Economic and National Economic Development Account Considerations During Dam Decommissioning Plan Formulation

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Agenda

- Four Accounts
- Consider Alternatives
- Consider Impacts
- Analysis of Impacts
- Economic Evaluation
Regulations

*Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies* (U.S. Water Resources Council, 1983)

- Natural Resources Conservation Service
- U.S. Army Corps of Engineers
- Bureau of Reclamation
- Tennessee Valley Authority
Four Accounts

National Economic Development (NED)
▶ Displays change in the economic value of the national output of goods and services

Regional Economic Development (RED)
▶ Registers changes in the distribution of regional economic activity

Environmental Quality (EQ)
▶ Displays non-monetary effects on significant natural and cultural resources

Other Social Effects (OSE)
▶ Registers plan effects from perspectives that are relevant to the planning process
Consider Alternatives

- Controlled breach of dam by local sponsor
- Federal decommissioning
- Rehabilitate to State criteria, but not NRCS criteria
- Rehabilitate to NRCS and State criteria
- Downsize reservoir
- Relocate/elevate properties in breach inundation area
- Replace with grade stabilization structure
Screen Alternatives

Conduct preliminary screening to eliminate unacceptable alternatives

- Completeness
- Efficiency
- Effectiveness
- Acceptability
Select Alternatives

- **No-Action Alternative**
- **With-Project Alternatives**
  - Selected alternatives must be reasonably different from each other and the No-Action Alternative
  - Federal decommissioning (must be considered)
**No-Action Alternative**

- Often called the “Without-Project Alternative”
- Identifies most likely course of action if a federally supported project is not implemented
- Does not necessarily mean that conditions remain as they currently exist
- Forms the basis for the economic evaluation and can significantly influence the economic evaluation
Consider Impacts

What are the impacts of the alternatives?

- Increase or decrease in flood damage to residential or commercial structures
- Impacts on water supply (agricultural or municipal)
- Change in recreation opportunities
- Alterations to land use
- Impacts on roadways and traffic
- Change in power generation
Analysis of Impacts

Downstream Flooding

- Does the alternative *induce* or *reduce* flooding?
- Identify affected area and measure damages
  - Hydrology and Hydraulics (H&H)
  - Structure Inventory
  - HEC-FDA
Analysis of Impacts

Water Supply

- How will the water supply change?
- Determine the cost of developing an alternative water supply
  - Construction Cost
  - Fees
  - O&M
Analysis of Impacts

Recreation

- What are the current recreational uses?
  - Fishing
  - Boating
  - Swimming
  - Camping

- Measure value of current use
  - Unit day values
  - Contingent valuation
  - Benefit transfer
Analysis of Impacts

Alterations to Land Use

- What is the value of reclaimed land if dam is decommissioned?
  - Determine what land can be used for (pasture?)
  - Determine value of land (what is adjacent land worth?)

- Will additional land be removed from use if pool elevation changes?
Analysis of Impacts

Impacts on Roadways and Traffic

- Identify impacts on downstream roads from flooding
- Determine detour time and mileage
- Calculate damage to downstream infrastructure
Analysis of Impacts

Additional areas for consideration:

- Emergency costs (relocation, emergency services)
- Flood Insurance Administration (FIA) administrative costs
- Environmental benefits
Cost Considerations

- **Construction cost**
  - What are construction costs for each alternative?
  - When would the costs occur?

- **Operations and maintenance costs**
  - What are the reasonable O&M costs now and in the future?

- Costs to all parties should be included
Economic Evaluation

All benefits and costs are in relation to the No-Action Alternative

- No-Action Alternative is considered to have no benefits or costs (zero benefits, zero costs)
- Calculate the benefits of With-Project Alternatives
- Calculate the costs of With-Project Alternatives
Economic Evaluation

Account for activities over the planning period

- Determine period of performance (e.g., 50 years)
- Apply appropriate discount rate
  - Changes annually by Federal fiscal year
  - Currently at 4.625%
Economic Evaluation

Examples of costs-avoided benefits

- Breaching or repairing dam
- Finding an alternative water source
- Reduction in O&M costs
Compare Alternatives

- If the benefit-cost ratio is greater than 1, the alternative is cost effective in relation to the No-Action Alternative

- Compare alternatives – select alternative that maximizes NED benefits

- Local sponsor may have to pay for locally preferred options – there may not be a Federal interest in all parts of plan
Discussion