

CHAPTER 9: MANAGING COASTS AND THEIR WATERSHEDS

The pressures of continuing growth are acutely felt in coastal areas. While largely attributable to activities taking place at the coast, some pressures originate hundreds of miles away in inland watersheds. To more effectively manage coasts, states need a stronger capacity to plan for and guide growth—one that incorporates a watershed approach to govern coastal and ocean resources. In addition, to assist states in such development and support the move toward an ecosystem-based management approach, federal area-based coastal programs should be consolidated to better integrate and capitalize on the strengths of each. Finally, to reach the goal of economically and environmentally sustainable development, changes should be made to federal programs that currently encourage inappropriate growth in fragile or hazard-prone areas.

ATTRACTING CROWDS, CREATING OPPORTUNITIES

People, Jobs, and Opportunities

While coastal counties (located entirely or partially within coastal watersheds) comprise only 17 percent of the land area in the contiguous United States, they are home to more than 53 percent of the total U.S. population. A study of coastal population trends predicts average increases of 3,600 people a day moving to coastal counties, reaching a total population of 165 million by 2015.¹ These figures do not include the 180 million people who visit the coast every year.²

Population growth and tourism bring many benefits to coastal communities, including new jobs and businesses and enhanced educational opportunities. Burgeoning industries associated with tourism and recreation in coastal areas (such as hotels, resorts, restaurants, fishing and dive stores, vacation housing, marinas, and other retail businesses) have created one of the nation's largest and fastest-growing economic forces (Appendix C).

Coastal Activities Are Big Business

Across the country, more than 89 million people a year participate in marine-related recreation, such as swimming, scuba diving, surfing, motor boating, sailing, kayaking, and wildlife viewing.³ In just four South Florida coastal counties, recreational diving, fishing, and ocean-watching activities generate \$4.4 billion in local sales and almost \$2 billion in local income annually⁴ and more than 2.9 million people visit the Florida Keys each year.⁵ During the summer of 2000, beach activities in Los Angeles and Orange counties stimulated an estimated \$1 billion in spending.⁶ The Hawaiian Islands and many U.S. island territories are particularly dependent on tourism for their economic health. Hawaii alone attracts some 7 million tourists each year.⁷ In 2001, over 8 million people took to the sea aboard cruise ships, and approximately 135 million people visited the nation's marine aquariums and zoos.^{8,9} Although golf and tennis are recognized as major U.S. industries, it is estimated that more Americans participate in recreational fishing than in both of these sports combined.¹⁰

Implications of Growth

The popularity of ocean and coastal areas increases pressures on these environments, creating a number of challenges for managers and decision makers. Increased development puts more people and property at risk from coastal hazards (Chapter 10), reduces and fragments fish and wildlife habitat (Chapter 11), alters sedimentation rates and flows (Chapter 12), and contributes to coastal water pollution (Chapter 14).

The rise in privately owned coastal land, coupled with the need to protect sensitive habitats, makes it increasingly difficult to provide public access to the shore. Every year, millions of dollars are spent replenishing sand at the nation's beaches and protecting coastal development from storms, waves, and erosion. And continued coastal development, coupled with rising sea level, results in ever-increasing wetlands losses.

Polluted waters limit fishing, swimming, and other water-related recreational and economic activities. One of the most serious impacts on ocean and coastal areas is the increasing amount of polluted runoff from urban, suburban, and agricultural areas, which is exacerbated by increases in impervious surfaces, such as roads, parking lots, sidewalks, and rooftops. Evidence indicates that ecosystem health is seriously impaired when the impervious area in a watershed reaches 10 percent. If current coastal growth trends continue, many healthy watersheds will cross the 10 percent threshold over the next twenty-five years.¹¹

Although the rate of population growth in coastal counties is not greater than in other areas of the country, the sheer numbers of people being added to fixed coastal land areas, combined with the fragile nature of coastal resources, create disproportionate impacts (Appendix C). In many cases, these impacts are destroying the very qualities that draw people to the coast.

The pattern of coastal growth—often in scattered and unplanned clusters of homes and businesses—is also significant. Urban sprawl increases the need for infrastructure such as roads, bridges, and sewers, degrading the coastal environment while making fragile or hazard-prone areas ever more accessible to development. Because of the connections between coastal and upland areas, development and sprawl that occur deep within the nation's watersheds also affect coastal resources.

STRENGTHENING COASTAL PLANNING AND MANAGEMENT

Multi-layered Decision Making

A complex combination of individuals and institutions at all levels of government make decisions that cumulatively affect the nation's ocean and coastal areas. These institutional processes determine where to build infrastructure, encourage commerce, extract natural resources, dispose of wastes, and protect or restore environmental attributes.

Many of the decisions that affect the nation's coastal areas are made by local governments through land use planning, zoning, subdivision controls, and capital improvement plans. Local decisions are shaped in turn by state policies and requirements. Some coastal states have developed statewide goals and policies for transportation, land use, and natural resource protection, with a few states putting specific emphasis on coastal resources. Recognizing that sprawling patterns of growth are not sustainable, several coastal states have instituted programs intended to manage growth, including Maine, Oregon, Florida, Washington, and Maryland. By applying a variety of land use planning tools, techniques, and strategies, these programs attempt to steer population growth toward existing population centers and away from fragile natural areas.

The Smart Growth Movement

For more than a decade, there has been a call for smart growth, characterized by more compact, land-conserving patterns of growth, through infill and reuse of building sites, pedestrian-friendly and transit-oriented development, and protection of green space. For example, in 1997, Maryland instituted its Smart Growth and Neighborhood Conservation Initiative, which tried to direct growth to more environmentally suitable areas and away from some of the state's most ecologically and economically important landscapes. Under this initiative, state agencies limited funding for infrastructure outside of designated growth areas. The Maryland experience, which has since been scaled back under new budgetary pressures, provides one model of growth management for consideration by other state and local governments.

Existing federal, state, and local institutional processes have made substantial progress in managing activities that affect the nation's coastal resources. However, local and state governments continue to face a number of obstacles in planning and managing the cumulative impacts of growth, including: disincentives to long-term planning due to the pressures of short political and business cycles; lack of shared values or political will; inadequate information, including locally relevant socioeconomic indicators; difficulty in addressing problems that cross multiple jurisdictions including upland areas; insufficient resources dedicated to protecting coastal resources; and multiple institutions at different levels of government that address isolated aspects of connected problems. Improved policies for managing growth in coastal areas will be essential in protecting and restoring the natural resources that sustain the character and economies of coastal communities.

Although most coastal management activities take place at state and local levels, coastal decision-making is also influenced by federal actions, including funding decisions and standard setting. Of the many federal programs that provide guidance and support for state and local decision-making, some address the management of activities and resources within designated geographic areas, while others address the management of specific resources, such as fisheries or marine mammals.

Federal Area-based Coastal Programs

The major area-based coastal programs include the Coastal Zone Management Program, National Estuarine Research Reserve System, and National Marine Sanctuaries Program of the National Oceanic and Atmospheric Administration (NOAA); the National Estuary Program of the U.S. Environmental Protection Agency (EPA); and the Coastal Program and Coastal Barrier Resources System of the U.S. Fish and Wildlife Service (USFWS). (These programs and others are also summarized in Appendix D.) In addition to their shared geographic focus, these programs are all implemented at the state and local level and highlight the importance of science, research, education, and outreach in improving the stewardship of ocean and coastal environments.

Coastal Zone Management Program

The Stratton Commission's 1969 report called for a national program to address development and environmental issues in coastal areas and to enhance the capacity of state and local governments to manage activities that affect these areas.¹² Three years after that report's release, Congress enacted the Coastal Zone Management Act (CZMA), the federal government's principal tool for fostering comprehensive coastal management. The CZMA created the Coastal Zone Management Program, a unique partnership between the federal and coastal state governments, whose goal is to balance the conservation of the coastal environment with the responsible development of economic and cultural interests.

Administered by NOAA, the CZMA provides two incentives for coastal states to voluntarily develop and conduct coastal management programs: federal grants and federal consistency authority. Federal consistency

provisions require federal activities affecting land, water, or natural resources of a state's coastal zone to be consistent with the enforceable policies specified in that state's approved coastal management program.

Currently, thirty-four of thirty-five coastal states and territories have coastal programs in place, covering 99 percent of the nation's marine and Great Lakes coastlines. The tools, assistance, and resources provided by the CZMA have enabled states and territories to increase their management capacity and improve decision making to enhance the condition of their coastal areas. These programs facilitate public access to ocean and coastal areas, protect people and property from coastal hazards, conserve critical natural resources and stimulate economic development by revitalizing urban waterfronts and promoting coastal-dependent industries. The CZMA has also enhanced communication and coordination between federal and state governments and between state and local governments.

Under the CZMA, participating states are given the flexibility to design coastal management programs that address their individual priorities and the programs are approved as long as they meet certain minimum national guidelines. This flexibility has been hailed by many as the CZMA's greatest virtue and by others as its most serious shortcoming.

State-by-state implementation has resulted in wide variations in the strength and scope of state coastal management programs. NOAA has few options to ensure that the programs are meeting national guidelines other than withholding funding or withdrawing program approval. No state program has ever been disapproved. The geographic boundaries of state coastal management programs also differ greatly. The CZMA defines the coastal zone—the area subject to the enforceable policies of a state's program—as stretching from the seaward boundary of state ocean waters (generally 3 nautical miles) to the inland extent deemed necessary by each state to manage activities that affect its coastal resources. Individual state discretion regarding the landward reach of its coastal zone has resulted in major variations. For example, Florida, Delaware, Rhode Island, and Hawaii include the entire state in their coastal zones, while the inland boundary of California's coastal management program varies from a few hundred feet in urban areas to several miles in rural locales.

The Coastal Zone Management Program can be strengthened by developing strong, specific, measurable goals and performance standards that reflect a growing understanding of the ocean and coastal environments, the basic tenets of ecosystem-based management, and the need to manage growth in regions under pressure from coastal development. A large portion of federal funding should be linked to program performance with additional incentives offered to states that perform exceptionally well. In addition, a fallback mechanism is needed to ensure that national goals are realized when a state does not adequately participate or perform.

The landside boundaries of state coastal management programs should also be reconsidered. At a minimum, each state should set the inland extent of its coastal zone based on the boundaries of coastal watersheds (discussed in Chapter 1). In creating new management areas, state programs should consider additional factors such as large or growing population centers, areas of considerable land use, and particularly sensitive natural resources, such as wetlands. Social and natural resource assessment and planning at the watershed scale should become a high priority in each state's program.

What Is a Coastal Watershed?

Everyone in the United States lives in a watershed. A watershed is a geographic area in which water flows on its way to a larger water body, such as a stream, river, estuary, lake, or ocean. The nation's coastal and ocean resources are affected not only by activities in coastal areas but also by those in upland watersheds.

A coastal watershed, as defined by the National Oceanic and Atmospheric Administration, is that portion of a watershed that includes the upstream extent of tidal influence. In the Great Lakes region, a coastal watershed includes the entire geographic area that drains into one of the lakes.¹³

Funding for CZMA implementation remains a significant concern, having been capped at \$2 million per coastal state since 1992. This level hampers program implementation and should be considerably increased to enable states to effectively carry out important existing and planned program functions, including the inclusion of coastal watersheds.

Recommendation 9-1. Congress should reauthorize the Coastal Zone Management Act (CZMA) to strengthen the planning and coordination capabilities of coastal states and enable them to incorporate a coastal watershed focus and more effectively manage growth. Amendments should include requirements for resource assessments, the development of measurable goals and performance measures, improved program evaluations, additional funding to adequately achieve the goals of the Act, incentives for good performance and disincentives for inaction, and expanded boundaries that include coastal watersheds.

Specifically, CZMA amendments should address the following issues:

- **resource assessments**—*State coastal management programs should provide for comprehensive periodic assessments of the state’s natural, cultural, and economic coastal resources. These assessments will be critical in the development of broader regional ecosystem assessments, as recommended in Chapter 5.*
- **goals**—*State coastal management programs should develop measurable goals based on coastal resource assessments that are consistent with national and regional goals. State coastal programs should work with local governments, watershed groups, nongovernmental organizations, and other regional entities, including regional ocean councils, to develop these goals.*
- **performance measures**—*State coastal management programs should develop performance measures to monitor their progress toward achieving national, regional, and state goals.*
- **evaluations**—*State coastal management programs should continue to undergo periodic performance evaluations by the National Oceanic and Atmospheric Administration. In addition to the existing evaluation criteria, the performance measures developed by state programs should also be reviewed. The public, representatives of watershed groups, and applicable federal program representatives should participate in these program evaluations.*
- **incentives**—*Existing incentives for state participation—federal funding and federal consistency authority—should remain, but a substantial portion of the federal funding received by each state should be based on performance. Incentives should be offered to reward exceptional accomplishments, and disincentives should be applied to state coastal management programs that are not making satisfactory progress in achieving program goals.*
- **boundaries**—*Coastal states should extend the landward side of their coastal zone boundaries to encompass coastal watersheds. Mechanisms should also be established for coordinating with watershed management groups outside of a state’s designated coastal zone boundary.*

Coastal Barrier Resources System

The Coastal Barrier Resources Act established the Coastal Barrier Resources System in 1982 to promote coastal conservation on barrier islands and minimize the loss of human life and property from coastal hazards. Through this program, which is administered by USFWS, the federal government discourages development on designated barrier islands in the Atlantic and Gulf coasts, Puerto Rico, the U.S. Virgin Islands, and the Great Lakes by restricting certain federal assistance, including flood insurance coverage, loans, funding for U.S. Army Corps of Engineers development projects, and construction of sewer systems, water supply systems, and transportation infrastructure. Nearly 1.3 million acres of land along the East Coast, Great Lakes, and Gulf of Mexico are part of the system. The program does not ban all development in these areas; rather, it creates disincentives by denying federal subsidies and imposing the full costs of development on the developer or property owner.

National Estuarine Research Reserve System

The CZMA established the National Estuarine Sanctuaries Program in 1972 for the purpose of creating “natural field laboratories in which to study and gather data on the natural and human processes occurring within the estuaries of the coastal zone.” That program evolved into NOAA’s National Estuarine Research Reserve System (NERRS), which provides funds to states for acquiring estuarine areas and developing and operating research facilities and educational programs. The NERRS program currently includes twenty-five reserves in twenty-one states.

National Marine Sanctuary Program

In 1972, one hundred years after the first national park was created, a similar commitment was made to preserving marine treasures by establishing the National Marine Sanctuary Program within NOAA. Since then, thirteen national marine sanctuaries have been designated, representing a variety of ocean environments. The mission of the program is to serve as the trustee for these areas and to conserve, protect, and enhance their biodiversity, ecological integrity, and cultural legacy. Sanctuaries are designated for many objectives, ranging from protecting the breeding and calving grounds of humpback whales to preserving the remains of historic shipwrecks.

National Estuary Program

Created by the 1987 amendments to the Clean Water Act, the National Estuary Program (NEP) was established to improve the quality of estuaries of national importance. EPA administers the program, and provides funds and technical assistance to local stakeholders to develop plans for attaining or maintaining water quality in designated estuaries. The program requires stakeholders to develop a comprehensive conservation and management plan that includes measures for protection of public water supplies, protection and propagation of fish, shellfish, and wildlife populations, allowance for recreational activities in and on the water, and control of point and nonpoint sources of pollution that supplements existing pollution control measures. Currently, twenty-eight estuaries are included in the program. In several cases, more than one state participates in a single NEP. In contrast to the CZMA’s broad scope and focus on state and local government decisions throughout the coastal zone, the NEP concentrates on bringing together stakeholders in particular areas that are in or approaching a crisis situation.

The assessment and planning process used by the NEP holds promise for the future of ecosystem-based management. However, the lack of federal funding and assistance for the implementation of NEP plans limits their effectiveness, as do the intergovernmental obstacles that arise when an estuary spans multiple states.

Coastal Program of the U.S. Fish and Wildlife Service

Through its Coastal Program, the USFWS undertakes habitat conservation efforts in bays, estuaries, and watersheds along the U.S. coastline, including the Great Lakes. The program targets funding to sixteen high-priority coastal ecosystems, providing assessment and planning tools to identify priority sites for protection and restoration, conserving pristine coastal habitats through voluntary conservation easements and locally initiated land acquisition, and forming partnerships to restore degraded habitat.

Linking Area-based Programs

The area-based programs described above have made significant progress in managing coastal resources in particular locations, working with communities and decision makers in those areas, and fostering improved coordination between different levels of government. However, because these programs generally operate in

isolation from one another, they cannot ensure effective management of all ocean and coastal resources or achievement of broad national goals. As NOAA is strengthened through the multi-phased approach described in Chapter 7, consolidation of area-based coastal resource management programs will result in more effective, unified strategies for managing these areas, an improved understanding of the ocean and coastal environment, and a basis for moving toward an ecosystem-based management approach.

Recommendation 9-2. Congress should consolidate area-based coastal management programs in a strengthened National Oceanic and Atmospheric Administration (NOAA), capitalizing on the strengths of each program. At a minimum, this consolidation should include the Coastal Zone Management, National Estuarine Research Reserve System, and National Marine Sanctuary programs currently administered by NOAA and additional programs administered by other agencies: the Coastal Barrier Resources System; the National Estuary Program; and the U.S. Fish and Wildlife Service Coastal Program.

Other Relevant Federal Programs

In addition to the area-based programs discussed above, a number of other laws significantly affect coastal resources, including the National Environmental Policy Act, Clean Water Act, and Clean Air Act. Programs related to transportation, flood insurance, disaster relief, wetlands permitting, dredging, beach nourishment, shoreline protection, and taxation also exert a profound influence on the coast. While these laws and policies address specific issues, and have each provided societal benefits, in many cases federal activities under their purview have inadvertently led to degradation of coastal environments. For example, road construction can have negative impacts on coastal areas and resources—including habitat destruction, increased runoff, and encouragement of inappropriate development—that could be mitigated if transportation infrastructure activities were implemented in the context of comprehensive, ecosystem-based goals and plans.

Regional coordination of federal agency activities, as recommended in Chapter 4, along with establishment of regional ocean councils and regional ocean information programs, as recommended in Chapter 5, would greatly improve federal project planning and implementation. Enhancing the relationships between federal agencies, state coastal resource managers, and all decision makers would also help to ensure compatibility among the many activities that affect ocean and coastal environments.

Recommendation 9-3. The National Ocean Council should recommend changes to federal funding and infrastructure programs to discourage inappropriate growth in fragile or hazard-prone coastal areas and ensure consistency with national, regional, and state goals aimed at achieving economically and environmentally sustainable development.

Examples of programs to be reviewed include:

- *Federal Emergency Management Agency hazards-related programs that may encourage development in high-hazard, flood, and erosion areas (see Chapter 10).*
- *U.S. Army Corps of Engineers wetland permitting, dredging, beach nourishment, and shoreline protection programs (see Chapters 11 and 12).*

LINKING COASTAL AND WATERSHED MANAGEMENT

In recent years there has been a growing interest in watershed management. This approach addresses water quality and quantity issues by acknowledging the hydrologic connections between upstream and downstream areas and considering the cumulative impacts of all activities that take place throughout a watershed.

The environmental and political characteristics of the nation’s watersheds vary tremendously. As a result, watershed management initiatives can differ widely in size and scope. Many watershed groups are formed at the local level by community members concerned about water quality or the health of fish and wildlife populations. Often, these groups work to improve watershed health through partnerships among citizens, industry, interest groups, and government.

The value of a watershed approach was articulated by the National Research Council in a 1999 report: “[w]atersheds as geographic areas are optimal organizing units for dealing with the management of water and closely related resources, but the natural boundaries of watersheds rarely coincide with political jurisdictions and thus they are less useful for political, institutional, and funding purposes. Initiatives and organizations directed at watershed management should be flexible to reflect the reality of these situations.”¹⁴

The benefits of a watershed focus have been recognized at state, regional, national, and international levels. For example, Oregon has defined watershed groups in law, and has also created a process for their legal recognition and funding. The New Jersey government includes a Division of Watershed Management that provides coordinated technical, financial, and planning support for twenty watershed management areas within the state. New Jersey also participates, along with Pennsylvania, Delaware, and New York, in the Delaware River Basin Commission—a regional body authorized to manage activities within a river system that transcends political boundaries. The Chesapeake Bay Program, the California Bay-Delta Program (known as CALFED), and the Northwest Power Planning Council are other notable examples of current initiatives that aim to address natural resource issues on a watershed scale. Some existing bi-national watershed initiatives include the Great Lakes Commission, Shared Strategy for Puget Sound, and the Gulf of Maine Council on the Marine Environment. Federal agencies have also begun to adopt a watershed management focus. For example, beginning in the 1990s, EPA launched efforts to address certain problems at the watershed level, rather than on a source-by-source or pollutant-by-pollutant basis.

As interest in watershed management continues to grow, so does the need for a framework to guide such initiatives and evaluate their effectiveness. The federal government can play an important role by helping to develop a framework and by providing technical and financial assistance to states and communities for watershed initiatives.

Recommendation 9–4. Congress should amend the Coastal Zone Management Act, the Clean Water Act, and other federal laws where appropriate, to provide better financial, technical, and institutional support for watershed initiatives. Amendments should include appropriate incentives and flexibility for local variability. The National Ocean Council should develop guidance concerning the purposes, structures, stakeholder composition, and performance of such initiatives.

LINKING COASTAL AND OFFSHORE MANAGEMENT

As discussed in Chapter 6, the growing number of activities that take place in offshore waters calls for a more comprehensive offshore management regime. While the focus of this chapter is on coastal and watershed management, it is important to recognize the strong relationship between the management of onshore and offshore resources. States have long asserted their interests offshore, both by acting as the trustee for public resources in and beneath state waters, and by exerting their responsibilities (principally through the CZMA federal consistency provisions, described on the next page) for activities that take place in federal waters but affect state resources. Several states, including Oregon, California, and Hawaii, have developed comprehensive plans to guide ocean activities, resolve conflicts, and anticipate new uses in their waters. Other states, including Florida, Maine, Mississippi, and North Carolina have conducted extensive studies of ocean issues affecting their states. In 2003, Massachusetts launched a specific ocean planning initiative.

Balancing Federal Ocean Activities with State Coastal Management Programs: The Federal Consistency Tool

In the area of natural resource management, one of the more interesting, innovative, and sometimes contentious features of the nation's system of federalism is the relationship between the federal government and coastal state governments with respect to the control and shaping of ocean activities in federal waters.

Historically, this relationship has taken on many hues and forms, but its policy and legal aspects have been largely structured over the last three decades by the development of one section of a single law, the so-called federal consistency provision (Section 307 of the Coastal Zone Management Act (CZMA)). As noted earlier in this chapter, the promise of federal consistency was one of two incentives (the other being grant money) Congress provided to encourage state participation in this voluntary program.

In very general terms, it is a promise that federal government actions that are reasonably likely to affect the coastal resources of a state with an approved coastal management program will be consistent with the enforceable policies of that program. Essentially, under some circumstances, it is a limited waiver of federal authority in an area—offshore waters seaward of state submerged lands—in which the federal government otherwise exercises full jurisdiction over the management of living and nonliving resources.

The underlying principle of federal consistency represents a key feature of cooperative federalism: the need for federal agencies to adequately consider coastal state coastal management programs by fostering early consultation, cooperation, and coordination before taking an action that is likely to affect the land or water use or natural resources of such state's coastal zone. It facilitates significant input at the state and local level from those who are closest to the issue and in a position to know the most about their coastal resources.

The process, however, is not one-sided. For states to exercise federal consistency authority, they must submit and receive approval of their coastal management programs from NOAA. Congress established the general criteria for approval of the programs, including a review by other federal agencies before the plans are officially authorized. A core criterion for program approval is whether the management program adequately considers the national interest when planning for and managing the coastal zone, including the siting of facilities (such as energy facilities) that are of greater than local significance.

Once a state has received approval, federal consistency procedures are triggered. Under current practice, states only review federal actions that have reasonably foreseeable coastal effects. There is flexibility in the law to allow agreements between states and federal agencies that can streamline many aspects of program implementation. For example, there may be understandings with respect to classes of activities that do not have coastal effects. Otherwise, the decisions about such effects are made on a case-by-case basis.

There have been disagreements between federal agencies and states on some coastal issues, the more high profile ones largely in the area of offshore oil and gas development (Chapter 24). Nevertheless, in general, the federal consistency coordination process has improved federal-state relationships in ocean management. States and local governments have to consider national interests while making their coastal management decisions and federal agencies are directed to adjust their decision-making to address the enforceable policies of a state's coastal management program.

In the event of a disagreement between the state and a federal agency, the agency may proceed with its activity over the state's objection, but it must show that it is meeting a certain level of consistency. In a separate part of the federal consistency section, the coastal activities of third party applicants for federal licenses or permits are required to be consistent with the state's program. If the state does not certify that the activities will be consistent, the federal agency shall not grant the license or permit and the proposed action may not go forward. An applicant can appeal such a decision to the Secretary of Commerce, who has certain specified grounds on which he or she can overturn the state's finding of inconsistency.

Today, after some thirty years of evolution in the practice and implementation of this rather unusual intergovernmental process, federal agencies do not take the consistency standard lightly, as it is a fairly high threshold to meet. The result, according to NOAA, has been an outstanding level of cooperation and negotiation between states and federal agencies¹⁵ such that approximately 93-95 percent of the activities are approved.¹⁶

INCREASING UNDERSTANDING OF COASTAL ECOSYSTEMS

To improve the management of the nation's oceans and coasts, decision makers at all levels will need to gain a better understanding of ecosystems, both how they function and how human activities and natural events affect them. The creation of regional ocean information programs, as recommended in Chapter 5, is one important vehicle for enabling decision makers to better communicate their information needs to the scientific community, and ensuring that new information is converted into useful products. Coastal and watershed management activities, and growing efforts to link these two approaches, should provide the information necessary for the public to be responsible stewards of the nation's oceans, coasts, and watersheds.

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