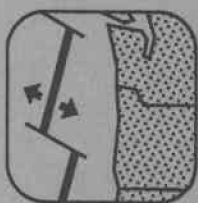


The Coastal Natural Hazards Policy Working Group: The Move to Update Oregon's Coastal Hazards Management

by

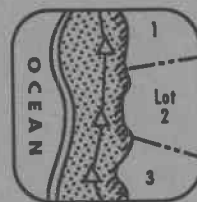
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INTRODUCTION

On a national as well as state level, there is a growing awareness of coastal natural hazards and the associated possible loss of life and property. Thirty of the fifty states have a coastal zone, and 50% of the United States population lives within an hour's drive of the coast. Construction in coastal counties over the last twenty years has accounted for almost half of all building construction, although the counties account for only 11% of the nation's land area, not counting Alaska (Culliton et al, 1992). With the continued increase of population and financial investment in coastal land the impact of natural processes such as erosion becomes highly magnified. Catastrophic events such as earthquakes or hurricanes can cause significant losses of life and property. Without some type of restraint on use of land and the application of proper planning, coastal communities may find themselves in personal danger or facing major financial losses when disaster strikes.

In Oregon there has been increasing concern over the inadequacies in coastal natural hazard mitigation policies and implementation efforts. These concerns have been escalated by the fact of accelerated coastal population growth and a recognition that we are unprepared for the large Cascadia Subduction Zone earthquake that scientists say could occur at any time, given research on recent geologic history of the region. In response, Oregon has embarked on an ambitious coastal hazards policy review and improvement effort. At the core of this effort is a Coastal Natural Hazards Policy Working Group (PWG), assembled by Extension Sea Grant and the Department

of Land Conservation and Development (DLCD). Composed of twenty individuals representing a broad range of public and private interests, the PWG is identifying important coastal natural hazard issues, evaluating existing management strategies and examining alternatives, and recommending and supporting needed policy improvements to public and private decision-makers at all levels. Using an "all-hazards/all-decisions" approach to identify issues and generate alternative strategies, the PWG is examining a wide range of planning, siting, design, protection, and emergency response decisions in affected coastal areas. The resulting recommendations from PWG are to be passed on to local governments, various state commissions, and the state legislature.

Though the recommendations will be subject to a public evaluation and subsequently adjusted, the final recommendations are only that, recommendations. The PWG has not been granted any actual authority to carry out these changes; it is up to the influence of the PWG's process and commitment to see that the work of this group actually makes some difference. Without the proper use of its process, the PWG may have a well thought out and reviewed proposal but no power to implement it.

The question arises whether Oregon is ready to make such significant changes in its legislation and regulations. Some of these changes, though fully explored and put to public review, will result in restrictions to the private property owner, which may lead to increased legislative action against the state and cries of "takings." Other states such as North Carolina, California, and Florida have instituted more restrictive regulations, but they may have had more political pressure to do so from the public who have suffered financially in the past. The history of destruction by hurricanes, earthquakes, and certain

man-made structures makes an economic impact on the public, and creates pressure to prevent such losses in the future. In states such as Florida, where tourism provides the major income, protecting and replenishing the beaches is of primary importance. Oregon, though supporting a tourist industry, is not totally dependant on such. Although some property losses from erosion have occurred, notably at Bayocean Spit, there have been no losses of life due to property damage by erosion. Catastrophic hazards, such as earthquakes, have recently come to the attention of Oregon's scientific community, and in 1991 legislation was passed to establish the Oregon Seismic Safety Policy Advisory Committee (OSSPAC) to consult the legislature on seismic hazard issues. However effective coastal planning to mitigate catastrophic or chronic hazards may still be far in the future, unless the PWG can make an impact.

The desired outcome of the PWG is, of course, the complete adoption of its recommendations by the relevant state agencies and/or by the legislature through new laws. Given this desired outcome, what is in fact the likelihood of success for the PWG? Since the process is not complete it is difficult to measure their accomplishments, but the potential effectiveness of the PWG can be evaluated through a variety of policy making models, both for the process used and for the actual recommendations.

This paper will attempt to evaluate the prospects of the PWG's success based on their process so far, using models of policy development and implementation from Kingdon (1984), Putt and Springer (1989), and Sabatier and Mazmanian (1983). Because the PWG's work is not finished, the evaluation may help the group improve on weaknesses; increasing their chances of getting their recommendations accepted.

Although the desired outcome is complete adoption of the recommendations, partial implementation may also be considered a success for the group. The recommendations will apply to issues that can "stand alone," such as emergency management and land use policy. These recommendations will be submitted for adoption at different levels of government, and each one implemented can be considered a partial success for the PWG.

The paper will detail more fully the hazards and political framework the PWG evaluated, then discuss the criteria for success using several different policy models. An evaluation of the PWG's work using the criteria will follow. Several of the criteria used to evaluate the PWG's process include: the credibility of the process, the representativeness of the group, the involvement and support of the public, the presence of visible and hidden participants, and whether the process was carried out correctly by the group. The actual recommendations of the group will not be evaluated as the author was not involved in the latter stages of the PWG's process. However, the major issues the group discussed may appear throughout the paper.

THE NEED FOR IMPROVED HAZARD POLICY

Chronic Hazards, Chronic Problems

Oregon has a diverse coastal environment, consisting of pocket beaches, rocky headlands, and fields of dunes. This variety in environment matches the assortment of chronic hazards found on the coast, a result of the natural forces of the Pacific ocean interacting with the shore. Although rarely severe or sudden, hazards such as beach and upland erosion, slumping, sea cliff recession, minor landslides, and coastal flooding all present problems to the developed areas of the coast.

These chronic hazards are usually attributed to large winter storms that have waves with significant wave heights of up to 20-30 feet; associated storm surge and wave setup along the beach and shoreland; strong nearshore currents including rips; high winds, rain, runoff, and associated lowland flooding; and elevated sea levels, caused by seasonal effects and periodic El Niños (Komar 1992). Long term sea level rise (SLR) associated with global warming poses no immediate risk along the north and south coasts of Oregon because coastal emergence rates exceed long-term SLR. However, SLR is a problem along approximately 150 miles of the central coast, where coastal uplift is minimal. While public policies addressing natural hazard mitigation tend to focus on these chronic coastal hazards (except for sea level rise), their implementation has been problematic, as discussed further on.

The first lesson in erosion management is that erosion is not a hazard unless the area is developed. The erosion process is essential to maintaining a natural balance of sediment on the coast. Erosion is merely a natural process of sand transport, the effects of the ocean on the beach. The beach and offshore regions operate on a "sand budget." During an annual cycle, sand will shift from one area to another, and a certain amount may be lost from the local beach system. "Erosion" of a bluff actually provides sand to the beach, to replace the sand from that beach that has moved offshore or to another beach. Erosion of an area may be followed by accretion, depending on the changing wave patterns and beach profiles. Of course, the time for erosion to change to accretion in an area may take thousands of years, but sometimes it may take as little as a few years. The beach environment maintains itself, but in doing so may not provide the wide beaches man considers such a resource.

The need to protect human life and property led to the view of coastal erosion as a problem rather than a process. Erosion hazards can be managed in two ways: structural solutions preventing the erosion, and development regulations preventing human occupancy in erosion prone areas. Erosion control solutions, mainly through hard structural means, were the preferred method of dealing with erosion hazards in the past. Since erosion is part of a larger plan of sand movements, when man interferes with this process the patterns can shift in a way man never intended. In fact, as scientific knowledge increased with regards to sand movement and budgets, a realization that hard structural methods may actually aggravate rather than solve the erosion hazard altered the way beach management was interpreted (Griggs, 1992).

Catastrophic Hazards - Opportunity for Policy Change?

Recent awareness of the geologic history of subduction earthquakes off the coast of Oregon along the Cascadia Subduction Zone (CSZ) has prompted a new look at Oregon's catastrophic hazard management strategies. The 700-mile long CSZ is the subducting edge on the small Juan de Fuca Plate, located between the large tectonic plates of North America

and the Pacific (see figure 1). The CSZ is the area where the Juan de Fuca plate is subducting under the North American Plate, and is also the magma and tectonic source for the Cascade volcanoes.

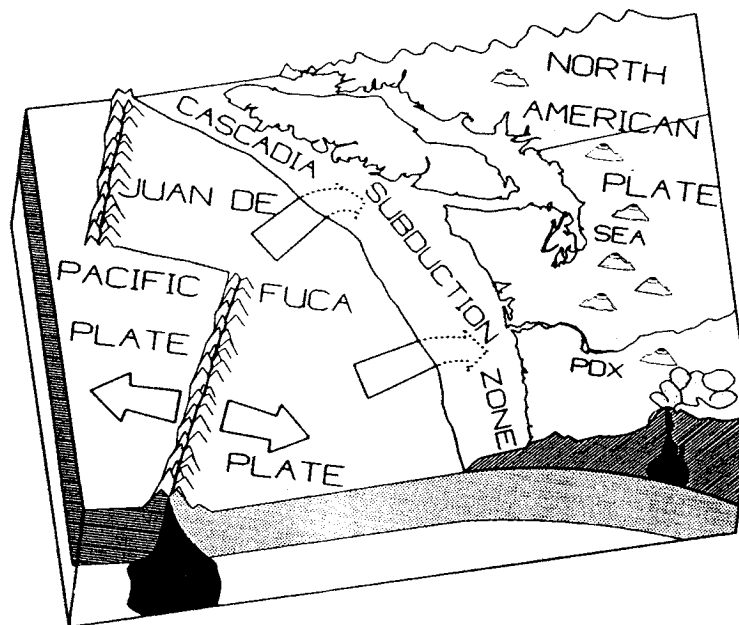


Figure 1. Schematic cross section of the Cascadia subduction zone (CSZ). (Source Madin, 1992)

It is an active fault, and has the potential for

large scale earthquakes. Oregon's tectonic placement results in the state being subject to three possible types of earthquakes: crustal, intraplate, and subduction (see figure 2).

Crustal earthquakes are the most common in Oregon, and occur at depths of 10 to 20 km in the North American Plate with magnitudes up to M 6.5. Intraplate earthquakes occur deep within the Juan de Fuca plate, with magnitudes up to M 7.1. But the new

worry of coastal planners is the subduction earthquake that can reach a magnitude of M 8.5 or even M 9, and may be accompanied by a quickly arriving tsunami. Subduction earthquakes result from the release of interseismic strain between converging plates, resulting in the "sinking" of the upper plate into a relaxed state. A large subduction earthquake would result in strong, sustained groundshaking, ground subsidence and associated flooding over a wide area along the coast, soil liquefaction and associated structural failure, and very large tsunami beginning to arrive shortly after the earthquake. The tsunami, because it was locally generated, would land on the Oregon coast about twenty minutes after the earthquake and leave little time for residents to prepare for what is often the most fatal part of a subduction earthquake.

There has never been a reported subduction earthquake in Oregon's written history. But new research by Atwater (1987) and others has shown evidence of such an earthquake and tsunami occurring several times in Oregon's geologic past. The recurrence interval is thought to be 340 - 590 years with the last event occurring roughly 300 years ago (Madin, 1992).

As new scientific evidence on the possibilities of a subduction earthquake grew, the general feeling that the coastal hazards policies in Oregon needed to be updated and reviewed increased. Along with the research into earthquakes and tsunamis, there have been many studies on more chronic hazards on the coast, such as erosion. New evidence of the harmful affects of shore protective structures (SPS) on the overall coastal sand budget as well as the decreasing aesthetic views on the public beaches also needed to be factored into a review of the coastal policy.

This paper will concentrate more on the chronic hazards of the Oregon Coast, and the policies concerning those issues. The "new" danger of a subduction earthquake actually may open a window of opportunity for changes to be made for hazards in general, but would not necessarily affect regulations that many feel must be altered before development continues on the coast.

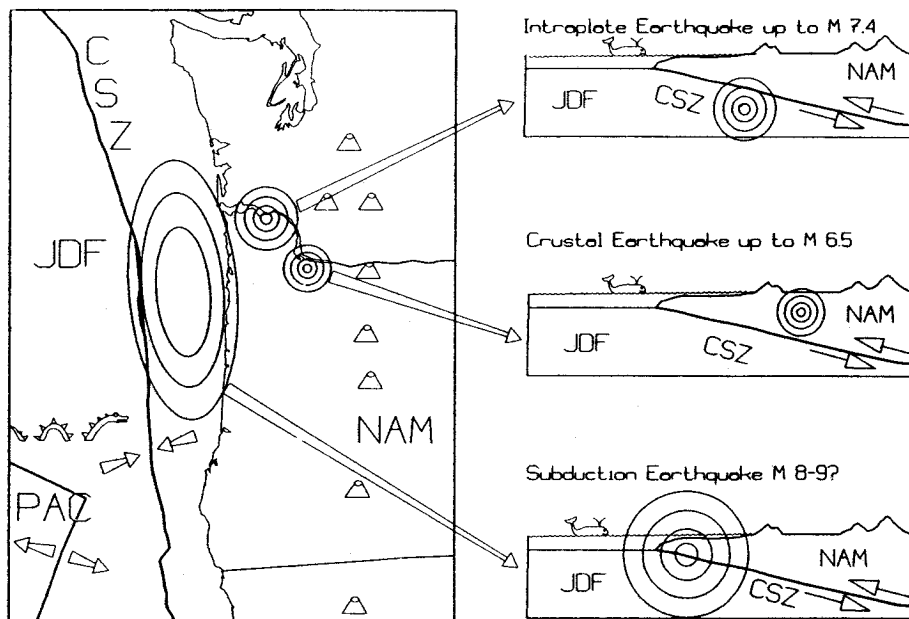


Figure 2. Earthquake source zones in the Pacific Northwest. CSZ = Cascadia subduction zone; JDF = Juan de Fuca Plate; NAM = North American Plate; PAC = Pacific Plate. (Source Madin, 1992)

Recent Coastal Growth and Development Practices

Over the last few decades, population growth and accompanying development have increased dramatically along the Oregon coast. Much of this growth is occurring in hazardous areas like low-lying beachfront and river mouth areas, high oceanfront bluffs, and steep hillside land. As coastal development pressure increases, the more hazardous sites avoided earlier fill in with houses, motels, and condominiums. Local planners are under extreme pressure from property owners who have invested large sums of money for oceanfront lots in hazardous areas and now want to build on their property. Many local comprehensive plans require a favorable geotechnical report before a lot on hazardous land can be given a building permit, so property owners sometimes "shop around" until they get this favorable report. Without stricter geotechnical report standards and procedures, such practices are likely to continue.

As erosion and other chronic processes continue on the Oregon Coast, previous development situated along much of the shore becomes threatened as the shoreline and bluffs gradually recede (see figure 3). For most shorefront property owners, the idea of their expensive property and housing eroding away is appalling. Because of the lack of restrictions on structure placement in the past and ignorance of owners, this is a major problem for Oregon's coastal policy. The loss of property leads to the eventual desire for shore protection structures (SPSs) - riprap revetments, seawalls, bulkheads - that are designed to fend off waves, stabilize cliffs, and retain the shoreland, and prevent the natural process of erosion from endangering the building or land. Attempts have been made by the government to avoid the need for SPS through setbacks and other

management techniques, but with much of the coast already developed, imposing restrictions may be difficult. When a homeowner is watching their backyard disappear, they tend to want something concrete done to protect their investment.

As more development occurs adjacent to the beach, normal episodes of erosion create a demand for more and more SPSs. Again, the pressure from property owners worried about losing a substantial investment usually leads to the granting of a SPS permit. These

development and shore protection practices, in turn, have raised questions about the effectiveness of Oregon's coastal management policies - policies that were designed to protect the scenic values, recreational qualities, and accessibility of Oregon's beaches; control development in hazardous areas; and promote non-structural alternatives to revetments, seawalls, and other shoreline armoring.

These concerns have been magnified by research that suggests that engineering solutions to coastal hazards sometimes lead to more problems if an alternate sand supply is not available, such as accelerated erosion of the beach and adjacent properties, loss of cliff-supplied sand to the beach system, and gradual beach narrowing in the face of sea

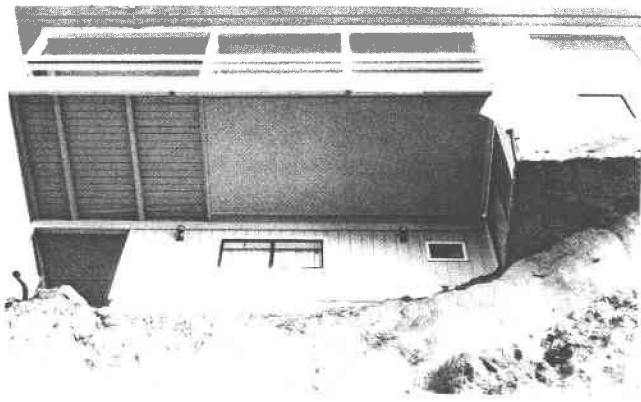


Figure 3. Examples of sea cliff erosion on developed property. (Source Komar, 1992)

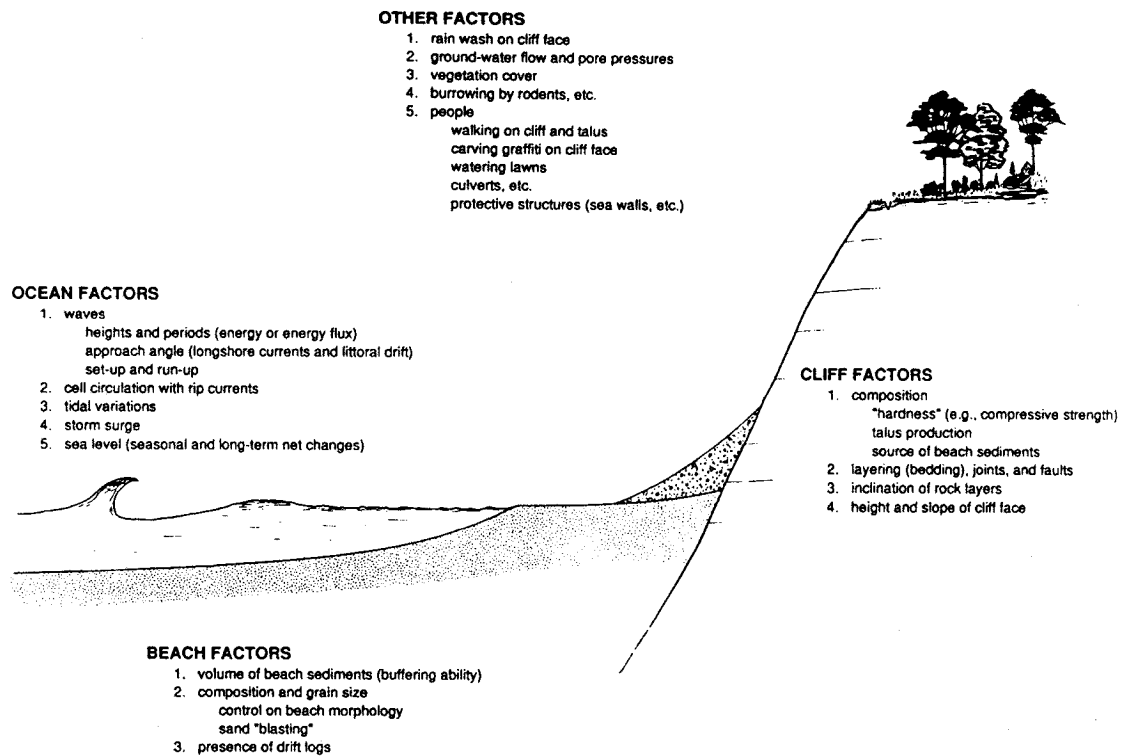


Figure 4. Schematic diagram illustrating the many factors and process involved in sea-cliff erosion. (Source Komar, 1992)

level rise (Kraus and McDougal 1992, Pilkey and Wright, 1988). This was especially true on the east coast where longshore drift is a significant factor in the sand movements and supply to the beach. The more structures such as groins and seawalls went up, the less "beach" the owners south of the structure had. These structures altered the flow of sand sometimes to the extent that the beach would entirely disappear, leaving the ocean tides washing up directly on the structure. SPS can aggravate erosion on sea cliff beaches as well by retaining sediment that belongs in the natural sand supply (see figure 4), thus leading to gradual erosion (Shih, 1992).

MANAGEMENT FRAMEWORK FOR COASTAL NATURAL HAZARDS

The management framework for mitigating coastal natural hazards in Oregon includes provisions for land use planning and regulation, hazard assessment, shore protection, and legal framework. Local, state, and federal agencies are involved, but state and local governments have historically played a more significant role (see table 1).

Land Use Planning and Regulation

The United States has over 100,000 miles of coast between the Atlantic, Gulf, Pacific, Great Lakes, and Pacific and Caribbean islands, shorelands that exhibit many different types of environments and associated problems. The ability of the nation to regulate activities in the coastal zone is limited at the federal level. The United State's coastal program was formulated in 1972 with the passage of the Coastal Zone Management Act (CZMA), which provided incentives and grants for states to develop and implement a coastal program that met with federal standards. This national program allows states leeway in the way they run coastal management, which is essential considering the variety of coastal environments and problems around the nation. Oregon was quick to take advantage of the CZMA, formulating a plan that was approved in 1977.

The Oregon coastal management plan is based on the "networking" concept in which land use management is integrated with other state statutes. The Department of Land Conservation and Development (DLCD) is the state agency responsible for land

GOVERNMENTAL FUNCTION	FEDERAL GOVERNMENT	STATE GOVERNMENT	LOCAL GOVERNMENT
Research, technical information, and mapping	<ul style="list-style-type: none"> ■ US Geological Survey (USGS)—hazards ■ Federal Emergency Management Agency (FEMA)—flood and erosion hazards ■ Corps of Engineers (COE)—erosion hazards 	<ul style="list-style-type: none"> ■ Dept. of Geology and Mineral Industries (DOGAMI)—hazards info and mapping ■ Dept. of Land Conservation and Development (DLCD)—hazards inventory standards ■ Universities/Sea Grant—research 	<ul style="list-style-type: none"> ■ Local Comprehensive Plan (LCP)—hazards inventory and maps
Planning and siting of development	<ul style="list-style-type: none"> ■ FEMA—National Flood Insurance Program (NFIP) 	<ul style="list-style-type: none"> ■ DLCD statewide planning standards—Goal 7: Natural Hazards Goal 17: Coastal Shorelands Goal 18: Beaches and Dunes 	<ul style="list-style-type: none"> ■ State-approved LCP with natural hazards, shorelands, beaches, and dunes elements; local subdivision, zoning, and flood damage prevention ordinances
Design and building criteria	<ul style="list-style-type: none"> ■ FEMA coastal and flood construction standards 	<ul style="list-style-type: none"> ■ State Building Code Agency—building standards 	<ul style="list-style-type: none"> ■ Local building code administration—city and county
Shore protection	<ul style="list-style-type: none"> ■ COE Nationwide Permit No. 13—bank stabilization 	<ul style="list-style-type: none"> ■ State Parks and Recreation Department (SPRD): Beach Law—regulates shore protection structures ■ Division of State Lands (DSL): Removal/Fill Law—regulates revetments and fill 	<ul style="list-style-type: none"> ■ LCP and development ordinances (provisions vary)
Emergency planning and response	<ul style="list-style-type: none"> ■ FEMA 	<ul style="list-style-type: none"> ■ Emergency Management Division (EMD)—disaster response and planning 	<ul style="list-style-type: none"> ■ County emergency services

Table 1. Governmental functions and agencies or authorities for coastal natural hazards management in Oregon. (Source Good, 1992b)

use planning and regulation, enforcing goals established by the Land Conservation and Development Commission (LCDC). Local comprehensive plans (LCPs) are formulated in keeping with state goals and then are approved by the LCDC. This allows the local areas freedom to customize their plan effectively for the specific environment, as long as the state goals are met in the process of planning.

Oregon's Statewide Land Use Planning Program includes three hazard-related planning goals with which local governments are required to comply in their LCPs. Goal 7, Natural Hazards, mandates that development subject to natural hazards not be located in known areas of natural hazards without appropriate safeguards. Goal 17, the Coastal Shorelands Goal, requires that LCPs consider geologic and hydrologic hazards along the ocean shorelands. When problems of erosion or flooding arise, preference must be given to land use management practices and non-structural erosion controls. Goal 18, Beaches and Dunes, prohibits development on hazardous dune and interdune lands, and prohibits breaching of foredunes except in certain unusual circumstances. Development on more stable dunelands requires findings that such development is adequately protected from erosion and other hazards.

These goals are sometimes criticized for being vague or not enforceable. A common complaint about Goal 7 by those wishing to restrict SPSs is the wording "appropriate safeguards" as being vague and undefined. Also, most local areas do not have a complete detailed hazard inventory, and usually end up relying on the developer-hired geologist/engineer for the hazard assessment (Good, 1992a). Goal 17 states that nonstructural solutions are preferred, but there is little proof or checking that they have

been considered. There is still the inventory problem, and overall the goal seems to have had little impact on development. Goal 18 regulates development in beach and dune areas, however much of the coast was developed prior to the enactment of this goal, and is therefore exempt. Infill areas have been allowed to build within "exempt" regions, even though they were not technically developed at that time.

Cities and counties were required to address Statewide Planning Goals in their LCPs, which had to be reviewed and approved by the state. All coastal jurisdictions completed their initial round of planning in the early 1980s and have state-acknowledged LCPs and implementing ordinances. Specific LCP provisions for regulating development in hazardous oceanfront areas vary. All counties have required construction setbacks, either fixed or variable, some require geologic hazard reports from a registered geologist or engineer, and some use overlay ordinances and other provisions. However, there are few standardized hazard mitigation provisions in the plans and some are more effective than others.

Shore Protection Policy

The typical response to shoreline erosion or slumping along developed portions of the Oregon coast is to install a seawall or riprap revetments. The installation of SPSs along the oceanfront are regulated through a joint permit program by the State Parks and Recreation Department (SPRD) and the Division of State Lands (DSL) respectively, though other state and federal agencies may also become involved (see table 2).

A recent evaluation of shore protection policy implementation in the 16-mile

Table 2. Jurisdictional comparison of shore protection regulatory programs in Oregon. (Source Good, 1992a)

GOVERNMENTAL LEVEL/AGENCY	TYPE OF PERMIT	TYPES OF SPSs REGULATED	AREA OF REGULATORY JURISDICTION	THRESHOLD OF JURISDICTION
Federal/ Corps of Engineers (COE)	NWP 13 w/ Regional conditions (new/repair)	Riprap revetments; others if notification procedures followed and impact minimal	Below ordinary high water (OHW)—rivers; or high tide line (HTL)—tidal areas	<500 ft in length and <½ cu yd of riprap below OHW or HTL
	Regular (new/repair)	Vertical concrete and other retaining walls, all structures not covered by NWP 13	Same as above	>500 ft in length and >½ cu yd of riprap below OHW or HTL
State/ Parks and Recreation Department (OPRD)	Regular (new only)	All structure types, including sand or other fill	West of the 1967 surveyed beach zone line (BZL)	None—all improvements covered, but no permit required for repair to original condition
	Emergency (new only)	All structure types (usually riprap revetments)	Same as above	Same as above
State/ Division of State Lands (DSL)	Regular (new/repair)	All structure types, including sand or other fill	Line of established upland vegetation or highest measured tide, whichever is higher	>50 cu yd of riprap or other fill (sand, concrete, etc.)
	Emergency (new/repair)	All structure types (usually riprap revetments)	Same as above	Same as above
Local/ City or County	Regular (may defer to OPRD/DSL process)	All types but varies with city/county	Varies, but may include areas landward of state jurisdiction	Varies

Siletz littoral cell found both overlaps and gaps in jurisdiction over SPS installation (Good 1992a). For instance, more than 30% of the SPSs installed since the regulatory programs were put in place have not had permits. Most of the structures slipped through jurisdictional loopholes.

Oregon's land use policies also play a role in regulating shore protection. The Beaches and Dunes goal prohibits beachfront protective structures where "development" did not exist on January 1, 1977 (when the Oregon Coastal Management Program was adopted). Development is defined as houses, commercial and industrial buildings and vacant subdivision lots that are physically improved through construction of streets and provision of utilities to the lot, or areas where special exceptions have been approved. For SPSs, the goal also requires that visual impacts must be minimized, necessary access to the beach be maintained, and that negative impacts on adjacent property, and long-term or recurring costs be minimized.

Hazard Assessment

Mapping, research, and technical assistance on hazards in Oregon is overseen by the Oregon Department of Geology and Mineral Industries (DOGAMI). In the 1970s, DOGAMI published environmental geology maps and assessments for all coastal counties that served as basic hazard inventories for many years. The state coastal management agency, DLCD, requires local governments to use hazard inventories in their local comprehensive planning process. However, much of the information used for the inventories was general and has proven to be of limited use at the detailed site-development level.

Effectiveness of Hazard Mitigation Policies

How are these policies working? Several examples were alluded to above - inadequate site hazard assessment reports, SPS permit jurisdictional gaps and inadequate evaluation, etc. In his Siletz cell study, Good (1992a and 1992b) identified these and other problems. Land use decisions were found to be driving the demand for shore protection structures that otherwise would not be needed. Inadequate building construction setbacks are a major problem as is the common practice of allowing SPSs to be installed on vacant lots to make them buildable. The SPS permitting process also has major flaws. Many SPS are not needed, alternatives are not considered, and evaluation of potential impacts, both individual and cumulative, are not carried out in many cases. Further, it was found that many SPSs are significantly larger than needed to mitigate the hazard, resulting in unnecessary public beach encroachment. In short, present hazard mitigation policies and policy implementation are largely ineffective; the roots of the problem have to do with rapid growth over the past several decades and dependence on structural hazard mitigation as opposed to hazard avoidance.

LEGAL FRAMEWORK OF HAZARD MANAGEMENT

Many legal controversies have arisen from private versus public disputes over the use of coastal property. The beach is public domain from the sea to the mean high tide line. Private owners, depending on what state they live in, may own the beach from that line landward. When SPS are used, the loss to the public of beach and associated recreational value must compete with the benefit of the private owner of saving property value. The government may impose restrictions on allowing SPS, but the private owner worried about the loss of home and investment may challenge the government's denial. Many state and local governments have been willing to give in when faced with this argument.

There have been many conflicts in the land regulation arena concerning the "takings" clause and the authority of the government to prevent actions which may save private owner's investments. There is always the possibility of prohibiting any development near the beach, but this has serious legal repercussions. The takings issue has been reviewed in several Supreme Court cases, but the boundaries are still rather nebulous. *Lucas v. South Carolina Coastal Council* (U.S. Supreme Court, June 29, 1992) has become a key takings case, with implications mainly because the lower court determined a total loss of value for that land. However, that point can still be argued, as some intrinsic worth, especially recreational, still must remain.

The Public Trust Doctrine is a common law principle currently being considered by several states as to its applicability to the coastal management programs. In almost

all states, the mean high tide line and seaward to three miles is state property, held in trust for the benefit of the public. By integrating the doctrine into a state's coastal management plans, the state would be in a more powerful position to protect the "existing uses" of their coastal resources (Kelly and Slade, 1991). By defending the public's right to recreate on a beach the state would be able to turn down hard structure requests that might endanger the presence of that beach. The takings issue would be less of a threat if the state was not allowing building because of a moving mean high tide line caused by erosion. As the Public Trust Doctrine is based on common law and not regulatory authority, the state gains an extra legal foothold in court.

Oregon has a history of public pride in wide sandy beaches. In 1907 the dry sand beach was declared a public highway, and customary use over the years resulted in the historic 1967 Beach Bill giving the public access to both the wet and dry sand portions of the beach. The Oregon Supreme Court case *Thorton v. Hay* (1969) established the "Beach Zone Line" granting a public easement between the mean high tide line and the vegetation line. This line was surveyed in 1969 and remains the established boundary regardless of current placement of vegetation along the shore. Because of this legal and history and framework, Oregon is in a favorable position for preventing development seaward of the vegetation line. Other coastal management programs may not be as strong and enforceable, leaving them more vulnerable to the takings issue. Many states are very restrictive toward the public, granting public access only seaward of the mean high tide line, and the private owner everything upland of that line. Oregon's legislative history in favor of public access suggests that the public's interests will be favorably considered in any new regulations and statutes.

ECONOMIC ASPECTS OF COASTAL POLICY

Why is oceanfront property valued so highly, even though it may be in danger from hazards such as erosion? Why are people willing to put money into a property that may eventually be washed away? The ocean has always appealed to mankind, the calming rhythm of the waves, the aesthetic beauty, the awe inspiring storms, and sheer immensity of the ocean have drawn man to the beach to play, dream, and relax. The increased recreational value of having a beach at your back door, as well as a spectacular view, comes into account when analyzing the market value of coastal property.

Economic studies have been conducted to find beach value based on the increased cost of real estate as one gets closer to the beach. By measuring recreational beach value through travel cost, contingent valuation, or hedonic methods one can rationalize the purchase of a beach house. The closer to the beach, the greater the consumer surplus of recreation value compared to travel costs. However, Edwards and Gable (1991) also found an implicit savings in not paying the high prices of beachfront or homes. To maximize consumer surplus one would want to locate where the implicit savings curve intersects the demand for distance, which is where marginal savings in the property market equals the marginal losses of consumer surplus. Recreational value is not the only economic consideration in paying the high real estate prices for coastal property, the aesthetic value of the view must carry a significant weight as well, helping to drive the demand for beachfront property. However, is this aesthetic pleasure an economically "rational" reason for buying a house in a potentially precarious location?

Does the value of the beach and view outweigh the potential for financial losses?

When looking at erosion hazards and real estate choices, several questions must be asked:

- Are the owners/buyers aware of potential hazards?
- Do the owners/buyers assume that they will get permission for SPSs if needed?
- Do they assume that they can sue if they are not permitted?
- Are they willing to accept the potential financial and property loss, or are they in denial of the possibility?

The costs of putting in a SPS to the property owner may include many variables such as hiring an engineer, building fee costs, actual building costs, etc. But the etc. does not include the costs to the public in terms of loss of beach through erosion due to the unavailable sand supply. The cost through loss of beach from SPS to the public has never been considered in the privately installed SPS projects. This unconsidered cost in a non-existent market (an externality) may be the key to many land use struggles. By assigning a tax on the SPS some of the public losses may be compensated, and lead to more long range thinking for the buyers of beachfront property. When confronted with an additional yearly tax, they may be more willing to comply with government established setbacks. But the value of that tax is rather hard to determine. The government (usually state or local) must consider the private homeowner as well as the public beachgoer. A method of determining the value of the beach must also be agreed upon by all parties.

There are other economic controls on shorefront development. Owners of coastal property have made a significant investment in land they hope will appreciate with time. True, the land is mostly purchased for its proximity to the ocean and for associated aesthetic values, as well as the continued increase of coastal property value. To help coastal land planners make an impact on the financial views of owners and buyers, financial institutions should be involved with the risk factors. Many insurance companies are now aware of potential losses to coastal hazards, and may charge higher premiums. In fact, a report from the National Association of Independent Insurers (NAII) on "Mitigating Catastrophic Property Insurance Loss" suggested that the increasing value of property as well as population levels in hazard prone areas has contributed to the \$23 billion cost to insurance agencies in 1992. The report recommended that the insurance industry should be promoting effective land-use restrictions, to help combat the costs of paying out on insured disaster losses. The report also maintains that there may be some locations where "serious consideration should be given as to the appropriate use of private property." (National Underwriter, 4/14/94,p.1) Support and cooperation from the insurance industry should be taken full advantage of by those trying to make changes in current land policy.

However, the insurance industry is not united on the subject of how to cope with disaster prone areas. The Independent Insurance Agents of America have proposed legislation to Congress on the natural disaster issues, namely the way to pay for disaster relief. Through the Natural Disaster Protection Act, funding would be available for community based disaster mitigation programs, expanding homeowner's insurance to

cover earthquake, flood, volcanic eruption and tsunami coverages, and an excess reinsurance program. The community-based disaster mitigation program would be an excellent way to increase public awareness of coastal hazards, and one the PWG is sure to recommend. However, the expansion of insurance would cause many of the same problems that the Federal Flood Insurance Program did, namely encouraging development in hazardous areas because low cost insurance would be available unless local land use provisions were sufficiently strong to prevent it. IIAA actually stated that the measure will boost insurance affordability and availability along hazardous coastal areas and in earthquake zones (Independent Agent, 4/94, vol. 91 no. 7, p.61). This is the wrong way to discourage building in hazardous coastal areas!

Banks who carry the mortgage for many of the financial investments into coastal property are not very involved or aware of the potential financial loss. When mortgaging a property on the coast, banks and owners should acknowledge the financial risk, as well as the unlikelihood of gaining a protective structure to protect the property. If more information and involvement were required of the buyers concerning the financial risks they were taking, perhaps the value of coastal property would not accelerate as quickly, and the huge pressure on coastal planners would decrease.

Oregon's legislature has passed a statute on disclosure to potential buyers and lenders, but this disclosure does not extend to coastal hazards such as erosion. If potential buyers and lenders were more aware of the financial risk they take when buying coastal property, more attention might be paid to the land use regulations to which the property will be subject to, including the possible restriction against SPS.

PWG PROCESS

A combination of several events in 1991 resulted in the creation of the Coastal Natural Hazards Policy Working Group. DLCD had just completed a public survey and assessment of their coastal program and identified areas that needed improvement (DLCD, 1992). The federal 309 program was established when the CZMA was reauthorized in 1990, and included funding for proposed enhancements in coastal hazards management. Extension Sea Grant held a conference on updated scientific knowledge about coastal hazards, and the implications for public policy. These three events culminated into the need for a group to review Oregon's goals for coastal hazard mitigation, advise on how the current policies met those goals, and recommend alternatives to current policies if the goals were not being met.

DLCD's Assessment of the Oregon Coastal Management Program (1992) asserted that the legislative objective for coastal hazards policy improvement in Oregon is as follows:

"[To] Prevent or significantly reduce threats to life and destruction of property by eliminating development and redevelopment in high hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise."

The assessment concludes that there are several needed improvements in the current policies and methods of hazard mitigation on the Oregon Coast including the outpacing of scientific knowledge and corresponding policy improvements; the overlaps and gaps in policy between different state agencies; the lack of awareness on the part of coastal

property owners and potential buyers about coastal hazards and SPS policies; the procedure for obtaining geotech reports; and others.

Under the CZMA's 309 Program Enhancement Grant states were encouraged to improve their current policies in seven areas defined as major management problems for the coastal zone, including wetlands, public access, ocean resources, marine debris, and coastal hazards. The overall goal of the 309 program was to encourage states to improve their management of coastal resources and develop implementable policies. The 309 program for coastal hazards included improvement areas such as policy development and implementation, technical knowledge and inventory information, and communication and education. This corresponded with Oregon's objectives for improvements, concentrating on preserving the natural protection, minimizing potential damage, and cataloguing known hazards and assessing hazard information needs.

Extension Sea Grant's conference *Coastal Natural Hazards: Science Engineering, and Public Policy*, conducted October 1-3, 1991, in Newport, Oregon presented current scientific and engineering research on coastal hazards and discussed the resulting implications for public policy and management. At the close of the conference, attendees were given the opportunity to provide feedback on the information in small focus groups. The overwhelming response from these groups was the need for a review of Oregon's current policies for coastal management in light of the updated scientific information available. Most groups recommended the formation of a diverse *ad hoc* advisory group to spearhead the review and alternatives report for the state. Results from those focus groups were the initial list of issues for the PWG, and the major issues

covered can be found in Appendix 2.

DLCD divided the coastal natural hazard management improvement areas into hazard policy, assessment, and awareness. The PWG was seen as a low-cost but efficient way to search for acceptable improvements to the coastal programs, and corresponded with the goals of the 309 Grant program as well. The PWG falls into the hazard policy improvement role, reviewing the laws and regulations currently applicable in coastal hazard areas, and recommending either to improve the old regulations or to develop new policy to address the currently known hazards. The hazard assessment improvement area will use the Technical Advisory

Committee (TAC) to collect the technical information and hazard inventory in Oregon, and will advise the PWG as needed. This improvement area also has additional funds to create detailed coastal maps of erosion rates and tsunami runup studies. Hazard awareness is the public education side, and has an Educational Advisory Committee (EAC) to aid the PWG in their decisions on educational matters as well as carry their findings and recommendations to the public. Through these groups, work on developing policy for the state of Oregon will take place; policy that will be implemented at the local level with comprehensive plan changes and periodic review, and at the state level with new or improved rules, goals, or statutes.

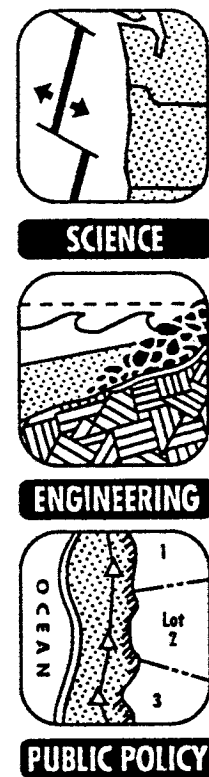


Figure 5. Logo from the Conference on Coastal Natural Hazards.

Development of the Process

Extension Sea Grant is involved in many public education projects dealing with the marine environment, and Extension itself has encouraged studies of group process and roles. The PWG project was initiated by Extension Sea Grant through the interest of Dr. James Good, and provided facilitation and staff support to the PWG meetings. Extension's research into policy process and overall group process aided the development of the PWG's process and agendas. Mrs. Ann Snyder, a professional group consultant and trainer, became the PWG's facilitator, an objective third party who aided the process development and encouraged the group's response.

After several meetings with Extension professors who had done research into the group process and advanced means of reaching consensus-based solutions, the first agenda was designed and the first meeting held. The members came ready to work, and found they had to learn a whole new process of "working." The idea met with resistance at first, but acceptance of a modified process was reached by the next meeting period.

Knowing that the recommendations of the PWG would include changes in regulations or legislation, the issues had to be fully discussed and argued from all perspectives, to result in solid counsel that could be presented to the public and supported by legislators. The structure and format of the group was specifically geared to involve diverse opinions and public outlook, and the facilitation and education process encouraged discussing issues from all views and coming to an understanding of the concerns of all involved.

The PWG's mission required the participation of stakeholders, who had a vested

interest in the condition of the coast either through their personal situation or their job, and who could argue most sides of the issues yet still come to an informed agreement. Because of the large amount of background information required to start discussions on issues, the members of the PWG were solicited from the conference attendees who would be acquainted with the basics of the problems. The PWG was selected out of

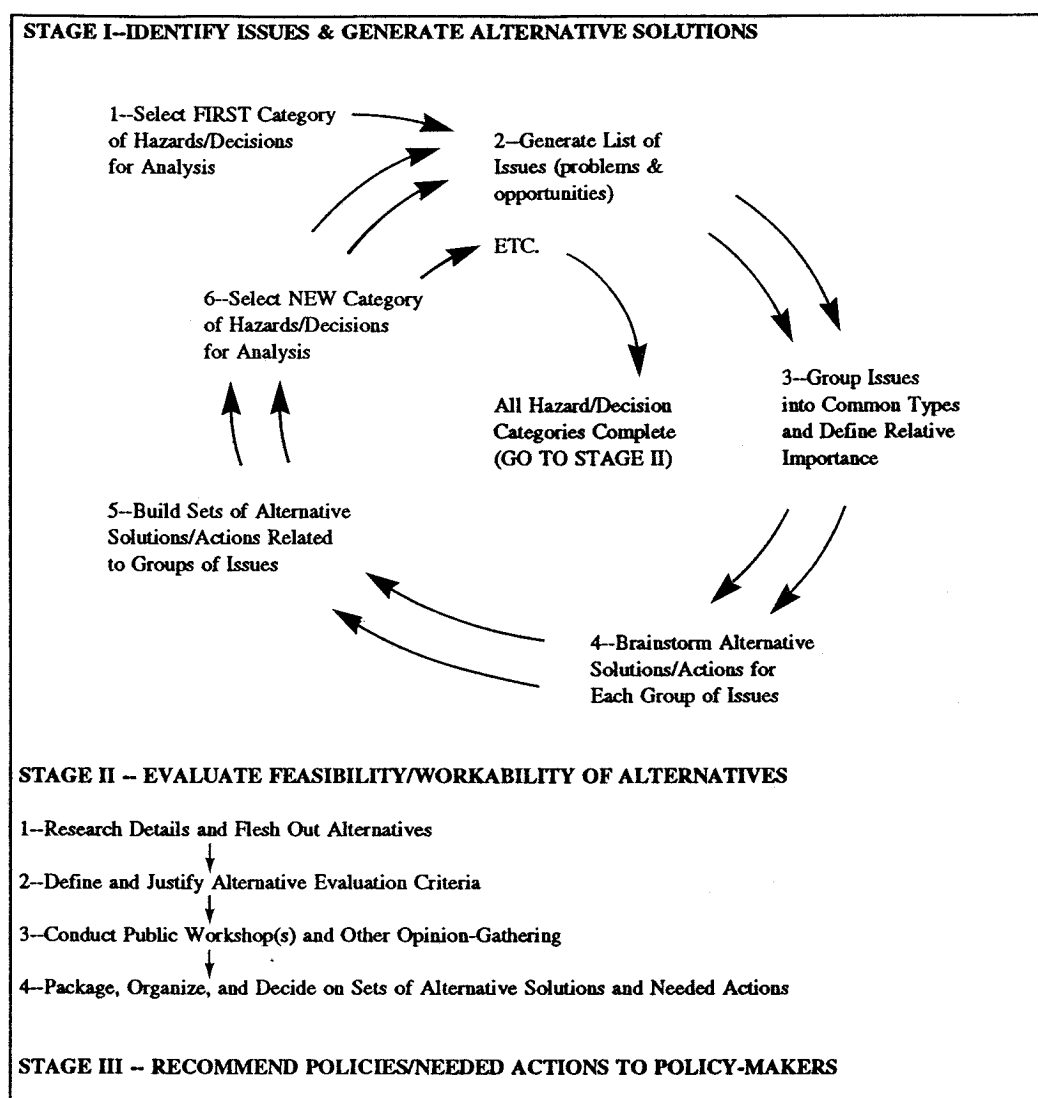


Figure 6. Process used by the Coastal Natural Hazards Policy Working Group. (Source Ansevin and Good, 1993)

conference attenders who expressed a willingness to join such a group. Chosen to represent a wide range of stakeholders as well as the government agencies that would be involved in any changes, the group met under a structured agenda and timetable, and after exploring all the issues in an educated manner, have come up with a wide range of recommendations and alternatives that are now being review by the public at large. Once reviewed, the PWG will submit to DLCD and the Oregon Legislators a description of the issues and problems, a list of the alternatives, and the recommendations from the PWG based on the public meetings and their own meeting results.

Description of PWG Process

The PWG process has three stages: I - issue and alternative solution generation; II - evaluation and public feedback on draft policy alternatives; and III - recommendation of preferred alternatives to policy makers. These are illustrated in figure 6 and described below. Two features of the PWG process are particularly noteworthy: the comprehensive "all-hazards/all-decisions" methodology designed for the process; and the highly-structured, consensus-building workshop process being utilized.

All-Hazards/All-Decisions Approach

There are many public and private decision-making situations that consider (or should consider) the potential effects of natural hazards. To provide an entry point for the complex policy negotiation task being undertaken by the PWG, an "all-hazards, all-decisions" approach was developed and is being used to integrate hazard-related

CHRONIC HAZARDS

CATASTROPHIC HAZARDS

PRIVATE/PUBLIC DECISIONS	Eros	Recess	Slide	Flood	SLR	Gr-shak	Fault	Sub/Flo	Liq/set	Slide	Tsun/Sei
Locating private development in undeveloped areas											
Locating public infrastructure and facilities in undeveloped areas											
Designing private development in undeveloped areas											
Designing public infrastructure and facilities undeveloped areas											
Protecting private development in undeveloped areas											
Protecting public infrastructure and facilities in undeveloped areas											
Locating private development in infill areas											
Locating public infrastructure and facilities in infill areas											
Designing private development in infill areas											
Designing public infrastructure and facilities in infill areas											
Protecting private development in infill areas											
Protecting public infrastructure and facilities in infill areas											
Locating private development in developed areas											
Locating public infrastructure and facilities in developed areas											
Designing private development in developed areas											
Designing public infrastructure and facilities in developed areas											
Protecting private development in developed areas											
Protecting public infrastructure and facilities in developed areas											
EMERGENCY RESPONSE PLANNING											
POST-DISASTER RECONSTRUCTION PLANNING											

Figure 7. All-hazards / All-decisions matrix used in the Policy Working Group process.
(Source Ansevin and Good, 1993)

problems with potential solutions. A matrix of decisions versus hazards was developed to represent this approach conceptually (see figure 7).

This matrix has served as guide to focus PWG workshops on a limited set or "block" of issues at any one time; for example, a single workshop focused on "chronic hazards as they effect the location of development in undeveloped areas." Principle "decision categories" are locating, protecting, and designing development, which are further divided into private and public decisions, and still further divided by type of land involved - developed, undeveloped, and infill development. Other decision categories relate to disaster response and reconstruction. "Hazard categories" include chronic hazards: erosion, sea cliff recession, landslides, flooding, and sea level rise; and potentially catastrophic hazards associated with a large earthquake. Individual cells or groups of cells were used as the basis for issue identification and generation of alternative solutions in a structured, brainstorming process mode. Though the activity was structured, all issues (defined as either problems or opportunities) and solutions are accepted in a non-judgmental manner. These raw data were recorded and posted, serving as a kind of "group memory." After the workshop, this raw data was reviewed and folded into an ongoing "working list," using natural groupings such as education, assessment, planning, shore protection, and so on. As the working list was gradually built, many overlapping issues and solutions became apparent and were combined. This working list was the product of Stage I and the raw material for developing the "policy alternatives report" in Stage II. By waiting until all hazards and decisions were examined and the complete working list developed, a more comprehensive set of policy alternatives

and recommendations was formulated that integrated chronic and catastrophic hazards with relevant public and private decision-making.

In Stage II of the process, the policy alternatives report will be presented in various public forums, with opportunity provided to evaluate and give feedback on potential policy improvements, and to voice objections or present other alternatives. One tool being considered for this purpose is Oregon's satellite education television network (EDNET). To reach as many people at one time as possible up and down the coast, an EDNET transmission will be sent by satellite to many locations. PWG members and facilitators at each site will be available to answer questions. This technology has been used successfully in many different arenas, because of time and financial constraints, it will allow more of the public input and interaction that is essential to the success of the PWG process.

In Stage III of the PWG process, policy proposals will be reevaluated in light of the public review. Using a consensus decision-making process, the PWG will put forward specific recommendations to appropriate policy-making bodies. Many of the proposals that are apparent from PWG work to date could be initiated through changes in state and local administrative law and through improved implementation. Some, however, will likely require state and/or local legislative action. Many of the proposed changes will likely be controversial because of the many public and private interests that will be affected.

Other Features of the PWG Process

Several additional features of the PWG process are seen as critical to the success of the group to date and to the eventual outcome. Most of these features are derived or modified from several decades of experience in environmental dispute resolution (see for example, Bingham 1986; Harter 1986). These include:

- 1) A public, interest-based process. The diversity of "stakeholders" on the PWG was noted above. The PWG agreed to recognize, respect, and value the diversity of ideas and opinions held by its members. All meetings are open to observers, who are regularly consulted, and broad-based public involvement in evaluation of PWG proposals is considered essential.
- 2) Consensus decision-making. The PWG agreed to work by consensus; consensus meant that they had an opportunity to state their views, that they believed they were listened to, and that they can live with the decision, whether or not it is the same decision they would have come to independently. Because of this and the commitment to public input, the PWG is striving for solutions that are effective and equitable as well as acceptable to all stakeholders.
- 3) Independent facilitation and support. A neutral, third-party facilitator was engaged to assist the PWG with group processes and decision-making.

Creativity and new thinking in definition of problems were encouraged; in part, this was to be stimulated by the diversity of interests represented within the PWG, and in part by the process itself. Funding for logistic and technical support for the group was provided by DLCD through its federal Section 309 coastal grant. Oregon State University, through its Extension Sea Grant Program, provided coordination and management assistance.

4) Expert panels, education, and research assistance. Many of the subjects addressed by the PWG are highly technical and cut across many disciplines. For each topic area addressed by the PWG, expert panels were convened and resource material provided by Extension Sea Grant. A research assistant researched issues in more depth when needed, a Technical Advisory Committee developed and presented the latest scientific consensus on other issues (e.g., a planning scenario for a large CSZ earthquake), and special research projects were funded and conducted by DLCD and other agencies (e.g., an all-hazards mapping pilot project).

5) Credibility-building. Being an *ad hoc*, grass roots, bottom up process with no legislative or other mandate, the PWG effort needed to build recognition and credibility through its commitment and the quality of its work. As a result to date, the PWG was selected as the centerpiece of the

state's Section 309 proposal for coastal hazards policy improvement, and designation by the legislatively-established OSSPAC as an advisory group. As the work of the PWG continues, additional incremental efforts are planned to get the attention of policy-makers and put coastal hazards policy improvements higher on the political agenda.

POLICY PROCESS MODELS

By 1990, several indicators pointed to the need for a comprehensive review of Oregon's coastal natural hazards management framework: new research findings on earthquakes and other coastal hazards, accelerating coastal growth, and an evaluation of shore protection policy implementation that was mostly critical. But given the relatively low profile this set of "problems" presented in comparison to state budget shortfalls, funding for education, health care, and other statewide issues; the key question for coastal managers was how to develop workable policy improvements and, at the same time, get the attention of the policy-makers who would be needed to initiate legislative and administrative changes. The resulting strategy, developed by Oregon State University Extension Sea Grant, DLCD, and other state coastal program agencies included: (1) a major conference to focus attention on the issues, (2) formation of an *ad hoc* policy working group to develop policy alternatives, and (3) a gradual effort to build credibility and support for needed changes, first at the grass roots level, and later with state legislators and agency leaders.

The policy improvement strategy has its conceptual basis in a descriptive model of the policy formulation process put forward by John Kingdon (1984). Kingdon describes policy-making as three "streams" of processes operating simultaneously and independently - a problem stream, a policy stream, and a political stream. Participants in these streams, including visible (e.g., legislators) and hidden (e.g., agency staff), play important roles in setting the policy agenda, specifying alternative solutions, and

initiating policy. Occasionally, according to Kingdon, the three process streams will couple, creating a "window of opportunity" for initiation of public policy. For such a coupling to occur, policymakers must learn about the problem and believe it is important; alternative policy solutions must be available to them; and the political environment must be right. How this model applies to coastal hazards policymaking in Oregon is described next.

Problem Stream. While problems in coastal hazard mitigation were apparent to resource managers and to researchers working on related issues, there was little public knowledge about the significance of what was being experienced and learned. Kingdon suggests that indicators, focusing events, and program evaluation are important in highlighting problems. Several tactics were employed to focus attention on coastal natural hazards as a growing problem. First, Sea Grant completed the shore protection policy study discussed earlier (Good 1992a) and widely publicized its results. Second, the state coastal management agency, DLCD, conducted a coastal hazard assessment of their own in conjunction with a Congressionally-mandated review of state coastal programs. Finally, Sea Grant, DLCD, and several other agencies and organizations organized a major conference, *Coastal Natural Hazards: Science Engineering, and Public Policy*, in October 1991 in Newport, Oregon. The principle goals of the conference were to present the results of a decade or more of scientific and engineering research on coastal hazards and to discuss its implications for public policy and management.

Policy Stream. At the close of the coastal hazards conference, more than 150 local officials, state and federal resource managers, citizen activists, and others joined ten focus groups to present their views and suggest priorities about research needs, policy implications of recent research, policy implementation issues, and possible solutions. In the conference wrap-up, the concept of a "coastal natural hazards policy working group" (PWG) was proposed. Conference attendees enthusiastically supported the idea, with nearly 25% of participants volunteering to become PWG members. The concept was given further political credibility when the DLCD adopted the PWG as the centerpiece of their coastal hazards policy improvement strategy under Section 309 of Coastal Zone Reauthorization Act of 1990. Section 309 called for states to make policy improvements in a number of areas, including coastal natural hazards; DLCD sponsored the creation of the PWG to carry out that mandate. The recommendations that the PWG makes will be used by DLCD for a review and overhaul of the current land use practices on the coast - under Section 309, enforceable policies must result. In addition, DLCD has contracted with DOGAMI for an "all-hazards" mapping project and is undertaking a special project to create and implement hazard site assessment and mitigation reports. These projects are benefiting from input by the PWG on the most essential needs and problems.

Political Stream. Coupling the problem and policy streams to the political stream is the most challenging and a continuing part of the process. Multiple strategies and tactics are being employed. The initial strategy is to use public education and the work of the PWG to build political support from the ground up. Legitimizing tactics are also

important, such as the Section 309 program designation noted above and the PWG's recent designation by the Oregon Seismic Safety Policy Advisory Commission (OSSPAC) as an advisory group for coastal issues. Local governments and state agency commissions will be presented with relevant packages of recommendations, and eventually, if needed, the legislature will be approached by the PWG with proposed legislation. Whether or not the three policy-making processes will actually couple and open a "window of opportunity" is yet to be determined, but the process is underway.

Putt & Springer

Putt and Springer (1989) describe the policy process as a series of five stages, from initial awareness of a need for new policy, to evaluation of results. The five stages are as follows:

1. Stimulation - recognizing and defining issues. This includes studies that have identified these issues, the rise on the political agenda of the issues, and the involvement of the policy makers and entrepreneurs.
2. Clarification - identifying needs and solutions to problem. Here is where the brainstorming of issues and alternative solutions becomes important, as well as the evaluation of those proposed solutions.
3. Initiation - the commitment of policy makers to the program. Once issues and solutions have been identified and evaluated, there must be a commitment of resources and support for the program. Even after the clarification stage, policy makers are likely to disagree based on personal

GENERAL POLICY-MAKING STAGE

Issue Identification/Initial Alternative Generation: recognizing and defining problems and opportunities

- ☐ Citizens, interest groups, government, academics
 - ☐ Diagnostic/issue-framing studies & events
 - ☐ Developing alternative solutions; compare current policy efforts
-

Clarification of Issues & Alternatives: specifying needs/solutions

- ☐ Refining problem/estimating needs
 - ☐ Alternative development; combination/recombination
 - ☐ Evaluating feasibility of alternatives (effectiveness of solution; public/private fiscal and human resource needs; complexity of policy initiation/implementation processes; magnitude of change required; ease of administration and enforcement)
-

Policy Initiation/Adoption: passing the law/adopting the policy

- ☐ Political stage--negotiation, bargaining, consensus-building, tradeoffs
 - ☐ Concerns--effectiveness, efficiency, equity, responsiveness
-

Implementation: putting programs into practice

- ☐ Specifying needs and objectives--concrete, measurable, attainable
 - ☐ Decision criteria determined--to meet policy's intent
 - ☐ Resource decisions/level of effort--budget, people
-

Evaluation: assessing results

- ☐ Principal feedback stage (may describe implementation activities; identify degree of success in achieving objectives; analyze reasons for poor/marginal performance & recommend remedies)
- ☐ Evaluation activities (Program monitoring; Impact evaluations; Process evaluations)

PWG PROCESS

PWG Stage I

PWG Stage II

PWG Stage III
(recommend)
Policy-makers
(initiate)

Agencies &
Others

Studies,
Conference,
Focus Groups

Table 3. Comparison of Putt and Springer's policy making stages and the Policy Working Group's process. (Source PWG Papers, 1992)

values, therefore the program values must be put into context in order to be measured on objective standards. This stage is where much of the bargaining and consensus building is necessary for initiation. Decision criteria are based on the program's effectiveness, efficiency, equality, and responsiveness.

4. Implementation - execution of the program.

5. Evaluation - assessing the program's results (or, was the effort worth it?).

The PWG's process can be compared to the Putt and Springer Model, as shown in Table 3. The process is cyclical, the Coastal Natural Hazards Conference falls in the Evaluation stage which then flows into the Issue Identification stage where the PWG began their work. The PWG's involvement as a cohesive group ends at the Initiation stage, where the recommendations will be passed on the relevant policy-makers. However, individual members of the PWG will continue to have an impact in the Implementation and Evaluation stage, as they lobby for adoption of the recommendations.

Sabatier and Mazmanian

Sabatier and Mazmanian (1983) identify conditions necessary for successful implementation of effective policy. As this paper does not attempt to analyze the actual recommendations of the PWG, these conditions will be listed but not used as criteria for

evaluating the PWG's process at this point.

Conditions:

- * Clear and consistent policy objectives.
- * Policies based on sound theory.
- * Implementation officials given sufficient jurisdiction.
- * Implementation process structured to maximize probability of expected performance.
- * Staff of relevant agencies with sufficient skill and resources to carry out the program, and with commitment to the goals.
- * The program is actively supported by constituency groups and some key legislatures, and the courts are neutral or supportive.
- * The relative priority of the program is not superseded by other issues.

EVALUATING THE PWG

The PWG is central to DLCD's coastal hazards policy improvement program under Section 309 of the federal CZMA. As the major tool for developing strategies for coastal hazard policy improvement, the ultimate success of the PWG is very important to accomplishing program goals. Formed as an *ad hoc* group without a legislative mandate, the influence of the PWG's recommendations depends on the integrity of the process and the grass roots support they build through consensus-based decision making. Without the support of the public, and through them the support of state agencies and legislature, the PWG's recommendations will not be easily implemented.

To evaluate the PWG's success in having their recommendations adopted by relevant state agencies and the legislature, several criteria drawn from the above models of policy making can be defined and examined. Given that the actual implementation stage of the recommendations has not yet been reached, few recommendations have actually been carried out. The only way to evaluate the success of the PWG at this stage is to reflect on the methods used and progress made thus far in comparison to the models and the success of similar groups in similar situations.

The criteria are as follows:

- **Is the PWG process credible with respect to models of policy-making?**
- **Is the PWG representative of all interested and affected parties?**
- **Are there visible and hidden participants?**
- **Did the PWG process adequately consider all views and perspectives?**

- **Did the PWG involve the public and build grass roots support?**
- **Will state legislature and agencies be likely to listen to their recommendations?**

By answering these questions, some prospects can be suggested for the future implementation of the PWG's work.

Is the PWG Process Credible With Respect to Models of Policy-Making?

As noted above, the PWG's process has been well researched and developed. The two levels of the process, the group's interactive process and the "all hazards/all decisions" approach to recommendations, were heavily debated and, in the end, were seen as ways to gain credibility from the public and key state officials. Considering how closely the design of the PWG process follows the policy-making models of Kingdon and Putt and Springer, the prospects of success are rather good. However, models are inherently theoretical, and in the real world many other factors may interfere with policy implementation. Examples from other states and other groups who have used approaches similar to the PWG's give support for the possibilities of success based on process.

In 1977, Long Beach, California needed to draw up a coastal management plan for their local area, a plan which had to be approved by the California Coastal Commission before permitting rights would be given to the local government. The city planners decided to bring in a citizen advisory group, as the local community was insisting on more public involvement after several government scandals. The committee was to review and approve the proposal that the planning staff drafted. The city was

under pressure to quickly come up with a local comprehensive plan, but it had to be credible, as the California Coastal Commission had little faith in the city government.

The committee seized the initiative and took advantage of the power they had, to actually create their own comprehensive plan. What the planning department thought would take three months took two and a half years, but was a much more thorough and credible document, with the support of the local community behind it. The plan was immediately approved by the California Coastal Commission because of the quality of the product, the extensive citizen participation, and the community consensus the plan represented (Nutter and Lamond, 1977).

There were several factors that Nutter and Lamond (1977) saw as the primary reasons for the success of the citizen-composed committee. The effort made to include a wide range of community groups in the process, and embrace members who might have "troublesome" opinions, as well as the chairman's insistence that all viewpoints would have a chance to be presented and considered fairly, gave the committee an inspiration to find mutually acceptable solutions. When the complexity of certain problems became evident, the group was willing to form subcommittees as needed to tackle intricate or technical issues. Success certainly had to be attributed to the hard work and commitment of the members to a superior process and result, and who turned a three month "rubber-stamping assignment" into a two and a half year dedication to a quality plan.

The PWG has many of these same features; the commitment of the members, the consensus-building structure, and the openness to diverse opinions and new ideas. The

major difference is that the Local Comprehensive Plan had to be done, while Oregon's coastal policy improvements are a choice. Many would consider the policy revisions necessary (this author included); however, there are policies and regulation currently in place, and some may argue that no investment into updating these policies need be made. Nevertheless, the PWG has the support of Oregon's coastal management agency and, as long as they are committed to the need for policy recommendations and change, the PWG's work should be seen as essential to the state.

Is the PWG Representative of All Interested and Affected Parties?

The makeup of the policy working group may be one of its negative points, because although most of the stakeholder groups are represented, all individuals exhibited an interest and acceptance of coastal hazards by attending the conference. There was a conscious tradeoff between including all views and the workability of the group. This may have shortchanged the process in some ways by not including a truly dissenting view, representing the public at large that the PWG will be trying to reach.

Will this in the long run affect the credibility of the PWG's process and chances for implementation of their recommendations? In order to be a productive group, the number of members had to be limited to a certain extent, thus not every person involved in the issues could be a part of the group. The PWG was not developed to deal with conflict resolution for coastal issues, but rather to take a broad and open look at current policy needs for coastal hazards management and suggest alternatives that could be acceptable to the public-at-large as well as the implementing agencies. The involvement

of all people interested during the public hearings in Stage II of the process may help mitigate the lack of certain stakeholders, as the views and opinions of all will be heard in an open forum and actively considered before the final recommendations are made. The public was invited to each meeting as well, however, the meetings were not actively advertised to the public at large so very few people attended the meetings.

Are There Visible and Hidden Participants?

Kingdon notes the importance of both visible and hidden participants in the attempt to implement policy. In the policy stream, where policy review and recommendations are made, hidden participants such as agency staff and technical experts are essential to identifying the issues and suggesting workable alternatives. The PWG had the backing of DLCD and several other state agencies who sent representatives to participate, and the enthusiastic support of academic and technical experts from universities and state agencies.

However, the PWG had few of what could be called visible participants, high profile individuals such as major legislators or media personalities, to support their efforts in the political stream. Kingdon also found that, for policy to be put on the agenda, elected officials in the long run may be more important than government employees or others outside the government. These elected officials representing citizens may give the process and results more credibility in the eyes of the public, and therefore the legislature. The PWG has very few visible participants or elected representatives involved in their process and as of yet has not made a great effort yet to

recruit such individuals. As the need for agenda setting becomes more important, the support and visibility of such individuals will be vital.

This lack of visible participants and elected officials may not become a problem for the PWG if they actively seek individuals in those areas now to support their recommendations. Before the recommendations are ready to be implemented, these individuals do not play as large a role. Of course, the earlier they are brought into the process, the better they understand the needs for policy change, but this is not always achievable. These individuals may be harder to involve, as they tend to have busy schedules and limited time to spend on issues. But if brought to their attention, they can become helpful allies in the implementation process.

Did the PWG Process Adequately Consider All Views and Perspectives?

As to considering all views, it is the feeling of the author that the PWG never considered the economic aspects in the same systematic manner that many other issues were debated. The fact that private land owners have a large financial investment involved is certain to make them a concerned stakeholder; and therefore to produce recommendations with their support, the issues must be considered from their viewpoint with solutions that they could accept.

On a summer research project for DOGAMI, the author spoke to several owners of property on eroding bluffs. Most were upset that they were not able to easily protect their property - which is understandable when beachfront property is such a large financial investment. Many of the owners were unaware of the reasons why SPS were a

bad idea, of how they affect the beach and other property. This lack of awareness needs to change if the government expects a change in private owners' attitudes toward coastal land management and local planners. Thorough understanding of the dynamics of erosion and the true meaning of setbacks (in thirty years, you will have no backyard), both before purchasing and after owning, may make the economic risks more acceptable in the long run.

Did the PWG Involve the Public and Build Grass Roots Support?

Public involvement in policy review and improvement is certainly not new to government programs. The United States was formed on the basis of citizen involvement in government, and that power has not been taken away. The public's interest in decisions may vary, depending on how they see those decisions affecting themselves in the future. The PWG was formed by those interested and involved with coastal hazards policy, either through their research or work-related experiences. The general public, however, does not have the awareness of the hazards affecting the coast, or the present policy situation. Without the public's support of the recommendations, the PWG carries much less weight with the legislature.

During the development of North Carolina's coastal management plan, there was an emphasis on public involvement, which also resulted in a significant increases in public awareness and understanding of the issues involved. By involving the public, the emphasis was on policy and participation rather than scientific and technical data. Owens (1985) felt that one of the lessons learned from the N.C. planning experience is

that for some communities, especially more rural ones, funding is better spent with more significant results when used on community awareness rather than on highly technical studies and mapping. By putting resources into technical studies that will mean little to a community that doesn't have the awareness of the problem or needs, the money invested is not being put to productive use.

Once a community is aware of the problems and supports efforts to deal with them, less technical proof will be needed to encourage passage of policy revisions. Lennon (1990) contends that the most effective way to approve a management plan is through public education. After all, with public support, the legislature has no reason to vote against improvements.

DLCD might take note of this comment. The majority of money from the 309 project improvement grant went to hazard mapping programs. This is in no way a criticism of the value of scientific and technical studies, but rather a comment on the need for funding of policy review and public education as well. In consequence, very little funding went for the PWG, just enough to support a research assistant and small monthly meeting expenses. Included in the initial PWG proposal was a newsletter to inform and update the public about Oregon's coastal hazards and the PWG's activities. The mailing list was to include real estate offices, insurance agents, banks, developers, members of coastal groups, local planners, state legislators, and others who would have an interest and stake in the outcome of the PWG's recommendations. This newsletter did not get funded, and the PWG lost one major link to public support.

Will State Legislature and Agencies Be Likely to Listen to the Recommendations?

In order for the PWG to fulfill its mission, their recommendations for change must be heard and acted upon. This may require changes in administrative rules at government agencies, changes in processing permits, and/or changes in the legislation. Kingdon notes that there are several requirements that must usually be met to be considered on the government's agenda: awareness of problems, political receptiveness, and visible participants. For a busy governing body to be ready to deal with a problem, the issue must be significant enough and have enough public attention to make it worthwhile. A focusing event, such as a large erosion event or an earthquake, may aid the problem's conspicuousness but unless rapidly acted upon, it will soon lose its spotlighting power. Feedback on existing programs to deal with the problem also can affect the public's awareness. The DLCD's assessment, along with the growing research predicting subduction earthquakes off the Oregon coast, brought the issue of Coastal Hazards to the state's attention. The conference on coastal natural hazards also served as a "focusing event" for the state.

However, much of the momentum gained by the conference, the new knowledge of the earthquakes, and DLCD's assessment of the state's coastal hazard policy needs has been lost over time. The PWG, originally slated as a one year commitment for the members, has extended into a two and a half year obligation. Once the PWG's original mission of developing policy recommendations is complete, they are needed to continue pushing for implementation of their work. However, many of the members have experienced burn-out after they worked with the issues and put so much effort into a

result from the PWG. That combined with the lost impetus for agenda setting means trouble for the implementation process.

This is where the thoroughness of the process may actually harm the implementation of new policy. The PWG's process encompassed many different areas of issues in the "all-hazards/all decisions" method, which is good but definitely a long term project. The group has a well thought out and rounded set of recommendations, but has lost the momentum to get them implemented. A shorter and less involved process may have been able to implement certain issues better right after the conference, but these recommendations would not have the advantage of the diversity of support that comes from a stakeholders' group using a consensus-based process. Again like the member issue, it is a trade off, this time for the increased quality of the product.

This lack of momentum means that the PWG and their supporters will have to try to create a new focusing event, or do a lot of lobbying to get their recommendations back on the agenda. As mentioned earlier, the participation of more elected officials from the beginning of the PWG's process could have increased the group's visibility to the political sector, but this was not the case. Once the final recommendations from the PWG are written up, the members will continue to pursue adoption through their own links to the community (interest/professional groups, state agencies, city councils, etc.) and hopefully support the final document at the legislative level. The members of the group will most likely not continue to lobby together, but rather push for adoption as stakeholders and interested parties. DLCD will encourage the implementation of the PWG's recommendations as well, but their time and effort in this matter will most likely

be limited by other priorities.

Nevertheless, many of the coastal-related agencies are anxiously awaiting the PWG's recommendations for improvement. It is primarily the state legislature, with its multiple priorities, which will have to be encouraged to see coastal hazard policy as a significant agenda item; until then implementation of the PWG recommendations slated for legislation will probably stay on hold.

CONCLUSION

Only time will tell if the PWG's efforts are successful, but by evaluating the probability for success at this point, increased efforts can be made to improve areas of weakness in policy implementation strategies. The PWG has followed to a great extent the Kingdon and Putt and Springer models for policy implementation which lends credibility to their process, but following a model does not mean success. There are many problems that must be dealt with in the real world of policy implementation. In a model, visible participants are relatively easy to contact, and not legislators overrun with paperwork and the state's debt. Members of groups stay committed, and do not suffer from burn-out. The public is eager to be involved and will support policy that tries to involve them in the process. Unfortunately, this is not the case when attempting to implement policy in today's government environment.

The PWG's weaknesses, namely poor outreach, lack of visible participants, low agenda priority for the legislature, lack of economic evaluation, and member burn-out can be rectified to a certain extent before the process is completed. Without the participation of key individuals, the PWG's recommendations will have a difficult time being implemented.

The outlook for the PWG if they can overcome these weaknesses is actually quite good. The group is dealing with many separate issues that will result in recommendations to different levels of government. Many of the recommendations may in fact not have to be implemented by the legislature, but at state and local agencies,

which may increase the possibility of their adoption. Several state agencies that have been supportive of the process from the beginning have already implemented some of the PWG's recommendations. Partial implementation is a success of the PWG's process; although complete adoption of all recommendations would be the ideal situation, when dealing with controversial topics and an indifferent legislature this may not be an achievable outcome.

My recommendations to the PWG after completing this evaluation are: to stay committed to the process, to recruit visible participants, to continue public presentations, and to form some economic basis for the controversial recommendations. Partial implementation is still a success, and encouragement should be taken from accomplishments when they occur.

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APPENDIX A
Coastal Natural Hazards Policy Working Group
Members and Coordination Team

MEMBERS

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APPENDIX B

COASTAL HAZARDS CONFERENCE

October 1-3, 1991

FOCUS GROUP SUMMARY REPORT

This summary report is a composite of the deliberations of nine focus discussion groups that were part of the conference, *Coastal Natural Hazards: Science, Engineering, and Public Policy*. The focus groups were designed to achieve two goals: (1) to collectively summarize the results of the conference, and (2) to collect data for a proposed working group on coastal natural hazards policy. Each of the nine groups addressed the same four questions. The results below are a summary of the highest priority issues identified by each group, but no priority is implied by the order listed here. A FULL REPORT of focus group results is available from OSU Extension Sea Grant (503/737-3771).

1. What are the *coastal natural hazards research and information needs* for Oregon and the Pacific Northwest?

- * Identify, establish baselines, map information, and set up monitoring for each coastal littoral cell: hazards, including erosion, bluff recession, slumping, landsliding, etc.; sand budgets, sources and sinks (e.g., bluffs, rivers, offshore), natural and human interferences
- * Need better estimates of the probability of a large subduction zone earthquake
- * Need better data on coseismic hazard potential--tsunami wave height modelling, run-up elevations, risk assessments; amplified groundshaking; soil liquefaction risk areas; landslide hazards and potential
- * Need a mechanism for providing hazard data in an accessible form--e.g., database, GIS, maps
- * Need to better understand public perception of coastal hazards risks, especially low probability events or long-term hazards; how do you raise public consciousness?

2. What are the *implications of recent scientific and engineering research results* for public policy related to natural hazards, coastal land use, and shore protection?

- * The coast is a more hazardous environment than previously understood
- * Need to assess levels of risk associated with various classes of hazards (erosion, slumping and landslides, earthquakes, tsunamis, etc.) and what level of risk the government should take responsibility versus what the private individual should bear
- * Communities need to factor earthquake/tsunami potential into land use decisions for critical facilities (hospitals, schools, emergency response centers, etc.)
- * Communities coast-wide need to develop emergency response plans related to earthquake/tsunami hazards; furthermore, broad public education is needed related to major earthquakes
- * Need to plan for and consider oceanfront development for each independent littoral cell; local variation in hazard potential and cumulative impacts must be a factor in decision-making; a single statewide policy won't work, but it cannot be jurisdiction-by-jurisdiction either

- * There should be special certification and continuing education requirements for geologists and engineers doing coastal work

- * There is a great need to educate public officials and private individuals about recent discoveries and the implications for public policy and public and private decision-making

3. What *issues or problems with existing public policy or policy implementation* need to be addressed and why?

- * Policies call for public altruism on one hand (protect life and property, protect the beach and scenic values), but upland property owners seem willing to take risks and government decision-makers are unwilling to say no

- * Lack of real estate transaction natural hazard disclosure requirements that allow informed decisions

- * Mechanisms for independent, third-party review of geological and geotechnical reports supporting development in hazardous areas are lacking or inadequate; this is exacerbated by the belief that many such reports are "made-as-instructed" and by lack of confidence in professionals that produce them

- * Governmental functions related to natural hazard mitigation are fragmented and poorly coordinated, at the local and state level; enforcement of permits and codes is inadequate

- * Science and engineering knowledge information are important, but little credibility given to public attitudes and concerns

4. Given these policy issues, *what coastal natural hazard policy "improvements"* would you suggest? Consider ideas that might have a real chance of being adopted and carried out in today's fiscal and political climate.

- * Require "littoral cell management plans" for each cell along the Oregon coast

- * Require full natural hazard disclosures in real estate transactions

- * Require independent peer review of geologic and geotechnical site reports at the discretion of state or local government, and at the cost of the developer/applicant

- * Establish site-specific construction setbacks & other hazard mitigation criteria/standards for siting development on all unbuilt lots; base on the life of the structure & erosion rates

- * Consolidate governmental functions or establish mechanisms for better local/state agency coordination of land development and shore protection decisions, including state oversight

- * Give priority to protection of the public beach over protection of private upland property

- * Remove financial subsidies and incentives that encourage development in hazard-prone areas and substitute incentives to avoid hazards

- * Consider a ban on the installation of seawalls, revetments, and other hard shore protection structures

APPENDIX C

Coastal Natural Hazards Policy Working Group

PROCESS AND MEETING SCHEDULE

The long-term goal of the Coastal Natural Hazards Policy Working Group (PWG) is to develop a specific set of recommendations to improve the management of natural hazards along the Oregon coast. The focus of the group's work is on measures that will reduce the potential for loss of life and property and protect valuable recreational and natural resources. Recommendations will be forwarded to appropriate administrative bodies and legislative bodies and are likely to address hazard assessment and education, regional planning, siting of public and private development, shore protection, disaster response, and reconstruction planning. Implementation of recommended measures are likely to include major roles for both the public and private sectors.

Keyed to the PWG process, below is a list of actual and planned PWG meetings and related workshops, along with the topics covered.

1992

STAGE I

IDENTIFYING ISSUES AND ALTERNATIVE SOLUTIONS (OPTIONS)

Using the "all-hazards/all-decisions matrix" as the basis for its process, the PWG identified problems and opportunities associated with each set of hazards/decisions, and then generating ideas for dealing with them. *Hazards* examined include chronic hazards, such as erosion, flooding, and potentially catastrophic hazards, such as earthquakes and tsunamis. Examples of *decisions* examined include locating private development and public infrastructure, designing buildings, protecting oceanfront development, and providing emergency services. As each set of hazards-decisions are discussed, a "working list" of issues and potential solutions identified by the PWG was grouped into categories, including education, hazard assessment, land use, shore protection, structural mitigation, disaster preparedness/response, and disaster reconstruction planning. The product of Stage I of the process was a working list of issues and options for coastal natural hazards management.

Mar 20 Introductory Workshop: Process, schedule, expectations, concerns

May 14 Chronic Hazards: Locating Private Development in Undeveloped Areas

Jun 17-18 Chronic Hazards: Locating Private Development in Undeveloped Areas & Protecting Private Development in Undeveloped Areas
TAC MEETING: All-hazards mapping

Aug 19-20 Chronic Hazards: Protecting Private Development in Undeveloped Areas & Locating Private Development in Infill/Developed Areas

Sep 23-24 Chronic Hazards: Locating Private Development in Infill/Developed Areas & Locating Public Infrastructure/Facilities in Undeveloped, Infill, and Developed Areas
TAC MEETING: Catastrophic Hazards Scenario

Oct 21-22 Catastrophic Hazards: Locating Private and Public Development and Infrastructure in Coastal Areas

TAC MEETING: All-hazards Mapping

- Nov 18-19 Catastrophic Hazards: Locating and Designing Private and Public Development and Infrastructure
- Dec 16-17 Catastrophic Hazards: Designing Private and Public Development/Infrastructure & Emergency Management/Post-disaster Reconstruction

1993

- Jan 20-21 Catastrophic hazards: Emergency Management and Post-disaster Reconstruction Planning

STAGE II
EVALUATE FEASIBILITY/WORKABILITY
OF ALTERNATIVES (OPTIONS)

Through public meetings/workshops, facilitated decision-making sessions, and the support of a writing team, the PWG produced 1) a Public Review Draft of Issues and Options, and 2) a final set of Policy Recommendations.

- Feb 17-18 PWG Issues and Options Report Small Group Selection/Work: Hazard Assessment; Disaster Preparedness and Response; Land Use; Shore Protection

PWG/Education Advisory Committee Joint Workshop

- Mar (various) Meetings of small works groups

- April 21-22 PWG Issues and Options Report Small Group Work

- May (various) Meetings of small works groups

- June 16-17 PWG Issues and Options Report Small Group Selection/Work
Options Evaluation Guidelines Development

- Jul (various) Meetings of small works groups

Writing Team: Prepare Public Review Draft and review process/evaluation framework

- Aug (various) Meetings of small works groups (same tasks as July)

Writing Team: Prepare Public Review Draft and review process/evaluation framework

- Sep 22-23 1) Review/approve Public Review Draft
2) Review/approve review process
3) Select groups for presentations and workshops
4) Review public meeting materials and workshop format

October	Public Review Meetings
November	Public Review Meetings
Dec 1-2	PWG meeting: Review public input/begin decision-making on final recommendations
Dec 15-16	PWG meeting: Continue discussion on issues and options

1994

Jan 19	PWG meeting: Continue discussion on issues and options and review of preliminary recommendations
Feb 16	PWG meeting: Finalize shore protection outline and further review of preliminary recommendations

STAGE III RECOMMEND POLICIES/NEEDED ACTIONS

Mar 17	PWG meeting: Finalize discussion on issues and options
April (various)	Writing Team: Prepare Final Recommendations Report draft for PWG review/approval
May 19-20	PWG meeting: Review, critique, approve first draft of Final Recommendations Report
June (various)	Writing Team: Complete Final Recommendations Report and prepare for publication
Aug-Dec	Present recommendations to state legislators, local governments, boards and commissions, state agencies, and private groups as appropriate. Work toward implementation of recommendations

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