Common Assumptions & Quantification of Benefits

California Water Commission

February 16, 2011

Common Assumptions Background

- Led by DWR, Reclamation, and California Bay-Delta Authority
- Originally developed for surface storage feasibility studies for these purposes:
  - Comply with CEQA, NEPA, CWA/404, Principles & Guidelines
  - Consistent assumptions and methodologies
  - Suite of common analytical tools - common model package

Common Assumptions Objectives

- Assist/coordinate in strategic planning, policy and management needs
- Establish *common assumptions/inputs*
- Establish *common analytical framework* and associated tools and methodologies
- Establish *common reporting metrics*
- Establish *modeling protocols* and quality control measures

Common Assumptions Accomplishments

Baselines

- Existing Condition (CEQA)
- Future No-Action Condition (NEPA)

Developed Analytical Framework

- Common Model Package
- Application protocols
- Economic analysis methods and protocols

Characterized and Quantified Water Management Actions

- Urban water use conservation
- Agricultural water use efficiency
- Recycling and desalination
- Groundwater storage for conjunctive management
- Water transfers

Common Model Package (Component Models)

Common Model Package consists of:

- CALSIM II – Water resources system
- DSM2 – Delta hydrodynamics and salinity
- LCPSIM/CVPM – Urban and ag water supply economics
- LCRBWQM – Urban water quality economics
- SRWQM – Sacramento River temperature
- SalMod – Salmon production
- LTGen/SWP Power – Hydropower generation/production

Benefits Quantification

Generally Accepted Methods

Revealed Willingness-to-Pay

- Market Prices
- Productivity
- Hedonic Pricing
- Travel Cost

Imputed Willingness-to-Pay

- Avoided Costs
- Alternative Costs

Expressed Willingness-to-Pay

- Contingent Valuation
- Contingent Choice

Benefits Transfer

Benefits Quantification for NODOS

Urban Water Supply (Avoided Cost and Alternative Cost)

System simulation/optimization economics model (SBA, SCR)
Shortage cost/loss economics spreadsheet model (Other urban areas)

Ag Water Supply (Productivity)

Crop production optimization economics model

Energy Generation (Market Prices)

Energy production and use modeling with forecasted energy prices

Cottonwood Establishment for Fish Habitat (Alternative Cost)

Irrigation system set up and operation

Benefits Quantification for NODOS

Refuge Water Supply (Alternative Cost)

Water purchase

Sacramento River Fishery (Avoided Cost and Benefits Transfer)

Listed species recovery actions
Salmon population modeling used with commercial harvest and recreational fishing day values

Delta Fishery (Alternative Cost)

Forgone water supply export value

Recreation (Benefits Transfer)

Water surface area visitation day model w/unit day values

Benefits Quantification for NODOS

Urban Water Quality (Avoided Cost)

- Southern California water quality economics model
- SF Bay Area water quality economics model

Agricultural Water Quality (Avoided Cost)

- Leaching water use

Flood Control (Avoided Cost)

- Flood damage modeling

Public Benefits Quantification
Common Assumptions Economics Workgroup

Workgroup history of:

Providing a forum for the free exchange ideas on the advantages and disadvantages of technically complex economic analysis methods

Hosting meetings with multiple stakeholders as participants

Providing recommendations to surface storage program managers on the use of economic analysis methods

Providing written documentation and guidance to surface storage project teams

Public Benefits Quantification
Common Assumptions Economics Workgroup

Proposed workgroup product would be a public benefit quantification method guidance document based on:

- Characteristics of the specific public benefit being quantified
- Advantages and disadvantages of alternative quantification methods
- Availability of data
- Availability of funds, time, and resources
- Consistency with federal guidelines

A draft task order is being prepared to obtain the services of consultants involved in previous workgroup efforts to facilitate the development of this document