



EDITORIAL

A Natural Resource Policy Protocol

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Florida's extensive coastal zone has been the subject of numerous policy debates over the past forty years. Those deliberations have dealt with various subjects including the dredging and filling of wetlands, oil exploration, thermal discharges, municipal and industrial waste discharges, salt-water intrusion, beach renourishment, dune protection, and fishing controls. Most of the associated regulation has occurred at the state and regional levels and has been extensive. More recently, local governments have been required by state comprehensive planning requirements to adopt policies to protect the natural resources in the coastal zone. All of these policy initiatives at the various levels of government must be based upon scientific data, principles, and opinions.

We truly are in the age of science. Unlike some other ages, it is not likely to diminish in importance after a certain period of time and from that point of view, it is not really an "age". Its impact on our everyday lives has become so strong and is such a relatively new cultural phenomenon that it seems as if we have entered a new age. Science is especially perplexing for most policy-makers who are almost entirely untrained in matters of science.

Our ability to observe, test, and measure various components of the environment has enabled us to detect changes in the natural world, many of which are adverse. That awareness has been reflected in the public's demand upon politicians at all levels of government for regulatory action.¹ Each of

these regulatory efforts generally has been focused narrowly on a specific environmental factor. The emerging concept of ecosystem management, or bio-regionalism, approaches resource management and pollution control on a comprehensive basis. This concept requires the active regulatory involvement of all levels of government employing prohibitions, performance standards, mitigation, and zoning controls.²

Some resource impacts seem easily understood and the appropriate responses obvious. Others are much more obscure and puzzling. Sometimes, policy-makers do not know with which type of situation they are confronted. An increasing amount of regulatory policy is promulgated to address problems which government staff personnel or third parties assert is based upon scientific proof or evidence. Much of this occurs at the state, regional and local levels of government where key staff may have some training in science but often are not scientists or good science readers. In addition, those government entities often do not have the budget to hire outside experts of the types

preprehensive planning across the United States has thrust local governments into the midst of natural resource management and regulation at a time when dropping tax revenues have diminished the ability of local governments to procure costly scientific expertise. This article does not address the issue of the efficient use of public funding; *i.e.*, whether a particular governmental level should exercise authority in a particular area of natural resource management. Given that demands upon tax dollars across the spectrum of public interest areas far exceed tax revenues, an assessment of overlapping governmental initiatives should be an ongoing function of government, so that citizens can obtain the best overall results for the dollars available. Perhaps there ought to be more voluntary yielding of a field by one governmental entity to another. Or, perhaps there ought to be more governmental preemptions.

¹ An extensive array of federal and state environmental regulations has evolved over the past twenty-five years in areas of air and water quality and hazardous materials contamination, endangered species, wetlands, and drinking water. More recently, the development of local government com-

² CALLAHAN, K. Bioregionalism: Wiser Planning for the Environment, *Land Use Law* (Aug. 1993); GRUMBINE, R. What is Ecosystem Management?, *Conservation Biology* (March 1994); TARLOCK, A. Local Government Protection of Biodiversity: What Is The Niche?, *Land Use Law* (April 1994).

and numbers necessary to provide the level of advice which would be preferable. Nevertheless, there is substantial constituent pressure on these entities to do something about perceived problems with electoral consequences for failing to do so. Meanwhile, some segments of the regulatory community have tremendous financial resources to resist policy initiatives through the use of science.

The alleged science behind a proposed policy is frequently not the rigorous product that the scientific method requires of real science.³ But science is such a mystery to most policy-makers and the general public that assertions posited in the language of science assume an untouchable quality similar to religious doctrine.

Science is supposed to de-mystify the mysterious through the use of certain precise analytical procedures which include the formation of hypotheses, observations, generalizations, explanations, and predictions; *i.e.*, the scientific method. The object is to acquire enough information in the form of data and measurements that a set of concepts can be developed which enable one to predict certain future events (cause and effect) within certain statistical limits, or ranges of variation.⁴ It is the intellectually rigorous nature of the scientific method which gives us the confidence in the results of science.

Policy deliberations in the natural resource area frequently become the battleground for opposing experts who inundate the policy-makers with contrary opinions based on science.⁵ The policy-maker can be frustrated by a science which produces countervailing points of view from the experts. As a result, policy-makers often feel constrained by their ignorance of science and statistics to accept what their staff "experts", or staff-selected experts, tell them unless confronted with overwhelming information and opinions to the contrary. The experts may be able to deal more easily with the science issues. However, given the trans-science nature of many natural resource issues, the policy-makers must be willing and skilled enough to stay actively and intelligently in the middle of the information and data fray. They

must demand that the experts for all participating interests provide their input in a manner which aids in reaching wise decisions. In other words, they must accept responsibility for and assume leadership in the manner in which data and information is brought to bear on natural resource issues.

Experts cannot produce totally unbiased opinions. Inherent in the nature of opinions are value, relevancy, and significance judgments. All experts do not resolve those issues in the same manner. Consequently, it is important for policy-makers to be aware of those judgment areas and of the differences of opinion among the experts.⁶ Furthermore, the experts used by government agencies, regulated interests and public interest groups vary in their technical skills and level of intellectual honesty or candor. No sector has a corner on skill and integrity. Some are more subject to the pressures of economic incentives or philosophical objectives than others.

Policy-makers are frequently at a loss about how to grapple with asserted problems and proposed solutions to those problems which are often cloaked in the science shroud. At an equal loss are members of the would-be regulated interests and members of the general public. A method, or protocol, to be used by all participating interests to sort through such matters could provide a framework for policy-makers to assess such purported problems and solutions. This article sets forth such a protocol. Of course, no protocol can eliminate the need for public officials and the rest of us to become more literate with respect to the science that is involved in public policy issues. To that end, the protocol can be a tool to facilitate the decision-making and educational processes. It cannot, however, replace the need for sound skills of judgment.

The purpose of the protocol is not to suggest that absolute proof of the alleged problem, and the proposed institutional response, is necessary before policy-makers should act. Generally, no such proof is ever available no matter how good the science.⁷ In fact, it is quite appropriate for policy-makers to institute policies based on less of an established cause and effect relationship than the science community would generally accept. Sometimes, policies need to be instituted to

³ DICKSON, BERNARD, *What is Science For?*, Harper and Rowe (1973) at pages 33 & 34.

⁴ HARDEE, JOHN T., *Science, Technology and the Environment*, W.B. Saunders Company (1975), at pages 2-7.

⁵ *The Politics of Expert Advice* (BARKER, A. and PETER, B., eds., 1993), University of Pittsburgh Press.

⁶ HISKES, ANNE L. and RICHARD P., *Science, Technology and Policy Decisions*, Westview Press (1986), at pages 165 and 166.

⁷ HARDEE, J.T., at pages 2-7.

give science an opportunity to catch up with technology or community activity. Acting in that situation creates even more of an obligation on the part of policy-makers to employ a critical approach to the alleged problem and proposed responses.

Neither is the suggested protocol intended to promote a strict cost-benefit analysis approach to policy decisions in the natural resource area. There are a variety of social values beyond the economics of an issue which are relevant to policy decisions.⁸ Environmental systems provide us with certain "services" at no cost for which we would otherwise have to pay for some technological substitute. It is argued by some that such natural benefits ought to be assigned a value in cost-benefit analyses. Unfortunately, the science of establishing such natural values is not well-developed.

It is recognized that information on all of the items addressed by the protocol may not be available in each instance. However, the exercise of searching for relevant information and gaining knowledge about the lack of it is as important as gaining knowledge about that which exists.

The purpose of the protocol is to assist policy-makers in understanding the nature of asserted problems, the proposed institutional responses and the anticipated impacts on various segments of the public, the relevancy and conclusiveness of available data, the degree to which other policy-makers have addressed the issue, and how the proposed institutional response fits into the hierarchy of other responses or programs of the institution. It is intended to provide institutional staff personnel with a means of communicating clearly technical and complex information to their policy-makers. It also gives the staff a means of imposing a discipline on their own work as well as that of other participating parties to help them satisfy themselves, and consequently their policy-makers, that they have sorted through the data and their own personal prejudices and those of the other participants in an orderly fashion. The protocol provides the public with a record to track the evolution of policy and a basis for determining whether that policy has been well-considered and public dollars well-spent.

The protocol may seem daunting to some and, therefore, an inhibiting obstacle to doing what needs to be done. It is not intended to be a set of hurdles to frustrate needed policy. It is, however,

intended to impress all factions involved with the gravity of policy development, resource allocation, and their respective roles in those processes.

THE PROBLEM AND DATA

The protocol is divided into four parts. The first part requires a description of the alleged problem and the data which support the allegation.⁹ The purpose of this section is to have the problem described and to inform the policy-maker of the amount, quality and conclusiveness of the data which are alleged to support the asserted problem. Policy-makers need to understand the alleged problem, its manifestations, the geographical areas involved (especially relative to the Governing Institution's physical area of control), the level of acuteness, the influences of human activity and Nature on the alleged problem, the pertinent scientific or technical factors involved, and the types of information and expertise needed to understand and address the alleged problem.

It is also important for policy-makers to understand whether there is or is not a substantial quantity of good data to support the allegation that there is a problem and that the proposed institutional response is warranted. Oftentimes, the data which are available are sparse, not comparable because the methods and equipment for deriving and analyzing the data were not the same, or the times of the day or year were so different as to render the data incomparable. There are also important statistical issues which policy-makers need to understand. The mere fact that each set of data is reduced to quantifiable numbers, percentages, charts, and graphs does not necessarily mean that the data are reliable or conclusive. Therefore, it is critical for the policy-makers to understand the statistical validity of data so that they can judge how much reliance to place upon those data. It is also pertinent for policy-makers to know whether their staff has searched for data which dispute the validity of the alleged problem as well as for data which support the allegation. There is frequently more than one cause of a problem. Consequently, policy-makers should understand the relative importance of various contributing factors so that they can judge the degree to which addressing a particular factor is justified in the context of other community objectives.

⁹ There are a number of readily accessible computer data bases of scientific studies and literature; e.g. Environmental Bibliography, Aquatic Sciences & Fisheries Abstracts, Scisearch, Pascal, Merck Index Online, Water Resources Abstracts, Compendex.

⁸ HISKES, ANNE L. and RICHARD P., at pages 166 through 170.

PROPOSED INSTITUTIONAL RESPONSE

The second part calls for a description of the proposed institutional response. The purpose of this section is to derive an understanding of the necessity for the response, the likely effectiveness, the degree to which it represents duplication with the policies or programs of other agencies, possible alternative responses, budgetary implications, and the priority which the proposed response should be given relative to the other existing programs of the Governing Institution.¹⁰

IMPACTS ON THE PUBLIC

The third part of the protocol addresses the impacts on the public of the proposed response. This section elicits the benefits to be gained by the public, the magnitude of the asserted benefit and when that benefit would be realized. It elicits the same information with respect to any harms to the public which would be prevented by the proposed response. This section also requires a description of the groups which would have to comply with the proposed response and the anticipated impacts on each group's activities, costs, and rights.

ISSUES OF DISPUTE

The fourth part requires the identification of points of disagreement between the proponents and opponents of the alleged problem, proposed response and the impacts of the proposed response. The agency should seek out affected interest groups and invite them to comment on these matters using the protocol format for their responses. This solicitation should be conducted in two stages, the first one addressing the problem and the second one addressing the impacts and response.

This section requires the delineation of the issues in dispute and the identification and availability of any data which could resolve those issues. Placing in writing for the scrutiny of others the opponent's points of disagreement forces one to understand the opponent's position well and to articulate it fairly. That helps reduce the rhetorical distortions which frequently accompany the proponent/opponent debate of issues. The reduction of that type of rhetoric which tends to confuse and make the policy-maker's task more

difficult is a fundamental objective of this protocol. Technical consultants and those who advocate for and against policy positions should do so in a manner which helps the policy-makers understand the issues so that they are better able to reach sound judgments which benefit us all. That type of process builds confidence in proponents and opponents of the decision-making system and should, over time, produce more candor by knowledgeable persons and stronger community consensus for policy decisions.

IMPLEMENTATION

The implementation of the protocol first requires a commitment by policy-makers and agency staff to the goal of improving the soundness of policy decisions. It requires a willingness to have ideas tested and a belief that government owes that to its constituents to whom it allocates rights and responsibilities with the attendant economic costs or limitations on the range of choices. Training in the use of the protocol would be needed by policy-makers and staff to maximize its benefits; *e.g.* constraints on drawing conclusions from data, reading and writing about science and technical matters with precision, conducting research on relevant computer data bases, typically relevant areas of expertise.

There would also need to be established an attitude of mutual support and cooperation between the government entity using the protocol and the constituent groups having an interest in the outcome. That is often not the atmosphere which surrounds policy development efforts, but it is the reduction of that prevalent adversarial attitude which is one of the key objectives of the protocol.

To minimize the adversarial nature of the process while realizing the benefit of testing assertions and proposals, the protocol should be employed in two stages. The initial stage involves elements of inquiry 1, 2, 3, 6, 7 and 8 under the protocol. The second stage involves elements of inquiry 4, 5, 6, 7 and 8. The second stage is undertaken only after the policy-makers are convinced that the alleged problem merits a response by their Governing Institution. Within each stage, one or more informal, non-voting workshops should be held to encourage a free exchange of views while minimizing the defense mentality which often surrounds a formal decision-making hearing. The use of technical committees comprised of agency personnel and interests affected

¹⁰ State and federal regulations can be researched in computer data bases provided by sources such as West Law, Lexis and Dialog.

by the proposed policy may be appropriate to sort through or clarify complex technical issues.

THE PROTOCOL¹¹

PART I

1. Alleged Problem and Data

- (a) Describe the nature or manifestation(s) of the alleged problem.
- (b) When was the alleged problem first detected and by whom?
- (c) Is the alleged problem totally confined to the geographical area within the jurisdiction of the Governing Institution?
 1. If not, what other geographical areas are affected?
 2. What geographical areas of the Governing Institution are affected?
- (d) Does the presence or degree of acuteness of the alleged problem vary? If so, what appear to be the factors affecting the variation?
- (e) Is the alleged problem caused, induced or exacerbated by human activity? If so, in what manner and to what percentage of the alleged problem?
- (f) Is the alleged problem caused, induced or exacerbated by Nature? If so, in what manner and to what percentage of the alleged problem?
- (g) Identify the type(s) of information and expertise which are pertinent to understanding the alleged problem. For each type of information and expertise indicate whether it is available to the Governing Institution, at what cost, in what time frame, and who is considered to possess the best information or expertise.
- (h) Identify and describe the scientific and technical factors which are pertinent to understanding the alleged problem. For each factor, indicate whether it is based on theory (and the degree to which the theory is accepted in the scientific community) or empirical data (and the degree to which the data are accepted in the scientific community).
- (i) Identify the data or information which support the allegation, and for each set of data or information state:

1. who (individuals and employer(s)) derived the data or information;
 2. when and where each set of data or information was derived;
 3. the quantity of samples, measurements or observations taken in each set of data or information;
 4. whether the methods used to derive each set of data or information were the same as those used for the other sets;
 5. what, if any, effect any variations in time and place among the sets of data or information might have on the comparability of those sets;
 6. whether each set of data or information is comparable to the other sets;
 7. the statistical validity of each set of data or information and the cumulated data or information;
 8. the degree of accuracy of each set of data or information and the cumulated data or information;
 9. whether there are any weaknesses or limitations in the data or information with respect to substantiation of the alleged problem;
 10. whether the data or information have been subjected to peer review, and if they have, who conducted the review and what the individual reviewer's conclusions were; and
 11. the degree to which the data or information provide conclusive support for the alleged problem.
- (j) Identify the data or information which dispute the validity of the alleged problem, and for each set of data or information state: [repeat (1)(i)1.-11. above].
- #### 2. The Importance of the Problem
- (a) Describe and explain the importance of the alleged problem within the natural resource system of which it is a part:
 - (b) Identify the data or information which support the described importance, and for each set of data or information state:
 1. who (individuals and employer(s)) derived the data or information;
 2. when and where each set of data or information was derived;
 3. the quantity of samples or measurements taken in each set of data or information;

¹¹ It is suggested that each of the four major sections of the protocol be color-coded for ease of reference.

4. whether the methods used to derive each set of data or information were the same as those used for the other sets;
 5. what, if any, effect any variations in time and place among the sets of data or information might have on the comparability of those sets;
 6. whether each set of data or information is comparable to the other sets;
 7. the statistical validity of each set of data or information and the cumulated data or information;
 8. the degree of accuracy of each set of data or information and the cumulated data or information;
 9. whether there are any weaknesses or limitations in the data or information with respect to substantiation of the alleged importance of the problem;
 10. whether the data or information have been subjected to peer review, and if they have, who conducted the review and what the individual reviewer's conclusions were; and
 11. the degree to which the data or information provide conclusive support for the alleged importance of the problem.
- (c) Identify the data or information which dispute the validity of the alleged problem, and for each set of data or information state: [repeat (2)(b)1.-11. above].
3. The Causes or Contributing Factors
 - (a) Describe what appear to be the causes of, or contributing factors to, the alleged problem, rank the relative importance of each:
 - (b) Identify the data or information which support the stated causes, contributing factors, and the ranking, and for each set of data or information state:
 1. who (individuals and employer(s)) derived the data or information;
 2. when and where each set of data or information was derived;
 3. the quantity of samples or measurements taken in each set of data or information;
 4. whether the methods used to derive each set of data or information were the same as those used for the other sets;
 5. what, if any, effect any variations in time and place among the sets of data or information might have on the comparability of those sets;
 6. whether each set of data or information is comparable to the other sets;
 7. the statistical validity of each set of data or information and the cumulated data or information;
 8. the degree of accuracy of each set of data or information and the cumulated data or information;
 9. whether there are any weaknesses or limitations in the data or information with respect to substantiation of the stated causes and contributing factors of the alleged problem;
 10. whether the data or information have been subjected to peer review, and if they have, who conducted the review and what the individual reviewer's conclusions were; and
 11. the degree to which the data or information provide conclusive support for the causes and contributing factors of the alleged problem.
 - (c) Identify the data or information which dispute the validity of the alleged problem, and for each set of data or information state: [repeat (3)(b)1.-11. above].

PART II

4. Proposed Institutional Response
 - (a) Explain why a response from the Governing Institution is necessary.
 - (b) State the degree to which the alleged problem can be solved by the Governing Institution alone and the degree to which other institutions within and without the jurisdiction of the Governing Institution must be involved to achieve a solution.
 - (c) Identify each of the other local, regional, state, federal, or governmental authorities which regulate the subject matter of the alleged problem within the jurisdictional area covered by the Governing Institution and with respect to each state:
 1. the citation(s) of its implementing regulations;
 2. whether the review criteria are numerical, non-numerical, or both;
 3. why the regulation is inadequate to achieve the policy objectives of the Governing Institution.
 - (d) Describe the proposed institutional re-

response(s) to the alleged problem and for each state:

1. the possible alternative responses, including no response;
 2. the percent of the alleged problem which would be solved by each possible response;
 3. the approximate number of people or entities which would be regulated by each possible response;
 4. why the proposed response(s) is necessary or preferable to the alternatives;
 5. the personnel (number and types), equipment, annual costs, and sources of revenue necessary and whether available, to implement the proposed response.
- (e) State and explain the basis for the priority which the proposed response should be given relative to all other existing programs throughout the entirety of the Governing Institution.
- (f) State whether the priority described in (e) has been agreed to by the administrators of the other programs. If not, attach the answers to (e) from all of said administrators.

PART III

5. Impacts on the Public

- (a) Describe:
1. the benefit(s) to be gained by the public from the proposed response,
 2. the magnitude of the benefit(s), and
 3. when the benefit(s) would be realized.
- (b) Describe:
1. any harm(s) to the public which would be prevented by the proposed response,
 2. the magnitude of the harm(s), and
 3. when the prevention would be realized.
- (c) Describe:
1. the general groups who would have to comply with the proposed response,
 2. the estimated size of each group,
 3. the form(s) and estimated magnitude(s) of the impact(s) on each group, and
 4. the degree to which the proposed response would prevent, impede, or change the activities, costs, or rights of each group.

PART IV

6. Points of Disagreement

- (a) List any known opponents, and for each

opponent explain precisely, to the degree known, the points of disagreement with the alleged problem, data or information, proposed response, and impacts on the public, and the basis for the explanation(s).

- (b) Identify any data or information which could resolve the points of disagreement, whether the data or information are available or could be derived, the probable time frame and cost for deriving any such data or information, and the degree to which such data or information could resolve the points.
- (c) Describe the efforts made to solicit comments from potentially interested parties on each element of inquiry under the protocol.
7. Glossary
- Define in non-technical terms any technical or scientific words or phrases used in the responses to each element of inquiry under the protocol to the extent their meanings are not generally understood by the Governing Institution's policy-makers and constituents.
8. Bibliography

List alphabetically all publications or other documents cited in responses to each element of inquiry under the protocol giving author, title, date, publisher, and protocol times where cited.

CONCLUSION

A more deliberate and orderly approach to science-based policy issues will permit decision-makers to develop more technically sound and politically defensible decisions. A policy protocol provides proponents, opponents, and interested and affected groups with a more reliable, fair, and predictable framework and process within which to present their information and assert their points of view. It fosters rationality, thoroughness, objectivity and civility—all qualities which human decision processes should strive to achieve.

[Editorial Note: Mr. Brindell is a partner in the law firm of Gunster, Yoakley, Valdes-Fauli, & Stewart, P.A. in West Palm Beach, Florida. He specializes in environmental and land use law. He is the former General Counsel and Director of Permitting for the Florida Department of Environmental Regulation and Chairman of the Florida Bar's Environmental and Land Use Law Section.]

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