CALAFCO
University

Water Determination Decision-Making for LAFCo

"Priming the Pump"

Friday, July 21, 2006
CALAFCO Offices
Sacramento, California
Today’s Program

-Keynote: “The Importance of Integrating Water Information in LAFCo Decision-Making”

-Water Elements Overview — What are the Key Water Elements that LAFCos Should Know?

-Water Demands — How much is Enough?

-Senate Bill 1087 — Water and Sewer Service Priority for Affordable and Low Income Housing
Today’s Program (cont.)

- Urban Water Management Plans, Water Supply Assessments (SB 610) and Written Verifications (SB 221)

- Case Studies
  - Culling Water Information from Water Agencies for SOIs: Nevada Irrigation District
  - Complexities in Annexation Approvals where Federal Water Service Areas are Involved: City of Oakley
Today's Program (cont.)

- **Breakout Sessions**
  - Municipal Service Reviews
  - Annexations
  - Spheres of Influence

- **Course Materials Handbook**
  - Water/Hydrology reference information
  - Resource Agency websites
  - Glossary, acronyms, unit conversions
  - Speaker Contacts
You have asked?

- What water information is relevant to me?
- Why is it important?
- Where do I find such information?
- How should I apply it in my LAFCo actions?
- How do I know if the information I am obtaining is accurate?
Keynote Presentation

“The Importance of Integrating Water Information in LAFCo Decision-Making”

Jerry Gladbach, CALAFCO Board of Director, former President of ACWA, and Los Angeles LAFCo Commissioner
Water Element Overview

“Water Element Overview – What are the Key Water Elements that LAFCOs Should Know?”

Robert Shibatani, Water Industry Advisor

Jennie Garza, Consulting Hydrologist
EIP Associates, a Division of PBS&J

Dennis Sanchez, Manager
Environmental Infrastructure, STANTEC
California Water Industry

- Water Purveyors
  - County Water Agencies
  - Water Districts
  - Irrigation Districts
  - Mutual Water Companies
  - Municipal Utility Districts
  - Public Utility Districts
  - City Utility Departments
 Industry Responsibilities

- **Water supply**
- **Storage**
- **Conveyance** (raw water)
- **Treatment**
- **Distribution** (treated water)
- **Demand reduction — conservation**
- **Wastewater disposal — recycling**
Water Supply

- **Water entitlements**
  - Federal Water Contracts
  - State Water Contracts
  - Water rights
    - Appropriative
    - Riparian
- **Groundwater**
- **Recycled water**
- **Acquired supplies (e.g., transfer, exchange)**
Water Supply

Is what you see in the water entitlement document an accurate reflection of what is actually "available"?
Water Allocations

- **Annual supply available = allocation**
- **Limitations on entitlements**
  - Shortage provisions of Federal / State contracts
  - Regulatory
  - Institutional
    - Multi-party agreements (e.g., Sacramento Area Water Forum)
    - Third party agreements
Limitation: Shortage Provisions

Annual shortages based on water year

Example: Federal water “cutback”

CVP M&I contract: 100,000 AFA

February — 100% of normal
March — 90% of normal
April — 75% of normal

Delivered quantity: 75,000 AF
LIMITATION: SHORTAGE PROVISIONS

**Example:** *Federal water “cutback”*

CVP **Ag** contract: 100,000 AFA

February — 80% of normal
March — 50% of normal
April — 0% of normal

Delivered quantity:
Zero
Limitation: Regulatory

Water rights — Terms and Conditions

Example: Required “minimum flows”

Water right — 100 cfs (year-round)

Fish bypass flows — 25 cfs (May – June)

Fish bypass flows — 35 cfs (May – Aug) in dry years
Limitation: Regulatory

Water rights — Terms and Conditions

Example: Water right subject to *Term 91*

Water right — 75 cfs (year-round)

Dry year — Delta water quality requires releases from CVP reservoirs

Allowed diversion — 0 cfs
Limitation: Regulatory

Water rights – Terms and Conditions

Example: Beneficial use

Water right – 500 cfs
Permit Condition
100 cfs consumptive use
400 cfs hydropower
LIMITATION: INSTITUTIONAL

THIRD PARTY AGREEMENT

EXAMPLE: City of Roseville

Purveyor Specific Agreement
(Water Forum)

Total entitlement – 62,000 AFA
Wet-year diversion – 54,900 AF
Dry-year cutback – 39,000 AF
Limitation: Institutional

Water Exchange

Example: Is it “Paper” or “Wet”

- Agency acquires Federal Contract
- Has no Physical Way of diverting it
- Enters into an “Exchange” with Another Agency
- Water Right “Exchange” for Federal Allocation
LIMITATION: INSTITUTIONAL

Water Exchange (Cont.)

Example: “Exchange” is Contingent Upon

- Agreement for Shared Diversion Facilities (Financial Agreement)
- SWRCB Expanded Place of Use Authorization for the Water Right
- U.S. Bureau of Reclamation Approval on a Federal Exchange
- Full CEQA Compliance
Limitation Recommendation

Look closely at the entitlement...

- What are the restrictions?
- Are there shortage provisions built into the entitlement agreement?
- Are they party to an agreement that would limit their annual supplies?
- What is the "firm yield"?
What is “Firm Yield”? 

Maximum Assured Annual Quantity

- Water entitlement = 100,000 AFA
- Subject to 25% “Cutbacks”
- Firm Yield = 75,000 AFA
GROUNDWATER

What important questions must be answered?

- How much groundwater is available?
- What is its quality?
- Are there seasonal constraints?
- Are institutional agreements in place?
- Do we know the “firm/safe yield”?
Example: Groundwater Supply

- Water agency is wholly on groundwater
- Groundwater levels dropping
- Centered over a “cone of depression”
- Concomitant reduction in groundwater quality
- Would this be considered an appropriate water supply?
**Example: Groundwater Banking (ASR) or Conjunctive Use**

- **Water agency stores surface water in ground in wet years**
- **Revert to pumping (in dry years)**
- **Is the ratio of input to withdrawal 1:1?**
- **How much can an agency rely on banked water as a “firm yield” supply?**
Example: Groundwater Quality

- Coastal water agency relies on groundwater
- Overdrafting has led to lower gradients
- Result - saline intrusion
- Potential long-term water quality problem
- Would this be considered an appropriate water supply?
Recycled Water

What important questions must be answered?

- How much recycled water is available?
- How effectively can it offset current potable uses?
- What is the timeline to have recycled water on-line?
Recycled Water

**Example:** Recycled water offset

- **Water agency firm yield** — 50,000 AFA
- **Current demands** — 40,000 AFA
- **New development requiring an additional 15,000 AFA is proposed**
- **Recycled water will account for 5,000 AFA of the future demand**
**Example:** Recycled water offset (cont.)

Should this development proposal be approved?

- How confident are we that the 5,000 AFA of recycled water will offset demands?
- What is the timeframe for full recycled water implementation?
- Is it solely under the purview of the water agency or are other parties involved?
On-stream Storage = Reservoir Capacity

Important Considerations

- “Dead Pool”
- Flood control restrictions (does it have to maintain empty space?)
- Refill limitations (how fast does it refill?)
Storage: Reservoir Capacity

**Example:** Stumpy Meadows Reservoir

- **Total Capacity:** 16,000 AF
- **Dead-pool storage:** 2,000 AF
- **Active storage:** 14,000 AF
- **Limitation on reservoir supply available for use**
Storage: Reservoir Capacity

Example: Folsom Reservoir 1997

▸ Full reservoir in January
▸ Obligation to preserve flood control space
▸ Driest March/April on record – limited refill
▸ Result: very low water levels in May
Storage: Reservoir Capacity

Example: Folsom Reservoir

- Full capacity 975,000 AF
- Flood season: November – May
- Flood storage: 400,000 to 670,000 AF
- April — storage is 575,000 AF
- If refill is limited — summer storage starts around 575,000 AF
Conveyance

Types of conveyance
- Rivers
- Canals (Lined and Unlined)
- Pipelines

Methods of conveyance
- Gravity
- Pumping
Conveyance: Factors

- **Losses**
  - Evaporation
  - Seepage
  - Leakage
  - Unlawful diversion
  - Channel / Canal failure

- **Capacity**
Conveyance: Factors

Capacity and connectedness of on-stream diversions is important.

Example: River Intakes

- Existing capacity — 100 cfs
- Existing demands — 90 cfs
- Proposed new project demands — add 25 cfs
- Existing intake serves western area
- Proposed annexation is in eastern area
Conveyance: Factors

Losses are important to consider in open conduits/canals

Example: Lower Cascade Canal losses
Rated capacity – 45 cfs
Safe capacity – 40 cfs
Summer losses – 12 cfs (30%)

Delivered to the WTP – 28 cfs
Conveyance: Factors

Consider Canal integrity

Example: Linear aged ditch system

- Frequent failures
- Linearity — no redundancy
- Delivery obligations at risk

Should a new area be approved for annexation which is to be served by this infrastructure?
Conveyance: Factors

“Unaccounted” for water can affect the total water available.

Example: Irrigation ditch unauthorized diversions

Total canal releases — 40 cfs

Unaccounted diversions — 10 service boxes

0.5 cfs per service box — 5 cfs
Conveyance: Factors

Capacity is important for pipelines

Example:

- Pipeline capacity – 25 cfs
- Existing demand – 20 cfs
- New demand – 10 cfs

Has the purveyor planned for this increase in required pipeline capacity?
Conveyance: Factors

Method of conveyance is important

Example: GDPUD Auburn Pump station

New supply potential – 25 cfs
River elevation – 500 ft
Proposed WTP elevation – 2,000 ft

Can the purveyor feasibly pump water up 1,500 vertical feet?
Treatment

Treatment plant capacity is important

Example: Water Treatment Plant capacity

- Existing WTP capacity – 60 mgd
- Currently operated – 40 mgd
- Projected demands over next 20 years – increase of 40 mgd
TREATMENT

TREATMENT PLANT CAPABILITIES ARE IMPORTANT

Example: Aged WTP

- Existing treatment train old
- Difficulty in meeting current regulations
- Perhaps – even a Cease & Desist
- New drinking water regulations
Treatment

Treatment plant sizing/space considerations

Example: WTP “footprint”

- Existing WTP surrounded by development
- No opportunities for expansion
- Increased capacity — only through a new alternative WTP
Distribution

Treated water distribution systems

- Delivery capacity
- “Bottlenecks”
- Pressure zones
Use Areas — Service Areas

“Where” certain water entitlements can be legally used is important

- Federal water contracts — Consolidated CVP Place of Use
- Water rights — Authorized Places of Use (POU)
- Is the proposed annexation within an authorized Place of Use for the water supply that is intended to be served?
CASE STUDY:

“Complexities in Annexation Approvals where Federal Water Service Areas are Involved: City of Oakley/Contra Costa Water District/U.S. Bureau of Reclamation”

Lou Ann Texeira and Barbara Graichen, Contra Costa County LAFCo
Case Study

- Legislature has encouraged LAFCOs:
  - Look beyond the "will serve" letter
  - Assure timely and available water supply

- LAFCOs look to the water supplier to assure timely and available supply

- Case Study: Annexation sequencing involving LAFCO and another party with similar annexation authority (USBR)
USBR Inclusion Process

Some factors that may lengthen the inclusion process:

- The need for an Environmental Impact Statement
- Significant resource issues coupled with disagreements over mitigation measure implementation
- Development of HCPs
- The need to obtain water resources
- Lack of water
Proposed Annexation

- March 2006: Contra Costa LAFCO
  - Three separate and concurrent reorganization proposals
  - Involving annexation of territory to:
    - The City of Oakley
    - Contra Costa Water District (wholesale)
    - Diablo Water District (retail water)
Available supply?

- CCWD indicates they could potentially serve Oakley territory
  - Without Central Valley Project Water
  - With alternative supplies (i.e., transfers)

- However, no environmental review of these alternatives was completed
“CHICKEN & EGG” SITUATION

- USBR and LAFCO seek each other’s approval
  - LAFCO may require completion of the Inclusion process prior to filing their Certificate of Completion
  - USBR accepts LAFCO’s action to annex as the trigger for accepting and processing an inclusion action
Language adopted:

"That the territory being annexed shall be included within CCWD's contractual water service area for the USBR Central Valley Project or water supplies necessary to service the territory being annexed shall be secured by CCWD prior to issuance of any final map and consistent with Section 5.2 of the East Cypress Corridor Specific Plan."

Case Study Discussion

- Have other LAFCOs encountered similar situations?

- How are the situations being addressed?
Lunch Presentation

“Senate Bill 1087 (Effective January 1, 2006): Water and Sewer Service Priority for Housing Affordable and Low Income Housing”

Paul McDougall, Analyst, Housing Policy Development Division, Department of Housing and Community Development
“What Do LAFCos Need to Know About Water Demands?”

Robert Shibatani, Water Industry Advisor
Jennie Garza, Consulting Hydrologist
EIP Associates, a Division of PBS&J
Water Demands: How Much is Enough?

Verifying Water Demands

- What Documents are Relevant?
- What Should I be Requesting?
- What Water Information Sources are Available?
- How do I know if the Information I am Obtaining is Accurate?
- How does demand reduction / water Conservation factor in?
Water Demands: How Much is Enough?

Demand data are important for:

- Districts with existing unmet or unserved demands
- Districts with potential for supply problems
- Groundwater overdraft areas
- Districts with infrastructure limitations
Sources of Demand Calculations

- **Types of demand**
  - Municipal & Industrial
  - Agricultural

- **Where to find demand calculations**
  - General Plan
  - Urban Water Management Plan
  - Water Supply Assessment or Verification
  - Federal Needs Assessment
  - Water Master Plan
Sophistication of Demand Projections

The level of demand analysis can vary

- Information source?
- Is supply a problem in the area?
  - Demand analysis in areas with ample surface or groundwater may be less detailed
- What document is the information from?
  - Individual-development -- cover less
  - State-level documents -- too gross-scale
  - District/county-level documents are ideal
What Information is Necessary for LAFCOs?

**The Basics**

- Current level of demand
- Projected future demand
- Demand contribution of the annexation

**Extra Information**

- Rate study reports
- Conservation plans
- Crop information
Details of Demand Projections

- **What is the time-frame?**
- **What is the basis for demand calculation?**
  - Population / gallons per capita per day
  - Dwelling units / gallons per DU per day
  - Agricultural acreage projections / crop requirement
Evaluation of Demand Projections

Are the projections accurate?
- Is it consistent with the General Plan?
- When was the analysis done?
- Are different projections consistent?
- Where did the population, DU, or acreage estimate come from, and when?
Evaluation of Demand Projections (Cont.)

➢ What are the Assumptions for High, Medium, and Low Density Residential?

➢ Are the Assumptions for the Major Industrial Facilities Accurate?

➢ How Effective is the Irrigation for Proposed Landscaping and Public Lands?
Supplemental Information

- **California Water Plan**
- **Population projections**
  - U.S. Census
  - Local Councils of Government
  - CA Department of Finance
- **Water supply data**
  - USGS Water Data (surface water)
  - DWR Bulletin 118 (groundwater)
  - California Data Exchange Center (CDEC)
- **County Crop Reports**
Example: Limited Groundwater Data

- Water Supply Verification for a basin with limited groundwater information

  - Depth of the well: 725 ft
  - Bulletin 118 data:
    - Yield known: 0-200 ft
    - Confining layer: 400 ft
    - No data: below 200 ft
Example: Potential for Supply Problems

Supply from a CVP contract

- Full contract amount can cover demands with annexation
- However, shortage provisions create a supply shortfall

Can the district ensure reduced demands in dry years?

- Drought protection plans
- Conservation plans
Example: Water Conservation

- **Water Conservation Estimate**
  - Agency Demands Set — 50,000 AFA
  - Water Conservation Assumes — 5,000 AFA
    “Saved” over the Next 10-Years

- Should this 5,000 AFA be Assumed to be Real?

- What Conservation Measures have been Implemented or Planned?
Example: Water Conservation (Cont.)

Water Conservation Measures

- Meters and Tiered Pricing
- Landscape Irrigation Controls
- ULF Fixtures
- New and Retrofit Plumbing
- Residential Interior/Exterior Audits
- Distribution System Water Audits
Example: Existing Un-met Demand

- **District with un-served demand**
  - Annexation of new development proposed
  - District has a back-log of customers waiting to be connected

- Can the district supply water in a timely manner?
Example: Existing Un-met Demand (Cont.)

- District with un-served demand
- Should a higher priority be placed on existing “Islands”?
- Should current use in “Islands” be included in the demand calculations?
New Tools for the Future

- The California Water Plan
  - DWR working with California Water and Environmental Modeling Forum (CWEMF)

- New tools being developed:
  - Information exchange and management system
  - Improved spatial data coverage (GIS)
  - Public-domain, well documented models
  - Multiple future baselines ("bookends")
Documents to Ask For

- Urban Water Management Plan
- Water Supply Assessment (SB 610)
- Written Verification (SB 221)
- Raw Water Master Plan
- Groundwater Management Plan
- Facilities Plan
- Treated Water Distribution
- Capital Improvement Projects (CIP)
- Service Area Map(s)
Documents to Ask For

- Water Contracts
- Water Right Permits
- “Wheeling” Agreements
- Third Party Agreements
- Historical Production Records
- Others?
Information Reliability

How Do I Know that the Information I Have is Accurate?

➤ You Can’t Assume it is
➤ You Have to Check it

▪ Follow the Basic Principles
▪ Rely on Reference Documentation
▪ Use Your Own Judgment
▪ Seek Expert Advice as Necessary
Special ACWA Report

“Urban Water Management Plans: Water Supply Assessments; SB 610 and 221”

John Schatz, General Manager
Santa Margarita Water District
Urban Water Management Planning Act

- California Water Code Section 10610 et seq. addresses Urban Water Management Plans (UWMP)
- Basic information regarding the water provider is required (i.e., service area, sources of water supplies, conservation programs and use of recycled water)
Urban Water Management Planning Act

- UWMPs evaluate water supplies and demands for a 20-year period; plans must be prepared every five years; next one due in 2010

- Applies to publicly or privately-owned water suppliers providing more than 3,000 acre-feet of water/year or supply more than 3,000 customers
Urban Water Management Planning Act

- Department of Water Resources (DWR) estimates more than 440 entities throughout the State are required to prepare UWMPs

- Both supply (sources of water) and demand (recycled water, conservation, must be analyzed)

- UWMPs are exempt from CEQA, but the water supplier must conduct a public hearing prior to adoption
Urban Water Management Planning Act

- UWMPs sent to, and reviewed and commented upon, by DWR
- UWMPs have increasingly important role since a condition of receiving State funding and drought assistance from the State, and serve as a base document for evaluating water supplies for new development (SB 221/610)
Urban Water Management Planning Act

- UWMPs prepared in consultation with local land use entities (cities and counties)
- Public input required by law: active involvement of diverse social, cultural and economic elements of the population prior to and during preparation of UWMP
- UWMPs must include normal, single and multiple dry-year analysis (drought cycles)
Urban Water Management Planning Act

- UWMPs are an excellent resource for LAFCOs to review in connection with MSRs or other LAFCO activities.
Water Supply Assessments (SB 610)

SB 610, effective January 2002, requires the preparation of a Water Supply Assessment (WSA) in connection with development projects that are subject to CEQA.

“Project” is defined as more than 500 residential dwelling units and other specified developments.
Water Supply Assessments (SB 610)

- WSAs must indicate sufficient supply reliability over the next 20 years, including normal, single dry, and multiple dry years.

- WSAs may build upon and incorporate the agency’s UWMP to the extent the UWMP addressed the project; underscores the importance of a solid and comprehensive UWMP.
Water Supply Assessments (SB 610)

- The WSA becomes part of the CEQA process and will be evaluated by the city or county on the basis of existing and future planned land uses; the WSA is challengeable in connection with CEQA.

- Like UWMPs, WSAs may be valuable tools in connection with LAFCO activities.
Written Verifications (SB 221)

- SB 221, effective January 2002, requires the preparation of a Written Verification (WV) in connection with the approval of a tentative map, parcel map or development agreement for certain residential subdivisions.
“Subdivision” is defined as more than 500 residential dwelling units; or, if the water system has fewer than 5,000 service connections, if the subdivision will increase the number of connections by 10% or more, a WV is required.

SB 221 doesn’t apply within urbanized (infill) areas and low income projects.
**Written Verifications (SB 221)**

- WV's require that a sufficient water supply be available
  - Defined as the total water supply available during normal, single-dry and multiple-dry years within a 20-year projection of the demand of the development, in addition to existing and planned future uses.
**Written Verifications (SB 221)**

- **WVs must be supported by substantial evidence; may include:**
  - most recent UWMP
  - WSA
  - other analytical information showing service reliability
Case Study:

“Contemporary Issues in Culling Water Information from Water Agencies for SOIs: Nevada Irrigation District”

SR Jones, Nevada County LAFCO
Adventures in Water Rights

Nevada LAFCo
Updates the Sphere of Influence for Nevada Irrigation District
Sphere of Influence Requirements (CKH)

- **Commission must update Spheres every five years**

- **Spheres cannot be updated or adopted until appropriate Municipal Service Reviews have been completed**
Sphere of Influence Requirements (CKH)

Commission must consider Four Factors:

- Present and Planned Land Uses
- Present and Probable Need for Facilities and Services
- Present capacity of facilities and adequacy of services
- Social and Economic Communities, if relevant
Sphere of Influence Policy (Nevada LAFCo)

- Sphere Planning Horizons (3 time periods)
- Phased Annexation Plan
- Master Service Element that demonstrates the agency’s capacity to provide services to meet the needs of population
Sphere of Influence Update Process


- District began an update of its Raw Water Master Plan (2005)

- District retained a consultant to work with LAFCo to prepare the sphere update

- Placer LAFCo staff has been consulted throughout process
Data Sources

Potential resources for a water agency sphere update —

- Municipal Service Review
- Raw Water Master Plan
- Urban Water Management Plan
- Water Rights Summary
Timely Availability of Water Supplies

- LAFCo is Required to Consider the Timely Availability of Water Supply
- A Sphere Plan can make this Assessment on a District-wide Basis
Timely Availability of Water Supplies (CONT.)

Items to consider:

- Water Entitlements
- Storage Capacity
- Treatment System
- Distribution System
Nevada Irrigation District Sphere of Influence

- Adopted in 1986 by Nevada LAFCo (Principal County LAFCo)
- Included District, plus islands (surrounded by District) as well as a few contiguous areas
- Also included watershed areas in neighboring Sierra County
- First update since 1986
Nevada Irrigation District

- Provides Raw, Agricultural and Treated Water
- Service in Nevada and Placer Counties, with minor service area in Yuba County
- Entire Source is Surface Water
Nevada Irrigation District

- 287,000 acres
- 16,000 + Treated Water Customers
- 5,700 Irrigation Customers
- Raw Water provided to two cities
- Ancillary Hydrogeneration and Recreation Services
NID By the Numbers

- 10 Storage Reservoirs
- 7 Treatment Plants
- 37 Storage Tanks & Reservoirs
- 425 miles of Transport Ditches and Pipelines
- 300 miles of Distribution Pipelines
Annual surface water supply is 358,000 acre feet.

Water entitlements for up to 450,000 acre feet

Raw water demand for 2005 was 164,900 acre feet

Demand projection for 2025 is 208,100 acre feet
Water Entitlements:

- District’s water registry has over 50 entitlements
  - A few riparian rights
  - 22 pre-1914 rights
  - 28 post-1914 rights

- Are there any constraints on the District’s stated water entitlements?
Possible Constraints

- **Place of Beneficial Use** (are there limitations on the area that can be served?)

- **Use it or lose it** (both pre- and post-1914 rights can be lost through non-use)

- **Type of Use** (are there limitations on how the water may be used?)
State Water Resources Control Board

... to establish and maintain a stable system of water rights in California ...

- Grants Licenses
- Monitors Existing Uses
- Information Resource
Closing Remarks

- Follow-Up and Evaluations
- Use the Course Handbook
- Contact the Speakers
- Watch the CALAFCO Website

Thank You!