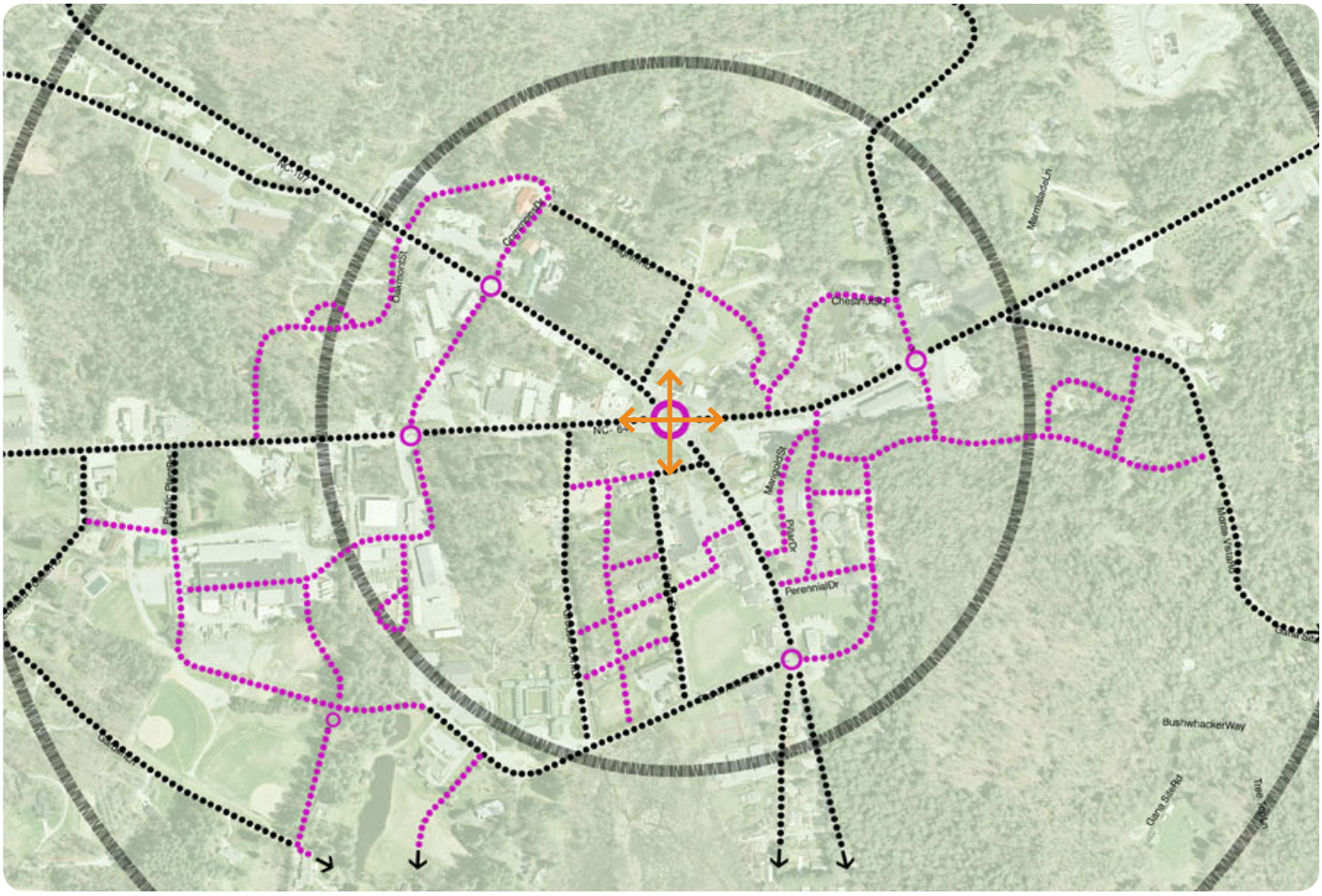
PEDESTRIAN FACILITIES DIAGRAM

The pedestrian facilities diagram illustrates three basic delineations of walkways that include: paved walkways, crushed stone or mulched trails, and boardwalks. These contexts follow three basic priorities established for the entire pedestrian network. They should use natural materials, be accessible for all people, and preserve the unique character of the community.

This integrated system could also be used for bicyclists. A innovative idea that is spreading all around the globe is the concept of mass bicycle rentals. Cashiers would no doubt be the smallest community to take on this sustainable action. It may simply mean that an entrepreneur could hang out a shingle and rent some bicycles for use on the Cashiers trail and around town.

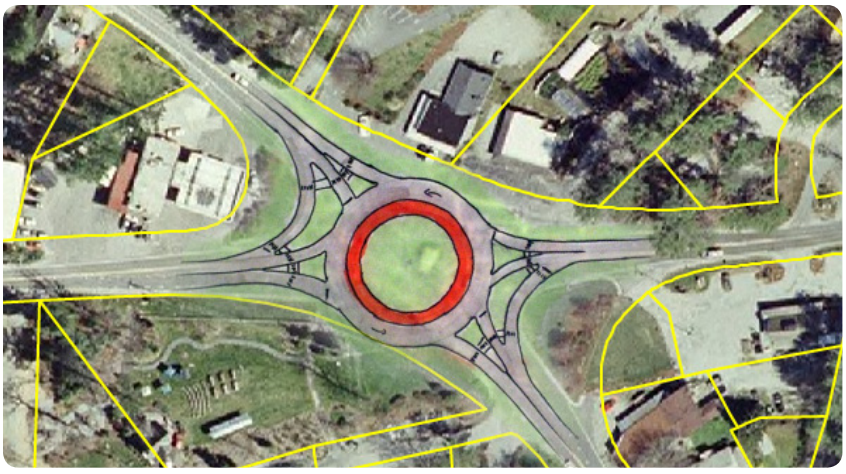
Bicycle rentals for Cashiers would be a great "green" action to stimulate use of the trail system.

Precedent imagery for the expanded off-road pedestrian and bicycle network.



Transportation diagram illustrating proposed road network with new connections shown in purple and the crossroads area indicated in orange.

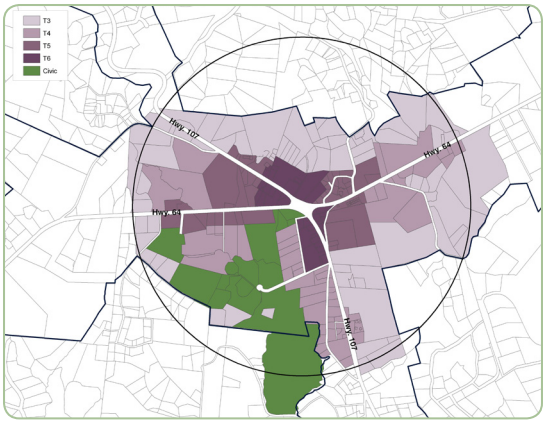
Streets are for everyone, not just vehicles.



Conceptual design of a single-lane roundabout at the crossroads of NC 107 and US 64.

European oblong roundabout.

Illustration of new development facing the proposed roundabout at the crossroads.



Proposed regulating plan for the Cashiers Crossroads.

REGULATORY CHANGES

R8: ***Convert zoning to a form-based code to focus standards on the building form (design).*** Some of the new best practices in zoning may be worthy of inclusion in Cashiers. Specifically, the new generation of form-based zoning codes are tailor-made for environments such as the village center. These codes focus primarily on the design, scale and intensity of development rather than the actual building use. In village center and downtown environments, these are becoming an increasingly common method for regulating the built environment.

R9: ***Creation and adoption of an architectural pattern book.*** These documents are created to illustrate in detail all of the common architectural elements that define a place's unique character. Cashiers in particular has an unusual blend of architectural styles and elements, and a pattern book could identify the particular styles and elements for guidance to developers and designers. This particular tool can be used as an optional guiding document or be tied to regulations for specific kinds of buildings.

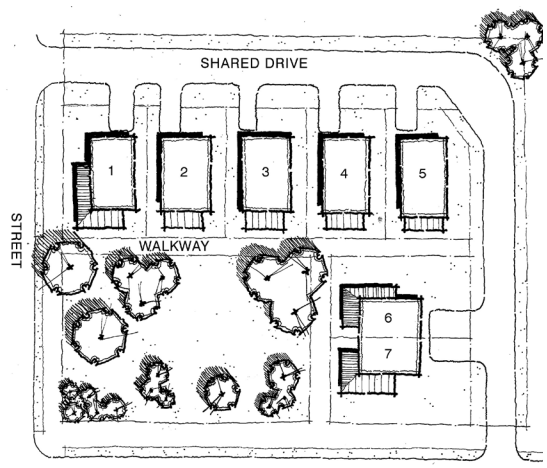
Illustration of small cottage that could serve as affordable housing in the crossroads area.

R10: ***Reduce the amount of commercial zoning along the main corridors and refocus it into pedestrian-friendly nodes.*** Presently, the amount of commercially-zoned land is far in excess of what the seasonal market of the Cashiers community can support. This is evident in the frequent turnover of tenants in many of the existing buildings. In order to make commerce more sustainable, the locations of businesses should be clustered into nodes, such as around the crossroads and the other gateways. This will permit the businesses to work cooperatively to promote a park once and walk environment that clusters shopping trips.

AFFORDABLE HOUSING

R11: ***Encourage a range of affordable housing types for both full-time residents and seasonal workers.*** Most of the Toolbox region, and Cashiers in particular, faces a critical shortage of affordable housing. Low-wage service workers are routinely commuting 30 miles or more to jobs in Cashiers. In addition, middle income households increasingly find themselves priced out of housing in the area. This has the potential to erode the future tax and commercial base of the village, as those households eventually look elsewhere to establish themselves.

R12: ***Create a Housing Trust to provide both for-sale and for-rent affordable units on a permanent basis in small increments throughout the village.*** The provision of affordable housing is not a simple matter, however. The approaches to be used are a combination of design and policy techniques. For example, the design team identified several sites for small-scale infill housing that would be excellent projects for a civic group to take on. In addition, the provision of smaller housing units should be considered—bungalows, cottages, row homes, and accessory apartments. A housing trust could also be established that operates in a similar manner as a land trust. The housing trust can write down the cost of housing and even ensure long-term affordability via covenants.



▲ CLUSTERED HOUSING PATTERN

By providing a slightly higher density of housing oriented around a common open space (with a similar level of tree preservation), the land costs are offset and there are greater efficiencies in providing more units with similar (but not identical) design characteristics.

WATER, WASTEWATER, AND STORMWATER INFRASTRUCTURE

R13: ***Develop a comprehensive Water and Sewer Plan for providing services to the Cashiers community with a specific focus on the crossroads area.*** With at least three water and sewer providers in the area and a myriad of small, inefficient systems, there appears to be little coordination in treatment, distribution, or collection practices. Ideally, this plan should be coordinated by the County since it will need to address multiple watersheds and stream basins. It should also address the pressing need to find ways to discharge treated wastewater by minimizing impacts to the surrounding pristine streams as well as the consideration by state officials to review strategic inter-basin transfers to provide interconnected water supplies.

R14: ***Investigate new technologies for the treatment of wastewater.*** Given the presence of pristine streams surrounding the Cashiers community, it is necessary to consider how wastewater and stormwater are discharged into the system. The proposed change in classification of certain streams to more restrictive standards will accelerate this need. As septic tanks fail and there becomes a greater need to extend utilities to previously unserved locations, this question will begin to touch every corner of the community.

R15: ***Create a Stormwater Master Plan.*** Given the clear public issues of flooding around the Post Office and the Library, the community should work with the County and the NC Department of Water Quality to development a comprehensive stormwater management plan for the basin that drains the crossroads area. This plan should not only include ways to reduce flooding and manage the "rate and volume" of stormwater, but it should also proactively address water quality issues.

R16: ***Incorporate "low impact development" (LID) stormwater management and treatment techniques in all public projects and consider adopting such standards for all new development.*** Stormwater issues are becoming more pressing for smaller communities as the public's awareness of non-point source pollution increases. And, given the propensity of flooding in some of the areas upland of Cashiers Lake, there is an immediate issue of providing more storage capacity for stormwater before it reaches the lake. LID techniques include the use of rain gardens, bio-engineered swales, cisterns, rain barrels, and other natural methods that store and treat stormwater closer to its point of contact with the earth.

R17: ***Dredge and restore Cashiers Lake.*** Though this waterbody is privately owned, it should be considered a community resource as it is essentially one large retention pond for the entire crossroads area. The erosion from every new development project has contributed to the heavy siltation of the lake and the resultant upstream flooding. As a vital piece of stormwater infrastructure for this area, the community should investigate ways to complete the necessary restoration and establish a long term maintenance plan that engages all of the "contributors" in the basin.

Cashiers Lake, shown in the plan above, serves as the retention pond for most of the crossroads. Through the years, the lack of a stormwater management plan has caused the lake to become heavily silted.

Image Source: NCSU

A bioretention rain garden at North Carolina State University.

Image Source: NCSU

A constructed wetland.

Images of the "Cashiers vernacular"

View looking south on NC 107 with compatible infill development and lush landscaping.

ARCHITECTURAL COMPATIBILITY

Cashiers is an architecturally diverse community comprised primarily of small detached structures often slightly askew from the frontage and wtih informal landscaping. What some would call "hodge-podge" others would call "eclectic." One will find a range of both pure vernacular styles and otherwise utilitarian structures. Whether by design or not, what makes Cashiers, Cashiers is a markedly understated commercial aesthetic. There are a couple of key elements that should be considered in the construction of new buildings.

R18: ***Buildings should be oriented to the street or a pedestrian path to encourage walkability.*** Too many buildings in Cashiers are surrounded by zones almost exclusively devoted to the automobile. With little in the way of pedestrian amenities and frequent driveways onto the main roads, the pattern promotes an unsafe environment and one that discourages people from enjoying the casual shopping environment that is uniquely Cashiers. Parking should be relegated to the side or rear of structures so that the frontage is devoted to the pedestrians. Unlike a Main Street community which has rigidly aligned buildings located at the back of the sidewalk, buildings in Cashiers should be setback 10-25 feet to permit a small courtyard or front yard landscaping to add to the lush feel along the roadways. Buildings can be rotated slightly on their lot to add interest or to preserve existing vegetation, or both.

Buildings located immediately adjacent to the crossroads of NC 107 and US 64 should be a bit more formalized in their lot orientation and located closer to the sidewalk to establish that area as the central destination in the community.

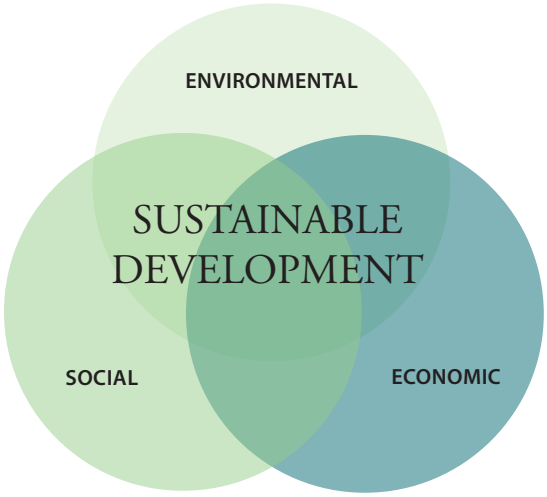
R19: ***New buildings should be small in footprint and utilize common details found throughout the community. These details include stone bases, steeply pitched roofs, lap siding, rafter tails, porches with twisted wood balustrades, and deep, rich colors.*** Regardless of whether the building is a replica style or a contemporary interpretation, the use of some or all of these details will bring a unifying theme to all new construction.

Improvements to the Exxon station.

BUILDING SUSTAINABILITY

With rising energy costs and a rising public awareness of the cumulative impacts of our development patterns on our environment, the incorporation of sustainable design and construction practices into every new building will better prepare Cashiers for the next forty years.

R20: ***Consider all three elements of sustainability when evaluating building decisions.*** (See Section 2.2) The economic success of any building is a well known formula. And to a large extent with our growing body of knowledge, we can also calculate the net impact of a building on the environment (external costs) as well as its energy efficiency (internal cost). What is often lost in these conversation though is the need for development to respond appropriately to the social realm. Does the building improve the visual aesthetic of the community? Does the building, through its siting on the lot and location in the community, encourage pedestrian activity? Do the uses within depend on regional automobile traffic or are they more locally serving?



R21: ***Incorporate sustainable design and construction principles and practices into all new development.*** With the substantial advances in building construction technologies over the last ten years and the rapid integration of new "green" products into the marketplace, the incremental cost of construction has all but been eliminated for new construction.

DECISION MAKING AND GOVERNANCE

R22: ***Establish a Village Council and "Mayor" to provide oversight and leadership.*** Cashiers, like many villages in the mountains, has little or no formal regulatory structure. It does, however, have a rich amount of civic groups and a heavy degree of civic involvement. In the absence of a formal municipal structure, these groups have stepped up to fund such things as the Village Green, a trail network and community facilities. Each group tends to have its own agenda, and a number of them overlap. A Village Council of some sort may be a way for these disparate groups to come together and achieve common aims. A "Mayor" or head of the Council could be selected to spearhead critical community needs.

Image Source: PlaceMakers

Image Source: PlaceMakers

Photos of citizens in Cashiers coming together to chart the future of the crossroads area.

A5

CASE STUDY
US 441 SMALL AREA PLAN
JACKSON COUNTY

Image Soure: Gabriel Cumming/Carla Norwood

"We're considered a gateway community, the same as Gatlinburg. Look what Gatlinburg looks like and Pigeon Forge. For a long time, we let tourism drive us, and now we are in a position that we can drive tourism. We can say what we want to offer to the tourists, not some outsider saying we're going to do this and we're going to do that…. We can say, 'This is how we want our community to be.'"

Joyce Dugan,
Harrah's Cherokee Casino and Hotel

INTRODUCTION

The US 441 Small Area Plan represents a blueprint for the preferred settlement patterns and design qualities that should be encouraged in the community. It is the culmination of a comprehensive and collaborative planning process that included local residents, business owners, property owners, and representatives from state agencies, conservation groups, public utilities, county planning staff, and the Eastern Band of Cherokee Indians. Without the Small Area Plan, members of this rural community fear that their quality of life and pride as a mountain community could be lost
forever and replaced with a crowded, suburban, and sprawling development pattern problematic in so many other areas of the state and country.

The community blueprint includes four components:

1. A framework plan that provides overall guidance to growth and conservation in the study area. Specific elements of the framework plan include the guiding principles, character area typology, supporting infrastructure, and general recommendations.

2. A detailed discussion on place-making, including a series of recommendations for physical improvements and planning initiatives necessary to implement the framework plan.

3. Focus area studies that provide study-in-detail recommendations for three activity centers and two supporting development areas. These recommendations include market realistic development programs and illustrative master plans that support catalyst projects in the study area.

4. An action plan full of recommendations, potential funding sources, teaming partners, and a timeline for inviting success to the study area.

The Small Area Plan is also the sourcebook for a development ordinance that will be prepared for the Gateway District which establishes the types, patterns, and conditions for development advocated by the community in this planning process.

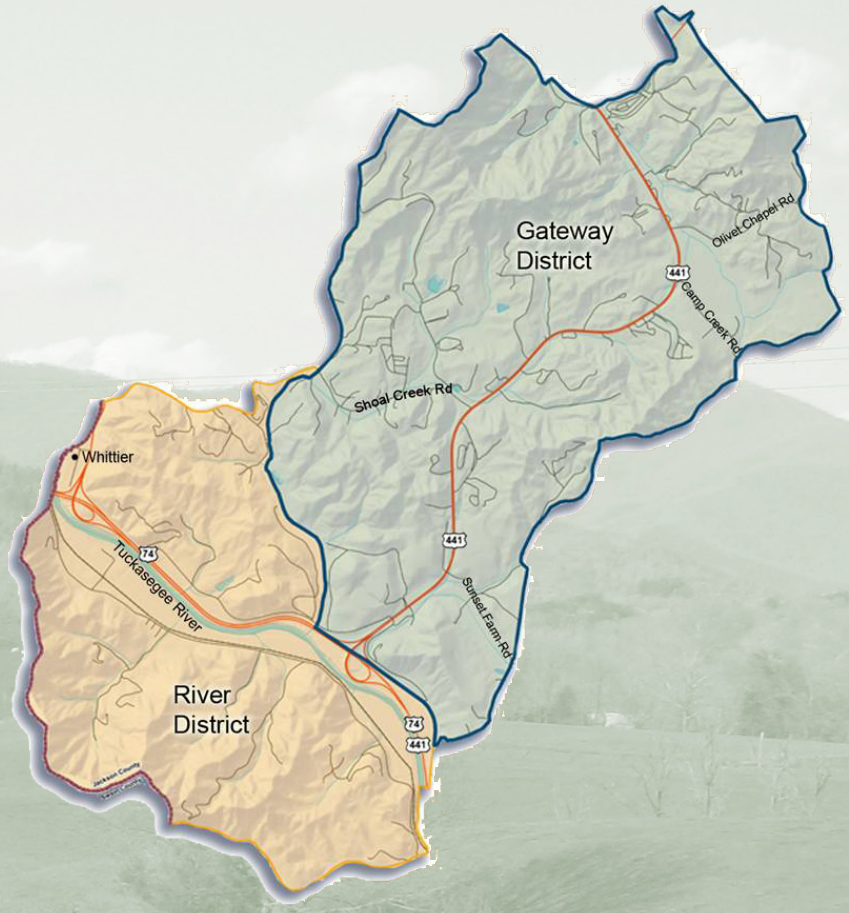
REGIONAL APPLICABILITY

The citizens of Jackson County, North Carolina, value its rural character and scenic areas and take great pride in their mountain community. Picturesque views and natural areas contribute significantly to the quality of life enjoyed by current residents, as well as to the desirability of the area for second home owners, migrating retirees, and visitors to the region.

Unfortunately, development in scenic areas like Jackson County could have a negative effect on its visual appeal. Whether they occur on mountain slopes or in pristine valleys, new developments often generate unintended consequences that could devalue the community. These

The text in this section was excerpted from the US 441 Small Area Plan, which was commissioned by Jackson County and the Eastern Band of Cherokee Indians, and developed by Kimley-Horn and Associates. All images and text are courtesy of Jackson County/Kimley-Horn and Associates. For additional project information go to planning.jacksonnc.org.

consequences include removal of natural vegetation, increased stormwater run-off, pollution in nearby creeks and streams, mountainside removal, and landslides. The US 441 corridor, between US 74 and US 19, represents a stewardship opportunity for Jackson County in managing the type, intensity, and appearance of growth in this scenic area. Development pressures are mounting, primarily from construction of the new Whittier/Gateway Sewer Treatment Facility near the junction of US 74 and Thomas Valley Road (State Road 1397). Major service lines along the US 441 corridor will be operating in fall 2009, so now is the time to prepare for the resulting growth anticipated for the study area.



US441 Small Area Plan study area.

Growth in the study area will forever change the quality of life experienced by its residents and business owners. "With so many people moving to the area, it is getting past the point of doing whatever you want with your land because it doesn't bother anyone. Without some sort of regulations, landowners have the potential to really mess up their land, and that messes up the neighbor's land and so on and so forth all the way down the line." (Raymond Bunn, resident of Jackson County, 2008) Left unchecked, the floodgates opening for development could lead to newly subdivided land and more suburban-scale living arrangements. The result is out-migration of frustrated families looking elsewhere for the low-intensity mountain lifestyle they and their ancestors once enjoyed.

Today, the community is truly at a crossroads for dealing with its future growth. A strong dichotomy in public opinion for how to prepare for this growth could lead to the community's demise. Examples of conflicts facing the community from the onset of the planning process include: private property rights vs. government regulation, willingness to stay in the community vs. cashing out, local entrepreneurship vs. corporate takeover of local businesses, the interests of a rural community vs. the opportunity to be a service stop on the way to national landmarks, and the perspective of long-time residents vs. newcomers to the area.

For all of these reasons, the Jackson County Board of Commissioners became interested in partnering with community leaders and landowners in the area to promote greater balance of the community's desire for environmental stewardship, economic prosperity, and protection of the quality of life unique to this mountain community.

From top: Land use and transportation images from the corridor and photos from the public input process for the Plan.

STUDY AREA

The study area for the US 441 Small Area Plan focuses on the potential high-growth area in the northern reaches of Jackson County that will soon be provided with public sewer service. This area is generally regarded as serving a dual role in the county as 1) home to a rural-living community of approximately 700 residents and 2) the southern gateway to landmarks in the region including the Great Smoky Mountains National Park, the Cherokee Reservation, and Harrah's Casino. Elevations in the study area range from 1,830 to 2,710 feet. Pristine valleys between the mountain ridges provide picturesque views of farmland and open space. Several intermittent streams feed the Tuckasegee River, which flows northwesterly from the study area to the Little Tennessee River.

The study area is served by two major US highways. US 74 runs from northwest to southeast as a four-lane, divided freeway. US 441 runs from southwest to northeast as a five-lane, undivided highway. The junction of US 74 and US 441 is historically known as the Gateway. Working farms, residential homes, schools, churches, and businesses all are present within the study area. Opposite the Gateway, the northern edges of the study area meet the Qualla Boundary established for the Eastern Band of Cherokee Indians.

The study area for the Small Area Plan includes two distinct districts: the River District and the Gateway District. The River District lies generally south of US 74, Henry Bird Road, and Shoal Creek Road. This area is characterized by working farms, enclaves of rural home sites, and uninterrupted tree-lined mountain views. The floodplain extending south from the Tuckasegee River (to Thomas Valley Road) and the provisions of the Jackson County Mountain and Hillside Protection Ordinance (adopted August 6, 2007) make this area unique in terms of the quantity and quality of development that can be expected. The River District includes approximately 2,000 acres.

The Gateway District represents the remaining portions of the study area. This district has far greater growth potential than the River District because of its proximity to US 441, potential synergy with existing development and land available with less challenging topographic features. The Gateway District includes approximately 3,400 acres.

Below is an outline of elements included in the planning process for the US 441 Small Area Plan:

1. Orientation and Kick-Off
2. Advisory Committee
3. Youth Planning Workshops
4. Stakeholder Interviews
5. Public Design Charrette
6. Project Website
7. Public Workshop
8. Public Hearing

COMMUNITY ASSESSMENT

The US 441 Small Area Plan includes a comprehensive inventory and assessment of conditions and community features noted in the study area. It communicates how land is organized, used, and supported by public facilities and services. A review of plans, programs, and policies administered in the study area acknowledges the invisible forces that could affect the planning process or resulting recommendations for the US 441 Small Area Plan. A subsequent market assessment for the study area supplements the Community Inventory & Assessment. Following are the existing conditions that were surveyed (some of which can be seen at right) as part of the Community Inventory & Assessment:

Natural Environment

- Topography
- Green Infrastructure
- Blue Infrastructure
- Critical Viewsheds

Built Environment

- Land Use Profile
- Land Ownership
- Vested Properties
- Approved Development

Community Design

- Billboards
- Cohesive Design

Transportation

- Transportation System
- Transportation Network
- Safety and Congestion
- Multimodal Considerations
- Transportation Considerations

Public Utilities

- Sewer Service
- Water Service
- Electric Service

GUIDANCE ON THE US 441 SMALL AREA PLAN

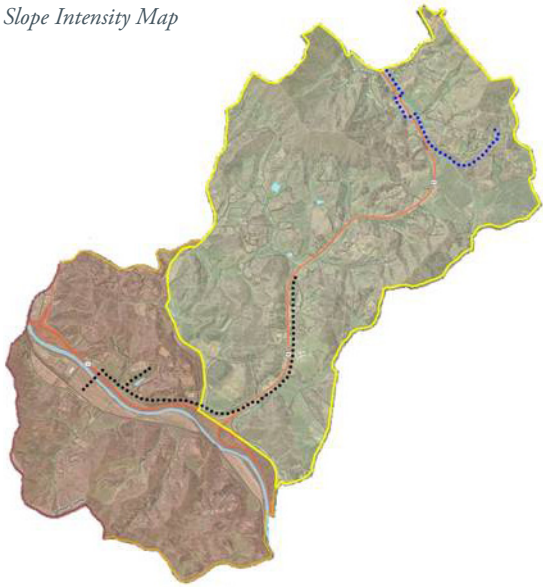
Careful consideration was given of other state, regional, county, and local plans and/or policies that impact planning efforts within the area. Some of these plans and ordinances include:

- Jackson County Land Development Plan
- Strategies for Land Conservation in Jackson County Report
- Jackson County Subdivision Ordinance
- Jackson County Mountain and Hillside Development Ordinance
- Mountain Ridge Protection Ordinance
- Voluntary/Enhanced Voluntary Agricultural District Ordinance
- Jackson County Land Conservation Ordinance

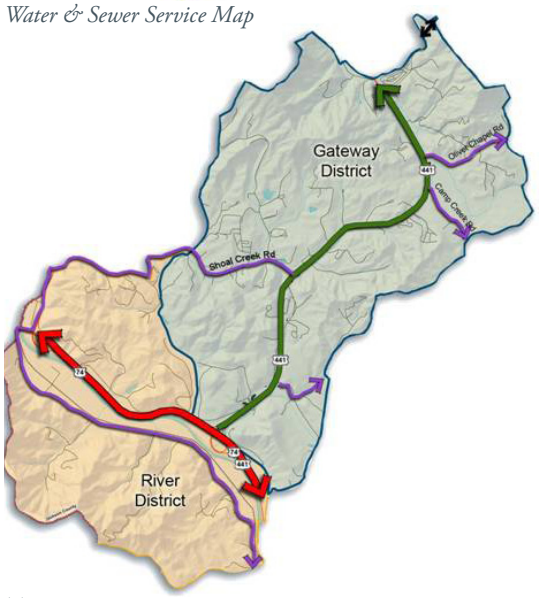
MARKET ANALYSIS

The market analysis for the US 441 Small Area Plan evaluated existing residential and commercial real estate conditions and assessed the potential for future development over the next decade (2018). Appropriate locations for various development types also were identified. Specific elements of the market analysis include: demographic profile, inventory of major projects that affect market demand, real estate market overview, and real estate market potential.

Slope Intensity Map

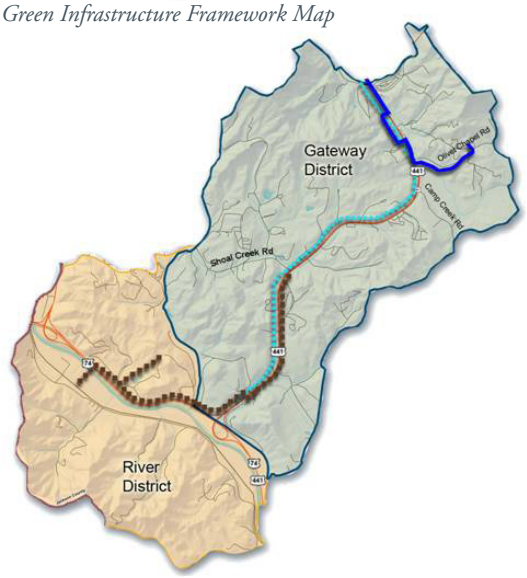


Water & Sewer Service Map

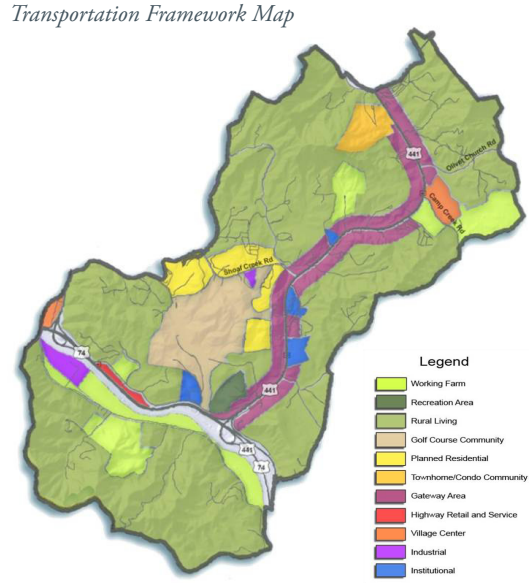


Transportation Map

Green Infrastructure Framework Map



Transportation Framework Map



Consolidated Framework Map

FRAMEWORK PLAN

The framework plan provides overall guidance for realizing the community's vision toward more sustainable development patterns in the study area, which in turn reinforces the rural character and scenic natural surroundings valued by its citizens. Specific elements in the framework plan include: guiding principles, character area typology, supporting infrastructure, consolidated framework map, and general recommendations.

The framework plan was formulated in partnership with local landowners during the public design charrette. It accommodates a diverse set of community interests, while preserving unique physical characteristics in the study area with respect to local traditions, community preferences, and cultural norms.

Guiding Principles

The consultant team worked with elected officials, the advisory committee, key stakeholders, and members of the public in attendance at the design charrette to create a set of guiding principles for influencing the framework plan. These principles generally support, encourage, and implement the community's vision toward more sustainable development. Principles for guiding the framework plan include:

1. Consider the community's concerns for environmental stewardship, economic prosperity, and protection of quality of life unique to this mountain community when formulating any recommendations.
2. Preserve the scenic views, natural areas, and working farms in the study area.
3. Create a vision for development that is economically viable, reflecting both market timing and change anticipated for the next 10 years.
4. Minimize the spatial footprint or detrimental impacts to the visual quality of the surrounding environment associated with new development.
5. Develop a beautification plan for US 441 that is functional, implementable, and affordable, while also addressing community safety concerns identified for the corridor.
6. Balance the need for government regulation that supports the community's vision with the interests of private property owners.
7. Provide recommendations, development and design guidelines, and an action plan that become the community's blueprint for implementation.
8. Treat those most immediately affected by the project with respect and ensure that their input has impact on the vision and recommendations created for the community.

Character Area Typology

Character areas represent different land use types and development patterns envisioned for the community. The term "character" is generally thought of as the look or feel of a place that which sets it apart from other areas. Character areas have their own unique setting, land use pattern, visual qualities, and characteristics of development. Character areas included in the US 441 Small Area Plan are not meant to be synonymous with zoning districts, nor should they be thought to replace the rules and requirements set forth in currently adopted county ordinances.

PLACE-MAKING PRINCIPLES

Place-making embodies the movement to create more livable communities, identifiable character, and a higher quality of life. The process of place-making celebrates the uniqueness of a community and identifies the physical improvements or planning initiatives necessary to implement the framework plan. Specific place-making principles identified for the U.S. 441 Small Area Plan include:

Branding and Image

The consultant team used the community branding strategy to develop design concepts for a master signage and lighting program that could unite the US 441 corridor. Valuable feedback from charrette participants led to the refinement and support of the design concepts included in the Small Area Plan (images to the right).

Community Design Principles

Building Architecture. The following elements of building architecture were identified as important to the community: building material and color, building articulation, rooftop equipment screening, roof articulation, signage, and architectural unity.

Site Design. The following elements of site design were identified as important to the community: outdoor storage, exterior lighting, landscaping, and tree preservation and buffer areas.

Billboards. The Small Area Plan recommends county officials consider design controls for limiting the size, structural design, materials, and technologies allowed for new billboards. Policies also should be adopted to establish minimum spacing standards between billboards (e.g., 300 feet) and implement a program for removing abandoned billboards that have fallen into obvious disrepair.

Franchise Architecture. Franchise architecture was a topic of discussion during the design charrette. Participants voiced support to limit franchise architecture in the study area and recommended that provisions be added to the design standards that will be developed for the Gateway District.

Transportation

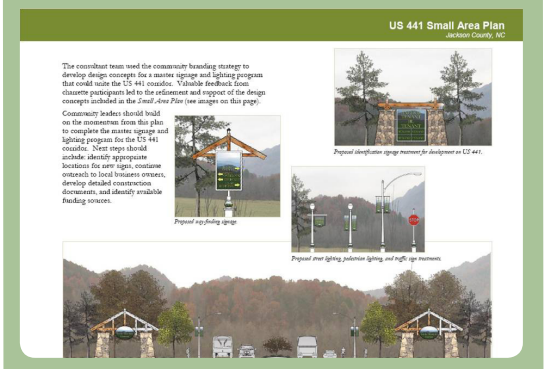
The emphasis for improving the transportation system is to 1) make improvements to the US 441 corridor that balance the needs of regional mobility and community livability as the signature corridor to the gateway character area, 2) improve overall street connectivity in the study area, and 3) identify opportunities to build a truly multi-modal transportation system that serves the needs of pedestrians and bicyclists.

Local Land Conservation Initiatives

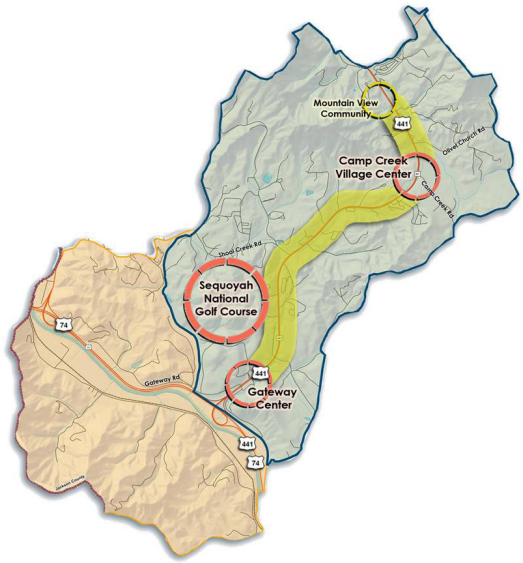
Efforts to permanently protect green infrastructure in the study area require the formulation of a plan, which includes an inventory of natural resources, recommended types and levels of protection, land conservation toolbox, priorities for protection, and an action plan indicating what is to be done, by whom, and when.

BRANDING & IMAGE PUBLIC INPUT SESSION

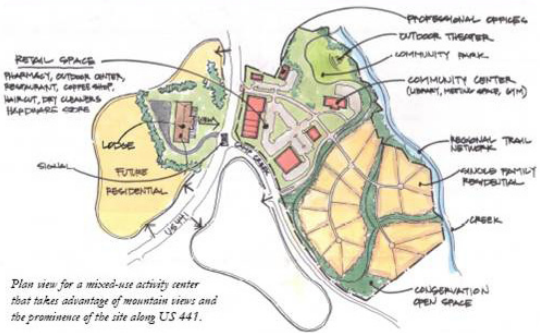
Community members were asked to comment on a list of design elements identified by the consultant team as critical for influencing the brand and image of the Gateway District. During the closing presentation of the design charrette, participants were given three green stickers and three yellow stickers. By placing green stickers on images, participants were able to "vote" for preferred design elements for the community. By placing the yellow stickers on images, they were able to "vote" for design elements that should be discouraged in the community. The images to the right capture the preferences of the community for building mass, building materials,
billboard signs, and on-site signs. This information will be used by the consultant team to develop design standards for the Gateway District, which should begin after adoption of the Small Area Plan.



US 441 corridor design concepts for master signage and lighting program.



Focus Area Studies Map



Plan view for a mixed-use activity center that takes advantage of mountain views and the prominence of the site along US 441.

Site design studies.

FOCUS STUDY AREAS

The consultant team worked with design charrette participants to identify key focus areas for further study. Together, these focus areas represent the most influential properties for implementing the community's vision. Focus areas were divided into two categories: activity centers and supporting development areas. Activity centers include the most desirable locations for new development based on site location, good visibility, favorable topography, access to supporting infrastructure, and motivation by the landowner. Supporting development areas include locations near the Qualla
Boundary and the US 441 corridor, which have desirable qualities for development similar to activity centers, but also some significant challenges. Directing new growth to activity centers (first priority) or to supporting development areas (second priority) lessens the demand for new development in the residual planning area, which enhances support for land preservation.

Focus Area Locations

All of the activity centers and supporting development areas identified for the Small Area Plan are located in the Gateway District. Activity centers include: Camp Creek Village Center, Sequoyah National Golf Course Community, and Gateway Center. Supporting development areas include The Mountain View Community and the US 441 corridor. The map to the left illustrates the locations for all activity centers and supporting development areas identified for the Small Area Plan.

Site Design Studies

Site design studies were completed for all of the focus areas.
They represent possible build-out scenarios for undeveloped (or underdeveloped) parcels that preserve scenic views and natural resources, while still providing significant amounts of development potential. Each site design study included a market-realistic development program, illustrative master plan concept, and three dimensional renderings. Drawings were done over aerial
photography with printed topographic and property lines. Many of the site design studies were formulated in partnership with local landowners.

The type of land uses or development patterns assumed in the site design studies were for illustrative purposes only and could vary significantly based on future landowner interests, development approvals, or location of available infrastructure. However, property owners with similar vision or with sites sharing similar characteristics, should consider the best development practices highlighted in this chapter when developing their own land. A summary of the site design studies completed for the three activity centers and two supporting development areas can be found in the full version of the US 441 Small Area Plan.

ACTION PLAN

The Action Plan provides a summary of the implementation strategy, including a list of specific projects, a phasing plan, planning level cost estimates, available funding sources, and agencies responsible for implementing the vision. The complete strategy and list of action items can be found in the full version of the US 441 Small Area Plan available at http://planning.jacksonnc.org/.

SMALL AREA PLAN PUBLIC PLANNING PROCESS

Transparency and collaboration provided the core strategies for establishing trust among the participants of the planning process. Elected officials, the consultant team, and other participants in the planning process began working together early and continued to do so as the process moved forward. This resulted in a shared learning environment and timely communication among participants. Those most directly affected by the project (residents and business owners in the community) were treated respectfully and continually assured that their input mattered and would have an effect on the outcome. Major elements of the planning process included:

Advisory Committee. An Advisory Committee for the US 441 Small Area Plan was appointed by the Jackson County Board of Commissioners to provide direct oversight and counsel of the planning process. Those on the advisory committee represented a broad base of local interests, viewpoints, and concerns for the study area. This group quickly became the conduit for the consultant, county staff, elected officials, and citizens living in the study area to develop a successful plan. Membership on the committee included business owners, home owners, community activists, and representatives of the Eastern Band of Cherokee Indians.

Youth Planning Workshops. The consultant partnered with the Cherokee Preservation Foundation to host a series of youth workshops in area schools prior to the public design charrette for the US 441 Small Area Plan. These workshops were used to enlighten pupils on planning as a profession and solicit students' input on how they would like to see the study area develop in the future. Overwhelmingly, students voiced concern for protecting the integrity of their culture and the surrounding environment and their sense of community that makes the area so unique. Students' ideas for improving conditions in the study area were recorded on maps and "if I were king or queen for the day" questionnaires. This information was displayed during the public design charrette so that participants could see firsthand the impressions of the study area from the next generation of citizens that will be responsible for its future.

Image from one of the youth workshops.

Stakeholder Interviews. Stakeholder interviews were used in the planning process to gain insight for the social, political, and economic issues facing the study area. Interview participants included property owners with large holdings in the study area, business owners, real estate brokers, land
conservation groups, civic group leaders, regional planning organizations, and representatives for NCDOT and Duke Energy. In total, seven stakeholder interviews were held in support of the Small Area Plan. Answers to the questions asked by the consultant team during the stakeholder interviews were used to refine the work plan for the public design charrette (i.e., what do we need to get done?) and to validate background information collected prior to the charrette event (i.e., did we get it right?).

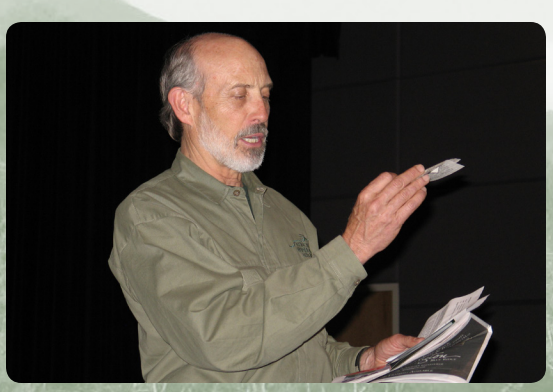
Public Design Charrette. The public design charrette took place on January 21–24, 2008, at the Qualla Community Center. A six-member, multidisciplinary team of community planners, landscape architects, transportation planners, engineers, and real estate market experts was assembled for the event.

Stakeholders reviewing plan recommendations.

This group worked together with citizens and stakeholders to build consensus for a vision that would accommodate future growth in the study area. Over the course of the four-day event, more than 150 participants visited the temporary charrette studio to watch the design team in action, take part in key stakeholder meetings, offer feedback, and put forward their vision for the project.

A6

MODEL ORDINANCES & GUIDELINES



"There might have been a time not so long ago when land-use planning was too controversial in our region to be on the top of election officials' agendas, but there's been a change. In fact, I think the politics has just about flipped on this issue. Now, current and former officials are calling and asking for help planning for growth. There could not be a better time for this initiative. And there could not be anything more important."

Bill Gibson, Southwestern Commission

USING MODEL ORDINANCES & GUIDELINES

This toolbox makes specific references to a number of model ordinances from around North Carolina, and from other parts of the country that have been implemented by local governments in Region A. These ordinances will by their nature provide good technical guidance for the specific issues under consideration.

Pattern Books & Design Guidelines

National Park Service: www.nps.gov/history/hps/tps/standguide/index.htm

The National Alliance of Preservation Commissions at the University of Georgia: www.uga.edu/sed/pso/programs/napc/guidelines.htm

Fort Mill, SC, Village of Baxter: www.urbandesignassociates.com/baxt_pb_architectural_patterns.html and www.villageofbaxter.com/News/newsletter.asp

Washington State, Rural Design Standards and Guidelines: www.nisquallyriver.org/planning/Nisqually_Guidelines.pdf & www.stewardshippartners.org/downloads/lid_03.pdf

Crossroads, Hamlet, Village, Town, by Randall Arendt:

www.greenerprospects.com/chvt_d.html

Louisiana Speaks Pattern Book: www.louisianaspeaks.org/static.html?id=39

Mississippi Renewal Forum Book Pattern Book: www.mississippirenewal.com/documents/Rep_PatternBook.pdf

Monterey County, California: www.co.monterey.ca.us/gpu/Reports/eir_0204/exhibit5122.pdf & www.co.monterey.ca.us/gpu/Reports/eir_0204/eir_5_12visualresources0204.pdf

Seattle, Washington, Cottage Housing: www.mrsc.org/govdocs/S42CottageHousDev.pdf & www.mrsc.org/GovDocs/S42CottageHousOrdGuide.pdf

New York State, Dutchess County Hamlet Design Guidelines, Rural Development Guidelines, and Building Form Guidelines: www.dutchessny.gov/CountyGov/Departments/Planning/PLpublications.pdf

"Firewise" Protection Strategies: www.ces.ncsu.edu/forestry/pdf/ag/firewise_landscaping.pdf

Ridges and Steep Slopes

Mountain Ridge and Steep Slopes: www.landofsky.org/downloads/LandofSky-MRSSPS-report.pdf

Asheville, North Carolina, Hillside Ordinance and Guideline References: http://64.233.167.104/custom?q=cache:jfRf-Y_jZzcJ:www.landofsky.org/downloads/Hillside%2520%26%2520Ridgetop%2520Regs%2520report%2520-%2520A%27ville.doc+land+of+sky+hillside+report&hl=en&ct=clnk&cd=1&gl=us&client=google-coop-np

Los Gatos, California, The Hillside Development Standards & Guidelines: www.losgatosca.gov/documents/Community%20Development/Planning/Hillside/III-SitePlanning.pdf

Greeley, Colorado: www.greeleygov.com/CommunityDevelopment/Documents/Development%20Code/Chapter18-50.pdf

Los Angeles County: http://planning.co.la.ca.us/doc/plan/drp_Hillside_Design_Guide.pdf & ordlink.com/codes/lacounty/_DATA/TITLE22/index.html

Glendora, California: www.ci.glendora.ca.us/planning/slope.pdf -Excellent general hillside development guide.

Claremont, California: www.cbaplanning.com/claremont/pdfs/reports/Hillsides.pdf

Going Green / Sustainability

Single-Family Green Design Guidelines: www.stopwaste.org/home/index.asp?page=487

Green Design Standards: www.frontierassoc.net/greenaffordablehousing/Feature/GGUSA%20QAP%20Report.pdf

Multifamily Green Building Guidelines: www.frontierassoc.net/greenaffordablehousing/index.shtml & www.multifamilygreen.org & www.stopwaste.org/home/index.asp?page=291 & www.build-green.org/guide

Camden County, North Carolina, Wind Turbine Ordinance: dsireusa.org/library/includes/incentive2.cfm?Incentive_Code=NC13R&state=NC&CurrentPageID=1&RE=1&EE=1

The International Dark-Sky Association: www.darksky.org/

Codes & Ordinances, Land Use, & Zoning

Local Government Document Warehouse: www.sog.unc.edu/nclgdocs

Municode (repository of many city and county ordinances): www.municode.com/Resources/code_list.asp?stateID=33 (includes many city and county ordinances)

UNC School of Government Local Government Planning Resources: www.sog.unc.edu/organizations/planning/othrsite.htm & www.sog.unc.edu/pubs/electronicversions/pdfs/ss21.pdf (includes county ordinance inventory, as of 2006) & www.sog.unc.edu/programs/managers/index.htm (resources for new city and county managers)

NC State Model Ordinance Repository: www.cals.ncsu.edu/wq/lpn/modelordinances.htm

American Planning Association-NC Chapter: www.nc-apa.org

Pasadena, California: www.codemanage.com/southpasadena/index.php?topic=36-36_340-36_340_010 & ordlink.com/codes/pasadena

Telluride, Colorado: www.telluride-co.gov/home/index.asp?page=342

Ouray County, Colorado: ouraycountyco.gov/landusecode/Section%209.pdf

Scottsdale, Arizona: www.scottsdaleaz.gov/codes

Park City, Utah, Sensitive Area Overlay Zone Regulations: www.parkcity.org/government/codesandpolicies/title_15_c_2_21.html

Clark County, Nevada, Zoning Overlay District: www.accessclarkcounty.com/depts/comprehensive_planning/title30/Documents/3048.pdf

Germantown, TN Smart Code: www.ci.germantown.tn.us/Final%20Code%2008.13.07.pdf

Spartanburg, SC Downtown Code: www.cityofspartanburg.org/About_Spartanburg/Downtown_Development/2007MasterPlan/DT_UrbanCodeDraft.pdf

Town of Davidson, NC, Planning Ordinance: www.ci.davidson.nc.us/DocumentView.asp?DID=437

Town of Huntersville, NC, Zoning Ordinance: www.huntersville.org/planning_3.asp

Stormwater Management

Model Ordinance For Post-Development Stormwater Management For New Development And Redevelopment: www.northgeorgiawater.com/files/MNGWPD_PostDevelopmentModOrd.pdf

Southern Environmental Law Center: www.southernenvironment.org/cases/wnc_growth/index.htm

The National Onsite Wastewater Recycling Association (NOWRA) & US Environmental Protection Agency Model Code for Onsite Wastewater Treatment Systems, which is currently under review in various states: www.nowra.org

Low Impact Development: www.lid-stormwater.net/ & www.lowimpactdevelopment.org/pubs/LID_National_Manual.pdf

Agriculture

Pasquotank County Subdivision Ordinance (Buffers between residential subdivision and agricultural uses.): www.farmlandinfo.org/documents/31663/q_Pasquotank_SUBDIVISION_ORDINANCE_-_buffer_strips.pdf

"Agricultural Uses and Zoning," David Owens: www.farmlandinfo.org/documents/31714/NC_Planning-_Ag._Uses_and_Zoning.pdf

Davie County Agribusiness Use Ordinance: www.farmlandinfo.org/documents/31672/n_Davie_agribusiness_ordinance.pdf

Financing

Existing Local Governments Policies for TIF in North Carolina: www.wakegov.com/agendas/2007/april16/19/01policy.htm & northhillsraleigh.com/east/?page_id=47 & www.co.guilford.nc.us/PolicyDraft_011708.pdf

Project Development Financing in Buncombe County: www.buncombecounty.org/visiting/news_Detail.asp?newsID=4043