

# Description and Screening of Potential Tools and Methods for SBX7-2 Public Benefits

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# What This Report Does

- Explains why economic quantification is important
- Explains economic benefit principles and precedents
- Reviews potential methods and models in detail
- Develops and applies screening criteria
- Identifies issues
- Provides recommendations
  - General, and specific by benefit category

# What This Report Does Not Do

- Does not provide a recipe of specific methods or specific benefit values to use
- Does not describe the Commission's overall evaluation and decision process
- Does not develop the regulations and guidelines, only recommendations for economic methods

# Why Economic Benefits?

- SBX7-2 implies benefits should be measured in dollars
  - To quantify and compare public benefits across benefit categories and projects
  - To show consistency between cost shares and benefits to public and private parties
- Consistent with federal and state evaluation guidelines for water projects

# Principles of Economic Benefits

- Economic benefits are willingness to pay for physical project outputs
- Precedence: Benefit-cost for water projects, P&G
- Difference between with-project and without-project

# Principles of Economic Benefits (cont.)

- Analysis perspective: whose public benefits should be counted
  - Recommend: Californians
- Express all benefits in inflation-adjusted dollars
- Use discounting for future benefits
- Other issues

# General Economic Methods to Quantify Benefits

- Avoided cost or avoided damage
- Alternative cost
- Direct observation of values or behavior
- Survey-based methods
- Benefits transfers

# Key Screening Criteria for Benefits Methods and Models

- Is consistent with benefits principles
- Has appropriate perspective and temporal scope
- Can be applied to physical quantities of public benefits
- Is not inferior to another available method
- Uses verifiable and documented data
- Provides level of detail commensurate with size of benefit

# Developed Qualifiers

- PM: preferred method
- SB: second-best
- NL: not likely method could be applied
- PB: likely to estimate only part of the benefit
- CO: Conditional depending on case-specific conditions as defined by the report

# Screening Results

- Relatively few screened out
  - Some methods do not provide benefits
  - Some models are hard-wired
- Some benefit categories have well-developed models
- Appropriate method depends on situation
- Results provide guidance and flexibility, not strict recipe

# Example:

## Surface Water Recreation

- Physical benefit related to surface area and timing
- Benefit is visits times benefit/visit
  - Travel cost method
  - Apply benefits transfers
  - Unit day value method from USACE

# Example: Ecosystem Improvement Fish Flows

- Determine physical benefits
- Economic benefit is the lesser of:
  1. Estimated WTP for increased fish population
  2. Cost of providing the fish population, habitat, or flow by alternative means
- Significant challenges:
  1. Population models may not exist, or are unreliable
  2. May be no clear, feasible alternatives

# Recommendations

- What the regulations and guidelines might contain, for example
  - A description of benefits principles
  - Recommendations for methods and models
  - Required studies; e.g. feasibility study, cost-effectiveness, cost allocation
  - Require physical quantification including water balance and storage yield analysis
  - Document all benefits, even unquantified

# Other General Findings

- Direct benefits measures, especially for ecosystem and water quality, are uncertain
- Relatively few recent studies to quantify public benefits in California
- Alternative cost should play a large role but not sufficient to justify a project
- Water supply models are important

# Other General Findings (continued)

- Distribution of all benefits, cost allocation and cost shares is implied for funding
- Economic quantification is only part of the Commission's decision process
  - Priorities of DFG and Board
  - Inclusion of unquantifiable benefits
  - Other

# **QUESTIONS AND DISCUSSION**