ADAPTIVE MANAGEMENT AND INTEGRATED DECISION MAKING

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Attention-Getters

- **CEQ is “pushing” appropriate inclusion of AM in the NEPA process**
- **USEPA is increasingly commenting on need for many DEISs to include AM**
- **AM can be used to address uncertainties in CEA, including incomplete and unavailable information (CEQ 1502.22)**
- **AM could be used in CEs mitigation and management**

- **Seen as a follow-on to initial EIS document completion; however, there are pros and cons**
- **AM results are not instantaneous**
- **AM could be required via permits associated with EIS process**
- **AM is more appropriate for larger-scale studies**

Definitions

- No single definition; had earlier usage in natural resources management
- Phrases from AM definitions
  - -- systematic process
  - -- test and adjust policies, practices, actions
  - -- AEM – plan, act, monitor, evaluate
  - -- learn from outcomes
  - -- adjust policies, practices, actions

Robust Information

- CAMNet
- Numerous relevant reports and papers on AM
- Use of case studies from EISs and EAs (untapped at this time)
- Collaboration will probably be required; and considerable information is available on this topic

NEPA (EIA) Models

- **Traditional**

  predict-mitigate-implement

- **Emerging**

  predict-mitigate-implement-monitor-adapt

Concerns About AM

- **Agencies could use to “sidestep” EIA requirements and analyses**
- **Agencies have a poor track record of long-term funding for and conduction of monitoring program (permittees in the private sector generally meet these stipulations)**
- **Would AM actions require additional EIA documentation? Would this increase litigation?**
- **Guidance on AM in EIA process is limited**

Benefits of AM

- Reduce CEA-related uncertainties
- Stakeholder involvements would be helpful
- Could be used as a tool for CEs mitigation and management
- Should lead to reduced CEs
- Could be integrated with EMS
- Would move NEPA in the direction of a substantive statute (not just a procedural one)

Element No. 1

- **Management objectives that are regularly revisited and accordingly revised**
  - **-- Needed for an integrative approach**
  - **-- Identify key questions to be addressed**
  - **-- Provides operational framework**
- **Agencies have program and management objectives**

Element No. 2

- **A model(s) of the system being managed**
  - **-- Provides a foundation for learning**
  - **-- Aid in understanding system responses**
  - **-- Tailor model complexity to the situation**
  - **-- Conceptual and diagrammatic models can be useful**
  - **-- Model assumptions and limitations must be understood by users**
- **Agencies have numerous natural resources and environmental processes models**

Element No. 3

- A range of management choices
  - -- A single best choice may not be known
  - -- Trade-offs may need to be considered across the choices
  - -- Combinations of choices may represent a useful approach
- Some Agencies have numerous management plans with defined choices – USFS, NPS, USFWS, DOD, etc.

Element No. 4

- **Monitoring and evaluation of outcomes**
  - **-- Enables testing of alternative hypotheses**
  - **-- Facilitates enhanced knowledge**
  - **-- Focus on selected indicators**
  - **-- Should be included from the outset of an AM program**
- **Agencies could modify and focus existing monitoring programs, and collaborate with other agencies on their programs**

Element No. 5

- **A mechanism for incorporating learning into future decisions**
  - **-- Need a “decision process”**
  - **-- Political commitment is required**
  - **-- Need a “streamlined” process for considering the environmental consequences of the decisions**
- **Agencies already utilize results in continuing decision-making; perhaps recognition and formalization is needed**

Element No. 6

- **A collaborative structure for stakeholder participation and learning**
  - **-- Stakeholder involvement is included in the practices of many agencies**
  - **-- Must disseminate AM program findings and decisions**
  - **-- Flexibility by all parties is desirable**
- **Agencies already share information; perhaps should be more proactive for AM**

Other “Elements”

- **Assemblage and continuation of a focused “information database” (environmental and institutional)**
- **Collaborative long-term agreements; and program decision-making and management board**
- **Adequate budgetary and personnel resources (blend with existing efforts)**
- **Peer group of advisors (SMEs)**

Case Studies

- **SOTEAG example, Shetland Islands**
- **Several are related to large-scale water resources management – Columbia River Basin, Glen Canyon Dam, Ohio River navigation system, upper Mississippi River system, Everglades restoration program, and Missouri River ecosystem**

USDOI Guidance (2007)

- Set-up phase and iterative phase
- Five steps in set-up phase and three steps in iterative phase
- Criteria for judging the success of AM
- Appendix on case studies
- Other agencies beginning to adapt USDOI guidance to their needs

AM in EIA Documents

- **AM for proposed action only or all alternatives**
- **No specified protocol – from brief promise to detailed information**
- **Separate chapter and commitments in ROD (or other approval document)**
- **Integrate AM through out the document (NPS-RMNP-elk and vegetation management, 2006)**

Needs

- **Recognize that natural resources agencies are ahead of other agencies in AM application**
- **Comparative case studies on how to incorporate AM in NEPA documents**
- **AM without EMS, and vice versa; recognize benefits via comparative case studies of blended approaches**

- **Careful development of regional model for AM planning, implementation, and decision making**
- **Recognize inclusion of AM without nomenclature; also recognize ranges of practices and documentation**
- **Need careful documentation of benefits and costs of AM in comparative case studies**
- **Review agencies prepared to move from “calls” to “volunteering aid”**