
CHAPTER 7 FINDINGS

This chapter summarizes the findings of this initial economic evaluation and presents recommendations for future studies related to the expansion of Los Vaqueros Reservoir.

SUMMARY OF FINDINGS

The alternative selected for analysis in this report would involve rebuilding the existing Los Vaqueros Dam in-place to create a reservoir with a total capacity of 275 TAF, in combination with a 170 cfs increase in Delta pumping and conveyance and construction of a 175 cfs delivery pipeline from the reservoir to the SBA. Based on the initial economic analysis, this alternative appears to be economically feasible, resulting in average annual positive net benefits between about \$0.37 million and \$22.30 million (annual), and with a ratio of average annual benefits to costs between about 1.01 and 1.65.

There appears to be Federal interest in the development of EWA replacement supplies. Assuming this Federal interest is confirmed, it is possible that some portion of the project could be financed by the Federal Government. While some Federal costs may be non-reimbursable, the majority of costs could be assumed to consist of both reimbursable Federal costs, and non-Federal costs. Additional work is required to complete the cost allocation.

The initial economic analysis presented in this report was performed at the concept level (pre-feasibility). The estimation of project costs is based on pre-feasibility level engineering and designs (developed from designs and costs to construct the original Los Vaqueros Project facilities, which were completed in 1997). The estimation of benefits is based on preliminary project yield and valuation estimates. Consequently, selection of this alternative for preliminary economic evaluation in this report does not represent the identification of a recommended or preferred alternative for display in a Feasibility Report or for consideration by Congress.

The alternative selected for analysis in this report would be operated primarily to provide EWA replacement supplies. Water supply reliability benefits were restricted to the emergency storage benefits that could be provided by the expanded reservoir in the event of a disruption in Bay Area water supplies (such as might result from an earthquake or levee failure). Similarly, no adjustments were made to facilities or sizes to improve water quality at the expense of EWA replacement supplies. Although the EWA replacement supply benefits alone appear to be sufficient to justify the cost of implementing the expansion project, future analyses should evaluate potential economic tradeoffs associated with operating the reservoir to provide Bay Area water supply reliability benefits as well. Although a 275 TAF reservoir was selected for analysis in this initial economic evaluation, future plan formulation efforts should continue to assess larger reservoir expansion options.

ALTERNATIVE FORMULATION OPTIONS

Although the alternative selected for analysis in this report appears to be economically feasible, ways may exist to reformulate alternatives for the LVE to expand the magnitude and categories of benefits. The formulation of alternatives is governed by the problems and opportunities, objectives, constraints, principles, and criteria specific to the LVE. The following text discusses examples of how LVE planning objectives, constraints, principles, and criteria might be changed to expand the range of potential benefits.

Project Objectives

The expansion of Los Vaqueros Reservoir has the potential to provide multiple benefits in a variety of resource areas. The current LVE study objectives were selected because they correspond to existing problems and opportunities in the study area (see **Chapter 2**). However, the LVE may be able to address additional problems and opportunities outside the study area. Several examples are summarized below.

- **Modify water supply reliability objective to include supply reliability for the CVP and/or SWP** – Currently, the water supply reliability objective of the LVE is directed toward Bay Area water agencies. However, surplus Delta flows stored in an expanded reservoir could provide supply reliability benefits to the CVP and/or SWP in a similar manner. CCWD’s voters approved Measure N (see **Chapter 2**), which would prevent an expansion project from exporting water to Southern California; this may or may not limit the opportunity to integrate the project with the CVP or SWP.
- **Add flood control as an objective** – Water stored in an expanded Los Vaqueros Reservoir could allow existing multipurpose reservoirs, such as Oroville or Folsom, to encroach on their conservation (water supply) storage space during the flood season to hold back more flood flows. Water stored in Los Vaqueros could be used to replace any CVP or SWP storage space that could not be refilled after the flood season ends. CVP or SWP water stored in Los Vaqueros could be conveyed to Bethany Reservoir for delivery via the California Aqueduct.
- **Add recreation as an objective** – Recreation could be added as an objective of the LVE; however, little data exist to support the need for additional recreation in the study area. Additional analysis of regional recreation use and needs would be required to determine whether recreation should be added as an objective. In addition, CCWD has strict policies regarding water-based recreation to protect water quality in the reservoir.

Plan Formulation Constraints, Principles, and Criteria

Plan formulation constraints, principles, and criteria guide the formulation of alternatives. For the LVE, several of the constraints and criteria that significantly influence the formulation of alternative plans are related to CCWD’s Principles of Participation and voter-approved Measure N. It is understood that Measure N precludes CCWD’s participation in the study of projects that would increase the export of water to Southern California or involve the construction of a peripheral canal; this may limit the ability of a project to serve water users outside the Bay Area. The Principles of Participation also may effect watershed ownership and operations arrangements for the project. It

may be possible to increase project benefits and/or justify the construction of a larger reservoir if benefits could be offered to a broader group of beneficiaries. These might include Central Valley CVP or SWP water users, or urban water users outside the Bay Area. However, additional analyses would be required to determine how these potential beneficiaries might participate in an expansion project and whether such a project would be economically feasible.

FUTURE STUDIES

This initial economic analysis indicates that feasibility-level studies for the LVE should continue, progressing toward the identification of a plan to be considered for implementation in a Draft Feasibility Report with accompanying environmental documentation.

Future plan formulation efforts will focus on refining, evaluating, and comparing alternative plans for display in the Feasibility Report. These efforts should include the following activities:

- Identify potential project participants and the financial responsibilities of Federal and non-Federal sponsors; specifically, determine how EWA costs could be shared between the Federal Government and non-Federal cost-sharing sponsor(s)
- Determine project ownership, and O&M arrangements
- Identify potential water rights issues associated with an expansion project
- Identify any additional elements or requirements of a locally preferred plan
- Identify a recommended alternative for display in the Feasibility Report

Future economic analyses will likely focus on confirming the valuation methodology and refining the estimate of project costs and benefits. Sensitivity analysis of key variables can provide an indication of how the economic analysis results could change given different assumptions. Based on preliminary estimates, it is recommended that future economic analyses include sensitivity analysis of the following variables:

- Inflation and potential changes in the real growth of water prices over time
- Key demand and supply factors influencing the price of water on the spot market
- Hydrologic variability

Future economic analyses should also evaluate the potential economic tradeoffs between formulating alternatives to provide EWA replacement supplies versus improving Bay Area water supply reliability. In addition, a more thorough estimate of other potential benefit categories and associated methods, including emergency water supply and fishery benefits, is required for feasibility.

Future operations analysis, engineering, and design work is needed to refine facility operations, configuration, size, and cost. These activities should include the following:

- Use the integrated CALSIM-II Common Assumptions Model Package to simulate alternative plans and refine operations for the recommended alternative
- Continue to evaluate both moderate (up to 275 TAF total capacity) and larger (up to 500 TAF total capacity) reservoir expansion opportunities
- Assess hydrodynamic impacts in the Delta, including Delta water quality
- Evaluate sensitivity of CALSIM-II modeling results to various input parameters
- Develop feasibility-level designs and costs for a recommended alternative; specifically, refine facility layouts and configurations, including a potential connection to the SBA