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Comprehensive Planning:

A MANUAL FOR MAINE COMMUNITIES

By Evan Richert and Sylvia Most

Comprehensive Planning:
A MANUAL FOR MAINE COMMUNITIES

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Introduction

Towns and cities in Maine began writing comprehensive plans during the first half of the Twentieth Century. The City of Auburn was the first, in 1918. Municipalities did so because they wanted to adopt zoning ordinances to help direct growth and protect neighborhoods. Comprehensive plans are the legal underpinning of zoning ordinances—intended to assure that the power of zoning is not used arbitrarily, unfairly, or without attention to documented needs.

Maine first enacted a requirement for comprehensive planning as the basis for zoning in 1943. The language was general, but the intent was clear: a "zoning ordinance shall be drafted *as an integral part of a comprehensive plan* for municipal development, and promotion of the health, safety and general welfare of the residents of the municipality."

Thus, when Maine adopted the Comprehensive Planning and Land Use Act in 1988 (including what is called the Growth Management Program), it was building on long-established law. The difference was that the pattern of growth and development had changed radically. Growth, which had long been concentrated in the State's job or service centers, was beginning to leapfrog into towns farther and farther out. Even in regions with little overall growth, the population was shifting outward. What started as a trickle in the 1950s and 1960s turned into a flood in the 1970s and 1980s. Formerly rural towns began to see growth they had no way to handle: few capital facilities, no land use ordinances, and mostly volunteers to deliver a rising demand for services. They began to see taxes rise, great ponds deteriorate, roads become congested, and rural character slip away.

This pattern became known as "sprawl," and its costs were unchecked. In many cases small towns in the path of growth enacted stop-gap measures and hurried plans and ordinances that may actually have worsened rather than relieved the problem.

The Comprehensive Planning and Land Use Act brought an explicit, new dimension to municipal comprehensive plans: prevent development sprawl. **To achieve that goal, comprehensive plans must direct most of the anticipated growth to areas of town designated as "growth" areas, and away from "rural" areas.** This is at the heart of the law: to find ways to continue to build neighborhoods and commercial centers where they make the most sense in order to accommodate and stimulate economic growth, and, at the same time, conserve large rural territories as working landscapes and natural gems.

The 1988 Act ushered in a new generation of comprehensive plans. By 2003, 15 years after the Act was adopted, 218 towns and cities in Maine (out of 458 organized municipalities, excluding plantations) had adopted comprehensive plans deemed consistent with the statewide goals of the Act, including preventing sprawl. More and more communities have taken stock and begun to build the capacity and know-how to manage growth in a way that serves property rights, economic growth, environment, and equity.

Still, the state is falling far short of the goal of preventing or even slowing development sprawl. Even in towns with approved plans, most growth (60% to 80% by most estimates) is spreading into designated rural areas rather than designated growth areas.

Part of the reason is lack of follow-through. With high property tax burdens and limited state assistance, investments in utilities and other facilities in designated growth areas are not being made. Policies on land use are not being translated into ordinances. Strip development along rural arterials continues apace. The short-term need for property tax base trumps land use policies that could save tax dollars over the long run. In short, comprehensive plans are not being implemented.

Another part of the reason is that far-sighted policies in comprehensive plans did not truly gain the endorsement of townspeople during the planning process. They face insurmountable political opposition when they are proposed for implementation. See Chapter 2 for a discussion of public participation as the foundation for a successful comprehensive plan and its implementation.

Still another part of the reason is that the comprehensive plans themselves fall short. Inventories of conditions and analysis of issues are strong points in the class of comprehensive plans adopted between 1988 and 2003. But policies aimed at solving the issues are weaker; strategies to implement the policies are weaker still; and taking action to implement the strategies is weakest of all.

The next class or generation of comprehensive plans—whether updates of past plans or adoption of new ones—will have to rise to a new plateau of policies, strategies, and implementation if the goals of the Comprehensive Planning and Land Use Act are to be realized.

This manual tries to help in that quest. It updates the original, which was written within a few years of the 1988 Act. Since the first edition, new planning technologies have come into their own, such as Geographic Information Systems (GIS); new sources of information have become available, such as the data in the Beginning with Habitat Program; laws and rules have been enacted, such as new storm water and revised wetlands rules and new transportation management rules; and new perspectives on the need for regional cooperation are taking form. These are captured in this second edition of the manual.

How to Read This Manual

This manual is written for citizen planners: the members of a comprehensive planning committee, boards of selectmen, or planning boards charged with preparing a comprehensive plan, and the many parties of interest who may be participating or advising

in the process. It is part "how-to," part suggestions for policy, and part tool box. Each of its 19 chapters addresses a requirement of the Growth Management Program. The 19 chapters are connected to each other and, together, present a complete picture of a comprehensive land use plan. But the manual is designed so that different members of a planning or advisory committee can concentrate on one chapter at a time; the chapters can even be split out among the members of a committee for individual review.

We recommend that each person involved in preparing the plan read the three chapters in Part A, Getting Started. These are Chapter One, Getting Organized; Chapter Two, Public Participation; and Chapter Three, Contents of a Comprehensive Plan. From there, the 14 chapters in Part B, The Planning Elements, can be assigned to individual members of the committee or, in any case, read one at a time as each topic is being tackled. Finally, everyone should be familiar with the last two chapters in Part C: The Future Land Use Plan and Regional Approaches.

Acknowledgements

Thanks are due to a number of editors and reviewers in state agencies who gave us insights and direction on how local comprehensive land use plans can meet the goals of the Growth Management Program. They gave us perspectives, filled gaps in our knowledge about their areas of expertise, and provided us with the latest sources of information. We especially thank the staff of the State Planning Office who gave impetus and invaluable direction to this manual, including Elizabeth Della Valle, Matt Nazar, and Mary Ann Hayes. Dan Fleishman, Town Planner in Arundel, Mark Eyerman of Planning Decisions, Inc., Esther Lacognata, and Judy Colby George provided helpful advice. Experts in state agencies who reviewed, edited, and re-wrote portions of relevant chapters included Jim Connors of the State Planning Office's Coastal Program; Ken Elowe of the Department of Inland Fisheries and Wildlife; Kathy Fuller of the Department of Transportation; Stephanie Gilbert of the Department of Agriculture; Sue Inches of the State Planning Office (and formerly of the Department of Marine Resources); State Geologist Bob Marvinney; Joanne Mooney of the Maine Emergency Management Agency; State Soil Conservationist David Rocque; Colleen Ryan of the Department of Conservation; Earle Shettleworth of the Maine Historic Preservation Commission; Lou Sidell of the State Planning Office; Hank Tyler of the State Planning Office; and Don Witherill, Jeff Dennis, and Mary Ellen Dennis of the Department of Environmental Protection.

The State Planning Office's April 2003 publication, "Updating Your Comprehensive Plans: 50 Recommendations for Making Plan Updates More Effective," which was prepared by Will Johnston, was valuable to this manual. It stands on its own as an important resource for municipalities that have an adopted plan and find that it is time to update it. But it also is a complement to this manual, with discussions on specific approaches for managing growth that go to greater depths than is possible here. We recommend that citizen planners keep it close at hand as they discuss and debate policies on future growth.

Part A:

Getting Started

Chapter One:

Getting Organized

Talk to citizens who have prepared a comprehensive land use plan, and they are likely to describe it as both exhilarating and frustrating. The exhilaration comes from seeing and shaping the future of their community. The frustration comes from the disagreements, the uneven progress, and the criticisms that are part of the natural democratic process of town planning.

To minimize the frustration and avoid the common phenomenon of "burn-out," it helps to approach comprehensive planning like a cross-country race rather than a 100-yard dash: well-paced over an 18 to 24 month period.

It also helps to be well organized, and to anticipate a public process that likely will grow more intense as the planning moves into its later phases. Some things you can do at the outset to design an efficient process and to build support for the comprehensive plan include:

- Appoint a representative local planning committee.
- Prepare a creative citizen participation program.
- Identify and organize the resources needed to carry out your information gathering.
- Make a realistic schedule, including time off.

This chapter talks about organization, and the next about public participation.

Appoint the Local Planning Committee

The local planning committee is responsible for preparing the comprehensive plan, measures to implement the plan, and periodic updates. Its specific role will vary from overseeing planning staff or consultants to doing much of the technical planning work itself. Either way, the planning committee is at the center of the process.

Membership

Appoint committee members with care. The planning committee should reflect the community as a whole – its different geographic areas, demographic characteristics, and different interests and points of view. Members of the committee, to be appointed by the municipal officers, should include:

- A member of the Board of Selectmen or Town Council.
- Representatives of other local boards or agencies.
- Representatives of key town departments, such as fire, police, school, sewer and water district, and recreation.
- Representatives of local businesses, including self-employed people like fishermen, farmers, and real estate professionals.
- Representatives of a local land trust or conservation group.
- People with special interests (environment, day care, housing, historic resources, etc.).
- Long-time residents and new residents.
- People with specific skills (foresters, surveyors, attorneys, architects, etc.).
- People with media and public communications experience, when available.
- People who tend to support land use regulation and people who are suspicious of it .

Achieving broad representation needs to be balanced against having a committee of manageable size. Some towns appoint a committee of 15 to 25 people who they believe are a reasonable cross section of the community. Others appoint a larger committee but then do much of the work through a smaller steering committee and subcommittees. If subcommittees are used, it is essential that they communicate regularly, and that a steering committee helps to bring together their work into a unified document.

In any case, it should be made clear to members of the planning committee that they are charged with preparing a plan that reflects the public interest, not self-interest. While personal interests may be validly expressed, they should not dominate.

Committee chairperson

Often, not enough thought is put into designating a committee chair. Sometimes the person with the most experience or the most time does not make the best chairperson. Qualities needed for this role are:

- A good facilitator—able to listen, to draw out the participation of all committee members, to sense when a consensus is coming together (or when the best that can be done is to “agree to disagree”), to keep committee members on the subject, to be a “traffic cop” who directs as well as participates in the committee’s discussions.

- Well organized—not only with respect to committee work, but in other aspects of his/her life so that enough time can be given to the committee.

- Respected in the community—trusted to speak thoughtfully to townspeople, credible even when presenting views with which some townspeople will disagree, able to command the respect of fellow committee members.

It also is helpful to appoint a vice-chair, with similar qualities, to fill in when the chair is absent.

Ground rules for committee meetings and decisions

Make sure ground rules for running meetings are agreed upon and in place. Organizing a

large and diverse group of people who may have strong opinions can be difficult. The committee should consider:

- What will be a quorum?
- How long will meetings run?
- Will committee members be called upon or speak at will?
- Will decisions be made by consensus or majority vote?
- How often, and where, will meetings be held?
- How will notification and minutes of the meetings be handled?
- Will members of the public be allowed to speak at will, or only during a designated part of the meeting?

Meetings should be predicable. They should start and end on time. If they're scheduled for 2 hours, they should end after 2 hours.

Timetable

Prepare a general timetable, with deadlines for completing key parts of the plan. It is especially important that the committee leave as much time for preparing policies and implementation strategies as it does for information gathering. Make time for an occasional break, such as in the summer months and around holidays.

Organize Available Resources

The basic tools

Comprehensive planning depends on information. Some of the basic information comes in three forms: maps, reports, and people, including consultants.

Base Maps: "Base" maps are maps with standard pieces of information on them, and on which additional information or interpretations can be recorded. A town needs at least one base map to record natural resource, land use, and other information. Many towns try to use up to three base maps:

- A topographic base map from the United States Geologic Survey. This map is the easiest for recording information on topography, water resources, and wildlife habitat.

- A soils base map from the U.S. Natural Resources Conservation Service (published soils maps are available for most Maine towns from the county soil and water conservation district). This map is essential for recording and interpreting soils information.

- A parcel base map compiled from local tax assessor records and tax maps. This map is useful for recording land use information.

Maps of natural systems, such as topography, soils, and water resources, and of man-made features, such as parcels, roads and utilities, are increasingly available digitally, through geographic information systems (GIS). Your regional planning council or the Maine Office of GIS (http://megis.maine.gov/) can help identify which features in your town are mapped

in this form and how to obtain them. The State Planning Office provides basic GIS maps in its Resource Package. In addition, many municipalities have invested in digital parcel or tax maps.

Writing It on Their Own

Large municipalities often have the staff and expertise to prepare comprehensive plans on their own – although they, too, may seek out specialized assistance.

But a number of small towns, with populations of a few hundred to a few thousand, also have successfully tackled comprehensive planning with volunteers taking on primary responsibility for researching and writing the plans. These include towns like Stoneham, Sweden, and Rockport, for example.

Rockport's 10-person volunteer committee produced an exceptional plan that was adopted by voters in November 2004. The committee reached out to experts, both within the town and region and from outside for advice and direction. But it did most of the work itself.

It met weekly over a couple of years, welcoming public participation throughout, sometimes in workshops, sometimes taking field trips. Committee members each assumed areas of responsibility, became well informed on the subject, and drafted and re-drafted his or her section of the plan for review by the Committee, and solicited help from knowledgeable citizens. On average, each section of the plan required three drafts before the Committee was comfortable adopting it.

The great advantage of digital maps is the ability to designate and change desired scales, to produce maps that combine and overlay different features, and to experiment with map presentations. A GIS that includes a data base (for example, data from tax records) also can produce useful statistics that help interpret the map.

At the same time, a committee may find it helpful to "get its hands dirty" with magic markers—going through its own mapping exercises manually to brainstorm, convey ideas, and learn about the town. Both manual mapping exercises and digital presentations have important roles in comprehensive planning.

Reports: Useful reports may already have been prepared to help describe existing conditions in the community. A previous comprehensive plan, a sewer district or water company master plan, a study by the Maine Department of Transportation or an environmental organization about an aspect of the community, a report prepared by an affordable housing task force or by the regional council, or other reports may be on someone's shelf. It is worthwhile looking for them.

People: To Hire a Consultant? A wealth of information resides in the minds of many town staff and other townspeople. Over the course of the comprehensive planning, you will tap into that knowledge. But at the outset the planning committee should decide whether it needs the help of a consultant (either a regional council or a private firm), or whether it is going to tackle the plan itself.

If a consultant is needed, decide how you will use that person: as the coordinator of the entire project, with the committee providing policy guidance and supervision? Or to help with certain parts of the plan? Which part(s)—the inventory, the policy formulation, or the implementation strategy? Who will be responsible for the citizen participation? Who will prepare the maps? Who will draft the plan? If the committee wants to do part itself and to have consultants do part, it is crucial that the assignments of responsibility be clear, and that all parties carry out those assignments faithfully and on

time. Any consulting relationship should be in writing, in the form of a contract. Make sure the contract addresses the issue of the consultant's involvement after the plan has been submitted to the State Planning Office for review in case revisions are needed.

If the committee wants to carry out the plan by itself, it should understand the scope of the task and make sure it has committee members with the skills, time, and commitment to execute it. Leadership and coordination will be especially important: it must be provided by municipal officers or town staff and by a highly committed chairperson or steering committee. A warning is in order: Many towns start out trying to do the work themselves, but then flounder and later backtrack to hire a consultant. If you plan to do the work yourselves, make sure that you're being realistic.

Three Important Sources of Information

Throughout this manual, you will be referred to sources of information. However, three sources should be especially kept in mind:

1. Maine State Planning Office – This office administers Maine's Growth Management Program and assigns a staff person to each region of the state to provide general advice and assistance. For each town undertaking a comprehensive plan, the office, with the help of other state agencies, compiles information called the "Comprehensive Planning Resource Package." This resource package contains a great deal of town-level information from the various state agencies. Maine State Planning Office's web site, which also includes economic data and a number of planning publications, is http://www.maine.gov/spo/.

2. Maine Office of Geographic Information Systems (MeGIS) – As noted above, MeGIS is a source of and clearinghouse for many digital maps useful to comprehensive planning in Maine. Its web site is http://megis.maine.gov/.

3. Regional Councils – Each region is served by a regional council, which is a source of maps, data, regional demographic and economic projections, and technical assistance to municipalities. The eleven regional councils are listed in Figure 1-1 on the following page.

Figure 1-1. Maine's Regional Councils

State law establishes regional planning districts. As of 2005, the state is served by eleven regional councils (regional planning commissions and councils of government (COGs)). These agencies are available for technical assistance to municipalities. The councils are (from north to south):

Northern Maine Development Commission

Penobscot Valley COG (part of Eastern Maine Development Corp.)

Washington County COG

Hancock County Planning Commission

Kennebec Valley COG

Midcoast Regional Planning Commission

Lincoln County Planning Office

Androscoggin County COG

Midcoast Council for Business Development and Planning

Greater Portland COG

Southern Maine Regional Planning Commission

Chapter Two:

Public Participation

A good comprehensive plan tackles "wicked" problems. A "wicked" problem is one that is hard to define, whose causes are hard to agree upon, and whose solutions stir fears of change that will be hard to accept.

A comprehensive plan also addresses plenty of relatively "tame" issues. In these cases agreement may be fairly easy: things like creating jobs in an industrial park, redeveloping a former mill building, or creating a recreational trail.

But to meet all of the goals contained in Maine's Growth Management Act – goals like preventing development sprawl, promoting affordable housing, and safeguarding prime farmland soils, forests, and access to the coast for marine industries – means confronting difficult issues. In the process, some in the community may feel like they are coming out as "losers" even while the planning committee believes it is trying to do the best it can for the town as a whole.

"Wicked" problems in comprehensive plans tend to lead to one of two outcomes. One outcome is to propose solutions that are so general or weak that they aren't solutions at all. This avoids conflict but fails to allow for affordable housing, protect certain significant natural resources, or prevent sprawl, for example. The other outcome is to propose far-reaching solutions that are "dead on arrival" for lack of widespread support.

"Wicked" problems are wicked, *but they aren't impossible.* Good vision, determined leadership, willingness to compromise, and participation by citizens of all stripes, early and often, can make the difference.

Citizen participation is the process through which those with a stake in the community have had enough say in the plan that they will support (or at least won't oppose) putting its recommendations into action.

How do you get there? The Act requires the municipality to appoint a planning committee (which may be the planning board) to prepare the comprehensive plan. The committee must solicit and consider "a broad range of public review and comment." All meetings must be open to the public, and the committee must hold at least one public hearing. These are the bare bones of public participation; *much more is necessary.*

There isn't a cookbook recipe for effective public participation, but here are some guidelines and tools that have proven useful.

Getting the right people involved:

Develop a list of characteristics that reflect the diversity of your community. The Town of Scarborough compiled this list from which 15 members were recruited for its Comp Plan update committee:

- 2 residents of more than 25 years
- 2 residents of less than 5 years
- 2 members of conservation commission or other conservation organization. Should speak with authority for the Scarborough conservation community.
- Builder
- Realtor
- Architect/designer
- Land use attorney
- School board member
- Planning board member
- Scarborough business owner – member of the Scarborough Chamber of Commerce. Should speak with authority on the business needs of the community.
- Scarborough large land-owner
- Scarborough home owner in R3/R4 zone or condominium any zone
- Scarborough home owner in a manufactured housing community
- Parent of school-age child
- Senior citizen or retiree
- Member of medical community
- One representative from each of the 7 distinct neighborhoods recognized in the Community Visioning Exercise

In addition to the formal planning committee, you can issue a call to other citizens to form a "second circle." A "second circle" consists of people who have an interest in one or more aspects of the plan, receive agendas of all meetings, and are given an opportunity for input at committee meetings. They are not committee members and don't vote, but are active observers of as much of the process as they wish.

Guidelines

Guideline 1: Get the right people involved in the actual planning. The "right people" include, at a minimum:

- Representatives of the "official town family" – that is, members of town boards and departments involved with decisions affecting land use;
- Citizens with positions of leadership in sectors that represent different points of view, different parts of town, and different demographic groups;
- People recognized as "opinion leaders" – who may not hold a formal position but whose voices are respected in their neighborhood, their interest group, among large landowners, etc.; and
- Other members of the general public who have a broad view of public interest and are not aligned with any particular point of view.

Guideline 2: Don't think of public participation as a one-time task to complete (like a public hearing or a workshop), but as a continuous process. At some points in the process, you will be *providing* information and education. At others you will be *receiving* information and informal input from the public or key segments of it. At other points, you will be testing ideas and floating trial balloons to get reactions. At still other points, you will be inviting comments on formal recommendations.

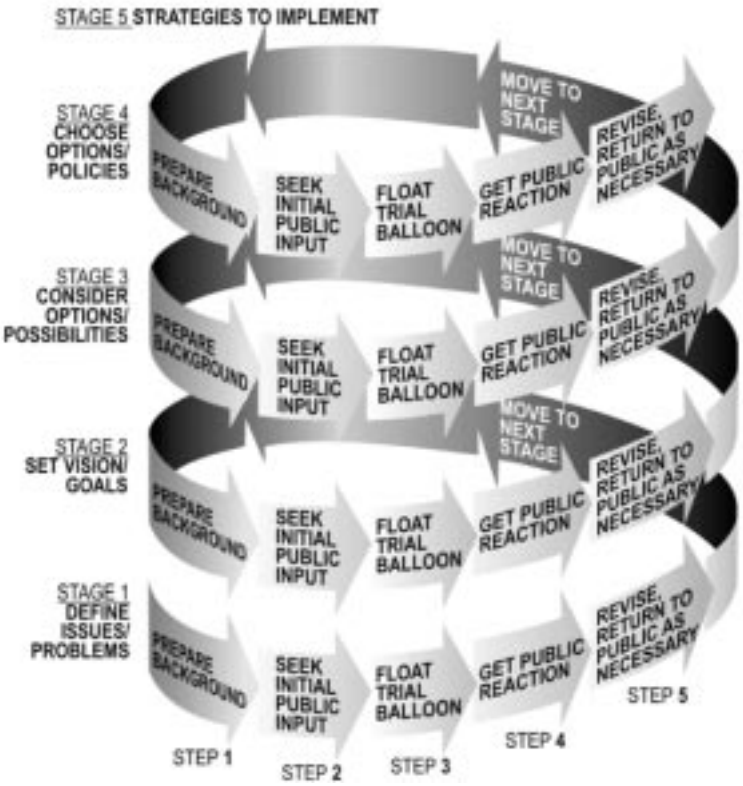
It's tempting to write a comprehensive plan in a straight line: First inventory and analyze, then identify issues and goals, then propose policies, then get public input, then make final recommendations to municipal officials or town meeting for consideration and adoption.

This may be fine for certain aspects of a comprehensive plan. But what about "wicked" problems? Is affordable housing a problem and how will we provide for it? Should we allow new retail business out on the highway even if it might hurt downtown? Should we extend public sewers and increase housing density? Are we concerned with loss of farms to large lot subdivisions and should we do something about it? These problems are rarely solved in a straight line.

It is better to think of comprehensive planning as a series of

Figure 2-1: The Cycles of Public Involvement

Illustration by C. Michael Lewis



cycles (See Figure 2-1). At each step along the way, the planning committee and staff interact with members of the public, both educating them and being educated by them. Think of each set of tentative conclusions – whether at the stage of identifying issues or the stage of recommending policies — as trial balloons to be floated. In floating them, you seek both to inform and get feedback from the public. The results are taken to the next stage, where the cycle is repeated, until you reach final recommendations and strategies to implement them.

Guideline 3: Approach the public in multiple ways.
Getting wide participation is a challenge. Most citizens are busy with family, work, and other commitments; some have little interest in governmental affairs. Often citizens become involved only at the end of the process, and then only if they believe they will be harmed by the plan, no matter how often you've invited them to participate. Even at the end of the process, it's not too late for constructive participation, but better to try to minimize the 11th hour opposition by getting to the public in different ways. The manual *Putting the People into Planning* (April 1998), referenced at the end

Steps in the cycles of public involvement:

1. Prepare background: This is the fact-gathering and brainstorming step. It is undertaken by the planning committee. At the stage of identifying problems and issues, it takes the form of the inventories and analysis described later in this manual. At later stages, such as setting vision and goals and considering alternative policies for meeting the goals, it involves looking at how other towns have dealt with a problem, at requirements of state or federal law, etc., and discussion and debate.

2. Seek initial input: At each stage, the public – either particular stakeholders or the public at-large – can provide information and insights as the committee develops initial proposals. This should be fairly informal – using time on agendas, workshops, surveys, "second circles" (see previous side bar), etc. to gain this input. A "visioning" session is an example of seeking initial input at Stage 2 (Set Vision/Goals).

3 & 4. Float trial balloon and get public reaction: This is a public test of how you've tentatively defined the problems, of the initial draft of vision and goals, of early proposed policies, etc. Usually it is in the form of a draft report or a presentation to the public. At this step in the cycle, the committee should not be so wedded to the draft that it is not open to changes. In fact, it should expect changes as a result of public reaction.

5. Revise, return to public as necessary: At this step the committee reconsiders its drafts or proposals and incorporates changes. If they are major changes or involve controversial subjects, it is wise to return to Step 4 in the cycle (Get Public Reaction) before moving on to the next stage of the process.

Two Types of Surveys

A community preference survey and a community attitude survey are both valuable. But they are different tools.

A community attitude survey tries to understand the values and beliefs of residents. Do they think the town is headed in the right direction? What is their attitude toward regulation versus property rights? What is their opinion on balancing open space and economic development? A community attitude survey helps to define issues in the town and can be undertaken early in the process.

A community preference survey tests proposals and ideas. Do citizens favor more affordable housing in town? Should the town invest a new industrial park? A community preference survey is most useful after problems and needs have been analyzed, and proposals to address the needs are beginning to take shape.

If funds are available for only one townwide survey, the two purposes – testing attitudes and testing preferences – can be combined. But it should be timed to occur after some initial fact-finding when it may be possible to pose realistic trade-offs between different proposals and preferences.

of this chapter, offers many ideas on how to get information to the public, get information from the public and to exchange ideas.

Some experts suggest beginning the planning process with focused individual interviews with key stakeholders. Your consultant or members of the planning committee can develop a set of interview questions and a list of pertinent individuals within the community to approach. The results of these initial interviews can be used to guide the committee's deliberations about the nature of the community's problems and the values that are important to the community.

Some methods of participation may work fine at some stages in the process, but not others. For example, many communities begin their planning process by distributing a community preference survey to the residents in town. Experts suggest that, if conducted too early, a community preference survey has questionable value. Better to wait to use a community preference survey until later in the comprehensive planning process, after problems have been identified clearly, the committee has factual background on which to base questions about preferences, and trade-offs are better understood. This takes us to the fourth guideline.

Guideline 4: Don't discuss solutions until there is wide agreement on the problems. Some, perhaps many, of the planning committee will come to the table with personal ideas of problems facing the town and their favorite solutions. But the moment someone proposes a solution to a problem ("I think we ought to…," "Why don't we just…," "We'd be better off if…." "The committee should recommend…."), splits begin to form. The splits are especially deep when different values and information lead to different notions of whether a problem really exists, what the problem is, or how urgent it is.

If the comprehensive plan is worth its salt, it will tackle controversial issues—issues that involve property rights, growth areas with higher densities of development, preserving rural lands and natural resources, and so forth. If there is to be hope of reaching workable recommendations on issues like these, it is essential to take the time – all the time necessary – to first reach wide agreement on the definition of the problems, their urgency, and their likely causes.
In fact, it is not unusual to devote half of the time allotted to a comprehensive plan to gathering and analyzing the information needed to shine light on issues and to carrying out the discussions (including interactions with the public – see Guideline 2). These allow

the committee to reach agreement on the nature of a problem – its definition, its likely causes, and how widespread and urgent it is. The wider the agreement on the problem, the more likely a workable solution will emerge or that divisiveness over possible solutions will be manageable.

You'll know when you've "nailed" the problem when the committee can express it in terms that invite action. For example: "The growing number of homes on substandard roads designed for seasonal use has stretched the town's road maintenance budget to its limit." This states the problem (*growing number of homes on substandard roads*), a contributing cause (*designed for seasonal use*), and a sense of its urgency (*budget stretched to its limit*). This makes it easier to consider policies to address the problem.

Guideline 5. Where do community "vision" and overall community goals come in? Get to these after reaching tentative agreement on major problems facing the town. Deciding where the town wants to be in 10 or 20 years is central to a comprehensive plan. But the seriousness of the vision and people's loyalty to it depend on what they may have to give up to reach it. That brings us back to the nature of problems. If there is a common and documented understanding, for example, that woodlots are important to the town, are disappearing, and are under pressure from housing development, it becomes very meaningful to ask citizens whether their vision of town includes woodlots. In deciding whether it does, they will begin calculating, more or less consciously, costs and benefits of preserving woodlots, trade-offs between private property rights and public good, and so forth. At that point, a decision to include it in the community vision or to state it as a goal ("As of 2020, at least 80% of existing woodlots will remain intact") means a lot. It is a vision created with eyes wide open.

On Planning Your Participation Effort

The timing of citizen participation programs is critical to their success. Meetings that compete with the standing meetings of other committees, local sports events or that simply fall victim to poor weather must be rescheduled or repeated. Additionally, in many parts of the state it is important not to forget seasonal residents. These members of the community may own important properties, or may plan to retire to the community. Some of the committee's workshops or forums should be scheduled during the summer to include the seasonal population.

Tools for citizen involvement in a continuous, cyclical process

1. **Effective program management strategies:**
   - **establish objectives**
   - **assign responsibilities**
   - **allocate $ and staff**
   - **set a schedule**
   - **monitor performance**
2. **Contract for citizen involvement services**
3. **Give planners training in customer relations and communications**
4. **Maintain a registry of stakeholders, interest groups, and individuals with expertise or interests in important land use topics or areas. Update the list periodically.**
5. **Earmark funding for the citizen involvement program in the local budget.**
6. **Develop and maintain an active network of neighborhood organizations. Provide basic support, such as mailing, staff attendance, photocopying.**
7. **Give recognition to citizen volunteers.**

From: Putting the People into Planning: A primer on public participation in planning (April 1998)

Go to the public. Some communities find that a neighborhood forum works when you haven't had luck drawing people to town hall. Hold a meeting in a local church, restaurant, community school or other local function room and serve refreshments. People may come to see their neighbors or for dessert. Remember that a neighborhood meeting is not a private session, but is subject to Maine's right-to-know law and is open to the public. In most cases, having a member of the local press invited to attend or asking the local access cable television station to tape the meeting resolves public access issues.

Proceeding in a high-involvement fashion requires a commitment of resources and an "up front" acknowledgement that the process will require a significant investment of time. Most experts agree that the investment of time throughout the process to include the public will pay off in less controversy at the end. In all cases, effective citizen participation requires the governing body of your community and the comprehensive planning committee to invite and allow public influence over final recommendations of the comprehensive plan.

Tools for community visioning

- **Visioning sessions help to formalize the community's hopes for the future. At a visioning session, participants identify key natural and historic areas of town to preserve and describe how the town should look and feel in the future, perhaps 25 years from now. The State Planning Office has published a helpful manual, "Community Visioning Handbook: How to Imagine–and Create–A Better Future," available at http://www.maine.gov/spo/landuse/pubs/**
- **Involve children: a school project that asks about the future they want to be part of can be powerful.**
- **Use the local press to help publicize the content and direction of the comprehensive plan. Printing an insert for the paper listing the results of the community attitudes survey, the alternative build-out scenarios and the community vision will help the public to follow the planning process. Include a tear off comment section or postcard to encourage feedback.**

Tools for visualizing patterns of development

- **New techniques in community participation have proven successful at enabling participants to visualize alternatives. The Town of Falmouth, in conjunction with several consulting firms, used Community Viz, a software program that runs within a GIS program to demonstrate the impact of various zoning decisions at a large public forum. The consulting staff, with the guidance of the comprehensive planning committee, created indicators that represented community values as well as a GIS-based map of the area.**
- **Using the software, participants in small groups were able to try out different zoning scenarios and see graphically the impacts in terms of community values. Citizens found it easier to suggest controversial alternatives in this context, as it was easy to "try things" without any permanent commitment.**
- **Build-out maps provide a less high-tech but effective alternative for visualizing future development patterns. By projecting rates of growth and by using current zoning as a guideline, planners can map the potential town build-out in 10-year increments to demonstrate anticipated changes in your community. See Chapter 12, Land Use Patterns, for more information on build-out scenarios.**

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Pamfill, C. (2002). *The process of participatory governance: an analysis of 40 cases*. Retrieved on December 9, 2003, from http://www.toolkitparticipation.com/download/analysis_3_ENG.pdf This site has other useful resources on the topic.

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Chapter Three:

Contents of a Comprehensive Plan

How do you create a whole picture of your town, both its natural and man-made systems? How do you grasp the possibilities for future growth? Preparing a comprehensive plan can seem like a large and intimidating assignment. But, taken a step at a time, it becomes manageable, and most who participate in the process find it rewarding.

The Inventories and Analyses

Where do you start?

Mechanically, Maine's Comprehensive Planning and Land Use Regulation Act (MRSA Title 30-A §4301-4350) calls for a three-part process: **first**, inventory and analyze existing conditions; **second**, prepare policies to address the issues raised in the inventories, and designate "growth" and "rural" areas; and **third**, prepare strategies to implement the plan.

The Act and its regulations prescribe a number of topics about which data are to be gathered and analyzed: these are the **inventories**.

A method of land use planning

At first, the required inventories may seem to be disjointed topics. But they are connected. In fact, you can think of them as a layer cake, in which one layer depends and is built upon the one before it (See Figure 3-1). Some call this "ecological" planning, because it makes clear the relationships among the natural foundations of a community and the human activities that take place upon them. Together, they tell a constantly evolving story of the community.

This method was spelled out by the planner and landscape architect Ian McHarg in his 1969 book *Design with Nature*.[1] McHarg showed how communities can be built in cooperation with, rather than in competition with, natural systems. Subsequent authors have built on this work, including helpful guides such as Frederick Steiner's *The Living Landscape*.[2]

The "layering" begins with inventories and maps of natural features. It proceeds to inventories and maps of resource-based economic activity, like farming and forestry. It then moves to inventories of the built environment – economy, population, and transportation system, land use, and other systems that utilize the land.

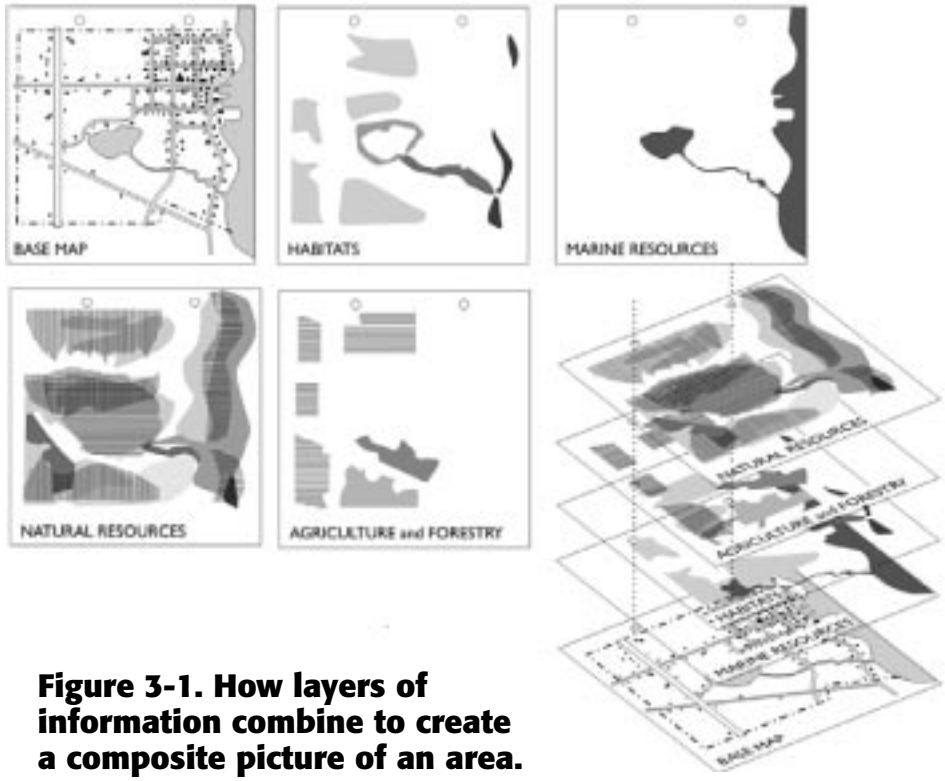

Figure 3-1. How layers of information combine to create a composite picture of an area.

Ian McHarg likened resulting maps and analyses to "a complex X-ray photograph" that depicts areas suitable for growth and areas that should be reserved for their natural or resource-based functions. This is a good way to think about comprehensive planning in Maine, because this method helps a community or region "see" areas that might be suitably designated for growth, and those that naturally fall into rural categories.

The required Inventories and how they are c-o-n-n-e-c-t-e-d

In all, the Act and its regulations prescribe 13 topics or "layers" for inventory and analysis.

Layer 1: Topography, soils & geology, and water resources

These are physical processes of the land. They help determine the town's capacity for growth and natural constraints to that growth. They also have much to do with natural beauty and image of a community. See Chapter 4.

Layer 2: Habitat and other significant natural resources

These are biological processes of the land and are inextricably tied to natural physical elements of layer 1. See Chapter 5.

Integral to layers 1 and 2 are natural features that may contribute or be vulnerable to hazardous events, such as floods and coastal storms, dam failures, ice dams, and forest fires. See Chapter 6.

Layer 3: Historic and archaeological resources

These are the earliest elements of human activity on the land and frequently occurred in the community precisely because of opportunities for survival, livelihood and wealth made available by resources in the first two layers. See Chapter 7.

Layers 4 and 5: Agriculture and forestry; marine resources

These economic activities are embedded in and rely upon the community's physical and biological resources. They were the first widespread layer of human activity on the land. Frequently, they reshaped the natural environment and gave many towns and cities images and self-identities that persist to this day. See Chapters 8 and 9.

Layer 6: The local and regional economy

In much of Maine, the local or regional economy still is dominated by natural resource-based industry. But in many cases – in some regions of Maine, most cases – different economies have sprung up, owing less to the community's natural resources and more to location near metropolitan areas, transportation and communications networks, educational facilities, and the like. These activities create another layer of activity on the landscape. See Chapter 10.

Layer 7: Population and demographics

The rate and character of a community's population growth are tied in large part to a community's or region's economic base—that is, the base from which goods and services are produced and exported and incomes are earned. In turn, population growth feeds back to help determine how large the local economic engine will be. See Chapter 11.

Layer 8: Land use patterns

The interplay among activities that make up the local and regional economy, populations required to staff the economy, and civic institutions that serve the populations creates demand to convert land into development for a variety of uses such as homes, stores, industries, offices, schools, and places of worship. The way in which they are built and placed in relationship to each other (compact like a village? spread out in suburban style? etc.) determines the pattern of land use. This pattern often is distinctive and part of a community's identity. See Chapter 12.

Layer 9: Housing

The population translates into demand for shelter – homes, apartments, seasonal homes, mobile home parks, and retirement communities. The price of housing, including its affordability to the region's workforce, depends on strength of the region's economy, on natural characteristics of the community, on supply of housing compared with demand for it, and how local regulations affect housing supply. See Chapter 13.

Layer 10: Transportation

Transportation is the means by which one moves from one land use to another: between home and work or school, between work and banks, a doctor's office, or law offices, between

home and a friend's house or a park, or between a home out-of-state and a coastal or mountain resort. Automobiles and trucks, traveling on public roads, emerged as the prevalent form of transportation by 1950 and are dominant today. Other forms are important as well, including rail, air and water-borne traffic, bicycling and walking. The transportation system both shapes and is shaped by patterns of land use. See Chapter 14.

Layer 11: Recreation and open space

Recreation is a specific type of human activity, and a variety of open spaces, from natural woods to manmade fields, are sought after to accommodate it. Open space and recreational activities that take place in and upon it often are symbolic of a community's quality of life. See Chapter 15.

Layer 12: Public facilities and services

Each of the previous "human" layers, economy, population, and the array of land use, housing, transportation, recreation activities demands public services. Whether and how these services are delivered, how demands will change as a result of growth, and what their costs will be are central questions of local government. See Chapter 16.

Layer 13: Fiscal capacity

This final layer is a "reality" layer: what is the community or regional capacity to pay for services inventoried in Layer 12 as a result of demands exerted by previous layers? This layer brings home the reality of budgets, taxes, and requirements for capital facilities to accommodate community growth and vision. See Chapter 17.

What's included in an inventory?

The inventory and analysis for each of the 13 topics usually includes:

A discussion of recent trends. Unless you look at the past, you will end up only with a snapshot of today, without any good sense of where the community has been or where it's headed.

A description of existing conditions.

Projections of how recent trends extend into the future, as appropriate.

An analysis of issues and implications. What problems or issues are raised by the information collected, and how serious are they? If trends continue, what will be the impact on the community? Do issues raised deserve specific attention in the comprehensive plan's policy section? Analyzing issues and implications gives substance to the inventories. It is the essential link between inventory and later formulation of policies.

Details are provided in the chapters that follow.

How much time and effort should be spent on inventory and analysis?

The more information and analysis a plan contains, the more likely it will anticipate issues and be able to support choices of policies and implementation strategies. However, the State Planning Office urges municipalities not to spend an inordinate amount of time and resources on inventories at the expense of analyzing information and developing the plan's policies and implementation strategies. It therefore uses a two-stage "threshold approach" to the inventory and analysis. The first stage is a scan of the topic (or, as we have described it, the "layer"), with enough information and analysis to allow a baseline understanding of the topic and to show whether or not there is a problem to be worried about. If there is, the inventory and analysis can move to the second stage of documenting the issue well enough to justify policies and implementation strategies that may later be adopted.

The link between inventories and policies

Use discussion of issues and implications to state, as precisely as possible, the nature of the problem raised in an inventory.

For example, the inventory of water resources might have found the water quality of a lake to be marginal, and that the DEP has rated it as a "highly vulnerable" lake. Further, it might have found that new subdivisions have been developed in the lake's watershed over the last ten years. Discussion of issues and implications at the end of the water resources inventory might state the problem like this:

"Water quality in Wet Lake is threatened primarily by storm water runoff from new development in the watershed. DEP estimates that without control of contaminants carried in the runoff, especially phosphorus, lake quality will continue to decline. Should the Town strictly limit new development in this watershed? Or should it allow new development as long as it includes methods to control runoff? If new development is allowed to continue, does the Town have the ability to enforce runoff controls?"

The issue is now framed; a debate on policy can follow.

Policies

What is a policy?

A policy is a specific statement of principle or course of action. Whereas a "goal" is an intention for which the community is striving, a policy is a statement concerning how to reach that goal. For example, to have clean water is a goal. To try to meet that goal, a community might adopt policies such as, "The Town must (should) (shall) strengthen its shoreland zoning ordinance to regulate land use near streams and lakes"; and, "The Town must (should) (shall) upgrade its sewage treatment plant."

The policies must, at the least, address statewide goals contained in the Act. It's up to the community to fashion policies the way it thinks best, based on conditions it has found in the community. Here are some guidelines:

Guideline 1: To the greatest extent possible, policies should be "directive." That is, they should be an instruction to those who will be implementing the plan. Policies that include the word "must" or "shall" or that specify what is to be done are "directive." "The Town shall extend public water lines to the industrial park," or "Reduce residential density in the rural-farm district to 1 unit per 10 acres" are examples of policies that direct or instruct. Not all policies are directive; some may be suggestions or general guidelines. These use "permissive" words like "should" or "encourage." "The Town is encouraged to identify land for affordable housing," or "The Town should limit new septic systems within

250 feet of Wet Lake" are examples of non-directive policies. Comprehensive plans generally will be found consistent with the Growth Management Act by the State Planning Office only if key policies – such as policies intended to direct new development into growth areas and away from rural areas or that are needed to meet other goals of the law – are directive.

Guideline 2: Policies should be linked to issues that arise from inventories and analyses. For example, one of the State's goals is to maintain clean water. But specific policies to address that goal should be shaped by an understanding of the issue in your community. The inventory and analysis of water resources may have found that a lake in the community is threatened by development on its shores. Having made that finding, there should be a policy to address it, such as, "Through the Town's land use ordinance, provide for greater setbacks and natural buffers between development and the shores of Wet Lake." On the other hand, let's say that the inventory and analysis did not find any other major problem, or anticipate future problems, relating to water quality. It would therefore be inappropriate to come up with a policy such as, "Development is to be strictly limited in the watershed of the Dry River." In this case, there are no facts to support the policy. If the planning committee does believe there is a problem in the watershed of the Dry River — or thinks there could be one in the future — it should be documented as part of the inventory and analysis before arriving at a policy about it.

Guideline 3: Policies should be specific enough that there isn't confusion about the direction the Town should take. A poorly written policy sometimes sounds like a restatement of the goal, offering no real direction for those who will be trying to implement the policy. For example, in striving for the goal of clean water, a policy statement such as, "The Town should take steps to protect the quality of Wet Lake" isn't very helpful. The committee may not have the expertise to spell out all the steps, nor does a policy statement have to be very detailed. But it should give direction, and that direction should spring from facts in the inventory and analysis.

If the problem relating to the lake is storm water runoff from farms or new development, for example, a better statement of policy would be, "Enact regulations to reduce the flow of contaminated storm water runoff to Wet Lake." Or, if the problem is believed to be failing septic systems from old seasonal homes that have been converted to year-round use, an appropriate policy might be, "Assure that septic systems around Wet Lake are upgraded to standards recognized by Maine's Subsurface Waste Water Disposal Rules."

Guideline 4: Policies should be realistic. It doesn't hurt to be ambitious or visionary, but there should be some prospect of being able to carry out stated policy. For example, a policy that says, "The Town should do whatever is necessary to return Wet Lake to its original, pristine condition" may be technically and financially impossible. It may also be politically impossible, since the policy may lead to a requirement of no farming, no woodcutting, and no development near the lake. Alternatively, a policy that says, "Enact land use controls to strictly limit flow of phosphorus to Wet Lake" may be a challenge but is within the realm of possibility.

Guideline 5: Policies should not contradict each other. As the committee moves from one subject to another and attempts to address different goals, it is easy to adopt inconsistent

policies. For example, to address the goal of clean water, the committee may adopt a policy of extending a public sewer line to take care of former seasonal homes with failing septic systems along a lake shore. But the lake might be in an area that the committee does not think should be further developed—a policy that would be foiled if an extended sewer line opened up land for development. You must resolve such inconsistencies (e.g., in this case by limiting the number of hookups to the new sewer line or by finding a different way to deal with the failing septic systems). The point is that what's said in one part of the plan may affect another part.

Guideline 6: Policies should be consistent with regional policies; or, if they are not, there should be a discussion of how the conflict can be resolved. The Act suggests that each comprehensive plan specifically discuss how resources that are shared with other municipalities will be cooperatively managed.

When should the planning committee start writing policies?

Gathering the information called for in the inventories can seem a very long task. Textbook planning says all 13 inventories and analyses should be complete before setting forth policies. How can you create policies until you have all the facts, know the extent of any problems, and understand how one inventory might be affected by the facts gathered in another inventory?

Moving back and forth

One committee decided to move back and forth between the fact-gathering and the policy-making. At each meeting it did at least two things: First, it debated proposed policies on an inventory topic that had been previously discussed. Second, it took up a new inventory topic and discussed its issues and implications. This then became the basis for a review of proposed policies at the next meeting. To make sure that they weren't recommending policies prematurely, committee members agreed that the initial adoption of policies on a given topic would be preliminary only. Then, when all the inventories were completed, and related policies drafted, the committee reviewed the package in its entirety to assure that minds hadn't changed and that all policies were consistent.

But this has to be balanced against the possibility that, unless the planning committee starts talking about substantive matters and feels like it is making decisions fairly early in the process, members will lose interest. As important as purely factual material is, it's like popcorn without the salt: boring, without the flavor of issues and a debate on policies to address those issues.

There is no single way to go about the inventory work and to relate it to the drafting and debating of policies. Each committee has to gauge its stamina and readiness to get involved in policy debates. Some committees will find the fact-gathering educational and interesting. Some will hesitate to write policy until all the facts are in. Others will be anxious to dive into the policy-making and after a few months of fact-gathering will wonder, "What's the point?" unless policy discussions start. Whatever approach is taken, make sure to reserve enough time to debate and shape policy: it will take longer than you think.

Beware of silence (I)

One of the chronic deficiencies of comprehensive plans is that they raise issues in their inventories and analysis, but then fall silent on the matter. There either is no policy

addressing the issue, or policy is stated in very general or ambiguous terms. Conversely, sometimes policies and strategies are included that seem to appear from nowhere, with no inventory and analysis to support them. These circumstances violate two guidelines presented in this section (link policies to issues, and do so with specificity). It also confuses those who are relying on the plan for direction. In the first case, should the matter be addressed or not, and if so, how? In the second case, why are policies included when no issue has been identified? At the very least, if a comprehensive planning process, having raised and documented an issue, cannot reach agreement on a policy to address it, this should be explained. Readers can understand that differences might have to wait to be settled in the future.

Future Land Use Map

The future land use map is a culmination of inventories and policies. The future land use map is a graphic statement of policy, showing "growth" areas to which development is to be directed and "rural" areas away from which development is to be directed. The future land use map may be part of the comprehensive plan citizens will review most closely. It should be clear, unambiguous, and easy to read. Its preparation is the subject of Chapter 18 in Part C of this manual.

The future land use map is a major step toward preparing a zoning or similar regulatory map. The boundaries are more general than a zoning map; and the provisions within each land use area for allowed uses are not in the detail found in a zoning ordinance. However, the future land use map is the foundation upon which a new or revised zoning map will be based.

Implementation Strategies

In general

The implementation strategies describe how the policies will be put into action. An implementation strategy:

- Specifically describes the action to be taken.
- Assigns responsibility to the appropriate municipal board, organization, or staff person.
- Establishes a schedule and priorities for carrying out the action.
- Estimates the cost, if any, and source of funds to carry out the action.

The implementation strategies tie back directly to the policies. Among other things, the implementation strategies must specify actions the community will take to:

- Write a land use ordinance that reflects the future land use map and other land use policies.
- Provide for affordable housing.
- Assure that growth will in fact be directed to growth areas and away from rural areas. These actions may range from land use regulations to providing public facilities and services in the designated growth areas.
- Provide for the coordinated management of resources shared with other communities .
- Address other statewide goals and local policies.

The implementation strategies should be as specific as possible, so that decision-makers and committees know what is to be done, who is to do it, and within what period of time.

Beware of silence (II)

Just as a persistent problem in many comprehensive plans is silence on policies after issues have been raised in the inventory, so, too, is silence on recommended strategies to implement policies that are stated. Moving from controversial issues (like affordable housing, how to build up growth areas and preserve rural areas, etc.) to policies, and then to specific strategies to implement the policies, gets increasingly harder. With leadership, patience, and participation, answers can be reached more often than not. But even then it might not be possible. If it isn't, explain that. Even an explanation that a recommended strategy cannot be offered, and why, may serve as a stepping stone later on when more people understand the issue and are willing to move ahead.

Capital investment plan

The implementation strategy also must include a capital investment plan: a plan to provide and finance the public facilities needed to accommodate projected development in designated growth areas. Needed facilities will have been identified in inventory/analysis and policy sections of the plan. The capital investment plan may not be able to estimate the costs of all anticipated facilities, but it should:

Identify those facilities.
Estimate the costs, if possible.
Identify the likely source of funds.
Indicate the priorities among the facilities.
Be realistic, staying within the municipality's ability to fund facilities.

Regional coordination

Many growth issues such as natural resources, transportation, solid waste, and economic development extend beyond the borders of a single town. In fact, overall land use patterns themselves are regional rather than just local in scope.

A town may not be able to accomplish its goals without cooperation of neighboring municipalities. Protection of a lake or ground water aquifer may take land use controls in several towns. Towns may wish to join together to provide affordable housing. Improvements to the flow of traffic on a major roadway may involve changes in several communities.

In such cases the plan should consider ways of coordinating its efforts with other towns and the regional planning council that serves the area. Regional planning councils in Maine can provide information on region-wide plans and policies, and on the plans of neighboring communities.

More about regional approaches to land use planning is presented in Chapter 19.

References

[1] McHarg, I. (1969). *Design with Nature*. Garden City, N. Y: The Natural History Press.

[2] Steiner, F. (2000), *The Living Landscape: An Ecological Approach to Landscape Planning*. New York: McGraw-Hill, 2nd edition.

Johnston, W. (April 2003). *Updating Your Comprehensive Plan: 50 Recommendations for Making Plan Updates More Effective*. Augusta, ME: State Planning Office. Retrieved on October 11, 2005 from: http://www.maine.gov/spo/landuse/pubs/

Part B:

The Planning Elements

Chapter Four:

Topography, Soils and Water

State Goal:

To protect the quality and manage the quantity of the State's water resources, including lakes, aquifers, great ponds, estuaries, rivers, and coastal areas.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Significant water resources such as lakes, aquifers, estuaries, rivers and coastal areas and when applicable, their vulnerability to degradation.

In addition, the Act requires that the implementation section of the plan:

> Protect, maintain and, when warranted, improve the water quality of each water body pursuant to Title 38, chapter 3, subchapter I, article 4-A [the part of state law that establishes water quality classifications] and ensure that the water quality will be protected from long-term and cumulative increases in phosphorus from development in great pond watersheds.

MRSA Title 30-A, §4312.3.E; §4326.1.B; §4326.3-A.C. (2001).
Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

The Act divides natural resources into two broad categories: water resources and "other critical natural resources." Yet it is not possible to separate water resources from other natural resources. The interaction is so intimate and complete that one cannot be isolated from the other. In particular, water only can be understood in relation to substances it follows through – soil and other geological materials—and surfaces it flows over – the topography.

Therefore, this chapter will review topography, soils, and water resources together. In so doing, the first steps toward a future land use plan, with "growth" and "rural" areas, will have been taken. Once other critical natural resources are inventoried (see Chapters 5 and 6), the outline of a future land use plan will begin to take shape.

These first layers of information will be mapped and combined into a summary or "composite" map of constraints and opportunities. The composite map highlights those areas of town with critical or fragile natural resources, such as wetlands, or resources needed for farming, forestry, and other resource-based economic activity. These furnish important clues as to parts of town that should be designated "rural," with constraints on growth. Conversely, the composite map will highlight other areas that are relatively free of natural constraints and that have capacity and opportunities for growth.

Tip: To create maps of natural resource constraints and opportunities, you will need agreement on what parts of the natural landscape are in fact constrained for development, and how severe constraints are. In other words, you need a system for rating different natural resource conditions, from severely constrained to unconstrained. A system used by one community is illustrated in Table 4-1.

Inventory and Analysis

The inventory and analysis of the community's topography, soils, and water resources is the first step toward identifying development constraints and opportunities. As you begin, remember that you will be mapping and analyzing individual but closely related natural resources, the sum of which will begin to point you toward "rural" and "growth" areas.

Topography: Inventory

Topography refers to the lay of the land: its slopes, hills, valleys, and plains.

Water falling to earth either evaporates, infiltrates soil or flows to a body of water. The land area that drains precipitation into a particular body of water is called a watershed. If you looked at a watershed in three dimensions, it would appear to be a huge basin, with the water body at the lowest point.

The inventory begins with a USGS topographic map. The topographic map serves as a useful base map – the map over which other features of the town also will be mapped. The scale of the map should be adjusted so that the map fits on a conveniently sized sheet of paper (typically 36 inches wide) and is large enough to record needed detail. Good scales for townwide comprehensive planning usually are one inch equals 1,000 feet to 1,500 feet. (Note: adjusting a topo map that has been mapped at, say, 1 inch equals 2000 feet to a scale of 1 inch equals 100 feet does not change the original map's level of precision—it just makes for a conveniently sized map.)

Table 4-1: Rating Natural Resources for Constraints to Development

Item	Variable	Severe	Significant	Moderate	Slight
Topography: slope	> 25%	X			
	15% to 25%		X		
	8% to 15%			X	
	1% to 8%				X
	< 1%		X		
Depth to bedrock (public sewer reduces these constraints)	< 12 inches	X			
	12 to 15 inches		X		
	15 to 48 inches in sands			X	
	>15" in non-sands, >48" sands				X
Soils:					
Depth to ground water (public sewer reduces these constraints)	< 7 inches	X			
	7 to 15 inches		X		
	> 15 inches in sands			X	
	> 15 inches in other soils				X
Prime farmland	Yes		X		
	No				X
Woodland productivity	High		X		
	Medium			X	
	Low				X
Risk of Erosion	Sandy on slopes >15%	X			
	Sandy on slopes 8%-15%		X		
	Other soils				X
Aquifer production	High	X			
	Medium		X		
	Low				X
Flood plain	100-year	X			
	Outside of 100-year				X
Wetlands	Coastal	X			
	Freshwater of spec. significance	X			
	Other		X		
Lakes and ponds: Distance from high water mark	Within 100',	X			
	Within 100'-250'			X	
	>250'				X
Marine waters: Distance from high water mark	<250' in sandy soils, <100' in other soils	X			
	250'-<500' in sandy soils, 100'-<250' in other soils			X	
	500'+ in sandy soils, 250'+ in other soils				X
Habitat	Rare & endangered	X			
	Deer yards, coastal nesting, other high value		X		
	None of the above but: Part of limited no. of blocks of 250+ acres		X		
	None of the above but: One of many blocks of 250+ acres			X	
	None of the above				X
Scenic value	Rated high		X		
	Rated medium			X	
	Rated low				X
Other critical areas	All	X			

Sources of information: Topography

US Geological Survey (USGS) maps are produced in quadrangles, or "quads." Maps are constructed at 1 inch equals 24,000 inches. (This is the same as 1 inch equals 2,000 feet; it also is depicted as 1:24000). Contour intervals (depending on the vintage of the map) represent either 10-foot or 20-foot changes in land elevation.

Maps are available through the Maine Office of Geographic Information Services (MeGIS), which has created digital versions of the topographic maps for the state. They also are available from many marine supply, map, or outdoor recreation stores. However, MeGIS electronically fits together quads for each town and therefore maps are immediately usable. For paper versions, you may have to piece together two or more quads to cover your town. Your regional planning council also can help obtain the maps, either directly from OGIS or from its own files.

Using the topographic base map, three characteristics of the town's topography should be inventoried and analyzed: watershed boundaries, relief, and slope.

Watershed boundaries: Delineating watershed boundaries is important because contaminants generated by activity on land are carried by runoff into water bodies at the bottom of watersheds. Because watershed boundaries represent high points of topography, they also influence placement of public facilities, such as sewer lines and roads.

Watersheds are identified by connecting points of highest elevation surrounding a water body or water course, (see Figure 4-1). The Maine Department of Environmental Protection (DEP)'s publications, "A Citizen's Guide to Lake Watershed Surveys" and "A Citizen's Guide to Coastal Watershed Surveys," include instructions for reading topographic maps and finding the boundaries of a watershed. The DEP's Lakes Program has maps of lake watershed boundaries that are available to towns. The Maine Office of GIS can produce watershed maps, as well. Anyone who can read topographic maps also can identify major watershed boundaries, at least to a level of detail sufficient for comprehensive plans.

Watershed boundaries frequently are not contained within a single municipality. A map of watersheds will indicate those water bodies for which management of land use activities should be coordinated with a neighboring town.

In describing the watersheds, your narrative should take general note of types of land uses in each watershed (residential, commercial, forest, agriculture, etc.), trends in land use activity, and whether significant parts of the watershed have been developed.

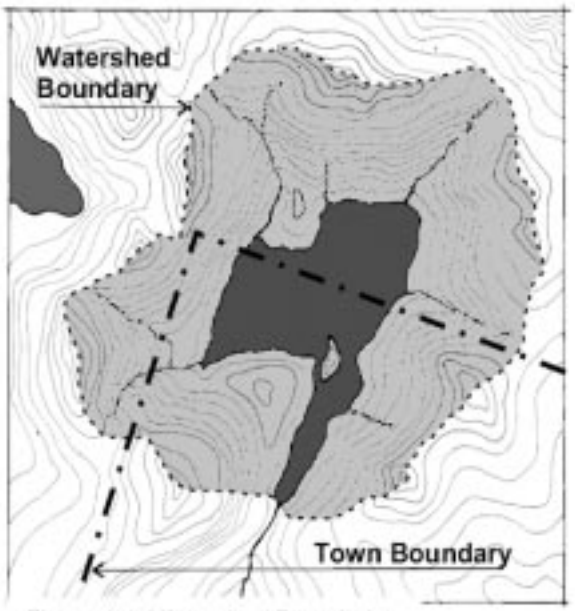

Figure 4-1: Watershed Boundaries

Relief (or elevations): Relief refers to elevation above sea level. A relief map identifies significant physical features, such as hills and valleys, which may hinder development or allow easy access for roadways. It indicates likely scenic areas and likely low-lying areas, such as flood plains. In mountainous communities, it will show location of very fragile mountain environments

(typically defined in Maine as 2,700 feet in elevation or higher). In combination with the watershed map, drainage patterns in the community become evident.

In your narrative analyzing the relief map, describe the general lay of the land, including highest and lowest points and where they occur, and names and locations of mountains, ridges, terraces, valleys, and other important land forms.

The narrative might also relate existing land use to relief. For example, it might explain how certain mountains or ridges have served as barriers to development and how valleys have served as corridors for roadways. Key elevations might be indicated, for example, elevation above which it may be difficult to deliver public water supply, or elevation of ridges with particularly good views. The narrative might describe the town center's location along a river or bay, where there is a good harbor, a wide flood plain, or a former source of water power. The relief map can also be used to show how topography will affect future land use and ability to extend public facilities, such as sewer and water lines.

Slope: Slope is the amount of rise or fall over a given horizontal distance. It is usually expressed as a percent. An 8% slope means that over a 100-foot horizontal distance, the rise (or fall) in elevation is 8 feet. Slope affects suitability of land for development. Very steep slopes, usually defined as 25% or greater, typically are too steep for development. In Maine, septic systems cannot be installed on slopes of 20% or greater. Most roadways shouldn't be on slopes of more than 8% to 10% for long distances. If developed, steep slopes can cause serious erosion problems. Slopes that are very flat, less than 1%, also can be problems as they are so flat that water does not readily drain (See Figures 4-2 and 4-3).

It should be noted that general slope information also can be estimated from official soils maps. On soils maps, the last letter in a map unit symbol indicates the percent slope. For example, BoB is a Boothbay soil on a "B" slope; "B" means 3% to 8%.

The narrative should describe major characteristics of the slope map: locations and extent of very steep slopes (25% or greater) and very flat areas where drainage might be a problem.

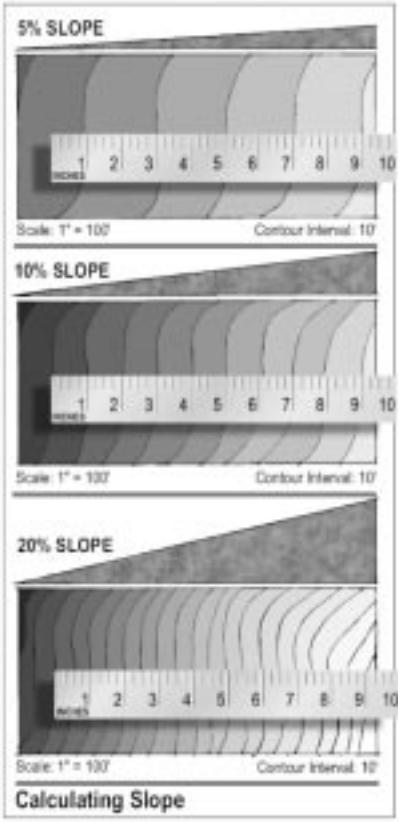

Figure 4-2 : Calculating Slope

Topography: Analysis

When you've completed the watershed, relief, and slope maps, step back and look at them. How has topography, its elevations and slopes, influenced the historic pattern of development in town? In which watersheds has development occurred? Are there scenic vistas from high points? Does topography indicate any particular constraints to new development: for possible new roads, or for extension of public water or sewer lines? Has recent development occurred in places that, due to elevation or slope, might be difficult for the town to serve?

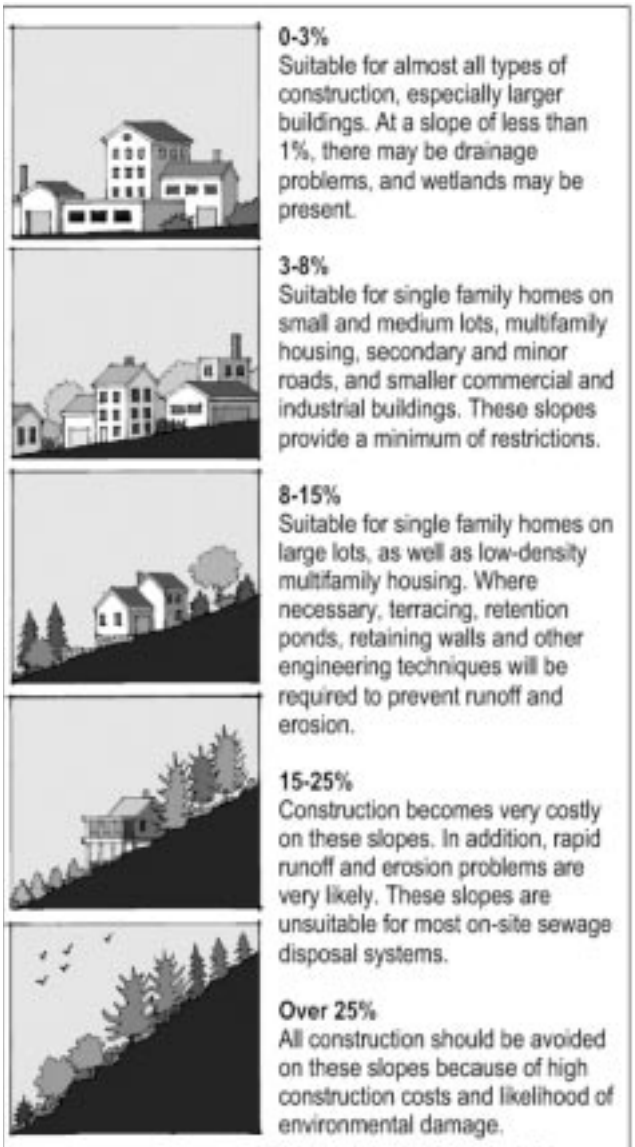

Figure 4-3: Construction Suitability of Slopes

Summary of topographic constraints: When it comes time to transfer information from these topographic maps to a composite map of natural resource constraints and opportunities, typically the following elements would be considered to be a severe constraint to development:

- Areas with slope greater than 25%.
- Very flat areas (these will be picked up later from flood plain and/or wetlands maps).

The following elements would be considered significant constraints, but not as severe as the very steep slopes (the planning committee should use its judgment; there is room for interpretation):

- Areas with slope of 15% to 25%.
- Land areas within watersheds directly tributary to a source of public water supply.
- High elevations from which scenic views are especially important, or which themselves are highly scenic from public roads or open spaces.

Surficial geology and soils: Inventory

Surficial geology refers to the loose materials, the clay, silt, sand, gravel, stones, rocks and boulders, whether sorted or mixed, that lie on top of solid ledge (bedrock).

Surficial geology often is discussed or shown on maps as the groupings of materials deposited by the last glacier that covered and receded from what is now Maine. Thus, a surficial geology map depicts marine deposits, glacial till (poorly sorted mixtures of materials), alluvial deposits associated with streams and flood plains, swamp deposits, formations such as eskers and moraines, and so forth. In town planning, surficial geology lends understanding to the various capacities and functions of soils, including farming, production of ground water, availability of gravel, and friendliness to septic systems.

Soil is an element of surficial geology. It is the upper layer of the earth's surface that is

subject to weathering (by such action as rainfall and erosion) and that supports plant growth. Character of the soil, its texture (mix of clay, silt, and sand), depth, drainage, and consistency' determines how readily rainfall can seep or "percolate" into it, and how much will run off to a stream or other water body.

Few towns in Maine have large areas of soils that are ideal for development. Often the soil is wet, bedrock is near the ground's surface, or the land has steep slopes. Especially where development relies on individual septic systems for disposal of waste water, soils help to dictate constraints to and opportunities for growth.
Several soils characteristics are important to land use planning and can be mapped on the soils base map. These include suitability of soils for agriculture, for woodland production, and for development. The following maps are useful to comprehensive planning:

- Prime farmland soils, as identified in "Soil Survey Data for Growth Management" for your county (check with the Natural Resource Conservation Service to see if prime farmland soils already have been mapped in your area).

- Prime forest soils, as identified in "Soil Survey Data for Growth Management" for your county.

- Hydric soils (indicative of wetlands), as identified in "Soil Survey Data for Growth Management" for your county.
- Potential for low-density development, as identified in "Soil Survey Data for Growth Management" for your county.

The narrative accompanying the maps should describe the series of soils in the community (from information available in the Soil Survey Report for your county). This should include general information about texture of the soil (sand/clay/silt), depth to bedrock, how well or poorly drained different soils are, and types of locations where different soils series are normally found.

Surficial geology and soils: Analysis

Analysis should be aimed at understanding where the greatest constraints to, and the best opportunities for, development lie. In thinking about whether a soil is a constraint to or an opportunity for development, you are looking for the following things:

Sources of information: Surficial geology & soils

Surficial geology maps are available from the Maine Geological Survey. They are mapped on top of USGS quads at a scale of 1:24000. In addition, the Maine Geological Survey has maps of two special situations in coastal Maine: sand dunes and areas subject to bluff erosion and potential landslides.

Soils maps depict the many types of soils that might originate in any particular type of glacial deposit. These maps identify soil units, and each unit is named for a town or geologic feature (such as Buxton, Peru, or Deerfield) near where that type of soil was first observed. Soils mapping has been completed for most of the state by the USDA's Natural Resources Conservation Service (formerly the Soil Conservation Service), and individual sheets are available from district offices. You may have to piece different sheets together to get full coverage of your town (check with your regional planning council to see if this already has been done). MeGIS can generate maps of soils by certain characteristics, such as drainage class.

The soils maps are at a scale of 1 inch equals 20,000 inches (or 1,667 ft.). The locations of soil units are approximate, able to differentiate areas down to about three acres. They are accurate enough for planning purposes, but on-site soils testing and mapping are required for specific developments.

(continued)

Sources of information … (continued)

Note: since their original publication, a number of soil types have been renamed or reclassified. These new names are cross-referenced to the old names on the map and are available from the county soil and water conservation district.

As an aid to comprehensive planning, districts also have booklets that categorize the soils according to certain key characteristics such as prime farmland, prime woodland, or overall development suitability. This set of two booklets is called "Soil Potential Ratings" and "Soil Survey Data for Growth Management."

Once the individual sheets have been pieced together into a soils base map for your town (with the help of GIS, your regional planning council or private consultant), make sure that it is adjusted to the same scale as the topographic base map. Because different cartographers have prepared the topographic and soils maps, you will probably find that they do not match up exactly. As long as they are at the same scale, they will be sufficient for town-wide comprehensive planning.

Lowest Potential	Highest Potential
• Floods	• Does not flood
• Wet (poorly drained)	• Not wet (well drained)
• Either impermeable or excessively permeable*	• Adequately permeable
• Water table near surface (less than 7" deep)	• Deep water table (more than 30")
• Shallow to bedrock (less than 12"–15")	• Deep to bedrock (60" or more)
• Steep slope (>25%) or flat	• Gentle slope (3%–5%)

(*Permeability is the rate at which water moves vertically through the soil. Low permeability may cause ponding and seepage of septic waste. Excessive permeability, as in sands, may cause pollution of groundwater.)

There also may be conflicts that should be noted in the analysis. For example, soils with high development potential may also be prime farmland soils. Some soils that have low potential often are found near lake shores, ocean fronts, or on mountain slopes, which also are attractive resort or second home locations. Downtown, where there is a natural focus for development and redevelopment, may have its historical location on floodplain soils.

Finally, mitigating circumstances must be taken into account. The most obvious is a public sewer system, which can often overcome the limitation of poorly drained soils.

Summary of soils constraints: When it comes time to transfer information from these soils maps to a composite map of natural resource constraints and opportunities, typically the following elements would be considered to be severe constraints to development:

- Areas with hydric soils.
- Areas rated by the Maine Subsurface Waste Water Disposal Rules as non-discharge soils (unless served by public sewer system).

The following elements would be considered significant constraints to development, but not as severe as the constraints above (the planning committee should use its judgment; there is room for interpretation):

- Areas with prime farmland soils, if farming is important to the local economy or character of the countryside.

- Areas with prime woodland soils, if commercial forestry is important to the local economy or character of the countryside.

- Areas with excessively drained soils indicative of an aquifer recharge area; areas with groundwater or bedrock within 7 to 15 inches of the surface, if there is no public or community sewer system; or otherwise rated by the Natural Resource Conservation Service's soils maps and analyses as having very low development potential (unless served by public sewer).

Water resources: Inventory

Maine has established water quality standards for lakes, ponds, rivers, streams, aquifers, and estuaries of the state. The water quality classification system is contained in Title 38 of Maine's statutes, chapter 3, subchapter I, article 4-A. To be consistent with the Act, your comprehensive plan must indicate actions to be taken to ensure that these standards are being met, or, where the standards are not being met, the actions to be taken to improve water quality. The Maine Department of Environmental Protection periodically files a statewide Water Quality Assessment under the Federal Water Pollution Control Act. This assessment includes a comprehensive listing of all waters in the state that were limited by water quality problems as of the date of the assessment. (See reference at end of chapter.)

Lakes: Perhaps the greatest threat to lakes in Maine is nutrient phosphorus. This naturally occurring chemical element acts as a fertilizer, stimulating plant growth. Too much phosphorus in a lake spurs algal blooms. As the algae die and decay, oxygen in the lake is depleted, altering the biological make-up of the lake and turning the lake "green." Phosphorus comes from a number of sources, including eroded soil, runoff from development, and lawn fertilizer. The amount of phosphorus reaching the lake is increased by disturbances of land within the lake's watershed. Agriculture, logging, roads, and residential and commercial development can all be sources of increased phosphorus.

Rivers and Streams: The management of rivers heavily depends on coordinated efforts among municipalities. Like other water resources, land use activities along the shore of the river or stream can affect quality of the water, and pollutants are quickly transported to neighboring downstream communities. Until the 1970's, before many treatment plants were built, discharge of untreated sewage from sewer pipes of municipalities and industry fouled many of the state's rivers. Such discharges through pipes are called "point sources" of pollution. Point sources can be potent water polluters. But they have the advantage of being easily identified, and plants can be built to intercept and treat wastewater. Technology and improved manufacturing processes also are reducing pollutants entering the system in the first place.

So-called "nonpoint sources" of pollution are as important a threat to water quality, and more insidious than point sources. This is pollution that comes from many sources, usually in the form of runoff from the land. These sources aren't easily identified, and pollution, once generated, cannot be easily intercepted or treated. Nonpoint source pollution can be controlled only through prevention, usually by regulation of land use, or by use of Best Management Practices (BMP) available from DEP.

In 1996, the Legislature enacted the Maine Stormwater Management Law (Title 38, Sec. 420-D). The law requires developments that disturb or pave over certain areas of land to first receive approval from DEP. Of importance to comprehensive plans, the law also directs the DEP to identify streams that are "most at risk" from new development, and to identify watersheds or regions considered "sensitive" or "threatened." DEP has determined that streams in watersheds in which at least 7% of land area has been made impervious, usually the result of parking lots, roads, and commercial-industrial facilities, are "most at risk." This degree of alteration of a watershed leads to chemical and physical changes in the stream that impair aquatic life.

Rules enacted under the Stormwater Management Law are contained in Chapter 500 and Chapter 502 of DEP's rules. Chapter 502 lists "urban impaired streams" and lakes that are "most at risk from new development."

In light of the Stormwater Management Law, the comprehensive plan's inventory of rivers and streams might usefully follow the hierarchy found in nature. Small streams join to form a larger stream, and larger streams join to form a still larger stream, and so forth. This is a highly organized system in nature. The streams can be denoted by their "order." A first order stream is one that has no tributaries. When two or more first order streams join, they create a stream of second order. When two streams of second order join, they become a stream of third order, and so forth. See Figure 4-4.

Each of these streams has its own watershed nested inside of the watershed of a stream of a higher order. Because watersheds (or "sub-watersheds") of first, second, and even some third order streams typically are small, they can be especially vulnerable to large impervious areas, like commercial parking lots. Many of the "urban impaired streams" on DEP's list are lower order streams that drain small areas: one or two square miles of land or less. The inventory should identify any lower order streams that have seen significant development or may see significant commercial, industrial, or residential growth.

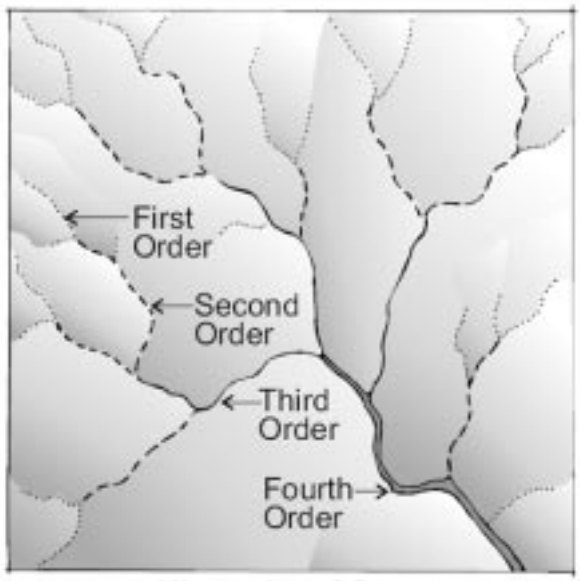

Figure 4-4: Hierarchy of Streams

Estuaries: Estuaries are the mixing areas between freshwater flowing from the uplands and salty, ocean waters. The mixing of fresh and salt water creates nutrient-rich habitats for plants, animals, and fish. Many species of fish and birds depend on estuaries for mating, spawning, feeding, and nesting. Estuaries are some of the most biologically important natural systems. They are vulnerable to pollution from nonpoint sources and from rivers carrying pollutants from upstream. In some coastal communities, sewer systems that combine storm water drainage with sewage, called "combined sewer systems," are a major point source of pollution. These systems are not designed to handle huge volumes of water that come from

rainfall. As a result, mixtures of storm water and raw sewage overflow and pollute estuarine and coastal waters during heavy storms.

Ground water: Approximately 60% of residents in Maine depend on ground water for their drinking water (See Figure 4-5). Although these unseen sources of water seem mysterious, ground water is simply the portion of rain and snow that has seeped into, rather than run over the ground to become surface water or been returned to the atmosphere via evaporation. Geologic deposits and bedrock containing large quantities of water are known as aquifers. In Maine, aquifers are commonly contained in sand and gravel deposits or in bedrock fractures.

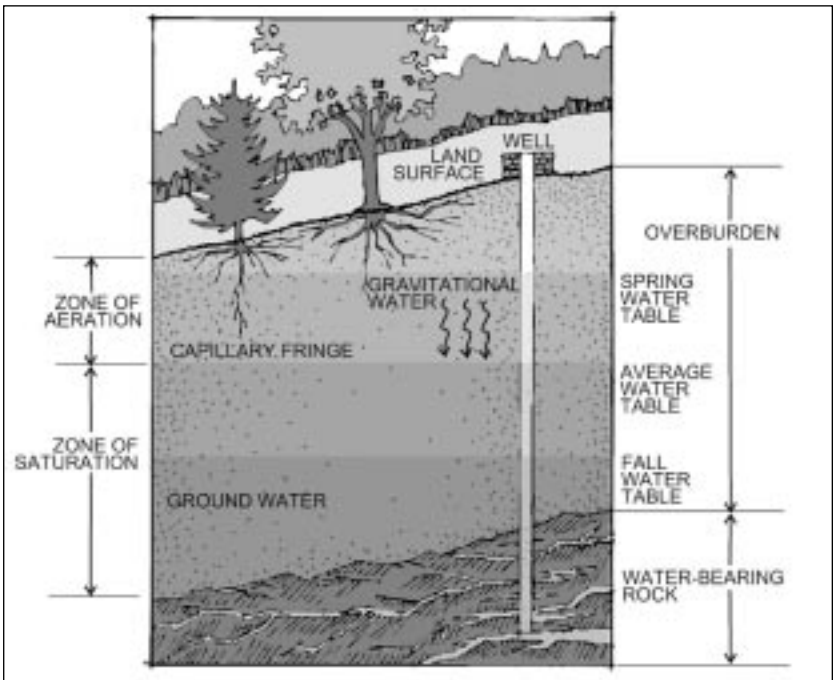

Figure 4-5. **Ground Water Profile**

The land area with coarse or sandy surface soils capable of absorbing rainwater easily and replenishing an aquifer is called the recharge area. Recharge areas deserve special attention because any pollutant discharged in the area, including chemicals and petroleum products, may eventually flow to the aquifer.

The area surrounding a well from which water supplies are drawn is a wellhead area. Especially if the well is a public water supply, delineating wellhead area and inventorying land uses within the area is an essential step toward managing the water supply. Wellhead protection areas typically are described as having two "zones": an area immediately surrounding the well (defined as the area with a groundwater travel time of 200 days) in which strict land use regulation is warranted; and a secondary area (defined as having a travel time of up to 2,500 days) in which some protection above the norm is warranted.

Maps

A water resources map (or maps) usually is developed on the topographic base map. Most of the important surface waters (lakes, ponds, streams, rivers, and estuaries) already are on the topographic base map and need only be highlighted, with watershed boundaries added so that water bodies can be seen in context. Water resources that need to be researched elsewhere include 100-year flood plains, aquifers and their recharge areas, and threats to water quality.

100-year flood plain maps show those areas of land that have a 1% chance of flooding in any given year. They are the basis for the National Flood Plain Insurance Act and also are used in the state's shoreland zoning. The maps should be available from your local code enforcement officer or town clerk. The scale of these maps will have to be adjusted (easy to do if the mapping is being accomplished with GIS) before transferring the information onto the topographic base map.

Significant sand and gravel aquifers have been mapped by the Maine Geological Survey. These maps, at a scale of 1 inch = 50,000 inches, show aquifer boundaries and have information on expected yields. The scale of the maps will have to be adjusted before transferring the information onto the topographic base map.

Bedrock aquifers, which are common throughout the state, have not been comprehensively mapped. In the absence of maps, the planning committee can still collect information on this resource. Local well drillers maintain files and may be a good source of information about depths to bedrock water supplies and their rates of flow. The Maine Geological Survey maintains a data base on well characteristics that may provide additional information. In addition, the committee may want to survey local residents about well conditions. This can be done at the same time as a community survey is undertaken. Aquifer and/or wellhead recharge areas generally have not been mapped by the state. Water companies or districts that supply public water from ground water may have mapped wellhead recharge areas. The Maine Office of Geographic Information Services (MeGIS) can provide a map of circular buffers around the wellheads of public water supply wells. If ground water quality is deemed an important issue due to known, existing, or potential threats, assistance should be sought from a professional hydrogeologist. Information on wellhead protection also can be obtained from the Maine Department of Human Services, Division of Health Engineering.

A map showing the locations of existing and potential threats to water quality can be compiled in part from state sources, but most of the information will have to come from a local survey of possible threats. The following may be among the threats:

- Agricultural and forestry operations that lack erosion control or runoff measures.
- Major sources of storm water runoff (any development with a lot of impervious surface, such as large parking lots, street ditches, storm water discharge pipes, etc.).
- Landfills (current and abandoned).
- Petroleum storage tanks on top of or near aquifers (information may be available from the local fire department).
- Sand and salt piles.
- Mining activities.
- Major construction sites that may be causing erosion.

- Businesses using or storing toxic or hazardous chemicals.
- Sites of abandoned industries.
- Marinas, boat maintenance facilities, etc.

Maine DEP maintains listings of hazardous waste and oil generators, gas stations, solid waste facilities (landfills, septage sites, sludge spreading sites), underground petroleum tanks, and sand and salt facilities.

Water resources: Analysis

The analysis of local water resources should include:

- **An assessment of existing water quality.** Indicate the state's classification of each water body, whether DEP has found water quality to be meeting the classification, and whether there are known threats to water quality.

  For ground water, the committee may want to identify areas that are contaminated, areas with salt water intrusion, or areas that experience problems with water supply. A survey of local residents is one method for gaining such information. It could be part of the effort to get information on private wells, as mentioned earlier.

  DEP has categorized lakes according to their sensitivity to phosphorus loading. This has been done as part of a method for evaluating how much additional phosphorus a lake can absorb without unacceptable loss of water quality. This method is described in DEP's publication, "Phosphorus Control in Lake Watersheds: A Technical Guide to Evaluating New Development." The manual explains how to set goals for lake water quality, and how to assess and control potential phosphorus impact of new development on lakes. (See reference at end of chapter.)

- **Identification of land areas that may require special consideration to protect water quality.** Vulnerable lakes, sources of water supply, and water bodies important for recreation and wildlife may have special need for protection. The land area tributary to these water bodies, and the likelihood of their development, should be identified and discussed. The lake watershed maps and other information from DEP are very helpful to this analysis.

- **An evaluation of the integrity of stream riparian zones.** These are land areas that immediately abut streams. Their width varies depending on slope and vegetation, but typically are 25 to 250 feet wide. When they are intact, they provide effective buffers against stormwater runoff from development, help regulate flooding, and are essential wildlife corridors. The canopies of trees in the zones help to regulate stream water

The dollar value of clear lake water

Economists at the University of Maine have correlated the depth of clear water in lakes with the value of property around the lakes. They found, for example, that the loss of 1 meter of clarity in a great pond such as Thompson Lake or Pushaw Lake can cumulatively depress property values by $6 million to $10 million dollars. The study, by Kevin Boyle and colleagues, can be found in "Lakefront Property Owners' Economic Demand for Water Clarity in Maine Lakes," Miscellaneous Report 410, Maine Agricultural and Forest Experiment Station (1998).

temperature. The analysis should describe degree to which riparian zones have been breached by development, logging and farming, and construction of driveways and other points of "hard" access. The analysis will be most useful if set in the context of "stream order," as discussed earlier.

- **Adequacy of existing programs to protect water quality.** The plan should evaluate effectiveness of present land use controls in protecting water quality. Does the town's shoreland zoning comply with state guidelines? Does this zoning adequately control nonpoint sources of pollution by requiring buffers along waterways, stormwater detention, and erosion control? If the town has important aquifers, does it have an aquifer protection plan? If the town has public water, is the source protected? How?

- **Review of relationship to public utilities, if any.** The inventory and analysis of public water and sewer systems will be discussed in Chapter 16. But they are obviously connected to the issue of water: both its quality and its quantity. It is wise to flag concerns at this stage. The concerns may include discharge of wastewater to water bodies (untreated via "straight pipes" or combined sewer systems, or treated from a waste water treatment plant); quality of the public water supply and practices of chlorinating and/or filtering supply; integrity of wellhead areas surrounding public groundwater supplies; and quantity of water, and whether it is sufficient to meet projected water supply needs, including in times of low rainfall.

Summary of water resource constraints: When it comes time to transfer information from the water resources maps to a composite map of natural resource constraints and opportunities, typically the following elements would be considered severe constraints to development:

- The surface waters themselves.

- 100-year flood plains that haven't been developed.

- Wellhead protection area (zone 1) around a source of public water supply.

In addition, the following would also be considered a significant constraint to development, but perhaps not as severe as the constraints above (the planning committee should use its judgment; there is room for interpretation):

- Aquifers and related recharge areas that are the sources of private (but not public) water supplies.

- Riparian zones associated with any surface waters used for water supply or that are habitat for fish and wildlife, or that protect habitat for fish and wildlife.

Issues and Implications

The issues and implications that may arise from analysis of water resources (and the related topography and soils of the town) typically fall into several categories:

1. **Point sources**: are there point sources of pollution in the community—from industry, the municipality, or other sources? Are discharges complying with state

and federal licenses? Is the classification of the water body threatened by discharges?

2. **Nonpoint sources**: to what extent are nonpoint sources of pollution threatening water quality, either surface water or ground water? Are water quality classifications threatened? Are sources of pollution primarily related to development, or primarily related to agriculture, forestry, or some other activity? Can sources be addressed through land use regulation? Should the community consider incorporating the phosphorus control method recommended by DEP to protect lake water quality? Should measures for aquifer protection be considered? What is the community's capacity to enforce land use controls, for example, erosion control and other measures that may be required of developers through site plan review or a subdivision ordinance? The best ordinance in the world does little good if it can't be enforced. This is especially true of efforts to control nonpoint sources of pollution, where measures must be preventive to be effective.

3. **Alteration of riparian zones**: To what extent are corridors extending 25 to 250 feet back from streams – especially higher order, more vulnerable streams – intact or broken up by development? Has the character and quality of streams through these zones changed?

4. **Groundwater**: Are public groundwater supplies adequately protected? Are recharge areas able to perform their function? Is sufficient land area allocated to house lots that rely on septic systems, but not so much as to promote development sprawl and related water quality problems? (Maine's Minimum Lot Size Law requires 20,000 square feet—about ½ acre—per dwelling served by a septic system. As long as the state's subsurface waste water disposal rules are followed, rarely would lots served by septic systems within designated growth areas need more than 30,000 to 40,000 square feet.)

5. **Fragile water resources, including flood plains**: To what extent have their locations been accurately identified? Should the municipality rely on federal and state laws and regulations to protect these resources, or should the municipality adopt supplemental measures? Is there an appreciation of possible need for farm and forest management operations to use some of these resources (for example, farming on flood plain soils)?

6. **Land use trends**: Is there growing coastline or lakeside development that raises concerns for future water quality? Are there adequate land use controls in place for such development?

7. **Water system development**: Will existing or anticipated problems require development or expansion of town water systems? Can such a costly remedy be avoided? Are wellhead areas sufficiently protected from intrusion of harmful land uses?

8. **Septic sludge**: Most small towns rely on private septic systems rather than public sewage disposal. Are adequate sludge treatment and disposal sites for septic tank waste available?

Policies

The policies will come from answers to questions raised in the inventory and analysis. Policies that might emerge include:

- Policies regarding protection of **sources of water supply**, including land use restrictions within watersheds of surface waters or over aquifer recharge areas.

- Policies regarding **protection of significant water resources from nonpoint source pollution** generally, including strengthened shoreland zoning, control of storm water runoff, and control of transport of phosphorus to lakes.

- Policies that clearly acknowledge potential conflict between **need, on the one hand, to direct growth toward traditional compact areas**, like downtowns, villages, and expanded neighborhoods; and, on the other hand, integrity of streams that drain these areas, and whose small watersheds may already be under stress from parking lots and other impervious surfaces.

- Where there are **combined sewer systems**, policies regarding separation of systems and control of overflows carrying sewage, and raising funds to upgrade the sewer system.

- Policies regarding ability of the community to **monitor and enforce land use measures** meant to control nonpoint sources of pollution.

- Where a water resource crosses municipal boundaries, policies regarding **cooperation with neighboring communities**.

Implementation Strategies

In some communities, a major need may be to remedy point sources of pollution: upgrading a sewage treatment plant, or extension of sewer lines to correct septic system problems, or separation of the storm water collection system from the sanitary sewer system. If so, the implementation strategy should indicate planning, engineering, funding, and construction steps to be taken.

For many communities, which either already have a treatment plant or do not foresee a need for one, implementation strategies will focus on policies to control nonpoint sources of pollution. This means land use controls. Some options for land use controls are:

Storm water runoff and erosion control

- Performance standards for storm water runoff in land use ordinances. Regulations to control storm water runoff, the transport of phosphorus, and similar sources of pollution resulting from new development often are in the form of performance standards. Performance standards set a measurable requirement as to how a piece of land will “perform” after development. The developer must demonstrate how the standard will be met. For example, the standard for storm water runoff might require the rate of storm water runoff after development to be no greater than the rate prior to development for a 25-year storm (a storm with a 1 in 25 chance of happening in any

year) of a given duration. The developer must show how, through use of buffer strips, detention ponds, or other means, the standard will be achieved.

- In potential growth areas, identifying objectives for stream buffers, including minimum widths of preserved vegetation (with wider buffers on steeper slopes); and considering measures to remediate areas where buffers have been eliminated or where erosive storm water flows are evident.

- In downtowns or other built-up areas where streams already are impaired or threatened, consideration of a master storm water management or mitigation plan that will allow continued development or redevelopment without further stream degradation.

- Shoreland zoning. If appropriate, the implementation strategy should describe what steps are needed to bring the shoreland area provisions of the Town's land use ordinance up to current standards, per the model ordinance administered by DEP. (NOTE: meeting minimum state shoreland zoning standards does not always assure water quality protection. Shoreland zoning addresses a narrow band around water bodies. Water bodies are affected by activities throughout their watersheds. Other tools, such as those mentioned in this chapter, may be necessary to meet the community's goals for water quality.)

- Erosion control standards. The town may want to incorporate into zoning and subdivision ordinances a requirement for erosion control plans, and ways to ensure that the town has the ability to enforce them.

Phosphorus control

- Phosphorus controls in subdivision or other land use ordinance: This would incorporate DEP's method for allocating allowable levels of phosphorus from land that is in the watersheds of lakes.

Groundwater protection

- Aquifer protection zone as part of a land use ordinance. If this is among the implementation strategies, the plan should recommend time and money for proper study to identify the aquifer recharge area, and then to develop the protection zone accordingly. Such a zone typically prohibits underground storage tanks and storage of hazardous wastes, and greatly restricts agricultural and development activities.

- Wellhead protection standards. These keep potential sources of contamination (piled up organic materials, sand and salt piles, chlorinated solvents and other chemicals, etc.) out of a wellhead protection area to the greatest extent possible, limit expansion of such activities that may already exist in the area, and enforce proper maintenance of potential sources that must be in the area.

Best practices in resource-based industries

- Working with farm and logging operations to achieve "best management practices." The

Dept. of Agriculture and DEP are assisting farmers and loggers to adopt such practices without the need for urban-type land use controls.

- Resource extraction regulations. Where gravel or other mining exists or is a possibility, the town may want to incorporate water quality protection measures. Ensure these are coordinated with state regulations.

- Agricultural stabilization programs. These programs, through the U.S. Department of Agriculture, assist farmers in preparing and carrying out plans for the control of erosion, storage of manure, and other sources of pollution.

Land acquisition

- Where land abuts or is tributary to especially important water bodies, the community may seek to purchase land or conservation easements that will restrict its development. The implementation strategy should identify the responsible party to pursue such acquisitions: it could be municipal staff, a municipal board such as the Conservation Commission, or a nonprofit organization, such as a land trust. The strategy also should identify possible sources of funding.

Regional organization

- Assisting in formation of a regional organization. An organization such as a watershed association or river corridor commission would act on behalf of regional water resources.

Whatever strategies are adopted, the implementation plan should assign responsibilities, identify potential costs (if any), and propose a timetable.

References

Maine Department of Environmental Protection. (May 1996). A Citizen's Guide to Coastal Watershed Surveys.

Maine Department of Environmental Protection and Congress of Lakes Association. (rev. April 1997). A Citizen's Guide to Lake Watershed Surveys.

Maine Department of Environmental Protection. (1992). Phosphorus Control in Lake Watersheds: A Technical Guide to Evaluating New Development.

Maine Department of Environmental Protection. (1998). State of Maine 1998 Water Quality Assessment.

Maine Rural Water Association. (September 2003). Best Management Practice for Groundwater Protection: A Guide for Public Waters Suppliers and Local Officials.

U.S. Soil Conservation Service, Soil Survey (individual report for each county), dates vary.

U.S. Soil Conservation Service, Soil Potential Ratings for Low Density Development (individual report for each soil and water conservation district), dates vary.

U.S. Soil Conservation Service, Soil Survey Data for Growth Management (individual report for each county), dates vary.

Chapter Five:

Habitats and Other Critical Natural Resources

State Goal:

To protect the State's other critical natural resources, including without limitation, wetlands, wildlife and fisheries habitat, sand dunes, shorelands, scenic vistas, and unique natural areas.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Significant or critical natural resources, such as wetlands, wildlife and fisheries habitats, significant plant habitats, coastal islands, sand dunes, scenic areas, shorelands, heritage coastal areas as defined under Title 5, section 3316, and unique natural areas.

The Act further requires that each comprehensive plan, as part of its implementation strategy:

> Ensure that its land use policies and ordinances are consistent with applicable state law regarding critical natural resources. A municipality or multimunicipal region, if authorized to enact ordinances, may adopt ordinances more stringent than applicable state law.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.F; §4326.1.C; §4326.3-A.D. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Critical natural resources are those with unusual or significant geological, biological, or hydrological features. These include:

- Biological features, such as "significant" and "essential" wildlife habitats and habitat for rare, threatened, and endangered plants (see sidebar later in this chapter for definitions).
- Hydrological features, such as bogs, marshes, and swamps.
- Geological features, such as waterfalls, sand dunes, fragile high mountain areas, and rock outcrops.

Critical natural resources are part of ecological systems that provide essential services such as protection of air and water quality. The diversity of plants and animals that these resources support are central to the workings of whole ecosystems and often are of scientific importance. They have economic value for fishing, outdoor recreation, and tourist industries. For many, they also are a source of aesthetics, quiet escape, and solace.

The Act also considers scenic areas to be significant natural resources. Regulating scenic beauty can be difficult when balanced against property rights. Most people can accept restrictions on property rights in return for clean water or for saving important wildlife habitat. But, some will ask, to save scenery? Yet, scenic views go beyond someone's arbitrary idea of beauty. Scenic vistas often are what define the community and how the community thinks of itself. They bring townspeople daily pleasure and peace of mind. For communities that depend on tourists, scenic views are part of their economic base. In many neighborhoods, along the coast, near lakes, or in the hills, scenery is the foundation of property values. The comprehensive plan should identify and assess importance of the town's scenic features and critical natural resources, and try to anticipate threats to them.

Once these resources are mapped, they should be transferred to the summary or composite map of natural constraints and opportunities, as described in Chapter 3.

Habitats and Critical Natural Resources Inventory and Analysis

Significant or critical natural resources to be inventoried include:

- Wetlands.
- Important wildlife and fisheries habitats.
- Important plant habitats, including rare and exemplary ecosystems and natural communities, as well as populations of rare, threatened, and endangered plants.
- Large, undeveloped habitat blocks.
- Unique natural areas, including fragile mountain areas and sites designated as National Natural Landmarks.
- Sand dunes.
- Shoreland areas and riparian habitat.

Each of these is considered a resource of statewide importance. There may be additional resources of local importance, such as hilltops, ridgelines, or natural areas that have special meaning to the community.

Wetlands

Wetlands—swamps, salt marshes, and bogs—are some of the most productive areas in Maine. They control erosion, store flood waters, recycle nutrients, filter pollutants, and recharge ground waters. They are habitat for fish, wildlife, and plants.

"Wetland" is broadly defined as the transitional area between terrestrial and aquatic environments where the water table is at or near the surface or land is covered by shallow water. A wetland is identified by type of vegetation it supports, presence of "hydric" soils (soils that are periodically saturated with water), and presence of ground water at or near the surface during the growing season.

The Maine Department of Environmental Protection, under the state Natural Resources Protection Act (Title 38, Section 480-A), regulates activities in coastal and freshwater wetlands. Coastal wetlands are tidal and subtidal lands with vegetation present that is tolerant of salt water and occurs primarily in a salt water or estuarine habitat. They also include any swamp, marsh, bog, beach, or flat that is subject to tidal action. Freshwater wetlands are freshwater swamps, marshes, bogs and similar areas that are inundated or saturated by surface or groundwater at a frequency and for a duration sufficient to support a prevalence of wetland vegetation adapted for life in saturated soils.

Vernal pools or "spring pools" are a specific type of wetland. They are shallow depressions that usually contain water for only part of the year. In the Northeast, vernal pools may fill during the fall and winter as the water table rises. Rain and melting snow also contribute water during the spring. Vernal pools typically dry out by mid to late summer. Although vernal pools may only contain water for a relatively short period of time, they serve as essential breeding habitat for certain species of wildlife, including salamanders and frogs.

Sources of information: Wetlands

Several sources of information on wetlands exist. None is comprehensive or complete for all towns. A good place to start is with the Maine Office of Geographic Information Systems (MeGIS), which maintains several "layers" of wetlands information, or your regional planning agency, which has access to the maps either directly or through MeGIS:

- The National Wetlands Inventory, prepared by the U.S. Fish and Wildlife Service, includes all wetland types, forested and non-forested. The inventory has evolved in its coverage and is compiled from color infrared aerial photography. The wetlands are digitized onto 1:24,000 scale base maps.

- Wetlands maps based on satellite interpretation of land cover have been prepared as part of the U.S. Fish and Wildlife Service's Gulf of Maine Watershed Habitat Analysis.

- Wetlands characterization maps, based on the National Wetlands Inventory, break out wetlands based on six different wetland functions and values, at a scale of 1:24,000.

The six functions are flood-flow alteration, sediment retention, finfish habitat, shellfish habitat, plant and animal habitat, and cultural value.

Many communities, especially those without the National Wetlands Inventory, will find available wetlands information incomplete. You may wish to supplement the information with local knowledge from game wardens, conservation groups or others knowledgeable about the terrain, and from information that may have been submitted in the course of applications for new development in town. In addition to the available maps, some communities with particular concern about wetlands have elected to contract with wetlands biologists for customized surveys within their municipalities.

Vernal pools in particular are poorly mapped, and towns may want to turn to local expertise especially for the identification of these wetlands.

Conducting the inventory and analysis of wetlands

The wetlands should be mapped on your topographic base map. This is readily done if digitized maps are being used. It also can be done manually by matching the scales of maps obtained from the sources with the scale of the topographic base, and then tracing the information onto the topographic base. Most source information is also on topographic maps, and contour lines and other features can serve as reference points.

In most cases, identified wetlands can be considered a severe constraint to development, and can be mapped as such on your composite natural resource constraints and opportunities map. However, not all wetlands have equal value. As wetlands become better understood, they can be rated as to their value for flood control, ability to recharge ground water, wildlife habitat, recreation, protection of water quality, and so forth. DEP recognizes "wetlands of special significance," which are:

- Any coastal wetland.
- Any wetland within 250 feet of a coastal wetland.
- Any wetland within 250 feet of a great pond.
- Any wetland with at least 20,000 square feet of aquatic or marsh vegetation, or open water.
- Any wetland located within a 100-year flood zone.
- Any wetland that contains "significant" wildlife habitat, as identified by the Maine Department of Inland Fisheries and Wildlife (see below).
- Any wetland that is part of peatlands not previously mined.
- Any wetland within 25 feet of a river, brook, or stream.

Important wildlife habitat

The comprehensive plan must identify significant wildlife and fisheries habitats as mapped by the Maine Dept. of Inland Fisheries and Wildlife (IF&W). These include:

- Habitat for endangered and threatened species, including "essential habitat," as defined in the Maine Endangered Species Act, Title 12, Section 7751-7760. (See side bar.)

- Significant habitat, as defined under the Natural Resources Protection Act, Title 38, Section 480-B. Significant habitats currently mapped by IF&W include:
    - High and moderate value deer wintering areas and travel corridors.
    - High and moderate value waterfowl and wading bird habitats, including nesting and feeding areas.
    - Shorebird nesting, feeding and staging areas.
    - Seabird nesting islands.
    - High and moderate value fisheries habitats.
    - Critical spawning and nursery areas for Atlantic sea run salmon.

Sources of information: Wildlife habitat

Maps of wildlife habitats, fact sheets on rare animals and important habitats, and supporting information may be obtained through the Beginning with Habitat program at the Maine Department of Conservation or from IF&W. IF&W regional biologists are available to assist in designing management strategies for protection of these resources.

Conducting the inventory and analysis of important wildlife habitat

If possible, all rare animal and important wildlife habitat information should be included on the same map as information on plants, natural communities, and ecosystems.

Important wildlife habitat should be considered a constraint to development and development should be directed away from these areas. In thinking about degree of constraint—whether severe (where development would be largely off limits) or significant (where some level of development would be acceptable)—it is important to appreciate the nature of the habitat. In particular, it is important to know if the habitat meets definitions of "essential" and "significant," as described in the sidebar.

Aquatic and riparian habitats (water bodies and their banks and shores) are necessary for survival and reproduction of not only fish but many other wildlife species. IF&W has rated rivers, streams, and lakes according to their value for fisheries. Land areas within 250 feet of aquatic habitats of high or moderate value should be considered to have at least significant constraints to development.

Transitional habitats—wetlands—often serve as habitat. As discussed earlier, the wetlands themselves probably will be considered to severely constrain development. Their specific role as habitat, if rated as having high or moderate value, adds another level of constraint.

In analyzing the results of the inventory of wildlife habitats, consider whether:

Essential and significant wildlife habitat

"Essential habitat" is habitat required to support, and designated to protect, species threatened or endangered with extinction. As of 2005, such habitat includes bald eagle nest sites, piping plover and least tern nesting areas, and roseate tern nesting habitat. Additional areas may be added over time.

"Significant habitat" means habitats, to the extent they have been mapped by IF&W, considered to be high and moderate value deer wintering areas and travel corridors; high and moderate value waterfowl and wading bird habitats; critical spawning and nursery areas for Atlantic salmon; shorebird nesting, feeding and staging areas an seabird nesting islands; and vernal pools (Natural Resources Protection Act, Title 38, Sec. 480-B).

- An important habitat is in danger of being lost as a result of changing land ownership or land use patterns.
- A particular habitat is unusual for the community—that is, comprises only a small percentage of the town's land area and is vulnerable as a result.
- Two or more habitats are close to each other and therefore might be able to be protected or managed as a single, large unit, or whether the habitat is part of a large, uninterrupted block of land (see Beginning with Habitat below).
- Activities outside of, but near to, the mapped habitat will affect the wildlife.

Important plant habitat

Important plant habitats include habitats that support endangered, threatened, or rare plant species and communities.

Sources of information: Important plant habitat

The Maine Natural Areas Program within the Department of Conservation has developed and maintains a comprehensive data base on location and condition of rare, threatened, and endangered plant species and rare and exemplary natural communities.

Conducting the inventory and analysis of important plant habitat
Important plant habitat should be mapped on the same base map as important wildlife habitat. For some plants, available information may be general (to protect the plants and their sites from curiosity seekers), but usually the exact location of each plant population is available.

Rare or endangered plant species and communities and their habitat should be considered severe constraints to development.

Other unique natural areas

Other unique natural areas include areas designated as National Natural Landmarks, and fragile high mountain areas.

Sources of information

High mountain areas are defined as areas above elevation 2,700 feet and can be readily identified on USGS topographic maps.

Conducting the inventory and analysis of unique natural areas

High mountain areas are fragile because of their thin soils, fragile plants, and harsh climates. They may contain rare alpine plant and animal communities.

For these reasons, these areas should be considered severe constraints to development on the composite map of natural resource constraints and opportunities. Typically, they will overlap other identified constraints (for example, high mountain areas often have steep slope).

Beginning with habitat

Beginning with Habitat is an innovative and ambitious effort, sponsored by a coalition of governmental agencies and environmental research groups. It enables municipalities and groups of municipalities in Maine to examine the status of wildlife habitat at scales that range from local to regional.

The program has become an indispensable technical assistance tool for comprehensive planning. It consolidates information on wildlife and habitat in the same manner as one would think about ecosystems – allowing many connections to be drawn among wildlife, the resources upon which they depend, and human activities. The maps and information contained in Beginning with Habitat for your municipality and region should be a foundation for the designation of protected and other rural areas; and it is an excellent resource for thinking about natural systems at a regional scale.

Sources of information: Beginning with habitat

Beginning with Habitat consists of a manual, three "primary" maps, and up to five "supplementary maps." All maps are developed using GIS. The maps can be consulted for other parts of the comprehensive plan's natural resource mapping efforts as well. They include:

Primary Maps

1. Water resources and riparian habitats. These include the National Wetlands Inventory maps and riparian zones related to ponds, lakes, streams, rivers, and wetlands.

2. High value plant and habitats. These include many items discussed earlier under important wildlife and plant habitats.

3. Undeveloped habitat blocks. Wildlife requires large, unbroken blocks of land – blocks that range from 50 acres (for certain grassland birds) to 2,500 acres (for species such as moose, bald eagles, and goshawks) – for breeding, feeding, and protection. These blocks are routinely "fragmented" by roads, subdivisions of land for development, and even individual homes and lawns. (See sidebar and Figure 5-1.)

What is an "uninterrupted block" of land?

A block of land that:
- **Is not divided by a roadway**
- **Is not broken into lots for development, and is punctuated by individual homes at no more than 1 dwelling unit per 25 to 50 acres**
- **Is buffered by a 200 to 500 foot edge separating the block of land from roads or development.**

The interior of an uninterrupted block of land should contain at least 50 acres for grassland birds, 100 to 500 acres for many species of woodland birds and some mid-sized carnivores, up to 2,500 acres for some large or far-ranging mammals and birds of prey, and up to 5,000 acres for the largest animals, such as black bear.

Supplementary Maps

4. Focus areas. Focus areas are landscape-scale areas deserving of special attention, by virtue of a convergence of two or more rare or representative plant and animal populations or communities with large blocks of undeveloped land.

5. Public and conservation lands, including town lands, parcels registered under the state's

Tree Growth Program or Farmland and Open Space Program, private conservation lands, conservation easements, and state and federal conservation lands.

6. Watersheds, ranging from sub-watersheds (typically 10,000 to 40,000 acres) to watersheds (typically between 40,000 and 250,000 acres) and sub-basins (typically at least 450,000 acres).

Figure 5-1. Example of Map of Undeveloped Habitat Blocks (showing Arundel-Kennebunk) from *Beginning with Habitat*

7. Wetlands characterization maps, described earlier under wetlands, compiled by the State Planning Office based on functions of the wetlands.

8. U.S. Fish and Wildlife Service Gulf of Maine habitat maps, centering on habitats of 64 species that regularly inhabit the Gulf of Maine watershed.

Conducting the inventory and analysis of "Focus Areas"

Map type 4, Focus Areas, is an important analytical map because it identifies areas where two or more important habitat features converge with large blocks of undeveloped land. These areas are large, at the scale of sub-watersheds, and often cross town boundaries. If a Focus Area is wholly or partly within a municipality, the Beginning with Habitat documentation provides information on its significant natural features and natural history. The comprehensive plan's analysis of the area might further discuss ownership patterns of the Focus Area, the degree to which conservation already is built into the area, the way in which the area presently is used, and whether development trends may signal a need to take more aggressive action to protect the integrity of the area.

Characteristics of a Focus Area may wholly or partly represent a severe or significant constraint to development. It is almost certain that the Focus Area should be among the designated rural areas of the municipality, with special efforts to deflect future development away from it.

Sand dunes

Sources of information

The Maine Geological Survey has mapped coastal sand dunes. The Maine Coastal Program in the State Planning Office can identify important coastal sand barrier systems.

Conducting the inventory and analysis of sand dunes

Sand dunes are an example of rare natural communities. In addition, they protect uplands from flooding and are often within flood hazard areas. They can be mapped on the topographic base map and should be considered a severe constraint to development.

Shoreland areas

Shoreland areas are areas within 250 feet of the normal high water line of any great pond, river, saltwater body, or of the upland edge of a coastal or freshwater wetland; and within 75 feet of the normal high water line of a stream. They are regulated by the state's Mandatory Shoreland Zoning Act, under which each community must control land use within shoreland areas according to regulations established by Maine DEP. All communities must adopt and enforce shoreland zoning standards that comply with the regulations. In the absence of adoption of a local ordinance, the state model ordinance is put into force. (Note: it is recommended that shoreland standards ultimately be integrated into a townwide zoning ordinance, when that ordinance is prepared or updated pursuant to the comprehensive plan. Towns with a townwide zoning ordinance and a separate shoreland zoning ordinance often find that the two are in conflict or create uncertainty.)

Sources of information

Water bodies covered by shoreland zoning are defined in the state's model ordinance. DEP can tell you which water bodies in your community are covered by shoreland zoning.

Conducting the inventory and analysis of shoreland areas

The shoreland areas should be mapped on the topographic base map. Within the shoreland areas, you also should identify "resource protection" areas. Resource protection areas are the especially fragile parts of the shoreland area, and they include:

- Areas within 250 feet of the upland edge of freshwater wetlands, salt marshes, and wetlands associated with great ponds and rivers, which are rated "moderate" or "high value" by IF&W.
- Undeveloped flood plains along rivers.
- Two or more contiguous acres with sustained slopes of 20% or greater.
- Areas of two or more acres that support wetland vegetation and hydric soils but that aren't part of a freshwater or coastal wetland.
- Land areas along rivers or tidal waters subject to erosion.

Your town may wish to extend such protection to small streams or other resources not covered under the mandatory shoreland zoning law.

Issues and Implications Concerning Habitats and Critical Natural Resources

It is not unusual for the following types of issues and implications to arise from the inventory and analysis of critical natural resources:

- How good is the information on which the inventory is based? Should there be future local efforts to supplement the information available from Federal and state sources?
- Are land use patterns, or changes in land ownership, threatening any of the critical natural resources? Are formerly large tracts of land that provided continuous wildlife habitat being broken up into lots for individual ownership?
- development activity by Maine DEP under the Natural Resources Protection Act—give sufficient protection to identified critical natural resources? Should local efforts—either additional regulation or acquisition of sensitive lands—be sought to supplement state laws?
- Will protection of critical natural resources also advance other goals of the comprehensive plan, such as preserving the community's rural character and protecting water quality?
- How would cooperation with neighboring municipalities, with which natural resources are shared, advance protection of resources? Conversely, will a failure to cooperate jeopardize resources?
- Is there a local or regional organization, such as a conservation commission or a nonprofit land trust, which can serve as a monitor of critical natural resources?

Policies Concerning Habitats and Critical Natural Resources

Some general concepts should guide development of policies relating to critical natural resources. First, a variety of habitats to support plants and wildlife should be maintained. This will assure diversity in natural communities. Second, preservation of large tracts of land is needed for a healthy wildlife population. Third, wherever possible, habitats should be linked to one another. Travel corridors, although not a substitute for unbroken blocks of habitat, allow for movement of animals and prevent populations from becoming isolated.

Policies drawn from these concepts, and from the planning committee's answers to issues and implications raised by its inventory, might (these are illustrative only):

- Discourage fragmenting of large parcels of undeveloped land in rural areas that support wildlife or exemplary natural communities.
- Conserve a variety of plant and wildlife habitats.
- Preserve travel corridors between habitats.
- Sponsor an inventory of wetlands and other critical natural resources to obtain more comprehensive information than is available from existing federal and state sources.
- Require wetland mapping or a natural resource inventory from developers, or require developers to work with IF&W and the Beginning with Habitats Program to study effects of proposed development in critical or unique areas.
- Appoint a conservation commission to monitor and advocate for protection of the community's critical natural resources.
- Seek to cooperate with a local or regional land trust in its identification and acquisition of lands to protect critical natural resources.
- Identify ample rural lands for conservation of wildlife habitat and other critical natural resources, while allowing sufficient room for development in designated growth areas away from these resources.
- Consider joint agreements with neighboring towns to establish common standards, joint protection, or even joint ownership of a shared critical natural resource.

Policies such as these lay a foundation for managing critical resources. To provide specific guidance, local policies also may want to address specific resources individually. The plan probably should include separate policies on plant and wildlife habitat, coastal islands, wetlands, and shoreland areas.

Implementation Strategies for Habitats and Critical Natural Resources

Your town may find that merely being consistent with state laws does not fulfill local goals and policies. Municipalities are encouraged to develop strategies that go beyond the state laws. The Beginning with Habitat manual provides strategies for local action for each of

the types of resources that it has mapped. In addition, the strategies, which would dovetail with the overall quest to identify suitable rural and growth areas, might include:

- Placing large areas of critical natural resources within rural areas that restrict the level of development. Critical natural resources may also occur within growth areas, and these should be protected through specific land use measures or other tools.

Brunswick's rural lands initiative

Based on Brunswick's comprehensive plan, which included a policy to conserve large blocks of wildlife habitat, a town committee prepared the Rural Brunswick Smart Growth Strategy. It recommended a system of overlay zoning districts to protect large areas of unfragmented habitat and wildlife travel corridors that connect them. In 2005, the recommendations were translated into a proposed amendment to the Town's zoning ordinance.

- Amendment of subdivision and site plan review regulations to more specifically address critical natural resources. For example, the State subdivision law states that a subdivision shall not "have an undue effect on the scenic or natural beauty of the area, aesthetics, historic sites or rare and irreplaceable natural areas...." The phrase "rare and irreplaceable" can be defined to include those areas identified in the comprehensive plan.

- Open space zoning (conservation subdivisions) for developments that do occur in rural areas, with open space encompassing wildlife habitats and other important resources. For clustering to be effective, the types of land to be included in open space must be spelled out, with opportunity for one project's open space to connect with other open space in the area.

- Requirements that development be set back from critical natural resources. IF&W has prepared recommended setback standards for wildlife habitat.

- A critical natural resources overlay zone as part of a zoning ordinance. (An overlay zone is a type of zoning district that is superimposed on other zoning districts to protect a particular resource. It doesn't replace the underlying zoning district, but it does add requirements for proposed developments.) Specific land use requirements contained in the overlay zone would be triggered when a development is proposed near a critical natural resource.

- Extending the town's resource protection provisions contained in its shoreland zoning ordinance beyond shoreland areas to other areas with identified critical natural areas.

- Cooperation with a land trust to establish a program to acquire land, either in fee simple or conservation easements.

Many of these implementation strategies would be multipurpose: in working to preserve wildlife habitat and other critical natural resources, goals relating to outdoor recreation, protection of water resources, and protection of farm and forest land also will be advanced. You will find some of these same strategies mentioned in later chapters on these topics.

Scenic Resources

The visual character of a community arises from relationships between its physical features (hills, ridges, plains, river valleys, and shore lines) and uses to which people put the land (farms, villages, harbors, roads, commerce, residential subdivisions). Some communities are "rural," with scattered, occasional development amid a landscape dominated by fields and forests. Others are "beach-resort," or "river-mill," or "wooded-suburban" towns, or some other combination of landscape and development pattern.

The scenic resources of a community are the attributes that give it identity and make it an appealing place to live. They may be specific, extraordinary views; or they may be vistas of segments of the community, such as a traditional working rural landscape, village centers, or historic districts. "Scenic" doesn't mean just "beautiful." It also includes landmarks, such as a commercial block, an historic structure, or a church: something so tied to the identity of a community or neighborhood that its destruction would be a cultural or social loss.

Sources of information

The State has identified scenic areas of state significance along some parts of the coast as a result of the Coastal Policy Act of 1987. This act directed the State Planning Office to identify Heritage Coastal Areas, which are places where scenic, historic, and natural features are concentrated in a way that make them unique. They may deserve special attention because of their significance. In addition, the State Planning Office has identified highly scenic lakes, and the Maine Rivers Study identified river segments with scenic values.

Otherwise, sources of information are local. Some scenic views or areas can be surmised from topographic maps or aerial photos. But a systematic tour of the community is the surest way of compiling scenic resources. Members of the planning committee probably know where many of them are and can be asked to locate them on a map. If a community attitude survey is conducted as part of the comprehensive plan, residents can be asked to identify the scenic resources of greatest importance to them.

Inventory and Analysis of Scenic Resources

An inventory of scenic areas should identify the visual assets of the community and help establish priorities for their management or protection. The following kinds of visual resources should be identified and evaluated:

- Natural or cultural features in the landscape that are visually attractive: for example, churches, lighthouses, fields, farmhouses, villages, mountains or hills, islands, marshes, old growth stands of trees, and shorelands. These areas may or may not be highly visible from public places.

- Views from public places of landscapes that people prefer: public places include roads, parks, trails, and other facilities belonging to the town, state or federal agencies. Research has found that people prefer views of water and islands; managed land (such as farms, fields, and woodlands); traditional development (such as village landscapes, city skylines, working waterfronts, and lighthouses); and mountains and hills.

- Segments of the municipality with distinctive visual character or scenic quality: the town (or its major roads) can be divided into parts according to how visual characteristics vary. Some towns will have only "village" and "rural" areas. Others will be more complex, with different types of manmade landscapes on terrain that ranges from hills and ridgelines to coastal plains.

- State-identified scenic areas and Coastal Heritage Areas: scenic areas identified by the State Planning Office should be noted for their high quality.

The methods used for identifying and recording visual resources will vary from community to community. The method can be as simple as asking questions in a community attitude survey about the community character and most treasured views. At a public workshop or as part of a survey, people can be asked to show locations of their favorite views on a map. Using another approach, local volunteers can identify the kinds of visual resources listed above on a map and record important information about each one. Some communities take photographs to help focus discussion at public meetings. Some use a rating system to help determine which views are most scenic and deserve protection.

The analysis of scenic resources should reach conclusions about those that are integral to the community's identity and the role they play in determining why people choose to live or visit there. The analysis might explore what townspeople want the community to look like if it ever reaches full development. It should assess whether recent land use patterns enhance or threaten that vision.

The scenic resources deemed to be so important to the community that development ought to be constrained by them should be included on the summary natural resource constraints and opportunities map either as a significant or moderate constraint.

Issues and Implications Concerning Scenic Resources

Typical of the issues raised by an inventory and analysis of scenic resources are:

- Is there consensus as to scenic areas that are so unique, or so important to residents, or so much a part of the community's identity that they should be protected? Does the pattern of land development threaten them?

- To what extent are the scenic resources manmade environments—such as a view of a traditional village, or of an historic district, or landmark building—as well as the natural environment?

- Do local land use ordinances at present afford protection? What is the right balance between property rights and protection of scenic resources?

- In what ways would the protection of scenic resources support or conflict with other community goals?

Policies to Protect Scenic Resources

Policies to protect scenic resources should begin with a statement as to whether the community wishes to commit to such protection, not only for recognized scenic resources of statewide significance, but of local significance as well. Such a statement will be part of the foundation for provisions that may later be written into land use ordinances.

To provide further guidance, the policies should specify types of scenic resources to be addressed. For example, policies might state that (for illustration only):

- View corridors to a harbor are to be maintained.
- The rolling hills and fields of an historic agricultural area are to be conserved, with any development in the area clustered within tree lines.
- The view shed surrounding a traditional village center are to be developed only in a manner that does not detract from the identity of the village.
- Roads that pass through scenic areas should be designated as scenic corridors.
- Ridge lines are to be preserved to the extent possible, with performance standards that keep development below elevations that would interfere with views.

Implementation Strategies to Protect Scenic Resources

A number of implementation strategies appropriate for protecting critical natural resources also are appropriate for protecting scenic resources. These include open space zoning and mandatory conservation subdivisions in rural areas of town, acquisition of conservation easements, and standards in land use ordinances. Standards typically address setback requirements, height limitations, and requirements for separations between buildings (for example, along a shoreline or ridgeline) in order to preserve view corridors and view sheds. In addition, they might require the use of natural materials and colors for structures where structures would otherwise be highly visible against a natural landscape. In situations considered particularly sensitive—for example, in areas of high elevation that are broadly visible from roadways below, or along shorelines widely visible from a lake—low densities and retained buffers may be appropriate.

Tools used to accomplish other goals may benefit scenic resources, as well: a zoning pattern that preserves the scale and functioning of a village, for example, or an ordinance that protects historic buildings. Protecting scenic resources can be considered a companion purpose for many planning tools.

References

Maine Department of Environmental Protection. (rev. September 1996). Protecting Maine's Natural Resources: the NRPA Wetlands Regulatory Program. (Vol. IV of a guide to Maine's Natural Resources Protection Act).

Beginning with Habitat Coalition, (2002). Beginning with Habitat: An Approach to Conserving Maine's Natural Landscape for Plants, Animals and People. The Beginning with Habitat Coalition includes Maine Audubon, the Maine Department of Conservation, the Maine Department of Inland Fisheries and Wildlife, the Maine Coastal Program (State Planning Office), the U.S. Fish and Wildlife Service, the Wells National Estuarine Research Reserve, the United States Geological Survey, the Southern Maine Regional Planning Commission, and The Nature Conservancy. The Program is housed (as of 2005) within the Maine Department of Conservation.

Chapter Six:

Hazard Mitigation

State Goal:

To discourage development in natural hazard areas.

Legislative Requirement:

The Act requires that:

> Each Municipality shall prevent inappropriate development in natural hazard areas, including flood plains and areas of high erosion.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4326.3-A.Ad. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Sources of information
(Web sites are at the end of the chapter.)

Federal Emergency Management Agency (FEMA) **in the Department of Homeland Security offers publications, links and other useful information for all types of hazards.**

National Flood Insurance Program (NFIP) **provides maps and studies that indicate 100-year flood, and in some cases flood elevation.**

Maine Floodplain Management Program **provides technical support and training to communities and compiles flood data prepared by other agencies not included in NFIP studies. The program can also contribute information regarding flood insurance policies, such as number of policies, amount of claims, repetitive loss structures, and how the community compares to county and state averages.**

Maine Emergency Management Agency **can provide information on estimated damages in past flood events, and amount of state and federal money spent in disaster assistance.**

Local information**, such as town reports, municipal files and neighbors' knowledge, can supplement all of the above. Local sources can help identify number of permits issued in flood plains, maintenance problems, locations, structures or critical facilities that are particularly vulnerable to flooding.**

Media documentation **which can provide accounts of floods and coastal storms disasters.**

Maine Geological Survey**, which can supply specific information and technical advice regarding coastal erosion.**

Because of geographic and weather conditions, all Maine communities are vulnerable to natural hazards. Of all natural hazards, floods generate the most extensive damages in the state. Severe winds, winter and coastal storms, coastal erosion, earthquakes, mudslides and other natural events also put lives and property at risk. As the costs of disasters to rise, the need to act before they occur becomes more and more evident.

Hazard Mitigation can be defined as *sustained actions taken to reduce or eliminate long-term risk to people and property from hazards and their effects*.

The best mitigation is to prevent development from occurring where it is at risk of suffering natural hazards. A growing body of Federal, state and local experience, along with associated research, has demonstrated that hazard mitigation pays for itself by reducing loss of life, property, and community resources. For this reason, Federal and state resources are made available for communities willing to prepare a hazard mitigation plan. At the same time, certain disaster relief funds can only be accessed by communities that adopt a multi-hazard mitigation plan.

The comprehensive plan provides a unique opportunity for hazard mitigation. By keeping in mind the notion of risk reduction, a good comprehensive plan can coordinate its different policies in order to make a more disaster-resistant community. Zoning and building ordinances, capital improvement plans and public information programs can contribute to an all-hazards mitigation approach.

No community is entirely free of risk from natural hazards. A hazard mitigation subcommittee may be appropriate for communities that find themselves vulnerable to natural hazards. As we will discuss later, hazard mitigation affects and is affected by community strategies regarding land use, transportation, water and other natural resources, housing, historic preservation and public facilities.

Mitigation strategies may include prohibiting or discouraging development in hazard prone areas, modifying existing structures to make them hazard-resistant, preserving or creating open space in a

floodplain, setting standards for new development, establishing emergency services, or increasing public awareness of natural hazards. All these actions gain significant strength if they are addressed in the community comprehensive plan.

Inventory and Analysis

The purpose of the inventory and analysis is to identify all hazards that potentially threaten a community, and to assess the community's vulnerability to these hazards. A summary of past events may be crucial to understanding the issue. However, there may be hazardous events that have not occurred to date but may strike the community in the future.

The list of hazards to consider may include floods, coastal storms, hurricanes and severe winds, winter storms, forest fires, dam failures, coastal erosion, landslides, earthquakes and droughts. Some communities may also need to address other hazards such as terrorism and technological hazards (i.e. chemical spills or industrial disasters.) The focus of this chapter will be natural hazards.

Floods and coastal storms

Most Maine rivers have overflowed for centuries, but recent flooding has caused much more damage because of the extensive development of the floodplains. The same applies to coastal environments: Storms commonly known as northeasters have always impacted sand dunes, beaches and coastal bluffs. When a structure is located on the shorefront, it can be extremely vulnerable to large waves and repeated wave attack through several high tide cycles.

About 90% of presidential disaster declarations in the state of Maine are related to damages caused by floods and coastal storms. For this reason, it is very important to gain a clear understanding of the hazards faced by each community in this regard.

Conducting the inventory and analysis

Getting an understanding of the flood hazard problem is the first step:

- How often is it likely to occur? (Frequency of occurrence)
- How bad can it get? (Magnitude and potential intensity)

A brief account of natural disasters in Maine

March 1936: flood in Cumberland County. Five killed, $25,000,000 in damages.

August 1938: Intensity V earthquake in Penobscot County.

October 1947: Forest fire. 250,000 acres destroyed in York, Cumberland, Oxford and Hancock Counties.

September 1954: Hurricane Edna. 8 deaths, $7,000,000 in damages statewide.

February 1978: Floods statewide. $20,000,000 in damages.

December 1980: High winds in Oxford County. $5,000,000 in damages.

April 1987: Floods statewide. $100,000,000 in damages.

April 1991: Ice jam in Allagash. $13,000,000 in damages.

September 1991: Hurricane Bob. 3 deaths, $5,500,000 in damages

1994: Ice jam flood in Fort Fairfield. $6,000,000 in damages

October 1996: Flood in Southern Maine; $2,500,000 in damages.

January 1998: Ice storm statewide. $25,000,000 estimated in damages.

Summer 1999: Drought in Southern Maine.

December 2003: Ice jam flood on the Androscoggin near Canton; $3,000,000 estimated in damages.

Base Flood and the Flood Insurance Rate Maps (FIRMs)

The *Base Flood*, also known as the 100-year flood, is a statistical concept that considers both severity of a flood and likelihood of it occurring. Most planning programs deal with the base flood, which is defined as *a flood that has a one percent probability of occurring on any given year*.

For communities that have joined the National Flood Insurance Program, FEMA provides Flood Insurance Rate Maps (FIRMs). These maps provide information regarding flood hazards. Floodplains (areas inundated during a base flood) are designated as "A" Zones. In coastal areas, floodplains subject to wave action are designated as "V" Zones.

The 500-year floodplain is shown as "B" or "X" Zones and areas above the 500-year flood are shown as "C" or "X" Zones (on newer maps, the "B" and "C" Zones are called "X" zones.) Designation of B, C or X Zone does not mean that the area is free from local drainage problems or flooding from streams or ditches not mapped on the FIRM.

- Where is it likely to occur? (Location)
- How large an area is it likely to affect? (Spatial extent)
- How fast is it likely to occur? (Speed of onset)
- Seasonal pattern.
- Velocities, debris, ice and other perils that may accompany a flood.

The flood prone areas should be mapped on the topographic base map, and should be considered as severely constrained for development. However, when there are no better alternatives to accommodate growth, a community may choose to allow development in the floodplain as long as certain safety conditions are met.

It is also important to understand trends regarding new development occurring in the floodplain. The community can look at the number of new permits issued per year to find how fast the floodplain is being lost to development; or compare the number of structures built before and after the community joined the National Flood Insurance Program, and how they were affected by floods.

A count of the number of buildings affected by each type of flooding is useful to have. Considerations about the type or use of each building may also be helpful: flooding of an industrial or commercial building is likely to cause more dollar damage and have a bigger impact on the community if it has to close. The number and types of buildings in the floodplain can be obtained by comparing flood maps with a review of aerial photos or a windshield survey. Special attention should be dedicated to repetitive loss structures (those that have sustained flood damage more than once): the community should consider collecting data on each of these properties to determine appropriate protection measures.

Floods and coastal storms usually affect much more than buildings. The inventory should also identify the following items, if relevant to your town or city:

- Roads, bridges and transportation facilities closed or damaged during a flood.
- Areas isolated or with evacuation roads impaired during a flood.
- Drainage system components obstructed or damaged during floods (culverts, ditches, etc.).
- Critical facilities potentially affected during a flood (e.g. fire station, hospital, power substation, chemical plant, hazardous materials storage yard).
- Sewer backup problems in basements.
- Coastal areas that present erosion problems.

- Flood protection measures in effect or under construction.
- Transportation or infrastructure plans that may induce development in the floodplain.
- Undeveloped areas and wetlands which store flood waters and alleviate the flood hazard Trends in sedimentation patterns, land use conversion or other forces affecting their natural ability to reduce the intensity of floods.
- Regulations in place affecting the floodplain (floodplain management ordinance, zoning, building codes, subdivision ordinance, etc.).
- Gauging stations and availability of flood warnings.
- Existing public information programs regarding flood hazards and damage prevention.
- Availability of response resources in case of a flood.

An assessment of predicted or actual flood damages is also very useful information. It may be available from disaster assistance agencies and flood insurance claims records, post-flood reports, or flood control studies.

In most of Maine's communities the code enforcement officer is also the floodplain management resource. Infrastructure issues are usually handled by the public works department or its equivalent.

Hurricanes and severe winds, coastal erosion, ice storms, forest fires, droughts, dam failures, earthquakes and other hazards

A good hazard mitigation plan should address all hazards that potentially threaten a community. Even though it may seem almost impossible to prevent some types of hazards from occurring, there are many things that can be done at the local level to reduce risks to people and properties.

Conducting the inventory and analysis

The inventory should address types of hazards that may threaten a community and assets that are more likely to be affected if those events occur.

- **Hurricanes and severe winds:** Every few years, between May and November, a storm of tropical origin affects Maine. Even though most times they have reached the state with winds of 74 m.p.h. ("post-hurricane stage"), a few full-blown hurricanes have hit Maine creating substantial property, infrastructure, and crop damage inland and flooding along the coastline and rivers. The entire state is vulnerable.

  The inventory should include evacuation plans and warning systems in place, and an assessment of building code standards for light frame construction.

- **Coastal erosion:** *Beach erosion* is a slow but steady process that can take away and below a structure. The vast majority of Maine beaches are moving inland, and many are under pressure for development. A safe location today may become hazardous in 25 years or less. This issue may be aggravated by expected sea level rise associated with trends in global warming. Even though there is no conclusive agreement on how fast sea level may be rising, it is a good idea to plan in case it happens.

Bluff Erosion, slumpage, can be a very sudden and destructive process, as was seen in Rockport in the recent past. Several coastal and riverine communities are vulnerable to it.

The inventory should identify the number of structures in sand dunes and bluffs, and when possible the vulnerability of their foundations. Maine Geological Survey may know the rate of beach erosion, which can help estimate the time it can take for erosion to reach existing structures.

- **Ice storms:** On January 1998, a severe freezing rainstorm hit Canada and the northeastern United States. Raindrops fell through the cold air, and froze on trees and structures. Ice accumulation caused millions of dollars of damage. State and secondary roads were closed due to downed trees on power lines, and thousands of people were left without power for more than a week. The inventory for ice storm mitigation planning ought to include a review of the community emergency action plan (including emergency shelter location, accessibility, size, and whether they can withstand floods, wind and ice loads), and an identification of critical facilities to be prioritized for action in case of power outage.

- **Forest fires:** The State of Maine has several million acres of woodlands. Consequently, forest fires are a major concern, particularly during dry summers when fire danger increases. In 1947 fires flared up all over the state, destroying more than 200,000 acres and hundreds of homes, especially in the areas of Bar Harbor, Biddeford and Kennebunk. The inventory ought to include maps reflecting fire risk zones, and populated areas with single access or inappropriate water storage. It is also useful to review how existing subdivision regulations deal with fire breaks, road access at the interface between homes and woodlands (what is often called "the urban-wildland interface"), defensive zones around homes that have intruded into woodlands, on-site water storage, and building code standards for roof materials.

- **Dam failures:** Many rivers were diverted to power mills throughout the state of Maine. Risk of dam failure is always present, especially in the oldest structures. The inventory should include a listing of dams, their level of maintenance, ownership, frequency of dam safety inspections, and dam failure inundation maps. The community should also review emergency action plans in place, including warning and evacuation plans.

- **Droughts:** During the mid sixties and in the summers of 1995 and 1999, droughts have endangered the economy of farms, and lack of rain affected some groundwater sources exploited by dug-wells. The inventory can identify buildings that depend on dug-wells.

- **Earthquakes:** Maine has measurable earthquakes most years. Due to sparse population in the areas of occurrence and their usual low intensity, damage rarely occurs. However, it is important to address these hazards in the mitigation inventory. It may include potential intensity, such as areas below steep slopes or on unstable soils, and the status of building codes in the community.

Issues and Implications

The following issues and implications are among those that may arise from the inventory and analysis for hazard mitigation:

1. Is there a multi-hazard mitigation plan in place at the local level to reduce risks to life and property? Maine's counties have prepared hazard mitigation plans that typically include municipal risks. Is your community included in the County Plan? Can the community access disaster relief funds from the federal and state government?

2. How vulnerable is the community to a flood or coastal storm event? How much damage can occur? Are there any critical facilities that could be damaged during a flood or coastal storm event?

3. What is the local policy regarding development in the floodplain? Are there conflicting policies? Is the community improving streets or extending services into the floodplain, and therefore encouraging new development in hazard prone areas? Is the rate of development in the floodplain or shorefront expected to continue as in the past, or to slow down or speed up?

4. Are zoning and building ordinances being enforced appropriately? Is development occurring in hazard prone areas that do not comply with local, state or federal standards?

5. Is the community trapped in the "damage-recovery-damage" cycle? Is the community investing its resources in repairing facilities that are likely to be damaged in the next hazardous event? Should local efforts –such as acquisition of repetitive loss properties—be sought to reduce damages from floods or coastal storms?

6. Are there opportunities for mitigation at the regional level that could increase the effectiveness or reduce the costs of mitigation strategies?

7. Are property owners aware of the flood risks associated to their structures? Is there information available regarding floodproofing, property elevation, flood insurance or other ways to minimize economic losses?

8. Do zoning, subdivision review, and building codes appropriately address the risk of coastal and bluff erosion? Are regulations in place to ensure that development in fire risk zones is safe?

9. Are dams, levees and other existing structural projects well maintained? Do they provide adequate protection from flooding? Are they being inspected and maintained appropriately?

Policies

Some general concepts should guide policies regarding hazard prone areas. They should prevent new problems, reduce future losses, and protect natural and beneficial functions of floodplains and shorelines.

The planning committee's answers to the issues and implications raised by its inventory and analysis may include:

- Prevent, through land use regulation, hazard vulnerability problems from getting worse by guiding future development away from hazard-prone areas.
- Discourage reinvestments in hazard prone areas without first addressing mitigation measures.
- Reduce effects of flood events by preserving the natural flood storage functions of floodplains and wetlands, and when possible restoring them.
- Encourage property protection measures that allow existing structures to sustain hazardous events without suffering significant damages
- Sponsor public information programs to inform and remind people about hazardous areas and measures necessary to avoid potential damage and injury.
- Adopt emergency services measures that help protect people during and after a hazard event.

Hazard mitigation policies adopted in the comprehensive plan should be consistent with the rest of the plan. This may require a dialogue within the planning committee to ensure that other policies in the plan do not present contradictions with mitigation goals. For example, transportation policies should not induce development in hazard prone areas, and economic policies should not recommend revitalization of a downtown area that remains

How hazard mitigation contributes to other aspects of the comprehensive plan

Water Resources: Hazard mitigation protects water quality by preventing damages that may result in the spilling of pollutants in waterbodies. Floodplain Management preserves natural functions such as recharging aquifers and sustaining vegetation that filters sediments and nutrients.

Housing: Safety is a precondition for safe housing. By reducing risk of disaster-related damages in the community, hazard mitigation contributes significantly to a better housing stock.

Recreation and Open Space: Hazard-prone areas such as beaches and floodplains provide the best environments for enjoying open space. Hazard mitigation strategies not only prevent development from occurring in these areas, but also provide an opportunity for creation of recreation facilities such as parks and pathways.

Public Facilities and Transportation: Several communities throughout the State of Maine have learned that investing in hazard-prone areas is not a good idea. The damage-repair-damage cycle is difficult to break once a big investment was made. Camp Ellis in Saco is a good example of roads repeatedly taken away by the power of nature.

Land Use: The wisest use of land involves respecting its natural features and functions. Coastal storms, beach erosion, floods and slumpage are dynamic processes that occur naturally and have always shaped our landscape. They become disasters only when humans are in their way. The best Hazard Mitigation strategy is simple: stay away from hazards, use the land for what it's fit.

subject to frequent flooding without addressing mitigation measures first. Relocation may be the best alternative, unless it can be effectively retrofitted to reduce or prevent damages.

Fortunately, the interconnection between different aspects of a comprehensive plan usually works in favor of hazard mitigation: good land use practice and hazard mitigation usually go hand-in-hand. See the following points on how hazard mitigation contributes to other aspects of the comprehensive plan.

Implementation Strategies

Depending on the vulnerability to natural hazards, your community may find that goals and policies can be fulfilled by merely being consistent with state and federal regulations. However, many small actions not required by any government may significantly reduce existing risks all throughout Maine. Municipalities are encouraged to develop strategies that go beyond federal and state laws.

The hazard mitigation strategies might include prevention, property protection, natural resource protection, structural projects, emergency services, and public information measures or combinations of these measures.

Prevention

Prevention measures are intended to keep a problem from getting worse.

- **Planning and zoning:** Floodplains can be designated as zoning districts that prohibit development or allow only development that is not susceptible to damage by flood events. This would not only keep damage-prone structures away from the hazardous area, but also prevent development from aggravating the flood problem (excess waters can flow freely or be stored in the floodplain.) The same strategy can be applied to unstable soils, areas below steep slopes or near eroding coasts and other hazardous areas. A good example is in high hazard coastal floodplains also known as Velocity Zones. While these areas should be avoided, at a minimum development must meet the standards of FEMA's Coastal Construction Manual which includes development standards for wind, wave action, erosion and seismic forces.

- Subdivision regulations can require that each individual lot have a buildable area above the base flood elevation, and set construction and location standards for the infrastructure built by the developer. Cluster zoning can be a good option for this purpose. Building codes can require standards for all new, improved or repaired structures. These should include criteria to ensure that all structures can withstand the flood, wind or earthquake forces that are presumed likely to affect the structure.

- **Stormwater management and drainage system maintenance:** Development outside a floodplain can contribute significantly to flooding problems. Runoff is increased when natural ground cover is replaced by urban development, aggravating downstream flooding and overloading both the community's natural drainage system as well as storm drains. Stormwater management contributes not only to hazard mitigation but also to preserving natural resources and water quality.

Stormwater management strategies may require developers to build retention and detention facilities. These minimize increases in runoff caused by impervious surfaces.

Channel and detention basin maintenance should be an ongoing process to clean out blockages caused by overgrowth or debris. A drainage maintenance program may include regulations to prevent landowners from impacting the discharge or storage provisions that serve a neighborhood (filling a wetland, discarding leaves or branches in a watercourse, or filling front yard ditches.

Property protection/ retrofitting

Property protection measures are used to modify existing buildings subject to hazard risk. Retrofitting involves a combination of adjustments or additions to features of existing structures that are intended to eliminate or reduce possibility of damage caused by floods, erosion or other hazards. Relocation, acquisition, building elevation, retrofitting and wind proofing are some examples of property protection measures.

The community rating system (CRS)

The National Flood Insurance Program has acknowledged that communities that adopt hazard mitigation measures have a smaller probability of suffering significant damages in the event of a flood. For that reason, FEMA has implemented the Community Rating System, which provides incentives for communities to do more than just comply with federal and state standards. Under CRS, flood insurance premiums are reduced between five and 45 percent when communities embrace mitigation principles with specific activities. About 21 communities in Maine benefit from this program, and many more could join it.

- **Relocation:** Moving a building to safer ground is the surest way to protect it from flooding and other localized hazards. Communities with areas subject to coastal storm surge, ice jams, flash flooding or other high hazards where the only safe approach is to remove the building should consider a relocation program. It can be expensive for the property owner, but there may be government loans or grants available.

- **Acquisition:** This strategy also ensures that buildings in a hazard prone area will cease to be subject to damage. Unlike relocation, the costs of acquisition are generally borne by a government agency. The land is usually converted to public use, such as a park. This strategy may be attractive for achieving other community goals, such as increasing the amount of open space or providing public access and recreation opportunities. It also improves natural and beneficial functions of the floodplain by allowing additional flood water storage and ground water recharge.

- **Building elevation:** Raising a building above the flood level is the best on-site property protection strategy. It is cheaper than relocating it, and it can be less disruptive to a neighborhood. This may be particularly necessary if a downtown or commercial area is subject to frequent flooding.

Raising a house will change its appearance, but there are creative ways to address the issue. During floods, the building may be isolated and without utilities or emergency access, and therefore unusable, but as soon as waters are gone, there should be nothing more than cosmetic damages to the structure. The building's contents should never be placed below the flood protection elevation.

- **Flood proofing:** If a building cannot be removed from its hazardous location, but the flood threat is low, it may be protected on site. *Barriers* (e.g. levees, floodwalls and berms) keep floodwaters from reaching a building. They are useful only when structures are subject to shallow flooding and where land area allows. *Dry floodproofing* consists of sealing a building against floodwaters. All areas below flood protection level are made watertight. Most walls and floors cannot withstand pressures of more than two or three feet of water above the top of the foundation.

  Wet floodproofing is usually considered the last resort. It essentially allows floodwaters into the building to minimize pressures on the structure. Approaches can vary from moving a few valuable items to rebuilding the floodable area using flood damage resistant materials.

- **Sewer backup protection:** Where sanitary and storm sewers are combined, basement flooding may be caused by stormwater overloading the system and backing up into the property through the sanitary sewer line. The same problem can be caused by infiltration or inflow into the lines. Flood drain plugs or standpipes, backflow preventers, overhead sewers are some alternatives to protect properties from sewer backup.

- **Earthquake protection measures:** Modifying a building may be the only way to reduce risk of earthquake damages. Many actions can be taken, including retrofitting to add braces, removing overhangs, protecting glass surfaces from shattering by applying protective coatings, providing flexible utility connections, and tying down major appliances.

- **Severe wind protection measures:** Property owners cannot do much to avoid hurricanes or severe winds from hitting a building. The best ways to mitigate potential wind damages include storm shutters over windows, and providing integrity to a structure with hurricane straps or clips on roofs and overhangs integrated in the construction.

- **Ice storm protection measures:** Risk of power loss to customers during ice storms and other hazardous events can be minimized by implementing a performance based tree management program. This may include tree trimming, removal, or selective relocation. The same goal can be achieved by placing utility infrastructure underground.

- **Landslide protection measures**: Slope stabilization can prevent landslides from occurring. The most commonly used are slope reduction, retention structures (ground cover, retaining walls), and driving vertical piles into the foot of a slope.

- **Insurance:** Most homeowners' insurance policies do not cover properties from flood or earthquake damages. However, communities that joined the National Flood Insurance Program can make insurance available to its residents. Citizens need to be educated to the fact that standard homeowners' policies may not cover floods or earthquakes.

Funding opportunities for hazard mitigation

Federal 404 Hazard Mitigation Project Funds:

Whenever the President of the U.S. declares a county a disaster area, funds are made available for hazard mitigation projects. All communities in good standing with the National Flood Insurance Program are eligible for 404 grants. The proposed projects should reduce the need for repetitive repairs on public infrastructure. Project selection is made on the basis of a cost/benefit ratio.

For additional information, contact the Maine Emergency Management Agency.

Flood Mitigation Assistance:

The State receives limited funding from the Federal Emergency Management Agency to support mitigation planning and mitigation projects. For additional information, contact the Floodplain Management Program at SPO.

Pre-Disaster Mitigation Competitive Grant Program

PDM is a grant program that allows communities to compete for larger sums of money for mitigation efforts that may address long term needs, e.g., acquisition and relocation for neighborhoods and protection or relocation of infrastructure project. This grant program is not limited to flood related mitigation; it includes other natural hazards as well, such as earthquake, fire, and wind.

For more information contact Maine Emergency Management Agency or visit FEMA's web site.

Natural resource protection

Natural resource protection measures are intended to reduce the intensity of hazard effects by preserving the functions of certain natural features, while also improving the environmental quality.

- **Wetland and floodplain protection:** These natural areas can store large amounts of floodwaters, slowing and reducing downstream flows. They also filter water and provide wildlife habitat. Preserving or restoring them reduces the intensity of floods, therefore lowering property damages. Wetland and floodplain preservation also improve water quality and protect wildlife habitat. These activities are usually implemented by conservation agencies or non-governmental organizations, but can be coordinated with the hazard mitigation committee.

- **Erosion and sediment control:** Stormwater can erode soils, particularly on construction sites and farmland, sending sediment into downstream waterways. Sedimentation fills in channels and lakes, reducing their ability to carry or store waters. This effect can be mitigated in two ways: minimizing erosion with vegetation, or capturing sediment before it leaves the site.

Emergency services

Communication and coordination before, during and after a hazard may be an inexpensive but efficient way to mitigate hazards. There are emergency management offices to coordinate warning, response and recovery at the state and county level. At the local level, both the public and the private sector can contribute to emergency preparedness:

- **Warnings:** The first step in responding to a hazard is to know that one is coming. A flood, hurricane or coastal storm warning can be disseminated via sirens, mobile public address systems, telephone trees, reverse 911 and even door to door contact, in addition to radio and TV. Multiple and redundant warning systems are most effective. Special attention should be given to isolated people, such as those living in remote areas, sailing or performing other outdoor activities.

- **Response:** Once a threat is recognized, and people have been warned, the community must respond with actions that can prevent or reduce damages or injuries. These

may include sandbagging, ordering an evacuation, closing streets or bridges, shutting off power to threatened areas, releasing children from school, etc.

- **Critical facilities protection:** A vital part of any emergency effort is to protect critical facilities during a disaster. These facilities include not only those vital to the response effort (e.g. hospitals, police and fire stations, evacuation routes, etc.) but also those that would create secondary disasters if they are not protected adequately. Hazardous materials facilities, power plants, water and wastewater treatment plants are some examples.

Public information

Public information strategies advise property owners, potential property owners and visitors about potential hazards, and ways to protect people and property from hazards. They can include outreach projects, environmental education, real estate disclosure, technical assistance on property protection measures, or even map information and booklets in the public library.

Structural projects

These projects involve construction of man-made structures to control hazards. Most structural projects can be very expensive, disturb the land, wildlife habitats, fisheries and natural water flows, require regular maintenance (which is not always performed), and create a false sense of security. A structural protection in one area may create problems for others up or downstream.
There are occasions where man-made structures are the only feasible alternative to protect people and properties from floods and coastal storms. Some examples of structural approaches are levees and floodwalls, channel modifications, diversions, dams and reservoirs, and storm sewers

A next step

Hazard Mitigation is simple common sense: thinking ahead to reduce risks. Since comprehensive planning is essentially a process of thinking ahead, it provides a great opportunity to integrate risk reduction in all the policy dimensions at the community level. An all-hazard mitigation approach in the comprehensive plan will help make the community more resistant to disaster.

For communities who want to take the next step and prepare a hazard mitigation plan, *Community-Based Hazard Mitigation Planning: Lowering the Risks and Costs of Disasters*, is an excellent guide and is available through the regional planning commissions (see Chapter 1 for contacts) or the Maine Floodplain Management Program.

References

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State Planning Office. (May 2004). Maine Floodplain Management Handbook.

Web sites:

Federal Emergency Management Agency:
http://www.fema.gov

Maine Floodplain Management Program:
http://www.maine.gov/spo/flood

Maine Emergency Management Agency:
http://www.maine.gov/mema/memahome.htm

Natural Hazards Center at the University of Colorado:
http://www.colorado.edu/hazards/informer/infrmr1/infrmr1a.htm#intro2

Chapter Seven:

Historic and Archaeological Resources

State Goal:

To preserve the State's historic and archaeological resources.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Historic and archaeological resources including, at the discretion of the municipality or multi-municipal region, stone walls, stone impoundments and timber bridges of historical significance.

In addition, the Act requires that the implementation section of the plan:

> Ensure that the value of historical and archaeological resources is recognized and that protection is afforded to those resources that merit it.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.I; §4326.1.I; §4326.3-A.H. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Criteria for historic places

For the community to consider a building, site, or district to be an important historic or archaeological resource, it need not qualify for the National Register of Historic Places. However, the Register's criteria for evaluating these resources may be helpful:

"The quality of significance in American history, architecture, archaeology, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and:

- **That are associated with events that have made a significant contribution to the broad patterns of our history.**
- **That are associated with the lives of persons significant in our past.**
- **That embody distinctive characteristics of a type, period, or method of construction, or that represent work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction.**
- **That have yielded, or may be likely to yield, information important in prehistory or history."**

[Code of Federal Regulations, vol. 36, pt. 60.]

It is important for communities to identify and preserve traces of their own pasts. Houses, churches, farms, grange halls, mills, villages, neighborhoods, town halls, libraries, and archaeological sites contain important information about history and prehistory. Such buildings and sites contribute texture and richness to a town's character, bring history alive for children, and set a standard for our own contributions to future generations.

Value of historic sites and structures has not always been appreciated. There is less evidence of our history today than there was a generation ago. Through the 1960's, comprehensive plans, which were often financed by the Federal government in order to qualify for urban renewal dollars, favored removing old buildings and districts rather than restoring them. Many cities responded to suburban competition by trying to become more like them. That meant tearing down dilapidated areas to make way for highways, parking lots, and suburban-style plazas and office parks. Tangible records of communities' pasts were lost in the process.

By the late 1960's and into the 1970's, there were signs of a change in attitude. In 1966 Congress passed the National Historic Preservation Act. The restoration of Faneuil Hall Market in Boston demonstrated that historic structures could anchor revitalized commercial centers. Historic preservation tax incentives were incorporated into income tax laws. And the U.S. Supreme Court held that New York City's designation of Grand Central Station as an historic landmark, thus prohibiting construction of an office tower atop the terminal, was a legitimate use of its regulatory powers.

Here in Maine, towns and cities moved to restore historic downtowns and buildings. Cities like Hallowell and Portland, towns like Camden, Kennebunk, and Yarmouth, began to preserve important districts and structures. Today such efforts have spread across the state.

An inventory of historic and archaeological resources is more than an accounting of the community's oldest buildings or finest architecture.[1] An historic resource may be an entire block or district or landscape. For example, an old farmhouse may be architecturally significant, but its surrounding agricultural landscape and associated outbuildings provide historic context that give it special meaning. The context of a building or site tells much about

the social and cultural period that the building or site represents.

The National Register of Historic Places defines "historic" as being: *"a district, site, building, structure, or object significant in American history, architecture, engineering, archaeology, and culture" that is at least 50 years old*. The full criteria are provided in the sidebar.

This definition includes houses, barns, old mills, city parks, colonial forts, and Native American settlements. Historic properties may be important on a national, state, or local basis.

Native American archaeological sites are important because they are the only sources of knowledge about prehistory — time before the written word. The only way to learn about prehistoric events is through the study of archaeological remains, known as prehistoric archaeological sites. Sites dating from the first Euro-American settlement of a town are known as historic archaeological sites and often contain information otherwise lost to history. Later sites may represent periods, people, or events important to the town's development. These sites must be retained for study. Once lost, a site cannot be recovered.

Most archaeological sites in Maine are near water. Ocean, lakes, and rivers provided transportation routes for Native Americans and early Euro-American settlers. Their shores were hunting and gathering places, natural areas to settle. Much of the state's recent development pressure has occurred in just such places.

Inventory and Analysis

Conducting the inventory and analysis

Depending on resources, the inventory and analysis can proceed at one of three levels:

- A minimal level, relying on information already on file with the Maine Historic Preservation Commission, and supplementing it with available local information.

- A reconnaissance level survey, in which a qualified professional historian, architectural historian, prehistoric archaeologist, and/or historical archaeologist is engaged to identify potential historic and/or archaeological resources or sites for further study.

Sources of information

The Maine Historic Preservation Commission is one of the best sources of information about historic and archaeological resources in your community. It has information on file concerning resources that are listed in or considered eligible for listing in the National Register of Historic Places. The Commission may also have information on any survey work already done in your town. If a survey has not been completed, the Commission's professional staff can provide guidance.

In addition to the Commission, good sources of information include:

- **Local resources, including town registries of deeds, cemetery inscriptions, newspaper archives, town meeting records, and school and church records.**

- **Local historical societies and written reports. Written local histories often are the most complete source of information about how the community developed. They can aid in identifying historic context for structures and sites.**

- **Maps, bird's eye views, and aerial photographs. Old maps, bird's eye views, and Sanborn Insurance maps are fascinating (and often surprisingly accurate) records of how the community was settled and later developed. They can give information on the relative ages of buildings and the development of neighborhoods.**

- An intensive level survey, in which a qualified professional carries out a detailed survey, focusing on prehistoric sites, historic archaeological sites, or historic architecture.

The minimal level should include the following steps:

1. Find the historic themes by which your community developed. By examining the town's early development, historic themes will emerge. What economic and environmental factors drove the early development? Was early development a function of water power, or soils and farms, or forests and water transportation routes, or fisheries, or protected harbors and shipbuilding? By examining historic land use and their connections to modern day land use, themes develop. This examination will also point the way to potential adaptive uses of older structures.

   How did these development themes influence patterns of settlement? Where did people live, and in what types of dwellings? What forces eventually changed these patterns? Did a major mill discontinue operation? How evident are historic patterns today? Are there areas of the community where historic patterns remain largely intact?

2. Obtain all information about your community on file at the Maine Historic Preservation Commission, including all structures, districts, and sites listed in or determined eligible for listing in the National Register of Historic Places, and any surveys that have been completed to date.

3. Find out what supplemental information about historic settlement patterns, structures, sites, and districts is available locally. Talk to the town historian or the historic preservation society, if one exists. Drive around the community—or enlist volunteers interested in historic preservation to do so—and take note of:

   - Buildings that are notable examples of architectural styles and periods.
   - Complexes of buildings, such as factory mills or a commercial district, that historically functioned as a whole.
   - Older institutions that provide evidence of the cultural history of the community (churches, theaters, grange halls, schools, opera houses, etc.).
   - Homes or workplaces of famous personages.
   - Old cemeteries.
   - Sites associated with events important in the community's history.
   - Ruins of buildings, structures, shipwrecks, or similar historically important items.
   - Historically cohesive neighborhoods—in ethnic, architectural, and social terms—and buildings that have housed their residents.
   - Landscapes, such as farming areas, and related structures indicative not only of the community's scenic resources but of its past economy and way of life.
   - Structures and designed landscapes (such as parks) that represent the work of masters.

   These do not exhaust examples of your community's historic resources. (A complete listing of types of historic resources is contained in the "National Park Service Bulletin #24.") A more thorough job can be done by a qualified professional as part of a

reconnaissance survey. But the survey described above will heighten awareness of the community's historic resources and can set the stage for more detailed surveys.

4. Identify areas with a high probability of having prehistoric or historic archaeological resources. The Maine Historic Preservation Commission has information on known archaeological sites. However, site location information is confidential in order to protect sites against vandalism and "pot-hunters" that may destroy them. Beyond these known sites, much of the state has not been researched. Professional assistance is necessary to actually inventory and identify archaeologically important sites. The Commission can help the community make a preliminary identification (for example, on a topographic map) of kinds of areas that have the greatest chance of containing archaeological sites.

5. Analyze findings. The planning committee, with help from knowledgeable local people and technical assistance from qualified professionals, must consider whether there are historic or archaeological resources not yet recognized that are worthy of preservation. You may want to use evaluation criteria mentioned earlier. For these and previously identified resources, assess whether they are threatened by development patterns, lack of maintenance or other factors. Consider whether local ordinances presently address these issues, or whether historic preservation provisions need to be adopted.

If there have been no professional town surveys for historic or archaeological resources, contact the Maine Historic Preservation Commission for direction and for names of qualified professionals who, for a fee, can assist.

Issues and Implications

Some issues and implications raised by a review of historic and archaeological resources are:

- Are historic patterns of settlement still evident in the community, and do the community's land use regulations respect them? What trade-offs between historic and contemporary development patterns are acceptable?

- Are historic and archaeological resources adequately protected?

- Have certain resources—such as historic rural resources or commercial districts—fallen into disrepair for economic reasons, and are there ways the community can help to make them economically viable while preserving the resource? For example, can apartments in large homes be allowed without threat to the structure's historic nature?

- Do local site plans and subdivision regulations require applicants in areas (such as shorelands) that may

Programs to aid your comprehensive planning process:

- **Certified Local government program.**
- **Survey.**
- **National Register programs.**
- **Federal and State rehabilitation tax incentives.**
- **Local tax reimbursement.**
- **Standards for the Treatment of Historic Properties (Secretary of the Interior).**

For more information, see: http://www.state.me.us/mhpc/

contain archaeological resources to conduct a survey for such resources? Should there be such a requirement?

- In what ways would preservation of historic and archaeological resources coincide with other objectives, such as preservation of agricultural resources, scenic resources, open space, revitalization of downtown, or provision of affordable housing using historic preservation investment tax credits?

Policies

The comprehensive plan's policies will depend on answers to questions raised under "issues and implications." Policies might address:

- Carrying out a more detailed survey of historic and archaeological resources by qualified professionals at a future time.
- Designating one or more historic preservation districts, with special local reviews or performance standards to protect them.
- Using historic resources as a tool for economic development.
- Revising of local zoning and building codes to allow historic resources—whether large homes, downtowns and other commercial districts, or farms—to be economically viable while preserving the resources.
- Recognizing historic and archaeological resources through placement in the National Register of Historic Places.

Note that listing a property on the National Register provides protection only when federal funds are used for a project which would affect historic property. More complete protection is provided by a local historic preservation ordinance.

Implementation Strategies

Your policy implementation program should assign responsibilities and set a timetable. A number of techniques can be used to implement policies in your historic preservation program. These include:

- Completing by qualified professionals a detailed town survey or a survey of a portion of town deemed significant. A survey is a systematic approach to identification and evaluation of historic and archaeological resources.
- Enacting an historic preservation ordinance.
- Assigning responsibility for administering the ordinance by either establishing a board, possibly a local historic preservation commission where members have specific expertise or interest or by empowering the planning board to administer such an ordinance.

- In either case, it is very important that review standards be adopted for reviewing proposals to alter significant older structures or sites (either townwide or in designated districts) or to undertake new construction in designated historic districts as discussed in the following bullet.

- Developing standards for your land use ordinances to better protect historic and archaeological resources. This includes requiring developers of parcels within areas identified as having a probability of containing archaeological sites to sponsor a survey acceptable to the Maine Historic Preservation Commission; and, if resources are found, to include a management plan for the resources. The standards must account for the fact that small projects and homeowner activities – not just large new developments – can substantially affect historic properties.

- Adopting realistic rehabilitation codes for downtown districts that preserve safety but give building owners flexibility as they renovate buildings, including upper floors, for re-use.

- Undertaking an informational program about the community's historic and archaeological resources. This might include plaques to commemorate historic buildings or sites; brochures with guidelines for retaining architectural integrity; and programs in schools.

- Nominating sites, districts, and structures to the National Register of Historic Places. The community should work closely with the Maine Historic Preservation Commission, which actually does the nominating.

- Working with the Board of Selectmen, a local historical society, and land trust (if one exists) to prepare an acquisition strategy for important properties. If fee simple purchases aren't possible, consider acquiring easements. Easements placed on facades of buildings can at least provide external protection, though they do nothing to preserve historic interiors. Conservation easements on farmland and open space can protect historic landscapes and simultaneously protect a scenic resource and, potentially, a working resource.

References

[1] Stokes, Samuel N. (1989). Saving America's Countryside: A Guide to Rural Conservation. The Johns Hopkins University Press.

Web site for the Maine Historic Preservation Commission: http://www.state.me.us/mhpc/

Connolly, William M., "Rules That Make Sense—New Jersey's Rehabilitation Subcode," New Jersey Department of Community Affairs, Division of Codes and Standards, at (as of March 2005) http://www.state.nj.us/dca/codes/rehab/pioneerart.shtml. New Jersey was a leader in creating a rehabilitation code that provides flexibility for renovating older downtown buildings. Other states followed, including Rhode Island in 2002.

National Park Service. (Rev. 1985). Guidelines for Local Surveys: A Basis for Preservation Planning. NPS Bulletin #24.

State Planning Office, "Report on the Development of a Maine Rehabilitation Code," February 2002. Retrieved October 17, 2003 at http://www.maine.gov/spo/landuse/docs/MaineBuildingRehabCodeRpt.pdf.

Chapter Eight:

Agriculture and Forestry

State Goal:

To safeguard the State's agricultural and forest resources from development which threatens those resources.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Commercial forestry and agricultural land.

In addition, the Act requires that the implementation section of the plan:

> Ensure the protection of agricultural and forest resources. Each municipality or multimunicipal region shall discourage new development that is incompatible with uses related to the agricultural and forest industries.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.H; §4326.1.E; §4326.3-A.F. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Sources of information

People who have personal knowledge about commercial forestry operations should be contacted since the best fact finding will be with farmers, foresters, tree farmers, and/or forest landowners to discuss their management programs and long-term outlooks.

Summary information on major commercial farms is available at the zip code level from the 2002 Census of Agriculture and the Maine Department of Agriculture, Food and Rural Resources. Detailed information is available by county. The Maine Forest Service has published a guide for conducting an inventory of a community's forest resource: *What do trees have to do with it? A Forestry Guide for Communities*.

Specifics on the number and kinds of active farms or commercial wood lots are also available from the Maine Department of Agriculture, Food and Rural Resources. The County Soil and Water Conservation District or University of Maine Cooperative Extension County Extension Office has knowledge about agricultural operations, as may a representative of the Maine Forest Service.

Soils prime for agriculture and forestry are mapped by the Natural Resource Conservation Service (NRCS). See NRCS' Soil Survey by county, and the accompanying county publication, *"Soil Survey Data for Growth Management."*

Information about the number of lots and acreage in your community that are enrolled under either the Farm and Open Space Tax Act (36 MRSA Sec. 1101) or the Tree Growth Tax Act (36 MRSA Sec. 573) is available from the municipal assessor.

Maine is more than 310 miles long and 200 miles wide, with a total area of 33,215 square miles – as big as all other New England states combined. Much of the attention of a comprehensive plan is focused on houses, stores, factories, and roads. However, 17 million acres, or nearly 90% of Maine's land, are forested. Another 1.3 million acres or 6% are occupied by farms. Even considering southern and mid-coastal counties alone, on the order of 50% to 55% of land area still was in farms, forests, and woodlots at the turn of the 21st Century. This open space is shrinking in the face of spreading development.[1]

As of 2002, Maine's agricultural producers and processors contribute over $1.2 billion annually to the State's economy and employ 65,000 people. Agriculture is one of our primary forms of wealth creation and economic development. It makes good fiscal sense to retain farmland in your town when possible. National data show that for every dollar of tax revenue collected, farmland produces an average surplus of $.64. Residential uses consistently cost more than the revenue they produce, requiring an average of $1.15 in municipal services for every dollar paid in taxes.[2]

Farms and forestland have other values. They provide wildlife habitat. They provide open space and recreation for people. They provide scenic landscapes. And they provide support for a way of life which has endured for centuries in Maine, and which has done much to define Maine's character and landscape.

Inventories and analyses in this section will establish the contribution of agriculture and forestry to the local and, if applicable, the regional economy.

To understand the local impact of agriculture it is important to discover how many people are employed locally or regionally either in production or management of natural resources or in related, value-added activities such as food processing, cheese production, lumber milling, paper milling, etc. Obtaining a clear understanding of the range of products produced in the area helps establish their local/regional economic importance.

In the past, many comprehensive plans recognized the importance of farm and forest land, but few have planned

how to preserve and protect it. There are several explanations:

First, in many communities the idea that truly "rural" areas should be working landscapes has been lost. The best way to protect the land is keep it active and farming a viable business. Yet, for many, "rural" means simply the presence of enough trees or fields between houses that one family can't see the next. Fewer and fewer "rural" areas now include people who actually make their livings from the land. They have been replaced by a new suburbia that has tried to keep a "rural" face. Zoning ordinances have sanctioned this problematic trend with the enactment of 2-acre, 3-acre, or 5-acre minimum lot sizes, intended to "preserve the rural character" of the community.

Second, farming and forestry operations need a land base to be viable. Large-lot zoning (with 2-, 3-, or 5-acre lots) has eroded the land base rather than preserved it. A viable farm or woodlot needs substantial acreage. For example, one cow needs ½ acre grazing space in Maine; the smallest viable herds need 50 to 100 acres. The optimal size for small woodlot management is upwards of 200 acres. Once carved into suburban house lots—even oversized suburban house lots—manageable farm or forestry units are gone.

Third, farming and forestry need economically viable conditions. Municipal comprehensive plans can do little to create markets for agricultural and forest products (though they can encourage local farmer's markets and local transactions). But property taxation; the crowding of working lands by homes and other uses that might consider farm and forest operations a nuisance; and sewer and water line extension policies that promote residential development into rural areas all affect the economics of farming and forestry. Municipalities can consciously influence or control these factors.

Finally, as sprawl occurs, land is increasingly seen by farmers and forest land owners as their last cash crop; especially among farmers nearing retirement age, or those who rely on their land value as both a bank account and insurance policy. Politically, restrictions on land use can be a hardship. Most municipalities have neither been willing to impose restrictions nor been able to find ways to mitigate the financial impacts of restrictions. As a result, they have settled on large-lot zoning as the least controversial tool.

Questions for farmers

Questions a committee member might ask a farmer:

- **How many acres is your farm?**
- **What is it like to farm in this town?**
- **How does development affect your farm?**
- **What could the community do to make it easier for farmers to keep their land in farming?**
- **What types of products do you sell?**
- **Do you rely on local markets for any of the products you sell?**
- **What would cause the farmer to develop his/her land?**
- **What would heirs likely do with the land?**

Questions for consumers, neighbors, and other citizens who may benefit from local agriculture and forestry:

- **Do you live in your town because of its:**
  - **Scenic views?**
  - **Open spaces?**
  - **Wooded spaces?**
  - **Active farms?**
- **How does the current landscape impact your daily life?**
- **Are you a member of your town's conservation committee or land trust?**

Current Use Tax laws

Provisions of the Farm and Open Space Tax Program (MRSA Title 36, §1101–1121):

- **Working farmland and open space are assessed at their current use value.**
- **Eligible farmland includes 5 or more contiguous acres of working farmland, that produces an annual gross income of $2,000 per year in one of the 2, or 3 of the last 5 years.**
- **Income can be derived from the value of commodities sold and/or produced for consumption by the farm household.**
- **Landowners who lease land to farmers may use the farmer's evidence of income to become eligible for this program.**
- **All ordinary Open Space is eligible for a reduction of 20% of the standard value. If the land is permanently protected, deemed forever wild, or provides guaranteed public access, it is eligible for reductions of 50-95%.**

Provisions of the Tree Growth Tax Program (MRSA Title 36, §571–584-A):

- **Land must be used primarily for growth of trees and forest products and be at least 10 acres.**
- **Land may also be used for public recreation.**

Refer to the Maine Revenue Services Web site: *www.maine.gov/revenue* for current information bulletins that describe the tax code in more detail, or contact the Maine Department of Agriculture at 207-287-3491.

The state's goal of protecting agricultural and forest resources challenges the planning committee to meet the goal in a way that (1) distinguishes the genuine rural landscape from the suburban landscape and (2) is politically acceptable.

Inventory and Analysis

Conducting the inventory and analysis

The inventory and analysis of agriculture and forestry can proceed in several steps, moving from the "people" aspects of the issue to more abstract "data" and "mapping" activities.

Agriculture, commercial forestry and related activities

It's worthwhile for members of the committee to contact major farmers and commercial woodland owners both in town and close by in neighboring communities to identify their principal crops, products, or markets, to gain an understanding of the problems facing their operations, and to assess their outlooks. This personal contact will give substance to the analysis of farm and forestry issues. It also will be a chance to familiarize these key rural land owners with the comprehensive plan and to encourage their involvement. Since it helps considerably if farmers and woodland owners are represented on the comprehensive plan committee, this is an opportunity to form a working subcommittee for the comprehensive plan to gather data and provide analysis necessary for this inventory.

Find local farmers and or woodlot owners for this inventory through the following sources:

- Local contacts with knowledge of farming and forestry activities.
- Maine Department of Agriculture, Food and Rural Resources.
- County Soil and Water Conservation District working in partnership with the US Department of Agriculture Natural Resource Conservation Service (NRCS) can provide an overview of agricultural issues in the county.
- University of Maine Cooperative Extension office, foresters, and the Maine Forest Service.

- Local assessor for data on those parcels enrolled under the Tree Growth Tax Program or the Farm and Open Space Tax Program.

Once these contacts have been made, the committee can tabulate the number of farms and their acreage and the number of managed woodlands and their acreage in the town. These should be mapped on a parcel base map or the current land use map.

Types of agriculture and woodland enterprises in and around your community may include:

- Certified tree farms, which are designated under a separate program and are identifiable by the diamond-shaped tree farm signs posted on participating properties.
- Orchards and fruit-producing farms, either standard or dwarf/semi-dwarf varieties.
- Dairy farms.
- Livestock farms.
- Crop farms.
- Small fruit and vegetable farms.
- Nursery.
- Turf, greenhouse, and florist farms.
- Parcels used for hay production.

Table 8-1: Profile of Agricultural and Forestry Land Use for "Treeville, Maine"

	Land Use Type (acres)								
Enterprise Type (number of farms)	Nursery stock, ornamental	Pasture	Hay land	Other animal feed crops	Annual Fruit, Vegetable, and Flowers	Orchard	Perennial crop	Certified Tree farm	Total Acreage
Commercial Forest (7)								12000	12000
Christmas Tree Farm (1)								150	150
Dairy Farm (2)		70	200	200				400	870
Orchard (1)	25		100			100			225
Livestock Farm (2)		100	200					150	450
Diversified Crop Farm (2)	10		40		50		10	100	210
Pick-your-own berry farm (1)	10					10	20		40
Nursery and Greenhouse (4)	15				20		10		45
Hay Operation (2)			800						800
Total	60	170	1340	200	70	110	40	12800	14790

In addition to identifying farms and commercial woodlands, other trees or wooded areas of importance may be found in the community. These include street trees, park trees and wooded lots in urban areas. These community trees perform several functions: they are cooling in summer, they help to filter pollutants, they improve human health, and they are important aesthetically to neighborhoods and streetscapes. If these are important to the community, their presence or absence in neighborhoods or along roadways should be noted.

Create a Profile of Agriculture and Forestry Land Use to help gather information. A sample chart is provided below. Keep in mind that some important agricultural enterprises may be in neighboring towns. Taking note of these enterprises and their related land use types is important to establishing how your community fits within the region. It may impact later decisions on the future land use map or it may help to identify related activities within your community.

Related activities

New Opportunities

- **Municipal and On-Farm Composting.**
- **Agricultural Tourism.**
  - **Hay rides.**
  - **Corn Mazes.**
  - **Petting Zoos.**
  - **Cross Country Skiing.**
- **Farm stands.**
- **Farmer's Markets.**

The viability of farming and forestry is related, in part, to availability of supporting services and market outlets. For example, even if the community does not have many farms, there may be activities in the community that contribute to a regional agricultural economy.

Activities include:

- Food processors.
- Equipment dealers.
- Repair and maintenance services.
- Feed stores and other suppliers.
- Hay dealers.
- Wholesale buyers.
- Saw mills, paper mills, bolt mills, veneer mills.
- Biomass boilers.
- Veterinarians.
- Trucking firms.
- On-farm composting facilities.
- Foresters.
- General Contractors.
- Timber Operators.

Create a new chart to help gather information on local and regional agricultural related businesses and resulting employment numbers in and around your community:

Ownership patterns

Assessor's records will tell you whether farm and forest land is owned by few or many owners, and whether parcels now used for farming are leased. This information may signal how vulnerable or stable farming or forestry is in the community. The greater the number of persons involved in farming and the greater the number of farmers who own the farmed land, the more stable the outlook will be.

Table 8-2: Profile of Agricultural and Forestry Infrastructure for "Treeville, Maine"

	Related Activities (Number of employees)								
Enterprise Type (number of farms)	Food Processors	Timber operators	Equipment Dealers	Repair and Maintenance Operations	Wholesale Buyer	Veterinarians	Trucking Firms	Hay Dealers	Total Employment
Commercial Forest (7)		6			4				10
Christmas Tree Farm (1)			2		4		4		10
Dairy Farm (2)	6		4	4		2	4		20
Orchard (1)	2		2	1	4		2		11
Livestock Farm (2)			1	2		2	1	2	8
Diversified Crop Farm (2)			1	2	1		2		6
Pick-your-own berry farm (1)									0
Nursery and Greenhouse (4)			1	1			1		3
Hay Operation (2)								2	2
Total	8	6	11	10	13	4	14	3	70

Resource base

The natural resource base consists of soils and plant life that covers the land.

Land cover refers to the activity that occupies the land. Much land cover is plant life. Land cover also includes roadways and other paved areas, buildings, excavated lands, etc. Information on land cover comes from aerial photographs, which may or may not be available to the community. (If they are available at a sufficient scale, a land cover map can be created.) The map can classify land cover at different levels of detail, depending on importance of farming and forestry in your community. The simplest classification is: agricultural land, forested land, and urban or other disturbed land. If the issue warrants it, agricultural and forested land can be further classified as follows:

Soils that are especially suited for agricultural or forest production have been identified by NRCS. These are mapped for each county in the NRCS "Soil Survey Data for Growth Management," also available as digital data. For most of the state, NRCS makes this information available on their web site. Your regional planning council can also aid in accessing this information.

Those soils that are most productive are labeled "prime farmland" and "farmland of statewide importance." Both groups of soil types should be added to the summary

Soils definitions

Prime Farmland

The U.S. Department of Agriculture defines prime farmland as land that is best suited to producing food, feed, forage, fiber and oilseed crops. It has soil quality, growing season, and moisture supply needed to produce a sustained high yield of crops while using acceptable farming methods. Prime Farmland produces the highest yields and requires minimal amounts of energy and economic resources, and farming it results in the least damage to the environment. Prime Farmland is a limited strategic resource. No more of it is being created.

Soils of Statewide Importance

This is land, in addition to prime and unique farmlands, that is of statewide significance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating this land are to be determined by the USDA Natural Resources Conservation Service. Generally, additional farmlands of statewide importance include those that are nearly prime farmland and that economically produce a high yield as prime farmlands if conditions are favorable.

constraints and opportunities map as at least a significant constraint to development. This is an important step, as these soils are also often well suited for development, but once used in this fashion no longer available for farming and resource production. How your community wishes to treat these soils should be an important point of discussion.

Not all farm or forest soils are used for farming or forestry; conversely, there are farms and managed woodlands on soils that are not considered ideal for optimum production. Your analysis should describe where the "prime farmland" and "farmland of statewide importance" soils are located and their present use. The following list of uses is a good start.

Agricultural Use:

- Pasture.
- Tilled crop land.
- Orchard.
- Abandoned open land in the early stages of returning to forest.

Forested Use:

- Mature forest (large, harvestable trees).
- Young forest (smaller trees, harvestable in 10 to 30 years).
- Cut-over forest.

Analyze how land use trends may be affecting farm and forest operations

Is farm or forest land being converted to residential or other land uses? Check subdivision and building permits for the last 5 to 10 years to quantify amount of activity on farm and forest lands. Is this trend likely to continue? Analysis should also include an inventory of land uses around existing farms and commercial forest land and an assessment as to whether these are compatible uses. Incompatible uses typically include residences, strip commercial activities, and commercial/ industrial uses that are not serving agricultural or forestry operations. Compatible uses include commercial/industrial uses that serve agricultural or forestry operations.

Identify specific trends affecting viability of existing operations in the short and long term

To analyze the future of farming and forestry operations in the community, look at:

- General trends in changing land use.

- Degree of current use protection through the Tree Growth Tax Program and Farm and Open Space Tax Program.

- Current level of land regulations that either promote or inhibit working lands.

Assess positive and negative pressures that will affect agriculture and forestry over the next 10 years. Are negative trends primarily economic and not related to pressures of land use and land values (i.e., lack of markets, operators reaching retirement age without younger people succeeding them, etc.), or is part of the problem related to land use and land values?

Issues and Implications

The following are examples of typical issues and implications raised by an inventory and analysis of agriculture and forestry:

- Is agriculture or forestry economically important to the community? If so, is it stable or declining? If not, are farms or woodlots that do exist in the community important for other reasons: for scenic landscapes, wildlife habitat, outdoor recreation, or as reminders of their historic role in the community?

- If farmland is being lost, is it due mostly to economic conditions over which the community has little control? Or are land use patterns and land values contributing to its conversion to other uses?

- Even if the community has few farms or commercial woodlands at present, are there undeveloped parts of town in which prime farmland or forest soils are prevalent? Does the community wish to protect this resource for a time when transportation costs may rise and farming close to the consumer may be more profitable?

- Are farm and commercial forest land owners taking advantage of the state's current use tax laws? If so, do these provide sufficient protection? If not, is it due to lack of knowledge about them, or because the land owners do not believe the benefits (reduced taxes) are worth the limitations (of not being able to sell their properties in the future without penalty)?

- Does the community's zoning ordinance recognize farm and forest lands as unique assets? Or are these lands zoned like other rural or residential areas, with suburban scale development permissible?

- Are farmers or commercial woodlot owners concerned about encroaching development? Do they favor protective measures? Or do they foresee selling all or part of their holdings in the future?

- Has proximity of new homes or other incompatible uses restricted farms or woodlot owners in their normal operations, which may be considered a nuisance to nearby residents? Do other regulations, such as restrictions related to wetlands, unduly limit ability to farm or harvest timber?

- Is clearcutting an issue in the community? Is the clearcutting related to normal woodlands management, or is it in preparation for land development?

- Are there ways to protect woodlands, not only as an end in and of itself, but as a means to meet other goals, such as the protection of water quality, scenic value, and rural character?

- Does the community have, or need, a street tree or other tree planting and maintenance program in the built-up part of the community?

Policies

After discussing the issues and implications, proposed policies will emerge. The types of policies the planning committee may want to consider fall into five broad categories:

1. **Protection of the resource**—that is, prime farm and/or forest soils. These policies will tend to focus on measures such as land use controls or acquisitions to try to assure that the resource is not preempted by another use.

2. **Protection or enhancement of economic ability** of existing farms or forestry operations to continue operations. These policies will include measures to try to keep the farm's or woodlot owner's operating costs from going up (as the result of utility line extensions or rising property taxes, for example), and/or to try to assure that the operator has the ability to use the property for cash flow (by being able to sell development rights, for example, or to sell a portion of land without sacrificing the operation).

3. **Policies related to the right to farm** or manage woodlands without fear of nuisance suits from encroaching development.

4. **Policies related to markets**, that is, policies that consider farming and forestry as part of the community's economic development strategy (for example, by encouraging outlets for farm goods to locate in the community or region, allowing roadside stands, working to establish a farmer's market, etc.).

5. Provision, at the municipal office, of **information about sources of professional assistance**, both governmental and private, for farmers and forest landowners.

Implementation Strategies

Municipalities must include implementation strategies that "ensure protection of agricultural and forest resources. Each municipality shall discourage new development that is incompatible with uses related to agricultural and forest industries." To fulfill this mandate, comprehensive plans should contain practical, specific strategies. Strategies that might flow from proposed policies include:

Protect the resource

- Inclusion of farm and managed forest lands (unless obvious conflicts exist) in a designated rural area.

- Assuming that development will not be entirely banned from such a designated rural area, the adoption of measures to assure that viable farm and forest lands are not carved into lots too small for agricultural and forestry operations. Approaches include:
    - Minimum lot sizes large enough to support at least small farm and woodlot operations (probably 10 to 25 acres plus).
    - Mandatory open space zoning (conservation subdivisions) for any development that includes farm or commercial forest land, with open space large enough and designed such that farming and forestry operations can continue within required open space area.
    - Maximum lot size-maximum density, in which a farmer or woodlot owner can sell off a small lot (no larger than one or two acres), and for each lot sold places a certain additional amount of land under easement for farming or woodlot management. This would enable a maximum density of (say) one dwelling unit per 25 acres.
    - Adoption of an agricultural or forest protection district. Such a district might not only employ the approaches above, but also restrict land uses to those compatible with farming and forestry operations.
- Limiting encroachment of incompatible land uses through standards, such as requiring buffers on the land of the nonagricultural use.
- Restricting topsoil mining on parcels with more than 10 acres of prime farmland soils.

Enhance economic ability

- Consider a program—either transfer of development rights or purchase of development rights—by which the farm or forest landowner can receive compensation for the reduced right to develop imposed by other land use controls. A variation of this tool could be a program for leasing of development rights, which could provide for annual payments in return for keeping the land in farming or forestry. It should be noted that any development rights program is complex and deserves study before moving ahead with recommendations.
- Encourage farm and commercial forest landowners to enroll in one of the state's property tax programs to tax forest, farm, and open space lands consistent with their current use.
- Assure that water and sewer extensions do not unnecessarily pass active farm and forest lands, requiring the payment of front foot assessments and/or the payment of increased property taxes as a result of high property values.
- Allow occasional sale of relatively small residential lots in return for easements that protect viable amounts of farm or forest land (see maximum lot size-maximum density, above).

Protect the right to farm/manage woodlands

- Include "right to farm/manage woodlands" provisions in the zoning ordinance. These provisions would give farming or forestry operations protection against nuisance suits (for odor, noise, etc.). There are legal limits to these provisions, so consultation with the Department of Agriculture or town counsel is advised.

- Encourage use of "best management practices" in operations of farm and woodlands as an alternative to urban-type land use regulations aimed at protecting water resources.

Encourage markets

- Allow sale of produce grown on the premises.

- Develop a local farmer's market.

- Develop a relationship between local farmers and school lunch programs or senior programs in your area.

- Prepare a comprehensive inventory of local farm products and distribute it widely.

- Work with the local chamber of commerce or other economic development organization to encourage location of industries and businesses that will purchase raw goods of farm and forestry operations. Review the zoning ordinance to assure that existing outlets can continue.

References

[1] Richert, E. (2004). Land Use in Maine, 1960 to 2000: From Production to Consumption. In Changing Maine R Barringer, ed.Tilbury House.

[2] Maine Department of Agriculture, Food & Rural Resources. (June 2003).Saving Maine's Farmland: A Collaborative Action Plan.

Other references:

Maine Revenue Services Property Tax Bulletin #18: Farm and Open Space Tax Law.

Maine Revenue Services Property Tax Bulletin #19: Maine Tree Growth Tax Law.

Parish, Kristin R. (2000). What do trees have to do with it? A forestry Guide for Communities. Maine Forest Service.

Publications of the Maine Department of Agriculture, Food and Rural Resources with county by county listings, for example:

- Farms, Farmstands & Farmer's Markets of Maine.
- Maine Maple Sunday and Other Maple Days.
- Get Real Maine by Mail Guide to Maine Food and Farm Products.
- Yearly publication of County Profile of Maine Agricultural Enterprises.

American Farmland Trust. (1997). Saving American Farmland: What Works.

Natural Resource Conservation Service. Soil Survey Data for Growth Management.

Stokes, Samuel N. (1989).Saving America's Countryside: A Guide to Rural Conservation. The Johns Hopkins University Press.

Web sites:

Maine Department of Agriculture, Food and Rural Resources
http://www.maine.gov/agriculture/

Maine Farmland Trust
http://www.mltn.org

Maine Revenue Services
http://www.maine.gov/revenue/

Soils references
United States Department of Agriculture (USDA)
http://www.usda.gov

USDA Natural Resource Conservation Service (NRCS)
http://www.nrcs.usda.gov

Chapter Nine:

Marine and Coastal Resources

State Goal:

To protect the State's marine resources industries, ports and harbors from incompatible development and to promote access to the shore for commercial fishermen, aquaculturists, marine trades, other water dependent businesses and the public.

Legislative Requirement:

The Act requires that each comprehensive plan (for a coastal community) include an inventory and analysis of:

> Marine-related resources and facilities such as ports, harbors, commercial moorings, commercial docking facilities and related parking, and shell fishing and worming areas.

In addition, the Act requires that the implementation section of the plan:

> Ensure the preservation of access to coastal waters necessary for commercial fishing, aquaculture, commercial mooring, docking and related facilities. Each coastal area may identify and designate one or more critical waterfront areas and implement polices to ensure protection of those areas or otherwise discourage new development that is incompatible with uses related to the marine resources industry.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.G; §4326.1.D; §4326.3-A.E. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Maine's coastline is more than 3,500 miles long. Less than 5 percent of it is sufficiently deep and sheltered to provide harbors for Maine's marine industries. Until recently, fishing, boating, and tourism have co-existed amid this limited resource - not always easily, but adequately. The web site of the Department of Marine resources (www.maine.gov/dmr) provides useful background information on changing fisheries and land use issues in Maine.

For some time, the character of Maine's coast has shifted toward private, non-working uses. Without new efforts to balance and manage competing demands and conflicts between uses this trend will continue. Some waterfront uses must have access to water to remain viable, others seek waterfront for its aesthetics and to enhance real estate values. Traditional working waterfront businesses increasingly find access they need blocked, either physically or financially, yet paradoxically these traditional uses help to create the character of coastal communities that is so valuable to both residents and tourists. Comprehensive plans must now address and plan for the future use of finite coastal resources and demonstrate how priority will be given to activities that depend on these resources.

Maine's coastal management policies

(38 M.R.S.A. Ch. 19, Section 1801)

1. Port and harbor development. Promote the maintenance, development and revitalization of the State's ports and harbors for fishing, transportation and recreation;

2. Marine resource management. Manage the marine environment and its related resources to preserve and improve the ecological integrity and diversity of marine communities and habitats, to expand our understanding of the productivity of the Gulf of Maine and coastal waters and to enhance the economic value of the State's renewable marine resources;

3. Shoreline management and access. Support shoreline management that gives preference to water-dependent uses over other uses, that promotes public access to the shoreline and that considers the cumulative effects of development on coastal resources;

4. Hazard area development. Discourage growth and new development in coastal areas where, because of coastal storms, flooding, landslides or sea-level rise, it is hazardous to human health and safety;

5. State and local cooperative management. Encourage and support cooperative state and municipal management of coastal resources;

6. Scenic and natural areas protection. Protect and manage critical habitat and natural areas of state and national significance and maintain the scenic beauty and character of the coast even in areas where development occurs;

7. Recreation and tourism. Expand the opportunities for outdoor recreation and encourage appropriate coastal tourist activities and development;

8. Water quality. Restore and maintain the quality of our fresh, marine and estuarine waters to allow for the broadest possible diversity of public and private uses; and

9. Air quality. Restore and maintain coastal air quality to protect the health of citizens and visitors and to protect enjoyment of the natural beauty and maritime characteristics of the Maine coast.

Maine's coastal management policies

A carefully considered balance among competing waterfront uses is essential to the well-being of Maine's citizens. All comprehensive plans for coastal communities must demonstrate this balance by addressing nine policies listed in State statute and outlined above. This chapter helps to address the first three policies. The fourth, hazard area development is addressed in chapter 6. Policies 6 and 8 are discussed in chapters 4 and 5. Policy 7 is addressed in Chapter 15, Recreation and Open Space.

Inventory and Analysis

Conducting the inventory and analysis

The inventory and analysis can be divided into four topics:

1. A description of the port, harbor or marine resource.

2. The commercial features of the working waterfront, including:

    - Shellfishing, fishing, and aquaculture, and how access to the water for commercial fishermen, water quality and other factors affect this industry.

    - Other port and harbor uses, such as tourism, including cultural, business and seasonal enterprises.

3. Residential growth and development and related seasonal and year round enterprises

4. The recreational features of the waterfront, including:

    - Scenic quality.
    - Beaches.
    - Public recreational access.
    - Environmental resource value.
    - Community preservation.

Members of the committee should contact lobster fishermen, clammers, wormers, aquaculturists, marine businesses and other commercial waterfront users to identify their principal products or markets, to gain an understanding of problems facing their operations, and to assess their outlooks. This personal contact will give

Sources of information

Contact information for these sources of info is included in your data packet from the State Planning Office.

The handbook, *Coastal Management Techniques: A Handbook for Local Officials*, is a good source of information on coastal policies and options for addressing them. Copies are available from the State Planning Office.

Coastal Program staff of the State Planning Office have a detailed list of data available on coastal resources and can provide assistance to local planning committees in obtaining and analyzing available information. This information is summarized on datasheets provided in a binder to the town.

Information on shellfish areas and catch, fish landings, commercial fishing licenses, and the results of marine water quality testing should be obtained directly from the Maine Dept. of Marine Resources.

There are several sources of information on ports and harbors. The National Oceanographic and Atmosphere Administration (NOAA) publishes charts (commercially available) that describe harbor characteristics. The National Weather Service, as well as the local harbormaster and fishermen, can describe key weather features, such as wave, fetch, and storm conditions. The U.S. Army Corps of Engineers (Augusta office) has information on federal navigation and dredging projects. The Maine Dept. of Transportation's Bureau of Transportation Services has inventories of port facilities, piers, ferry services, and cargo data for major ports. The local harbormaster

(continued)

Sources of information
(continued)

or commission is the best source for information about the mix and numbers of boats using the harbor, and about problems facing the harbor.

An excellent source of information on coastal river estuaries are the Estuary Profiles prepared by the Maine State Planning Office. Profiles and maps are available for 19 estuaries and include information on physical and biological features, human activities, and discharges.

The Maine State Planning Office has published maps showing the locations of public access sites and facilities and coastal sites suitable for water dependent uses. Related handbooks and reports are also available.

The Maine Dept. of Environmental Protection should be consulted to learn of possible sources of contamination of coastal waters, such as wastewater discharge licenses.

In addition, many coastal communities have received grants from the Maine Coastal Program over the years. These grants often have produced studies and maps that can serve as good starting points for the comprehensive plan's inventory and analysis.

substance to analysis of marine and coastal issues. It also will be a chance to familiarize commercial fishermen with your town's comprehensive planning process and encourage their involvement.

Those communities whose economies depend on coastal waters and lands—for fishing, tourism and recreation, and/or cargo or other industries—should offer careful study and consideration of marine resources and critical land and water links in their community. This analysis will describe the breadth of waterfront business activities and establish which business and recreational uses require water access for success and which uses are enhanced by proximity to water. With this information, the committee can identify land use priorities. Other communities (such as those whose coastal lands are mostly tidal rivers with limited direct economic use) may focus the inventory more on protection of natural resource areas and less on development priorities.

In all cases the goal of the inventory and analysis is to establish the character of the community's marine and coastal resources and identify trends and changes influencing its future. If the working waterfront is disappearing, find out why. If the community values traditional waterfront uses, consider what can be done to create and preserve opportunities.

Port, harbor and natural resources

The description of any port or harbor, including both water and waterfront areas, should include its location, its physical characteristics, its use, and how it is managed. These can be shown on a map and summarized in a tabular format. The Dept of Marine Resources provides GIS-based mapping services for creating local resource maps.

- Location. What constitutes a port or harbor varies from place to place. Any place suitable for mooring or berthing of a number of boats and where public access is provided is, or has potential for use as a harbor. As existing harbors become crowded, use of other, smaller areas will increase. Each existing or potential harbor area should be located and mapped.

- Physical characteristics. Physical characteristics of a harbor determine the amount of area suitable for water and land uses, protection from wind and waves, and access from surrounding areas. Important attributes to include in the inventory are:

- Water depth, channel locations and dimensions, and navigational hazards.
- Fetch, wave, historical storm and icing conditions. This information is important to understanding whether use of the harbor can be year-round.
- Dredge areas. The town office and Army Corps of Engineers should have information about past dredging projects, periodic need for dredging, and issues involved with being able to undertake dredging.
- Water Quality.

- Water harbor uses. These harbor users can be divided into two groups — recreational and commercial. Recreational vessels include sail and power boats and their accommodations. Commercial vessels include fishing boats (lobster boats, draggers, seiners, etc.), cargo vessels and support vessels, ferry services, and tour boats (sightseeing, charters, cruise vessels, whale watching, etc.). The inventory should note number and types of berthings and moorings available for recreational and commercial vessels, and whether there is a waiting list for moorings/berthings.

- Harbor management. Existing measures regulating use of the harbor (such as a harbor ordinance) and waterfront areas (including zoning provisions) should be noted and their effectiveness assessed.

Seeing it yourself

When Bath developed a plan and zoning ordinance for its waterfront, the committee realized it couldn't get a full understanding of the waterfront from maps and aerial photos. So they took a boat tour. They traveled the length of the waterfront, discussing problems and opportunities for each section. The boat tour offered a chance to see the waterfront as a whole, to informally discuss the different sections, and to receive comments from interested parties. And a boat tour on a warm afternoon isn't a bad way to keep up your committee's participation during the summer months.

The analysis should identify trends related to water uses. Is focus of the harbor shifting from commercial to recreational boats? Is the harbor becoming overcrowded? Are there safety problems?

Similarly, the analysis should identify waterfront changes and trends. Find types of waterfront uses that have arrived in recent years, whether existing facilities have been converted from one use to another, and whether circumstances—such as economic conditions and viability of support services—are changing in a way that will affect survival or growth of traditional marine industries. Finally, the analysis of the port and harbor should indicate degree to which those lands that are best suited for water-dependent uses are in fact put to such use, and what future prospects are for these lands.

To describe other natural resources location, identify condition and size of areas with clams, quahogs, oysters, mussels, and worms. In addition to official sources of information (see previous sidebar), local clammers and other fishermen will be able to cite areas and describe their importance. Information on other marine fisheries (i.e., lobsters, groundfish) should also be included. Location and importance of aquaculture operations, if applicable, should also be documented.

Condition of shellfishing areas should be noted. If an area is closed to shellfish harvest, indicate whether it is seasonal (due, for example, to seasonal tidal blooms) or permanent. Find out from the Dept. of Marine Resources or DEP whether closure is due to known or suspected contamination or as a precaution until actual testing can be done. Indicate trends in closings: are they increasing? Is there any indication as to when they may reopen or steps that must be taken before they can be reopened? Have areas been closed for many years, or are closings recent?

Ask about probable causes and locations of contamination: they may include sewage treatment plant discharges, industrial plant discharges, overboard discharges, malfunctioning septic systems, agricultural or urban runoff, or they may be unknown. Only an understanding of causes can lead to discussions on what steps are possible to remedy the problem.

The inventory should include any aquaculture leases located in or adjacent to town waters. Are these leases being actively used? Where do the leaseholders find water access for their activities?

The inventory also should assess adequacy of existing land use controls or other measures—such as resource protection zoning and a local shellfish management ordinance, if one exists—meant to protect and manage marine resources. Table 9-1 provides a template for organizing an inventory of port, harbor and other natural resources.

Table 9-1: Inventory of Port, Harbor and other Natural Resources

Nature of Resource	Size (Acres)	Comments Note special features or constraints
Clam flats		
Salt marsh estuary		
River basin		
Deep water anchorage		
Protected cove or harbor		
Protected species or wildlife area		
Aquaculture site		
Sand Beach		
Etc. …		

The working waterfront

Many different businesses require a place on the waterfront for success. The working waterfront includes shellfishing, fishing and aquaculture businesses and related support industries. Not only do these enterprises use the ocean, but they require ability to move products directly from the ocean to land transportation and storage facilities.

Establish the contribution of the marine resources industry to the local and regional

economy. To develop a reasonably accurate profile of extent and value of these fisheries to your community and region, information from a variety of sources will need to be pieced together. Useful data will include number of commercial fishing vessels and related equipment; numbers and types of commercial fishing licenses; state landings data supplemented by local knowledge; and numbers of jobs in marine businesses. Creating a profile of marine activity in your town can help to organize this information. Table 9-2 provides a template.

Table 9-2: Profile of Marine Activity

	# of Employees				
Business	Full Time	Part-time	Seasonal	Total Employment	Type of Marine Activity

Once the range of businesses along the waterfront in your community is identified, the next step is to identify what public or private infrastructure is necessary to continue activity. Land-side users of the harbor should be considered in two categories—those requiring a waterfront location ("water dependent") and other uses which may be enhanced by a waterfront location, but do not require one. Examples of water dependent uses include marinas, boat yards, fish processing plants, cargo terminals and retail/wholesale seafood facilities. Public services such as ferries and water taxis require wharf space. Other land uses, such as restaurants, residences and lodging facilities may be located on the waterfront, but are not water dependent. Some of these uses, however, may be water-related, such as a restaurant that caters primarily to fishermen.

In addition to describing waterfront users and related infrastructure, the inventory should also describe support facilities and their ability to accommodate projected growth in activities. Support facilities in your community may include: parking areas, boat launches, docks, piers, and wharves, restrooms, etc. Availability of public services, such as sewer, water, and electricity, and adequacy of existing road and/or rail connections might also be noted. Table 9-3 provides an example of a profile of marine infrastructure.

Table 9-3: Profile of Marine Infrastructure

	Water Access Required		Public Infrastructure Required				Private Infrastructure Required		
Marine Activity	Yes	No	Public Boat Ramp	Public Pier	Clam Flat	Parking Area	Private Dock	Private Boat Ramp	Other Private Resource

Residential growth and development

Coastal communities are an attractive place to live and many towns have seen space previously occupied by business converted to condominiums and other waterfront homes. Once converted to homes, this space may never again be available for public use. Maintaining a considered balance of private and public waterfront uses is critical to the community's economic health and maintenance of a working waterfront. The inventory and analysis should document changes of use for waterfront properties from commercial to residential and identify waterfront properties likely to be converted over the next ten years.

Scenic quality and water access

Water access refers to roads, paths, structures, and rights-of-way that allow fishermen, industry, and the public to reach coastal waters or lands next to waters. They include:

- Docks, piers, and wharves
- Paths and walkways
- Boat ramps and access ways
- Roads and parking lots
- Waterfront parks and picnic areas
- Rights-of-way that may not be formally developed
- Hiking trails and scenic overlooks

Size, use, and condition of these access ways should be noted. For example, a boat ramp might lack adequate parking so that cars are parked along nearby residential roads, causing congestion and confusion. In addition, ownership of significant access areas should be indicated. Are access points publicly or privately owned? If public, are they town or state owned? Who maintains them? Is use of the access area restricted in any way—including residents only policies, fees for use, etc.? Also note the extent to which an access site or facility serves as an important regional resource.

Once existing access sites and needs have been identified, think about likely demand for access over the next ten years. This won't be a precise projection. However, a good idea of future demand for recreational uses can be drawn from earlier projections of year-round and seasonal populations; and from waiting lists for moorings that may be available from the harbormaster. Projected demands for fishing and industrial uses can be drawn from earlier analyses of the local economy and from discussions with representatives of relevant industries. The need is not so much for precise projections of demand, but rather for a good understanding of level of competition for scarce waterfront lands and of types of facilities that must be anticipated in the comprehensive plan.

A related question is visual access. Major points of visual access along the coastline—especially scenic elements, such as islands and lighthouses—should be included in the inventory (these may have been previously included in the inventory of other significant or critical natural resources; see Chapter 5). The information compiled for this inventory will be used again in the Recreation and Open Space inventory discussed in Chapter 15.

Issues and Implications

The issues raised by the inventory and analysis will vary from community to community. Sample issues include:

- Marine resources industry issues, such as:
    - Is excessive harvesting of clams having an impact on long-term viability of the resource? Is the resource being properly managed?
    - Has closing of clam flats threatened the shellfishing industry, and are sources of contamination known? Are sources point or nonpoint sources? If nonpoint, are there land use control measures the municipality can take to protect and/or reopen the flats? If point sources, is the community taking steps to install or improve waste water treatment; or to cooperate with the DEP for a long-term solution to the problem?

Harpswell looks at its fishing industry

In 1999 Harpswell set out to answer three questions:

- **How many people are involved in commercial fishing locally, and how is this changing?**
- **What are the economic effects of the local fishing industry on the Town and region?**
- **Are there issues that the Town needs to address to continue to support a continuing fishing presence in Harpswell?**

The result was a thorough review of trends in the industry and related businesses in Harpswell, and of threats that Harpswell had to confront: real estate pressure, harbor management, waterfront access, and changing character of the shorefront.

The assessment, titled "Town of Harpswell Fishing Industry Profile," is a model for assessing commercial marine issues.

- Harbor and related land use issues, such as:
  - Are traditional water-dependent uses reasonably protected from competing uses? If water-dependent uses are in decline, are causes primarily outside of municipal control (such as fundamental economic trends in affected industry), or do they include new competition from uses that are driving up cost of waterfront space? If current trends continue, what will the waterfront look like in 10 years?
  - Is there reasonable balance not only between water-dependent and other uses, but also between commercial and recreational uses? If there have been recent conversions of uses, have they improved or worsened the balance?
  - How does local zoning treat land around the harbor? Does it recognize its special nature? Has the cumulative impact of development over time eroded traditional uses despite (or in part because of) existing zoning?
  - How do property taxes affect traditional waterfront uses and those who work on and live near the waterfront?
- Harbor management issues, such as:
  - Have arrangements for managing the harbor been effective? Should the community consider strengthening management: for example, by creating a harbor commission, increasing funding for the harbormaster or adopting a harbor ordinance?
  - Is there a harbor plan? If not, is one needed, and who should prepare it? If so, does it adequately allocate space to competing harbor uses, and does it contain an up-to-date list of facilities and their needs for maintenance or replacement? Are dredging needs addressed?
  - If the harbor is shared with other communities, is there cooperation in management of the harbor?
- Access issues, such as:
  - Is adequate, protected access for commercial fishermen and aquaculturists available? For recreational users of the harbor and adjacent lands? Based on projections, will access—and support facilities, such as parking—be adequate for the future? Are there opportunities for improved access?
  - Is visual access important to the community, and are points of visual access available and protected?

Policies

Policies should provide a road map for future use and management of the community's coastline. They should flow from the issues raised in the inventory and analysis and from state policy. For a comprehensive plan to be consistent with state policy, each of the core

policy areas, shown below in bold headings, should be addressed. Since every town is unique, the list may contain policies that don't apply to your town, or there may be important issues for your town that do not appear on the list.

Marine resources/water quality

- Adopt a relevant shellfish ordinance to improve local management of shellfish resources.
- Seek to eliminate overflows of sewage into the harbor that close shellfish flats by working with the sewer district or municipal department to upgrade infrastructure.
- Limit runoff of contaminated storm water into the harbor through changes to its site plan review and subdivision requirements.
- Identify malfunctioning septic systems in the vicinity of the harbor or tributaries to the harbor and have them corrected.
- In cooperation with the Dept. of Marine Resources, seek to determine water quality of shellfish areas and to identify sources of contamination.

Harbor land use

- Identify areas best suited for water-dependent activities and protect them for such uses through water-dependent or marine-use waterfront zoning.
- Allow uses that don't depend on the waterfront to occupy only or primarily upper floors of waterfront buildings.

Harbor management

- Develop a harbor plan in order to equitably allocate harbor space among competing activities and provide for funding and maintenance of harbor facilities. The Department of Marine Resources can aid in development of a comprehensive harbor plan.
- Adequately staff and equip the harbormaster or commission to manage activities in the harbor.
- Cooperate with other communities that share the harbor in the harbor's management.
- Manage for a balance of commercial and recreational use in the harbor.

Access

- Identify and maintain existing points of access to the town's coastal waters.
- Investigate options for expanding opportunities for public access to the Town's clam flats or other waters for commercial and recreational activities.

- Consider incentives for waterfront property owners who are proposing development to incorporate public access into their development plans.

- Protect major points of visual access to coastal waters, especially from public ways and parks.

Implementation Strategies

Municipalities must include implementation strategies that "ensure preservation of access to coastal waters necessary for commercial fishing, commercial mooring, docking and related facilities. Each coastal municipality shall discourage new development that is incompatible with uses related to the marine resources industry."

Among strategies that might flow from proposed policies are:

Marine resources/water quality

- Development of a shellfish conservation program through the Department of Marine Resources. The program could include, for example, a clam ordinance that will define how your town's clam resource will be used and managed. A clam ordinance typically will establish a program for residential and non-residential clam licenses, conservation requirements for clam harvesters, and law enforcement for clam harvesting. The Department of Marine Resources can help you develop a suitable shellfish ordinance.

- A formal water quality testing program in shellfish areas to determine sources and extent of contamination.

- A systematic program, with commensurate funding, to separate the storm water drainage system from the sewer system, thus eliminating sewer overflows to the harbor.

- Performance standards for control of storm water runoff from new development.

- Installation of a pump out station in the harbor for boats with holding tanks, with an appropriate fee to help pay costs.

Harbor land use

- Creation of a zoning district for water-dependent uses, similar to the Commercial Fisheries/ Maritime Activities District suggested in the State Guidelines for Municipal Shoreland Zoning Ordinances.

- Use of site plan review provisions (i.e., standards for parking, walkways, lighting, landscaping, etc.) to promote more efficient use of limited and often densely developed waterfront areas.

Harbor management

- Creation of a Harbor Plan, including a mooring plan that allocates harbor space and ensures balance among commercial, recreational, and other uses.

- Funding and staffing of the harbormaster and/or harbor commission to implement the Harbor Plan.

- Adopting a local harbor ordinance to implement the harbor plan that is consistent with state law.

- Inter-municipal agreement or other joint actions with communities sharing the harbor for funding and management of activities in the harbor.

- Creation of a local development corporation to support and encourage marine related businesses and activities through a variety of initiatives, including acquisition of waterfront land for water dependent uses.

Access

- Funding of a program to acquire (either fee simple or easements) points of public access to the waterfront and the Town's clam flats.

- Creation of a waterfront zone that restricts non-water dependent uses in the zoned area.

- Provisions in the zoning ordinance to trade greater intensity of use in return for new or improved public access to the water.

- Provisions in the zoning ordinance that limit height and/or that require a reasonable, unobstructed view corridor to coastal waters.

References

Land & Water Associates and Maine Tomorrow. (October 1988). Coastal Management Techniques: A Handbook for Local Officials. Maine Department of Economic and Community Development.

Maine Department of Environmental Protection and Maine Dept. of Marine Resources. (1989). Maine's Marine Environment: A Plan for Action.

State Planning Office, Maine Coastal Program. (July 1995).The Right Tack: Charting Your Harbor's Future.

State Planning Office, Data Package for Comprehensive Planning. Datasheets by community listing marine fishing licenses, shellfish licenses, lobster tags, boat licenses and landings data.

Town of Harpswell, "Fishing Industry Profile," prepared by Mayberry, Bruce C., and Town Community Development Committee, Sept. 1999.

Web sites:

Department of Marine Resources: http://www.maine.gov/dmr/

State Planning Office Coastal Program: http://www.maine.gov/mcp/

Chapter Ten:

The Economy

State Goal:

To promote an economic climate that increases job opportunities and overall economic well-being.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Economic and demographic data describing the municipality and the region in which it is located.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.C; §4326.1.A. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Sources of information

The most extensive source of regional information is the Maine Department of Labor. It has divided the state into "labor market areas," areas which are so tied together economically that it would be typically possible to change jobs within the area without having to move one's place of residence. The labor market area is the same as the "metropolitan statistical area" (Bangor, Portland-South Portland-Biddeford, Lewiston-Auburn, Portsmouth, NH-ME) and the "micropolitan statistical area" (Augusta-Waterville, Rockland, Brunswick) for those parts of the state. For each labor market area in the state, the Department of Labor tracks number of non-farm wage and salary jobs for each industrial sector, total employment, and unemployment rates.

The Department of Labor also estimates, annually, the size of each community's labor force, the number employed, and the number unemployed.

The decennial U.S. Census contains a good snapshot of each community's labor force as of the census date. It includes such economic characteristics as labor force make-up by type of occupation and by type of industry, and percentage of adult men and women who are in the labor force. It also provides data on commuter patterns. (Note: Data on economic characteristics usually are not released until two or three years after the census date.)

There are two reasons to understand the local economy. First, it is essential for projecting future population and households. Second, it will point to initiatives the town itself can take to promote jobs, on its own and regionally. Each is discussed below.

The economy drives growth or decline of population. It must be understood to be able to confidently project population and household change. Often the economy is in a state of long-term change—as in the pervasive shift from manufacturing to financial and service sectors in southern Maine, or change in the agricultural economy of Aroostook County. Sometimes there is sudden change in a major economic sector. During the 1990s, for example, the rapid rise of call centers and information technology companies infused economic growth in a number of small towns and surrounding regions. In the early 2000s, there may be major shifts in defense contracting, affecting Maine's largest employers and a number of small ones. At the same time, the rise of biotechnology, biomedicine, and marine science create new long-term opportunities.

These changes are called "structural." They involve a fundamental and long-term altering of the economic base. Temporary changes due to the normal economic pendulum of growth and recession are called "cyclical."

Cyclical changes are less important than structural because they do not involve any fundamental changes in the town. However, cyclical changes greatly affect our moods—during a boom, we tend to think prosperity will last forever, while during a recession we think things will never get better. Sometimes these moods will unduly influence comprehensive plans.

For example, projections prepared during the late 1980s frequently just extrapolated the most recent boom and overestimated growth into the 1990s, when a deep recession hit. Projections made during the mid-1990s may not have anticipated strong in-migration to the state during the next decade. Because of the cyclical nature of the economy, projections should be based on long-term trends, with more attention to the structure of the economy than to its periodic ups and downs.

The second purpose of an inventory of economic conditions is relatively new (within the last 30 years) to comprehensive planning. It is to determine whether the municipality should

take a role, not merely as an observer of the economy and its effects on local growth, but as a shaper of it. Many municipalities in recent years have promoted economic development or redevelopment. They have done so through nonprofit industrial development corporations, creation of industrial parks, and partnerships with private enterprise to renew downtowns or spur new commercial-industrial development. Their purpose is to create jobs and broaden the property tax base. An inventory of economic conditions will help the community to decide whether it can, in fact, influence events and whether a large commitment of time and money is warranted.

Inventory and Analysis

As complex as any economy is, even a local one, it is possible to identify major trends and forces driving them. Two key points to remember are:

1. The local economy is part of a regional economy. It cannot be understood outside of a regional context. The major trends, therefore, must be reviewed regionally.

2. Economic activity is divided into "export" and "service" activities.

    - Export activities are those that, through sale of goods and services, bring dollars into the area from outside.

    - Service activities are those that provide goods and services locally. They re-circulate money that is already in the area, rather than bring in new money from outside.

Economic growth depends on export activities. But it's not always easy to identify which activities are export and which are service. Most manufacturers are exporters. Most neighborhood retail stores are service activities. But some businesses that appear to be "service" activities—like banks, insurance companies, department stores, and restaurants—may in fact be exporters as well. This is especially true of financial centers (like Portland) that attract investment from outside the region and state; of regional retail centers (like the Maine Mall or Bangor Mall) that attract the trade of tourists and visitors as well as local shoppers; and of resorts or specialty centers (like Freeport, Boothbay Harbor, or Sugarloaf in Carrabassett Valley) whose retail, lodging, and restaurant sales are primarily to visitors.

Location quotients

A simple way to spot the sectors that are central to the area's economic base is through "location quotients." A location quotient is a statistic that compares the area's dependence on an industrial sector with the state's or nation's overall dependence on that sector. The theory is that if the area is significantly more dependent on a sector than the state or nation, it must be producing goods and services not only for local consumption, but for export as well.

Simply calculate (from Dept. of Labor data) the percentage of jobs in the labor market area that is in a particular sector: for example, 18% of the area's jobs might be in retail trade. Compare this to the percentage of jobs statewide in that sector. Statewide, the percentage of jobs in the retail sector is 20%. The ratio of labor market area dependence on retail jobs to the statewide dependence is 18%/20%, or 0.90.

Any ratio that is significantly greater than 1.00 indicates that the sector is disproportionately important to the area economy. These are central to the regional economic base.

In the example above, the labor market area's dependence on the retail sector is about average; retailing is important in that it provides 18% of the area's jobs, but it may not play a big exporting role. See chart on next page for a few examples of high location quotients in some of Maine's labor market areas for 2000.

Examples of location quotients, Maine's labor market areas, 2000

Bangor, transportation and utilities	1.63
Bath-Brunswick, durables manufacturing	2.91
Boothbay Harbor, eating places	1.49
Millinocket, paper products mfg.	13.73
Portland, finance/ insurance	1.72
Kittery-York, apparel & accessory stores	5.92

In any case, the first focus of an inventory of the economy should be on identifying the export industries: those activities that employ more people than would be necessary just to service the local population and that sell goods and services to the outside world. These are the engines that drive the local economy.

Conducting the inventory and analysis

The regional economic base

The inventory and analysis should begin with a description of the regional economic base. This should include:

- **An historical perspective on how and why the region (and the community) developed**: Due to location near a particular resource, such as good farming soils or prime forest land, or near sources of water power? Due to proximity to transportation arterials, or a harbor, or a coast line that attracted tourists? Due to proximity to a city center within easy commuting distance? Every community and region developed for an economic reason, and it is useful at the outset to put that into perspective, even if the original reason has since faded and been replaced by other forces. This will also give important clues as to why the community and region settled the way they did.

- **Trends in the number of non-farm wage and salary jobs by industrial sector for the labor market area**. Detailed information by industrial sector is available back to 1981. (Be careful, though: occasionally the Dept. of Labor changes the definition of labor market areas, usually because the federal government changes the definition of a metropolitan statistical area. Be sure the definition of the labor market area in the base year is the same as in the current year.) For most areas, this data will give the clearest statistical picture of which industrial sectors are at the heart of the region's economic base. The exception will be those areas that depend heavily on farming or on activities, such as fishing, that may not involve wage and salary employment. In these cases, information from the U.S. Census, although it is not as up-to-date, is a useful supplement. The statistical review should also include trends in unemployment.

- **A listing of major employers in the region**. This may be available through a chamber of commerce or a directory. It is useful to speak directly with the principal employers in the region to get up-to-date employment figures and an assessment of how they see the future of their industries. These conversations can reveal not only information about the vitality of the area economy, but also whether the principal employers envision a municipal role in economic development.

- **A review of specific sectors**. Good regional information is available from the state on taxable retail sales and the value of manufactured products. Federal information also is

available at the county level for several economic sectors. The Federal government (Dept. of Commerce) conducts "economic censuses" every five years for agriculture, manufacturing, wholesaling, and service industries, among others.

The local economy

While the local economy is only part of the regional picture, certain effects are felt uniquely at the municipal level: on the property tax base, on general assistance if there is unemployment, and on the sense of identity that arises from whatever activities produce economic well-being. A description of the local economy typically includes:

- **An understanding of where the local population works**. The type and character of the community depends in part on whether people who live in town also work there, or whether they are primarily commuters. The decennial U.S. Census provides detailed information on local commuting patterns.

- **A review of basic economic statistics and trends for the community**. These include size of the civilian labor force and number of employed and unemployed (from the Dept. of Labor) and a breakdown of employment by type of industry (from the U.S. Census).

- **Comparisons between the municipality and region**. Both local and regional information is available, or can be compiled, in a number of areas: growth in the labor force, trends in employment and unemployment, breakdown of employment by type of industry, and taxable retail sales. These comparisons can reveal important distinctions between the region and town that explain and help to project the character and amount of local growth.

- **Review of local strengths and weaknesses and of the community's potential economic role**. An objective review of strengths and weaknesses will help keep later goal-setting realistic. Consider the community's proximity to transportation routes and facilities, to raw materials and resources, the availability and skills of the local labor force, the availability of public utilities, the availability of sites for new business, and similar factors. Consider strengths and weaknesses of nearby business centers, and whether there is in fact a unique role for the community to play.

Reviving Main Street

Before the car, people traditionally did their major shopping in the center of the community–either in a downtown in a major city, or at the crossroads or center of a small town. These centers provided a value that went beyond jobs and sales. They became the place where people would meet and visit, the place that gave identity to the community.

With the advent of interstate highways, interchanges, shopping centers, and regional malls, Main Streets have lost many stores and much vitality. Still, many towns and cities have been successful in revitalizing their downtowns.

Elements of success include:

- **concentration of stores and activities: a downtown should have clear and limited boundaries;**
- **solidifying two or three roles (government, finance, culture and arts, specialty retail, legal and business services) in which it excels and that attract workers and visitors;**
- **access to roads and parking;**
- **visual attractiveness, with historic renovation, consistency of signs, sidewalks and benches;**
- **unified marketing and image; and**
- **residences nearby or built into downtown.**

The Maine Downtown Center, which is Maine's version of the National Main Street Program, can help downtowns organize for success. Visit its web site at: http://www.mdf.org/downtown

If the community has a traditional downtown that plays an important role—commercially, culturally, as a community meeting place, etc.—its economic health also should be reviewed. Taxable retail sales records, trends in occupancies/vacancies, and the outlooks of downtown businesses will provide a basic outline of how downtown is doing.

Issues and Implications

Some issues and implications commonly raised during the inventory of the economy include:

1. Is the economy experiencing long-term change, and how is this, or might this, affect local population and municipal tax base?

2. Should the municipality be a promoter of economic development, or an observer only? An actual investment of local funds, or should support be mostly moral support? Or is the community primarily a "bedroom" community that is content to continue to rely on a neighboring job center for most of its residents' jobs?

3. If the community wants to be actively involved in economic development, is there a person or organization assigned this responsibility?

4. Is tourism an important part of the local economy, and, if so, what are tensions between a seasonal economy and the needs of the year-round population?

5. Are there especially suitable locations for industrial or commercial development? Are performance standards necessary to assure that industrial and commercial development is compatible with surrounding land uses and landscape?

6. Is housing affordable for those who work in the community?

7. Is the community satisfied that there is a balance between economic and environmental concerns?

8. What role do/should home occupations play in the community?

9. If there is a traditional downtown in the community, is it deteriorating or thriving, and how is this affecting the town?

Policies

Policies should flow directly from the answers to the issues raised. The answers need to keep in mind not only the state goal of promoting an economic climate that increases job opportunities, but also the state goals with respect to housing, natural environment, and public services. There is a faith in the state law that these goals can be compatible, even mutually supporting. But don't be surprised if you find yourself in a balancing act.

Among the areas that policies might address are:

- The type of economic development activity the municipality wants to support, if any: industrial, commercial, tourist, cottage industry, farming and forestry, etc.

- The role of the municipality in supporting economic development, including the level of financial commitment, if any.

- The reality that the economy is regional, and therefore the need to explore approaches to economic development with regional development corporations and area municipalities

- The willingness of the municipality to provide, or to cooperate in providing, support facilities and services needed to foster a climate for economic development (including a transportation network, utilities, appropriate zoning, and a supply of housing).

- The role of affordable, "work force" housing in economic development.

Implementation Strategies

Depending on the policies adopted, implementation strategies should address:

- Zoning necessary to accommodate locations for economic activity (industrial, commercial, services, home occupations, etc.);

- Responsibility for economic development activities, if appropriate, such as:

    - Membership in a regional development corporation, or a formal agreement with a local chamber of commerce, in which the municipality offers financial support in return for specific economic development activities.
    - An interlocal agreement with other municipalities to pursue opportunities together.
    - Assignment of economic development to a member of the town staff.
    - Establishment of a nonprofit economic development commission and providing it with seed money to carry out its duties.

- Public facilities (including public utilities) needed to support the projected location, type, and amount of economic activity, and organizational or jurisdictional issues involved in providing them;

- If public investments are foreseen, mechanisms to be considered to finance them. These might include (among others):

    - Local tax dollars.

    - Tax increment financing. Under this mechanism, the municipality designates a specific area as a municipal development district. Upon application to and approval by the Dept. of Economic and Community Development, the municipality then can dedicate increases in taxes resulting from new development in the district to pay for eligible public facilities that are installed to serve the district, or to help defray the developer's costs.

    - Community development block grants, which are intended to benefit low- and moderate-income people and are administered by the Dept. of Economic and Community Development.

- Matching private investments.

- Appropriate location for a local or regional industrial park, if one is desired, with necessary market and engineering studies to establish its feasibility.

References

Web sites:

Maine Department of Economic and Community Development, Community Development Block Grant Program, located within the DECD's Office of Community Development: http://www.meocd.org/

Maine Department of Labor, Labor Market Information Service, which maintains employment data by labor market area: http://www.maine.gov/labor/lmis

Maine Downtown Center: http://mdf.org/downtown

State Planning Office, Economics Team, which maintains a variety of data bases on Maine's economy. Many of these data are updated regularly and presented on the web as MaineGraph. See http://www.maine.gov/spo/economics

Chapter Eleven:

Population and Demographics

State Goal:

No state goal specifically addresses population. But all other goals depend on an understanding of population and demographic data for the municipality and its region.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Economic and demographic data describing the municipality or the multimunicipal region in which it is located.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4326.1.A. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Bursting illusions

In the world of population and demographics, things aren't always what they seem. For example, during the 1990's the population of Maine grew by less than 4%. But it wasn't population that was the visible part of growth. Housing units were the visible part, and they were built at rapid rates to accommodate households.

Since the 1970s, number of households has increased at a much faster rate than population. Why? Demographic changes have been dictating smaller and smaller households: fewer people living in more housing units. This was the result of young adults leaving home and setting up one-person and two-person households; a high rate of divorce that split households into two; more elderly living longer and on their own rather than with other family.

During the 1990's, even if there had been no population growth, the number of housing units would have had to increase by nearly 7% just to keep up with the increase in households (as average household size dropped from 2.56 persons to 2.39).

Comprehensive plan is a guide for how people should use the land. Most analysis involves understanding the land—its soils, water, topography, natural features, and its development. But the other side of the equation—the people—needs to be understood as well.

How many people are there? How old are they? How fast is population increasing? What kinds of families do they form? What are their special needs? This is the essence of the study of population and demography.

In towns that are experiencing rapid growth, it is common to hear the complaint, "We don't want to be like Boston." Meaning: we don't want to grow as big as Boston, to have as many people, to have problems that seem to go with a large population. It is a powerful assertion. Many zoning ordinances and growth control measures have been adopted based on the concern contained in that statement.

But the statement lacks specificity. What is it about the population that is so troublesome: its overall size and rate of growth? Increase in school-aged children and cost of educating them? Number of new homes? Or the way they are being built across the landscape? Or is the problem that the character of the population is changing—from long-time residents who worked in local industries and served in the volunteer fire department, to people "from away" who commute to office jobs and have new ideas about the way the town should be run? The issue might be any or all of these, or something else altogether different. In some towns the problem may not be an increase in the population at all, but rather a loss due to a deteriorated area economy.

The point is that before the community can arrive at answers about its growth, it has to ask the right questions. A crisp understanding of the size of the community's population, its past growth, its likely future growth, and its make-up is the first step.

It is not easy to project growth, to anticipate which trends will continue and which will change. For example, the falling size of households has been an important part of Maine's growth since the 1970s (see box). It isn't yet clear how long into the 21st Century this trend will continue, although it likely will for a while. Nor is it clear whether, given different economic conditions in Maine and New England, the trend toward more people moving into than out of Maine will continue, accelerate, or reverse, or how this will affect different regions of the state.

But it is necessary to arrive at the best estimates possible of the community's future

population and its make-up. This will help to shape recommendations for regulating growth, and also for housing, need for school space, transportation network improvements, and public facilities updates.

Inventory and Analysis

The purpose of the inventory and analysis of demographic data is to describe size and characteristics of population and households of the municipality and region and to project changes expected 10 years into the future. The information will be used to determine need for housing, public facilities, transportation systems, and recreational facilities; to plan for economic development; and to help project from possible impacts of growth on natural resources.

A caution should be added here. Sometimes the picture of the town can get lost in a sea of data and tables. Remember that the point of the exercise is to help you understand your town. Those numbers which help you describe your town should be included in the analysis; and those numbers which do not provide insights can be left out.

Conducting the inventory and analysis

Identifying the region

A municipality is part of a region whose economy, transportation network, and population will both affect and be affected by the municipality. Comparison with the region's population characteristics and growth rates will lead to a better understanding of how the municipality might grow.

The "region" might mean the county or regional planning district. Based on economic considerations, labor market area, as defined by the Maine Dept. of Labor, may be more relevant. At a minimum the region should include adjacent municipalities; but it may include communities beyond these, depending on economy, shared public facilities, such as school districts or public utilities, and transportation network. It should be the area with which the community has the strongest economic and social ties.

Estimates of population and household change and description of population and household characteristics should be presented for both the municipality and, to the extent information is available, the identified region.

Sources of information

The three primary sources of demographic data are:

U.S. Bureau of the Census, which conducts a census of population every 10 years (the decennial census), most recently in 2000. This provides the most complete set of demographic information, although most of the detailed information on population characteristics, socio-economic characteristics, and housing characteristics are not released until one to three years following the census. The U.S. Census also prepares estimates of population and per capita incomes for communities every two years between the decennial censuses.

Maine Dept. of Human Services, Office of Vital Statistics, which prepares official estimates of municipal populations annually. These estimates are used by the state in revenue sharing formulas. The estimates are based on a statistical method that takes into account school enrollments, births, deaths, marriage licenses, and housing permits, among other factors. The data also includes breakdowns by age group.

Regional planning councils sometimes prepare their own estimates of population for area communities. All councils have estimates prepared by the U.S. Census and Maine Dept. of Human Services.

Current year estimates of population and households

Except for the figures in the decennial U.S. Census, estimates of current year populations and households are just that: estimates. Estimating techniques vary, but all of them take into account births, deaths and net migration. Net migration is the difference between people moving into the community and those moving away.

If you are comfortable with one of the estimates for your community from the Census, Dept. of Human Services, and/or regional planning council, use it. Especially if your plan is being prepared close to the time of the most recent decennial Census, there probably is little need to search elsewhere. For a short-hand technique to estimate the current population, see the sidebar on the next page.

Describing the characteristics of the population

The population and household characteristics most important to comprehensive planning include:

- An estimate of the share of the growth in population attributable to net migration as opposed to natural change (births minus deaths). This will indicate extent to which the community is seen by newcomers (either from elsewhere in the region or from outside the area) as a desirable place to locate.

- Distribution of population by age group, including pre-school (under 5 years old), school-age (5 to 17 years old), child bearing age (18 to 44), middle-age (45 to 64), and seniors (65 and older). The U.S. Census provides a breakdown in its decennial census, and the Maine Dept. of Human Services includes an age breakdown as part of its annual population estimates.

- Average household size.

- Median household income and distribution of households by income group. The income groupings should at least reflect very low incomes (less than 50% of the county median), low incomes (between 50% and 80% of the county median), moderate incomes (between 80% and 150% of the county median) and middle-to-upper incomes (more than 150% of the county median). These are the income categories that will be used in your later analysis of need for affordable housing. The only official estimates of income come from the decennial U.S. Census.

- Distribution of the employed population by type of occupation. The only official data come from the decennial U.S. Census.

Other interesting pieces of demographic information fill in the profile of the community: distribution of the adult population by last grade of formal schooling; percentage of population that has arrived within the last 5 years; and percentage of households with children living at home. This and a great deal of other information are contained in the decennial census. If your planning committee has decided to do a citizens survey as part of the comprehensive plan, it can update this information as part of the survey.

Trend analysis

The present and future are best understood in the context of past trends. The analysis of population trends should take into account data for at least the last 20 years. The analysis of change is usefully expressed both in absolute (numerical) and in percentage terms (see sidebar on trends). The trend analysis is most importantly applied to population, households, average household size, and age groups.

The analysis of trends in the overall population will provide a general picture. But even in communities where there has been little change in total population, the breakdown by age will show lots of movement below the surface.

This is because the "baby boom" generation—a huge group of people born between 1947 and 1964—surged into adulthood during the 1970's and 1980's, and are now headed (as of 2005) beyond middle age. This created much of the demand for new housing over the last 30 years and was responsible for a lot of the state's apparent growth. This group also created a "baby boomlet," which can be seen in the Population Pyramid for 2000 (see sidebar on the next page) and the effects of which many school districts have felt in their

A quick population estimating technique

If you aren't comfortable with any of the official estimates, here is a quick way to come up with your own, which can then be compared with the official estimates:

Record total number of year-round housing units in the municipality as of the last decennial census (source: latest U.S. Census).

Add to (1) the number of year-round housing units actually built in the municipality since the last Census (source: local assessor's office; this information also is reported by the Maine State Housing Authority). This will give you the current total number of year-round housing units in the community.

Multiply the current total number of year-round housing units by the estimated percentage of these units that are occupied (source: the U.S. Census will tell you what the vacancy rate was at the time of the Census; you should talk to local real estate agents, landlords, and/or postal workers to determine whether this has changed). This will give you the estimated number of year-round housing units that are occupied. This also equals the present number of households.

Estimate average household size–that is, the average number of people living in each year-round housing unit–for the municipality. The last decennial census will give you the figure for that year. (Look for the average or mean figure, not the median.) If you are preparing the estimate within two or three years of the census, it probably is safe to use the same figure. If several years have gone by since the last census, you should adjust the figure based on latest trends. Check with your regional planning council, the State Planning Office, or the Maine Office of Vital Statistics for the latest information.

Multiply the estimated number of year-round, occupied housing units from step (3) by the current estimated average household size in step (4). This will give you the estimated number of people living in households.

Finally, add to this number the number of people living in "group quarters" (such as nursing homes, dormitories, etc.). You can use the number contained in the latest decennial U.S. Census. This will give you the total estimated current year population.

Trends

A trend can be expressed in several ways. First is in terms of actual numerical change. For example, a town with a 2000 population of 3,500 living in 1,500 households (none in group quarters) may have experienced the following trends:

	1980	1990	Change 1980-1990	2000	Change 1990-2000
Population	2,600	3,200	+600	3,500	+300
Household	800	1,150	+ 350	1,350	+ 200
Persons per HH	3.25	2.78	- 0.47	2.59	- 0.19
The trend is more fully understood if the change is expressed in terms of percentages:					
	1980	1990	% CHANGE 1980-1990	2000	% CHANGE 1990-2000
Population	2,600	3,200	+ 23.1%	3,500	+ 9.4%
Households	800	1,150	+ 43.8%	1,350	+ 17.4%
Persons per HH	3.25	2.78	- 14.5%	2.59	- 6.8%

Both trends show that growth was greater during the 1980's than during the 1990's. The analysis of percent change reveals that rate of increase in number of households was twice rate of population growth during both decades. It also shows that rate of decline in average household size slowed by more than half between the 1980's and 1990's. This information will be helpful in projecting the next decade of population and household change.

elementary schools. This group now has passed the elementary age level (as of 2005), and school populations are declining. (The Department of Education and State Planning Office periodically project school aged population and are a good source for this information.)

There is other movement between age groups, too, including disproportionate increases among the elderly (75 years old and older). Because age is an indication of life stage, and life stage in turn signals the kinds of needs people have—schools and playgrounds for children, apartments and "starter" homes for young adults, bigger houses for middle-aged adults with children, leisure time and volunteer opportunities for retirees, medical services for the very elderly, etc.—this trend analysis will reveal much about the implications of growth in your community.

Projecting population and households

The population (both total and by age group) and number of households should be projected to a point 10 years after the anticipated adoption of the comprehensive plan.

The Maine Dept. of Human Services has prepared projections of population and age groups for each community using a mathematical model of its own. Normally, this will suffice.

However, DHS does not project the number of households or other population and household characteristics. There are several techniques to use; you should discuss these with your regional planning council or consultant. If you are using Maine DHS population projections, you can project number of households as follows:

- First, subtract the number of residents who live in group quarters (as reported in the last census) from the projected population figure. This gives you projected household population.

- Second, project the average household size to the target year. While it isn't clear what the national trend in average household size will be during the first decades of the 21st Century, it will probably continue to decline for a while longer, but at a slower rate than during the 1990's.

- Third, divide the projected household population figure by the projected average household size. This gives you the projected number of households.

- In preparing projections of population and households, it often is wise to prepare low and high projections by varying assumptions about net migration, average household size, and similar factors.

Commuter population

In service center communities, daytime population is larger than nighttime population, because commuters flow into the communities from surrounding areas. For surrounding suburbs, the opposite is true: daytime populations are smaller than the nighttime or resident population.

The U.S. Census, as part of its decennial census of population, tracks commuters both by place of residence of the commuters and by where they work. This makes it possible for municipalities to estimate the population that relies on them for services during the day. These services include police and fire, emergency services, public works, and water supply and sewerage.

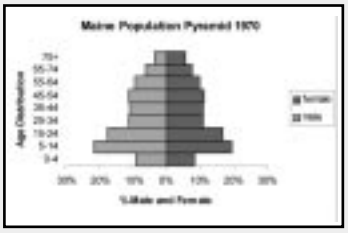
Seasonal population

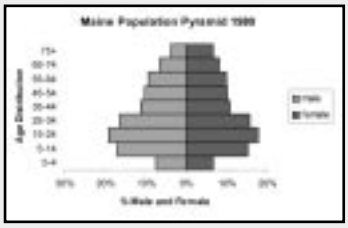
Coastal, lake, and mountain communities have seasonal populations that can be larger than year-round population. Their impact on municipal facilities is all the greater because it is a "shock" impact—it arrives in June or July and is gone by September or October (or, in ski territory, the winter months). Unfortunately, this population is very hard to estimate. There are no official sources of information.

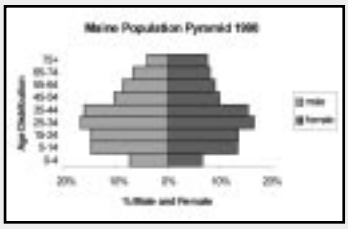
However, estimates can be pieced together in several ways. The best sources of information are:

Population pyramids

One of the best ways to illustrate how the population's age structure is changing is with population pyramids. A population pyramid is a kind of graph. It divides the population by gender, and then breaks each of these groups into age groups. Bars on the graph show percent of total population contained in each age-and-sex grouping. When the population pyramids from, say, 1970, 1980, 1990, and 2000 are placed next to each other, it's easy to see which groups are growing and which are shrinking. In this example, note how the "baby boom" generation, which was roughly 5 to 24 years old in 1970, is surging upward on the pyramid. In 2000, it was mostly in the 35 to 54 year old age range.







- Number of seasonal dwelling units, as recorded by the decennial U.S. Census. (This isn't always a reliable count but is the best available. Some cross-checking with tax records, real estate professionals and others may be useful.) The "peak" population in seasonal dwelling units can be estimated by multiplying the number of units by an average of 2 to 4 persons per unit. Local real estate agents should have a handle on the average number of visitors in a party.

- The ratio of taxable consumer retail sales during the summer quarter compared with average sales during the other three quarters. For example, if summer quarter sales are $10 million, compared with an average of $8 million per quarter for the other three quarters, this is an indication that summer population is 25% greater than the rest of the year ($10 million / $8 million). If your community is large enough, these quarterly figures will be available for the town from the State Planning Office. If your community isn't large enough to have its own data, you must settle for a larger "economic summary area."

- Monthly traffic counts, if the Maine Dept. of Transportation maintains a permanent traffic counter in or near your community. Again, the ratio of average monthly traffic during summer months to the average monthly traffic the rest of the year will give some indication of the increase in seasonal population.

- A count of hotel/motel rooms, camp sites, and restaurant seats in the community. The Bureau of Tourism in the Department of Economic and Community Development may have data for your region.

- In addition, as part of a community opinion survey (if one is conducted), seasonal property owners can be asked about intentions to move permanently to the community. This may help small towns with large seasonal populations project population growth.

Issues and Implications

A sample of the issues and implications that commonly arise from an analysis of the community's population and demographics include:

1. Is the rate of population change expected to continue as in the past, or to slow down or speed up? Is the community comfortable with this amount of change?

2. Which age groups are the fastest growing, which are in decline, and what are the implications for municipal and school services?

3. What will be likely demand for housing to accommodate change in households—both as a result of overall change and as a result of change among different age groups?

4. If most of the population growth is the result of newcomers (net in-migration), is there conflict in the way this group would like to see the community governed versus the outlooks of long-time residents? What are the opportunities for greater cooperation and shared outlooks?

5. If the community has a significant seasonal population, is the nature of that population changing—from seasonal residents who stayed for several weeks or months, for example, to mostly transient tourists? What is the community's relationship to and dependence on seasonal visitors?

6. If the municipality is a service center or has a major employer, what additional effort does it have to make to serve a daytime population that is larger than its resident population?

Policies

Few policies are likely to emerge from the analysis of the population data alone, although policies on many other issues will be related to this analysis. Two important policy questions to tackle may be:

Should the community actively discourage growth; actively encourage growth; or neither discourage nor encourage growth, but rather attempt to direct it to the most suitable locations in the community?

If one community's residents are relying on another community for jobs, services, and public facilities in another town, are there ways to cooperate on the financing of some of those facilities?

An open discussion about these kinds of questions will reflect an underlying attitude that will influence other policies in other sections of the plan. In fact, the questions may not be able to be answered until the facts are in from other sections—facts on natural resources, the capacity of public services, housing, and so forth. Because of the legal and/or political implications that would be involved in either actively discouraging or encouraging growth, this policy should be carefully built on fact.

Implementation Strategies

Again, few implementation strategies are likely to be based on policies relating to the population data alone. One possibility might be to institute specific municipal record-keeping (for example, in the area of building permit and assessor's records, or in attempting to get accurate counts of pre-school aged children, or in tracking conversion of seasonal homes to year-round occupancy) that will improve local data for future population analyses.

Chapter Twelve:

Land Use Patterns

State Goal:

To encourage orderly growth and development in appropriate areas of each community and region, while protecting the State's rural character, making efficient use of public services and preventing development sprawl.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

Land use information describing current and projected development patterns.

In addition, the Act requires that the implementation section of the plan:

Identify and designate geographic areas in the municipality or multimunicipal region as growth areas and rural areas, as defined in this chapter.

1. Within growth areas, each municipality or multimunicipal region shall:
    a. Establish development standards;
    b. Establish timely permitting procedures;
    c. Ensure that needed public services are available; and
    d. Prevent inappropriate development in natural hazard areas, including flood plains and areas of high erosion.
2. Within rural areas, each municipality or multimunicipal region shall adopt land use policies and ordinances to discourage incompatible development. These policies and ordinances may include, without limitation, density limits, cluster or special zoning, acquisition of land or development rights, transfer of development rights pursuant to section 4328 and performance standards. The municipality or multimunicipal region should also identify which rural areas qualify as critical rural areas as defined in this chapter. Critical rural areas must receive priority consideration for proactive strategies designed to enhance rural industries, manage wildlife and fisheries habitat and preserve sensitive natural areas.
3. A municipality or multimunicipal region may also designate as a transitional area any portion of land area that does not meet the definition of either a growth area or a rural area. Such an area may be appropriate for medium-density development that does not require expansion of municipal facilities and does not include significant rural resources.

4. A municipality or multimunicipal region is not required to identify growth areas for residential, commercial or industrial growth if it demonstrates that it is not possible to accommodate future residential, commercial or industrial growth in these areas because of severe physical limitations, including, without limitation, the lack of adequate water supply and sewage disposal services, very shallow soils or limitations imposed by protected natural resources.

5. A municipality or multimunicipal region is not required to identify growth areas for residential, commercial or industrial growth if it demonstrates that the municipality or multimunicipal region has experienced minimal or no residential, commercial or industrial development over the past decade and this condition is expected to continue over the 10-year planning period.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.A; §4326.3-A.A. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Land use patterns are pivotal in the analysis incorporated in a comprehensive plan. Many of the issues you examine—housing, water resources, historic sites, transportation, for example—revolve around land use. Land use patterns are the hub of a comprehensive plan, where many other issues meet. A clear analysis of past and existing patterns of land use also paves the way toward a Future Land Use Plan.

This section of the plan gives a bird's eye view of how the town has developed, historically and recently. It will tell whether the community's pattern of growth has respected natural, historic, rural, and other resources—all of which by now will have been inventoried—or whether it has tended to overrun them. It will lend understanding to the shape of villages, neighborhoods, and business centers, and how these might be either altered or reinforced in coming years.

Inventories of land use have long been a staple of comprehensive plans. But earlier comprehensive plans tended merely to take note of trends in order to codify them into ordinances. A new generation of plans in Maine is called upon to do more. Plans must clearly identify and designate "growth" areas, to which future development is to be directed, and "rural" areas, away from which future development is to be deflected. If the recent trend has been one of development spreading into areas the town believes should remain rural, or along rural arterials not intended to be heavily developed, the comprehensive plan must consider ways to slow or reverse that trend.

Inventory and Analysis

Sources of land use information are primarily local. They include:

- Tax assessor's records, which detail the use of each parcel in the community;
- Building permit records, which help track the development of the last 10 years;
- Aerial photography;

- Windshield (drive-by) surveys, which often are necessary to verify specific land uses and to fully appreciate development patterns in the community.

In addition, the planning committee should check with the regional planning council that serves the community and with the state Office of Geographic Information Systems, which may have aerial photography and images, data bases and computer-generated maps of relevance to local and regional land use patterns. These may range from maps prepared for the state's emergency 911 system to maps that track changes in electrical utility hook-ups.

The inventory of land use is most easily and accurately done with the help of a parcel base map. However, it also can be done on a topographic base map.

Conducting the inventory and analysis

The inventory and analysis of land use patterns includes a land use map and a narrative.

Land use map

The land use map is most useful if it shows the current use of each parcel in the community; as mentioned, this is most easily done on a parcel base map. The time and effort invested in a complete land use map pay many dividends. Not only will the map make work on the comprehensive plan easier; it also will be a useful tool for future planning, code enforcement, and other town purposes.

Land Use	Suggested Symbol	Suggested Color
Residential, including • single family and mobile homes • multifamily	circle circle with # units	yellow orange
Commercial, including retail trade, commercial lodgings, personal services, and office-based services	triangle	red
Industrial, including manufacturing, food processing, research and development, and wholesale trade	square	purple
Transportation, communication, and utilities, including transportation systems, water, truck and rail terminals, and utility rights-of-way	hexagon	gray
Recreation, including parks and playgrounds, campgrounds, and outdoor recreational facilities	/\	light blue
Civic and institutional, including public buildings, cultural buildings, places of worship, and cemeteries	star	dark blue
Agriculture and forestry activities	tree	dk green
Mining activities	X	brown
Undeveloped land - earmarked as open space (i.e., restricted from development due to ownership, easement, or other formal restriction) - other vacant land		light green white

For purposes of the inventory, land use often is classified into the following categories (with a suggested map symbol or color for each):

If the community's tax assessor's records have been digitized, a map of current land uses by parcel can be readily produced using a computer-based geographic information system (GIS). GIS also enables statistical analyses, such as producing a breakdown of the municipality's land area by developed vs. vacant lots, by type of land use, by age of housing, or by other variables that are part of tax records.

If records have not been digitized and the land use map is to be done "the old-fashioned" way (by hand), the best and usually fastest way of collecting information is by a manual search of the property tax cards or the assessor's print-out of properties. The land uses are recorded first onto an extra set of full-scale assessor's maps. This information then is transferred to the smaller scale parcel base map. A drive around the community can verify and fill in gaps in information.
In fact, whether or not the land use map is computer-generated, field visits to get a first-hand view of land use patterns are highly recommended. GIS has the great advantage of speed and brings with it the power of statistical analysis. On the other hand, it should not replace field visits, manual notes and mark-ups of maps, and other "hands-on" approaches that help a planning committee to thoroughly understand land use trends in town.

Analysis

The analysis of land use patterns should include:

1. **A description of existing zoning in the community**. This should be a critical review of the zoning (or lack of it): has it encouraged the preservation of the natural, historic, rural, coastal and other resources identified in previous sections of the comprehensive plan as important? Or has it allowed infringement of development on these resources? Has it kept older neighborhoods intact, and helped to keep existing villages and older commercial centers vital? Has it encouraged (or even required) spreading out of development away from traditional residential and commercial centers? How has it accommodated change (such as in the transportation system, in the community's demographics, or in the new demands of the retail market)? Through large minimum lot sizes, prohibition of apartments, and other standards that exceed what is required for public health, safety, and welfare, does the ordinance have the effect of excluding households of modest means?

2. **A description of land use patterns in different parts of the community**. Neighborhoods are the building blocks of the community. Whether their boundaries are defined by social, physical, or natural factors, the analysis of land use is more meaningful if it focuses on these smaller units. Even in very rural communities, the geography may be divided into smaller individual settlements.

Land use by sector

One Comprehensive Planning Committee divided its town into five sectors. One of the sectors encompassed its major village, where public sewer and public water are available. As of the latest Census, this sector contained 47% of the Town's homes. But in the ensuing years, the land use analysis found that less than 30% of all the new housing was built in this sector. One of the fastest growing sectors was the most rural part of town, located the farthest away from town services. The number of homes in this part of town had increased by 46% during the period.

3. **A description of the pace and pattern of development during the last 10 years**. A review of building permit records and subdivision records, of electrical utility hook-ups, or a windshield survey will indicate how much development (and of what type) has occurred in each neighborhood or part of town in the last decade. The more you can quantify this information, the better. You may have a "feel" that most of the housing development has occurred in the western part of town. But you will be in a better position to analyze recent land use patterns if you are able to say, "30% of all new homes were built in the western part of town." That level of detail will help you project the future pattern of development and understand possible impacts of that pattern of development. See sidebar on land use by sector.

4. **A build-out scenario**. A build-out scenario projects past development patterns into the future. Based on the town's expected population, household, and commercial growth, and assuming that the growth locates according to the development patterns of the last 10 or 20 years, what will the community look like at the end of the next 10 years? See sidebar.

Build-out scenario (See also Figures 12-1 and 12-2 and the end of this chapter.)

Build-out scenarios help the committee and townspeople envision what the town or an area of town could look like in the future. They are especially helpful to towns in or near growing urban or suburban areas. To create a build-out scenario based on recent trends and current zoning:

1. **Identify vacant, developable land. This is most easily done by laying your land use map on top of your natural resources composite map (see Chapter 3). This will let you see what land already is developed. You also can see which undeveloped parcels probably can't be developed because of wetlands, steep slopes, and other serious natural constraints. You should also eliminate from potential development vacant land that is owned and dedicated as open space, such as parkland or a wildlife preserve owned by the government.**

2. **Estimate the acreage of the vacant, developable land. Let's say there are 1,000 vacant, developable acres in the part of town you're studying.**

3. **Reduce this by 15% or so to take into account potential new roads, etc., that will serve the new development, as well as oddly shaped land and other circumstances that will keep all the land from being developed. That leaves 850 acres.**

4. **Based on the minimum lot size and density requirements of the zoning ordinance, calculate the number of house lots that could be developed on this acreage. Think long-term: 25 or 50 years. If, in our example, current zoning calls for 2-acre lots in this part of town, a total of 425 house lots could be built on this acreage. (You may want to modify this figure based on experience. For example, even though zoning calls for 2-acre house lots, experience might show that the average size of new lots being created is closer to 3 acres. The point is that your scenario should be as realistic as possible.)**

5. **Play subdivider and sketch 425 new house lots into the areas identified as vacant, developable land. Try to follow the same patterns that already are evident on the land use map. Usually this will include some lots simply being stretched along existing roadways; some lots in small subdivisions with short, dead-end roads; and some lots in larger subdivisions with more than one new road.**

6. **Step back and look at the map. What do you think? Think especially about location of development: what might be the impacts on open space, on ability of fire fighters to respond quickly to emergencies, or on ability of public works crews to efficiently maintain the road system?**

Issues and Implications

The most important issue raised by the inventory and analysis of land use patterns often is sprawl: Is housing and commercial development leapfrogging out of traditional areas of settlement and into previously rural areas? Is the community losing a traditional village-and-countryside, or urban-rural, pattern of settlement? If so, is the resulting "suburban" pattern what the community wants? Is it what present zoning requires?

This should be one of the crucial debates in your plan. Many towns in Maine are "suburbanizing." Most local zoning ordinances, because they codify suburban standards, make any but the suburban pattern of development difficult to achieve. (See sidebar, "How to spot suburbia.")

Difference between village, suburban and rural styles

What's the difference between village or small city, suburban, and rural settlement? Many towns, even rural towns, have two or all three patterns of development somewhere within their boundaries. Here are some key words and phrases that distinguish them.

Village/Small City	Suburban	Rural
Compact	Spread out	Large tracts of undeveloped land intact
Variety of housing	Mostly single family	Few homes; land used primarily for woodlands, farming, related industry, unbroken wildlife habitat
Hierarchy of interconnected streets, sidewalks provided	Standard street design, often oversized, sidewalks optional, many cul-de-sacs	Private, unimproved ways connecting to rural collectors and arterials
Institutional, cultural, small-scale commercial activity mixed in or nearby	Separated land uses; little public activity designed into development; commercial strips along highways	Depends on nearby village center for goods and services and cultural activity
Relatively small lots and small yards	Relatively large house lots and yards	Expanses of land
Opportunities to work near home	Primarily commuters	Resource-based economy
Parks and planned public open spaces	Large, private yards. Community parks or neighbor-hood parks interspersed.	Wide open spaces often used informally by others for outdoor recreation
Easy to walk to things	Dependent on auto. Neighborhoods may be connected by walking paths.	Livelihood often related to the land; otherwise dependent on auto
Public utilities (sewer and water)	Some public utilities; on-site wells and septic systems	No public utilities

The tendency toward low-density suburban standards springs from both consumers and public policy. For many consumers, suburbia has the image of a home "in the country," or in a park-like setting, or otherwise removed from other people and surrounded with space for play, leisure, and quiet. It feels safe, a good place to raise children. And despite its dependency on the automobile, suburbia carries the prospect of freedom: to do what you want in your home and backyard, with a great deal of privacy.

For public policy, a zoning ordinance that prescribes a uniform, low-density suburban pattern of development is the easiest and least controversial to write. It treats most property owners alike: whether the property is located near a village or on an outlying farm, each is granted the right to develop a home on every so many acres. This may seem like the fairest public policy.

But if the suburban pattern of development is the only pattern prescribed in a town's ordinances, the certain result is "sprawl." It consumes large chunks of rural lands, pushes development into fragile environments, gives rise to commercial strips and traffic congestion, and is expensive to serve. It is the clash of these bigger community issues against consumer preferences and perceptions of fairness among property owners that defines much of the debate in comprehensive plans.

The outcome of this fundamental debate will help shape later decisions to designate "rural" and "growth" areas in your town.

In some cases, rural towns now experiencing growth have never had a "town center," or had only a very small center with no public water or sewer and limited capacity for growth. These communities have relied on larger towns in the region for centralized goods and services; their own development has been historically spread out at very low densities. The issue for these communities, as they receive more residential development, is whether a tighter, village pattern surrounded by rural land makes sense for the future; and if so, where should the village(s) or hamlet be? And if not, what steps can be taken so that the spread out pattern—which was acceptable when most of the land use was farm and forest rather than suburban lots with commuters—doesn't jeopardize the town's rural resources and character?

Other issues often raised by the inventory of land use include:

- Issues specific to different neighborhoods or parts of town: waterfront or a lake watershed, for example, or older established neighborhoods, or a highway corridor. These issues should be articulated so that the committee will have direction for later statements of policy.

- The pattern of commercial development: Where do townspeople shop, and is there need for one or more designated commercial areas? Do existing commercial areas serve different purposes: for example, does one area provide day-to-day services to the immediate community, while another caters to a larger region or to highway traffic? In the case of the former, does the neighborhood commercial area fit in well with surrounding homes? Is there need and room to expand? In the case of highway-oriented commerce, are there standards to control the movement of traffic, signs, number of driveways onto rural arterials, and other features of commercial development?

- The pattern of industrial development: Are there appropriate places for it to occur in the future? Is the town's land use policy for industrial development consistent with economic development and natural resource goals? Are there opportunities to cooperate with other municipalities in the region to grow the regional economic base, and to cooperatively locate a single, well-equipped industrial park with a regional draw?

Policies

The policies that spring from the inventory and analysis will be at the heart of your Comprehensive Plan. They will lay the foundation for designating "rural" and "growth" areas and:

- Describe, as clearly as possible, the general pattern of development for which the town wants to strive: for example, is the desired pattern village-oriented, village-and-rural, village-and-suburban, suburban-rural, or something else?

- Describe the types of locations and the general boundaries that should be designated "rural" and "growth," taking into account amount of growth anticipated over the next 10 years.

- Describe the types of locations that would be suitable to accommodate expected or planned commercial, industrial and other nonresidential activity.

- Set forth the types of measures favored for directing development to growth areas and away from rural areas (you may choose to keep the statements of policy general and become more specific later in the description of the Future Land Use Plan and implementation strategies)

- Establish performance objectives by which the town can measure progress toward the goal of directing development into "growth" areas and away from "rural" areas. For example, the objective may be that 60%-70% of all new residential development will be located in growth areas over the next 10 years.

- Assign someone (planning board, town planner, code enforcement officer) the responsibility to track development year-to-year, so that actual trends can be compared against the performance objective.

An example of policies from a rural town

In one rural town, the comprehensive planning committee opened its policies on growth and development like this:

"Baldwin has a tradition of independence and privacy typical of the rural lifestyle. Historically this tradition has imposed few limitations on the activities a private landowner can undertake on his or her property. The Town respects this tradition and will seek to limit property rights only for `clear and compelling reasons.' . . ."

The policies then established several guiding principles, including:

- **Direct projected growth to "suitable" areas, i.e., areas relatively free of natural resource constraints.**

- **Preserve Baldwin's traditional pattern of villages surrounded by rural areas, avoiding suburbanization of the rural areas.**

Then, in a series of concise statements, the policies laid the groundwork for a Future Land Use Plan. A sample:

- **Established three types of growth areas: villages, commercial areas, and residential areas.**

- **Specifically identified three villages, four small commercial areas, and three other residential growth areas, with the rest of town rural.**

(continued)

Policies on land use are very much tied to every other section of the Comprehensive Plan. They are the integrators of policies on virtually every other topic: utilities and public services, affordable housing, transportation, natural resources, and so forth. Policies on land use must be developed with due regard to policies in each of these other areas, and vice versa. If they are at odds with each other, one will cancel the other. If land use policy is to enhance villages, but policies on municipal facilities don't build capacity in the villages, the land use policy will be hard to achieve. If natural resource policy is to protect a certain lake, but land use policy designates the upper reaches of the lake watershed as a growth area (or calls it "rural" but still allows suburban house lots), the natural resource policy will be hard to achieve. Because so many connections are forged in land use policies, you will find it helpful to go back and forth between these policies and the policies on other topics to assure consistency.

An example of policies from a rural town (continued) . . .

What kinds of measures do these policies suggest should be built into future land use ordinances to direct growth to the designated areas and away from rural areas? They might include:

- **House lot densities tied to soils, perhaps taking advantage of "community" or "clustered' underground waste water systems with third party management (safely enabling lots in the 20,000 sq. ft. range).**
- **Very low density (20+ acres) zoning in fragile highlands.**
- **Mandatory open space zoning for subdivisions outside of villages.**
- **"Right-to-farm" and "right-to-forest" provisions to protect traditional rural uses from nuisance suits.**
- **A limit on the number of annual building permits for new housing units in any one subdivision (outside of villages).**

Implementation Strategies

The vehicles for implementing land use policy include:

- Regulatory ordinances, including zoning, subdivision, and site plan review.
- Capital investment plans, including public water, public sewer, transportation, and other public facilities.
- Land acquisition by public or nonprofit agencies.
- Tax policy.

Several useful publications describe the range of land use tools in these categories. Many of these are part of a "tool box" maintained by the State Planning Office and provided to each of the regional planning councils for use by municipalities. Following is a synopsis of some of the tools most often used to direct development away from "rural" areas and into "growth" areas.

Directing Development Away from Rural Areas

Land use regulatory tools

- Very large minimum lot sizes (and low maximum densities) in certain rural areas corresponding to the land area needed to sustain a farm or woodlot operation or to allow wildlife to thrive—for example, 10 to 25 acres.

Transfer of development rights: a local example

The Town of New Gloucester in 2004 adopted an optional TDR program. The program was an amendment to its zoning ordinance.

It designates rural "sending" zones from which land owners may choose to sell development rights (at a rate 2 to 2.5 times the density of development they could achieve by developing the land itself). And it designates in-town "receiving" zones, where land owners can apply the acquired development rights, at twice the density than would otherwise be allowed.

Land owners selling the development rights from sending zones are required to grant a third-party conservation easement prohibiting future development of the land from which development rights have been sold.

Source: New Gloucester Zoning Ordinance, Article 9.

- Creation of an agricultural zoning district, in which land uses that would conflict with farming are limited and "right-to-farm" provisions are enacted.

- Mandatory open space zoning (also known as conservation subdivisions) for rural area subdivisions, in which any subdivision is required to retain a large share of land (often 60% to 80%) as open space outside of the lots.

- A limitation on number of lots (for example, no more than three) that can be built upon annually in any one subdivision in rural areas. This provision discourages large scale subdivisions in rural areas.

- For lots in rural areas, combine low density with a maximum lot size. For example, the density in a rural area may be one dwelling unit per 10 acres. If the maximum lot size for lots created outside of subdivisions were one acre, then for every one-acre lot created, nine acres of land must be permanently protected through conservation easements or deed restrictions. This technique might make it easier for a farmer or woodlot owner to slice off an occasional lot while protecting the remaining land for farming or forestry.

- A point system to determine where and how intensively development can occur in rural areas. The point system is used to rate parcels of land proposed for development, based on such factors as the presence or absence of prime farmland soils, proximity to municipal services, and the ability of soils to handle septic systems. The number of points achieved determines whether a parcel can be developed, and if so, at what intensity. (See sidebar, titled "An alternative to traditional zoning," in Chapter 18, Future Land Use Plan.)

- Standards for rural development, including (for example):

  - Standards for scenic corridors.
  - Standards for development along ridgelines.
  - Standards for the development of rural roads.
  - Requirements for wildlife management plans as part of major subdivision applications.

- Limitation or prohibition of the creation of new lots that front on existing major through roads. If the plan opts for a limitation rather than prohibition, it would be in the form of very large required road frontages on the designated roads (e.g., 500 or 1,000 feet).

- Building permit cap or quota, also known as a rate of growth ordinance, in rural areas (but not in growth areas). The annual cap, for example, might be no more than 20% of the dwellings projected to be developed each year, on average, over the next 10 years.

- In suburban areas, conservation subdivision design is a tool for clustering house lots in a proposed development to preserve fragile wetlands or other natural features and create larger tracts of open space for recreation or wildlife habitat. In a conservation subdivision, the subdivider retains the original net residential density of the overall parcel, but may create smaller lot sizes, subject to other considerations such as the state plumbing code. A conservation subdivision ordinance may also require the subdivider to design the street system to interconnect with neighboring developments.

Capital investment tools

- Commitments by water and sewer districts to do their planning in concert with the comprehensive plan. Among other things, this would mean not extending water and/or sewer lines into designated rural areas, unless necessary to take care of a public health problem. (Most public utilities are interested in cooperating with a community's comprehensive planning. However, many believe that they must respond to a request for service by any landowner willing to pay the cost of a line extension, regardless of location. Public water utilities also must comply with regulations of the Public Utilities Commission. This is a serious issue that should be discussed with the utilities early in the planning.)

- Coordination of the community's own capital investments, including fire stations, schools, etc., with its land use plan.

Land acquisition tools

- Purchase in fee simple or of conservation easements on land considered especially important to the community's rural territory. Local funds, private funds (for example, through a land trust), and or state funds (for example, through the Land for Maine's Future Program) might be considered.

- Use of "transfer of development rights" in the community, with rural areas serving as "sending" areas.

Low impact nonresidential uses

Camden defined low impact nonresidential uses as commercial or light industrial use in a village residential or village extension zone that:

- **Is in a freestanding structure and occupies no more than 1,500 square feet of total ground floor area and no more than 2,000 square feet of total floor area.**
- **Generates no more than a daily average of 20 vehicular "trip ends" on week days, based on data contained in Trip Generation, Institute of Transportation Engineers, 4th Edition, as may be amended from time to time, or on the written opinion of a professional traffic engineer.**
- **Uses no more than one curb cut, max. 20 foot width, per lot;**
- **Requires no more than five off-street parking spaces according to the requirements of Article X of this ordinance.**
- **Locates its off-street parking entirely to the rear or side of the structure, with no off-street parking between the structure and any street.**
- **Maintains a vegetated buffer between its parking lot and adjacent residential properties, such buffer to be a minimum of 10 feet in width with vegetation at least 6 feet in height and planted at a density to achieve an effective visual screen.**
- **Does not generate hourly sound levels resulting from routine operations in excess of 60 dBA as measured at the property line.**

continued

Low impact nonresidential uses
(continued) . . .

- **Is not open for business before 7 a.m. or after 8 p.m.**
- **Complies with the sign regulations of Article XI of this ordinance relating to residential zones.**
- **Neither frequently makes nor frequently receives shipments in large delivery trucks.**
- **Stores no materials outdoors or displays no goods outdoors**
- **Files an application and receives approval under terms of Article XII, Site Plan Review, of this ordinance.**

Under a transfer of development rights program, landowners in restricted rural areas ("sending" areas) are allowed to sell credits to landowners in designated growth areas ("receiving" areas). This tool compensates rural landowners for reduced development potential while providing developers an incentive to concentrate development in growth areas. Experience nationally indicates that transfer of development rights works best at a regional level or in areas under significant growth pressure. In any case, it requires a sophisticated understanding of the land market. See sidebar on the previous page for a local example of use of transfer of development rights.

Taxation tools

- Encouraging owners of active agricultural lands to take advantage of the state's Farm and Open Space Tax Law.
- Encouraging owners of commercially viable woodlands to take advantage of the state's Tree Growth Tax Law.
- Discussion with the local tax assessor concerning his or her practice in assessing active farm and woodlands based on current versus highest and best use, and whether there is flexibility in that practice.

Directing development toward growth areas

Land use regulatory tools

- Reduce minimum lot size, frontage, and setback requirements in designated growth areas to allow for reasonably compact development. Care must be taken not to portray "growth" areas as places to pack in development. The objective is to adopt lot sizes, frontages, and setbacks that are compatible with the community's traditional pattern of settlement.
- Increase densities, consistent with the ability to safely dispose of wastewater, in designated growth areas. The densities should make a variety of housing types feasible, including multifamily housing.
- Establish a local sanitary district to manage community subsurface waste water disposal systems in growth areas (with user fees to pay for the management), enabling village-scale residential densities.
- Consider accessory apartments in single family homes. These are small separate spaces within an existing structure that are designed to house a single additional family member, such as an elderly parent.
- Create density bonuses for affordable housing in designated growth areas.

- Permit small-scale, low-impact commercial and other nonresidential uses within or near residential neighborhoods (see sidebar).

- Create standards for village or neighborhood development, so that these "growth" areas are attractive, desirable places to live, work, and shop. Village and neighborhood design standards are becoming better understood (see, for example, the State Planning Office's manual, Great American Neighborhoods, and the University of Southern Maine publication, The Hidden Design in Land Use Ordinances; references are at the end of the chapter). Some communities, including the Town of Rockport, have enacted "traditional village" provisions in their zoning ordinances.

- Establish realistic building rehabilitation codes that allow downtown building owners flexibility in redevelopment for both commercial and residential purposes. (See references at the end of Chapter 8, Historic and Archaeological Resources).

Capital investment tools

- Coordinate extension of public sewer and water lines with the designated "growth" areas.

- Concentrate other public investments in "growth" rather than "rural" areas, including investments in parks and strategically placed open spaces, sidewalks, and public buildings. Encourage quasi-public facilities (post office, utility offices, etc.) to also stay within "growth" areas.

- Adopt an "official plan" as part of a town's comprehensive plan. The "official plan" shows the general location of the future street network in designated growth areas. Once adopted, it can be used as a guide to future subdividers, and can also serve as part of a capital investment program, in which the town participates in road building provided that developers adhere to the official plan.

- Plan and improve roadways in a manner that respects village or neighborhood character of the town center; i.e., allowing for connecting (rather than dead-end) roadways, protecting residential local roads from commercial traffic, keeping roadways a reasonable width, maintaining on-street parking where it presently exists, protecting sidewalks and front yards that are traditional parts of a village landscape, and requiring and maintaining street trees.

- Investments in downtown in partnership with merchants and building owners to help keep downtown competitive with suburban shopping centers.

Land acquisition tools

- Designate certain "growth" areas as "receiving" areas under a transfer of development rights program. Careful consideration of allowable densities or intensity of use will be necessary. This program will have best chance of success where growth areas are served by public water and public sewer, or where community underground wastewater disposal is an option.

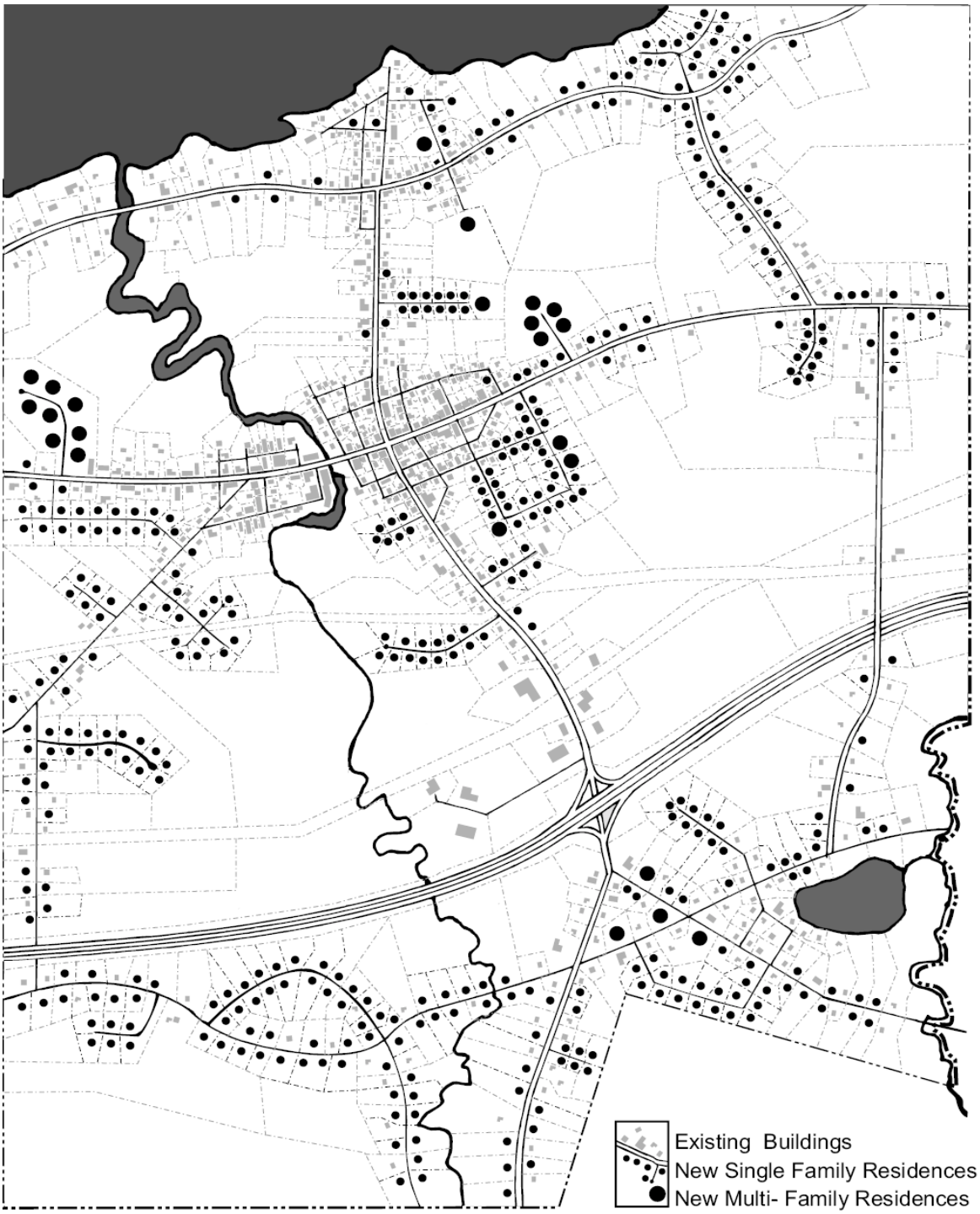
Taxation tools

- Tax increment financing (TIF), if used judiciously, can help finance the extension of public facilities needed to stimulate economic development in designated areas of the community or region.

Figure 12-1. Existing Parcels with Built and Vacant Lots

Strategies for directing development toward growth areas and away from rural areas will become clearer as the planning committee tackles its future land use plan. In fact, it usually is in conjunction with the future land use plan that the tools and their implications are detailed and fully appreciated. The creation of a future land use plan is described in Part C of this manual.

Figure 12-2: Build-out scenario



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Johnston, W. (April 2003). Updating Your Comprehensive Plan: 50 Recommendations for Making Plan Updates More Effective. Maine State Planning Office. Retrieved on October 17, 2005 from http://www.maine.gov/spo/landuse/pubs/

Pruetz, R. (1997). Saved by Development: Preserving Environmental Areas, Farmland and Historic Landmarks with Transfer of Development Rights. Arje Press. This is one of many publications and briefs on TDR, and provides many examples of TDR programs. The book was supplemented by its author in an update presented at the American Planning Association's 1999 National Planning Conference, and as of March 2005 was available at: http://www.asu.edu/caed/proceedings99/PRUETZ/PRUETZ.HTM

State Planning Office Tool Box: a collection of materials from SPO and available from regional planning councils

Other web sites:

State Planning Office publications: http://www.maine.gov/spo/landuse/pubs/

Chapter Thirteen:

Housing

State Goal:

To encourage and promote affordable, decent housing opportunities for all Maine citizens.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Residential housing stock, including affordable housing.

In addition, the Act requires that the implementation section of the plan:

> Ensure that the municipality's or multimunicipal region's land use policies and ordinances encourage the siting and construction of affordable housing within the community and comply with the requirements of section 4358 pertaining to individual mobile home and mobile home park siting and design requirements. The municipality or multimunicipal region shall seek to achieve a level of at least 10% of new residential development, based on a 5-year historical average of residential development in the municipality or multimunicipal region, that meets the definition of affordable housing. A municipality or multimunicipal region is encouraged to seek creative approaches to assist in the development of affordable housing, including, but not limited to, cluster zoning, reducing minimum lot and frontage sizes, increased residential densities, and use of municipally owned land.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.D; §4326.1.H; §4326.3-A.G. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Sources of information

There are a number of sources of information on housing stock:

The decennial U.S. Census, which provides counts of housing units in the community, with a breakdown by type of units (single family, multifamily, mobile home), by number of occupied vs. vacant units, by year-round vs. seasonal housing units, and by units occupied by renters vs. home owners. It also provides a general breakdown of age of the housing units. In addition, the Census provides limited information on condition of housing, such as the number of units without complete plumbing.

Local building permit records are available from your town planning office. These allow you to track housing units, by type of unit that have been authorized to be built (or demolished) since the last decennial Census

Tax assessor's records are available, which allow you to track housing units, by type of unit that have actually been built since the last decennial Census.

The assessor's records may also indicate degree to which housing has depreciated, physically and/or functionally. This information is used by the assessor to arrive at a value of the housing. For the purposes of a comprehensive plan, it provides a picture of housing conditions in the community. Finally, tax assessor maintain records of home selling prices.

A windshield or drive-by survey of the community is another useful activity.

(continued)

The centerpiece of many communities is not the local industry or town hall. It is the individual home. As a Governor's Task Force on Affordable Housing put it:

> "A home is a roof over one's head, a warm dry place to sleep. But it is more than that. It is a ticket in our society to basic rights and services: school for one's children, a place to vote, eligibility for government services.
>
> "Maine homes and apartments reflect the individuality, the values, of residents both past and present. Extended farmhouses tell of family togetherness. Three-deckers speak of Maine's immigrant urban past. Greek revival houses, with their columns, speak of our interest in classical culture; Gothic housing of our fascination with the Middle Ages. Victorian houses are a fireworks celebration of domestic life.
>
> "Homes express our deepest values, as individuals, as families, and as a society."

Housing has been part of comprehensive plans for a long time. The issue of slum housing helped to trigger the planning movement early this century. In the 1960's and 1970's, the federal Department of Housing and Urban Development paid for many local comprehensive plans, in part to address a fair distribution of housing for low income households. In the 1980's, the issue was redefined by extraordinary housing inflation in Maine: in the five years from 1981 to 1986, the median price of a single family home in the state rose by 51% (and from 1986 to 1990 it rose further). By the mid-1980's, it was not only low income households who faced housing costs they could not afford, but also young, middle-income households in search of their first homes.

In the early 2000's, housing inflation resumed a rapid pace. As of 2003, the Maine State Housing Authority estimated that there were 14,000 low-income Maine families and 1,000 low-income elderly households who could not afford their homes. The discussion of housing affordability often centers around three areas:

- Affordability for those whose incomes are low or fixed, such as single parents on public assistance or elderly residents living on Social Security.

- Affordability for those who are working, but can not afford to live in communities where they work, such as nurses, police officers and teachers, or whom businesses need to attract to the area for their work forces.

- Affordability for first-time homebuyers.

The issue of housing, and especially its affordability, spills into other aspects of the comprehensive plan. It affects ability to attract business. It is tied to ability of those who work in or serve municipal government to live in the community. The cost and variety of housing help determine whether a community's population will be diverse or homogeneous. You will discover that many discussions in the comprehensive plan will find their way back to the question of housing and its affordability.

Inventory and Analysis

The inventory and analysis can be divided into two parts: first, an inventory of the town's housing stock, and second an assessment of its affordability.

Conducting the inventory and analysis of housing stock

The inventory and analysis of the community's housing stock typically includes:

The number of housing units in the community, by type (single family, multifamily, and mobile homes). It is useful to indicate these numbers as of the last decennial census, and then to show how numbers have since changed, based on local building permit or assessor's figures. The resulting table might look like this:

Table 13-1: Analysis of housing unit availability

	No. units 2000	%	No. units 2004	%	% ch. 2000-2004
Total	2,291		2,573		12.3
Year-round units	2,110	100.0	2,392	100.0	13.4
Single family	1,416	67.1	1,514	63.3	6.9
Multifamily	557	26.4	715	29.9	22.1
Mobile homes	137	6.5	163	6.8	19.0

Sources of information, continued …

If a community survey is being conducted as part of the comprehensive plan, information on housing conditions, the housing age, etc., can be updated.

The Maine State Housing Authority (MSHA) tracks information on home prices, including averages, medians, and distributions of selling prices. The MSHA maintains an affordability index by Labor Market Area (LMA).

Several national data/marketing companies, such as Claritas, supply updated estimates of household income levels, which can be used to compare local incomes to housing prices. Standard demographic reports can be ordered from these firms inexpensively. In some cases, your regional planning council or consultant may be tied into one of these organizations on-line, and can order information for you.

Local real estate professionals (including the Multiple Listing Service) and landlords can provide up-to-date information on housing prices.

The analysis of the chart would indicate that the town's year-round housing stock increased by more than 13% (or 282 units) since 2000. While about 100 of those units were single family homes, multifamily units grew at the fastest rate (about 22%), followed closely by mobile homes.

- **Age and condition of the housing stock**. The U.S. Census breaks down housing units by year in which they were built; ages of housing can be derived from that. For most communities, information from the Census on housing condition is limited. As signs of "substandard" housing, the 2000 Census provided information about the presence of complete bathrooms, kitchens, and central heating.

  More direct ways of quantifying substandard housing include a windshield survey and reviewing tax records (when they are up to date). If the tax records show that a unit has a low rating for CDU (Condition, Desirability, and Use), it is likely to be deteriorated. Using the information, the committee can identify general areas of town where problems relating to housing conditions tend to be concentrated.

  Programs are available to help rehabilitate housing. For information, contact your local community action agency, the Maine State Housing Authority, or the Maine Department of Economic and Community Development.

- **Occupancy and vacancy rates**. These may already have been identified when you prepared estimates of households and population. If not, the best sources of information (other than the decennial census) probably are local real estate professionals and landlords. The local post office may be able to conduct a special survey. A windshield survey might include how many homes and apartments are on the market. The purpose of identifying vacancy rates is to understand how tight the housing market is, and whether there is a shortage or a surplus of different types of housing units.

- **Tenure of households**, that is, percent of housing units in the community occupied by home owners versus renters. The decennial census is a reliable source of information for the year in which the census was taken. Subsequent to the census, it can be assumed that the single family homes that have been built are owner-occupied and that the multifamily units that have been built are renter-occupied. This is not entirely true, of course: some single family homes are rented, some multifamily units (especially condominiums) are owned, and some units go back and forth from owner to renter. To the extent that you are aware of these exceptions, adjust the breakdown accordingly. In any case, when combined with census information, the picture will be generally accurate.

The analysis of information gathered about housing stock should note trends in different types of housing and why they may be occurring. For example: If multifamily units have increased faster than single family homes, is it because there are more young households in the community? Because single family homes have become too expensive? Because there was a surge in condominium construction? Conversely, if there has been little increase in multifamily housing, is it because utilities (especially sewer) are unavailable to serve them? Because zoning restricts them? Does there seem to be a need for apartments that isn't being met? Are mobile homes, either on individual lots or in mobile home parks, becoming an increasingly important alternative in the community?

Conducting the inventory and analysis of housing affordability

Title 30-A §4301 provides the following definition of affordable housing:

"Affordable housing" means a decent, safe and sanitary dwelling, apartment or other living accommodation of a household whose income does not exceed 80% of the median income for the area as defined by the United States Department of Housing and Urban development under the United States Housing Act of 1937, Public Law 412, 50 Stat. 888, Section 8, as amended."

The objective of the comprehensive plan is to assure a supply of housing that is affordable to households in three income groups:

1. "Very low income" households, with incomes that do not exceed 50% of the median income in the county (or metropolitan statistical area if the community is in the Portland, Bangor, Lewiston-Auburn, or Portsmouth-Kittery MSA)

2. "Lower income" households, who have incomes of between 51% and 80% of the median income in the county or MSA

While not required, it is helpful also to examine "moderate income" households, who have incomes of between 81% and 150% of the median income in the county or MSA.

Use the most recent decennial census to obtain median household income figure for use in your community, or if the census is outdated, the Maine State Housing Authority can provide current information.

Conducting the inventory and analysis of affordable housing

The review of affordable housing can proceed at two levels. The first is a review of general information, and the second is a more in-depth study. If, after the review of general information, the issue of affordable housing seems well understood, there may be no need to go further. If not, the more detailed analysis will help you pinpoint the problem and prepare appropriate policies to address it.

General Review

In simplest terms, affordability is a question of household income versus the cost of housing. A review of the issue therefore should track and compare trends in the community's income levels and the cost of housing, both owned and rented.

The 2000 Census provided a snapshot of affordability for both the state and specific towns and cities. Table H73 of Summary File 3 presents household income by gross rent. Table H97 presents household income by owner costs. The resulting table, using statewide information as a point of comparison, might look like Table 13-2.

In the sample community, nearly a third of all renters in 2000 paid more than 35% of their incomes to rent, including nearly two thirds of renter households with incomes of less than $10,000 and 44% with incomes of between $10,000 and $20,000. Owners were better off.

About 13% paid more than 35% of their incomes to housing costs. This included 54% of households with less than $20,000, and 1.3% of owner households with healthy incomes ($50,000 plus).

These figures are in 2000 dollars. When dealing with income figures in different years, it is important to adjust them according to inflation. The most convenient tool for adjusting is the Consumer Price Index, or CPI, which is available from the Maine Dept. of Labor or the U.S. Bureau of Labor Statistics. For example, the CPI in 2000 was 172.2; in 2003 it was 184.4. This represents an inflation factor of 184.4 divided by 172.2, or 1.07.

Table13-2: Analysis of housing expenses by income, 2000 data

	% Households Paying >35% to Shelter	
	Community	**Maine**
RENTERS		
< $10,000	62.3%	60.1%
$10,000 - $19,999	44.1%	48.1%
$20,000 - $34,999	7.8%	12.0%
$35,000 - $49,999	0%	1.5%
$50,000 +	3.1%	0.6%
Total Renters	32.2%	27.4%
OWNERS		
< $10,000	67.8%	68.1%
$10,000 - $19,999	49.4%	39.6%
$20,000 - $34,999	16.8%	23.6%
$35,000 - $49,999	5.0%	9.4%
$50,000 +	1.3%	2.0%
Total Owners	13.4%	14.7%

To bring the general affordability picture up to date:

1. Identify trends in median household incomes. This may already have been done in the comprehensive plan's chapter on Population and Demographics. The data should at least include median income as recorded in the 1990 Census, median income as recorded in the 2000 Census, and estimated current year median income. (Note: "median" means that half the incomes are above this level, half are below. "Median"

and "average" or "mean" are different statistics. It is important to use "median" income because the average or mean figure is skewed upward by high income households.)

2. Identify trends in the median sales price of homes in the community. 1990 and 2000 figures are available from the 1990 and 2000 Censuses. Recent annual figures are available from the Maine State Housing Authority. If necessary, check with the local assessor for real estate transfer tax information, or see if you can borrow Multiple Listing Service "sold" books from a real estate professional and obtain median prices directly from them.

   Tracking median rental prices is more difficult, because there is no central source of information. Again, 1990 and 2000 census figures are available. More recent information must be gleaned from discussions with major landlords and/or classified advertisements in the newspapers. Questions about rental prices also can be included in a community survey.

Next, calculate the rate of growth in median income versus the rate of increase in sales and rental prices. This will demonstrate the extent to which incomes have kept up with, or lagged behind, housing costs. The results might look like this:

Table 13-3: Analysis of changes in income and housing costs

	1989	1999	% change
Median rent	$407	$517	27%
Median home value	$78,500	$107,000	36%
Median household income	$28,816	$36,498	27%

In this example, analysis would indicate that housing price kept pace with, or in the case of owned homes, exceeded change in incomes. In this community, it is probably fair to conclude that housing was comparably or a little less affordable in 2000 versus 1990.

The final step in the general review of affordability is to ask the questions: at what prices would housing be affordable to very low income, low income, and moderate income households; and does there appear to be housing available in these price ranges?

Using Kennebec County as an example, median income in the county (as of 1999—you should update the figure to the current year) was $36,498.

- Very low income households have incomes less than 50% of this level, or less than $18,249

- Lower income households have incomes of between 51% and 80% of county median, or between $18,614 and $29,198

- Moderate income households have incomes of between 81% and 150% of county median, or between $29,563 and $54,747.

For each of these households, maximum affordable prices of housing would be about 30% of their incomes. For example, maximum monthly housing cost (including basic utilities) for a lower income household would be:

> *$18,614 and $29,198 times 30%, divided by 12 months, or between $465 and $730 per month, depending on where in this income range the household falls.*

In Kennebec County as of 1999, the affordable prices for each of the three income groups can be summarized as in Table 13-4 (you should construct a similar chart for your county):

Table 13-4: Analysis of 2000 Kennebec County affordable pricing

	Very Low Income	Lower Income	Moderate Income
% of County Median	50%	51%-80%	81%-150%
In Dollars	<$18,249	$18,614 - $29,198	$29,563- $54,747
Affordable Gross Rent (@30% of Income)	<$456	$456-$730	$730-$1,369
Home Purchase:			
Affordable Mortgage inc. taxes, ins., util. @30% Income	<$456	$456-$730	$730-$1,369
Less property taxes, ins., utilities	+/-$225*	+/-$260**	+/-$295***
Equals Affordable Mortgage Payment	$231	$196-$470	$435-$1,074
Affordable Housing Price, Assuming 5% Down Payment and 6% Interest Rate over 30 years	<$39,500	$39,500- $82,500	$76,400- $188,500

*Assumes $100 in taxes and insurance, $125 utilities
**Assumes $135 in taxes and insurance, $125 utilities
***Assumes $170 in taxes and insurance, $125 utilities

Are there rents (say, 2-bedroom rents) available in town at less than $465, including utilities? Less than $730? Are these units safe and decent? Are subsidized housing units available? Based on Multiple Listing Service, real estate transfer tax data, or classified ad listings, what percent of homes are selling at prices affordable to the moderate income group? What is the cost of mobile homes, and are there places to put them? The answers to

these kinds of questions will signal whether or not the community must confront the issue of affordable housing.

It is very useful to back up these statistics with discussions with key people in the community: social service agencies who may be aware of needs among low income people (including, potentially, the problem of homelessness); public housing officials who may have waiting lists; and real estate professionals and landlords who may regularly field inquiries from households looking for suitable units.

A more detailed analysis

The general review may be sufficient to indicate whether a problem of affordability exists in your community, and even to lead to policies to address the problem. However, it may be important to define need for affordable housing in more detail in order to estimate the number of households who in fact may have a current need for housing in the indicated price ranges.

One way to do this is to include questions about housing need in a community survey. Some communities have carried out special surveys specifically on affordable housing. These surveys try to both measure extent of need in the town and gauge support among residents for affordable housing initiatives.

With or without a survey, it is also possible to take the data developed in the general review an important step further, and to actually quantify the housing need among each of the three income groups. To do so, it is necessary to zero in on specific groups of households:

- Those households who are of an age and income that make them likely first-time home buyers.
- Those households who are potentially in need of rental housing with deep subsidies.
- Those households who are potentially in need of rental housing that is low priced, but not necessarily subsidized.

First-time home buyers: In newspaper articles on the need for affordable housing, it is not unusual to read that some high percent of all households in the state could not afford a home at today's prices. This both overstates and understates the problem. It overstates it because there are many households—especially among the retired and elderly—who indeed have low and moderate incomes (they are no longer earning wages) but who already own their homes. It understates it because among the specific group of households that is now looking for housing, the percentage who can't afford today's prices may actually be higher than the average.

The key is to isolate those households that are likely first-time home buyers. These are households who probably are headed by a person between 25 and 44 years old. Younger than this, the household typically is a renter household without a desire or an expectation to own a home yet. Older than this, the household either owns a home or has made a

decision to rent for reasons other than price. Further, 25-to-44 year old households who are looking for a first home probably are of moderate, rather than low, income: in the case of Kennebec County, between roughly $29,600 and $54,750. As we found earlier, these households need homes priced between $76,000 and $188,000.

So, the question is: how many households headed by a person 25 to 44 years old, with incomes between $29,600 and $54,750, live in the community? The census provides this data in Table P55, "Age of householder by household income." For example, the 2000 figures for households headed by people 25 to 44 years old in one Kennebec County town of about 3,000 people and 1,100 total households looked like Table 13-5.

The income categories provided by the census don't match exactly our needed categories. Therefore, it is necessary to interpolate to the range $29,600 to $54,750. (Only an estimated 8% of households in the $25,000 to $29,999 range, and about 52.5% of households in the $50,000 to $59,999 range are within our needed categories.) After interpolating, estimated total number of households headed by a person between 25 and 44 years old, with incomes of $29,600 to $54,750, is about 122 (8% X 47, plus 97, plus 52.5% X 40).

A judgment must now be made as to what part of these 122 households may need to purchase a home but can not because of prices beyond their means. First, not all households in this age and income range want to buy a home. Some, for a variety of personal reasons, choose to rent. Census data suggests that in Maine, on the order of 25% of these households are renters by choice. That leaves 75%, or (in our example) about 92 households who could be considered in the home buying market. Next, how likely is it that a portion of these households already have bought homes? This will vary by community and by area of the state, and depends on the supply of homes within the required price range. In southern and coastal Maine, the supply will be very limited, and it can be assumed that a large need remains. In other communities, there may be a reasonable supply for at least households in the upper part of the moderate income range. The analyst must reach a conclusion based on knowledge of local real estate conditions.

Table 13-5: No. of 25-44 year old Households By Selected Income Categories

Household Income	25-34 years old	35-44 years old	Total
$25,000-$29,999	5	42	47
$30,000-$49,999	39	58	97
$50,000-$59,999	29	11	40
Total	73	111	184

Renters in need of deep subsidies: "Deep subsidy" projects provide renters with a direct government subsidy to help pay the rent. Under federal regulations, most renters must be within very low income ranges. They pay 30% of their income to rent, and government

makes up the difference between this amount and actual rental cost (based on a fair market rent).

Using the state definition of very low income, or less than about $18,249 for Kennebec County, census data for our sample community found an estimated 259 households in this range. Of these, 92 were elderly households (over 65) and 167 were non-elderly.

Not all households in this very low income range have a need or desire to rent. Many seniors own their homes, live with family, or are in other housing situations (boarding care, etc.). Many young adults who are very low income live at home; some very low income families may own mobile homes. Past data for Maine suggest that:

- 30% - 40% of very low income elderly households have a need and desire to rent.
- 40% - 45% of very low income non-elderly households have a need and desire to rent.

Using these ranges, we can estimate the total potential demand for deep subsidy rentals among the elderly in our sample community at (30% - 40% times 92) 27 to 37 units, and among non-elderly, (40% - 45% times 167) 67 to 75 units.

The needs of some of these households already are satisfied. For example, existing deep subsidy units in town should be subtracted from total potential demand. The remainder represents a good estimate of need in the community among very low-income households.

Renters in need of low-priced market rate rentals: Lower income households, as in our Kennebec County example, have incomes of between roughly $18,600 and $29,200. From the census data for our sample community, there are 247 households in this range: 66 elderly and 181 non-elderly. Again, using past Census data as a guide:

- 18% - 25% of elderly households in this income range have a need and desire to rent; and
- 35% - 45% of non-elderly households in this income range have a need and desire to rent.

Using these ranges, demand for low-priced rental units in our sample community in 2000 (a maximum of $456 to $730, including utilities) was between 12 and 17 units among elderly households (18%-25% times 66); and was between 63 and 81 units among non-elderly households, (35%-45% times 181).

Again, estimated number of existing rental units in the needed price range should be subtracted from these totals to arrive at remaining need for moderately priced rentals. Some of these units may be government-assisted units, even though they do not involve deep subsidies. Others may be available in the private market place. The best way to get a handle on the number of such private units is to speak with the Maine State Housing Authority and local landlords. The tax assessor may have information as well.

Summary of the analysis of affordability

In our sample community, the comprehensive planning committee's conclusions as to the number of affordable housing units that may be needed are summarized in Table 13-6. It

shows the greatest remaining need (in this example) to be among first-time homebuyers and very low income non-elderly families.

The important point to remember in this analysis of the affordability of housing is that different segments of the population have different needs. The need and demand for housing is related to life stage. New adults need rentals. By their late twenties or early thirties, a large share of households wants to buy a home, though many may not be able to afford to do so. Middle-aged adults with growing families may have a need to "buy up." The preponderance of seniors are home owners and, despite relatively low average incomes, may have neither the need nor the desire to move. The very elderly, unable to maintain a home, increasingly are looking for alternatives, ranging from in-home care to congregate housing and assisted living. There are exceptions to all of these generalizations. But the issue of affordable housing can only be understood if it is related not only to incomes, but also to the needs of households in their different stages of life.

Table13-6 also helps pinpoint the sample town's percentage goal for affordable housing. Recall that the goal is at least 10% of new units, based on a 5-year historical average of new unit construction, being affordable. Adding up low and very low income rental needs, both elderly and non-elderly, we get 94 – 135 units. If the sample town had added, on average, 50 new units per year over the previous five years, a 10% goal would mean adding 5 affordable units per year or 25 over the next five years. At this rate, it would take 20 years to fulfill the unmet need. This town might decide to set a goal higher than 10% to meet the need more quickly.

Table 13-6: Summary of Analysis of Affordability

	First-time buyers	Low income renter households		Very low income renter households	
		Elderly	Noneld.	Elderly	Noneld.
Age	25-44	>65	<65	>65	<65
Income	$30-55K	$18-30K	$18-30K	<18K	<18K
% of county median	81%-150%	51%-80%	51%-80%	50% or less	50% or less
Total No. Households	122	66	181	97	167
With Need	54	12 - 17	63 - 81	27 - 37	67 - 75
Units Avail. to Meet Need	10 - 20	10	25	15	25
Remaining Need	34 - 44	2 - 7	38 - 56	12 - 22	42 - 50

Lack of choice in the local market

Choice is important to meeting affordability goals, and to providing a variety of lifestyle possibilities for local residents. You should examine your town's housing stock—and zoning, if it exists—to see whether a variety of housing types is permitted or encouraged.

Here's a simple analysis:

	# of units	%	land zoned to permit	%
Single family, 2+ acres				
Single family <2 acres				
Mobile homes (alone)				
Mobile homes (parks)				
Condominiums				
Multifamily (1-4 units)				
Multifamily (5+ units)				

If there isn't a variety, what is the reason? Land costs? Lack of utilities? Lack of interest? Local zoning? What can be done to promote more choice?

Regional considerations

Most of the analysis has been described in terms of one town. But individual towns are generally part of large housing markets, which cover surrounding towns. Prices and vacancies in an individual community are in large part determined by this broader market.

Therefore, a community's analysis should not be done in a vacuum but, where possible, in comparison to neighboring and comparable communities in order to determine the degree of affordability in the community.

When it comes to policies and implementation, joint approaches with neighboring towns should be considered. Options include forming a regional nonprofit development corporation, or an agreement that towns will accept their fair shares of affordable housing.

Issues and Implications

Typical of the issues raised by an inventory and analysis of housing are:

1. How acute is the problem of affordable housing in the community? Among which segments of the population is there a problem?

2. Is the lack of reasonably priced housing a barrier to attracting to the community or region industry that needs a readily available labor force? Is it a problem for municipal or school employees?

3. Is the community sharing fairly in the housing needs in the region? You should check with your regional council to see if they have set any housing goals.

4. Do local regulations—zoning and subdivision standards, for example—unnecessarily inflate the cost of housing? Do they prohibit, or make impossible, certain forms of affordable housing, such as apartments? Are public services available to allow such forms of housing?

5. Does the community want to become directly involved in bringing about more affordable housing? Or can the market place produce what is needed? Under what conditions (in terms of land price, allowable density, road standards, and so forth) could the market place respond?

6. Is there a need and are there opportunities for rehabilitation of existing homes?

7. Is there an organization, either local or regional, that is spearheading the development of affordable housing? Are there opportunities for rehabilitation of existing housing units?

It should be noted that there may be housing issues beyond affordability. For example, the elderly or persons with mental or physical disabilities may have needs for specialized housing types, designs, or services. Contact with an area agency on aging or with an organization that represents interests of people with handicaps may provide guidance.

Policies

The Act suggests that communities strive to make 10% of new residential development within the range of affordability, as defined by the state. At a minimum, the plan's policies should be directed at this goal. Possible approaches to the policies include:

Regulatory approaches

- Review of zoning regulations, including density, minimum lot sizes, frontage requirements, and the manner in which multifamily and mobile home developments, congregate housing, and accessory apartments are treated, to determine whether any of them can be revised to make housing easier and less expensive to develop. Accessory apartments may provide affordable housing for a renter and also a welcome source of income for the homeowner.

- Review of subdivision regulations to determine whether development standards, including paved width of roads, requirements for curbs, and other standards related to infrastructure, can be revised to make housing less expensive to develop.

- Enactment of provisions within the Town's ordinances that offer incentives for affordable housing. These provisions would, for example, offer density bonuses or ease development standards in return for guaranteed affordable home prices. They might encourage "infill" housing—housing that is placed on vacant lots located within built-up areas that are easily served by public facilities.

- Enactment of "contract zoning" that would allow one-on-one negotiations with developers interested in producing affordable housing.

- Assuring that mobile home and mobile home park provisions of local zoning are in compliance with state law.

Production approaches

- Setting aside of Town-owned parcels of land and making them available for affordable housing proposals, provided that the resulting housing remains affordable for a long-term.

- Working to create a nonprofit organization, or cooperating with an existing one, whose mission is to produce affordable housing.

- Establishing a community land trust (not to be confused with the more familiar conservation land trust). A community land trust is a nonprofit organization that acquires land and makes it available for long-term, renewable leases to developers or individuals in need of affordable housing. It helps to control the future price of housing through its land leases.

- Making contact with the Maine State Housing Authority, the state's community development block grant program, or other agency involved with financing housing for low income households to let them know of the community's interest in an affordable housing project. Such contact may encourage both a developer and a financing agency to take steps to build the needed housing.

Regional approach

Participate in a regional approach to provision of housing in your area. For example, communities, business, and nonprofit groups might form a regional housing partnership to encourage affordable housing provisions in ordinances, to help seek financing for housing projects, and to be a voice for affordable housing. This should not be a community's sole policy for affordable housing, but it can be a valuable part of an overall strategy.

Implementation Strategies

Implementation strategies for addressing housing needs in the community will describe how and when chosen policies will be put into place. Strategies should concentrate on those measures over which the community has control, such as regulatory provisions of ordinances or freeing up of surplus municipal land for an affordable housing project. Incorporated into any strategy should be effective public involvement keep the community aware of the program goals.

Beyond these types of actions, particularly as a community moves toward involvement, directly or indirectly, in production of affordable housing or working with a regional organization, it is important that specific staff, agencies, or organizations be assigned responsibility. Timetables should be discussed, as should the question of whether the town should commit financial support to an endeavor.

References

Affordable Housing Subcommittee of the Community Preservation Advisory Committee. (December 2003). Affordable Housing: Barriers and Solutions for Maine.

Maine State Housing Authority. Housing, Jobs and Maine People: 2001. Retrieved from http://www.mainehousing.org/reports.html

O'Hara, F. (June 1988). Affordable Housing: A Handbook for Maine Citizens and Towns. The Governor's Task Force on Affordable Housing.

Other web sites:

U.S. Census: http://factfinder.census.gov

State Planning Office publications: http://www.maine.gov/spo/landuse/pubs/

Chapter Fourteen:

Transportation

State Goal:

To plan for, finance and develop an efficient system of public facilities and services to accommodate anticipated growth and economic development.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Existing transportation systems, including the capacity of existing and proposed major thoroughfares, secondary routes, pedestrian ways and parking facilities.

In addition, the Act requires that the implementation section of the plan:

> Develop a capital investment plan for financing the replacement and expansion of public facilities and services required to meet projected growth and development.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.B; §4326.1.G; §4326.3-A.B. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Roads are lifelines. They connect us to friends and neighbors. They are corridors of trade and tourism. They move freight. They are windows to scenic Maine. They provide frontage for homes and development of all kinds.

But transportation is more than roads and bridges. Sidewalks, bike paths, rail lines, cargo ports, airports, and buses all provide similar connections, though on different scales. All are important to our quality of life, and essential to our economy.

Transportation issues can vary widely in different towns and regions. Rural communities face problems of maintaining the existing network of public and private roads, and depend on major roads to access larger markets. Larger cities and towns face problems of congestion, parking, expanding airports and limited use of public transit. In major tourism corridors, conflict between the need to move people through a region often conflicts with the need to treat the road as downtown's Main Street. Many regions depend on one-of-a-kind facilities, such as a port for water-based shipments, a new passenger rail terminal, or a multi-modal facility where people or freight can shift from one mode of transportation to another.

In recent years the intricate connection between transportation and land use has become better understood. In the final analysis, transportation exists to connect one land use to another – a home to a work place, a manufacturer to a distributor, a business to a supplier, a neighborhood to a school or commercial center. As land uses spread out – for example, as homes are more distant from work places, or as neighborhood retail centers are replaced by larger, centralized retailers along highways – the demands on roads grow. And when government responds to those demands by expanding capacity of the roads or building bypasses, for example, land uses in the region often re-arrange themselves to take advantage of the increased capacity or re-directed flows of traffic.

With this better understanding have come new perspectives. At one level, the use of roads themselves is being examined. The problem of automobile congestion now is being attacked not only from the "supply" side: building more roads. It also is being attacked from the "demand" side: reducing the number of vehicles on the road during peak travel times. Transportation planners call this "transportation demand management" or TDM. Ride-sharing, staggered work hours, van pooling to work places, and similar measures are aimed at reducing the number of vehicles on the road during rush hours. Another technique used to manage congestion is referred to as "transportation system management" or TSM. TSM measures include signalization, lane channelization, installing medians and other access management actions. The idea is to get more efficient use out of the existing road system before trying to expand it.

Both federal laws (the so-called Transportation Equity Acts) and state law (the Maine Sensible Transportation Policy Act—Title 23 M.R.S.A, Chapter 3, section 73) no longer automatically jump to expansions of road systems to solve traffic problems. They encourage or require consideration of alternative solutions to traffic congestion. Both require consideration and integration of land use plans and practices before transportation decisions are made.

How effective traditional "transportation demand management" strategies can be in a

rural state punctuated with small cities and towns isn't yet known. Managing demand for road space, especially through pooling of trips and public transit, requires that people live near each other at a point of origin, and that there be a concentration of jobs at a point of destination. As homes and jobs spread out of villages and urban centers—becoming less dense and more dependent on the auto—trying to manage demand becomes difficult. Nevertheless, the financial, quality of life and environmental costs of an ever expanding road network make demand management an option to be considered.

At a broader level, a transportation network that offers a variety of ways to move around is the most effective. Lewis Mumford once observed:

"Speed in locomotion should be a function of human purpose. If one wants to meet and chat with people on an urban promenade, three miles an hour will be too fast; if a surgeon is being rushed to a patient a thousand miles away, three hundred miles an hour may be too slow....What an effective network requires is the largest number of alternative modes of transportation, at varying speeds and volumes, for different functions and purposes."1

Walking, biking, motoring, busing, trucking, shipping, railroading, and flying all have purposes to serve. Comprehensive plans should look both at how to manage auto traffic on roadways and at ways to take advantage of alternatives. Communities then have to be designed and built compactly enough to give the alternatives a chance to work.

Sources of information

Roadway information, including classification of roadways, traffic counts, accident information, and any special traffic studies, is available from the Maine Department of Transportation's planning division. If your community has an airport, MaineDOT has information on that facility as well. If your community is in a metropolitan area (Portland, Lewiston-Auburn, Bangor, Portsmouth-Kittery), a metropolitan planning organization based at a regional planning council studies a range of transportation issues. Regional planning councils themselves develop transportation needs assessments for MaineDOT and can provide another good source of information. Other important transportation information–concerning public transit, sidewalks, other pedestrian and bike paths, and major parking areas–must be gathered locally.

If it hasn't already done so, the town also may want to contact the Maine Local Roads Center in the MaineDOT's Bureau of Planning. It sponsors the Road Surface Management system. This is a system by which the community can evaluate the condition of its roads, list the roads by priority for repair, and identify options for repair, with estimated costs. The result is a comprehensive road maintenance plan that can be incorporated into the town's capital investment program.

Inventory and Analysis

Conducting the inventory and analysis

The inventory and analysis should cover the road system, off-street parking (if the community has commercial, job, or other areas that attract large numbers of vehicles), and the various modes of transportation that exist or are desired.

The road system

Classification: Roads can be defined according to the functions they are intended to serve. These "functional classifications" include:

- **Arterials**, highways that are intended to provide long-distance connections between towns and regional centers. Volumes of traffic typically range from 5,000 to 30,000

"Performance streets"

"In the absence of appropriate guidelines, municipalities ...adopted modified highway design standards....(But) highways were not intended to serve and be part of a residential neighborhood. They are overdesigned for that purpose. Local residential streets are part and parcel of the neighborhood they serve. People live on them....One must still provide for the necessary movement of the private automobile, a place to park and for access for service and emergency vehicles, but only because these, too, are part of the needs of the local and neighborhood. Such streets should be designed to serve the neighborhood–not the neighborhood to serve the streets. With the use of highway design standards, neighborhoods are designed on a tail wagging the dog approach."

–Performance Streets: A Concept and Model Standards for Residential Streets, Bucks County (Pennsylvania) Planning Commission, April 1980

vehicles per day. Arterials are divided between "principal" arterials and "minor" arterials. MaineDOT, in its rules governing driveways and entrances onto highways, also divides them into "mobility" arterials and "retrograde" arterials. A "mobility" arterial corridor is a rural arterial with a posted speed limit of 40 mph or more and which carries 5,000 or more vehicles per day for at least 50% of its length. A "retrograde" arterial corridor is a type of mobility arterial on which crash rates due to vehicles entering and exiting driveways exceed a certain level defined in the rules. These distinctions are important, because standards for driveway or entrance permits are tied to them. MaineDOT has mapped its mobility and retrograde arterials highways. Maine's arterials also play a major role in supporting heavy and long haul trucking needs. Generally speaking, arterials are also considered State Highways for purposes of distinguishing between state and local maintenance responsibilities.

- **Collectors**, meant to act as conduits between local or residential neighborhoods and arterials. Traffic is collected from local residential roads and delivered to the nearest arterial. Volumes typically range from 1,000 to 5,000 vehicles per day. In Maine, collectors are divided into major and minor collectors in rural areas. In urban areas, all collectors are considered urban collectors. Though not always the case, urban and major collectors are considered state highways, and minor collectors are considered state-aid highways for purposes of determining winter and summer maintenance responsibilities.

- **Local roads**, intended to provide direct access to abutting properties. Volumes typically range from 100 to 1,000 vehicles per day: the equivalent of a street serving a few to around 100 homes. All roads not classified by MaineDOT as arterials or collectors are considered local roads.

As part of the inventory and analysis of the roadway system, it is helpful to identify on a map or table which roads fall into the three classifications.

Ownership: Most arterials, collectors and local roads are publicly owned. But in some towns, certain local roads—serving seasonal homes, small subdivisions, or a scattering of houses—may be privately owned. This may raise issues of accessibility and maintenance responsibilities, especially because private roads often are not built to public standards. If these are issues, the inventory should differentiate between private and public roads.

Traffic volumes: Traffic volumes can be expressed in a number of ways. For example,

volumes are expressed as average annual daily traffic (AADT) or peak morning or afternoon traffic. Usually only estimated AADTs are available. Estimated AADTs are extrapolated from MaineDOT's automatic traffic counters. MaineDOT operates only a limited number of automatic traffic counters, which are in place year-round. If one of these counters is in or near your community, actual average daily and monthly counts can be obtained.

AADTs are an indicator of the amount of traffic on the roads, but they are average counts and they are often only estimates. Because traffic varies by time of year and time of day, AADTs alone will not demonstrate whether a problem exists. If a special study has been done of a highway corridor or a roadway (either by the DOT as one of its site-specific planning studies, or by a developer as part of a large project), more detailed information may be available. Such detailed studies normally identify average daily counts for the peak season associated with a particular area. They also often identify "level of service" of a road segment and of major intersections. "Level of service" refers to delays that occur on a roadway. It is determined by comparing the volume of traffic on the road or at an intersection with the road's or intersection's capacity to handle it. It is classified from A through F. Level of service A means there is minimal delay, with traffic flowing freely. Level of service E means capacity is either being approached or has been reached. Level of service F indicates the roadway is over capacity.

Crashes: A high number of crashes may indicate that traffic volumes are too great for the roadway or intersection, or that the roadway or intersection has one or more design flaws, or both. MaineDOT measures potential safety problems both by looking at total number of crashes in a location and by comparing this to the number that might be expected given the type of roadway or intersection involved and its traffic volume. From this, they calculate a "critical rate factor." Any location that has experienced at least 8 crashes over a three-year period and has a critical rate factor greater than 1.00 is considered a high crash location. Other safety concerns may exist, and the community may wish to document and monitor those.

Road condition: If possible, the inventory should indicate condition of the principal roads. Often, the local road commissioner or public works director maintains a list (even if it's just in his head) of problem areas. Problems could range from routine need to repave ("overlay") the road to a complete reconstruction of roadway and shoulders. The Maine Local Roads Center's road surface management program will be especially helpful in evaluating road conditions, assigning priorities, and anticipating costs. Also, communities should note whether there are drainage, erosion or sedimentation issues associated with the roadway. If a bridge or culvert exists on the roadway being reviewed, the community should determine whose jurisdiction it is in and what its condition is. Whether or not the culvert has any flow restrictions should also be noted. Road commissioners or local transportation committees should also review MaineDOT's capital work plan (BTIP) or contact the community's MaineDOT Regional Office to determine whether the state has pending maintenance or improvement plans for roadways in the community.

Road standards: As part of the inventory, it is useful to review local road construction standards if the town has them (as part of a subdivision or road ordinance, for example). These standards usually address the required width of the right-of-way, required width of

the pavement, the depths and types of base material, thickness of pavement, minimum and maximum grades and side slopes, and the like. MaineDOT determines state standards for collectors and arterials and is subject to Federal standards associated with certain arterials considered part of the National Highway System. It is useful for local planners to review these standards, because many towns that have adopted subdivision ordinances during the last 10-20 years simply adopted "model" road standards based on the expertise of state highway designers. These standards may or may not be appropriate to many neighborhoods, villages, and truly rural areas. Several sources of information offer guidance on local road standards. They include (see references at the end of the chapter):

- The latest edition of *Model Subdivision Regulations* prepared by the Southern Maine Regional Planning Commission.
- The manual, *Residential Streets*, prepared by national engineering and home building organizations.
- The Institute of Traffic Engineers' *Neighborhood Street Design Guidelines*.
- *The Subdivision and Site Plan Handbook*.
- DEP's Site Location Law regulations, Chapter 374.

Access management: This refers to regulation of low use driveways or higher use entrances between the road and private property. The proliferation of driveways and entrances (sometimes called "curb cuts") along major roadways can cause crashes and traffic congestion. For arterials (outside of downtowns and similar built-up areas) to serve their purpose of providing high speed long distance connections, access should be heavily restricted. For collectors to serve their purpose, there also should be limits to address safety. The inventory should indicate whether the community's ordinances govern the number, placement, and/or design of driveways. MaineDOT has adopted rules governing driveways and entrances onto state and state aid highways located outside of urban compact areas (17-229 Chapter 299, "Highway Driveway and Entrance Rules," which can be found at MaineDOT's web site: www.maine.gov/mainedot).

Parking

Parking is a concern for communities where an activity or attraction exists that draws people to a central location: a downtown, a major industry or other work place, a shopping center, a harbor, or a recreational complex, for example. In these cases, off-street parking is a double-edged issue: how to provide parking to meet the need while at the same time not allowing the parking to dictate design or to overwhelm an area.

In communities with large urban centers and a variety of parking mechanisms—off-street, on-street, metered or otherwise limited, surface lots and garages—sophisticated studies may be needed to fully understand the problem and identify solutions. In less complicated situations, but where parking is nevertheless thought to be a concern, the inventory and analysis should:

- Count the public and private parking spaces in the area of concern, both off-street and on-street, with appropriate descriptions (striped or not, metered or otherwise limited, parallel or diagonal, spaces for persons with handicaps, etc.);

- If possible, monitor use of the parking spaces over a period of several days at representative times to determine percent of spaces, by type, time and location, that are vacant;

- Estimate the number of spaces required by employees in the area of concern versus transient visitors (shoppers, tourists, etc.), and whether employees are using "prime" spaces or are parking elsewhere;

- Note specific needs or problems, such as whether parking is spilling into residential neighborhoods, the need of merchants for on-street parking in front of their shops, or the all-day use by commuters of off-street lots intended to serve visitors.

This set of information is aimed at defining the problem in terms of number of spaces to meet demand. There may be other issues as well: safety, condition, security or aesthetics, for example. If so, the nature of these problems should be documented.

Public transit, intercity travel, and ride sharing

The inventory should indicate whether public transit is available. Forms of public transit include a bus system running on a set schedule (fixed route), bus or van service available by appointment (demand response service, often provided by a human services agency), and taxi services. The description should include routes, cost, and level of use. If the public transit is subsidized with local dollars, that should be indicated as well. From time to time, MaineDOT prepares a Transit Needs Study and works with existing transit providers to regularly update their Operations Plans. Contact the MaineDOT Office of Passenger Transportation for more information.

The inventory also should identify location and owner/operators of commuter parking (park-and-ride) lots that enable car or van pooling. If your community has a major employer, it may sponsor car or van pooling, a shuttle, or other measures to ease its own parking and congestion problems. GO Maine, a program sponsored by MaineDOT, the Maine Turnpike, and the Greater Portland Council of Governments, also may be available in your area.

Passenger rail, from Portland to Boston, was reintroduced to Maine in 2001, and plans are underway to extend service to the north and eventually to the west. Meanwhile, intercity bus travel also has grown. Communities served by these modes of intercity travel should include them and any associated issues in their inventories.

Bicycling, sidewalks, and pedestrian paths

Bicycle use multiplied during the last few decades. In Maine the use is primarily recreational, for trips to and from school, or for other personal or recreational purposes, but some also use bikes for work trips. The inventory should note whether paths or safe street lanes are available or needed for bikes, their quality, and the availability of facilities

at major job centers to accommodate cyclists. The American Association of State and Highway Transportation Officials (AASHTO) has prepared standards for bicycle facilities (see the reference at end of the chapter), and MaineDOT's Bike-Ped coordinator is an important resource on this topic.

Feet were the original mode of transportation and, though threatened by moving machines and poor community design, are still worth using today! The inventory should describe facilities available for pedestrians, the extent to which sidewalks or other paths are available in neighborhoods and commercial districts, and whether they connect residential areas with schools, neighborhood shopping areas, and other daily destinations.

Major tourist terminals

Large transportation facilities that serve primarily visitors, such as cruise ship terminals, ferry terminals, excursion rail terminals, and airports with a large tourist usage, are both an economic cornerstone of communities and a challenge to manage. The inventory should document trends in their use, land areas devoted to the terminals, potential expansion requirements, surrounding land uses, and degree to which passengers embarking or disembarking are connected to other modes of transportation to reach their final destinations.

How the community sees its highways

When MaineDOT reviews state roads and highways for possible upgrades, it may have little insight to the values a town or city attaches to the aesthetics of the roadway, trees along the road, historic elements like stonewalls, particular buildings or their relationship to the road, or the overall "feel" of the road. If the inventory of transportation facilities includes aspects of the transportation system that are important to the community, it is much more likely that MaineDOT will take these into account as it reviews its plans and responsibilities for the road.

Implications and issues

Some implications and issues that often arise from the inventory and analysis of transportation include:

With respect to the road system:

- For which roads and bridges does the municipality have full responsibility, and for which does the state have or share responsibility? In the latter case, are communications between the municipality and MaineDOT adequate to convey local needs? Conversely, is the municipality aware of state objectives for managing access and safety in state highway corridors, and do the municipality's land use regulations mesh well with these objectives?

- If there are documented deficiencies in the roadway system, how does the community want to approach the solutions? If the deficiencies are questions of safety (as indicated by number and type of accidents), the community may want to immediately commit resources to engineer and build a solution; or, if it is a state road, work with MaineDOT to address the problem.

If the deficiencies are questions of congestion and delay during rush hours, the community may want to explore with MaineDOT less expensive "demand management" alternatives first.

Or are the periods of delay so temporary or occasional that it is reasonable simply to tolerate them? If so, what are the implications for future development proposals that may cause additional traffic to enter the area?

- Are deficiencies related to the environment? For example, the community may want to explore ways to minimize erosion of soil into water bodies or may wish to upgrade culvert designs to permit unrestricted flow to prevent flood damage and provide for fish passage.

- Does the community have a schedule for regular investments in road maintenance and improvement (see Chapter 17 for discussion of capital improvements planning)? MaineDOT has a long-standing and frequently updated capital improvement plan, known as the Biennial Transportation Improvement Plan (BTIP), and a companion Biennial Maintenance Action Plan. Is the town plugged into the process by which state-related projects get included in the BTIP?

- Does a major state or U.S. route, which generally serves as an arterial for travelers, pass through the community—for example, its downtown—and serve as a local service road en route? Does this dual use as arterial vs. local service road cause conflicts: for example, the need to widen the road for faster travel, versus the need to keep it in a configuration (for example, with two lanes, on-street parking) that serves the community's needs? How can the town work cooperatively with MaineDOT to solve conflicting needs?

- Does the community have a clear policy with regard to accepting privately built roads? Are there construction standards for such roads? Who is responsible for maintaining roads that are to remain privately owned?

- Does the community have in place, or does it need to put into place, measures to control the number, placement, and design of driveways along arterials and collectors? If so, how do these measures correlate or conflict with MaineDOT's access management program?

- Are the community's local road design standards appropriate to the type of village, suburban, or rural environments the town wants? Appropriate standards for local roads may call for narrower pavement, have less shoulder width, and require maintenance of more existing trees than would be prescribed by a highway planner. Can standards be designed that are compatible with these settings and still provide for safety, easy winter maintenance, and access by emergency vehicles?

- Are new subdivision roads (residential or commercial) designed for connection to other roads to create a network of streets, or are new roads mostly dead-end? If dead-end, what are the implications for town services, such as snow plowing, school buses, and emergency vehicles?

With respect to parking:

- How real are perceived parking problems—for example, in the central business area? Are there management or on-street solutions to the problem, or is expanded off-street parking required? (Communities should be aware that MaineDOT's access management standards limits the type of on-street parking that can occur in downtowns on designated mobility or rural arterials.)

- Does off-street parking dictate design of sites in the community, with little regard for best placement of buildings, aesthetics, or ability of pedestrians to safely move about? Is the community satisfied with the way off-street parking is provided and regulated?

With respect to alternative modes of transportation:

- Does the community wish to support public transit financially? Does the community have the size or neighborhoods that are densely enough settled to make public transit feasible? For example, some studies indicate that community bus service becomes feasible when neighborhoods are settled at 4 to 7 units per residential acre. However, car pooling or intercity service that includes a gathering point for commuters from the area can work at lower densities. Communities should be aware that MaineDOT has a Transit Bonus Program to support existing transit services.

- What role should bicycle lanes or paths play in the community?

- If the community hosts a transportation terminal, such as an airport, rail, or ferry terminal, is the terminal adequately connected to other modes for passengers who are continuing their trips?

With respect to pedestrians:

- Do the community's lay-out, design, and facilities make it easy or hard for pedestrians to go between their homes and other destinations? Are business areas allowed to develop in a way that patrons, once in the area, can easily walk from one place of business to another? MaineDOT's Safe Ways to School Program can help improve walking and biking facilities between neighborhoods and schools.

Policies

Policies should build on the facts in the inventory and analysis and the responses to the issues and implications. It may be helpful to organize them as follows:

1. Policies that deal with the **pattern of the municipality's development**. This pattern is tightly bound to the transportation system. It's been said that the best way to avoid traffic problems is to design the community in a way that does not rely so heavily on cars. A community built around villages or traditional neighborhoods with a variety of services will spawn a greater variety of ways to get to needed destinations (work, store, school, friend's house, day care, ice cream shop, the beauty salon) than one that is spread out.

2. Policies that deal with **private roads**: These policies might address two situations:

a. Existing private roads. These policies would address the town's willingness to continue to provide maintenance (both summer and winter) for private roads. They would also establish the circumstances under which the town would accept ownership of and responsibilities for an existing private road. For example, it may require that the roadway be brought up to certain minimum construction standards with respect to base and sub-base depth and materials, pavement thickness, associated drainage, and width of the right-of-way.

b. New roads built as part of approved subdivisions. These policies would establish (if this has not yet been done) that road standards should be incorporated into subdivision regulations, with a clear procedure for construction, inspection, filing performance guarantees, and acceptance of roadways. The policies might also establish whether, and under what conditions, newly built roads that are intended to serve a limited amount of development and to remain in private ownership should be subject to lesser standards. Such standards should not be less than necessary to accommodate emergency vehicles.

3. Policies that deal with **street design**: not only to move traffic safely and efficiently, but also to make the street a contributor to and part of the overall neighborhood or community landscape. That landscape might be the bustle of Main Street, filled with people as well as cars; or quiet and sociability of a neighborhood; or woods and fields of rural lands. Standards of new road design—its width, shoulders, street trees, and so forth—should be made to fit the landscape.

4. Policies that deal with **road capacity**: There may be problems so urgent that the community, in conjunction with MaineDOT, is ready to move to construction of new or wider roads or intersections. But in general the community may want to consider a policy that, when confronted with a potential or growing traffic problem, it will try the least expensive and least intrusive methods of dealing with it before moving to the most expensive and most intrusive. This would mean considering, in order: access management first, demand management second, system improvements third (that is, minor redesign and reconstruction of existing roads and intersections, signal connectivity), and new construction only if the first three approaches aren't sufficient or practical.

   A related policy would be one that encourages the evolution of a network of local streets and frontage roads that enable residents to navigate through portions of town without having to enter, exit, or cross arterials or collector roads. The Future Land Use Plan (Chapter 18) and this future network can evolve hand-in-hand. An "official plan" that lays out a street network in advance of development, as noted in Chapter 12 (Land Use Patterns) would be an important companion tool.

5. **Policies dealing with parking**, if parking is considered an issue in the community. A policy of moving from least expensive and intrusive solutions to most expensive and intrusive solutions also is possible here. This would mean trying management solutions first, low-cost capital solutions second, and more expensive capital solutions last. If the issue is centered on downtown, a primary consideration is the need of merchants for on-street parking, which also is important to a strong downtown "streetscape," balanced against the need to move traffic if Main Street doubles as an arterial.

6. **Policies dealing with alternative modes of transit**, which, as mentioned, are closely tied to development patterns in the community and region. The policies might focus on use of alternative modes for specific purposes (recreation or personal needs not related to work, for example) or as a complement to the automobile. In the latter case, it is especially important to be realistic. Studies suggest that certain minimum levels of residential density are necessary before public transportation is feasible: for example, at least 4 units per residential acre, and preferably at least 7. This is one of many instances in the comprehensive plan where the community has to make a choice about land use patterns before it can decide on the means of transportation to serve the preferred pattern. The more compact the pattern, the more implementation options there will be for alternative modes of transportation.

   Policies on alternative modes of transportation may have less to do with the needs and demands of local residents, and more to do with the needs and demands of visitors. For towns that are tourist destinations, the summer density of visitors may well warrant choices in modes, including shuttles, buses, and taxis.

7. **Policies dealing with pedestrians**, including the need for sidewalks or other walking paths, and whether (and under what circumstances) these will be part of subdivision requirements and/or part of the municipality's capital improvements program. Think about where schools and other public facilities exist; if sidewalks don't exist, are land use management mechanisms in place conducive to pedestrian activity between these uses?

8. **Policies dealing with transportation impacts that are considered local nuisances or hazards**. These might involve trucks and truck routes, speeding, proximity of residential areas to large transportation terminals, such as airports, and noise associated with the transportation system. The ability of a municipality, on its own, to remedy these problems is limited. Policies should be aimed at preventing them (for example, by directing residential development away from major transportation facilities). Where the issue involves state roads, working effectively with MaineDOT will be necessary.

Implementation Strategies

Depending on the policies adopted, implementation strategies to be considered might include:

- Careful consideration of how the community's future land use plan and its transportation policies interact. It is only in the context of the future land use plan that decisions to implement modes of transit—walking, biking, busing—in addition to the automobile can be made. Depending on policies relating to land use and transportation, the appropriate implementation measure may simply be (for example) to improve sidewalks or to start a bikeway for personal and recreational purposes. It may be to support initiation or expansion of a bus system that can serve workplaces that are sufficiently concentrated to make mass transit possible.

- Coordination with neighboring towns: initiating or participating in forums to discuss

Building a relationship with MaineDOT

MaineDOT is anxious to work in concert with towns to complement local comprehensive plans even as it looks out for regional and statewide needs. Because local transportation policies may rely on coordination with (and implementation by) MaineDOT, knowing about MaineDOT's mission, its operations, and potential points of conflict can help.

(a) **MaineDOT's transportation and budget plans**: The Department maintains a biennial transportation improvement plan (BTIP), which is the basis of its biennial budget. It also has a six-year plan, which is updated every two years or so, and whose projects may make their way into the biennial plan; and a 20-year plan, which is updated every three to five years. Towns calling for transportation improvements or for character preserving enhancements that are within the state jurisdiction should consult with MaineDOT concerning these plans.

(b) **Access management**: The Legislature and MaineDOT overhauled the State's access management rules in 2002 to give greater protection to the safety and functions of rural arterials. MaineDOT strongly discourages unlimited access to arterials from abutting properties, because each point of access creates a point of conflict for traffic. Local policies should call for a limited number of planned points of access that serve multiple properties (through frontage roads, interconnected parking lots, shared driveways, etc.). An advisable policy along rural arterials is to allow a single point of access per lot of record as of the date of the adoption of Maine's access management rules (May 2002) or another appropriate date (for example, adoption new access management regulations in a local land use ordinance).

Further, if the town's policies call for signalization of intersections, consult with MaineDOT about standards for spacing of signals. The town's "growth areas" should be designed with these spacing requirements in mind. The signals themselves must be authorized by MaineDOT.

(c) **Local context**: If the town is recommending transportation improvements or is anticipating development that will require transportation improvements, try to be clear about characteristics of the town that should be protected. For example, what scenic vistas, historic resources, rural characteristics (such as stone walls and tree lines) or natural characteristics does the town wish to preserve if and when construction for transportation work is required?

(d) **Transit and other alternative modes of travel**: If the town's policy is to promote public transportation, beware of conflicting policies. Land use policies such as overly wide frontage or large lot requirements conflict with that policy. Similarly, if MaineDOT is asked to build or extend sidewalks in areas in which it is working, it will need to know that the setting is compact enough that the sidewalks will be used. (There is a sidewalk policy which if properly used will "forgive" any local match requirement).

(e) **Coordination with neighboring towns**: In establishing priorities for enhancements to the state's transportation network, MaineDOT likely will favor communities that explicitly recognize roads and other transportation facilities as shared assets and adopt policies that, jointly with other towns, anticipate and try to avoid future traffic problems.

(f) **Environment**: In the plan, make MaineDOT aware of local environmental needs that may be affected by transportation facilities (for example, culverts that may be affecting a stream). This increases later justification for MaineDOT funding to address the problem if located on the state system.

Under the Maine Sensible Transportation Policy Act, towns should be aware that MaineDOT is trying to respond to concerns about contribution by vehicles to greenhouse gases. It anticipates looking, within its programs, for incentives to encourage more compact forms of development that correspond to fewer vehicle miles driven.

(g) **Avoiding land use conflicts**: Some state transportation facilities – airports, highway interchanges, port facilities, and the like – can be noisy and intrusive. They are also economic assets. A town's land use policies should avoid directing incompatible growth near these facilities and turning them into nuisances.

how transportation and related land use in one town is affecting another town, and how transportation and land use planning can be coordinated.

- Road maintenance and repair budgets as part of a capital improvement plan and as input to MaineDOT's Biennial Transportation Improvement Program (BTIP).

- Road standards for subdivisions and private roads

- Design of future street systems. Consider an "official plan" for the layout of future streets in designated growth areas. This plan would foresee the evolution of a street system that interconnects, creating low-volume, safe, and convenient routes, separated from arterials, for residents in neighborhoods and for shoppers in commercial districts.

- Access management strategies. These include:

  - A limit on number of curb cuts (driveways/entrances) serving a lot, especially along commercial corridors. Along arterials outside of downtowns or similarly built-up areas, best practice calls for a limit of one new curb cut to the arterial per lot of record.

  - Requirements to place curb cuts minimum distances away from intersections and other curb cuts. MaineDOT has published standards for spacing of driveways along arterials depending on posted speed limits. Elsewhere, often minimum distance for a curb cut serving a commercial purpose, for example, is 200 feet. An appropriate professional should be consulted at the time standards actually are prepared.

  - Limits on widths of curb cuts (often the limit is on the order of 20 feet for normal residential uses and 40 to 60 feet for different types of commercial uses). An appropriate professional should be consulted at the time standards actually are prepared.

- Demand management strategies, including working with major employers on car and van pooling or park-and-ride lots.

- System management strategies, including turn lanes, acceleration and deceleration lanes, medians, signal synchronization, if appropriate and based on MaineDOT concurrence.

- Parking management strategies, including striping parking lots, enforcement of parking time limits, and pay-for-parking measures such as metering or pay lots.

- Low-cost capital strategies to solve parking problems, such as satellite parking areas in a town with a job center or tourist activity, perhaps combined with a shuttle bus sponsored by merchants or major employers.

- New construction, based on studies and recommendations by the Department of Transportation. As noted earlier, MaineDOT projects must go through a planning and budgeting procedure that requires several years of lead time before construction can begin.

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http://www.smrpc.org/transportation/dm/otherplanning/Model%20Subdivision/Revised%20Model%20Subdivision%20Regulation_Transportation.doc

Web Sites:

Maine Department of Transportation: http://www.maine.gov/mdot

Maine State Planning Office: http://www.maine.gov/spo

Chapter Fifteen:

Recreation and Open Space

State Goal:

To promote and protect the availability of outdoor recreation opportunities for all Maine citizens, including access to surface waters.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> Existing recreation, park and open space areas and significant points of public access to shorelands within a municipality or multimunicipal region.

In addition, the Act requires that the implementation section of the plan:

> Encourage the availability of and access to traditional outdoor recreation opportunities, including, without limitation, hunting, boating, fishing and hiking; and encourage the creation of greenbelts, public parks, trails and conservation easements. Each municipality or multimunicipal region should identify and encourage the protection of undeveloped shoreland and other areas identified in the local planning process as meriting that protection.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.J; §4326.1.F; §4326.3-A.I. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Sources of information

The town's tax records or a parks and recreation committee can provide a wealth of local information.
Some communities may have a master parks plan or a long-term recreation plan already prepared.

The Bureau of Parks and Lands in the Department of Conservation maintains a data base (called PARKALL) of outdoor recreation lands and facilities, including at the local level. The data are included in State Planning Office's Comprehensive Planning Resource Package, and also are available to municipalities on request.

The State Planning Office's Land for Maine's Future Program maintains a list and map of state and federal conservation lands. The Bureau of Parks and Lands, the Department of Inland Fisheries and Wildlife and the Department of Marine Resources have information on public access to water bodies, and on priorities to increase access.

An important reference is the Bureau of Parks and Lands' State Comprehensive Outdoor Recreation Plan (SCORP), which the state is required to prepare to maintain eligibility for federal Land and Water Conservation Fund monies.

The National Recreation and Parks Association (http://www.nrpa.org) is a resource for standards for parks, open space, and recreational facilities.

So fervently do Mainers embrace outdoor recreation that in a survey for the Commission on Maine's Future in the late 1980s, 75% said that "the people of Maine should have the continued right to use private wilderness and forest land at no cost." And half said "no one should be able to own a beach and keep everyone else off." It is not so much that Mainers think private property rights—which Mainers also hold dear—must yield to the right of the public to fish, hunt, swim, and hike where it chooses. Rather, for most of the state's history these two notions—the rights of property and free access to the outdoors—have been compatible.

Today, opportunity for access to outdoor recreation is not as vast as it once was. As development spreads to rural and coastal lands, conflicts between new suburban property owners and traditional outdoor recreation are inevitable. New balances must be struck: sometimes restricting outdoor recreation, as with more stringent hunting laws, and sometimes restricting property rights, as with land use regulations that keep large acreages of open space intact. Comprehensive planning should be used to help find the balance.

Unlike much of the state's outdoor recreation—rural, informal, and free of charge—municipal parks and recreation programs are not available in all communities. But in the many communities that do offer them, they are highly valued. Municipal recreation programs often are viewed as discretionary: something to be considered after the necessities of police and fire services and trash removal. Yet, where they are offered, public parks and recreation facilities are used heavily and are relied upon for well-being and as part of the fabric that holds the community together.

Government is not the only provider of recreation. Businesses operate ski slopes, campgrounds, golf courses, and swimming beaches. Local clubs and cooperating landowners provide snowmobile, cross-country skiing, and hiking trails. They, too, are integral to the fabric of community life.

For municipal recreation programs, the comprehensive plan serves as the foundation for identifying need and for building necessary facilities to meet needs. It also helps communities meet the municipal planning requirements for federal and state grants under the Land and Water Conservation Program.

For major private recreational endeavors, the comprehensive plan can identify potential land for expansion, as well as provide protection for and from neighboring uses.

Inventory and Analysis

Conducting the inventory and analysis

The inventory of recreation and open space can be divided conveniently into four parts:

1. Municipal parks and recreation.

2. Other outdoor recreation and open space, public and private.

3. Public access to water bodies.

4. Connection and proximity.

Municipal parks and recreation

Municipal parks and recreation facilities and programs are principally those owned or provided by the town. They include town parks, beaches, recreation facilities, and programs, and school facilities and programs (which may be administered by a School Administrative District [SAD] or a Community School District [CSD]). Although not owned by the municipality, other groups and enterprises may be providing organized facilities or programs that help meet the town's needs and should be in the inventory. These include private, commercial, and voluntary agencies, facilities, and programs (YMCA, YWCA, Boys' & Girls' Clubs, snowmobile club, country club, bowling alley, etc.). In each case, there should be a facility description, an indication of its condition and level of use, and whether there are apparent problems (such as inadequate parking or poor drainage).

Table 15-1. Sample Guidelines for Parkland and Recreational Facilities

PARKS	NRPA GUIDELINE	**FACILITIES**	NRPA GUIDELINE
Regional Park		Recreation Centers	No standard
Size	200+ acres	Baseball fields	1 per 5,000 pop.
Acres/1000 pop.	5.0 – 10.0	Softball fields	1 per 5,000 pop.
Large Urban		Soccer fields	1 per 10,000 pop.
Size	50-75+ acres	Bask'ball cts. (outdoor)	1 per 5,000 pop.
Acres/1000 pop.	n/a	Football fields	1 per 20,000 pop.
Community		Pools	1 per 20,000 pop.
Size	30-50 acres	Tennis courts	1 per 2,000 pop.
Acres/1000 pop.	5.0 – 8.0	Golf	1 per 50,000 pop.
Neighborhood		Walking/jogging trails	No standard
Size	5 – 10 acres		
Acres/1000 pop.	1.0 – 2.0		
Playfield/Mini-park			
Size	2500 sq. ft. – 1 acre		
Acres/1000 pop.	0.25 – 0.50		

The inventory also should discuss the way the municipality presently delivers park and recreational services, and how they are paid for. Is there a formal town parks and

recreation department? An advisory committee? To what extent do local parks and recreation activities rely on user fees rather than property tax dollars from the general fund?

Having identified existing facilities and programs, the next step is to establish guidelines for number and types of facilities and programs the community should be offering. One widely used set of guidelines is from the National Recreation and Parks Association. One set of guidelines is for a hierarchy of parks, from regional to mini-parks. A second relates to facilities, such as ballfields. Table 15-1 illustrates.

Total population may not be the sole, or in some cases the best, indicator of need for a recreational facility or program. Specific demographic or other characteristics help define need, as well. For example, a community with a high number of elderly will have different needs than one with a high number of youths. Or a community with both an urban center and less dense suburban neighborhoods may find that the needs in these areas differ, even though population sizes might be similar. A community survey is helpful in identifying unique needs.

With an inventory of existing facilities and programs in hand, and guidelines as to the number and size of facilities that the community thinks is important to offer based on its population or other indicators of need, the committee can identify deficiencies, existing and projected. For example, a town of 3,000 people, projected to grow to 3,700 over 10 years, may have one tennis court. It may have adopted a guideline of 1 tennis court per 2000 population. That would suggest that its lone tennis court already is being heavily used and it is time to think about a second one. Within 10 years, it will almost certainly need a second court. This need should be incorporated into the plan.

This kind of analysis should be applied to each major type of recreational facility and program.

Other outdoor recreation and open space

Other outdoor recreational opportunities also are available in most communities. These may be open spaces that are not organized into parks or even publicly owned but rather are informally used by local residents for ice skating, hunting, snowmobiling, hiking, cross-country skiing, bird watching, berry-picking, or other outdoor recreation. These lands may by owned by the town or state or by a nonprofit organization or land trust. They may be privately owned but under a conservation easement. Or they may be large, privately owned tracts that simply have been historically popular and available for recreational use.

These areas should be part of the inventory, including acreage, ownership, and any important features that make the open space especially suited for outdoor recreation. Lands that have taken advantage of preferential taxation under the open space provisions of the Farm and Open Space Tax Law should be noted (the tax assessor has this information).

These lands almost always will be part of a bigger picture: part of an environmental setting (watershed, woodlands, wildlife habitat, etc.) that give them multiple importance.

Recreation often is just one of several important uses and may not dominate.

Discussion of these lands should be in this larger context. For example, do they have, in addition to recreational value, such significance, e.g., a combination of wildlife and scenic values and unique topographic features, that land use restrictions should be imposed? Perhaps a tract should be purchased by the town or state. Could a land trust be established or a conservation easement purchased? Is the land fragile, able to withstand only passive, non-motorized recreational use? Conversely, does the land have economic value to the town because of its availability to hunters, snowmobilers, and others? This kind of evaluation will provide the committee with information it needs to shape policies.

Public access to water bodies

Public access to water bodies is related to other parts of the inventory of marine and coastal resources, and related recreational facilities and open space may have been partly included in them. It may be helpful to focus separately on this issue.

The inventory of public access should include both formal and informal access, large-scale and small-scale, and access that is not only publicly owned, but also privately owned and available for use by the public. Formal points of access might include boat ramps, public docks, public beaches, and marinas available for use by the public. Informal points of access might include places that have no organized parking, signs or facilities but are popularly used to launch canoes or other small boats or to fish from the banks. Public access need not be limited to physical access to the water itself; walking paths along a water body, or places that offer good views of the water also should be noted.

The inventory of public access should include a physical description of the access, the type of use it receives, and its ownership. The discussion also should address whether or not there are apparent threats to the access: Is it likely to be put to another use? Is it likely that an adjacent property will be developed or used in a way that will diminish or effectively eliminate the point of access? (Note: Public access to coastal waters is also discussed as part of marine resources in Chapter 9).

The taking issue

The "taking issue" refers to the legal question of whether governmental regulation has gone so far as to have effectively "taken" private property, requiring compensation to the property owner. It is a shorthand reference to the Fifth Amendment to the U.S. Constitution's prohibition: "nor shall private property be taken for public use without just compensation."

Taking is a complex legal issue. The courts have never offered a formula for determining when a "taking" has occurred. Reviews are made case-by-case. But there are several tests:

What is the economic impact of the regulation on the property owner? Has the owner been left with a reasonable economic use? It doesn't have to be "highest and best" use or the use the owner hoped for. It merely has to be "reasonable" use.

Does the regulation promote a valid police power objective? The "police power" is the power of government to regulate to protect the public health, safety, and welfare. Courts try to balance the public welfare against the diminished value of private property that may result from regulations. Where regulations prevent a public harm–for example, by protecting environmentally sensitive lands–this test is easier to meet. Where regulations create a public benefit–for example, a park–that did not previously exist, it is difficult to meet.

What is the character of the governmental action? If the

(continued)

The taking issue, (continued) ….

regulation requires a landowner to conserve open space to prevent a public hazard, such as flooding, it is easy to defend. If the action in effect reserves private land for a uniquely public function–for example, for a utility line or a park–or allows public "invasion" of the property, as in the case of points of public access, it is likely a taking.

Within this framework, zoning to preserve open space can be the subject of argument. In 1980 the U.S. Supreme Court held that an ordinance discouraging premature development of open space advanced a legitimate governmental goal. (Agins v. City of Tiburon, 447 U.S. 225) Subsequent cases have warned that there must be a direct connection between the regulation and the harm that the regulation is trying to prevent; and against regulation that, while guarding against a legitimate concern, such as flooding, also requires a land owner to allow public access.

Connection and Proximity

The State Comprehensive Outdoor Recreation Plan (SCORP) considers the relationship between community outdoor recreation and "smart" growth to be an issue of statewide importance. Among the concerns is how well community playgrounds and facilities are linked to residences – allowing a child to get there on his or her own – and whether they are close enough to where people live that they can reach them easily. The inventory should rate existing facilities, at least informally, according to proximity to neighborhoods and easy and safe connections.

Connections also are central to the planning of ecological open space. The inventory and analysis of open space should identify whether there are links among open spaces, or opportunities to create links. The concept of linkages heightens awareness of open spaces as being part of a larger community or ecological setting. Links might be trails or walking paths. Or they might be streams or other natural corridors along which important open spaces are arrayed. Wildlife travel routes are natural links.

Issues and Implications

Some types of issues and implications that often arise from an inventory and analysis of recreation and open space include:

Municipal parks and recreation issues, such as:

- Does the community need certain recreational facilities, based on guidelines or survey results? Will the community become deficient during the next 10 years as a result of growth?

- In what esteem is municipally sponsored recreation held? Does the community consider it a priority, or something to be addressed only after other municipal services are taken care of? Do parks and recreation get their needed share of the town budget?

- Is the town adequately organized to maintain local recreational facilities and to sponsor desired programs?

- Are facilities well located, with safe and easy ways for children to reach them on their own?

Outdoor recreation and open space issues, such as:

- Are important tracts of open space publicly owned? If not, what is the likelihood that

lands traditionally used by members of the public for outdoor recreation will remain available?

- Does the community have a system in place to respond to opportunities to acquire important open spaces and access sites, either outright or conservation easements?

- Is the need for open space balanced against need to accommodate growth and to provide opportunities for housing at reasonable prices?

- Is there a public perception that open space preservation is being used simply as a way to stop development? Or that zoning to conserve open space is simply a way for the town to provide for recreation at the property owner's expense, without having to pay for it? In other words, to "take" the property for public use? See the sidebar on The Taking Issue.

- Is there a need to upgrade or enlarge present facilities to either add capacity or make them more usable?

- Are private facilities threatened by growth and development?

Public access issues, such as:

- How adequate are the amount and types of access in town, both public and private? Are existing public access sites adequate for existing and future use?

- Is there a sufficient amount of access owned or controlled by the public? Is the town fully aware of all points of access to which the public has rights? How can the town work with property owners near lakes and coast to overcome opposition to new points of public access?

- How secure are privately owned points of access? Are there easements or covenants that protect them, or is there a likelihood that one or more points of access will be closed off? In the latter case, is the access significant enough that the town should consider acquisition?

Policies

The responses to the issues raised in the inventory and analysis are a starting point for policies on recreation and open space. Areas to be addressed by policies might include:

Looking for outdoor recreation funds

The Bureau of Parks and Lands in the Department of Conservation is the clearinghouse for several funding programs:

Federal Land and Water Conservation Funds

The LWCF program was established in 1965 in part to get outdoor recreation funds to states and municipalities. The program was unfunded from 1996 to 1999 but restored in 2000. All requests are directed through the Bureau of Parks and Lands and must be consistent with the Maine SCORP. Funded projects range from local playgrounds to state park expansions.

Recreational Trails

The Federal Highway Administration transfers a percentage of gasoline taxes paid on non-highway recreational use in off-highway vehicles into the Recreational Trails Program. Municipalities and non-profits may apply to the Bureau of Parks and Lands.

Boating Facilities

The Boating Facilities Division of the Bureau of Parks & Lands administers the Boating Facility Grant Program. It is funded by a portion of the state gas tax attributable to motor boat use, and is used to fund the purchase, development, and maintenance of public boating facilities on both coastal and inland waters.

Municipal parks and recreation

- Incorporating funding for recreational facilities found deficient in the inventory and analysis into capital investment plans (or some part of these facilities, based on stated priorities). Be as specific as possible in listing these facilities.

- Designing open space, habitat preservation, and natural features into developing neighborhoods, using principles of "smart growth."

- Locating mini-parks and neighborhood playgrounds close to where people live, and providing for safe walking and biking links between homes and the facilities.

- Upgrading existing facilities (the lighting system for a ballfield, for example).

- Exploration of the availability of Land and Water Conservation Funds, or other grant programs, for needed facilities and assuring that documentation is in place to be eligible for these funds.

- Assuring that the ability to properly administer and maintain public parks and other recreational facilities is in place. This may mean, for example, considering hiring a parks and recreation director, or adding staff to the public works department.

Other outdoor recreation and open space

- Conserving large, intact tracts of open space that have multiple values for recreation, wildlife, water quality, and resource management.

- Designating "rural" areas in the town's future land use plan, including important tracts of open space that provide recreational opportunity as well as natural resource benefits.

- Creating a reserve fund for purchase of important open space, or easements for open space, as opportunities arise. (Note: any municipality that becomes involved in land purchases, either easements or in fee, should be prepared to monitor and maintain the properties or easements acquired.)

- Creating a system for evaluating potential public benefit of open space that might be considered for purchase (see box).

- Connecting important parks and open spaces into a network of open spaces, by means of trails, greenbelts, and natural resource links. Such a network will magnify the value and usefulness of its individual parts.

Public access to water bodies

- Assuring at least one major point of public access to major water bodies for boating, fishing, and swimming; and working with nearby property owners to find satisfactory solutions to concerns about traffic, noise, spread of invasive species, etc., that they may have.

- Upgrading existing points of access (for example, by creating parking areas) provided that the increased use that may result does not cause erosion or other damage to the water body.

- Providing incentives or other mechanisms for the negotiation of public access during the review of new waterfront developments.

Implementation Strategies

Implementation strategies for municipal parks and recreation programs usually center on finance and administration: use of the capital improvement budget to plan and build a facility, or the operating budget or user fees to sponsor a program, maintain facilities, or hire personnel. Impact fees may also be a source of funds where recreational facilities need expansion to serve a growing population (see Chapter 16).

Strategies to conserve open space, outdoor recreational opportunities, and public access to water bodies can be divided into four categories.

Planning and creating a system of open spaces

These strategies include:

- Creating a master open space plan, which would identify potential open spaces and points of public access to water bodies, establish criteria for evaluating open space acquisitions, and identify funding mechanisms and potential relationships with local conservation land trusts.

- Designing methods of integrating important parks, trails, and open spaces into a network, with physical and ecological connections (trails, "greenbelts," stream corridors, etc.) among them. Where hunting is an issue or an opportunity, involve the local fish and game club.

- Pursuing the concept of "greenways." A greenway is a corridor of open space, often associated with a water way, which links recreational, cultural, scenic, and natural areas. It is meant to give people access to the natural world while protecting ecosystems from sprawling development.

- Working with a snowmobile club, property owners, and the Bureau of Parks and Lands to extend and maintain a network of snowmobile and cross-country ski trails.

Acquisition strategies

Acquisition is the surest way to preserve open space and access sites. Acquisition strategies include:

Open space tax law

Maine enacted a farm and open space tax law in 1975. Under it, a parcel of land that conserves scenic resources, enhances public recreation opportunities, promotes game management, or preserves wildlife could qualify for taxation based on current use rather than "highest and best" use. Prior to 1990 the law provided little guidance to communities as to whether the open space was providing required public benefits. In 1990, the law was amended to include a set of fourteen factors to be used in determining whether a parcel of land meets the test of public benefit. Once accepted under the open space tax law program, a landowner who uses the parcel in a way that disqualifies it as open space must pay a recapture penalty. (Title 36 MRSA, Chapter 105)

Evaluating potential purchases of open space

Falmouth devised a scoring system to evaluate the purchase of open spaces. The criteria were divided into six categories:

1. **Community character (for example, undeveloped field and meadowland, undeveloped land that can serve as a gateway to the community, presence of minimum width greenbelt along roadway, etc.).**
2. **Natural resources (for example, coastline above high water mark, floodplain, etc.).**
3. **Suitability for recreation facilities (for example, well drained land).**
4. **Public access (for example, to ocean or lake; pedestrian access only, etc.).**
5. **Trail system (for example, preserves existing system, links trails, creates new trails, etc.).**
6. **Landscape buffers (for example, between residential development and roads).**

Each criterion was assigned a number of points. A property that scores at least 100 points is considered a good candidate for acquisition.

- The purchase of easements (development rights) for the purpose of preserving open space, as authorized by state law (Title 36 MRSA, Section 1111).
- The purchase of open space property or points of public access in fee simple. See sidebar on how one town evaluates potential purchases.
- Working with a local land trust or other preservation organization to identify and acquire important open space.
- Using development impact fees to help finance the purchase of open space needed to serve a growing population.

Property taxation strategies

- Encouraging owners of qualifying open space to participate in the open space provisions of the Farm and Open Space Tax Law (Title 36 MRSA, Ch. 105). See sidebar.

Land use regulation strategies

Regulatory strategies to preserve open space include:

- Amending zoning and subdivision regulations to enable development of traditional neighborhood design, which typically incorporate neighborhood-scale open spaces and parks.
- Placing important open spaces within the "rural" portions of the town's future land use plan, with standards designed to preserve the rural character of those lands (see Chapter 12, Land Use Patterns, and Chapter 18, Future Land Use Plan).
- Requiring subdivisions in rural areas to use an open space (conservation subdivision) format, with provisions for preservation, management, and maintenance of the open space in perpetuity.
- Enabling contract zoning within the community, with the intention of negotiating incentives with developers of waterfront property or important open spaces to provide long-term public access for recreation.
- Working with, or encouraging a local land trust to work with, major landowners to consider the concept of "limited development." Under this concept, the landowner

voluntarily develops the property less intensively than permitted by ordinance, and in a manner that conserves the largest amount of important open space possible. In return, the property owner may be able to realize certain tax and other financial benefits, including appeal to a part of the market that seeks to purchase homes in a setting surrounded by open space.

- Use of conservation subdivision design to cluster house lots and preserve open space.

References

Bureau of Parks and Lands (September 2003). Maine State Comprehensive Outdoor Recreation Plan, 2003-2008.

Web sites:

Bureau of Public Lands: http://www.blm.gov/

The National Recreation and Parks Association: http://www.nrpa.org

Chapter Sixteen:

Public Facilities and Services

State Goal:

To plan for, finance and develop an efficient system of public facilities and services to accommodate anticipated growth and economic development.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> An assessment of capital facilities and public services necessary to support growth and development and to protect the environment and health, safety and welfare of the public and the costs of those facilities and services.

In addition, the Act requires that the implementation section of the plan:

> Develop a capital investment plan for financing the replacement and expansion of public facilities and services required to meet projected growth and development.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.B; §4326.1.K; §4326.3-A.B. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

Sources of information

Most sources of information on public facilities are local. In preparing this inventory and analysis, the committee has the opportunity to bring town staff into the planning process: both to take advantage of their knowledge and to discuss with them how their services affect and are affected by community development patterns.

At the state level, the Department of Environmental Protection maintains records for licensed waste water treatment facilities; the Public Utilities Commission maintains records on aspects of public water supply systems; and the State Planning Office's Waste Management and Recycling Program is an excellent source of data, information and tools for managing solid waste.

In carrying out this inventory, you will find that sometimes information is in written form, and sometimes it is not. Those in charge of sewer and water supply systems, for example, often have reports or plans that are very helpful in describing those systems and their needs. Road system and other public works inventories are available in communities meeting the accounting standards of the Governmental Accounting Standards Board (GASB-34). Some important information may be only in someone's head. In most cases, face-to-face interviews are the best way to get information needed for the inventories and analyses.

Before zoning was widespread, comprehensive planning focused on municipal facilities: public buildings, fire-fighting capabilities, utilities, streets, schools, and parks. Through their municipal facilities, towns and cities sought communities that worked efficiently, were safe and sanitary, and offered beauty.

As attention shifted to private property and its regulation through zoning, municipal facilities remained a central part of comprehensive plans. They are important both for the services they deliver and for the way they help shape growth. Location of certain municipal facilities—sewer, water supply, schools, fire stations, even town hall—can influence the pattern of a community's development as powerfully as zoning. If the tools of zoning and public facilities work in tandem, there is a fighting chance that desired patterns of development will emerge. If they don't, one will tend to cancel out the effects of the other.

This section discusses sewer and water supply and the range of facilities typically maintained by municipalities, other than transportation, recreation, and marine facilities (which are discussed separately in the chapters on transportation, recreation and open space, and marine and coastal resources).

Inventory and Analysis

Conducting the inventory and analysis

Public sewer, water supply, drainage, and solid waste management systems

If the municipality has public sewer and/or public water supply, the service may be the responsibility of the municipality, of a sewer or water district (a quasi-municipal corporation), or of a private company. Whoever provides these services, it is crucial that the committee establish a working relationship with people in charge as early in the process as possible. Ideally, a representative of the department, district, or company will be invited to serve on the comprehensive planning committee. Public sewer and public water supply so strongly influence the pattern of development that those systems must be well understood by the committee; and those in charge of services must learn about and appreciate the committee's goals.

Water supply: The inventory and analysis should include:

- Description of how the service is governed.

- Description of the service area (area in which service is delivered), how the service area may have been expanded over the last decade, and any known expansion plans. List other communities served by the same water source and water supply organization.

- Description of the source of the water: type (groundwater or surface), quality, location of the intake(s), location of well head protection areas if the supply is groundwater, and safe yield. Safe yield is the amount of water that would be available in a drought.

- Description of facilities that treat, store, and distribute the water. Get as many hard numbers as possible. The purpose is to document the capacity of the water supply system.

- Analysis of trends in use of the water system, with projections if available, and a discussion of whether system capacity will need to be expanded to accommodate future demand.

- Description of how the water supply system is financed, both its operating and its capital costs.

- Description of known environmental threats to water quality and measures taken, if any, to mitigate threats; and description of potential manmade health or security threats to water supply and measures taken, if any, to mitigate threats. (These threats may also have been addressed in the inventories of water resources, Chapter 4, and hazards to be mitigated, Chapter 6.)

Sewerage: The inventory and analysis should include:

- Description of how the service is governed.

- Description of the service area, how it may have been expanded over the last decade, and any known expansion plans. List other communities served by the same sewerage arrangement and sewerage organization.

- Description of the treatment plant, including type, wastewater flow it is designed to handle, and any conditions attached to its discharge license.

- Description of the collection system, including pumps and collection lines, whether it is a "combined" system (designed to carry both wastewater and storm water), and, if it is a combined system, the schedule, if one has been established, for separating storm water from wastewater. Of primary interest is capacity of this system.

- Identification of the water body (including ground water, in the case of underground systems) to which the treatment plant discharges, the water bodies to which combined sewer overflows discharge, and frequency of those discharges.

- Analysis of the trend in wastewater flows reaching the treatment plant, with projections if available, and a discussion of ability of the treatment plant to handle future demand.

- Description of treatment plant sludge disposal.

- Description and of the quality of receiving waters, and discussion of known water quality problems associated with the sewer system, including those associated with treatment plant discharges, combined sewer overflows, and sludge handling (this may also have been addressed in the water resources section of Chapter 4).

- Description of how the sewerage system is financed, both operating and capital costs.

Drainage: If the community has a manmade drainage system separate from its sewerage system (that is, "separated" rather than "combined,"), the inventory and analysis should include:

Description of the collection system and how it connects to the upstream natural drainage system (the collection system may consist of pipes, gutters, swales, or other methods for directing storm water to a discharge point).

Description of the area served by the collection system, including an estimate of the percentage of each drainage area (or sub-watershed) that is devoted to roads, paved parking, roofs, and other impervious area.

Description of quality of receiving waters, including DEP's classification of receiving waters, whether receiving waters are considered by DEP to be impaired, and any other known water quality problems associated with the drainage system (this may also have been addressed in the water resources section of Chapter 4).

Identification of regulations contained in local zoning, site plan review, and subdivision ordinances that govern stormwater runoff.

Solid waste management: State law (Title 38 MRSA, Section 1305) requires that *"Each municipality shall provide solid waste disposal services for domestic and commercial solid waste generated within the municipality and may provide these services for industrial wastes and sewage treatment plant sludge."*

Most communities in Maine have established working solid waste programs that may include trash collection services, recycling opportunities, and perhaps a leaf and yard waste composting facility or other activities to manage solid waste. The community may have a disposal contract with a landfill or incinerator or may rely upon a contractor to provide that service.

The inventory and analysis of the solid waste management system should include:

- Format of the current program (curbside collection versus drop-off at a transfer station, etc.), and mix of public and private collection services.

- Volume, trends in, and composition of solid waste generated in the community: residential, non-residential, construction and other bulky debris.

- Facilities for transfer, recycling, and disposal of solid waste. This should include commitments to other entities (other municipalities, regional organizations and private organizations) for shared ownership or use of these facilities.

- Programs, if any, for handling of hazardous household or commercial wastes, a matter of particular importance if the town's residents draw their water from an aquifer.

- Costs of solid waste management and sources of funds to pay the costs.

Municipal line departments

Municipal line departments include police, fire and rescue, highway (or similar department handling roads), public works (or similar department handling solid waste disposal, recycling, storm water drainage, and similar matters), welfare/social services, and general administration.

In each case, the inventory should address:

- Existing facilities and equipment for each function.

- Existing staffing and operating budget for each function.

- Discussion based on input from the person in charge, of how growth and patterns of development over the last decade have affected the department's ability to perform its work, and extent to which facilities, equipment, staff, and budget have been changed or expanded.

- Discussion of what the person in charge believes to be immediate needs for proper functioning of the department.

- Projection of impact of growth and pattern of development on future department needs.

- Discussion of feasibility, opportunity and desirability of combining functions with neighboring communities.

Where a department handles more than one function, it may be helpful to discuss each separately. For example, if the public works department is in charge of storm water drainage, roads, and solid waste disposal, each deserves its own description. In turn, solid waste disposal may be further divided into functions of disposal (landfill, transfer station, etc.) and recycling.

Does it matter how the town grows?

An effective way of getting advice from those in charge of public safety and public works is to sit down with them with a parcel map that:

- **Shows existing land uses.**
- **Highlights development and subdivisions from the last 10-20 years.**

If, say, 150 homes plus several businesses were built over the last 10 years and it is projected that growth over the next 10 years will be similar, ask each person in charge to draw circles on the map around:

- **The areas of town where it would be easiest to serve the next 150 homes and additional businesses.**
- **The areas of town where it would be *hardest* to serve.**

Their answers will be one indication of whether the location of growth affects costs of basic municipal services. If location matters, answers should influence location of future growth areas.

In the case of departments that deliver services over a distance—for example, fire, rescue, police, and even the highway department in terms of snowplowing—the inventory should generally indicate response times to various parts of the community. Response time is an important indicator of public safety service sufficiency.

Schools

The municipality usually does not have control over the public school system. But because schools are among services most affected by growth, and because decisions made by school officials may affect costs and patterns of growth, school department or district representatives should be drawn into the planning process early.

At one time, elementary schools were a focal point for neighborhoods of larger communities. Neighborhoods were designed or evolved to be within a walking distance radius (one-half to three-quarter mile) of the elementary school. In an era of out-migration to low-density suburbs and related trends toward centralizing schools and busing, and, conversely, of school consolidations in the older hub communities that have lost school populations, influence of school location on development patterns has been diluted. Nevertheless, a relationship remains, and this is another reason for close communication between the comprehensive planning committee and school representatives.

The inventory and analysis should include a description of schools in the system (location and age of facility, grades housed in each, acreage of related grounds and fields), and of existing enrollment from your community. It should describe how schools relate to the surrounding community: for example, how many homes are within 0.5 or 1 mile of the school? What percent of students are bused? Are there safe connections (for walking and biking) to the schools? In addition, the inventory should include districts to which local students may be tuitioned, and parochial or other private schools if any are in the community.

The inventory and analysis should identify enrollment trends over the last 10 years. (This may have been done as part of, or the information can be drawn from, the chapter on population. See Chapter 11).

Most school systems have prepared projections of enrollment by grade. The State Planning Office also periodically prepares projections. If the school system is an SAD, information usually is available by community. In addition, space utilization studies may have been completed in preparation for proposals to update, expand or build schools. Needs of the school system should be summarized. If possible, school enrollment projections upon which needs are based should be compared with the committee's own growth projections to assure that they are compatible; and if they aren't, to identify conflicting assumptions.

Other public services

Other public services administered by private organizations may be worthy of note in the inventory and analysis. This includes health care organizations in the community or region, such as hospitals and clinics. The inventory should include activities and capacities of these facilities, and a discussion of possible impacts of growth.

Issues and Implications

Many of the implications and issues arising from the inventory will be specific to the needs expressed by each department or function: for example, need to upgrade facilities, to expand staff, to protect or locate new sources of water supply, and so forth. In reviewing these needs, it will be useful to discuss with those in charge the degree to which they have been caused by growth versus simply the ongoing requirement to replace and maintain.

Several overarching implications should be considered:

1. **Impact of facilities on patterns of growth**: To what extent have public facilities—especially sewer, water, transportation (discussed in Chapter 14), school, and fire protection facilities—shaped growth patterns in the community or been shaped by them? If they have shaped patterns, have these patterns been desirable? Do administrators of these facilities recognize impact they have on the community's settlement patterns, and are they open to working in concert with the comprehensive plan to direct development toward "growth" areas and away from "rural" areas? If new schools are being built away from existing residential areas, what is the feasibility of allowing new neighborhoods to evolve around them, within walking distance? Would existing land use regulations allow them?

2. **Impact of growth on facilities**: Are public facilities nearing their respective capacities, or is there room to accommodate projected growth? In the opinions of those in charge, what, if any, impact have growth and development patterns of the last 10 years had on the cost of delivering municipal services? From their points of view, where are trouble spots in town?

3. **Public sewer system**: If the town has public sewers, is the sanitary district cooperating in development of the comprehensive plan and related ordinances, as required by law (38 MRSA Sec. 1163-A)? If the town does not have a public sewer system, is this preventing it from designating effective "growth" areas, as envisioned by the Growth Management Program? Is it assumed that the only option is septic systems on large lots? (See sidebar on "making growth areas work without public sewers."i)

Making growth areas work without sewers

If your community lacks a public sewer system, it is still possible to designate effective growth areas with safe disposal of wastewater.

First, Maine's Subsurface Waste Water Disposal Rules specifically allow for "community" waste water systems. To assure these work properly over a long term, rules require a "single and independent" entity, legally established under Maine law, to own and maintain the system. Community waste water systems, located on suitable soils and with the prescribed buffers from wells, enable individual house lots to be as small as 15,000 to 20,000 square feet (as long as overall gross density of a tract does not exceed one unit per 20,000 square feet.)

Second, the Division of Health Engineering in the Dept. of Human Services believes that the science, practice, and rules of subsurface waste water disposal have advanced sufficiently over the last quarter-century that some of the widely held notions that stymie good "growth" areas are no longer valid. It is possible, following state subsurface waste water disposal rules and good management practices, to have effective "growth" areas that depend on individual septic systems and wells. Under Maine's rules, within specified growth areas, lots greater than 20,000 or 30,000ft2 may not be necessary for safe wastewater disposal. This can allow for effective, small town growth areas.

Fire response times

According to the National Fire Protection Association, target response time for fire and EMS calls is 5 minutes, and for advanced life support, 8 minutes. This is the standard for municipalities with "career" fire departments (NFPA 1710). The NFPA recognizes that such response may not be practical for volunteer departments (NFPA 1720). Nevertheless, homes burn and heart attack victims die at the same pace, whether served by career or volunteer departments. "Flashover," the point at which fire progresses rapidly to a state of full development, generally is said to occur within 8 minutes.

A community can help achieve safe emergency response times by designating and implementing "growth" areas within reasonable distances of fire stations and water supplies.

4. **Fire protection**: Is the community's emergency response system under stress? Are water supplies adequate, and is the fire department able to meet staffing requirements? If home construction has spread out across town, what has happened to average response times for fire and EMS calls? (See sidebar on "fire response times.")

5. **Cooperation with other towns**: To what extent has your community taken advantage of opportunities to partner with neighboring communities to share services and reduce costs? Are regional partnerships considered when new services are discussed?

Policies

Policies will be based on responses to issues raised during the inventory and analysis. Policies might address:

- Desire to assure location of key public facilities in a manner that promotes the community's desired growth pattern; and need to establish close, ongoing communications with quasi-municipal agencies whose facilities affect that pattern of growth.

- Phasing of needed improvements to public facilities to accommodate projected growth; and, related to this, policies on slowing or deferring growth if facilities already are at capacity (and can be so documented) and time is needed to catch up.

- Financing of capital improvements, including responsibility of municipality or public agency versus responsibility of developers. (Chapter 17, Government and Fiscal Capacity, addresses capital investment strategies).

- Specific needs of municipal departments.

Implementation Strategies

The primary implementation tool for meeting the needs of municipal facilities and departments is a familiar one: the municipal budget. Identified needs must compete through the normal process for a place in the budget. If the comprehensive plan is successful, it will offer the budget committee, administration, and legislative body direction on priorities for facilities needed to respond to the community's growth.

There are, however, measures beyond the municipal operating budget that most communities should consider:

- Decisions to designate "growth" and "rural" areas. The very process of designating

"growth" and "rural" areas as part of a future land use plan is meant to facilitate the delivery of public services. The future land use plan should be regarded as central to the strategy for economical municipal services.

- Formally involving representatives of school districts, fire departments, and utility districts or companies on the committee responsible for preparing land use ordinances and, in the future, for updating the comprehensive plan.

- Instituting a formal Capital Improvements Plan as part of the municipality's annual budgeting process (see Chapter 17, Government and Fiscal Capacity).

- Exploring alternative sources of revenue, including grants-in-aid, user fees, and impact fees (see Chapter 17, Government and Fiscal Capacity).

In addition, some municipalities may face circumstances that limit their ability to accommodate growth. They may need tools to slow, phase, or defer growth. These should be used with great care. Each has legal implications. It should be recognized that the comprehensive planning process is meant to make it possible for most communities to avoid crisis land use management: to take the long view, make difficult decisions with an understanding of how they will affect other aspects of the community, and avoid need for ad hoc, emergency actions. Nevertheless, there may be occasions when one of the following tools is appropriate, or should be used to implement an aspect of the comprehensive plan.

- A moratorium on development. Moratoria are regulated by state law (30-A M.R.S.A., Sec. 4356). To enact a moratorium, the municipality must demonstrate that it is needed for preventing a shortage or an overburden of public facilities or because current ordinances are inadequate to prevent serious public harm from development. A moratorium can last no more than 180 days, although it can be extended another 180 days if the problem still exists and reasonable progress is being made to alleviate it.

- A residential or commercial building permit quota, also known as a building cap or a rate of growth ordinance. This tool is used to regulate the timing of growth (and as a supplement to the future land use plan and subsequent zoning map, which regulate the location of growth). A rate of growth ordinance must be reviewed at least every 3 years to determine whether it is still necessary and whether it needs to be adjusted to meet current conditions. (30-A MRSA Sec. 4360) Quotas, like zoning and other land use ordinances, must be consistent with the town's comprehensive plan. They could be based on the known capacity of an essential public facility, such as a sewer line; on a spike in development above the average number of building permits issued compared with the past; on rising tax rates or debt levels to deal with growth; or on some other criterion related to the capacity to absorb growth.

  It should be cautioned that building permit quotas often are administratively and politically difficult to execute. They raise a host of fairness issues. They can affect the affordability of housing (they can be structured to exempt affordable housing). They may shift development to other towns. Any community contemplating a quota system should consult both the town's legal counsel and other towns that have tried it to learn about pitfalls and approaches.

- State law allows rate of growth ordinances to be “differential” in their effects on growth vs. rural areas, as designated in the comprehensive plan. (30-A MRSA Sec. 4360-2) As mentioned in Chapter 12 (Land Use Patterns), a town can convert a rate of growth ordinance from one that simply regulates the rate of growth to one that also helps to direct growth to the desired areas. It can do so by setting more stringent quotas in the rural areas, and less stringent or no quotas in growth areas.

References

Richert, E., and Stone Environmental, Inc.(December 2003). How to Make Growth Areas Work without Public Sewers. Maine State Planning Office.

Chapter Seventeen:

Governmental and Fiscal Capacity

State Goal:

To plan for, finance and develop an efficient system of public facilities and services to accommodate anticipated growth and economic development.

Legislative Requirement:

The Act requires that each comprehensive plan include an inventory and analysis of:

> An assessment of capital facilities and public services necessary to support growth and development and to protect the environment and health, safety and welfare of the public and the costs of those facilities and services (emphasis added).

In addition, the Act requires that the implementation section of the plan:

> Develop a capital investment plan for financing the replacement and expansion of public facilities and services required to meet projected growth and development.

Comprehensive Planning and Land Use Regulation Act. MRSA Title 30-A, §4312.3.B; §4326.1.K; §4326.3-A.B. (2001). Retrieved on October 17, 2005 from http://janus.state.me.us/legis/statutes/search.asp

A premise of Maine's growth management program is that sprawling development is more expensive to serve than compact development. Whether this is true has never been definitively answered. Evidence points in that direction. There have been at least nine nationally recognized studies since 1955 of costs of municipal services associated with different patterns of development. Each found municipal costs rising as development spread out.1 The Maine State Planning Office issued a report in 1997 detailing these costs for Maine communities entitled "The Cost of Sprawl."

Examples of local services whose costs rise as development spreads

- **Snowplowing**
- **School busing**
- **Extension of water lines**
- **Extension of sewer lines**
- **Fire protection**
- **EMS services**
- **Police protection**

The cost of sprawl may not be evident at the outset. In the beginning stages of sprawl certain costs can be avoided: public water and sewer lines, for example, or public ownership of roads, as home owners rely on private systems and streets. But in time public services are demanded: a new fire station, a better water supply for fire protection, maintenance of new subdivision roads, school buses, etc. And because homes are spread out, the cost per unit of delivering the services is high.

Managing growth means adopting a long-term outlook for public services. There may be need, for example, to build capacity up front to accommodate anticipated growth within the comprehensive plan's designated growth areas. This strategy is less expensive than responding to incremental demands from spread out development that, as services are required, can not be met efficiently.

The purpose of the comprehensive plan's analysis of fiscal capacity is to reach an understanding of facilities needed to accommodate anticipated growth in designated growth areas and of the municipality's ability to finance them.

Inventory and Analysis

Sources of information

Most sources of fiscal data are local. The types of information needed—assessed value of the community, budgets, and debt history—all are available at municipal offices. The annual audit, often included in the town's annual report, is an excellent source of historical information that allows "apples-to-apples" comparison of year-to-year costs. "Full value" (also called "equalized") tax rates for all municipalities can be found on the web site (http://www.maine.gov/revenue/propertytax/homepage.html) of the Property Tax Division of Maine Revenue Services.

Conducting the inventory and analysis

The inventory of fiscal information includes:

- Assessed value of the community.
- Operating expenditures and revenues and tax rate (actual and full value).
- Borrowing history and capacity.
- Alternative revenue sources for capital improvements.

Assessed value

The basis of a municipality's fiscal health is its property valuation: greater the valuation, the lower the tax rate needed to raise a given sum of money. Municipalities and the state both track property valuation. The local valuation reflects actual market values only in years in which a municipality conducts a revaluation and upgrades values to 100% of market value. The state adjusts or "equalizes" value each year to better reflect true market value.

Assessed value (both local and state figures) should be tracked for the last 10 years to establish a trend. A simple chart might display local and state assessed values and annual percent change. It is helpful to convert dollars to "real" dollars (using the Consumer Price Index to discount inflation) and recalculate percent change. This figure can later be used to project assessed value over the next 10 years. Trend in property tax rate can be included in the same chart. This provides a quick picture of relationship between changes in assessed value and changes in tax rate. Table 17-1 illustrates.

Table 17-1: Sample Analysis of Assessed Value and Tax Rate

Year	Local Assessed Value ($000)	State Assessed Value ($000)	Annual % Change (State)	Annual Real % Change	Tax Rate
1990	$175,650	$177,000	---	---	15.80
1991	$190,720	$203,350	+14.9%	+ 4.1%	16.50
1992	$193,440	$216,850	+ 6.6%	+ 0.5%	18.00
1993	$201,258	$241,600	+11.4%	+ 8.0%	19.50
1994	$207,905	$274,600	+13.7%	+ 9.0%	21.00
1995	$222,765	$314,050	+14.4%	+10.4%	19.85
1996	$240,374	$398,450	+26.9%	+24.6%	20.65
1997	$476,391*	$551,900	+38.5%	+33.6%	11.60
1998	$544,214	$711,850	+29.0%	+23.9%	12.75
1999	$566,246	$748,550	+ 5.2%	+ 0.3%	13.75
Change 1990-1999	$390,596	$571,550	+17.4%	+12.2%	---

* Revaluation

Assessed Value and Tax Rate
Town of _____
1990–99

This chart offers guidance in projecting assessed valuation for the next decade. Making a projection is hazardous at best, but different "what-if" scenarios should allow you to find a range of likely change. For example:

In the chart, note the modest growth in state assessed value for the town during the early 1990s (typical of many Maine communities) as the state was slowly climbing out of recession; and then the strong growth in the 1990s during an expanding economy. The decade of the 1990's thus had both slow and rapid growth periods. One scenario therefore might assume that the average annual rate of growth is a good reflection of what might happen in any 10-year period. This scenario would assume a 12% annual real increase in valuation over the next decade.

On the other hand, there may be legitimate opinion that the next decade will not see a return of the highest growth rate years, and that the best that can be expected would be growth at the rate experienced during 1993-95, a period of economic recovery but not accelerated growth. This would mean an 8% or 9% annual real increase in valuation over a 10-year period.

Ultimately, you have to rely on best judgment, taking into account the area's economy (drawing on findings from Chapter 10) and the kinds of trends that show up in the analysis. As long as the assumptions are clear, the projections can be updated as time goes on.

Operating expenditures and revenues

The inventory and analysis of operating expenditures will highlight the municipal services that require the largest shares of the budget and those line items that are increasing most rapidly. The expenditure categories can be general, such as:

- General administration
- Public safety (fire, police)
- Public works
- Recreation
- Education
- County and other jurisdictions
- Other
- Debt service

The expenditures should be tracked over at least a 5-year period to identify trends.

A review of revenues over the same period will reveal extent to which the community relies on local property taxes to fund municipal government. Other revenues to be tracked include excise taxes and intergovernmental transfers (municipal revenue sharing, state general purpose aid to education, etc.).

Analysis should consider not only how expenditures might be expected to grow in the future, but also whether sources of revenue other than property taxes will grow with them, or whether there will be increased reliance on property tax. Because the full answer to this depends on actions of the state and federal governments, only best guesses can be made. However, this analysis, combined with projections of assessed values, will indicate how much pressure there will be on property taxes simply to fund operating items in coming years, and how much room there may be to fund capital improvements to accommodate future growth.

Borrowing capacity

The inventory should include a list of outstanding long-term debt as a result of a bond issue or other borrowing (for example, through government agencies such as the U.S. Department of Agriculture or the Maine Department of Environmental Protection), purpose of the debt, and year in which the debt will be retired. Included should be the municipality's share of overlapping debt (for example, through the SAD or the county). In listing share of SAD debt, it should be noted how much of that debt actually is being paid by the state vs. the municipality (see sidebar).

To analyze the municipality's capacity for taking on new debt, you can use some rules of thumb. These are not hard-and-fast rules. Meeting or failing to meet any one measure would not render a community either credit-worthy or not credit-worthy. But together these measures will give a general picture of the town's capacity to borrow.

- The town's debt should not exceed 5% of the state's assessed valuation. The legal limit actually is 15%, with certain limits on the shares that can be devoted to school, sewer, and other purposes (Title 30-A, M.R.S.A, Section 5702). But any community approaching the 15% limit would be stretched beyond its means.

- The Town's per capita debt (total debt divided by population) should not exceed 4% - 5% of the Town's per capita income. If a community's tax base includes a large component of commercial, industrial, or second home properties—thus relieving year-round home owners of a significant share of the bill—the tolerable per capita debt can be higher.

- The town's fund balance (its undesignated, unappropriated surplus) should be about one-twelfth (8.3%) of its budget.

- The town should be experiencing growth in assessed valuation.

State aid for school debt service

Debt service costs cover items such as leases for portable classrooms and bond payments for school construction projects. Only State-approved projects or leases are counted for this purpose.

There are two steps in determining State aid for debt service. First, the total amount of debt service for approved leases and school construction projects is calculated. Second, state and local shares are determined based on local per pupil property valuation. This is adjusted by a debt service circuit breaker that sets a maximum local share for debt service. The State pays the portion of the unit's local share for debt service costs that exceed the circuit breaker.

Alternative revenue sources

Finally, the inventory should identify alternative revenue sources that it may be using to fund capital items, such as impact fees and sewer user fees.

Issues and Implications

Among the issues typically raised in an analysis of fiscal resources are:

- Impact of slowed growth of the community's tax base during a time of recession. What is the implication of an extended recession for funding needed capital improvements?

- In fiscal terms, based on the rule-of-thumb measures of borrowing capacity, is it feasible for the community to fund capital improvements through a bond issue or other borrowing? Does the community prefer, and can it meet its needs by, pay-as-you-go funding of capital improvements rather than borrowing?

- What is the likely impact on the tax rate of borrowing for one or two important projects? Does this seem politically acceptable?

- How does overlapping debt (e.g., from the SAD or county), over which the community does not have full control, affect the community's fiscal resources?

- How have development patterns within the community created demand for and affected the cost of delivering major public services or capital improvements?

- Can the capital project be avoided or shared by combining resources with a neighboring community? Are there regional initiatives that can help to meet this need?

Implementation Strategies

Implementation strategies center on the capital improvements needed to accommodate projected growth and ways to fund them. These make up what the Act refers to as a "capital investment plan."

Capital investment plan

A "capital investment plan"—a required part of a comprehensive plan—is a precursor to a formal Capital Improvements Plan (CIP). A growing number of communities prepare annual CIP's to manage financing of major capital projects. A CIP is a fiscal tool that budgets major capital improvements over a 5- or 6-year period and tracks the community's debt, reserve funds, and other methods to pay for improvements.

The capital investment plan identifies facilities needed to accommodate projected growth, assigns them priorities, and identifies possible funding sources. A formal CIP is a more detailed document that builds upon the capital investment plan: it includes detailed costs, often based on engineering, architectural, or other studies, and an actual capital budget for the upcoming year.

The elements of a capital investment plan include:

- Identification of public facilities and services that will be needed to accommodate projected growth. These might include new, expanded, or replaced infrastructure of all types for which the municipality has fiscal responsibility: transportation, solid waste, schools, waste water treatment and collection, fire and police protection, and recreational and open space, among others. The needed facilities and services in each of these areas should already have been identified in an earlier inventory and analysis, with a statement of policy regarding the community's intent to invest in or explore the needed expansion or improvement. *Ideally, the capital investment plan will not raise new needs but rather will compile, in a single section, those capital needs previously identified under transportation, recreation, and public facilities and services.*

The capital investment plan should not include operating costs anticipated as the result of projected growth: for example, the need to hire personnel. These are important—and indeed may affect the committee's decision about how to manage growth—but should be addressed elsewhere (typically in the section dealing with the topic—for example, public facilities).

Nor does the plan have to address small items. Typically, to be included in a capital investment plan (and eventually a CIP) an item must carry a predetermined minimum cost: for example, $25,000, $50,000, or $100,000. The cut-off can be more or less; it is up to the community to decide. It depends on what constitutes a significant cost for the community, that is, a cost that might be unusual or difficult for a single year's operating budget.

- Assignment of general priorities among the identified capital investments. One method is to rate each of the needs in one of the following categories:
    - Urgent: first priority; expansion or improvement is required to address an immediate public health or safety problem, to comply with a governmental regulation or mandate, or to complete an important, unfinished project. Failure to address the problem or mandate would hinder the community's ability to accommodate expected growth.
    - Necessary: second priority; project isn't needed to solve an immediate public health or safety problem related to growth, but should be undertaken in the near future to allow for proper servicing of expected growth.
    - Desirable: third priority; project would significantly improve ability of the Town to accommodate expected growth and would enhance the community's quality of life, but improvements can wait until other more pressing projects are finished and additional funds are available.
    - Deferrable: fourth priority; project would allow for ideal operations given projected growth but can be deferred without detriment to delivering the basic services.

Impact fees

Impact fees are one way to make development pay for municipal capital costs incurred because of the development.

State law (Title 30-A, M.R.S.A., Section 4354) authorizes impact fees for off-site infrastructure such as waste water collection and treatment facilities, water supplies, public safety equipment, fire protection facilities, roads, parks, and school facilities. Impact fees can not be used to pay for operating costs. Limitations on impact fees include:

- **Amount of an impact fee must be reasonably related to the development's share of the cost of the facility made necessary by the development. The cost of the facility must be documented, and there must be a way to distribute the cost between the development and others that contribute to demand for the facility, including the public at-large.**
- **Funds received from impact fees can be used only for specified improvements.**
- **There must be a reasonable schedule for making specified improvements, and fees must be refunded if improvements are not made according to schedule.**

A thoughtful capital investment plan and annual Capital Improvements Plan are foundations for impact fees.

For more, see the Maine State Planning Office's guide, "Financing Infrastructure Improvements through Impact Fees." A link is provided at the end of this chapter.

- This (or a similar) rating system can also serve as a reality check on capital items included in the plan. Items that may be "nice" to have but for which there is no expectation for funding can be included but with a rating that indicates they are deferrable.

- Estimate of costs: In some cases, cost estimates already will be available from previous studies. In some cases an order-of-magnitude cost estimate can be obtained from a vendor. But in some cases cost estimates cannot be made without engineering, architectural, appraisal, or other services. These most likely will be beyond the budget for the comprehensive plan. A best guess is sufficient in these cases; a cost estimate is less important at this point than recognizing that the facility will be needed to accommodate projected growth. Where costs are unknown but a project is thought to be urgent or necessary, one of the plan's policies should be to hire the expertise needed to take the capital planning to the next step.

  As projects and their costs are being considered, it may become evident that one or more projects needed to accommodate projected growth are too expensive for immediate or short-term consideration. If so, the implications of not having the facility should be discussed. In particular, will boundaries of the designated growth areas have to be changed? Will there have to be specific measures to limit expected growth until the needed facility can be financed?

- General estimate of timing: The plan should set forth general estimates of when identified facilities or projects should be implemented. The timetable should be related to the priorities given the projects. For example, "urgent" projects might be proposed to be addressed within one to two years; "necessary" within the next three-to-five years; "desirable" within the 10-year planning period; and "deferrable" some time after the 10-year planning period. These timetables would be updated at least every five years when the comprehensive plan is updated; and more frequently if the community prepares an annual Capital Improvements Program.

- Identification of possible funding methods sources: The sources usually fall within one of the following categories: general fund (operating budget); a reserve fund, into which dollars are placed annually in anticipation of the replacement or construction of a needed facility; grants from other governmental agencies; borrowing either as a result of a bond issue or from a governmental agency; user fees; impact fees (see side bar); or private gifts or philanthropy (which often fund cultural facilities, for example).

For each item included in the capital investment plan, the likely source or sources of funds should be indicated. Depending on extent of needs, this may require a balance among sources to assure that neither borrowing capacity nor ability to raise property taxes is stretched, and that there are not unrealistic expectations in terms of governmental grants.

References

[1] Frank, James E. (1989). The Costs of Alternative Development Patterns. Urban Land Institute.

Other References:

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Maine State Planning Office. (2003). Financing Infrastructure Improvements through Impact Fees: A Manual for Maine Communities on the Design and Calculation of Development Impact Fees. Available on the internet: http:// www.maine.gov /spo/landuse/docs/impactfee/impactfeemanual.pdf

Maine State Planning Office. (1997).The Cost of Sprawl. Available on the internet: http://www.maine.gov/spo/landuse/docs/CostofSprawl.

Other web address:

Property Tax Division of Maine Revenue Services: http:// www.maine.gov /revenue/property tax/homepage.html

Part C:

Future Land Use Plan

Chapter Eighteen:

Future Land Use Plan

The strength of a community's land use plan lies:

- **First**, in an understanding of the natural system, broken into its individual parts and reassembled, like layers of a cake, into a summary map of constraints and opportunities.

- **Second**, in an understanding of how human activity has settled on and used this landscape.

- **Third**, in decisions about where and how to direct future human activity, with due respect for what has been learned, and with broad participation of citizens of the town.

The 13 inventories and analyses and related policies lay the foundation for the Future Land Use Plan. Policies on natural resources, farming and forestry, transportation, housing and other topics all feed into the Future Land Use Plan. Of special importance, however, are policies from the chapter on land use patterns. The Future Land Use Plan is very much a graphic representation and a fleshing out of those policies.

There is no single ideal plan. Character of the land and preferences of residents differ from place to place. Their varying influences will produce very different plans. Maine's growth management law gives latitude to decisions about land use plans, provided that each:

- Clearly designates rural areas and appropriately sized growth areas.

- Includes actions that will be taken to actually direct development away from the rural areas and into the growth areas.

This chapter describes a three-step process to help you make the jump from inventories and policies to a future land use plan. These steps build on the constraints and opportunities map produced earlier, as a result of inventories of natural resources and public facilities. Each of the steps results in a map, described below and illustrated at the end of this chapter.

Step 1: Prepare a Land Use Sectors Map

A "sectors" map simply divides the community into smaller areas and briefly lists important features of each area. A "sector" might be based on physical boundaries (a watershed, for instance), or on recognized neighborhood boundaries, or on any other factor that seems to tie together a particular part of town. The number of "sectors" might be many or few. It isn't unusual to end up with a total of 10 to 20 sectors.

Preparing a "sectors" map is a good chance to get committee members actively involved in a meeting. Roll out a blank map (or a piece of clear acetate on top of a base map), give committee members magic markers, discuss what parts of town seem to be bound together by natural, social, or economic features, and start drawing sector boundaries. Don't worry about precision or art. The end product will look like a rough map of "bubbles," with each "bubble" representing a sector.

For each identified "sector," make a concise list of its characteristics. The object is to distill the committee's understanding about various parts of the community. You should draw heavily on maps and information collected during the inventories and analyses. Keep the summary natural constraints and opportunities map, as well as water resources, wetlands, soils, land use, utilities, and similar maps, close by for easy reference.

The list of characteristics might include key natural features (wet? hilly? good soils? scenic? etc.), extent of natural resource constraint (severe? significant? slight?), dominant land uses (field and forest? farms? residential? commercial? traditional village? etc.), any unique features (town's only gravel pit? deer yard? near Turnpike? remote from main roads? etc.), access to public services (water supply? transportation? schools? 3-phase power? etc.), recent development trends (in the path of development? what kind?), and major issues that may be facing neighborhoods in each section of town.

Once the work session is complete, a responsible member of the committee or the committee's staff should prepare a clean version of the map. It will be the basis for the second step in the process, designation of "rural" and "growth" areas.

Step 2: Prepare a "Rural" and "Growth" Areas Map

In this step, the committee designates each identified sector as a "rural," "growth," or transitional area. This might not be a separate map; it might be overlaid on the Sectors map. Before starting work on this map, keep in mind the general meanings of these two terms:

"Growth" areas:

- Have, or can efficiently obtain, public facilities and services.
- Have natural characteristics suitable for development.
- Are large enough to accommodate the expected growth over the next 10 years and to allow the market to function.
- Are large enough to accommodate a variety of types of housing.

- Must be limited to a size and configuration that encourages compact rather than sprawling development.

In addition, the town may want to identify **"transitional" areas**, which are suitable for a share of projected development but are not intended to accept the amount or density of development appropriate for growth areas.

"Rural" areas:

- Include important agricultural and forest lands.
- Include large areas of contiguous, undeveloped land used by wildlife, for resource production, and for outdoor recreation.
- Include important natural resources and scenic open spaces.
- May have very low densities of development interspersed among fields and woodlands.
- May not include areas in which a significant portion of the community's development is planned to occur.

A subset of rural areas is **"critical" rural areas**. These areas deserve maximum protection from development to preserve scarce or vulnerable natural resources or economic activities that rely on natural resources. (One type of "critical" rural area includes those lands that would be zoned for resource protection under the State Mandatory Shoreland Zoning Act. Resource protection areas may in fact span rural areas and areas, such as stream shores, that may be embedded within areas otherwise designated for growth.)

Rural areas, and conversely growth areas, will be drawn in part from analysis of natural resources and constraints described in Chapter 4.

There is no hard-and-fast rule about what percentage of the community's development should be directed into growth areas over the next 10 years. Anything less than 60% would compromise the meaning of growth areas, since nearly as much development would be going into rural areas. One set of benchmarks might be:

An alternative to traditional zoning

The process of designating growth and rural areas, and indeed of creating a future land use plan, is a step toward zoning. Some rural communities do not yet have townwide zoning. They may continue to resist townwide zoning, even if based on a thoughtful comprehensive plan. A number of small communities in the nation have turned to a "point" or "permit" system as an alternative to traditional zoning. It can help steer development into growth areas.

A "point" or "permit" system does not divide a community into zoning districts. Under this system there are few automatically permitted or prohibited uses. Rather, the ordinance sets forth criteria for development, and each criterion is assigned points. Any proposed new use must score a certain number of points before it can be considered for a permit.

Criteria usually include items such as soils and proximity to existing municipal services and facilities. For example, criteria might include soil suitability for on-site waste disposal (good suitability scores high, poor suitability scores low); prime farmland soils (no prime farmland soils scores high, presence of prime farmland soils scores low); proximity to existing fire station (close to station scores high, distant from station scores low); and so forth. Properly constructed, the point system will encourage locations for development that are near existing services and that avoid sensitive environments.

(continued)

An alternative to traditional zoning,
continued…

Examples of communities with working point systems include Hardin County, Kentucky (a rural, farming county), and Breckenridge, Colorado (a winter resort community). In Maine, for many years Gorham used a modified point system to determine density of development in its rural area.

The State Planning Office neither encourages nor discourages the use of a "point" or "permit" system. But it has been the preferred tool in some growing but still rural communities.

- At least 60% of new residential development and virtually all new commercial-industrial development in growth areas (village areas, neighborhood development areas, etc.).
- No more than 30% of residential development in transitional areas.
- No more than 20% of residential development in rural areas, including no more than 5% in critical rural areas.

These benchmarks would be consistent with the village-and-countryside pattern of development in Maine up until a few decades ago, when a sprawling pattern took firm hold.

The growth areas designated to accommodate this development typically are a small part of the town's total acreage. The actual amount will vary from municipality to municipality, depending on how much development is projected. A typical community in Maine contains perhaps 35 to 40 square miles, or 22,000 to 26,000 acres. Present development (including seasonal homes and commercial activity) typically consumes less than 10% of the acreage. If, say, 500 new homes were projected to be built over the next decade, they would need no more than perhaps 500 to 750 new acres at the outside, including area for roads and ancillary development. That would be no more than another 3% to 4% of the community. The needed acreage for this projected development would be considerably less if public sewer and water were available, allowing higher densities.

The growth areas won't be carved to exactly equal the projected amount of land to be developed. That level of precision isn't possible. Nor is it desirable: the supply of land would be so constricted that prices would certainly rise. Enough land needs to be included in the growth areas to provide future lot and home buyers with choice and to allow the market to function. How much should be the committee's decision. But it should represent a relatively small percentage of the town's total acreage. And it should be configured in a way that discourages sprawl. For example, a growth area that is stripped along the length of the town's major roadways would be unacceptable.

With these guidelines for designating rural and growth areas in mind, consider the characteristics of each area identified on the "sectors" map. Is this an area to which the community should direct much of its development over the next 10 years? Does it have the ability to absorb new development? Is it generally free of severe environmental constraints? If soils are poor, is a public sewer line available? Is public water supply available, thus reducing concerns about contamination of on-site drinking water by septic systems? Conversely, are the characteristics of the area such that development should be directed away from it?

As you review each sector for designation as a rural or growth area, you will discover two

things. First, some of the sector boundaries of the previous map will be modified. The committee may conclude, for example, that part of one sector is suitable for growth and part is not.

Second, the committee probably will decide that there are different kinds of growth areas, and different kinds of rural areas. Among growth areas, it may designate (for example) one or more types of residential growth areas, one or more types of commercial or industrial growth areas, traditional village or downtown areas, other mixed use areas, and/or seasonal resort areas.

There also may be different shades of rural areas. In addition to resource protection areas (per shoreland zoning), for example, there may be areas with special environmental features (for example, the watershed of a lake that serves as a public water supply, or outstanding ridgelines), or with multiple environmental constraints (as shown on the summary natural resource constraints and opportunities map), or with especially important farm or forest land. These may not merit the stringency of resource protection, but nevertheless are "critical" rural areas that warrant a level of conservation that can be achieved only if little development is allowed. There may be rural areas that are not so constrained by environmental concerns, but, due to distance from public services, are best earmarked for low density residential activity, provided rural character can be maintained. There also may be areas that are not actually "rural" but that the committee does not want subject to growth: for example, an historic area or a seasonally developed coastal area. The rural and growth areas map can pick up these distinctions.

Step 3: Prepare the Future Land Use Map

The work of the first two steps will flow naturally into this third step.

On this map, boundaries and descriptions of different rural and growth areas are refined as necessary. Other important physical features also should be displayed: for example, proposed new roadways or road extensions (if any), the location of a proposed industrial or business park, major public open spaces, or major proposed municipal facilities.

The Future Land Use Plan is the one part of the comprehensive plan that citizens will be sure to look at. It is important that it be legible and that its intentions be clear. Many citizens will judge the comprehensive plan by this section of the plan alone. If your printed plan has only one page that has color and departs from an 8-1/2" x 11" letter format, let the map representing the Future Land Use Plan be it. As part of your GIS or basic graphics software, have this map available in electronic form, allowing for simplified revision of drafts, e-mailing or posting on your web site, printing of large versions on a plotter, and ease of overlaying with other electronically generated maps.

It is a good idea to note on the map that the plan is not itself a zoning map, but will be used as the basis for developing a zoning map.

A narrative should accompany the future land use plan. It is in this narrative that many of the implementing measures relating to land use usually are included. (Examples of the types of implementing measures that might be considered were discussed in Chapter 12,

Table 18-1. Example of Implementing Measures in Designated Rural Areas

Measure*	Resource Protection	Rural Conservation	Rural Residential
Subdivision lots: • Max. density Non-subdivision lots	 Not allowed Not allowed	 1u/25 acres 1u/5 acres	 1u/5 acres 1u/3 acres
Open space format for subdivisions ("conservation subdivisions") • Required? • % of original parcel retained as open space	Not applicable	Yes 80%	Yes 60%
Minimum road frontage • Subdivision lots --on existing arterial roads --on subdivision road • Nonsubdivision lots	 Not applicable Not applicable	 Prohibited 100 ft.+/- 200 ft.+/-	 Prohibited 100 ft.+/- 200 ft.+/-
Maximum no. building permits/yr. in subdivisions	Not applicable	3/year	No limit
Wildlife management plan as part of subdivision applications	Not applicable	Yes	No
Road standards	Not applicable	To fit rural landscape	To fit rural landscape

* See Chapter 12, Land Use Patterns, for a discussion of possible land use implementation measures.

Land Use Patterns.) *The measures should be specific and directive*. They should demonstrate the means by which most future development will indeed be directed into designated growth areas, and away from designated rural areas.

These measures should be tied to different types of growth and rural areas. Table 18-1 on the next page shows the summary chart of one community's proposed implementing measures for three types of rural areas. This community prepared a similar table for growth areas. Among other measures, the plan called for residential densities commensurate with public sewerage, or where public sewer wasn't available, with ability of the soil to accept wastewater; made provisions for multifamily housing, including accessory apartments; reduced required road frontages and setbacks to be more similar to established villages in the community; and allowed density bonuses for affordable housing developments using a public sewer line, provided they participate in a design review.

Each community should decide what mix of measures makes sense for its situation. **But the test that the committee should challenge itself with is: "Will this set of measures in fact encourage most of the development during the next decade to locate in growth areas, and away from rural areas?"** As recommended in Chapter 12,

Land Use Patterns, a system should be established to track the share of development going into growth vs. rural areas. If measures implemented to meet the performance objectives are proving insufficient, additional measures should be put into place.

The future land use plan is not a zoning map, and the narrative that accompanies it is not a zoning ordinance. Most comprehensive plan committees recognize that the process of actually writing a zoning ordinance and preparing a zoning map requires flexibility. But the Future Land
Use Plan will be the foundation for revised or new ordinances. The plan will also be the part of the comprehensive plan that receives the most public attention. Therefore, the committee's intentions, while allowing flexibility in final zoning boundary lines and standards, should be stated and presented as clearly as possible, using directive language ("shall" or imperative statements) rather than permissive or discretionary language ("should," "encourage," etc.).

The best land use plan will speak for itself. It will allow natural systems to perform their functions for the community and region, free of charge. It will account for the potential for livelihood from the land and sea. It will provide room for homes and jobs to grow within reach of municipal services. It will respect established neighborhoods and village centers and allow new ones to evolve. It will build in a variety of methods of transportation, with a pattern of development that gives residents some freedom of choice as to how to move about. It will provide, either within town or as part of a larger region, for places of commerce, culture, and religious practice. It will provide places of solitude, greenery, and recreation. And it will fit in with the larger region of which it is a part. This is the subject of Chapter 19.

24-month grace period

By law, existing zoning, rate of growth, and impact fee ordinances have 24 months to be brought into consistency with the comprehensive plan. After that, inconsistent provisions no longer have effect.

Figure 18-1. Composite Constraints and Opportunities Map

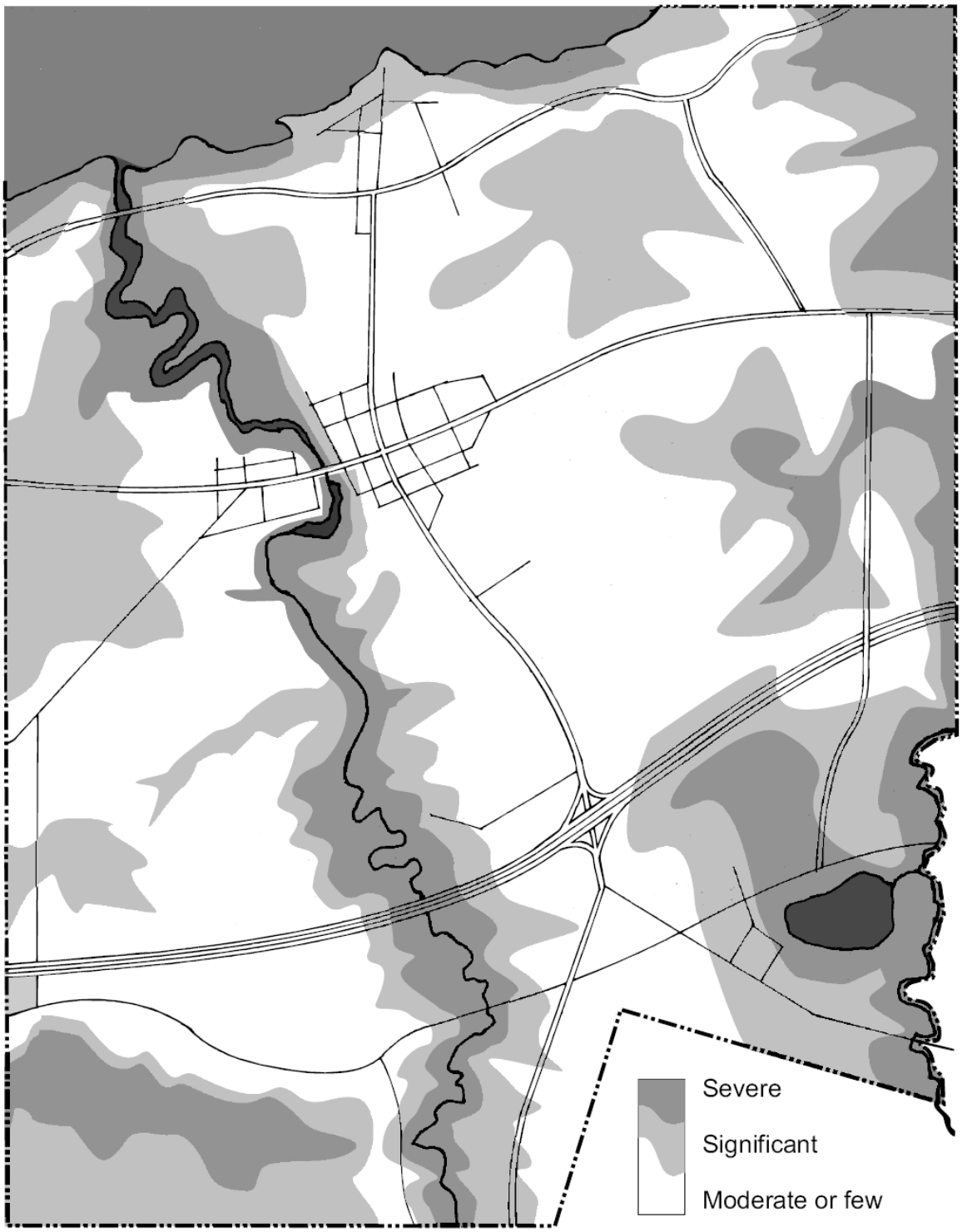


Figure 18-2. Land Use Sectors Map

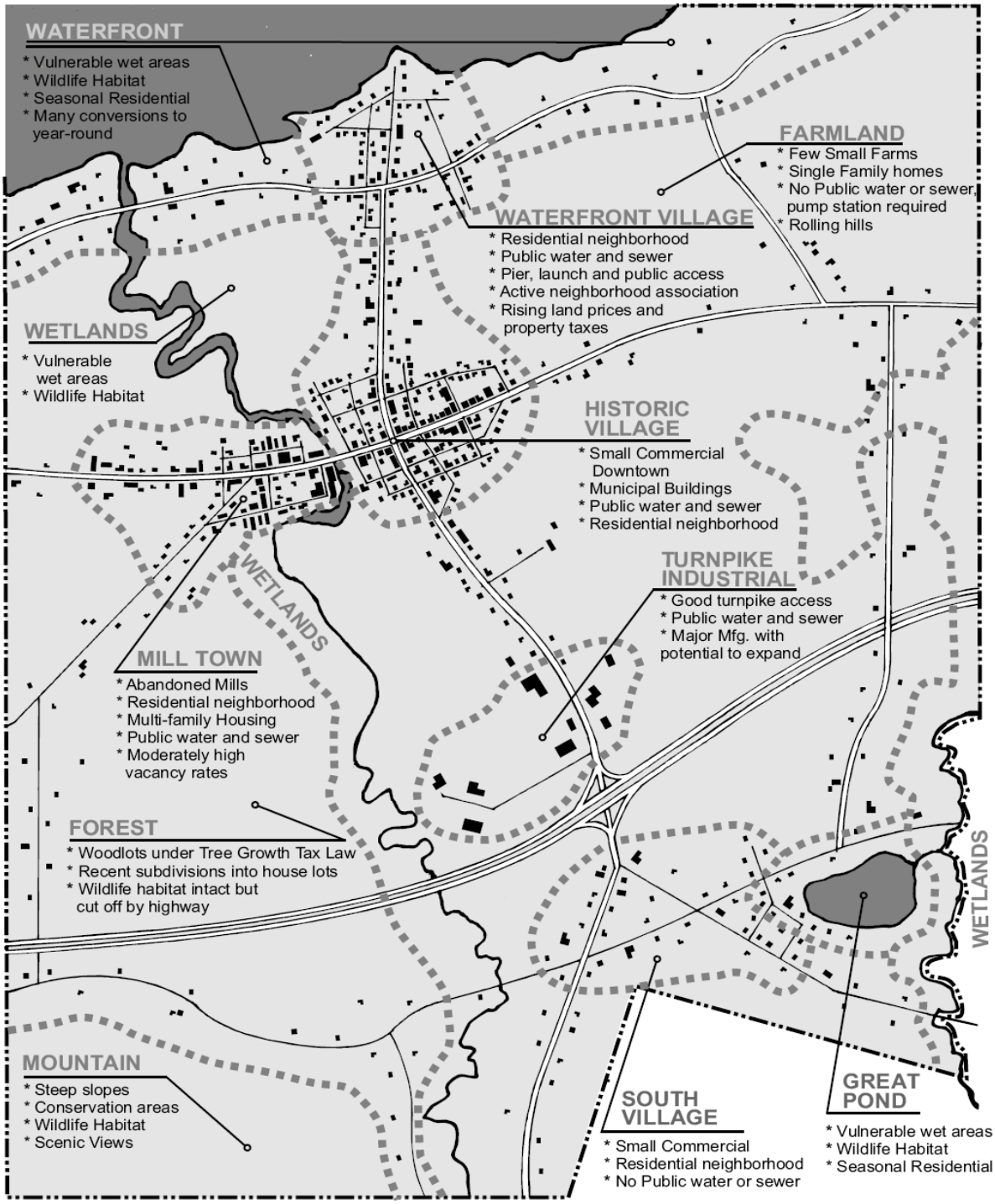
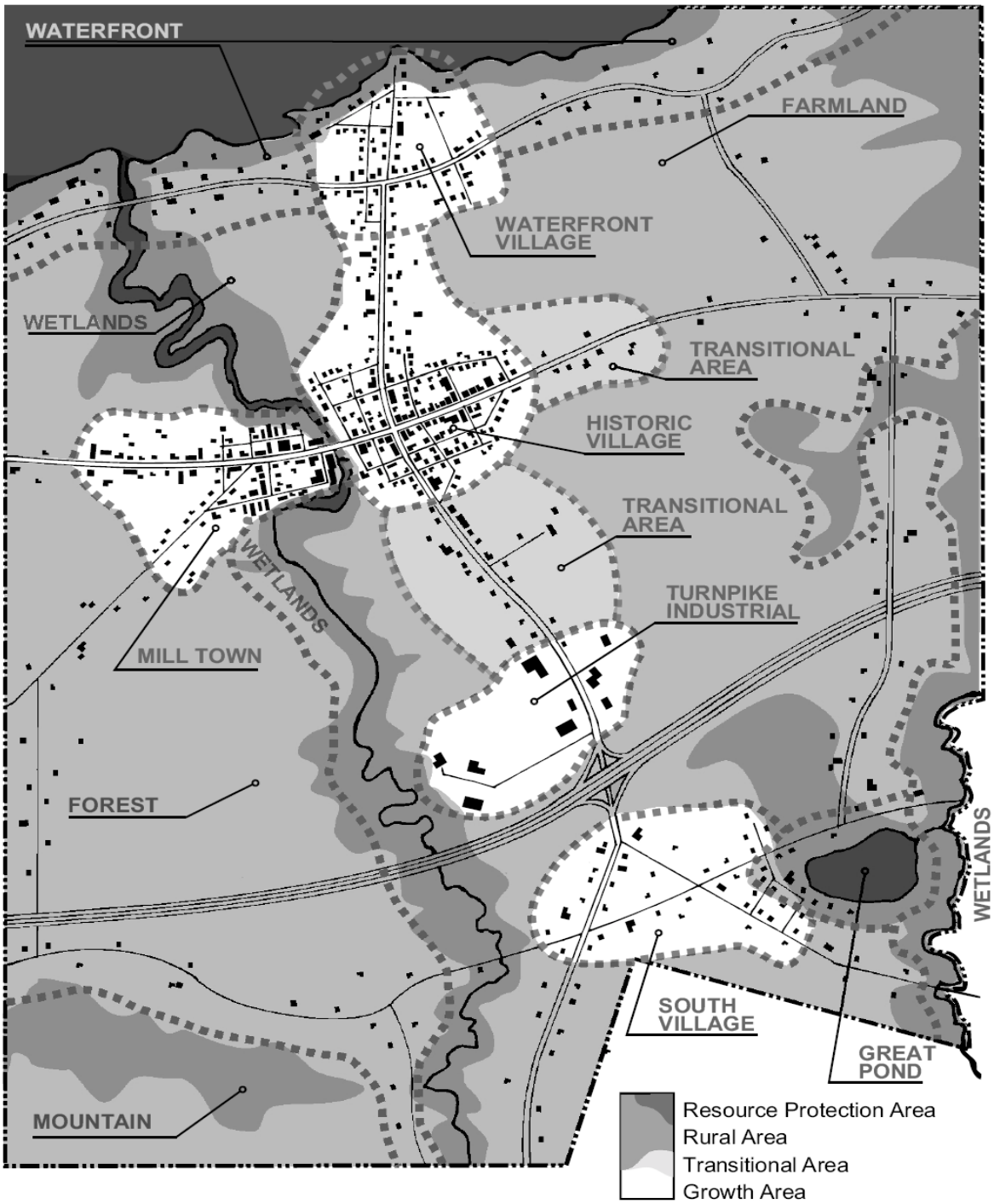


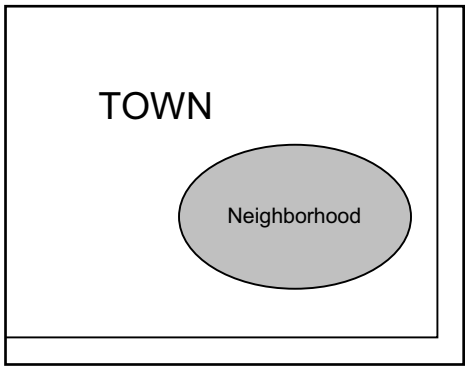
Figure 18-3. Future Land Use Plan



Chapter Nineteen:

Regional Approaches to Land Use Planning

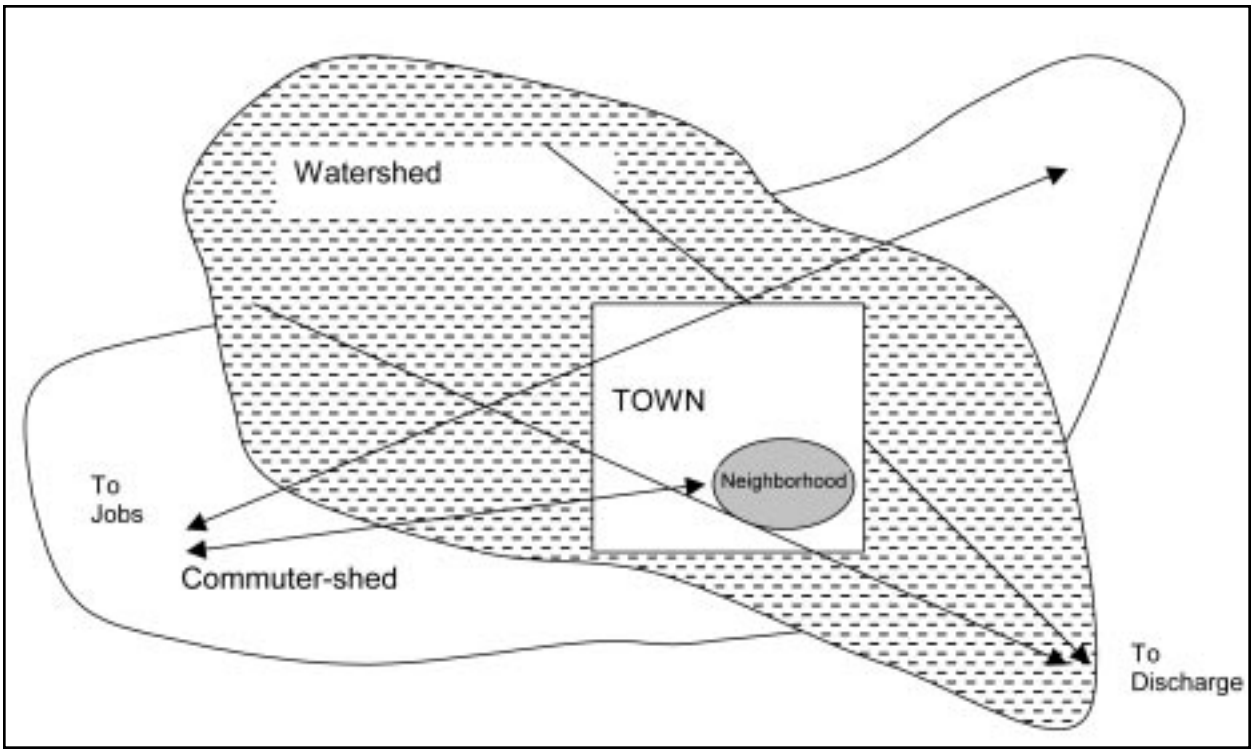
Most Mainers carry out their daily lives at two scales: neighborhood scale and regional scale. Neighborhood scale is "home territory." It is smaller than a town and typically extends a quarter-mile to a couple of miles from where one lives, depending on whether it is a rural, suburban, or in-town setting. It includes immediate surroundings and activities: going to a corner store, picking up mail, going to school, talking to a neighbor, carrying out household errands, taking walks. Neighborhood residents look to their town government to deliver services and protections that allow them to enjoy their neighborhood and keep it safe.



The other scale is regional. It is larger than a town and can cover a hundred to a few hundred square miles. This is the scale on which we depend for jobs, commercial trade, many environmental needs and for cultural amenities. We can think of this scale as being made up of "sheds": that is, areas that capture the flow of large numbers of people or resources. For example, the area in which water flowing down slopes toward a common body of water is a watershed. The area in which commuters tend to flow from homes to central work places is a labor-shed or commuter-shed. The area in which residents tend to congregate for shopping is a retail-shed (or market area).

Most of us live in multiple, overlapping "sheds," all of which affect our lives directly – in water we drink, economic opportunities available, choice of housing, ease of traveling between home and work, opportunities for outdoor recreation, and so forth. Each shed is organized around a spine or focal point of some kind: an arterial roadway, a river, a downtown or major shopping center, or a congregation of employers.

While this is a fact of every-day life, it also is a fact that Maine has very few multi-town or regional institutions that match up with boundaries of these "sheds." Land use decisions are almost entirely at the town level, whereas many forces that drive land use decisions, and many of resources affected by them, are regional. This has become especially apparent since the 1970s. With arterial highways, new forms of highway-oriented retailing, rural



home finance and other subsidy programs, and two-car households long in place, there has been a spreading of development across town boundaries into large, once rural regions.

Provisions in Law

Maine's Growth Management Program expects, at the least, that a municipality's comprehensive plan will include a "regional coordination program" describing how the municipality will coordinate management of shared resources (such as rivers and aquifers) and facilities (such as roads and ports).

Many municipalities work together on a variety of single-purpose items, such as solid waste disposal, mutual aid for fire protection, and code enforcement. The state also has a tradition of voluntary regional planning agencies (see reference information in Chapter 1), organized under state law. These agencies help to coordinate joint purchasing and shared town services. They provide technical assistance in transportation, economic development, land use planning, solid waste management, and other areas.

However, sharing of land use planning, land use decisions, and land use investments is rare. In the absence of systems to jointly manage land use, meeting the objectives of the Growth Management Program will be hard. In particular, it will be hard to slow the sprawl of suburbia into the open spaces of developing regions; to manage non-point sources of pollution to water and air; to prevent congestion on highways; to avoid loss of large blocks of wildlife habitat; or to slow the rush for an expanded local property tax base at the expense of regional resources or facilities.

The growth management law enables groups of towns to jointly conduct any planning and implementation activities that towns can do individually; and it provides for adoption and

approval of multi-municipal comprehensive plans that meet requirements of the comprehensive planning statute. There are no requirements or incentives to do so, however. Since enactment of the Growth Management Program in 1988, no group of communities (as of 2005) had enacted a multi-town program of land use planning and regulation under the program, and only one was considering it (see sidebar on Mapleton, Castle Hill, and Chapman).

Nevertheless, in the few instances in which towns have ventured into joint land use planning, investment, or regulation, they have showed promise. They have demonstrated that, by executing interlocal agreements or by approaching state government to charter a regional organization, they can share land use authority to protect an area-wide resource or to produce returns on investment in ways that they could not do alone.

In Aroostook County, a multi-town plan

Mapleton, Castle Hill, and Chapman have a long history of cooperation. They have a combined population of about 2,800, cover a land area of about 102 square miles, with nearly 60 miles of roads. They have shared a town manager for decades, and since 1992 have had, by interlocal agreement, a Joint Highway Department (which, when the agreement was signed, was estimated to be saving the towns more than $1,000 per mile of roadway for maintenance) joint general governmental services, and joint insurance.

Now the towns are venturing into joint land use planning. The towns' three planning boards are preparing a joint comprehensive plan and considering a common land use ordinance. The ordinance would be written in "modules," with each town able to adopt the modules or sections it considers appropriate for its needs. The ordinance would be consistent with the common comprehensive plan, and, while a town may not adopt the entire ordinance, any sections that are adopted would contain the same language and standards as in the other participating towns.

Multi-town Land Use Planning Approaches

The simplest approach to multi-town land use planning, and one that does not suggest any compromise of home rule authority, is just for two or more towns to **talk regularly to each other**. They may share a resource such as a lake, aquifer, harbor, airport, arterial, or a major employer. Informal, multi-town discussions, sometimes sponsored by a regional planning agency, have become more common. Out of them can come information and informal agreements on common standards or approaches each town can incorporate into its practices or ordinances, aimed at protecting or investing in the shared resource. Regular discussions can also help resolve differences over conflicting zoning or land use decisions in the border area between towns.

At a more formal level, but without legal commitments to take action, are **signed agreements among towns to prepare a plan around a shared resource**. This is useful because it sets forth a process and timeline to be followed among the towns, explicitly involves elected and appointed representatives of participating towns, and describes the kind of joint plan that is expected to result from discussions. It can be a stepping stone toward joint actions to implement recommendations that come out of the plan.

An agreement of this kind to prepare a land use plan around a shared resource can be helpfully initiated by a state agency responsible for the resource. For example, Maine Department of Transportation has sponsored, via signed agreements with municipalities in the 100-mile corridor of Route 1 between Brunswick and Stockton Springs, a strategic plan

to coordinate local land use and area-wide transportation decisions. See side bar on Gateway 1.

The hope of the Growth Management Program is that municipalities will go beyond planning discussions, whether informal or formal, to the **adoption of joint future land use plans**. At the heart of a joint land use plan would be the joint designation of "growth" and "rural" areas. For example, a small town in which the water supply of several towns is located might be designated mostly "rural," while an adjacent town with public utilities and commercial services would provide "growth" areas. Or two or more municipalities might jointly designate an industrial area for future area-wide job growth. Local ordinances then would be keyed to implementing the joint future land use plan, and there would be agreements to share costs and revenues resulting from development in shared growth areas.

In the absence of multi-town agreements to share land use decisions, non-profit organizations, such as regional land trusts, lake associations, and housing trusts, have filled small parts of the void. An option for individual municipalities to pursue joint planning is to support organizations that are carrying out such work—and to encourage organizations to do so in concert with local comprehensive plans.

Gateway 1: Regional land use and transportation planning

Route 1 is coastal Maine's economic lifeline. It is called upon to simultaneously meet two competing goals. On one hand, it must move people and freight through the region smoothly and quickly. On the other hand, towns and local markets see it as prime land for developing taxable property and to meet a variety of commercial demands–creating points of congestion and friction that slow regional traffic.

MaineDOT and up to 20 municipalities in 2005 agreed to produce a strategic land use-transportation plan to reconcile these competing goals, design future land use in a way that reduces impacts on rural arterials, make use of multiple modes of travel, and preserve downtowns and quality of life in Maine's mid-coastal region.

Contact MaineDOT for more information.

Multi-town Finance and Development Approaches

More familiar to municipalities than formal, joint land use planning are joint investments in facilities that may be too expensive for any one town to carry on its own. Perhaps the best examples are schools, through school administrative districts, and sanitation facilities, such as solid waste and waste water disposal facilities. Special districts provide a handful of services across town boundaries, as well.

These tend to be single-purpose and to be outside of the framework of land use planning and development – although, of course, these facilities are essential to growth and development. Less common are **multi-town investments in infrastructure intended to stimulate growth in, and direct it to, the most advantageous areas of a region**. Towns might, for example, agree that extension of sewer or water supply lines or location of a joint fire station would enable and direct growth to areas of a multi-town area that is closest to transportation facilities, or that logically extends or provides for reinvestment in a downtown or village that serves a region.

An obstacle to joining with other municipalities is the question of how property taxes resulting from new infrastructure will be fairly shared. A business and technology center

in Oakland – FirstPark – provides an example of how a joint decision by a large group of municipalities to invest in an advantageously located regional park resolved the question through tax sharing. See side bar on FirstPark.

Multi-town Land Use Regulatory Approaches

The most difficult step toward multi-town land use decision-making is in regulation. Regulation goes to the core of home rule, and the idea that land use regulation might be shared by or formally coordinated among several municipalities is, for many in Maine, a distant and politically challenging idea. The only examples in Maine of land use regulation transcending boundaries of organized towns and cities have come through state law: for example, the Site Location Act (under which the Department of Environmental Protection regulates developments of regional impact), the Mandatory Shoreland Zoning Act (under which each community must adopt minimum land use standards in shoreland areas); and the Saco River Corridor Commission (a state-chartered commission with permitting authority for land uses either side of the Saco River as it flows through Maine). These examples revolve primarily around environmental concerns.

Nevertheless, the seeds for multi-town regulation of land use have been planted for those municipalities who may choose to move in this direction.

The Saco River Corridor Commission, for example, although a state-charted body (Title 38, Chapter 6), is in fact multi-town or regional in its make-up and character. It has demonstrated that citizens of a region, regardless of their address, can rally around a resource that is important across town boundaries, and over which no one municipality has effective control. Based in part on success of the Saco River Corridor Commission, state law in 1989 enabled creation of river corridor commissions elsewhere, with approval of the Commissioner of the Department of Conservation, to improve effectiveness of shoreland zoning (Title 30-A, Chapter 189) on shared rivers. Once established, a commission is authorized to regulate land use within 500 feet of the high water mark of a river.

State law, both through the Growth Management Program (Title 30-A, Sec. 4325) and through state statute enabling interlocal agreements (Title 30-A, Sec. 2203), allows joint adoption and administration by municipalities of land use ordinances and rules. The Growth Management Act explicitly enables one of the tools that can be used for cooperative land use regulation. This tool is called "transfer of development rights," or TDR. In Chapter 12, Land Use Patterns, a town-level version of TDR adopted in New Gloucester

FirstPark: Regional economic development

In 2000, twenty-four municipalities formed the Kennebec Regional Development Authority to jointly develop the state's first "super park" – a business and technology center on 285 acres in Oakland. Through the Authority, twenty-four towns and cities have committed to share costs and tax revenues in proportion to each municipality's total property valuation.

FirstPark is notable for its high technology infrastructure, including communications services replete with wireless services, an integrated voice, data and video network, high-speed internet access, and a redundant network designed to eliminate service outages.

The 24 municipalities range from small rural towns, such as Cornville and Benton, for whom a high tech park would otherwise be out of the question, to cities like Waterville and Gardiner.

For more information, see http://www.firstpark.com.

was described. TDR can also be applied regionally, and some of the most successful examples of its use in the U.S. have been at a regional scale. Because TDR, by design, moves development rights (with compensation) from farms, woodlands, and other open spaces to areas better suited for development, and because it can do so from one area of a region to another area, even if it is not adjacent to the first, it is a natural tool to implement growth and rural areas in multi-town regions.

Looking to the Future

How ever a town or city envisions its future, it is likely to conclude that it cannot get there on its own. The forces of economy, mobility, technology, and environmental concern require serious thinking beyond municipal boundaries. The ability to reach local goals will increasingly depend on alliances with neighboring communities—through joint planning, developing common facilities to serve growth and development, sharing services, costs and tax revenues, and coordinating the care of natural resources that cross local boundaries.