

The Future of the Texas Gulf Coast

*Strategies for Managing
Beach Access*



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Strategies for Managing Beach Access

**A Report Prepared for the
Texas General Land Office**

by

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PREFACE

In 1989, the 71st Texas Legislature enacted Senate Bill 1571. This bill amended the Texas Natural Resource Code and appointed the Texas General Land Office (GLO) as the lead agency in developing a comprehensive plan for the state's coastal public lands. In response to SB 1571, the GLO appointed a citizens advisory committee, and state and federal agency task forces, to aid in formulating the plan.

Five public meetings were held on the Texas coast. These meetings pinpointed shoreline erosion/dune protection, wetlands, and beach access as the issues of greatest concern to the coastal community.

In the summer of 1990, the GLO employed the Office for Strategic Studies in Resource Policy at Texas A&M University to help develop a Texas coastal management plan. The Office used the Alternative Futures Assessment (AFA) Process, a computer assisted workshop procedure, as a means to incorporate the concerns of the coastal community into the plan. The ultimate goal -- to build a consensus on strategies that will resolve the top three issues affecting the Texas Gulf Coast.

An ideal strategy balances the needs of affected interests and inspires their active support. The strategy should also include practical courses of action to achieve the primary goal as well as actions to anticipate and mitigate unwanted side effects. The workshop participants strived to develop a strategy that comes close to the ideal.

This report documents the work of the participants in the AFA Process who contributed their time and effort to assist in resolving the beach access issue. Their effort succeeded in producing a consensus on a general strategy to resolve the issue for the Texas Gulf Coast.

Companion reports for the shoreline erosion/dune protection issue and the wetlands issue were also completed. This set of reports show that these two issues, and the beach access issue, are interrelated. Therefore, strategies to resolve the beach access issue will require coordination with strategies adopted to resolve the other issues.

Funding for this project was provided by an interagency contract between the Texas General Land Office and the Texas Water Development Board. Matching support was made by the Office for Strategic Studies in Resource Policy at Texas A&M University. We would like to thank all of our participants for their time and cooperation on this project. We hope that this report will aid in improving the future of the Texas Gulf Coast.

CONTENTS

	Page
LIST OF FIGURES	v
LIST OF TABLES	vi
EXECUTIVE SUMMARY	1
INTRODUCTION	5
The AFA Process	5
The Software	5
The Workshops	7
Foundation Workshops	7
Strategy Workshop	7
Capstone Workshop	9
INTERESTS AND CONCERNS	12
Stakeholder Groups	12
Key Variables	12
TRENDS AND INTERACTIONS	18
Long-Term Trends	18
Interactions	18
Linking Trends and Interactions	21
POLICIES AND PRIORITIES	23
Defining the Issue	23
Stakeholder Objectives	23
Recommended Policy	26
Primary Policy	26
Mitigation Policies	26
Final Recommendation	27
Satisfaction of Objectives	30
Recommended Actions	33
Increase Interagency Coordination	33
Increase Comprehensive Planning	34
Increase County Regulatory Authority	34
Increase Public Education	34
Increase Appropriations for Beach Access	35
Control Real Property Losses	35
Control Vehicles on Beaches and Dunes	35
Research Priorities	36

	Page
APPENDIX A: Stakeholder Objectives	39
APPENDIX B: Simulated Trends	43
APPENDIX C: Region I Foundation Workshop	49
APPENDIX D: Region II Foundation Workshop	55
APPENDIX E: Region III Foundation Workshop	61

LIST OF FIGURES

	Page
Figure 1. Flowchart of the Alternative Futures Assessment (AFA) Process.	6
Figure 2. Pyramid structure of workshops used to apply the AFA Process to the Texas Gulf Coast.	8
Figure 3. Bar chart showing the expected change in variables under the current policy.	19
Figure 4. Cross-impact matrix showing interactions among variables.	20
Figure 5. Bar chart used to validate the computer model.	22
Figure 6. Bar chart comparing the potential effects of the current and recommended policies.	29

LIST OF TABLES

		Page	
Table 1.	Names of stakeholder groups and representatives in each group.	13	—
Table 2.	Key variables and estimated future trends.	14	—
Table 3.	Top priority (peremptory) variable identified by each stakeholder group.	16	—
Table 4.	Variables shared among two or more of the top three Texas Gulf Coast issues.	17	—
Table 5.	Definitions of objectives.	24	—
Table 6.	Summary of stakeholder objectives.	25	—
Table 7.	Change specified for each variable in the recommended policy.	28	—
Table 8.	Satisfaction levels for the recommended policy.	31	—
Table 9.	Comparison of satisfaction levels for the current and recommended policies.	32	—
Table 10.	Recommended list of priorities for future research.	37	—

EXECUTIVE SUMMARY

Introduction

The AFA Process

- The Alternative Futures Assessment (AFA) Process was used by the Office for Strategic Studies in Resource Policy at Texas A&M University to address the beach access issue.
- The AFA Process is a computer-aided approach for bringing concerned parties together in a workshop setting to formulate strategies to resolve complex issues.

The Workshops

- A series of five workshops were conducted in the AFA Process for this issue. The first three were regional Foundation Workshops. A Strategy Workshop came next followed by a Capstone Workshop.
- The Capstone Workshop produced a consensus among participants on a recommended policy and courses of action to resolve the beach access issue for the Texas Gulf Coast.

Interest and Concerns

Stakeholder Groups

- People who share a common interest are categorized as a stakeholder group. The interests and concerns of these groups are the driving force in the AFA Process.
- The Texas General Land Office defined 14 stakeholder groups and selected participants to represent the groups.

Key Variables

- The interests and concerns of participants were defined by variables. A variable is the name or description of something that changes, such as the number of beach access points.
- The participants selected 29 key variables, with units of measure, to represent the beach access issue for the Texas Gulf Coast.
- Each stakeholder group had the right to select one variable that best defined their principal interest or concern. This variable is called preemptory because it must be included on the final list.

- There is significant overlap among the key variables for the top three Texas Gulf Coast issues. Therefore, strategies to resolve the beach access issue will require coordination with strategies adopted to address the other issues.

Trends and Interactions

Long-Term Trends

- Participants estimated the trends in key variables that might occur over the next twenty years under current policies. Most of the variables were expected to increase, including tourism revenue, coastal highway traffic flows, access points, the use of vehicles on beaches and dunes, and the dune erosion rate. Two variables were expected to decrease slightly, including institutional fragmentation and the width of public easements (measured from mean high tide).
- The affects of outside forces were also considered. For instance, the participants decided that 60 percent of the dune erosion rate cannot be controlled by the recommended policy.

Interactions

- The participants defined how the 29 key variables interact with one another. This was accomplished using a cross-impact matrix.

Linking Trends and Interactions

- The trends and interactions were linked using artificial intelligence techniques to form a working computer model of the issue. The model formalized the participant's mutual understanding of the issue.
- The participants used the computer model to compare the possible consequences of new policies with the probable consequences of continuing the old policies.

Policies and Priorities

Defining the Issue

- The participants selected planned quality access points as the variable that best defines the beach access issue.
- The number of access points is expected to nearly double over the next twenty years under current policies. However, the participants felt that an increase in access points should be assured with new policies. A number of participants also felt that access points should increase by nearly 5 times to resolve the beach access issue.

Stakeholder Objectives

- An objective represents how a stakeholder group would like to see a variable change from the way it is today. For this issue, the time limit for reaching an objective was set at twenty years.
- There were eight objectives from which to choose. A stakeholder group specified an objective for each of the 29 key variables.
- The specified objectives revealed that the stakeholder groups share similar views on a desired future for the Texas Gulf Coast. However, there was a notable difference in objectives for the width of public easements. The No Change objective was selected by 2 stakeholder groups, but 8 groups had a preference for an increase in the width of public easements and 4 groups had a preference for a decrease. There also was a slight difference of opinion on establishing special purpose districts.

Recommended Policy

- The primary policy selected by participants involved increasing interagency coordination, increasing the area covered by comprehensive plans, increasing county authority to regulate access, increasing public education, and increasing appropriations for beach access.
- The results of simulations showed that the primary policy is likely to increase the number of planned quality access points substantially above the level expected under current policies.
- The participants felt that some of the side effects produced by simulating the primary policy were undesirable. For example, to mitigate a possible increase in dune erosion they recommended that vehicle use of beaches and dunes be held at today's level. They also recommended controlling real property losses.
- The recommended policy consists of the original changes in five target variables in the primary policy plus the changes in the two mitigation variables (vehicle use and real property losses) that were added to reduce unwanted side effects.
- The results of simulations showed that the recommended policy will still increase the number of planned quality access points. However, it could also reduce dune erosion and litter while holding down real property losses.
- The overall or total satisfaction of objectives is moderately high for the recommended policy. The lowest level of satisfaction for a stakeholder group is 71 percent and the highest level is 91 percent.
- Levels of dissatisfaction for the recommended policy are relatively low. The highest remaining dissatisfaction is for the Cameron County group. The variable of concern to the group is restricted use recreation areas. They did not want this variable to change. Nevertheless, the group is still 77 percent satisfied with the recommended policy.

- The recommended policy is superior to the current policy for three measures of success. For example, the recommended policy produces the lowest level of dissatisfaction for all groups and for any one group. It also provides the most benefits to all groups.

Recommended Actions

- The participants specified actions needed to bring about the recommended change in variables. They specified who should be responsible for taking the action. They also estimated the cost and source of funds. The recommended actions represent a consensus of the participants.
- The total cost of addressing the beach access issue was estimated at about \$160 million over the next twenty years. An additional \$300 million was recommended to hold down real property losses through shoreline erosion control. The participants felt that these funds should come from both legislative appropriations and private sources.

Research Priorities

- The participants used the cross-impact matrix to decide which interactions between variables were the most important to study. The highest priority means that research funds should be directed toward the interaction because it is not well understood, and it has a strong affect on the issue.
- The highest research priority is the affect of increasing county authority to regulate access on the provision of new quality access points. The affect of off beach parking on the quality of access points tied as the top research priority.
- The second research priority is the affect of quality access points on annual tourism revenue. Research on four other interactions between variables tied for second priority. Research on eight interactions between variables tied for third priority.

INTRODUCTION

The AFA Process

The Alternative Futures Assessment (AFA) Process is a computer-aided approach for bringing concerned parties together in a workshop setting to formulate strategies to resolve complex issues. The AFA Process has successfully addressed a variety of complex resource, environmental and business management issues.

The AFA Process helps participants to pool their knowledge and experience and develop a detailed mutual understanding of the issue under consideration. It also assists them in exploring the potential consequences of alternatives so that they can develop policies. Finally, the AFA Process provides them with an opportunity to recommend funding priorities for research.

The workshops used in the AFA Process are conducted by a facilitator, a technical assistant, and a recorder. The facilitator mediates discussions among participants and guides them through the AFA Process. The technical assistant operates the computer and distributes the results of each exercise. The recorder helps the technical assistant and takes notes on important points in the discussions.

The AFA Process involves identifying trends that define an issue and evaluating different courses of action to deal with those trends. The AFA Process encourages participants to share their knowledge and experience, and work together as a team to explore solutions. Teamwork is fostered by using the step-by-step procedure shown in Figure 1.

An unavoidable characteristic of the AFA Process is that the participants in a workshop will determine the outcome. In other words, given the same issue, different participants would probably arrive at somewhat different conclusions. This is also true in other group decisionmaking processes, including legislatures, courts, and scientific committees. The AFA Process helps to reduce bias by making assumptions explicit so that others can evaluate the results. The potential problem of bias can be further reduced by involving a broad spectrum of concerned parties.

The Software

The computer software used in the AFA Process is an expert cross-impact simulation language that shows how variables interact over time. It runs on an IBM compatible personal computer. The software includes artificial intelligence to aid participants in using their knowledge and experience to build a computer model that describes the issue. The model they build formalizes their understanding of the issue. The participants also can quickly and easily make changes in the model as they learn from one another during the workshop. Thus the participants use their model to evaluate courses of action they recommend for resolving the issue.

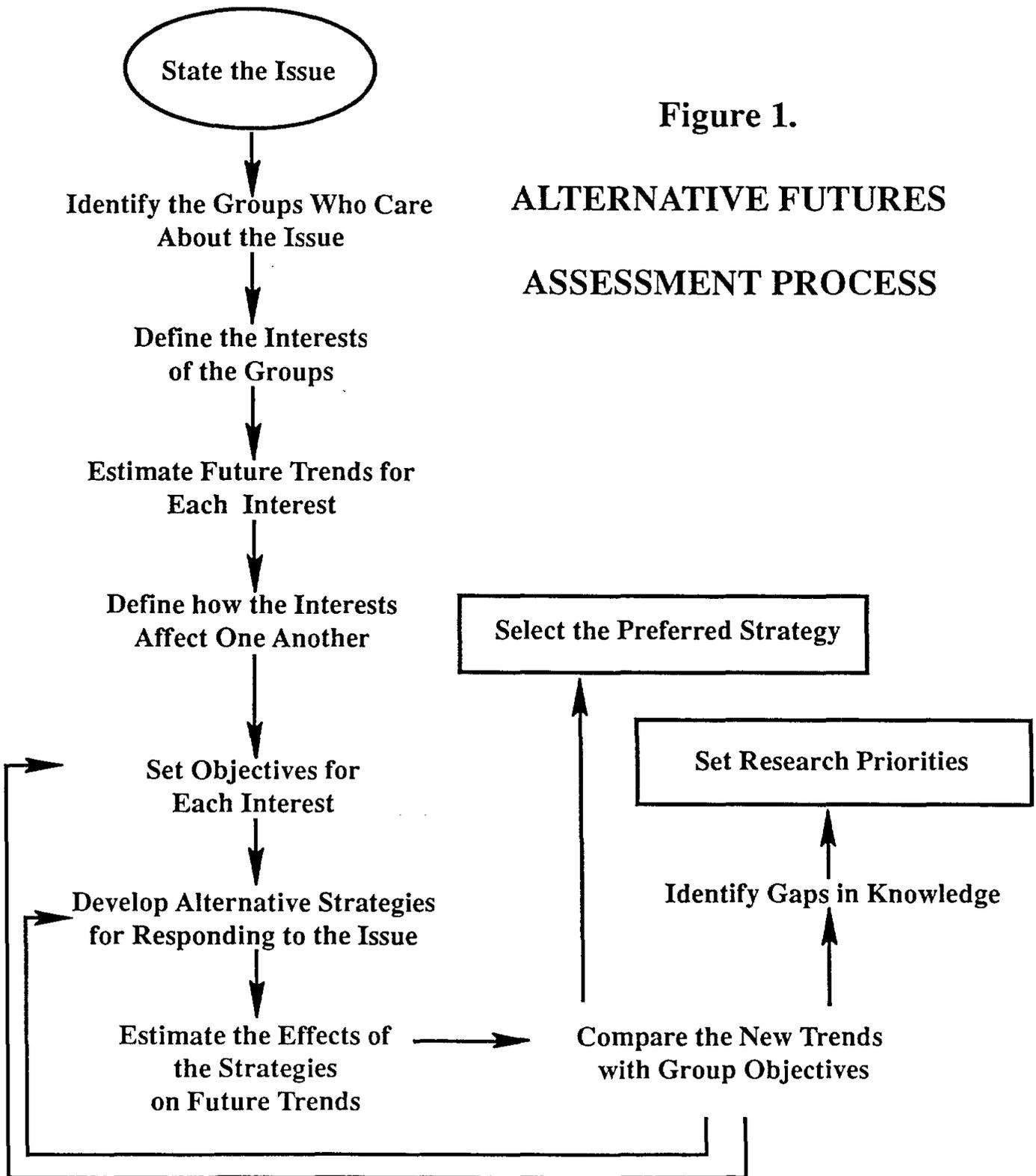


Figure 1.

**ALTERNATIVE FUTURES
ASSESSMENT PROCESS**

The Workshops

A standard workshop takes 2 1/2 days and can be conducted in a location that is convenient for participants. A standard issue takes about 6 weeks to complete. The time required to complete the AFA Process, and the number and type of workshops, depends on the issue. The three issues addressed for the Texas Gulf Coast took 16 weeks to complete. Thus the AFA Process is a fast, portable, and cost-effective approach for building a consensus on strategies to resolve complex issues.

A series of five workshops were held to address the beach access issue on the Texas Gulf Coast. The first three were Foundation Workshops. A Strategy Workshop came next followed by a Capstone Workshop. Like a pyramid, the AFA Process rested upon a broad base of information generated in the Foundation Workshops and became more focused in subsequent workshops (Figure 2).

Foundation Workshops

The purpose of the Foundation Workshops was to clarify how the issue affects a particular region of the coast. Recommendations to resolve the issue also were considered. Therefore, Foundation Workshops were conducted in three geographic regions: the lower, middle and upper coast. Workshops were conducted in Galveston on June 27, 1990, in Corpus Christi on July 11, 1990, and in Brownsville on July 17, 1990.

Each Foundation Workshop for the Texas Gulf Coast included up to 28 participants who represented a wide array of interests in a particular region. A few individuals representing statewide interests on the coast participated in more than one Foundation Workshop.

The Foundation Workshops were organized to gather as much information as possible from the participants in one day. The most important information provided by the participants was a ranked list of variables defining their interests and concerns. They also identified the top beach access problems affecting their region and they recommended courses of action to resolve those problems (see Appendix C, Appendix D, and Appendix E).

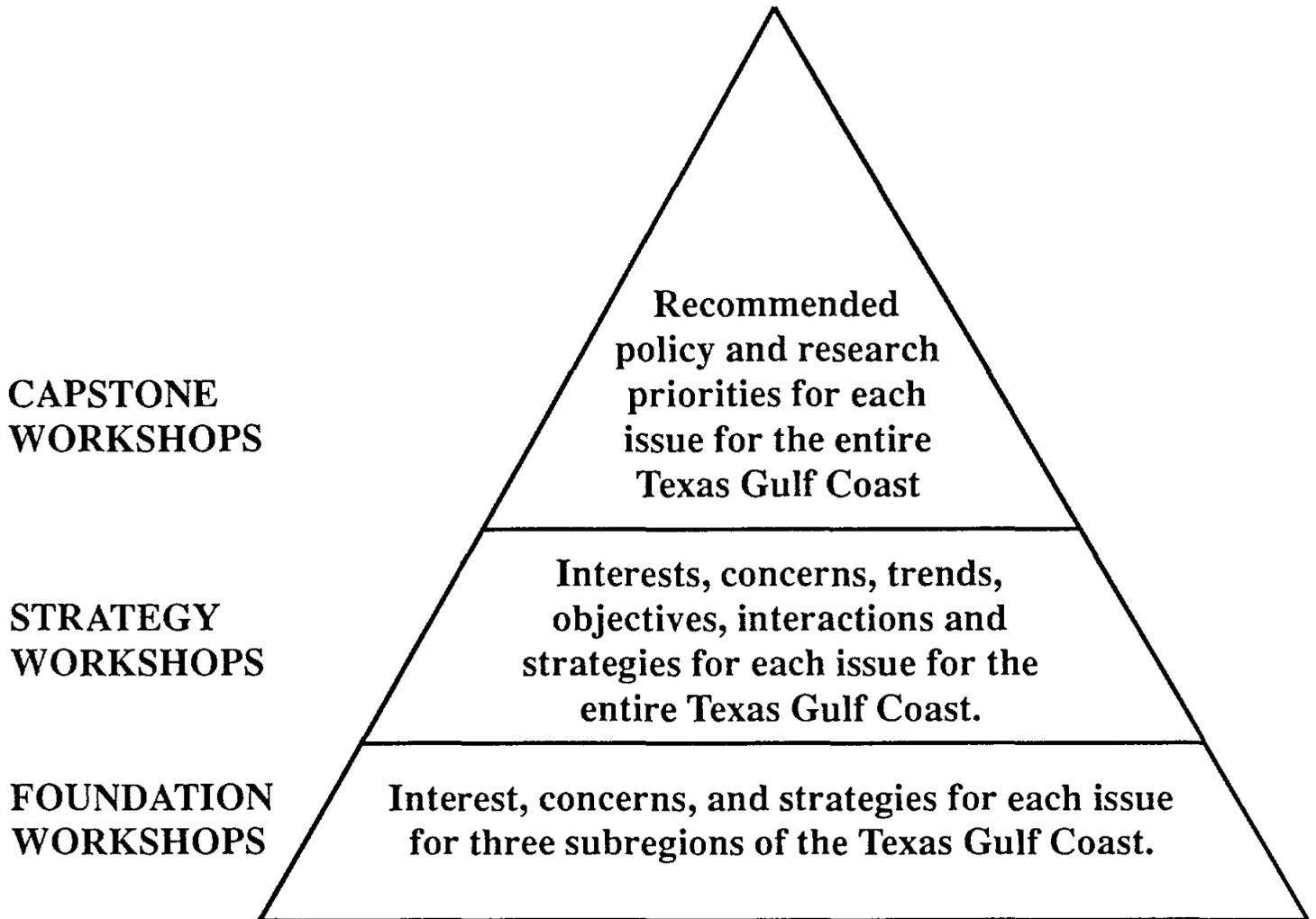
Strategy Workshop

The purpose of the Strategy Workshop was to build a computer model to evaluate the potential consequences of strategies to resolve the issue. Participants also specified their objectives and prepared a preliminary policy. The information and ideas generated in the Foundation Workshops served as the starting point.

The Strategy Workshop for the beach access issue was held on August 21-22, 1990, in Clear Lake, Texas. Like the Foundation Workshops, the Strategy Workshop was structured to use time efficiently.

The Strategy Workshop participants were divided into 14 stakeholder groups. These groups represented the principal interests involved in the issue. Some participants in the Strategy Workshop also took part in the Foundation Workshops.

Figure 2.

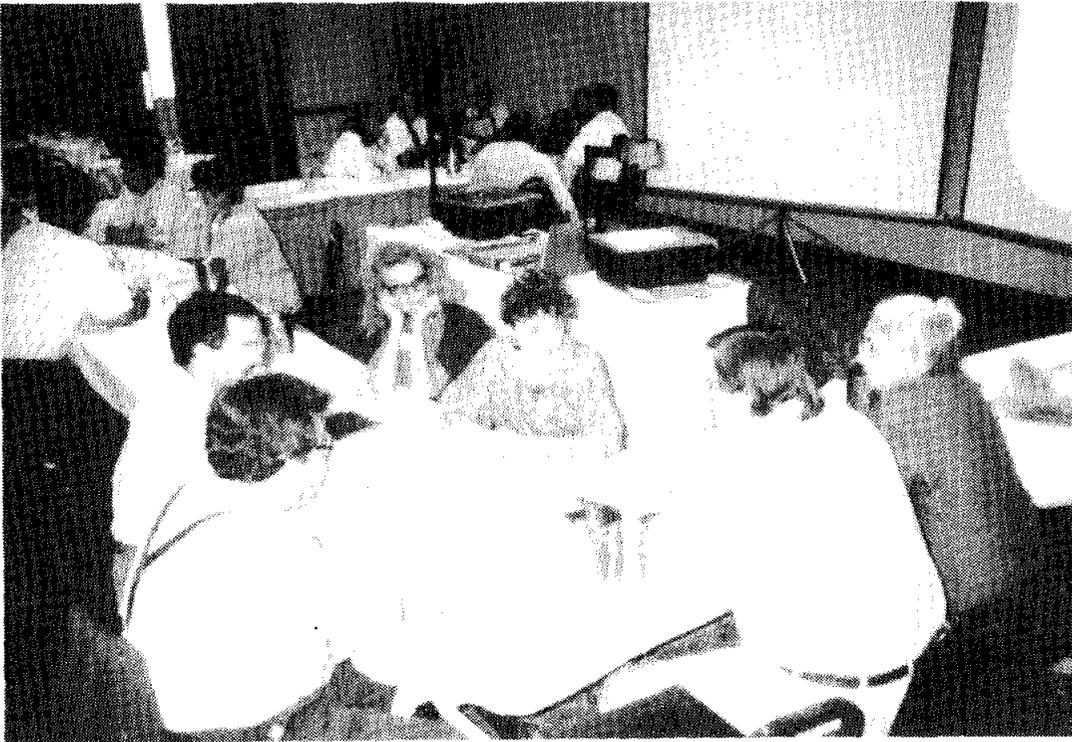


Capstone Workshop

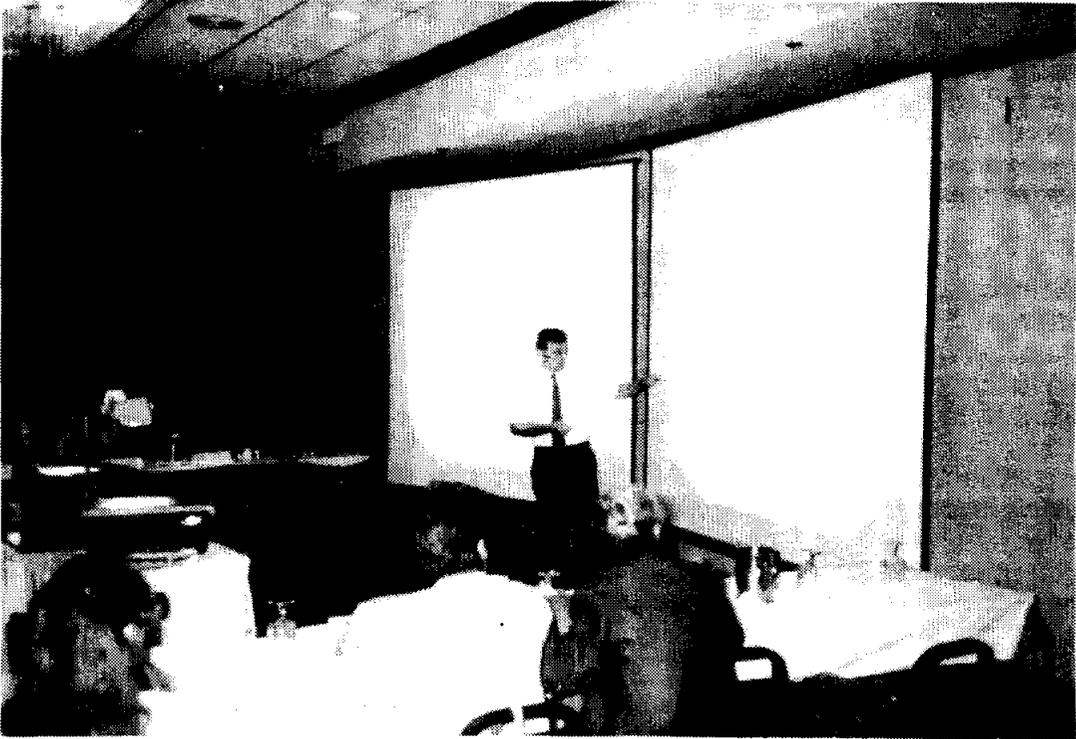
The purpose of the Capstone Workshop was to build a consensus on a realistic strategy to resolve the beach access issue for the Texas Gulf Coast. The workshop also involved identifying gaps in knowledge and recommending priorities for future research. The preliminary policy developed in the Strategy Workshop served as the starting point for the Capstone Workshop.

The Capstone Workshop for the beach access issue was held in Clear Lake, Texas, on September 19, 1990. Most of the participants also took part in the Strategy Workshop for this issue. They were divided into the same 14 stakeholder groups in both workshops. ***The Capstone Workshop produced a consensus among participants on a recommended policy and courses of action to resolve the beach access issue for the Texas Gulf Coast.***

BEACH ACCESS CAPSTONE WORKSHOP



BEACH ACCESS CAPSTONE WORKSHOP



INTERESTS AND CONCERNS

Stakeholder Groups

The first and most important step in the AFA Process is determining who cares about the issue and what they care about. People who share a common interest are categorized as a stakeholder group. In short, they have a direct stake in the outcome of decisions that address the issue. *The interests and concerns of stakeholder groups are the driving force in the AFA Process.*

The computer software used in the AFA Process can accommodate up to 15 stakeholder groups. *Since there were 26 participants involved in the workshop, those who shared similar interests formed coalitions.* Each coalition represented a broad stakeholder group. Thus the members of the coalition had to agree on decisions for that stakeholder group. This approach fostered communication among participants who looked at their common interests from different perspectives.

The Texas General Land Office defined the stakeholder groups and selected participants to represent the groups. Table 1 shows the names of the 14 stakeholder groups involved in the Strategy and Capstone Workshops, and the participants that represented each group. Only 14 stakeholder groups were used because one representative was unable to attend the Capstone meeting.

Key Variables

The interests and concerns of participants were defined by variables. A variable is the name or description of something that changes, such as sleep. To insure that everyone is discussing the same thing a variable must be defined with a unit of measure. For instance, sleep is ambiguous until it is assigned a unit of measure, such as nights of 8 hours sleep per year, or sleepless nights per year. Each unit of measure clarifies the meaning of sleep.

The participants selected 29 key variables, with units of measure, to represent the beach access issue for the Texas Gulf Coast (Table 2). The name of the variable in the table is a seven character abbreviation. The number at the end of the abbreviation is a code that is used in the computer software. The other numbers in the table will be explained in the section on long-term trends.

The procedure for selecting variables began during the Foundation Workshops. A brainstorming session in each Foundation Workshop helped participants to nominate a large number of variables in a short time. This session yielded between 100 and 200 variables in one hour. The participants ranked the list to produce a short list of 30 variables that represented the issue in their region of the coast. The regional lists were combined and sent to the Strategy Workshop.

Participants in the Strategy Workshop clarified and expanded the list of variables they received from the three Foundation Workshops. The list again approached 100 variables. They used the same ranking procedure to reduce this list to the final list of 30 variables that represented the issue for the entire Texas Gulf Coast. During the Capstone Workshop two variables were merged, so the final list contained 29 key variables (Table 2).

Table 1.

COASTAL MANAGEMENT PLAN

BEACH ACCESS

Stakeholder Group Name	Stakeholder Group Description	Representatives	Organization / Interest
Sierra	Sierra Club	Mary Lou Campbell	Sierra Club
Audubon	Audubon Society	Ro Wauer Sandra Hoover Gretchen Mueller	Audubon Society Audubon Society Audubon Society
League	League of Women Voters	Gwen Smith	League of Women Voters
LocalCom	Local Communities	Ken Pagans	Texas A&M Sea Grant
Cameron	Cameron County	Ken Conway Robert Pinkerton	Cameron County Parks South Padre Island Mayor
Nueces	Nueces County	J. P. Luby	Nueces County Commissioner
Brazoria	Brazoria County	Charlie Moss Penny Sturdivant	Texas A&M Sea Grant Brazoria County Floodplain
Galvestn	Galveston County	Harold Holmes Mel Russel	Galveston Urban Planning Dept. Texas A&M Sea Grant
BeachPrs	Beach Preservation	Russell Eitel John Arrington	Galveston Beach Env. Comm. Galveston Citizen
Jeffersn	Jefferson County	Robert Stroder	Jefferson County Engineer
Developm	Development	Obie O'Brien Richard Franke A. R. "Babe" Schwartz	Mitchell Energy & Development Franke Realty Attorney
Senator B	Seantor Brooks	Neal Hunt	Senator Chet Brooks' Office
FedIagny	Federal Agencies	Jim LeGrotte	Federal Emergency Management Agency
StatAgny	State Agencies	Ken Cross B.C. Gersch Tom Nuckols Sally Davenport Andy Mangan	Texas Attorney General's Office State Department of Highways Texas General Land Office Texas General Land Office Texas General Land Office

Table 2.

BEACH ACCESS

Variable List and Trends

No.	Variable Name	Variable Description	Unit of Measure	Maximum Increase (%)	Expected Change (%)	External Impact (% Exp.)
1	QACPTS3	Access Pts.	Quality Plan Pts	355.0	90.0	10.0
2	BCHCLN\$2	Beach Cleaning Fund	\$/Yr	359.0	17.0	30.0
3	INSTFRG5	Instit Fragmentation	# Entities Respn	46.0	13.0	70.0
4	BCHNOUR3	Beach Nourishment	Cubic Yds/Yr	181.0	18.0	10.0
5	FACFEE\$0	Beach Facil User Fee	\$ Generated/Yr	236.0	77.0	20.0
6	BOUNDR\$1	Bound. Disput. Reslv	\$/Yr	290.0	53.0	10.0
7	SFCOORD1	Stat/Fedl Coordinatn	Eff Joint Act/Yr	296.0	76.0	10.0
8	COMPLAN1	Comprehens. Planning	% Coast Covered	353.0	27.0	10.0
9	COUNLEG1	County Enabling Leg.	# Count w/Auth	147.0	20.0	90.0
10	DUNEER05	Dune Erosion	Ft Lost/Yr	327.0	113.0	60.0
11	DUNPRO\$2	Dune Protection	\$ Allocated/Yr	317.0	59.0	10.0
12	DUNWALK3	Dune Walkovers	#/Mi	335.0	83.0	10.0
13	ENFORCE1	Enforce Open Bch Act	# Actions Taken	179.0	27.0	10.0
14	HWYACCS4	Highway Access	Vol Traf Flow Av	190.0	63.0	50.0
15	RECAREA1	Restr Use Areas(Rec)	#/Mi	129.0	46.0	10.0
16	LITTER 5	Litter	Tons/Yr	239.0	59.0	40.0
17	OFFPARK3	Off Beach Parking	# Spaces/Mi	302.0	44.0	10.0
18	OFFACIL3	Off Beach Pub. Facilt	# Added/Yr	272.0	31.0	10.0
19	PUBEDUC4	Public Education	Hrs Exposure/Yr	338.0	90.0	10.0
20	PUBACQU1	Public Land Acquis.	Acs Acquired/Yr	236.0	27.0	10.0
21	REALOS\$5	Real Property Loss	\$/Yr	315.0	77.0	50.0
22	NATAREA1	Rstr Use Areas (Nat)	#/Mi	194.0	76.0	10.0
23	VEHREST1	Rstr Veh Traffic	% Bch Restr/Yr	250.0	26.0	10.0
24	EWIDTH 4	Public Easement Wdth	Ft from MHT/Yr	20.0	17.0	70.0
25	SPCDIST1	Spec. Purpose Distr.	#	192.0	17.0	90.0
26	SFLFND\$2	Stat/Fed/Loc \$ BA	\$/Yr	292.0	58.0	20.0
27	TOURSM\$0	Tourism	\$ Generated/Yr	246.0	95.0	50.0
28	VEHBUSE4	Vehicular Beach Use	# Vehicles/Yr	156.0	83.0	10.0
29	HABLOSS5	Wildlife Habit Loss	Acs Lost/Yr	326.0	78.0	10.0

Time period is 20 Years, beginning 1/ 1991.

In the ranking procedure *each stakeholder group had the right to select one variable that best defined their interest or concern. This variable is called preemptory because it must be included on the final list.* In short, a stakeholder group owns the variable they select and no other group can challenge its right to use the variable in the computer model. Similarly, the variable can only be removed from the model with the consent of the stakeholder group. Three preemptory variables were removed from the list. The final list of preemptory variables is presented in Table 3.

The key variables identified by participants for the top three Texas Gulf Coast issues (i.e., shoreline erosion/dune protection, wetlands, and beach access) were compared to determine the degree to which the issues are interrelated. The variables were grouped if they shared a similar description. The results are presented in Table 4.

There is significant overlap among the key variables for the top three Texas Gulf Coast issues. For example, Table 4 shows that five variables are important to all three issues. The variables are tourism revenue, interagency coordination, habitat loss, public education, and funding. The beach access issue shares six additional variables with the shoreline erosion/dune protection issue and one additional variable with the wetlands issue. *Therefore, strategies to resolve the beach access issue will require coordination with strategies adopted to address the other issues.*

Table 3.

PEREMPTORY VARIABLES

Issue: BEACH ACCESS

<u>Group</u>	<u>Variable</u>	<u>Unit of Measure</u>
Sierra	Wildlife Habitat Loss	Ac Lost/Yr
Audubon	Wildlife Habitat Loss	Ac Lost/Yr
League	Beach Capacity Standards*	Index Level
LocalCom	Beach Access Development Fund*	\$/Yr
Cameron	Off Beach Public Facilities	# Added/Yr
Nueces	Beach Access Development Fund*	\$/Yr
Brazoria	Carrying Capacity*	Upper Limit of Visitor Days/Ac/Yr
Galvestn	Tourism	\$ Generated/Yr
BeachPrs	Special Purpose District	#
Jeffrsn	Beach Nourishment	Cubic Yds/Yr
Developm	Real Property Loss	\$/Yr
SenatorB	Stat/Fed/Local \$ for Beach Access	\$/Yr
FedlAgy	Comprehensive Planning	% of Coast Covered
StatAgy	Access Pts.	Quality Planned Pts

*Stakeholder(s) agreed to remove from final list.

Table 4.

VARIABLES SHARED AMONG TWO OR MORE
TEXAS GULF COAST ISSUES

<u>Variable</u>	<u>Issue</u>		
	<u>Erosion</u>	<u>Wetlands</u>	<u>Access</u>
Tourism Revenue	X	X	X
Interagency Coordination	X	X	X
Habitat Loss	X	X	X
Public Education	X	X	X
Funding	X	X	X
Ecological Integrity/Biodiversity	X	X	
Subsidence	X	X	
Wetlands	X	X	
Beach Nourishment	X		X
Dune Protection	X		X
Planning	X		X
Setbacks/Easements	X		X
Trash/Litter	X		X
Vehicles on Beach/Dunes	X		X
Enforcement		X	X

TRENDS AND INTERACTIONS

Long-Term Trends

The next step in the AFA Process involved estimating the trends in variables that might occur over the next twenty years under current policies. *Most of the key variables were expected to increase, including tourism revenue, coastal highway traffic flows, access points, the use of vehicles on beaches and dunes, and the dune erosion rate. Two variables were expected to decrease slightly, including institutional fragmentation and the width of public easements (measured from mean high tide).* Stakeholder groups evaluated these trends as either desirable or undesirable. New policies addressed the undesirable trends.

Information was collected about two kinds of trends. The first trend is the possible or "maximum increase" for each variable over the next twenty years (Table 2). The maximum increase defines the upper limit for each variable. The second trend is the probable or "expected change" in each variable over the same period (Table 2). This is the trend that is likely to occur if current policies remain unchanged.

Information on trends was obtained from a questionnaire that was filled in by all participants. The participants were asked for their perceptions of the direction and magnitude of future trends. For example, if they thought a variable would change over the next twenty years, they were asked if it would be higher or lower than it is today. If the variable would be higher, the participants were given the option of saying it would be slightly, a little, moderately, a lot, or immensely higher.

The words in the questionnaire were associated with numbers that formed a geometric progression. For downward trends the progression ranged between 0 and -100 percent, and for upward trends it ranged between 0 and 1000 percent. The numerical values associated with the words selected by the participants were averaged. The averages were displayed, discussed, and modified as necessary. The final trends are illustrated with a bar chart in Figure 3.

The affects of outside forces were also considered. These forces are called external impacts (Table 2). This information is important because it points out how much, or how little, of the change in a variable may be controlled by policy. For instance, *the participants decided that 60 percent of the dune erosion rate cannot be controlled by the recommended policy.*

Interactions

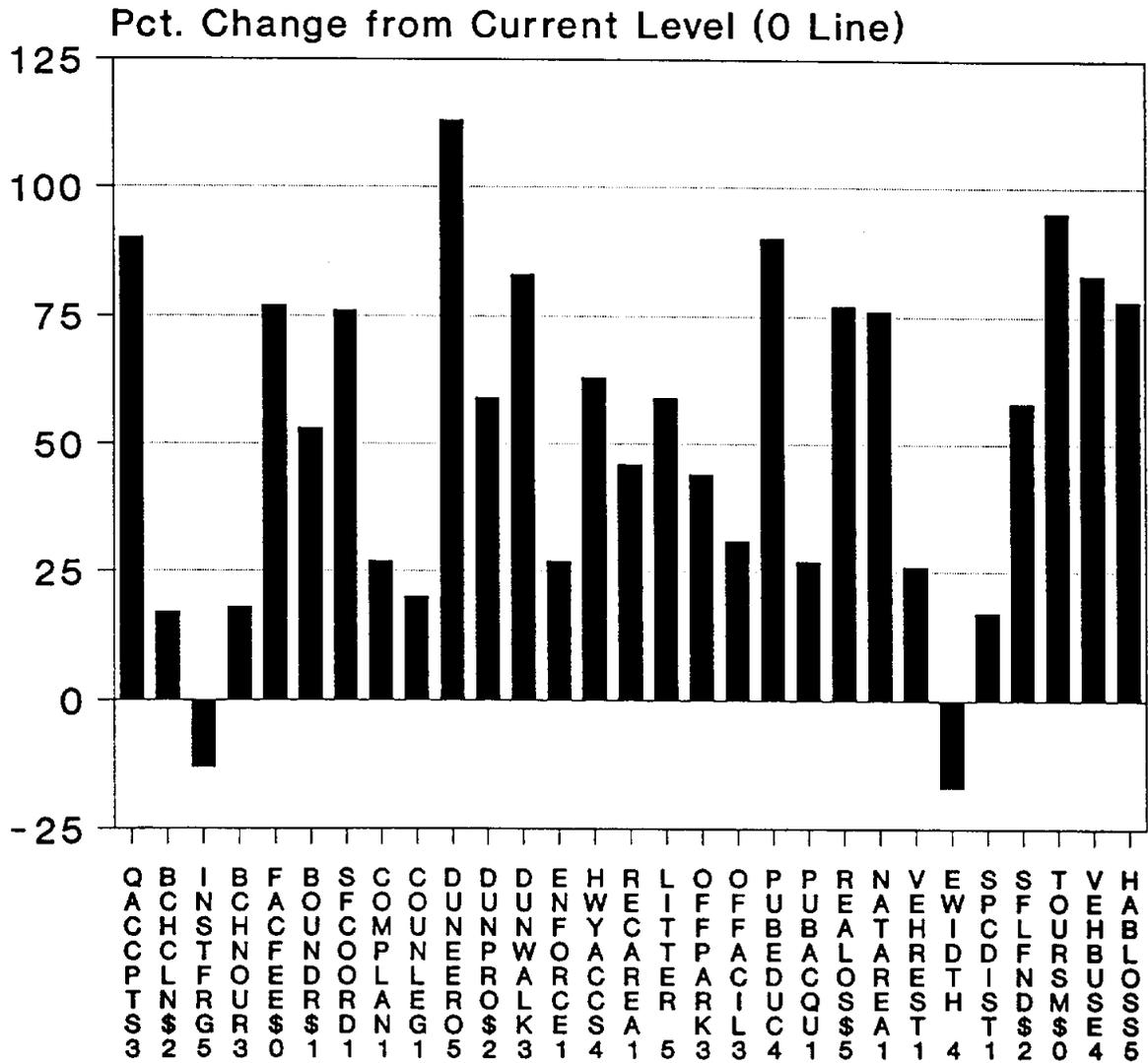
The next step in constructing a computer model is to show how the variables interact with one another to produce the estimated long-term trends. This is accomplished using a cross-impact matrix.

A cross-impact matrix is constructed by listing the key variables across the top of the matrix and then listing them again down the left side of the matrix (Figure 4). In a cross-impact matrix the column variable always impacts or affects the row variable. The number of filled cells in a column shows how many row variables that column variable affects, and in what way. The number of filled cells in a row shows how many column variables affect that row variable, and in what way.

Figure 3.

Beach Access

Expected Change in Variables Over
the Next 20 Years for Current Policy



VARIABLE

NOTE: Estimates of expected change in variables were provided by the Beach Access Panel.

Figure 4.
CROSS-IMPACT MATRIX
Issue: BEACH ACCESS

No. Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29
1 QACPTS3							+	+	+			+	+					+	+	+	+					+	+		
2 BCHCLN\$2					+		+									+		+								+	+		
3 INSTFRG5							-	-																		+			
4 BCHNOUR3				-			+	+		+												+			-	+	+		
5 FACFEE\$0	+	+		+					+						+	+	+	+	+							+		+	
6 BOUNDR\$1				-			+	-		+			+									+			+				
7 SFCOORD1				-				+		+										+							+		
8 COMPLAN1				-			+		+	+			+	+					+					+		+	+		
9 COUNLEG1																				+									
10 DUNEEROS	-			-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	-		+
11 DUNPROS2				-				+	+	+		-							+							+	+		
12 DUNWALK3	+						+	+	+	+	+	+	+	+	+	+	+	+	+			+	+			+			
13 ENFORCE1				+	-		-	-		+										-	-	+			+		+		
14 HWYACCS4	+			+						-		+			-				+		+					+	+	+	
15 RECAREA1							+	+	+										+	+	+					+	+		
16 LITTER 5				-			-	-				+	+	-					-	+	-			-	-			+	+
17 OFFPARK3	+			+			+	+	+	+	+	+	+	+	+				+			+	+		+	+	+		
18 OFFACIL3	+			+			+	+	+	+	+	+	+	+	+							+	+		+	+	+		
19 PUBEDUC4				-			+	+		+		+											+			+			
20 PUBACQU1	+			-			+	+	+		+		+		+				+				+	+	+	+			
21 REALOS\$5				-		-	-	-		+	-	+	+							-					+				+
22 NATAREA1							+	+	+	-	+								+	+						+	+		
23 VEHREST1	+						+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
24 EWIDTH 4				+		+				-																			
25 SPCDIST1									+																				
26 SFLFND\$2				-		+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+		
27 TOURSM\$0	+	+		+			+	+	-	+	+	+	+	+	-	+	+	+	+	+	+	-	+	+	+	+	+	+	-
28 VEBUSE4				-		-	-	-	-	-	-	+	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	+	
29 HABLOSS5	+					-	-	-	-	-	-	-	-	+	+	-	-	-	-	-	-	+	-	-	+	-	+	+	

An interaction between two variables in the cross-impact matrix is represented by a plus "+" or a minus "-" sign. The cell is left blank if there is no interaction. A plus sign means that the row variable follows the column variable. In other words, if the column variable goes up the row variable will go up. A minus sign means that the row variable moves in the opposite direction of the column variable. That is, if the column variable goes up the row variable will go down.

All cells in the matrix were considered one at a time to estimate interactions among the 29 key variables. This potentially tedious process of filling in the cells was simplified so that it took only three hours to complete. The workshop participants were assembled into teams, and each team was given up to 5 questionnaires. Each questionnaire focused on how a particular variable affected the other variables in the matrix. The question was stated as "If variable A goes up, then variable B goes up, down, or no impact?". The team then circled one answer for each affected variable. The completed questionnaires were displayed for discussion and revision. This procedure insured that participants agreed on the interactions used to describe the issue.

Linking Trends and Interactions

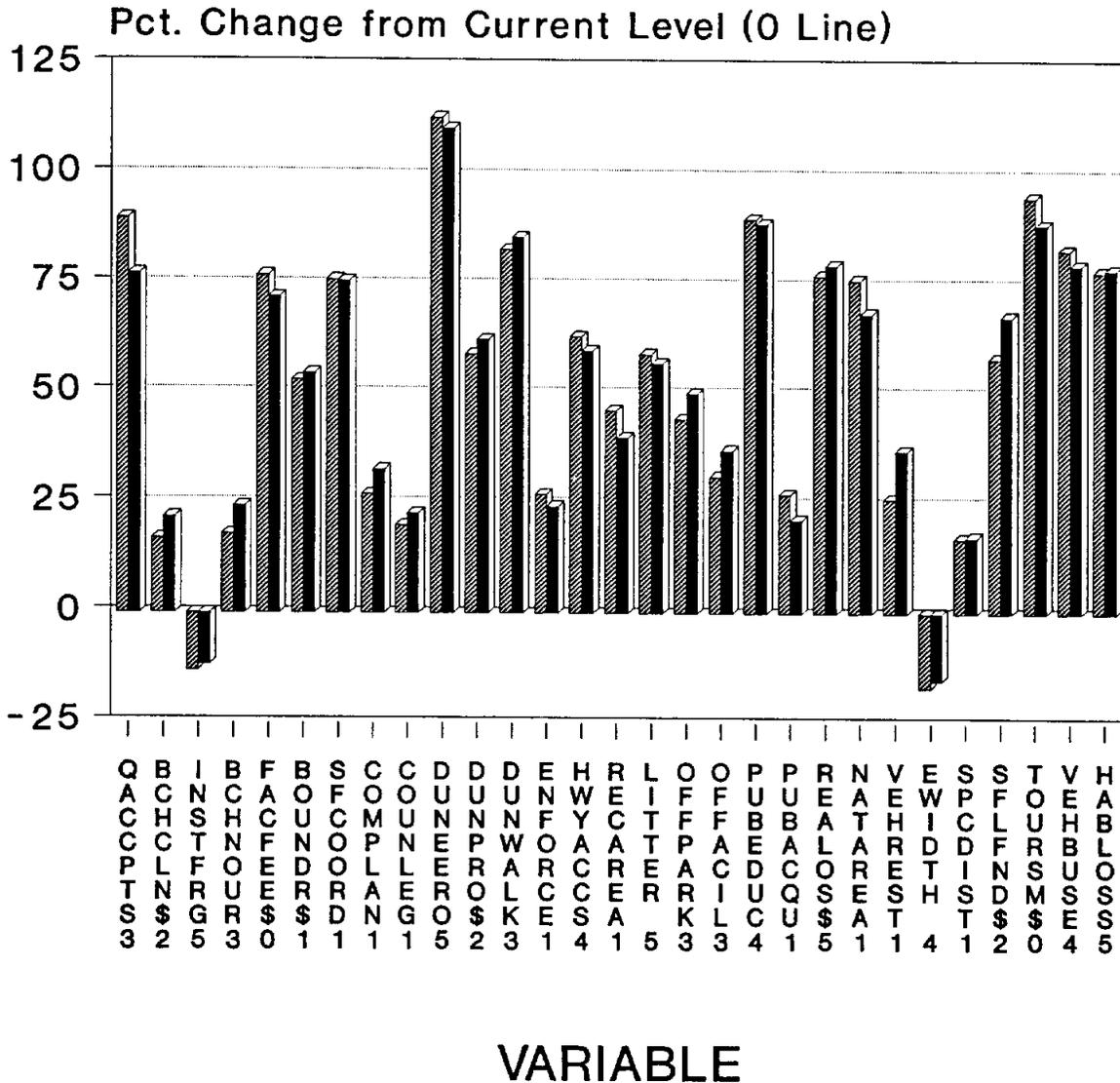
The software for the AFA Process uses artificial intelligence techniques to link the trends and the interactions in the cross-impact matrix to form a working computer model. The computer model is then validated. The closer the simulated trends from the model match the expected trends the better the model. Figure 5 shows that *the beach access model developed by the participants produces simulated trends that closely match the expected trends.*

The computer model formalized the participant's mutual understanding of the issue. It also provided a baseline for evaluating recommended policies. Thus participants used the model to compare the possible consequences of new policies with the probable consequences of continuing the old policies.

Figure 5.

Validation of Beach Access Model

Estimated Changes for Current Policy vs.
Simulated Changes from Computer Model



▨ ESTIMATED ■ SIMULATED

NOTE: A valid computer model can approximate the expected changes in variables estimated by the Access Panel.

POLICIES AND PRIORITIES

Defining the Issue

The participants selected planned quality access points as the variable that best defines the beach access issue. The number of access points is expected to nearly double over the next twenty years under current policies. However, the participants felt that an increase in access points should be assured with new policies. A number of participants also felt that access points should increase by nearly 5 times to resolve the beach access issue.

Stakeholder Objectives

An objective represents how a stakeholder group would like to see a variable change from the way it is today. For this issue, the time limit for reaching an objective was set at twenty years.

There were eight objectives from which to choose (Table 5). They included No Change, Not Up, Not Down, Up %, Down %, Up Max., Down Max., and Don't Care. The definitions of the objectives are presented in Table 5. Since the objectives were stated simply, the stakeholder groups specified their objectives for the 29 key variables in less than one-half hour. They were also given an opportunity to change their objectives. Most of the participants took advantage of this opportunity on more than one occasion.

The computer software converts the objectives into a form that can be used to evaluate policies. The simulated trends in variables for a policy are compared with these objectives to determine the level of satisfaction achieved by a stakeholder group. The closer a variable comes to the objective the higher the stakeholder group's satisfaction. Thus satisfaction does not express a group's happiness, it defines the degree to which an objective is met.

Table 6 summarizes the objectives specified by the 14 stakeholder groups for the 29 key variables used to describe the beach access issue. The Up Max., Up %, and Not Down objectives were grouped to illustrate a preference for an increase in the variable. Similarly, the Down Max., Down %, and Not Up objectives were grouped to illustrate a preference for a decrease in the variable.

Table 6 reveals that *the stakeholder groups share similar views on a desired future for the Texas Gulf Coast. However, there was a notable difference in objectives for the width of public easements.* The No Change objective was selected by 2 stakeholder groups, but 8 groups had a preference for an increase in the width of public easements and 4 groups had a preference for a decrease. *There also was a slight difference of opinion on establishing special purpose districts.* Appendix A shows the objectives for all stakeholder groups for all 29 variables.

Table 5.

DEFINITIONS OF OBJECTIVES

<u>Objective</u>	<u>Definition</u>
NO CHANGE	You do not want the variable to go higher or lower than its current level.
NOT UP	You do not want the variable to go higher than its current level, but you do not care if it goes lower.
NOT DOWN	You do not want the variable to go lower than its current level, but you do not care if it goes higher.
UP %	You want the variable to go up to or above a certain percent of its current level.
DOWN %	You want the variable to go down to or below a certain percent of its current level.
UP MAX.	You want the variable to go up as high as possible from its current level.
DOWN MAX.	You want the variable to go to zero.
DON'T CARE	You do not care about the variable.

TABLE 6.
SUMMARY OF GROUP OBJECTIVES

Issue: BEACH ACCESS

Variable No.	Variable	No Change	Preference for Increase*	Preference for Decrease**	Don't Care
1	Planned Quality Access Points	0	14	0	0
2	Annual Beach Cleaning Fund	0	14	0	0
3	Institutional Fragmentation/Entities Responsible	0	1	13	0
4	Volume of Sand Used for Beach Nourishment	0	13	1	0
5	Dollars Generated Annually from Beach Facility Fees	0	13	1	0
6	Funds Available to Resolve Boundary Disputes	1	12	0	1
7	Interagency Coordination	0	14	0	0
8	Coast Covered by Comprehensive Plans	0	14	0	0
9	Counties with Authority to Regulate Access	0	14	0	0
10	Dune Erosion Rate	0	0	14	0
11	Dune Protection Funding	0	14	0	0
12	Density of Dune Walkovers	0	13	0	1
13	Actions Taken to Enforce Open Beaches Act	2	10	1	1
14	Volume of Highway Traffic	1	9	2	2
15	Density of Restricted Recreation Use Areas	1	11	0	2
16	Volume of Litter	0	0	14	0
17	Density of Off Beach Parking	0	14	0	0
18	Off Beach Public Facilities	0	13	1	0
19	Public Education on Issue	0	14	0	0
20	Acquisition of Public Land	1	12	0	1
21	Dollars of Real Property Lost Per Year	1	0	13	0
22	Density of Restricted Natural Areas	0	14	0	0
23	Proportion of Beaches/Dunes Restricted from Vehicle Use	0	13	1	0
24	Public Easement Width from Mean High Tide	2	8	4	0
25	Special Purpose Districts	1	8	3	2
26	Federal/State/Local Appropriations for Beach Access	0	14	0	0
27	Annual Tourism Revenue	0	13	1	0
28	Vehicle Use of Beaches/Dunes	0	1	13	0
29	Wildlife Habitat Loss Rate	0	0	14	0

*The Up Max., Up %, or Not Down objectives were combined.

**The Down Max., Down %, or Not Up objectives were combined.

Recommended Policy

Primary Policy

The participants followed a step-by-step procedure to develop a recommended policy. They began by selecting up to 5 target variables that could increase quality access points. ***The primary policy selected by participants involved increasing interagency coordination, increasing the area covered by comprehensive plans, increasing county authority to regulate access, increasing public education, and increasing appropriations for beach access.*** They made this selection because the interactions in the cross-impact matrix showed that the five target variables directly affect the problem variable (Figure 4).

The primary policy is created by deciding the direction, magnitude, and rate of change needed to produce a new trend in each target variable. The assumption is that new trends in the target variables will cause favorable changes in the problem variable.

Computer simulations were performed by forcing the five target variables to follow the new trends specified in the primary policy. These new trends in the target variables then interacted through the cross-impact matrix to change the trend in the problem variable. The trends in other variables also changed because they are connected to one another in the matrix.

The results produced by simulating policies should be interpreted qualitatively since the data used in building the computer model also was qualitative. Thus a percentage change in a variable caused by a policy is best interpreted with words. For example, 100 percent above the current level might be stated as substantially higher, while 20 percent below the current level might be stated as slightly lower.

The results of simulations showed that the primary policy is likely to increase the number of planned quality access points substantially above the level expected under current policies.

Mitigation Policies

The participants felt that some of the side effects produced by simulating the primary policy were undesirable. For example, dune erosion is likely to go up because of an increase in vehicle use of beaches and dunes. This increase in vehicles was attributed to tourism development that may be stimulated by the primary policy. Table 6 shows that 13 of 14 stakeholder groups wanted the number of vehicles to decrease below today's level. Therefore, ***to mitigate a possible increase in dune erosion, the participants compromised on their objectives and recommended that vehicle use of beaches and dunes be held at today's level.*** Thus they added a mitigation variable to their primary policy to form a policy portfolio (Policy 2) that was again simulated to test for new side effects.

The results of simulating the second policy revealed another problem. Real property loss is likely to rise above the expected level. This increase was attributed to more property being placed at risk due to the stimulation of development by the primary policy. Therefore *the participants recommended holding real property losses to the expected trend over the next twenty years.* They added this mitigation variable to their policy portfolio (Policy 3) and conducted another simulation to test for additional problems. The results of the simulation were acceptable so this became the recommended policy (Table 7).

Final Recommendation

The recommended policy consists of the original five target variables in the primary policy plus the two mitigation variables that were added to reduce unwanted side effects. The recommended policy selected by participants includes 1) increasing interagency coordination by 4 times, 2) increasing the area covered by comprehensive plans by nearly 5 times, 3) increasing county authority to regulate access by nearly 3 times, 4) increasing public education by nearly 5 times, 5) increasing appropriations for beach access by 4 times, 6) holding real property losses at least as low as the expected increase, and 7) holding vehicle use of beaches and dunes to today's level (Table 7).

A bar chart comparing the affects of the current policy and the recommended policy is presented in Figure 6. The chart is constructed with the zero line representing the current level of the variable. A bar above the line means that, over the next twenty years, the variable is likely to move higher than it is today. A bar below the line means that the variable is likely to move lower than it is today. The bars are shown in pairs. One bar is the expected change in a variable estimated by workshop participants for the current policy. The other bar is the simulated change produced for the recommended policy.

As Figure 6 shows, *the recommended policy will still increase the number of planned quality access points. However, it could also reduce dune erosion and litter while holding down real property losses.*

Table 7.

CHANGES SPECIFIED FOR THE RECOMMENDED POLICY

Issue: BEACH ACCESS

TARGET VARIABLES (Primary Policy)

<u>Variable No.</u>	<u>Variable</u>	<u>Policy</u>	<u>%</u>	<u>Rate of Desired Change</u>
7	Interagency Coordination	Up Max	326	Gradually
8	Coast Covered by Comprehensive Plans	Up Max	353	Rapidly
9	Counties with Authority to Regulate Access	Up Max	147	Rapidly
19	Public Education	Up Max	338	Rapidly
26	Federal/State/Local Appropriations for Beach Access	Up Max	292	Gradually

MITIGATION VARIABLES (Added to Primary Policy)

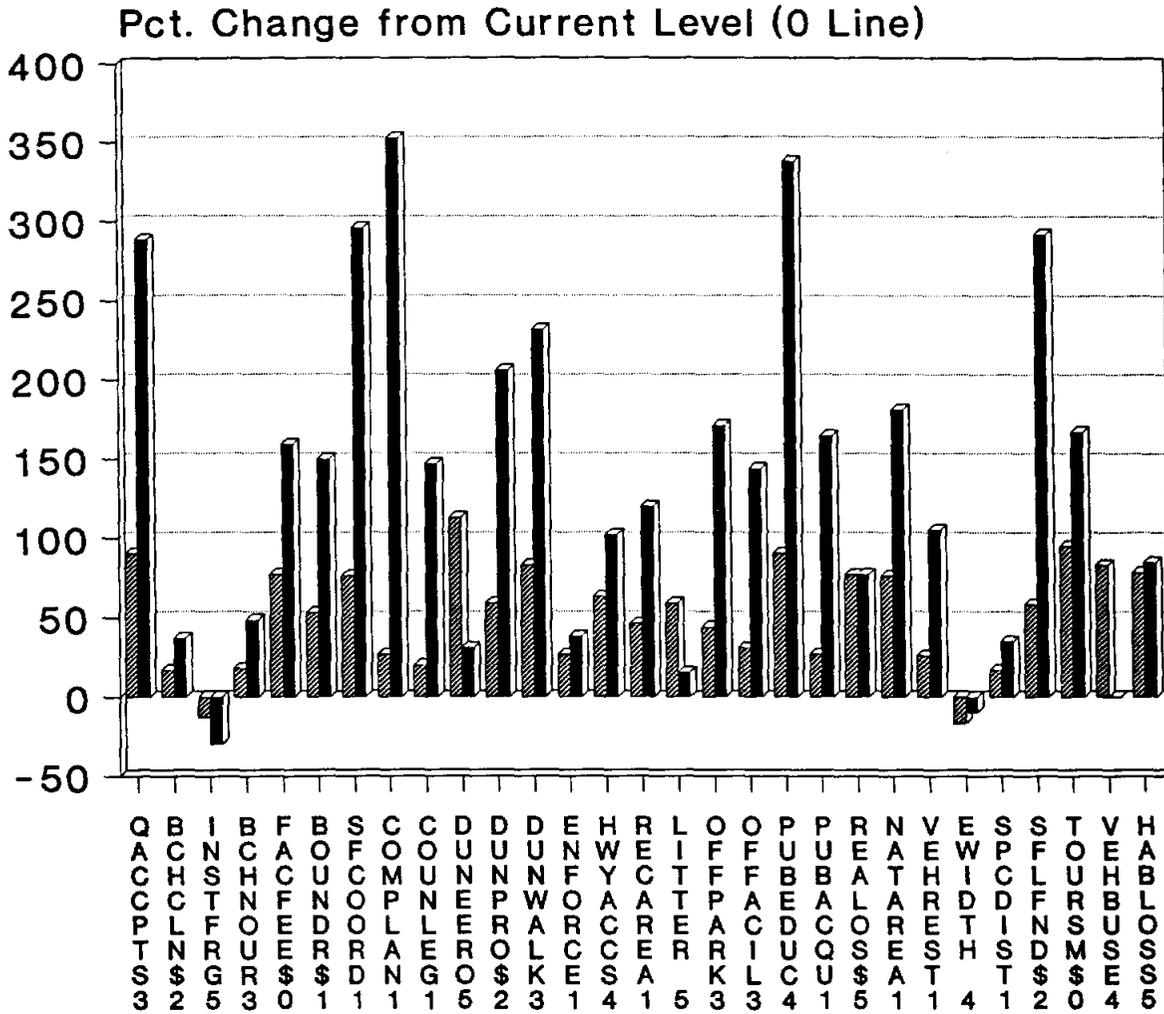
<u>Variable No.</u>	<u>Variable</u>	<u>Policy</u>	<u>%</u>	<u>Rate of Desired Change</u>
21	Dollars of Real Property Lost Per Year	Up *	77	Gradually
28	Vehicle Use of Beaches and Dunes	No Change		

* Policy is designed to control the substantial increase in losses that could occur if the primary policy is adopted. The recommended policy retains the trend expected under current policies.

Figure 6.

Beach Access

Percentage Change in Variables for Current and Recommended Policies



VARIABLE

CURRENT POLICY
 RECOMMENDED POLICY

NOTE: The percentage shown is the total change that may occur over 20 years.

The line graphs presented in Appendix B show the simulated trends in variables over the next twenty years for the current policy and the recommended policy. The graphs are arranged in pairs with the same seven variables in each graph. The top graph shows the expected change in variables over time if current policies continue into the future. The lower graph shows the change that might occur in the same variables if the recommended policy is adopted.

Satisfaction of Objectives

Table 8 shows the satisfaction levels achieved by each stakeholder group for the recommended policy (Policy 3). The first column shows the names of the groups. The second column shows the total level of satisfaction achieved by each group. A 100 for a group would mean that all of their objectives were met or exceeded by the policy.

The third column in Table 8 shows the highest level of dissatisfaction experienced by a stakeholder group for any variable. In this case, a 100 for a group would mean that they are completely dissatisfied. That is, the group's objective for the variable was not even partially met. The last three columns show the name of the variable that caused the dissatisfaction, how much it changed as a result of the policy, and how the group wanted the variable to change.

The overall or total satisfaction of objectives is moderately high for the recommended policy (Policy 3). The lowest level of satisfaction for a stakeholder group is 71 percent and the highest level is 91 percent (Table 8).

Levels of dissatisfaction for the recommended policy are relatively low. The highest remaining dissatisfaction is for the Cameron County group. The variable of concern to the group is restricted use recreation areas. This variable increased and the group specified No Change as their objective. Nevertheless, the group is still 77 percent satisfied with the recommended policy (Table 8).

Table 9 compares the current policy (Expected) and the recommended policy (Policy 3). The table is constructed in three columns and the index of success used in each column is scaled between zero and 100 percent. In columns one and two the larger the percent the better the policy. In column three the smaller the percent the better the policy.

The recommended policy is superior to the current policy for three measures of success. For example, the first column in Table 9 shows that the recommended policy maximizes the minimum level of satisfaction for all groups (i.e., ***it produces a lower level of dissatisfaction for all groups than the current policy***). The second column shows that the recommended policy maximizes total satisfaction for all groups (i.e., ***it provides more benefits to all groups than the current policy***). The third column shows that the recommended policy minimizes total dissatisfaction for any one group (i.e., ***it produces a lower level of dissatisfaction for any one group than the current policy***).

Table 8.

BEACH ACCESS

EXPERIMENT: POLICY3

Satisfaction of Group Objectives *

Group	Total Satisfaction (% of Max.)**	Highest Dissatisfaction (%)	Dissatisfaction Variables	Dif. From Initial Value (%)	Objective
Sierra	71.8	69.7	HWYACCS4	102.1	Down 100%
Audubon	81.0	50.5	ENFORCE1	38.2	Up Max. 179%
League	82.9	53.7	HWYACCS4	102.1	Not Up
LocalCom	96.4	30.2	REALOSS5 HABLOSS5	77.0 84.6	Down 25% Down 20%
Cameron	77.3	93.1	RECAREA1	120.1	No Change
Nueces	88.5	70.1	BCHCLN\$2	37.1	Up Max. 359%
Brazoria	91.5	51.6	BOUNDRS1	149.7	No Change
Galvestn	86.5	47.9	INSTFRG5 BCHNOUR3	- 30.0 48.3	Down 100% Up Max. 181%
BeachPrs	79.6	53.8	SPCDIST1	34.8	Up Max. 192%
Jeffersn	81.2	47.9	INSTFRG5 BCHNOUR3	- 30.0 48.3	Down 100% Up Max. 181%
Developm	81.0	47.9	INSTFRG5 BCHNOUR3	- 30.0 48.3	Down 100% Up Max. 181%
SenatorB	78.9	53.8	SPCDIST1	34.8	Up Max. 192%
FedlAgny	86.5	50.5	ENFORCE1	38.2	Up Max. 179%
StatAgny	81.2	47.9	INSTFRG5 BCHNOUR3	- 30.0 48.3	Down 100% Up Max. 181%

* Computed using normalized (% of Max.) units.

** Maximum excludes variables assigned 'Don't Care'.

Table 9.**BEACH ACCESS**

Satisfaction of Objectives by Policy Experiment

Experiment	Total Min. Sat. All Groups (% of Max.)	Total Weighted Sat. All Groups (% of Max.)	Highest Total Dissat. Any One Group (% of Max.)
EXPECTED	44.9	66.8	44.9
POLICY3	[61.9]*	[83.2]**	[28.2]***

* MAXIMIN Solution: Policy maximizes total minimum satisfaction
(i.e., policy is least hurtful to all groups).

** MAXIMAX Solution: Policy maximizes total weighted satisfaction
(i.e., policy provides the most benefits to all groups).

*** MINIMAX Solution: Policy minimizes total dissatisfaction for any one group
(i.e., policy is least hurtful to any one group).

Recommended Actions

The recommended policy is composed of seven variables. The participants specified how these variables should change over the next twenty years to resolve the beach access issue. Their recommendation was based on the assumption that the changes in variables were optimistic but realistic.

The participants worked in multi-stakeholder teams to formulate workable actions to bring about the desired changes in variables. Each team was given up to two target and/or mitigation variables to review. The team filled in a questionnaire for each variable that requested information on the specific actions needed to bring about the recommended change. They specified who should be responsible for taking the action. They also estimated the cost and source of funds.

The proposed actions from the teams were displayed for discussion and revision by all participants. As a result, *the recommended actions represent a consensus of the participants*. These actions are listed below.

Increase Interagency Coordination

ACTION: Create 18 local action committees -- one per county (coastal); membership should include representatives from federal, state, county, and municipal governments, and interest groups.

RESPONSIBLE PARTY: Texas General Land Office as the lead agency for coordination, but working in cooperation with other responsible agencies; Attorney General's Office is responsible for legal review.

ESTIMATED COST: Year 1-5: \$1 million; Year 6-10: \$1 million; Year 11-15: \$1 million; Year 16-20: \$1 million.

SOURCE OF FUNDS: State and federal appropriations; private sources; local government.

***Increase
Comprehensive Planning***

ACTION: Initiate legislative directive to mandate comprehensive beach access planning at the local level with state oversight; systematize a public input mechanism.

RESPONSIBLE PARTY: Texas General Land Office should act as the lead agency overseeing state agencies and local government agencies; legal oversight in the Attorney General's Office.

ESTIMATED COST: Year 1-5: \$10 million; Year 6-10: \$2 million; Year 11-15: \$10 million; Year 16-20: \$2 million. (Cyclic planning process.)

SOURCE OF FUNDS: State appropriation with private financial support; federal coastal management plan dollars.

***Increase County
Regulatory Authority***

ACTION: Authorize counties to plan, implement, and enforce comprehensive beach management in conjunction with state level efforts.

RESPONSIBLE PARTY: Legislative action.

ESTIMATED COST: No expense.

SOURCE OF FUNDS: No expense.

***Increase
Public Education***

ACTION: Access signage should have a uniform design statewide, with a logo; include natural science education applying to the coast in public school curriculum; encourage use of educational kiosks at appropriate access points; Public service announcements regarding coastal management (e.g., dune protection).

RESPONSIBLE PARTY: Texas A&M Sea Grant Program; TEA and local service centers; State Highway Department; PBS; private broadcasting.

ESTIMATED COST: Year 1-5: \$2.5 million; Year 6-10: \$2.5million; Year 11-15: \$1 million; Year 16-20: \$1 million.

SOURCE OF FUNDS: All feasible sources.

Increase Appropriations for Beach Access

ACTION: Increased appropriations; user fees; explore options such as a hotel bed tax and special taxing districts.

RESPONSIBLE PARTY: U.S. Congress; state legislature; local government; private sources.

ESTIMATED COST: Year 1-5: \$30 million; Year 6-10: \$20 million; Year 11-15: \$10 million; Year 16-20: \$10 million.

SOURCE OF FUNDS: State appropriations; local funds; user fees; matching federal grants; partnerships with private entities.

Control Real Property Losses

ACTION: Implement a comprehensive program to reduce the erosion of the Gulf shoreline to preserve beaches.

RESPONSIBLE PARTY: State, federal, and local governments.

ESTIMATED COST: Year 1-5: \$150 million; Year 6-10: \$150 million; Year 11-15: \$1 million; Year 16-20: \$1 million.

SOURCE OF FUNDS: State, Federal, and Local governments; local users and private property owners.

Control Vehicles on Beaches and Dunes

ACTION: Increase the number of off beach parking facilities and access points; increase county authority for beach access through enabling legislation; public education campaign; comprehensive state plan.

RESPONSIBLE PARTY: State and local governments; legislature.

ESTIMATED COST: Year 1-5: \$25 million; Year 6-10: \$25 million; Year 11-15: \$25 million; Year 16-20: \$25 million.

SOURCE OF FUNDS: State land acquisition bonds; State Department of Highways and Public Transportation for parking facilities; user fees; private donations; federal matching funds.

Research Priorities

The cross-impact matrix was used to identify which interactions between variables are important to study. The participants were asked to rate up to 10 percent of the interactions in the matrix as unimportant and up to 10 percent as extremely important. The remaining 80 percent of the interactions were automatically rated as moderately important.

An unimportant rating means that research funds would be wasted on the interaction because it is either well understood or it has little affect on the issue. An extremely important rating means that research funds should be directed toward the interaction because it is not well understood, and it has a strong affect on the issue.

The ratings from the participants were processed with a statistical procedure that produces an importance index that varies between 0 and 100. The higher the index the more research effort should be focused on the interaction. An index of 100 would mean that all of the participants identified the interaction as extremely important. Thus research funding should start with interactions that have the highest importance index and work downward toward those with the lowest importance index.

The recommended priorities for future research on the wetlands issue are presented in Table 10. ***The highest research priority is the affect of increasing county authority to regulate access on the provision of new quality access points. The affect of off beach parking on the quality of access points tied as the top research priority.***

The second research priority is the affect of quality access points on annual tourism revenue. Research on four other interactions between variables tied for second priority. Research on eight interactions between variables tied for third priority.

Table 10.

**RECOMMENDED RESEARCH
FUNDING PRIORITIES**

Issue: BEACH ACCESS

Rank	Importance Index		<u>Interaction</u>
1	50%	AFFECT OF ON	Counties with Authority to Regulate Access Planned Quality Access Points
		AFFECT OF ON	the Density of Off Beach Parking Planned Quality Access Points
2	44%	AFFECT OF ON	Planned Quality Access Points Annual Tourism Revenue
		AFFECT OF ON	the Annual Beach Cleaning Fund the Wildlife Habitat Loss Rate
		AFFECT OF ON	Counties with Authority to Regulate Access the Dune Erosion Rate
		AFFECT OF ON	Public Education on Issue Federal/State/Local Appropriations for Beach Access
		AFFECT OF ON	the Acquisition of Public Land Planned Quality Access Points
		AFFECT OF ON	the Coast Covered by Comprehensive Plans Planned Quality Access Points
3	38%	AFFECT OF ON	Counties with Authority to Regulate Access the Density of Off Beach Parking
		AFFECT OF ON	Counties with Authority to Regulate Access Off Beach Public Facilities
		AFFECT OF ON	Counties with Authority to Regulate Access Vehicle Use of Beaches/Dunes
		AFFECT OF ON	Counties with Authority to Regulate Access the Wildlife Habitat Loss Rate
		AFFECT OF ON	Public Education on Issue Planned Quality Access Points
		AFFECT OF ON	Public Education on Issue Federal/State/Local Appropriations for Beach Access
		AFFECT OF ON	Annual Tourism Revenue the Wildlife Habitat Loss Rate

APPENDIX A
Stakeholder Objectives

BEACH ACCESS

Objective Specified for Each Variable by Each Group

No.	Variable	GROUP				
		Sierra	Audubon	League	LocalCom	Cameron
1	QACPTS3	Up Max.	Up Max.	Up 25%	Up 20%	Up 50%
2	BCHCLN\$2	Not Down	Up 10%	Up 50%	Up 35%	Up Max.
3	INSTFRG5	Not Down	Down Max.	Down Max.	Down 30%	Down Max.
4	BCHNOUR3	Down Max.	Up Max.	Up 25%	Up 25%	Up 50%
5	FACFEE\$0	Not Up	Not Down	Up Max.	Up 20%	Up 50%
6	BOUNDR\$1	Up Max.	Not Down	Up Max.	Up 25%	Up 25%
7	SFCOORD1	Up Max.	Up Max.	Up 100%	Up 25%	Up Max.
8	COMPLAN1	Up Max.	Up Max.	Up Max.	Up 25%	Up Max.
9	COUNLEG1	Up Max.	Up 10%	Up Max.	Up 20%	Up 25%
10	DUNEER05	Down Max.	Down Max.	Down Max.	Down 20%	Down Max.
11	DUNPRO\$2	Up Max.	Up Max.	Up 25%	Up 25%	Up 50%
12	DUNWALK3	Up Max.	Up 83%	Up 25%	Up 40%	Up 50%
13	ENFORCE1	Up Max.	Up Max.	Up Max.	Up 25%	No Change
14	HWYACCS4	Down Max.	Up 50%	Not Up	Up 20%	No Change
15	RECAREA1	Up Max.	Up 100%	Up 25%	Up 20%	No Change
16	LITTER 5	Down Max.	Down Max.	Down Max.	Down 35%	Down Max.
17	OFFPARK3	Up Max.	Up Max.	Up 25%	Up 35%	Up Max.
18	OFFACIL3	Not Up	Up Max.	Up 25%	Up 35%	Up Max.
19	PUBEDUC4	Up Max.	Up Max.	Up Max.	Up 40%	Up Max.
20	PUBACQU1	Up Max.	Up Max.	Up Max.	Up 25%	No Change
21	REALOS\$5	Down Max.	Down Max.	Down Max.	Down 25%	Not Up
22	NATAREA1	Up Max.	Up Max.	Up Max.	Up 20%	Not Down
23	VEHREST1	Not Up	Up Max.	Up Max.	Up 5%	Up Max.
24	EWIDTH 4	Up Max.	Not Up	Not Down	Down 10%	No Change
25	SPCDIST1	Down Max.	Don't Care	Up 50%	Up 5%	No Change
26	SFLFND\$2	Up Max.	Up Max.	Up 25%	Up 20%	Up Max.
27	TOURSM\$0	Not Up	Up Max.	Up 25%	Up 20%	Up 50%
28	VEHBUSE4	Not Up	Down Max.	Down Max.	Down 20%	Down 75%
29	HABLOSS5	Down Max.	Down Max.	Down Max.	Down 20%	Down Max.

BEACH ACCESS

Objective Specified for Each Variable by Each Group

No.	Variable	GROUP				
		Nueces	Brazoria	Galvestn	BeachPrs	Jeffersn
1	QACCP3	Not Down	Up 50%	Up 25%	Up Max.	Not Down
2	BCHCLN\$2	Up Max.	Up 50%	Up 50%	Up 100%	Up 100%
3	INSTFRG5	Down 20%	Down 25%	Down Max.	Down 50%	Down Max.
4	BCHNOUR3	Up 30%	Up 25%	Up Max.	Up Max.	Up Max.
5	FACFEE\$0	Up Max.	Not Down	Up Max.	Up 50%	Not Down
6	BOUNDR\$1	Up Max.	No Change	Up 25%	Up Max.	Up Max.
7	SFCOORD1	Not Down	Not Down	Up Max.	Up Max.	Up Max.
8	COMPLAN1	Up Max.	Up Max.	Up Max.	Up Max.	Not Down
9	COUNLEG1	Up Max.	Up Max.	Up Max.	Up Max.	Up Max.
10	DUNEER05	Not Up	Not Up	Not Up	Not Up	Down Max.
11	DUNPRO\$2	Up Max.	Not Down	Up 50%	Up Max.	Up Max.
12	DUNWALK3	Up 20%	Up Max.	Up 50%	Up Max.	Up Max.
13	ENFORCE1	Up Max.	Up Max.	Not Down	No Change	Don't Care
14	HWYACCS4	Not Down	Not Down	Not Down	Up 20%	Up Max.
15	RECCARE1	Up 20%	Up 25%	Up 10%	Don't Care	Not Down
16	LITTER 5	Not Up	Down Max.	Not Up	Down Max.	Down Max.
17	OFFPARK3	Up 30%	Up 25%	Up Max.	Up Max.	Up Max.
18	OFFACIL3	Up 20%	Up 25%	Up Max.	Up Max.	Up Max.
19	PUBEDUC4	Up Max.	Up Max.	Up Max.	Up Max.	Up Max.
20	PUBACQU1	Up 20%	Up 25%	Up 25%	Up Max.	Don't Care
21	REALOS\$5	Down 30%	No Change	Not Up	Not Up	Not Up
22	NATAREA1	Up 20%	Up Max.	Not Down	Not Down	Not Down
23	VEHREST1	Up 20%	Not Down	Up Max.	Up Max.	Not Down
24	EWIDTH 4	Down 15%	No Change	Not Down	Not Down	Up Max.
25	SPCDIST1	Up 20%	Up 25%	Up 50%	Up Max.	Don't Care
26	SFLFND\$2	Up Max.	Up 25%	Up Max.	Up Max.	Up Max.
27	TOURSM\$0	Up Max.	Up 50%	Up Max.	Up Max.	Up Max.
28	VEHBUSE4	Up 20%	Not Up	Down Max.	Down Max.	Not Up
29	HABLOSS5	Not Up	Down 25%	Down 50%	Not Up	Down Max.

BEACH ACCESS

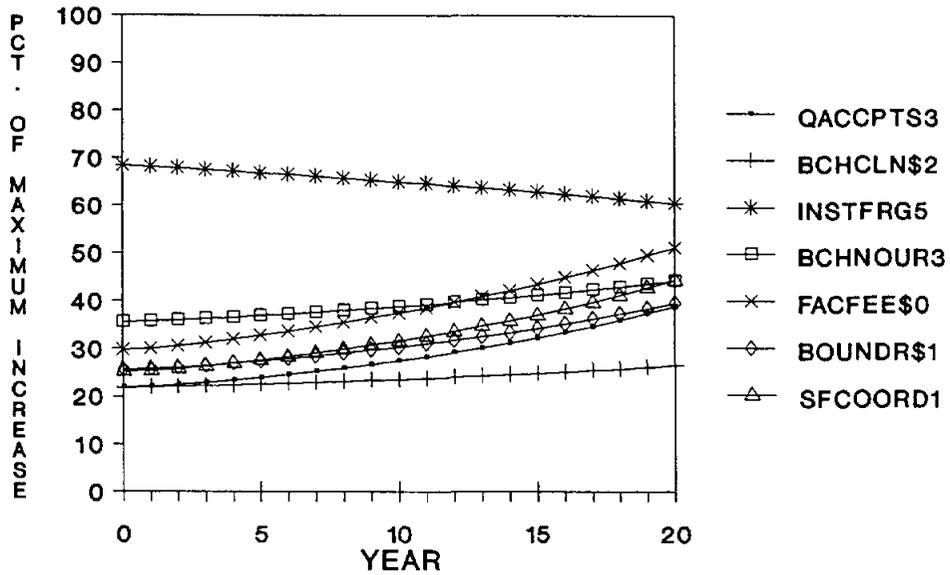
Objective Specified for Each Variable by Each Group

No.	Variable	GROUP			
		Developm	SenatorB	FedAgny	StatAgny
1	QACPTS3	Up 50%	Up Max.	Up 50%	Up Max.
2	BCHCLN\$2	Up 100%	Up 50%	Up 50%	Up 100%
3	INSTFRG5	Down Max.	Not Up	Down Max.	Down Max.
4	BCHNOUR3	Up Max.	Up Max.	Up Max.	Up Max.
5	FACFEE\$0	Not Down	Not Down	Not Down	Up 75%
6	BOUNDR\$1	Up Max.	Don't Care	Not Down	Up Max.
7	SFCOORD1	Up Max.	Up Max.	Up Max.	Up Max.
8	COMPLAN1	Up Max.	Up Max.	Up Max.	Up Max.
9	COUNLEG1	Up 100%	Up Max.	Up Max.	Up Max.
10	DUNEER05	Down Max.	Down Max.	Down 40%	Down Max.
11	DUNPRO\$2	Up Max.	Up Max.	Up 25%	Up 100%
12	DUNWALK3	Don't Care	Up Max.	Up Max.	Up Max.
13	ENFORCE1	Down 50%	Up Max.	Up Max.	Not Down
14	HWYACCS4	Don't Care	Up Max.	Don't Care	Up 20%
15	REAREA1	Up 25%	Up Max.	Not Down	Don't Care
16	LITTER 5	Down Max.	Down Max.	Down Max.	Down Max.
17	OFFPARK3	Not Down	Up Max.	Up 20%	Up Max.
18	OFFACIL3	Not Down	Up Max.	Not Down	Up Max.
19	PUBEDUC4	Up Max.	Up Max.	Up 100%	Up Max.
20	PUBACQU1	Up 25%	Not Down	Not Down	Up Max.
21	REALOS\$5	Down Max.	Down Max.	Down 40%	Down Max.
22	NATAREA1	Up 20%	Not Down	Up 50%	Up 50%
23	VEHREST1	Up Max.	Up Max.	Up Max.	Up 50%
24	EWIDTH 4	Not Up	Not Down	Not Down	Up Max.
25	SPCDIST1	Up 100%	Up Max.	Not Up	Not Up
26	SFLFND\$2	Not Down	Up Max.	Up Max.	Up Max.
27	TOURSM\$0	Up Max.	Up Max.	Not Down	Up 200%
28	VEHBUSE4	Down Max.	Down Max.	Not Up	Down 75%
29	HABLOSS5	Down Max.	Down Max.	Down Max.	Down Max.

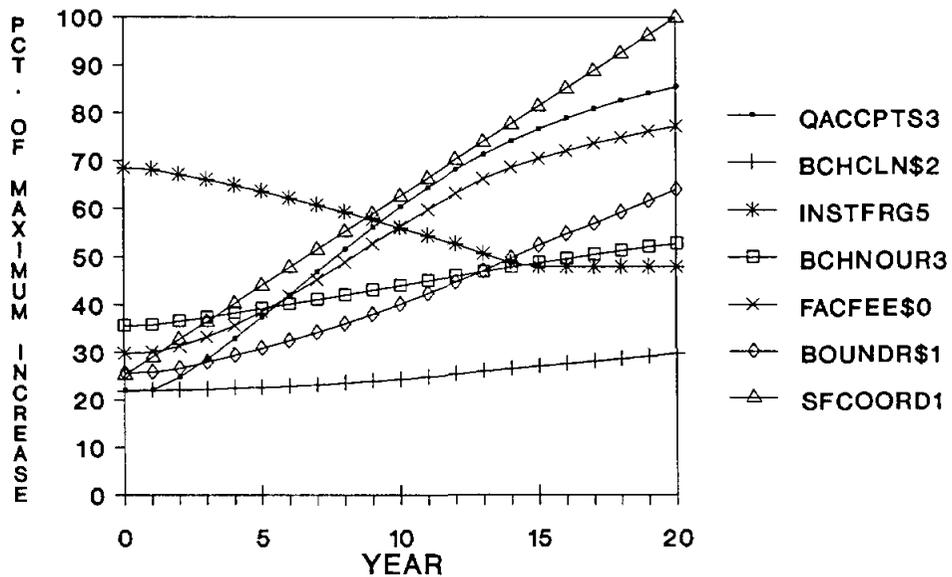
APPENDIX B
Simulated Trends

Beach Access

Simulated Trends for Current Policy

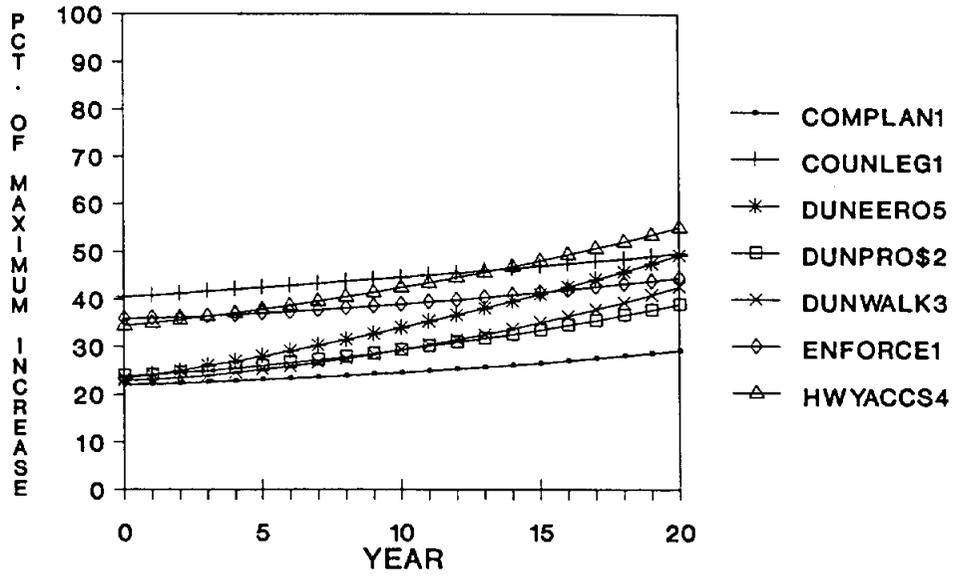


Simulated Trends for Recommended Policy

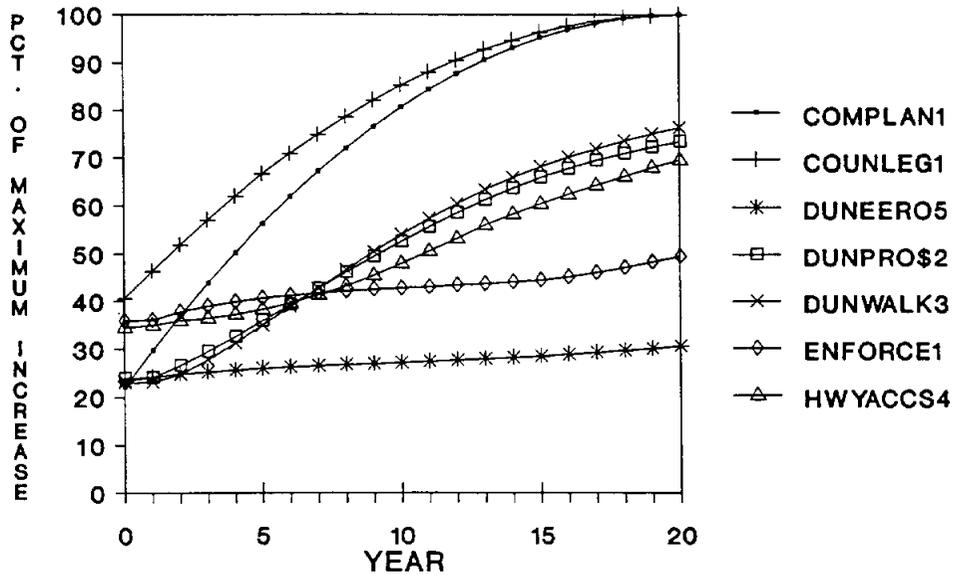


Beach Access

Simulated Trends for Current Policy

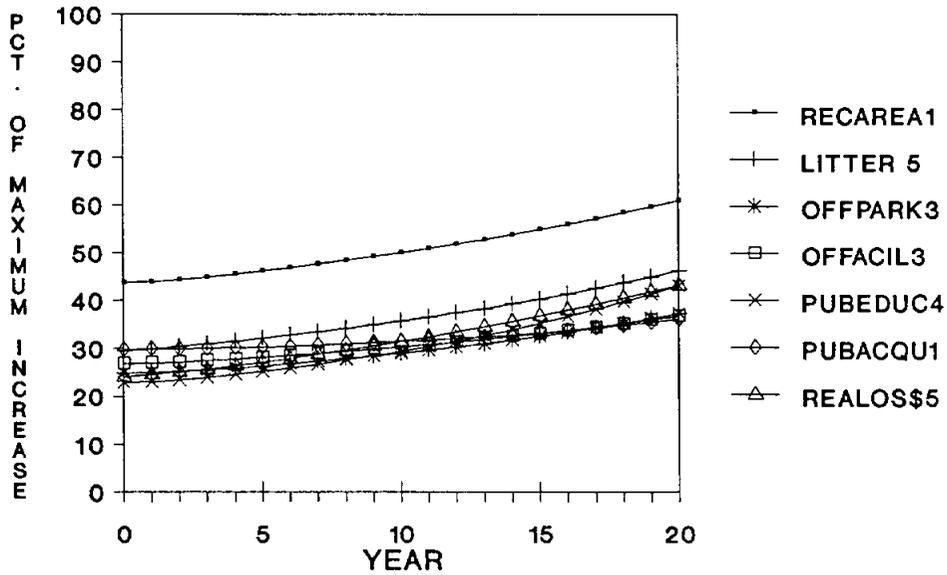


Simulated Trends for Recommended Policy

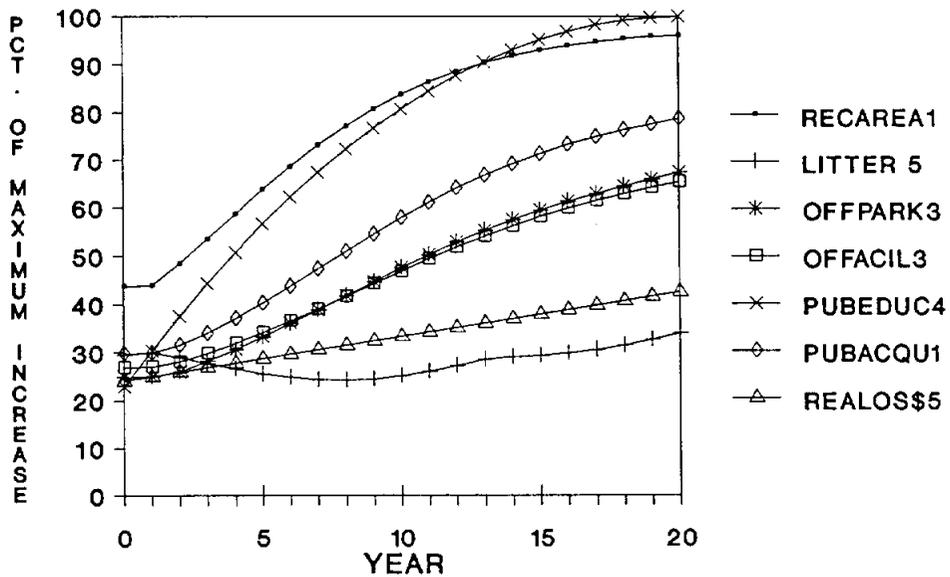


Beach Access

Simulated Trends for Current Policy

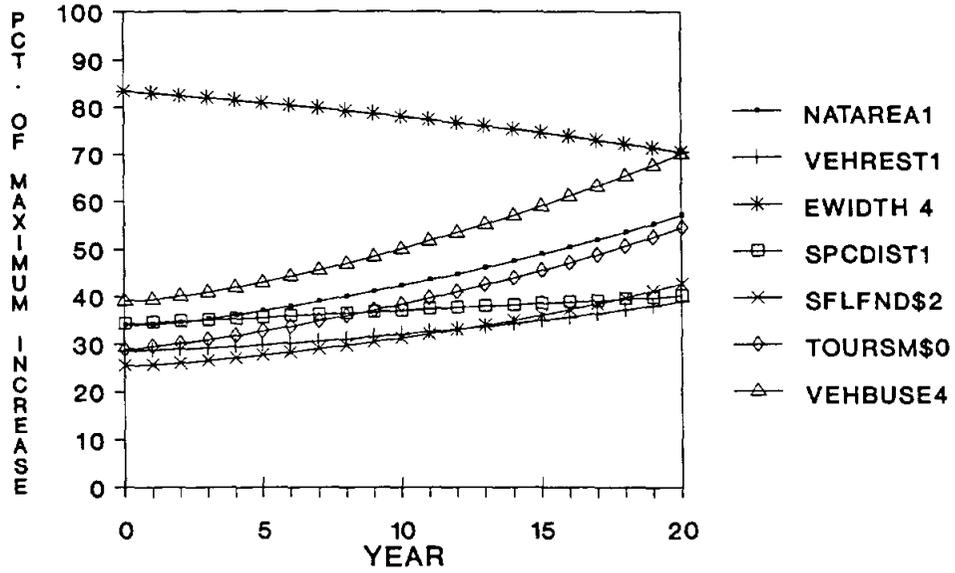


Simulated Trends for Recommended Policy

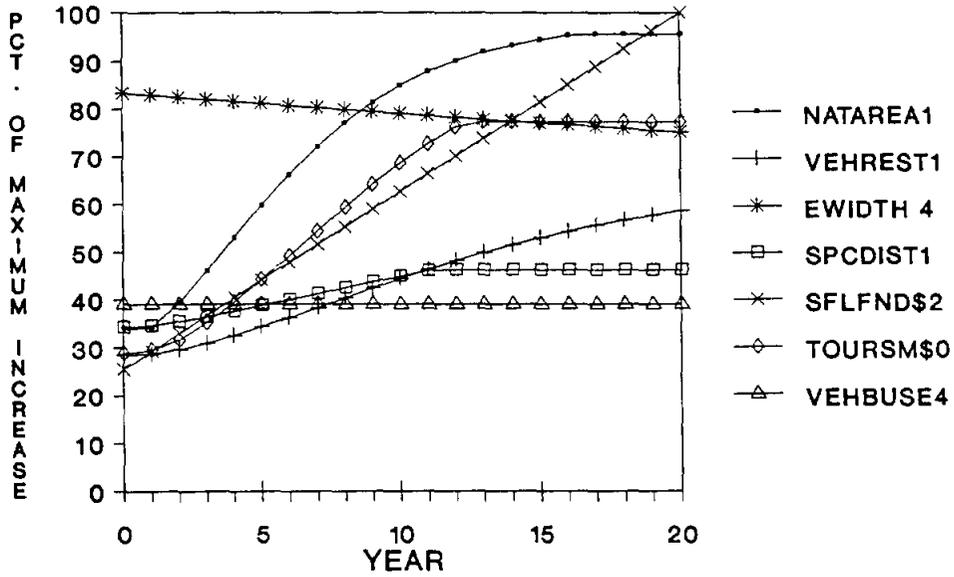


Beach Access

Simulated Trends for Current Policy

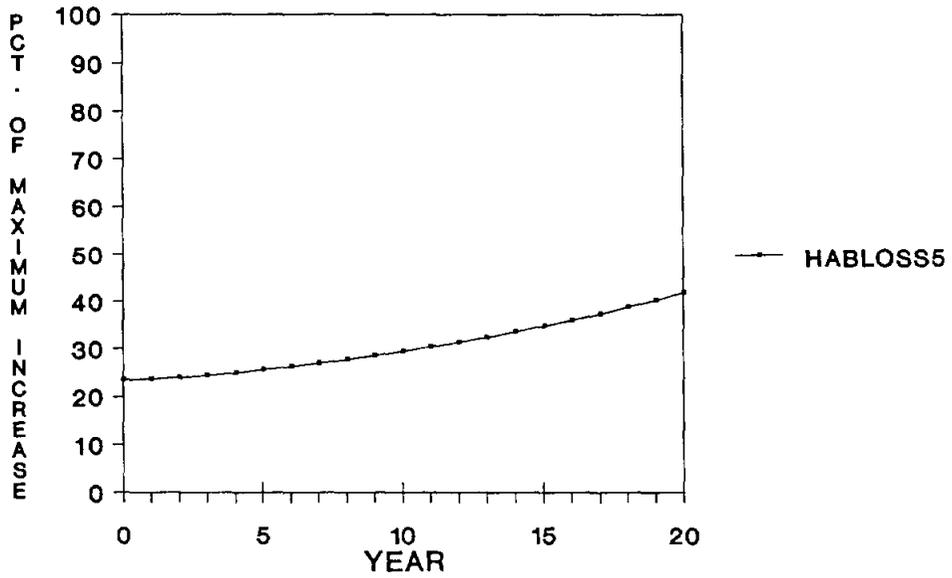


Simulated Trends for Recommended Policy

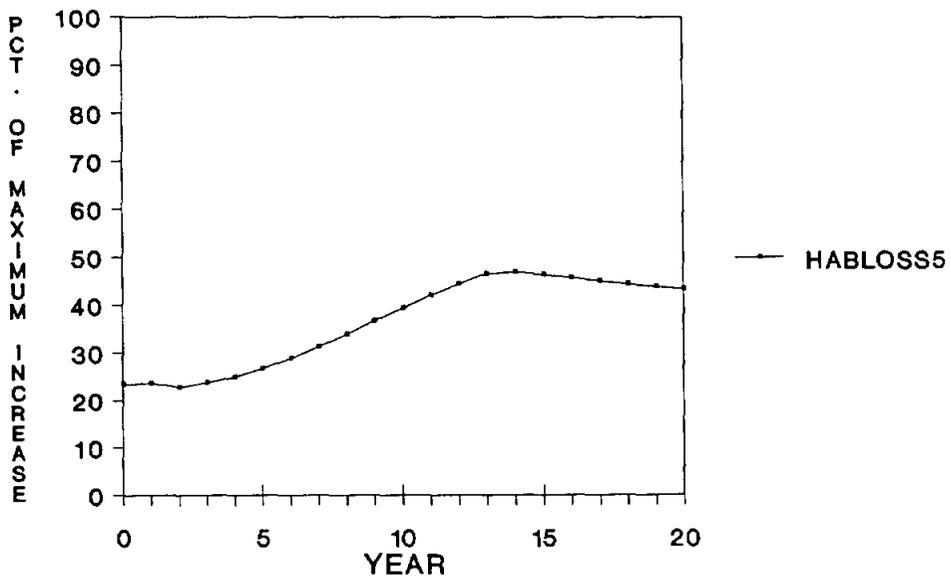


Beach Access

Simulated Trends for Current Policy



Simulated Trends for Recommended Policy



APPENDIX C
Region I Foundation Workshop

REGION I
PARTICIPANT LIST

John Arrington, *Galveston resident*
Peter Bowman, *University of Houston - Clear Lake*
Patsy Clapper, *Representative Mark Stiles*
Marty Conway, *Senator Carl Parker*
Dale Durr, *Chevron Chemical Co.*
John Eberling, *Gulf Coast Rod, Reel & Gun Club*
Russell E. Eitel, *Galveston Beach Environmental Committee*
Frank Frankovich, *Dannenbaum Engineering*
Richard Gorini, *Port of Houston*
Pat Halliseey, *Galveston County Parks Board*
Wilson Hillman, *Standley (commercial fishing)*
Neal Hunt, *Senator Chet Brooks*
James D. McNicholas, *Jefferson County Drainage District Committee*
Karen O'Neal, *Houston/Galveston Subsidence District*
A.R. "Babe" Schwartz, *lobbyist/attorney*
Eddie Seidensticker, *U.S. Soil Conservation Service*
Linda Shead, *Galveston Bay Foundation*
Gwen Smith, *Texas League of Women Voters*
Sam O. Smith, *Jefferson County Drainage District Committee*
Sharron Stewart, *Texas Environmental Coalition*
Robert Stroder, *Jefferson Co. Engineer*
Mary Ellen Summerlin, *Mayor, Port Arthur*
Steve Valerius, *Hollywood Marine, Inc.*
John Watson, *Mitchell Energy and Development*
Kerry Whelan, *Houston Power and Light*

**REGION I
RANKED VARIABLE LIST**

Issue: BEACH ACCESS

RANK	VARIABLE	DEFINITION
1	Public Education	Time/Yr
2	Gulf Shoreline Erosion	Area Lost/Yr
3	State Funding of Access Acq	\$/Yr
4	Consist of Regs for Beach Access	Level
5	Dune Erosion	Ft Lost/Yr
6	Highway Losses	Miles Lost/Yr
7	Setback Lines	Ft
8	Planning	# Plans/Yr
9	State Interagency Coordination	MOUs/Yr
10	Property Loss	\$/Yr
11	Pop Density on Coastline	#/Sq Mile
12	Beach Capacity Standards	Index Level
13	Beach User Litter	Tons Deposited/Yr
14	Boundary Disputes	#/Yr
15	Vehicular Beach Access	# Vehicles/Yr
16	Dune Vegetation	Area Covered
17	Regulations	Miles Affected/Yr
18	Off Beach Public Facilities	#/Yr
19	Public Ownership	Acres Acquired/Yr
20	Location of Facilities	Distance from Beach
21	Vehicular Dune Access	# Vehicles/Yr
22	Tourism	\$ Generated/Yr
23	Dune Walkovers	#/Mile
24	Rightaway Acr Priv Lands	#/Yr
25	Beach Nourishment	Cubic Yds/Yr
26	Dune Protection	\$ Allocated/Yr
27	Beach User Fees	\$/Yr
28	Dune Access	# People/Yr
29	Population Density	#/Sq Mile
30	Compliance	Notices of Violations/Yr

Problem Variable	Problem Explanation	Proposed Action
<p># 1 Public Education (Time)</p>	<ul style="list-style-type: none"> - Public does not understand the potential negative impact beach users have on erosion and the environment - Public does not know about their rights and the rights of private property owners to prevent conflict 	<ul style="list-style-type: none"> - Distribute brochures addressing proper use of state-owned land by the public and restrictions, including private property owner rights - Dune manual - Map boundaries - Remove ambiguous laws - Require all Texas coastline to protect dunes - State agency implementation of an education program
<p># 2 Gulf Shoreline Erosion (Area Lost/Yr)</p>	<ul style="list-style-type: none"> - Continued shoreline erosion even at the current rate reduces public access - Increase conflicts with private property owners - Reduces wildlife habitat - Reduces public funds through taxes - Loss of transportation facilities - Loss of tourism dollars 	<ul style="list-style-type: none"> - Require mitigation of all structures that impede sediment sources for beach replenishment - Utilize dredge spoil material for replenishment - Protect and maintain dune vegetation - Prohibit construction within dune region - Public education - Planning - Setbacks - Coastal Zone Management - Off beach facilities - Beach nourishment - Dune access - Dune walkovers - Establish guidelines for implementation of plan - Provide funding
<p># 3 State Funding for Access Acquisition (\$)</p>	<ul style="list-style-type: none"> - Key factor in the "Open Beaches Act" - Local city governments can not afford to buy the land required to provide this key ingredient - Lack of funds for public access 	<ul style="list-style-type: none"> - A portion of Texas Parks and Wildlife budget should be designated to create beach accesses in proportion to the size of the population that will use them - Provisions should be made in general beach management plan to finance and locate adequate access corridors including streets, walkways, and parking lots - Possibly finance with user fees
<p># 14 Vehicular Beach Access (# Veh/Yr)</p>	<ul style="list-style-type: none"> - No truly good beach allows vehicle traffic - Dangerous to people and wildlife 	<ul style="list-style-type: none"> - Public parking set-back from the beaches - Close beach to vehicles - An alternative would be to strictly enforce low speed limits

1 Problem for Region I

Issue: BEACH ACCESS

Problem Variable	Problem Explanation	Proposed Action
# 4 Consistency in Beach Regulations (Level)	<ul style="list-style-type: none"> - Lack of regulations - Lack of understandable rules that are enforced - We are getting nothing accomplished 	<ul style="list-style-type: none"> - Enforcement of rules made in the future or rules that are in place now
# 9 State Interagency Coordination (MOUs/Yr)	<ul style="list-style-type: none"> - Lack of coordination at the policy level among agencies with competing or overlapping jurisdiction 	<ul style="list-style-type: none"> - Creation of an inter-agency policy board to deal with coastal issues
# 13 Beach User Litter (Tons Deposited/Yr)	<ul style="list-style-type: none"> - Litter costs money that should be used for other reasons - Broken glass and other items present a danger to beach users including wildlife 	<ul style="list-style-type: none"> - Strict enforcement of anti-litter laws and through education of the beach users - Use of prisoners to clean beaches and other conservation causes
# 17 Off-Beach Public Facilities (#)	<ul style="list-style-type: none"> - Insufficient increase in the availability of quality off beach parking and amenities necessary to promote tourism 	<ul style="list-style-type: none"> - Increased funding by private and public sector contributions
# 25 Dune Protection (\$ Allowed/Yr)	<ul style="list-style-type: none"> - Lack of money set aside to protect the dune line when the beach is opened to the public 	<ul style="list-style-type: none"> - Local-state-federal agencies need to find the funding mechanism to protect the dunes
# 28 Population Density (#/Sq. Mile)	<ul style="list-style-type: none"> - Increased number of people wanting to use the same amount of beach - As population increases so will the demand for access, this increases erosion of the dunes and shoreline 	<ul style="list-style-type: none"> - Support new legislation on recommending new moneys to birth control and fertility research - Increase education in existing methods - Support family planning - Tie population concerns to all environmental legislation

APPENDIX D
Region II Foundation Workshop

REGION II
PARTICIPANT LIST

Anthony Amos, *University of Texas Marine Science Institute*
J.C. Barr, *Port Aransas City Government*
Hugo Berлага, *Texas House of Representatives*
Paul Carangelo, *Port of Corpus Christi*
George Deshotels, *Matagorda County, Precinct 2*
Carl Duncan, *Commissioner, Precinct 2*
Sharon Weaver, *Representative Robert Early*
Alex Hernandez, *Calhoun County Judge*
Henry Hildebrand, *Environmental and fisheries*
William H. Holmes, Jr., *Boating Trades Association of Texas*
Todd Hunter, *Texas House of Representatives*
Ray Allen, *Central Power and Light*
Robert Jones, *University of Texas Marine Science Institute*
Ted Jones, *Environmental*
Kenneth Lester, *Mayor, Port Lavaca*
J.P. Luby, *Nueces County Commissioner*
David McKee, *Corpus Christi State University*
Joe Moseley, *Shiner, Moseley and Associates, Inc.*
Bob Mullen, *Builder*
Erma Patton, *Patton Sea Foods*
George Fred Rhodes, *Port Lavaca resident*
Harrison Stafford, II, *County government*
Charles Stone, *County government*
Mary Thorpe, *Del Mar College*
Vic Hines, *Senator Carlos Truan*
Ro Wauer, *National Audubon Society*
Willie Younger, *Texas A&M Marine Advisory Service*

**REGION II
RANKED VARIABLE LIST**

Issue: BEACH ACCESS

RANK	VARIABLE	DEFINITION
1	Beach Cleaning	\$ for Cleaning
2	Access to Barrier Island	# Ferries
3	Beach Restricted from Vehicular Traffic	Miles
4	Tourism	\$ Generated
5	Beach Access Roads	# through Dunes/Mile
6	Boat Dock and Ramps	#
7	Legal Definition of Beach	Lack
8	Carrying Capacity	Density
9	Beach Vehicular Access	Miles Available for Vehicles
10	Vehicular Impact on Wildlife	# Species
11	Sand Beach Width	Ft From Water/Yr
12	Structures that Shift from Private to Public	#/Yr
13	State Funding for Beach Access	\$/Yr
14	Marine Inlet Access	# of Inlets/Mile
15	Causeway Tolls	\$
16	Biodiversity	Index
17	Sanitation Facilities	#/Mile
18	Parking	#/Mile
19	Access to Barrier Island	# Causeways
20	Litter	Tons/Yr
21	Off Beach Parking	# Spaces/Mile
22	Vehicular Impact on Vegetation	# Species
23	Public Safety	# Incidents/Yr
24	Vehicle Density	#/Mile
25	Pedest Access Ways to Protect Dunes	#/Mile
26	Marine Debris	Tons
27	Off Beach Parking	\$
28	Hazardous Waste on Beach	Tons/Yr
29	Highway Congestion	Hours in Transit
30	Large Oil Spills	Barrels/Yr

Problem Variable	Problem Explanation	Proposed Action
<p># 1 Beach Cleaning (\$ Spent)</p>	<ul style="list-style-type: none"> - Debris is main tourist complaint and main aesthetic problem - Lack of local funds to clean beaches - As demand for access increases, cleaning and maintenance of the beaches will increase 	<ul style="list-style-type: none"> - Increase beach cleaning fund - Keep Adopt-a-Beach program - Ban non-return containers sale within second and first tier counties - State legislature to appropriate more monies for beach cleaning - Make ordinances giving power to coastal counties - Establish paid access system on causeway (tolls)
<p># 3 Beach Restricted from Vehicular Traffic (Traffic/Mile)</p>	<ul style="list-style-type: none"> - Too many cars on the beach 	<ul style="list-style-type: none"> - Change the Open Beaches Act to reduce vehicular traffic or eliminate it on the beach - Increase the number of miles where vehicles are restricted
<p># 4 Tourism (\$ Generated/Yr)</p>	<ul style="list-style-type: none"> - Tourism is a natural development of a healthy beach property and available access - GLO purpose is to manage state land for best of state - Maximum tourist impact means more money but also more damage. 	<ul style="list-style-type: none"> - Proper control of beach litter - Sufficient docks and ramps for marine inlet access - Develop different beach areas for different purpose - birdwatching, fishing, sunbathing, etc. - Restrict vehicle access - Increase controlled walkways - Increase public transportation - Increase off beach parking
<p># 7 Legal Definition of Beach (Lack)</p>	<ul style="list-style-type: none"> - As development encroaches upon the sandy beach, or hurricanes and tides wash it away the space that remains becomes likely to sprout "Private" signs and intimidates the public - Lack of a clear separation of public and private lands 	<ul style="list-style-type: none"> - Clear statutes concerning who has the right to use the beach - Make "set-back from water line" for construction a state, not a county, law - Impose the 100 year set-back lines

Problem Variable	Problem Explanation	Proposed Action
<p># 8 Carrying Capacity (Density)</p>	<ul style="list-style-type: none"> - Need prudent management of barrier islands/bay shoreline - Carrying capacity regarding to minimum impact on biological and sociological entities - and continue to use or limit all use to key areas so that the resources get first consideration 	<ul style="list-style-type: none"> - Use existing data and applied programs of several coastal counties toward the development of a master recreation plan at site specific (regions) along the coast - Inventory of logical amounts of beach - Access biological resources at each unit - Establish beach use to minimize impacts on most units
<p># 2 Access to Barrier Islands (# Ferries)</p>	<ul style="list-style-type: none"> - Matagorda Island is not accessible to the general public without a boat 	<ul style="list-style-type: none"> - Provide a scheduled ferry system in connection with a public transportation system on the island
<p># 12 Structures Private to Public (#/Yr)</p>	<ul style="list-style-type: none"> - It will be virtually impossible to get investment and all that goes with it if there is no security for those engaged in economic activity 	<ul style="list-style-type: none"> - Protection should be granted to private entities that make substantial investments on land which moves from the private sector to the public domain
<p># 13 State Funding for Beach Access (\$)</p>	<ul style="list-style-type: none"> - Public access is guaranteed by law - Current, unstructured strategy of getting the public on the beach is both costly to state, county and local governments and is often dangerous to the public 	<ul style="list-style-type: none"> - Legislature should enable local governments to charge a beach user fee - Use funds to clean up beach and roads, and to create off beach parking - Create a formal mechanism to educate the public on the "real" costs of their use of the beaches, bays, etc.
<p># 14 Marine Inlet Access (# of Inlets/Mi)</p>	<ul style="list-style-type: none"> - Because of the natural inflow of water changed when the federal government dredged deep water ports, many shallower channels and natural passes have silted in 	<ul style="list-style-type: none"> - Re-open the many natural passes and channels that have silted in - Deposit sand on the beaches
<p># 28 Hazardous Waste on Beach (Tons/Yr)</p>	<ul style="list-style-type: none"> - Beach and water on beach could not be used if hazardous waste exists 	<ul style="list-style-type: none"> - Enact laws to prohibit hazardous waste from being dumped on beaches - Hold responsible party to pay all costs of clean up and other damages

APPENDIX E
Region III Foundation Workshop

REGION III
PARTICIPANT LIST

Gary Becher, *City Manager's Office, SPI*
Sid Beckman, *Brownsville Navigation District*
Deyaun Boudreaux, *Texas Environmental Coalition*
Sudie Blakcburn, *Keep Brownsville Beautiful*
Calvin Byrd, *Mayor, Port Isabel*
Jack Campbell, *Brownsville Economic Development Council*
Mary Lou Campbell, *Sierra Club*
Ken Conway, *Cameron County Parks*
Ed Cooper, *Valley Sportsman Club*
Merriwood Ferguson, *Frontera Audubon Society*
J.A. Garcia, Jr., *Kenedy County Judge*
Joe Garcia, *Representative Eddie Lucio*
Antonio O. Garza, Jr., *Cameron County Judge*
Eustolio Gonzalez, *Senator Carlos Truan*
Wayne Halbert, *Harlingen Irrigation District*
Vic Hines, *Senator Carlos Truan*
Don Hockaday, *Coastal Studies Lab, University of Texas - Pan Am*
Herb Houston, *Alderman, SPI*
Darlene Caines, *SPI National Seashore*
Harris Lasseigne, Jr., *Texas Shrimp Association*
Robert Lerma, *Attorney*
Eddie B. Long, *Texas Pipe Trades Association*
Richard McInnis, *Gulf Coast Conservation Association*
Diana Munoz, *Representative Larry Warner*
Pete Pranis, *COSTEP*
Sonny Ramirez, *Businessman*
Mike Reuwsaat, *Kleberg County Park System, King Ranch*
Laurel Devaney, *Laguna Atascosa National Wildlife Refuge*
Rob Youker, *Lower RGV Boating Trades Association*

**REGION III
RANKED VARIABLE LIST**

Issue: BEACH ACCESS

RANK	VARIABLE	DEFINITION
1	Local Comprehensive Plans	#
2	Off Beach Parking	Spaces/Ac/Mile
3	Roads to beach	#/Mile
4	Wildlife Habitat	Acs Affected by access
5	Beach Users	Visitor Days/Ac/Yr
6	Ident of Beach Access	# of Signs
7	Beach Accessibility	Acs Mi of Easily Access Beach
8	Carrying Capacity	Upper Limit of Vis Days/Ac/Yr
9	Security	Hrs of Patrol
10	County Inabling Leg	Area w/ Authority to Reg Accs
11	Human Induced Erosion	Ft/Yr
12	Enforce of Open Beaches Act	# Actions Taken
13	Restricted Vehicle Traffic	% Beach Restricted
14	Public Acquisition	Area Acquired/Yr
15	Beach Acc Dev Fund	\$/Yr
16	On Beach Parking	Area Available
17	Pedestrian Access	Aver Dist from Parking
18	Dedicated Easement for Access	#
19	Beach Cleaning Funds	\$/Yr
20	Duen Prot Regulations	#
21	Access Pts (Public)	#
22	Vehicle Access	Area Available
23	Highway Access	Vol Traffic Plow Avail
24	Emergency Med Services	Response Time
25	Restrooms	#/Ac/Mile
26	Fees	\$/Visit
27	Visitor Info Areas	Interpretation Centers
28	Causeway Bridge to Barrier Islands	#/Mi
29	All Terrain Vehicles on Beach	Area Avail for Use
30	Visitor Day Use	Visitor Days/Yr

Problem Variable	Problem Explanation	Proposed Action
<p># 1 Local Comprehensive Plans (#)</p>	<ul style="list-style-type: none"> - Lack of local control based on a local comprehensive plan - Each area deals differently with the public - Local plans should allow access to the beach for the public - No enforceable agreement on access to prevent unnecessary damage to the ecosystem 	<ul style="list-style-type: none"> - Develop a comprehensive beach access plan with general parameters and regulations - Local governments can tailor the plan to meet their specific needs - Business community, environmental groups and appropriate government agency entities should negotiate on agreeable access plan to be aggressively supported by all parties - Counties should adopt plans that include: dune protection, access roads, parking, sanitation, public safety, pedestrian acces, and beach cleaning - Zone beaches according to wildlife need; presence of an endangered species, migratory stopover, nesting habitat, etc.
<p># 21 Access Points (Public) (#)</p>	<ul style="list-style-type: none"> - Private development - No public acquisitions - Slow local development of beach areas - Points to reach the beach, whether pedestrian or vehicular, most directly, positively enhance public access 	<ul style="list-style-type: none"> - Dedicated easements - Beach access development funds - Require developers to give easement - Public acquisition - Acquire public beach parks with off beach parking - Designate existing and new public access points
<p># 6 Identification of Beach Access (# of Signs)</p>	<ul style="list-style-type: none"> - Public is generally not aware of the correct public access routes that already exist 	<ul style="list-style-type: none"> - Every access route should be posted with a standard sign

1 Problem for Region III

Issue: BEACH ACCESS

Problem Variable	Problem Explanation	Proposed Action
<p># 7 Beach Accessibility (Acs Mi of Easily Accessed Beach)</p>	<p>- More accessibility, the more problems with erosion, loss of habitat, crowd control, etc</p>	<ul style="list-style-type: none"> - No new vehicle access to beach - Control social trails - Prohibit driving in dunes through better enforcement - Take out majority of "beach access" signs, they are too confusing and people get lost
<p># 11 Human Induced Erosion (Loss/Yr)</p>	<p>- Human induced erosion is about the only problem that we can gain control of</p>	<ul style="list-style-type: none"> - Control all vehicle access on beach, dunes, etc. - Forbid removal of vegetation and sand from island - Enforce litter law - When development is done, do it right for the minimum impact - Public education
<p># 15 Beach Access Development Funding (\$/Yr)</p>	<p>- Some undisturbed areas in South Padre Island are targeted for more beach access, these areas will suffer greatly</p>	<ul style="list-style-type: none"> - Some undisturbed public lands ought to be left alone to provide visitors (present and future) a sight into how the island once was - Since the Attorney General's office is requiring that the town comply with the Texas Open Beach Act they should pay at least 50% of the costs associated with the development of parking lots and pedestrian walkways
<p># 23 Highway Access (Vol of Traffic Flow Available Access)</p>	<p>- A prime problem with barrier island, etc. is lack of hard surface roads which serve to channel greater proportion of traffic</p>	<ul style="list-style-type: none"> - Provide hard surface roads and parking lots and insist that vehicles keep on paved surfaces only - Ban dune buggies and four wheel drive to channel - Let people drive on beach and camp (How many people can afford \$100/day for a hotel?)