Strategic Planning and Optimization of Facilities and Equipment to Improve Staffing Efficiency

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Workshop Overview

– Overview of Contra Costa Water District
– Strategic Facility and Project Planning
– Partnerships and Shared Facilities
– Equipment and Facility Optimization
– Key Performance Measures
– Intern Utilization and Unique Staffing Approaches
– Employee Buy-In and Moving Forward
Contra Costa Water District (CCWD)

- California Special District
- Formed 1936
- USBR Central Valley Project
- Contra Costa Canal
- Los Vaqueros Project 1998
- Service Area
  - 215 Square Miles
  - Population 500,000
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CCWD Untreated Water Operations

– Contra Costa Canal (48 Miles)
– Sacramento/San Joaquin Delta
– Four Delta Diversion Points
– Reservoirs
  • Los Vaqueros – 160,000 ACFT
  • Contra Loma – 2,500 ACFT
  • Mallard – 3,000 ACFT
  • Martinez – 270 ACFT
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CCWD Treated Water Operations

– Retail
  • 60,942 Connections
  • 862 Miles of Pipeline
  • 41 Storage Reservoirs
  • 31 Pump Stations
  • 8 cities in Central Contra Costa County

– Water Treatment Plants
  • Ralph D. Bollman WTP - 75 MGD
  • Randall-Bold WTP - 50 MGD
  • CCWD/Brentwood WTP - 16.5 MGD
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Strategic Facility and Project Planning

**Master Plans**

- CCWD has several covering treated and untreated water systems, terminal reservoirs and water treatment plants
- Updated every 10 years, frequency can change depending on priority

**10-Year Capital Improvement Program and Financial Plan**

- Updated annually
- Highlights areas of outside funding and efficiency gains

**2-Year Budget Cycle**

- Reduces staff burden required for annual budgeting
- Provides stability allowing for staff focus on District operations
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Facility and Project Planning – The Challenges

Planning for robust facilities to meet future objectives without creating stranded assets

– Short term stranded assets are OK as long as future plan has clear objectives
– The Randall-Bold WTP/Multi-Purpose Pipeline Example

Developing Partnerships and Outside Funding – Balance vs. Bullying

– Partnerships must have mutual benefits and gaining staff efficiency is a key focus of ALL agencies
– The Randall-Bold Campus Example – Meeting the City of Brentwood’s goals
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Facility and Project Planning

Randall-Bold WTP/Multi-Purpose Pipeline
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Treated Water Systems (1990)

- City of Antioch
- City of Pittsburg
- Bay Point GSWC
- Bollman WTP (75 MGD, 1968/1996)
- Contra Costa Canal (1937)
- CCWD
- TWSA
- City of Martinez

Contra Costa Water District
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Treated Water Systems (1992)

Randall-Bold WTP
40 MGD
(1992/2007)

City of Antioch

City of Pittsburg

Bay Point GSWC

Bollman WTP
75 MGD
(1968/1996)

Contra Costa Canal (1937)

DWD

CCWD TWSA

City of Martinez
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- Contra Costa Canal (1937)
  - City of Antioch
  - City of Pittsburg
  - City of Martinez

  - Contra Loma Reservoir
  - Contra Loma Reservoir

- Bollman WTP (1968/1996)
  - Multi-Purpose Pipeline

  - CCWD TWSA
  - Emergency Untreated Water
    - LV Reservoir and Intakes
    - Contra Loma Reservoir
    - Mallard Slough PS

- DWD

- Multi-Purpose Pipeline

- City of Martinez

- Contra Costa Canal (1937)

- Bollman WTP
  - 75 MGD (1968/1996)

- Randall-Bold WTP
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Treated Water Systems (2007)

- Randall-Bold WTP
  - 50 MGD
  - (1992/2007)
  - Emergency Untreated Water
    - LV Reservoir and Intakes
    - Contra Loma Reservoir
    - Mallard Slough PS

- Multi-Purpose Pipeline

- City of Antioch
- City of Pittsburg

- Contra Costa Canal (1937)

- Bollman WTP
  - 75 MGD
  - (1968/1996)

- City of Martinez
- Contra Costa Canal (1937)
- CCWD
- TWSA

- DWD

- Multi-Purpose Pipeline

- GSWC

- Bay Point

- Emergency Untreated Water
  - LV Reservoir and Intakes
  - Contra Loma Reservoir
  - Mallard Slough PS
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Treated Water Systems (Today)

- Randall-Bold WTP
  - CCWD/Brentwood WTP
  - 50 MGD/16.5 MGD
- Multi-Purpose Pipeline
- City of Antioch
- City of Pittsburg
- Bay Point GSWC
- Bollman WTP
  - 75 MGD
  - (1968/1996)
- Contra Costa Canal (1937)
- Emergency Untreated Water
  - LV Reservoir and Intakes
  - Contra Loma Reservoir
  - Mallard Slough PS
- COB
- DWD
- City of Martinez
- CCWD TWSA
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Facility and Project Planning

Randall-Bold Campus/City of Brentwood
Facility and Project Planning

City of Brentwood

– Additional capacity need
– Source water through East Contra Costa Irrigation District (ECCID)
– Looking for cost-effective approach

CCWD/City of Brentwood Partnership

– Design, construct and permit a water treatment plant on land owned by CCWD within same footprint as existing Randall-Bold WTP
– Utilize existing CCWD raw water conveyance to “Wheel” ECCID
– Use existing staff with minimal staffing increase, rotate operators between facilities on the campus and utilize existing maintenance forces
– Match control systems and plant equipment
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Facility and Project Planning

Randall-Bold WTP

CCWD/Brentwood WTP
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Equipment and Facility Optimization

Water Treatment Plants – Can be both Robust and Cost Effective

- All CCWD water treatment plants have been designed with dual CxT as a standard either by Ozone/Free Chlorine or Intermediate/Post Ozone
- Control system matching and availability for viewing at other locations allows efficient single operator staffing
- Interoperability between water treatment plants allows for planned outages during typically high leave usage times, which improves morale and reduces overtime cost
- Break down work barriers between what is operations and what is maintenance
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Equipment and Facility Optimization

Control System Components – Implement Standards or Develop a Unique Approach

- PLC/Radio Standard – Allows for geographically diverse workforce to maintain a consistent look and feel to all systems
- Single contract support across all platforms
- Supervisors function in control system oversight role, no separate “SCADA Engineering Section.” This maximizes operator buy-in and ownership of the systems. Improves staff efficiency.
- Integrate corporate IS structure into control systems. VPN, equipment replacement and network administration. Important “silos” to break down as control systems move to Ethernet and IS systems move to wide area.
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Intern Utilization and Unique Staffing Approaches

- Program increased from three interns, in specific engineering discipline work areas, to eight in a variety of departments and assignments including Operations and Maintenance.
- Example Intern Projects: Disinfectant Tracer Study and Main Break Response/Repair Tracking
- CCWD utilizes on-call supervisor program to meet shift operator requirements for operation of the distribution system
- Operator Rotation and Fixed Shift Differential – No competing for “best shift” and increase in experience of operating staff
- All CCWD professional and supervisory staff are FLSA exempt. Staff develop more ownership of projects and take a leadership role at all levels
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How to Measure Performance – Key Performance Measures

- **Employee Safety:** Reduce the number of calendar year recordable accidents and lost workdays to achieve frequency and severity rates for industrial injuries below the District’s five-year rolling average.

- **Customer Service:** Achieve sustained improvement in customer ratings of their satisfaction levels for contacts with District employees on a satisfaction scale from poor to excellent.

- **Water Production:** Hold increases in operating labor costs per equivalent connection at less than annual inflation.
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How to Measure Performance – Key Performance Measures

- **Water Quality/Reliability:** Have no reportable California Department of Public Health violations and ensure operations are conducted in a manner that does not result in environmental regulatory citations or violations.

- **Capital Projects:** Ensure all District costs for administration, planning, design, and construction management on completed projects are less than the District’s five-year rolling average without reducing quality or performance.

- **Productivity:** Maintain increases in the average cost per operating labor hour at a level less than annual inflation.
Employee Buy-In and Moving Forward

- Develop a safety culture. Investing in safety is an investment in the critical asset of people.
- Get out of embedded institutional “comfort zones.” Staff grow with new challenges.
- Maintain a tactical approach and strategic vision. Operate your water or wastewater system, do not administer it.
- Develop new project approaches. Design/Build and Cradle to Grave Project Management.
- Share information across the organization. Daily reporting, intranet and extranet.
- Nurture interagency relationships and develop key contacts at all levels of the agency.
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