

Economic Analysis of Water Supply, Water Quality/Other and Flood Damage Reduction Benefits

Prop 84 Round 1

Farhad Farnam

Steve Hatchett

Roger Mann

Lorraine Marsh



Overview of Presentation

- Purposes
- Overview and structure of Prop 84
Implementation PSP economic analysis
- Cost information
- Benefit information

Purposes of Presentation

- Help applicants understand the economic analysis requirements
- Provide additional guidance where PSP offers options
- Discuss difficult parts of economic analysis
- Answer general questions; proposal-specific questions in breakout sessions
- Collect information needed to develop Frequently Asked Questions (FAQ) for economic analysis

Each Proposal Must Include

- Cost details for each project
- Description of the project's benefits by reference to a future without the project: who, when and where
- Quantified estimates of physical benefits, if feasible
- Quantified economic benefits, if feasible
- Adequate quality and documentation of benefits consistent with project cost

Principles for Economic Analysis

- With-project and without-project conditions should be consistent across projects
 - Except flood damage reduction is evaluated at current level of development
- Include all costs, not just grant-funded portion
- Assumptions for quantitative analysis
 - Analysis period must equal project life
 - Use 6 percent to discount future real costs, benefits
 - Show all costs and benefits in year 2009 dollars
 - Real costs or benefits can trend over time

Planning Horizon Analysis

- Account for timing of costs and changing conditions over future years
- Do not confuse a hydrologic sequence with a planning horizon
- Use average annual values at current level of development for flood damage reduction benefits

Costs to be included

- All capital, O&M, and future replacement
- All associated costs (needed to achieve benefits)
- Include current market value (opportunity cost) of any resources (land, volunteer labor) committed to the project, even if they were purchased in the past
- If there is no current market value (sunk cost) do not include it

Cost tables to be included

- Table 11 for a project whose primary purpose is water supply, water quality, or other benefit
- Table 17 for a project whose primary purpose is flood damage reduction.
- Tables 11 and 17 must be consistent with Table 7 in the Budget section

Types of Benefits Allowed

- Water Supply
- Water Quality
- Other (scored with water quality)
- Flood Damage Reduction

Benefit estimates must realistically reflect what the agency would do in absence of project

Ways to Estimate Water Supply Benefits

- Reduced or avoided cost of an existing supply
- Increased net revenue from water sales allowed if changes in supply cost or net revenues elsewhere in California are assessed
- Avoided cost of alternative project
- Value of reduced shortage cost if other supplies are not available without the project

Benefits/Cost Savings Tables

- Use Table 12 when, without project, no other project will be implemented. Examples include
 - Avoided water supply purchases
 - Avoided groundwater production
 - Water sales revenues
- Use Table 13 when without project, alternative project will be implemented instead
- Other (Table 14)
 - e.g., from existing studies not readily adaptable for Table 12 or 13

Avoid Double-Counting Benefits

- Applicants should count only one of the three types of benefits for a unit of physical water supply or water quality benefit in a given year
- Applicants can count different types of benefits under certain circumstances. For example: if:
 - The benefit types apply to different time periods
 - The benefit types apply to different parts of the service area

Water Quality Benefits (Table 16)

- Describe and document affected water bodies, beneficial uses, water quality constituents, and benefits
 - Impaired water bodies or sensitive habitats
 - Other affected water bodies, including groundwater
 - Water treatment or wastewater treatment cost savings
- Quantified economic benefits are typically avoided project cost or avoided treatment costs
- Mandates to improve water quality often mean the benefit is the avoided cost of some other project

Other Benefits (Table 16)

- Water Quality and Other Benefits are scored together
- Other Benefits could include:
 - Ecosystem Restoration
 - Recreation and Public Access
 - Power Cost Savings or Power Production
 - Other Environmental Benefits
- Do not include economic impacts such as jobs or income created by construction projects

Other Benefits Examples

- Ecosystem restoration: document where, physical measures, species, who benefits. Use Habitat Evaluation Procedure (HEP) if available
- Recreation: document where, current types and amounts of usage, apply unit day values if possible
- Power (careful not to double count with water cost savings)
- Other environmental: carbon reduction, sustainability

Flood Damage Reduction Benefits

- Minimum information is a qualitative description of protected area and expected benefits
- Use Expected Annual Damages (EAD) approach to quantify benefits
 - Present value calculations should assume existing conditions (current level of development) into the future
- Provide benefits information using Tables 18 and 19, or similar
- Figure 1 is not required
- Additional FRAM detail in breakout sessions (extra slide)



Questions for Breakout Session?

Considerations for Using FRAM

- Some default data are region-specific
- DWR will accept FRAM analysis using the default data
 - If default data in FRAM is not appropriate, you may change the default data or use a different model
- If you use FRAM, provide the model with your inputs and results
- If you use a different model or analysis, provide a similar level of detail

Additional FRAM Information

- Documentation is provided on the DWR IRWM Implementation web page
- Specific directions:
 - Only enter data in the “Inputs” tab of the spreadsheet
 - Input numbers of structures inundated, check sq footage, construction costs, depth-damage curves.
 - OR, input results from HEC-FIA or equivalent analysis, if available
 - If you are claiming contents damage, you must consider warning time and experience – Input rows 28 and 29.