

**MEASURING PUBLIC PARTICIPATION IN COASTAL ZONE  
MANAGEMENT: POLICY OPTIONS FOR CALIFORNIA AND  
NORTH CAROLINA**

by

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## **ABSTRACT**

NOAA manages the coastal zone in the United States under the Coastal Zone Management Act (CZMA). One of the goals of the act is to provide opportunities for the public to participate in the coastal zone management (CZM) process. I have developed a set of indicators of public participation by reviewing how government agencies solicit and implement public views in the states of California and North Carolina. Indicators – measures of success – are used by government agencies to show their progress towards policy goals, to simplify information, and to improve communication between government officials and the public. A public participation indicator will help states determine how well they are implementing the CZMA, enable states to compare participation levels over time, and allow comparisons between states. Indicators of public participation, however, should include a measure of the effectiveness of the participation, of how representative the views of those who participate are of the entire public, and of the influence that the public has on final policy outcomes. If NOAA develops a national system of indicators and performance measures, they should include an indicator of public participation in coastal zone management decisions.

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## INTRODUCTION

In 1972 Congress passed the Coastal Zone Management Act, authorizing the Coastal Zone Management Program and giving the National Oceanic and Atmospheric Administration (NOAA) the authority and responsibility to implement the Act. Now, thirty years later, NOAA is considering using a national indicator system to determine how well state and federal governments are meeting the goals of the Act. One of these goals is the “giving of timely and effective notification of, and opportunities for public and local government participation in, coastal management decisionmaking” (CZMA §1452(2)(I)). The purpose of this project is to develop a set of indicators for public participation in coastal zone management.

The reasons for public participation in policy making are many. The goals are generally either to provide a benefit to the public, or to improve policy. I will discuss the benefits of public participation in policy making, and describe the many ways in which the government and citizens interact.

The development of a set of indicators for public participation in coastal zone management (CZM) requires a discussion of both environmental and social indicators. Environmental indicators are signs and signals that summarize characteristics of the biophysical environment, while social indicators summarize characteristics of the social environment. I will discuss the development and use of both types of indicators, focusing on social indicators.

A major principle of the CZMA is that coastal resources and uses are regional in nature and best managed at the state and local level. As a result, public participation indicators may vary between states and localities. I have chosen to review CZM processes in California and North Carolina in order to point out the similarities and differences in CZM, and how both states attempt to provide for public participation. “Coastal zone management” includes many decisions and actions made by many agencies. For example, decisions made outside the normal purview of CZM agencies about development of inland portions of a watershed affect the coastal zone. I will therefore define “coastal zone management” and spell out what decisions and actions I will include as CZM.

Because it is difficult to measure public participation without first defining the terms “public” and “public participation,” I will spell out what I mean by each of these terms. I will review the ways in which other laws require public participation, as well as how the public

participates in environmental management decisions. I will apply these issues to CZM and develop a set of indicators of public participation in CZM decision-making processes based on public participation methods in both North Carolina and California. Finally, I will give my conclusions, observations, and recommendations for measuring public participation in CZM processes and decisions.

## THE PUBLIC AND PUBLIC PARTICIPATION

While the terms “public” and “public participation” are used frequently, definitions for these terms are not widespread. Mimi Becker has defined public participation as “...the means by which the views of all parties interested in a given issue are integrated into the decisionmaking process” (1993). Lee et al., however, discuss public participation as “...a catch-all phrase for a wide range of agency-public interactions varying from placation of public concern to full citizen control of the decision making process,” and say the public involved in these interactions is a matter of agency choice (1982).

I will discuss public participation only at the state level, and will therefore include only those people who are citizens of, or own property in, the particular state I am discussing as members of the public. Public participation is any two-way interaction between the two states’ coastal agencies and members of the public.

Public participation benefits the public by educating them about the activities, problems, and demands of the government. Increased education makes the public more trusting and tolerant of the government and therefore more likely to comply with its decisions (Kweit and Kweit 1981). Public participation also benefits the public by providing an increased sense of efficacy – belief that their actions can affect government decisions. Participation by the public decreases alienation from members of their community, and from the government. When individuals realize that other members of their community share their desires, a sense of community develops. Pride in the government and in the community increases compliance with government rules and desires to work toward improvements in the community (Kweit and Kweit 1981).

Public participation improves policy because citizens can protect their interests and achieve what they desire from their government. Public participation in policy making also makes the policy more legitimate and leads to better results (Kweit and Kweit 1981). If policy-makers use and value citizen input, it provides them with a better basis for policy-making and ensures more effective implementation. Citizen participation also makes government more transparent and accountable, and can counter declining public support (OECD 2001b).

There are three basic types of government/citizen interactions (Table 1).

**Table 1. Three types of government/citizen interactions with applicable legislative acts and examples.**

Type of Interaction	Definition	Legislative Acts	Examples
Information Provision	<i>Information flows in one direction, from the government to the citizens in a one-way relationship</i>	?Federal Freedom of Information Act ?California's Bagley-Keene Open Meetings Act ?North Carolina's Open Meetings Law	?Access to public records ?Government websites
Public Consultation	<i>Government asks for and receives citizens' feedback in a limited two-way relationship</i>	?NEPA ?APA ?CEQA ?NCEPA	?Comments on government actions ?Comments on proposed rule changes ?Public opinion surveys
Active Participation	<i>Citizens actively engage in decision and policy making in an advanced two way relationship</i>	?Clean Water Act (National Estuary Program)	?Working groups ?Stakeholder processes

Government/citizen interactions include information provision, where information flows in one direction from the government to its citizens in a one-way relationship; public consultation, where the government asks for and receives citizen feedback in a limited two-way relationship; and advanced participation, where citizens are actively engaged in decision and policy making in an advanced two-way relationship (OECD 2001b). Table 1 provides examples of legislative acts and regulations that use each type of government/citizen interaction, as well as examples of interactions that take place within each category. I will discuss these legislative acts in a following section.

Table 1 also gives examples of the three types of government/citizen interactions. There are many other ways the public participates in government decision-making, and not all of these are included in the CZM decision-making process. Examples of involving the public in government decisions include public hearings, public surveys, public initiatives, negotiated rule-making, citizens review panels, the notice and comment process, providing the public standing to sue, and many others. Researchers have found that managers should not be constrained by mandated methods of public involvement. Rather, they should choose methods appropriate for each situation (Creighton cited in McMullin and Nielson 1991). General objectives to guide the evaluation of public participation processes are that they should use the experience of the public to develop creative solutions to problems, create the opportunity for the public to be heard prior to a decision, avoid later time and money costs that often result from not having public



participation, build public knowledge, and increase the prospects for successful implementation of the decision (Becker 1993).

Research shows that those people who participate are not always representative of the entire public. They differ in their personal circumstances, dependence upon government benefits, in their priorities for government action, and in what they say when they participate (Verba et al. 1993). Those who participate also tend to be the most knowledgeable, most interested, and most upset about a particular issue (Donahue 1993). Generally, the more involved members of the public become, the less representative they are of the entire public and the more expensive and time consuming the process becomes. However, the more involved members of the public are the more influence they exert on policy-making (OECD 2001b).

Before moving forward, I will make a few clarifications about public participation. First, not all government/citizen interactions constitute public participation. The public has access to information through information provision, but is not participating in government decisions. This type of interaction is important, however, because citizens cannot effectively participate in decision-making unless they have information about the issue.

Secondly, I want to make a distinction between public participation and public perceptions. Not all public perceptions are translated into public participation. Surveys gather public perceptions, but this is a limited way for the public to participate in policy decisions and is by no means a substitute for true participation. However, gathering perceptions is important because, as I mentioned, not all public perceptions may be represented by those who participate.

Thirdly, I want to make a distinction between members of the public and stakeholders. I have defined “public” as citizens who reside or own property in one of the coastal states, but stakeholders have a share or interest in the specific decision or issue at hand. All stakeholders are members of the public. On most issues, stakeholders are a smaller group of people than the entire public, as some members of the public have stronger interest and investment in a particular issue than others. However, the government provides opportunities for all members of the public to participate in decision-making, not just those with a special interest, which means that all members of the public can be considered stakeholders.

I have discussed the many types of public participation and the benefits of involving the public in government decision-making. I now turn to methods to measure this participation in CZM decisions, and using indicators as a tool to do so.

## INDICATORS

Indicators are intended to relay a complex message, potentially from numerous sources, in a simplified and useful manner (Jackson et al. 2000). They show changes in larger systems over time (Robson and Whitaker 2002). When systems are too complex to measure directly, indicators help derive feedback about them in a simpler way. We use indicators in many parts of our daily lives, from blood pressure and pulse as indicators of health to gross national product as an indicator of the economy. Poverty rate, a social indicator, tells us about the relative quality of life and economic well being of our citizens as a whole. Ozone levels, an environmental indicator, tells us about the quality of our air. Indicators have many purposes, including to quantify and simplify data and to establish baselines. Indicators improve communication among professionals, and between professionals and the public by providing a common ground to discuss issues and by simplifying information.

The Government Performance and Results Act (GPRA) provided a foundation for the federal government to use indicators. Passed in 1993, the GPRA attempts to shift the focus of government away from the activities that agencies undertake, to a focus on the results of these activities (United States General Accounting Office 2002). Congress found through the GPRA that inefficiency and waste reduces citizen confidence in federal programs and the Federal Government's ability to address public needs; that federal managers are disadvantaged because program goals and information on performance are not clear; and that lack of attention to program performance and results hinders policymaking, spending decisions, and program oversight (GPRA, Sec. 2 (a)). After the passage of the GPRA, many federal agencies began using indicators as a measure of the success of their programs to increase efficiency in government.

The development of a set of indicators for public participation in CZM requires a discussion of both environmental and social indicators. Environmental indicators measure characteristics of the biophysical environment, while social indicators summarize characteristics of the social environment. I will discuss the development and use of both types of indicators, focusing on social indicators.

## ENVIRONMENTAL INDICATORS

The New Jersey Center for Environmental Indicators defines environmental indicators as, “...selected measures that represent or summarize status and trends in significant aspects of environmental quality” (2002). Federal and state environmental agencies have evolved over the past thirty years through individual legislative initiatives to respond to pressing environmental conditions and concerns (Kaplan and McGeorge 2002). With the use of indicators, the government has shifted its management of the environment from a study of the *processes* used to manage the environment – number of permits issued, for example, to the *outcomes* of those processes, such as acres of the coastal zone protected. Rather than focusing exclusively on what government agencies do to improve the environment, effective indicators also focus on the status of the environment itself and the changes occurring there. Indicators help in measuring the successes of the agencies’ actions, and in pointing out the areas of the environment that the agencies need to focus on more closely.

Several international efforts to determine the state of the environment began in the early 1990s, around the time of the United Nations Conference on the Environment and Development, otherwise known as the Rio Conference or Earth Summit, which took place in 1992 (Jackson et al. 2000). The Organisation for Economic Co-operation and Development (OECD) has regularly published environmental indicators since 1991, and uses them in their environmental performance reviews. For example, OECD uses carbon dioxide emission intensities as an indicator of climate change, and number of threatened species as an indicator of biodiversity (OECD 2001a).

In 1995 the Environmental Protection Agency (EPA) and the Environmental Council of States established the National Environment Performance Partnership System (NEPPS) (EPA 2002). The goal of the program was to help the federal and state governments work better together to solve environmental problems. The EPA and states use environmental indicators as an integral part of the performance partnerships to gauge progress in implementing and achieving environmental goals (EPA 2002). The EPA and Environmental Council of States implemented indicators to better understand how the actions they take affect the environment. Under NEPPS, state environmental managers determine what indicators they will use in their home states.

## SOCIAL INDICATORS

Just as environmental indicators aim to summarize and consolidate information about the biophysical environment, social indicators do the same for the social environment. Social indicators attempt to quantify quality of life. Raymond Bauer, who has been credited with coining the term “social indicators,” defined this term as “statistics, statistical series, and all other forms of evidence that enable us to assess where we stand and are going with respect to our values and goals” (Bauer 1966).

The two basic functions of social indicators are to monitor social change and to measure welfare (Noll 2002). Examples of social indicators include employment rate, educational attainment, child poverty, and gender wage gap. Examples of social indicators related to public participation include voter turnout and public meeting participation.

The concept of social indicators goes back to the 1930s when President Hoover established the “Committee on Social Trends” (Noll 2002). The use of indicators grew out of a desire to measure the societal costs of economic growth. As people became wary of using only economics as a measure of a country’s well being, social indicators were developed to measure the harmful impacts economic development was having on some portions of the population. Through the 1960s and 1970s research on social indicators increased as people began to focus more on increased quality of life rather than quantity of goods. During the 1980s, the United States did not support much research on social indicators, but international organizations such as OECD and the United Nations began reporting social indicators. In the 90s, social indicators became more heavily used after the Earth Summit, in the same manner as environmental indicators (Martin and Pearson 2001).

## INDICATOR USE IN COASTAL ZONE MANAGEMENT

Between 1995 and 1997 Marc J. Hershman et al. undertook a CZM effectiveness study, in cooperation with the Office of Ocean and Coastal Resources Management (OCRM) of NOAA, to determine how well state coastal management programs were implementing five goals of the Coastal Zone Management Act. These goals included protection of estuaries and coastal wetlands; protection of beaches, dunes, bluffs and rocky shores; provision of public access to the shore; revitalization of urban waterfronts; and accommodation of seaport development (Hershman et al. 1999). Hershman et al. aimed to evaluate state coastal

management programs from a national perspective. They defined effectiveness as, "...the impact of the state coastal management programs relative to the objectives of the CZMA as measured by 'on-the-ground' outcomes of CZM program actions and decisions, the processes used to achieve the outcomes, and the relative importance given to the issue by the CZM program" (Hershman et al. 1999).

In the view of the researchers, the state programs should have been able to link the goals of their program, the processes used to achieve those goals, and the outcomes produced by those processes (Hershman et al. 1999). They evaluated not only the processes state programs used to manage the coast, such as how they spent their money or the program decisions they made, but also the outcomes of these processes. This focus on outcomes allowed the researchers to determine how well the programs achieved their intended objectives, rather than on how well they performed their specific tasks.

The team of researchers on the effectiveness study concluded that the state CZM programs were effectively implementing the five goals of the CZMA that they studied, but this conclusion was based mainly on the evaluation of the policies, processes, and tools used rather than the "on-the-ground" results produced by the states because of the limited amount of outcome data (Hershman et al. 1999). Additionally, the team concluded that the lack of a common set of outcome indicators linking state management activities prevented them from completing a systematic, outcome-based performance evaluation of state CZM programs. The team suggested that Congress initiate a national outcome monitoring and performance evaluation system and that OCRM develop a national set of outcome indicators.

In a recent study on the feasibility of implementing a national coastal zone indicator program, NOAA spelled out 24 goals of the CZMA and chose to focus on five: protection, restoration, or enhancement of coastal wetlands; management of coastal development to protect against hazards; environmentally sound public access; revitalization of deteriorating urban waterfronts and ports; and *public and local government participation* (NOAA 2002). NOAA prepared this report, entitled "National Coastal Zone Indicators: An Assessment of Indicator Use and Potential in Five Coastal States", because reauthorization bills introduced in the 107<sup>th</sup> Congress called for a system of national coastal zone indicators (H.R. 3577, H.R. 897). This highlighting of public and local government participation leads to the need for a set of indicators for this goal.

My discussion of indicator use in CZM included some of the goals of the CZMA. In the next section, I will talk more about how the government implements these goals and how it manages the coastal zone in the United States, focusing on the states of California and North Carolina.

## COASTAL ZONE MANAGEMENT

Fifty percent of the United States population resides in coastal areas, which cover only seventeen percent of the land area (OCRM 2003). The extent of the coastal zone, as spelled out in the CZMA, includes coastal waters and adjacent shorelands, estuaries, bays, and the coastline of the Great Lakes. The coastal zone extends inland from the shorelines to the extent necessary to control shorelands that have a direct impact on coastal waters, and to areas which are likely to be affected by sea level rise (§1453(1)). The population of coastal areas is expected to grow substantially in the next fifteen years. Recreational opportunities in coastal areas provide a large tourism base which is important to the economy, and the coastal zone includes ports, which are vital to transportation. The coastal zone is also a unique ecological area.

Coastal zone management in the United States is regulated under the Coastal Zone Management Act (CZMA). Passed in 1972, the act provides incentives, in the form of grants, to coastal states that wish to participate in managing the resources and uses of the coastal zone. The CZMA authorizes the Coastal Zone Management Program (CZMP) and is administered by the Coastal Programs Division within NOAA's Office of Ocean and Coastal Resource Management (OCRM). While the program is entirely voluntary, 34 of the nation's 35 coastal states, territories, and commonwealths currently participate, covering 99.9% of the nation's shorelines (OCRM 2003). A major principle of the Act is that coastal resources and uses are regional in nature and best managed at the state and local level. To this end, the CZMA is a coordinating act that organizes local efforts to manage the coastal zone for national benefit. The CZMA takes a bottom-up, rather than top-down, approach. The CZMA is not an ecosystem-based act, but a planning act that provides incentives to state governments for participating. The individual state coastal management programs have taken a variety of forms. Some combine a number of laws and management programs, with different state agencies taking the lead in one or more aspects of the program, while others have one central agency responsible for all aspects of the coastal zone. Still others integrate their coastal management program into a broader state-planning framework (Beatley et al. 2002). These many forms make coordination between states and with the national program complicated.

In addition to the financial incentives for participating, coastal states with approved programs also have the right to review federal actions occurring in or adjacent to their coastal

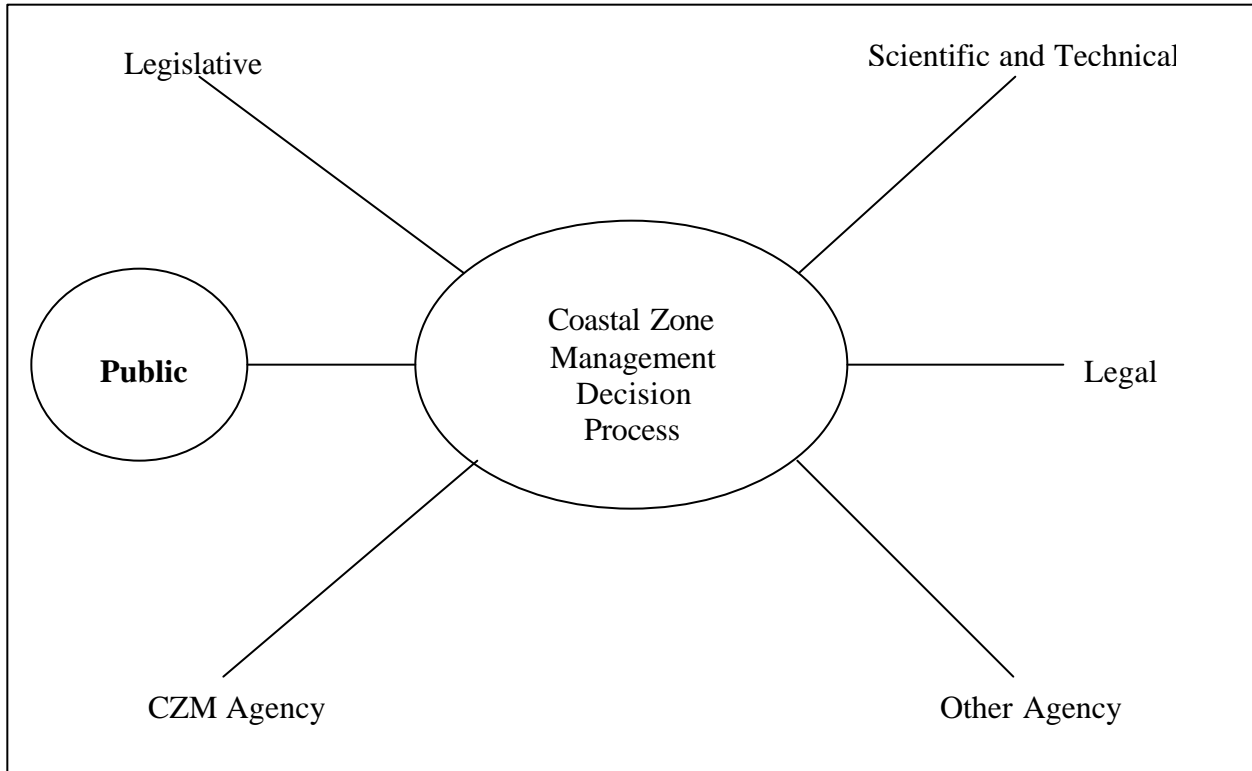
zone. This provision provided under Sec. 307 and termed “federal consistency,” provides states with a powerful way to participate in federal decisions that affect their coast.

NOAA is the main federal agency with responsibility for administering the Coastal Zone Management Program (CZMP). NOAA falls under the Commerce Department. The Coastal Programs Division and OCRM are the primary divisions within NOAA with responsibility for administering the CZMP. NOAA also has the authority to grant money to the states under Sec. 309 of the CZMA, the Coastal Zone Enhancement Grants section and to review state programs under Sec. 312 of the CZMA. OCRM and the Special Projects Office of the National Ocean Service in NOAA performed and wrote the Assessment of Indicator Use and Potential Report (NOAA 2002).

The EPA also has primary responsibility and authority over some activities taking place in the coastal zone, including discharges of coastal pollutants, disposal of dredged materials, and others (NOAA 2003). Many other federal agencies, including the Army Corps of Engineers, the Minerals Management Service, the Department of Defense, the National Park Service, the Federal Emergency Management Agency, and the U.S. Fish and Wildlife Service have strong influence on overall coastal management services (NOAA 2003). Still other federal agencies exert tertiary influence via construction, funding, and research activities. Examples include the Department of Agriculture, the Bureau of Land Management, and the Nuclear Regulatory Commission (NOAA 2003).

There are many other inputs into the CZM decision-making process (Figure 1). These include inputs from Congress at the federal level, the General Assemblies of North Carolina and California, scientific and technical inputs, inputs from the courts, government agency inputs such as those I have already discussed, and inputs from the coastal management agency itself. This project focuses primarily on public inputs.





**Figure 1. Inputs into the coastal zone management decision-making process.**

Because each state was given the authority to develop their own coastal zone program, the organization of the programs varies significantly from state to state. In order to fully explain the governance structure of coastal zone management in the United States, and then to provide recommendations on how to develop indicators of public participation in CZM, I will use the states of California and North Carolina as examples.

### CALIFORNIA

The state of California passed the California Coastal Act in 1976 (California Coastal Commission 1999). Provisions in the act establish a system for the California Coastal Commission to review local coastal plans in the state, and for review of federal actions in California's coastal zone. The coastal zone of California stretches 1,100 miles from Oregon to the border with Mexico, encompasses 1.5 million acres of land, and reaches from three miles out to sea to an inland boundary generally 1,000 yards from the mean high tide line. This boundary varies from a few blocks in the more urban areas, and in significant coastal estuarine, habitat, and recreational areas, the coastal zone extends inland to the first major ridgeline paralleling the sea or five miles from the mean high tide line, whichever is less (California Coastal Act §30103).

California has 15 counties and 58 cities located in whole or in part in the coastal zone (California Coastal Commission 2002).

California has a centralized program where specific permitting responsibilities can be delegated to local entities with approved Local Coastal Plans (LCP). While they are not required, some county and municipal governments have LCPs to govern decisions that determine the conservation and use of coastal resources. They spell out ground rules for development in the locality's coastal zone. The Coastal Commission must approve local governments' LCPs, which must include Land Use Plans.

When there is no approved LCP, the Coastal Commission has permitting responsibilities. The Coastal Commission reviews all amendments to previously approved LCPs, and periodically reviews each LCP to ensure that the goals and policies are being implemented effectively in light of changing needs and circumstances. The Coastal Commission or the BCDC can be involved in permitting responsibilities if local cases are appealed (California Coastal Commission 1999).

The three main coastal management agencies in California are the California Coastal Commission (CCC), the San Francisco Bay Conservation and Development Commission (BCDC), and the California Coastal Conservancy. The San Francisco Bay Conservation and Development Commission oversees development around the San Francisco Bay, and the Coastal Conservancy provides funding to buy agricultural land, restore endangered areas, and provide public access to the coast (OCRM 2002). The Coastal Conservancy's plans must be consistent with the Commission, the BCDC, and with the LCPs. The Coastal Commission reviews and acts on all federal activities that affect California's coastal zone to ensure their consistency with the California Coastal Act, in accordance with the federal consistency provision in the CZMA. For example, the Coastal Commission must review all offshore oil and gas activities (California Coastal Commission 1999). The Commission also carries out public education and involvement programs.

While these three agencies have the main responsibility for the coastal zone, they work with many other state agencies. The State Water Resources Control Board and nine Regional Water Quality Control Boards have responsibility for water quality. The State Lands Commission is responsible for leasing public land, and works closely with the Coastal Conservancy and the Commission. The Coastal Conservancy also works closely with the State Parks and Recreation Division for coastal access issues. The California Department of Boating

and Waterways, State Parks and Recreation, and the Department of Transportation have authority over beach nourishment. The State Office of Oil Spill Prevention and Response also works with the Coastal Commission to protect against oil spills (California Coastal Commission 1999).

#### NORTH CAROLINA

The General Assembly of the State of North Carolina passed the Coastal Area Management Act (CAMA) in 1974. CAMA establishes a cooperative program between the state and local governments, giving local governments the initiative for planning while the state government sets standards and reviews local actions. CAMA established the Coastal Resources Commission (CRC) and gives them the authority to regulate development in Areas of Environmental Concern (AEC). The definition of an AEC in CAMA includes coastal wetlands; estuarine waters; renewable resource areas where incompatible development could jeopardize future needs; fragile or historic areas; areas such as navigable waters where the public may have rights of access or public trust rights; natural hazard areas; areas impacted by key facilities; Outstanding Resource Waters; and Primary Nursery Areas. Included in this definition are all lands within 75 feet of the normal high water level of estuarine waters, all lands within 575 feet of the normal high water level of Outstanding Resource Waters, and all lands within 30 feet of the normal high water level of areas designated as inland fishing waters (NCDCM 2002).

Development in an AEC requires a permit issued by the CRC. CAMA defines development, and spells out which activities are exempt from CAMA permit requirements. The CRC issues major, general, and minor permits. Developers need a major permit if they plan to develop a portion of an AEC. The CRC issues general permits for projects with little or no impact on the environment, and minor permits for a single-family home or projects that do not require a major permit. CAMA also gives the CRC the authority to review federal actions taking place in the coastal zone.

Like California, North Carolina is a centralized program because one state agency, the Division of Coastal Management, has comprehensive regulatory authority over the coastal zone. The Division of Coastal Management falls under the North Carolina Department of Environment and Natural Resources, and serves as staff to the CRC. The Division of Coastal Management also carries out the state's Dredge and Fill law, which highly influences the coastal zone

(NCDCM 2003). CAMA requires that each of the state's twenty coastal counties has a local land use plan, and the CRC must approve those plans. Once the CRC approves a land use plan, they use the plan in making permit decisions and federal consistency determinations.

Other agencies in North Carolina play a role in coastal management. The Division of Parks and Recreation plays a role in providing public beach access and preserving beach habitat. The Shellfish Sanitation and Recreational Water Quality section of the Department of Environment and Natural Resources tests the water quality of beaches and posts closings if the water is not safe for swimming. The state Division of Water Resources administers the beach nourishment programs, which usually involve cost-sharing between federal, state, and local governments (NCDCM 2002).

Although CAMA does not require it, many cities and towns in North Carolina have developed local land use plans as part of the county plans. Local governments play a role in establishing public access, and the Division of Coastal Management provides matching grants to counties and cities for establishing public access sites.

## **PUBLIC PARTICIPATION REQUIREMENTS IN ENVIRONMENTAL REGULATIONS**

### FEDERAL

The federal Freedom of Information Act, passed in 1966, gives members of the public the right to request access to federal agency records and information. However, this act does not provide a means for the public to provide information to the federal government; it just provides a way for the public to gain information from the government. This law does not guarantee the same level of access to state government proceedings, but the states have their own versions of these laws.

The Administrative Procedures Act (APA), passed in 1946, is a broad federal law that guarantees the public can comment when the federal government proposes rule changes. This law is broad because it does not only deal with environmental issues, but with all rule changes that the federal government proposes. The APA requires that most rules be published in the *Federal Register* and that a period of public comment be held on the proposed rule changes. Public comments can be submitted in oral form, but are usually given in written form and can be submitted to a government website.

In 1969, the National Environmental Protection Act (NEPA) was passed. NEPA was the first law that focused environmental concerns into a comprehensive national policy, giving every federal agency the responsibility and power to protect, restore, and enhance the environment. NEPA aimed to improve and coordinate Federal activities to benefit the environment. Under the law, if a federal action significantly affects the quality of the human environment, an Environmental Impact Statement (EIS) must be prepared. EISs spell out the environmental impact of the proposed action, alternatives to the proposed action, and any irreversible changes that will occur to the environment because of the action, among other things.

NEPA also set up the Council on Environmental Quality (CEQ). CEQ's regulations require public comment on EISs. All EISs prepared by federal agencies are sent to the EPA, which then publishes a Notice of Availability in the *Federal Register*. The public then has a chance to comment on the EISs. The NEPA process is only used to help agencies make decisions about whether to go forward with a project, and is not able to stop a proposed action from taking place, even if the action would be detrimental to the environment.

In 1997, for the twenty-fifth anniversary of the passage of the Act, the CEQ prepared a study of NEPA's effectiveness. In the study, they found that NEPA had brought the public into the agency decision-making process like no other statute (CEQ 1997). The study admitted, however, that implementation has, at times, fallen short of NEPA's goals. Particularly, many agencies see the EIS process as an end in itself, rather than a method to weigh various options under consideration by an agency. For all practical purposes, usually the agency has made their decision before the EIS has been prepared and reviewed (CEQ 1997).

Additionally, the effectiveness of public involvement in NEPA has been questioned. The success of the NEPA process depends heavily on how well the particular federal agency reached out to members of the public directly affected by the particular project, gathered information and ideas from them, and responded to their input by modifying or adding alternatives. Many members of the public feel that the communication process is one-way, and that their comments and suggestions are rarely taken into account because their involvement has been solicited too late in the process, after decisions regarding alternatives have been made (CEQ 1997).

The NEPA Effectiveness Study points out that many members of the public feel that they are treated as adversaries rather than welcome participants in the NEPA process. Many times public hearings on a proposed decision take place late in the process, before the public has had a chance to become familiar with and educated about the issues. Additionally, the study points out that developing a partnership with a community involves more than holding hearings and making documents available. Agencies need to do a better job at reaching out to members of the public affected by the proposed project, including using more creative ways to involve the public. Notice in the *Federal Register* is not enough to involve all interested parties. Mechanisms such as workshops and roundtables would be a better method to gather public input. One thing the government is doing is providing more information over the Internet, in the form of *NEPANet*, as a way to educate the public on NEPA processes (CEQ 1997). Government solicitation of public participation in CZM decisions must avoid the problems the NEPA process has in effectively involving the public, particularly because of the similarities of the processes.

The CZMA calls for public participation at both the federal and state levels, but allows the states to decide how they will gather public input. In the following sections, I will discuss public participation requirements in environmental regulations in California and North Carolina.

## CALIFORNIA

In California, the Bagley-Keene Open Meetings Act (Government Code §11126) provides public access to the workings of the government. The Act declares that public agencies exist to aid in the conduct of the people's business and therefore the proceedings of public agencies should be conducted openly so that the public may remain informed. While the act gives information to the public about the workings of the government, it does not allow for the public to provide input to the government.

California also has the California Environmental Quality Act (CEQA) – its version of NEPA. Under the CEQA, any project performed by a state agency must inform governmental decision makers and the public about potential environmental impacts of a project.

In spelling out the duties of the Coastal Commission, the California Coastal Act says that they must ensure full and adequate public participation by all interested groups and the public at large in the commission's work. They must also ensure that timely and complete notice is given to the public and interested parties about their work. The Commission must also advise local governments on how to best assure open and effective public participation in their programs and activities. The California Coastal Act has an article on Fairness and Due Process, in which it defines interested persons and *ex parte* communications – "...any oral or written communication between a member of the commission and an interested person, about a matter within the commission's jurisdiction, which does not occur at a public hearing, workshop, or other official proceeding, or on the official record of the proceeding on the matter" (§30322). The section also spells out the method for commission members to make *ex parte* communications public.

Additionally, the Coastal Act says that during the preparation, approval, certification, and amendment of Local Coastal Programs, the public as well as all affected governmental agencies shall be provided maximum opportunities to participate. Before a local government can submit a local coastal program for approval, they must hold public hearings for those portions of the program that have not been subjected to public hearings within four years.

## NORTH CAROLINA

In North Carolina, the Open Meetings Law and the Public Records Law provide public access to the workings of the government. The Open Meetings Law was originally enacted in

1971, around the same time as the federal Freedom of Information Act. The Law says that since the government of North Carolina exists solely to conduct the people's business, hearings, deliberations, and other actions of the government should be conducted openly. Again, this law does not allow for the public to provide information to the government, it just allows the public to observe the workings of the government.

Similar to California's CEQA, North Carolina has its Environmental Policy Act. It requires that an Environmental Bulletin be published twice a month containing Environmental Statements, giving notice to the public, and directing the public where they can submit comments.

CAMA requires that before the CRC issues a major permit, the public must be notified and public hearings must be held in all twenty coastal counties. The CRC must give notice of the hearing in a local newspaper at least thirty days before the hearing begins. Any person who wants to comment at the hearings must give written notice to the Division of Coastal Management.

CAMA also requires that local governments hold public hearings before adopting local land use plans. Local governments must provide written proof to the Division of Coastal Management that they have followed the process for public hearings spelled out in CAMA. This process includes informing both the citizens of the town or city and the non-citizen land owners of the date, time, and place of the hearing; the subject of the hearing; and the proposed action not less than thirty days before the hearing. In addition, copies of the proposed plan need to be made available for public inspection before the hearing. Local governments are required to publish notice of the hearing and the location of copies of the proposed plan at least once in a local newspaper of general circulation in the county.

Local governments that receive funding from the Department of Environment and Natural Resources to develop their land use plans must develop and implement a Citizen Participation Plan under Subchapter 7L of CAMA. The plan must spell out how the local governments will use a variety of educational efforts and participation techniques to ensure that people of all socioeconomic segments of the community and non-resident property owners have opportunities to participate. CAMA also specifically spells out that discussions about the current land use plan, its effects on the community, and the ways the plan has been used to guide development in the community should take place at meetings held to inform the public. Written



notice of these meetings must be provided twice prior to the meetings, and more than one means of reporting the progress of the meetings must be used. The Citizen Participation Plan must also include a description of the methods and techniques used to solicit public participation and input, including but not limited to citizen questionnaires, surveys, brochures, and town meetings. It must also describe the results the local government hopes to gain from use of these methods. All meetings must have on their agendas a time for public comments, and a list of all speakers. A copy of all written comments must be provided to the CRC in consideration of approval of the local and use plan.

Environmental regulations require government agencies to involve the public in their decisions. In practice, these requirements are carried out in various ways, which I will discuss in the next section.

## **PUBLIC PARTICIPATION IN COASTAL ZONE MANAGEMENT DECISIONS**

Many agencies are responsible for decisions regulating human behavior in the coastal zone in both states. However, for the sake of simplicity and applicability to a national system of coastal zone indicators, my definition of “coastal zone management” includes only those decisions made by the main coastal agencies in both states – the CRC in North Carolina and the California Coastal Commission in California.

### CALIFORNIA

The California Coastal Commission holds monthly public meetings in different locations throughout the state. The commission staff writes up reports with recommendations for Commission action, and makes these reports available to the public at least ten days before a Commission meeting (§13015 California Code of Regulations). The reports are available on the Internet, and commission staff also mails them to any interested parties. They must give notice of the meetings to all interested parties, and to those who have requested such notice. The Commission gives notice by mail. The notice and the meeting agenda must also be mailed to public libraries, building departments, and city halls throughout the coastal zone area. The Commission also provides the agenda to newspapers of general circulation (§13016 California Code of Regulations). Members of the public can make their views known either at the public meetings or by written comment sent to commissioners and staff prior to the meetings. The Commission does not accept electronic comments; they must be written. Speakers at meetings are given time limits – ranging from three to fifteen minutes for *all* speakers on one side of the issue at hand. Before the lunch recess on each day of the meeting, citizens may make comments on items not on the agenda (California Coastal Commission 2003b).

Specific permitting responsibilities in California’s coastal zone are delegated to local governments with approved LCPs. When a local government receives an application for a permit, they must give notice of a hearing or pending action to interested parties prior to a decision. Then they must give notice of the final action to the Commission. These notices constitute opportunities for public input and participation.

The California Coastal Commission also has a Public Education Program that aims to increase public knowledge of coastal issues and engage the public in coastal protection and

recreation activities (California Coastal Commission 2003a). Programs such as the Coastal Cleanup Day and the Adopt-a-Beach program offer opportunities for the public to volunteer to restore coastal habitats. The Whale Tail Grants Program distributes funds from sales of whale tail license plates to NGOs or government entities for projects aimed at educating people about coastal environments. The Public Education Program also offers school curricula teachers can use in their classrooms. They also offer a resource directory for members of the public to search for marine, coastal, and watershed organizations with opportunities to do research, intern, or become involved in educational programs (California Coastal Commission 2003a).

#### NORTH CAROLINA

CAMA requires that all meetings of the CRC, held quarterly, be open to the public. In addition, there is time set aside on the first day of these meetings for members of the public to speak to the Commission. CAMA requires that before a portion of an AEC is developed the public must be notified and public hearings must be held in all twenty coastal counties. In practice, two meetings are held in each county, one during the day and one at night. In addition, a meeting is held in Raleigh, NC, the state capitol (Lopazanski 2003).

The Division of Coastal Management also holds stakeholder meetings and develops stakeholder processes when they deem it appropriate. For example, in 1999 while the coastal shoreline rules were under development, the CRC asked a citizens group to look at other solutions to coastal water quality programs. The group, known as the Estuarine Shoreline Protection Stakeholders, worked with a facilitator to make recommendations and proposals to the CRC, legislators, and other environmental commissions. The stakeholders included private citizens, members of environmental and recreational organizations, local government officials, corporation representatives and many others. The group recommended, among other things, that a thirty foot buffer rule be implemented around coastal waters to improve water quality. The CRC sought extensive public comment on this recommendation in the form of public hearings and written and oral comments (NCDCM 2001).

CAMA requires that local governments provide written proof that they have held public hearings before the CRC will approve their local land use plans. If a local government requests funding from the North Carolina Department of Environment and Natural Resources, they must also follow additional specific guidelines for development of a Citizen Participation Plan.

Local governments may go to great lengths to gather public input. The Town of Duck began developing its first land use plan in January 2003. Because the town received funding from NCDENR, they developed a citizen participation plan for soliciting and encouraging citizens to make their wishes and vision for the future known. In addition to regular committee meetings, meetings were held to specifically provide information to the public. Informational materials and questionnaires were distributed. The Town distributed project progress flyers; the Town Manager made regular progress reports to the Town Council, and to civic, business, church, and similar groups; and the Town released preliminary reports on the Land Use Plan process (Town of Duck 2003).

Duck's Citizen Participation Plan also pointed out that they needed to make citizen participation and education available on a continuing basis, both during and after the CAMA Land Use Plan project. Duck wanted to educate citizens on the importance of land use planning and its effect on their quality of life; listen to citizens concerning issues important to them; collaborate with citizens to achieve community consensus; and create a base of citizen support for implementing the land use plan. The citizen participation plan points out that if citizens will participate in the policy process, they must have a basic understanding of the CAMA land use planning process and the major issues the town faces. The plan states that it is unrealistic to expect that citizens can be made aware of these matters solely during the land use planning process. They used the media to promote, educate, and inform, and also to distribute planning information. Media included local public access cable television, newspapers, radio, and the Internet. The town also gave presentations to civic, community, school, and special interest groups (Town of Duck 2003).

## INDICATORS OF PUBLIC PARTICIPATION IN COASTAL ZONE MANAGEMENT

I have reviewed how the public participates in CZM decisions in the states of California and North Carolina. To determine indicators of public participation, I chose aspects of these activities that could be measured (Table 2). I did not have to create separate indicators for California and North Carolina because although coastal managers involve the public slightly differently in each state, indicators of this involvement were the same in both states.

**Table 2. Set of indicators for public participation in CZM decisions.**

Within Regulatory Process		
Type of Interaction	Efforts Made by Government	Efforts Made by the Public
Information Provision	Public Documents Open Meetings Educational Publications Website	Web Site Visits
Public Consultation	Conduct Surveys Commission Meetings Number Location Time of Day Time Limits on Public Comment Types of Comments Accepted Notice Procedures Number of Notices Number of Methods	Number of Responses  Attendance Number and Type of Comments Submitted  Socioeconomic Characteristics of Participants*
Advanced Participation	Number of Informational Meetings Stakeholder Processes	
Outside Regulatory Process		
Advanced Participation	People Involved in Educational and Volunteer Opportunities Successful Lawsuits Lobbying* Contacting Legislators*	

\* The socioeconomic characteristics of the participants, lobbying, and contacting legislators are all difficult to measure, as compared to the other indicators. See text for an explanation.

I have categorized the set of indicators based on activities that take place within the regulatory process and those that take place outside of the regulatory process (Table 2). Activities within the regulatory process are those that take place in reference to a specific issue or activity and are governed by the rule-making process. Those that take place outside of the regulatory process are ongoing, may take place in reference to a specific activity or issue, but are

not governed by the rule-making process. I have further categorized this set of indicators based on the three types of government/citizen interaction I discussed previously. Finally, I made a distinction between those efforts made by the government to solicit public participation, and those efforts made by the public to participate. This distinction is important because increasing opportunities for the public to participate may not directly relate to increased public participation. Coastal managers may make great efforts to involve the public, but public participation may still be low. This would be visible in this set of indicators.

Public documents, open meetings, educational publications, and a CZM website are four efforts made by coastal managers to provide information to the public (Table 2). These do not directly constitute public participation, but indicate information provision. I have included them in the set of indicators because I believe that the public cannot effectively participate without knowledge of the workings of the government and of the issues.

While the number of public documents and open meetings could be counted, this is not my intention. Rather, I have included these to indicate whether or not coastal managers are doing what is required of them under The Freedom of Information Act and open meetings laws. The presence of educational materials and a website provide a way to measure efforts of the government to educate citizens about the issues they face. Counting the number of visits to the website indicates how many people this information reaches.

Most of the public participation in CZM decisions takes place via public consultation, where the government asks for and receives citizen feedback in a limited two-way relationship. Efforts made by the government to survey its citizens indicate that the government wants input from the public. The number of survey responses indicates the how many people participate in this process.

As I mentioned previously, the coastal commissions in both California and North Carolina hold open meetings. I have included the number of these meetings in the set of indicators. Commissions may only hold meetings in the state capitol, rather than in central locations throughout the state or near property under consideration. Holding meetings only in the state capitol limits the number of people able to attend. Therefore, I included the location of the commission meetings as an indicator.

In addition to the location of the meetings, the time of day commissions hold the meetings also influences how many people can attend. It is difficult for many members of the

public to attend meetings held during the morning and afternoons of a weekday. More members of the public could attend if commissions held meetings at night or on weekends.

At commission meetings, time limits are generally placed on public comment. I have included the length of these limits in the indicators. Finally, I have included the types of public comment in the set of indicators. Some commissions will only accept written or oral comments, while others may accept comments submitted via e-mail, through a government-sponsored website, or via fax. Indicators of efforts made by the public to participate in public meetings include the attendance at the meetings and the number of comments submitted.

In order to have members of the public attend open meetings, the commissions must give notice. They may also be required to give notice at other times such as before they make a decision on a permit, for example. I have included the number of notices given in the set of indicators, as well as the number of methods used to notify the public. Methods newspaper notices, mailings, radio announcements, and others.

An indicator of the effectiveness of these notices is the socioeconomic characteristics of the participants in CZM decisions. This is a difficult indicator to measure, as there are privacy issues in asking participants their race and income. However, I included it as an indicator of the effectiveness of notice procedures because coastal managers may be required to show they made efforts to include participants from all socioeconomic levels of their community, as is the case with the Town of Duck's Citizen Participation Plan. Additionally, those who are likely to participate in government decisions are often different demographically, and in their policy preferences (Verba et al. 1993). Encouraging people with differing socioeconomic characteristics to participate will broaden the input in CZM decisions.

The third category of government/citizen interaction is advanced participation, when the government and citizens are involved in an advanced two-way relationship. Because of the nature of this interaction, I combined the efforts made by the government and the efforts made by the public into one category. However, many of these types of interactions could not take place without initiative on behalf of the government.

I have included the number of informational meetings held in the set of indicators. Informational meetings are generally less formal than hearings or public commission meetings, and they provide a way for coastal managers to ask questions of the public and the public to ask questions of coastal managers in a more relaxed manner than a commission meeting. Coastal

managers can respond directly to the public's questions, and are generally not on as tight of an agenda as commission meetings. In addition, there are generally more lax time limits, if any at all, placed on public speaking. I have included the number of these meetings as well as the attendance in the set of indicators.

Finally, I have included the presence or absence of stakeholder processes, such as North Carolina's Estuarine Shoreline Protection Stakeholders group, in the set of indicators. If coastal managers do convene a stakeholder process, they should include all stakeholders willing to participate. Identifying all possible stakeholders is a difficult process, but methods to do so indicate government efforts to include all stakeholders. I have also included the number of stakeholder teams in this set of indicators.

The responsibility for gathering information on indicators that take place within the regulatory process would fall to commission staff members. Staff members would have to devote time to documenting efforts made both on behalf of the commissions to gather public input and on behalf of the public to participate. Commission staff would collect information related to information provision on a regular basis, perhaps every month or quarterly throughout the year. Commission staff would collect information on the indicators related to commission and informational meetings for every meeting. Information related to stakeholder processes would be collected as they are convened. Staffers would report this information to OCRM when they request it.

Public participation activities that take place outside of the regulatory process are advanced participation because they involve an advanced two-way relationship between members of the public and government. First, I have included educational and volunteer opportunities provided by both the government and by the private sector (Table 2). I have included the presence of government educational and volunteer opportunities, as well as the number of people that participate in both public and private sector opportunities. Data collection for this indicator would be time consuming, as commission staff would have to determine all public and private sector volunteer and educational opportunities, then determine how many people participate in these activities. Commission staff could determine the number of people involved through a survey distributed to all members of the public, or by communicating with those organizations that provide the opportunities. The Public Education Program of the California Coastal Commission, for example, provides a Marine, Coastal, and Watershed



Directory on their website listing organizations that provide volunteer, internship, and educational opportunities. This list provides a count of the number of opportunities, and organizations listed on the site could report to Commission staff how many people participate in their programs.

If members of the public feel that coastal managers are not doing what is required of them to involve the public in CZM decisions, they can sue (Table 2). A successful lawsuit indicates the government is doing a poor job of involving the public in its decisions. The lawsuit, of course, would have to be related directly to the issue of not providing the public opportunities to participate given to them under the law. Commissions and their staffs would report this information to OCRM upon losing a case.

Lastly, I have included lobbying efforts and contacts with legislators as indicators of public participation in CZM decisions. These items are difficult to measure, but I have included them because they are influential ways for members of the public to participate in CZM decisions. In California, the Coastal Act requires Commissioners to make public all *ex parte* communications. This is one way to measure lobbying efforts. Measuring contacts made to legislators would require efforts on behalf of the legislators to record the number of communications they have with members of the public, excluding comments not related to CZM, and reporting this information to commission staff.

After all the data on indicators is reported to OCRM, they would have the responsibility of evaluating efforts made by the states to involve the public to determine if they are meeting the goal of the CZMA which calls for public participation in CZM decisions. The states would be responsible for keeping records of the information from year to year.

#### CONSIDERATIONS

To develop indicators I focused on measuring solely what Coastal Commissions and their staffs *currently* do to gather public participation in the two states. I did not make any recommendations for what *should* be done. As I mentioned, the NEPA process has many problems. Often the agency may have made a decision before the public has the opportunity to comment, and the agency may have a difficult time involving the public early enough in the process (CEQ 1997). This process is similar to Coastal Commissions giving notice of proposed actions and allowing members of the public to comment. Many people who participate in the

process feel that those who are advocates for conservation are at a disadvantage to those planning to develop coastal land, because they do not have the time and resources that developers have (Massara 2003).

One way around the drawbacks of this process is for the Commissions and staff to hold more informational meetings. The Town of Duck's Citizen Participation Plan stated that it was unrealistic to expect members of the public to be made aware of major issues they face and of the land use planning process without ongoing informational meetings and educational materials (Town of Duck 2003). Generally, advanced two-way participation is more effective than other methods of public participation. However, it is more expensive and time consuming.

There is no way in the set of indicators to measure if the input given to the coastal managers by a few members of the public is representative of all the members of the public. Public participation opportunities tend to draw only the most interested, the most knowledgeable, and the most upset people (Donahue 1993). Many argue that it is unfair to only consider the views of those people willing to stand up at meetings and make them known, for example. Conducting surveys helps improve this problem, but the members of the public who return surveys may also not be representative of the entire public.

Measuring only government efforts to involve the public and the public's efforts to become involved leaves out a few components of public participation. While increased government efforts to involve the public leads to increased public participation, members of the public must be aware of the issue before they will participate. For example, if members of the public do not know what wetlands are or the functions they serve; it is not likely that they will attend a hearing about whether the Commission should grant a permit for a wetland to be filled. I have included portions of this aspect of public participation in the set of indicators in public and private sector educational and volunteer efforts.

Additionally, members of the public are not likely to participate if they are not interested in the issues. For example, if members of the public know what wetlands are but do not care whether or not they are filled, they are not likely to attend a hearing about whether the Commission should grant a permit for a wetland to be filled. Surveys are a way to determine the interests of some members of the public, but they do not build this interest. Educational and volunteer programs help to build this interest, but generally people who are not interested in the issue will not be involved in such programs.

Nowhere in the set of indicators is there any measure of the effectiveness of the participation techniques. Before effectiveness of the techniques can be determined, coastal agencies need to formulate specific goals for involving the public. If, for example, the goals are to avoid later time and money costs that often result from not involving the public, decisions made with and without public participation can be compared for cost. If the goal is to educate the public, the knowledge of members of the public before and after participation can be evaluated.

Finally, the indicators do not include any measure of how coastal zone managers use input from the public. After managers gather the input, there is no measure of how they translate it into policy. The purposes of public involvement in government decision-making are to improve the policy outcomes and to provide benefits to the public. Without a measure of the participation's impact on policy and on the public, these measures indicate how well the states are meeting the public participation goal of the CZMA, but otherwise mean very little. If NOAA goes forward with a national system of coastal zone indicators, a measure of the effectiveness of the participation, a measure of government actions to include people from many demographics, and a measure of the public's ultimate influence on policy should be developed.

## CONCLUSIONS

One goal of the CZMA is to involve the public in CZM decisions. Government officials use many methods to accomplish this goal, ranging from information provision to advanced citizen involvement. CZM in the United States has taken on a variety of forms in each coastal state, but managers involve the public in much of the same ways. I have developed a set of potential indicators to measure public participation in CZM decisions, and to determine how well state managers are meeting this goal of the CZMA. Ultimately, this set of indicators would be included in a national system of coastal zone indicators.

First, I found it is possible to measure public participation in CZM decision-making. These measures indicate efforts on behalf of governments to involve the public and efforts on behalf of the public to become involved. I was able to use the same measures for both states. I believe this is partially due to the fact that CZM programs are set up similarly in both states, with centralized structures. However, this system could be applied to states that do not have centralized structures with an expanded definition of CZM and including the efforts made by all CZM agencies to involve the public in their decisions.

Implementation of a set of indicators of public participation would allow state and federal managers to assess whether they are meeting the goal of the CZMA which requires public participation in CZM decisions. One advantage of a national system of indicators is that state managers can document their efforts and successes. They can also point out areas in which they require more funding to meet their goals. Implementing a set of indicators for public participation as part of a larger performance measure system would meet these needs.

Gathering information on public participation and summarizing it into a set of indicators requires work, time, and money. If a national coastal zone management outcome indicator and monitoring and performance evaluation system is implemented, it must be properly funded. In addition, the indicator system should be cost effective. I believe that an indicator system will improve the physical condition of the coastal environment and that money should be spent on a system to accomplish this. However, one of the purposes of an indicator is to summarize a lot of data on many individual species and processes into one easy-to-understand measure. If it would be more cost effective to simply measure all the other processes, than an indicator could just

complicate the process and should not be used. This means, however, that the indicators must accurately represent these many processes.

Indicators should be clearly defined and documented. When an indicator is formed, an associated document should be written that spells out why the indicator is being implemented and what it should and should not be used for. If the motivation behind keeping track of the information is conveyed, misinterpretation of the indicators will be prevented. Also, the system should be reviewed to ensure that the performance measures being used are the true indicators for the health of the coastal environment.

Transparency and cooperation between the states and with the states and the federal government will ensure that a national system of indicators will be acceptable by all parties and enforceable by the federal government. Some state managers fear that this system will be formed without enough input from them (NOAA 2002). Because of the regional nature of the coastal zone, and the importance of using existing sources of data, a system of indicators formed without the input from state managers will most likely fail.

Finally, if the system is implemented, it should include a set of indicators for public participation in coastal zone management decisions. The goals for involving the public should be clearly defined and documented, and a measure of the influence the participation has on the policy outcomes should be developed.

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