



Planning for Optimal Utility Performance in a Sustainable, Cost Effective, Manner

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Increasing Challenges for Water Utilities

- Environmental
 - Increasing population + finite resources → increasing environmental pressure (“shrinking planet effect”)
 - Increasing environmental pressures → more stringent environmental regulations
- Economic
 - Aging infrastructure + increased economic pressures → larger gap between needs and resources
- Demographic
 - Aging workforce → potential loss of institutional knowledge

Thus, Utility Managers must:

- Improve environmental performance
- Replace aging capital
- Arrange for succession planning
- Without raising rates!

Water treatment managers face great challenges but, correspondingly, also have a tremendous opportunity to make a positive difference

- Water treatment
- Energy conservation
- Maintaining capital infrastructure
- Cost minimization
- Community service

- So, water treatment managers must integrate sustainability principles as they develop operational optimization and asset management plans
- The USEPA's new Planning for Sustainability Handbook for Water and Wastewater Utilities is an ideal resource for water treatment managers seeking sustained improvement for their utility

USEPA's Planning for Sustainability Handbook for Water and Wastewater Utilities

- Four main planning elements
 - Goal Setting
 - Objectives and Strategies
 - Alternatives Analysis
 - Financial Strategy

Camden County Municipal Utilities Authorities (CCMUA)

- Services 500,000 customers in Southern New Jersey
- Design Flow: 80 MGD
- Average Flow: 58 MGD
- Secondary, pure oxygen activated sludge treatment
- Discharges to Delaware River



Planning Element No. 1 – Goal Setting

Camden County MUA's Approach

- Implemented an Environmental Management System internally to identify agency's most important objectives
- Engaged external environmental stakeholders
- Engaged neighboring community
- Engaged ratepayers

Engaging Stakeholders

- Meetings with Delaware River Basin Commission & New Jersey Department of Environmental Protection → Effluent quality, odor control, trackback of PCB's
- Meetings with neighboring residential community, public hearings, formation of Community Services Task Force → odor control, reduction of truck traffic and creation of green space
- Public hearings for rate payers, issuance of quarterly newsletter, creation of interactive website → rate control & green energy practices

Camden County MUA's Main Goals

- Water Quality Optimization
- Odor Control Optimization
- Cost Minimization
- Community Service
- Energy Minimization/reduction of carbon footprint

Planning Element No. 2 – Objectives and Strategies

Camden County MUA Sustainability Objectives

- Water Quality – suspended solids concentration below 5 ppm by 2010 and sustain
- Odor Control – zero odor events by 2013
- Cost Minimization – upgrade five main plant processes by 2013 while holding rates
- Community Service- Eliminate truck traffic & create three new parks by 2014
- Energy Minimization – net zero by 2017

Strategies to Meet Sustainability Objectives

A. Water Quality

- Change institutional culture to require “supercompliance”
- Upgrade plant process units to improve performance

Strategies to Meet Sustainability Objectives

B. Odor Control

- Change institutional culture; implement “zero tolerance”
- Install new odor control equipment
- Replace sludge hauling with enclosed sludge drying

Strategies to Meet Sustainability Objectives

C. Cost Minimization

- Replace underperforming, high maintenance equipment with newer equipment (better performing/lower O+M cost)
- Utilize low interest State Revolving Fund Loans to reduce annual debt service
- Reduce staffing through automation and attrition

Strategies To Meet Sustainability Objectives

- Community Services
 - Pass ordinance reducing truck traffic
 - Convert brownfield sites into green space
 - Create rain gardens to beautify neighborhood and reduce flooding

Strategies to Meet Sustainability Objectives

E. Energy Minimization

- Reduce energy consumption
- Implement on-site green energy alternatives (solar panels, digestion, etc.)
- Procure off-site green energy sources

Planning Element No. 3 – Alternatives Analysis

Camden County MUA's Alternative Evaluations

- Projects were chosen on the triple bottom line basis – economic, environmental, and social benefit
- Projects had to be rate neutral, if at all possible, then environmental and social benefits predominated the analysis

Alternative Analysis Case Study

Camden County's Sludge Drying Facility

- Alternative 1 – No action (continue sludge hauling)
- Alternative 2 – Install sludge drying facility
- Alternative 3 – Install sludge drying facility & digestion

Alternative Analysis (continued)

Alternative	Rate	Odor Control	Green Energy	Effluent Quality
1	Rate Neutral	No odor reductions	None	No change
2	Rate Neutral	Significant odor reduction	None	No change
3	Significant rate increase	Significant odor reduction	Green Energy Opportunities	No change

Based on this, CCMUA selected Alternative 2, sludge drying only, and is currently looking at a Power Purchase Agreement to add digestion in a rate neutral way

Planning Element No. 4 – Financial Strategy

Camden County MUA's Financial Strategy

- Continually seek cost saving opportunities through Environmental Management System (EMS)
- Seek grants wherever possible
- Utilize low interest State Revolving Fund (SRF) loans
- Select projects where near annual debt service is less than or equal to annual O&M cost savings from new equipment
- Reduce O&M costs through automation & attrition
- Charge connection fees to reduce rate burden to current customers
- Offer Host Community Benefit to Camden as part of environmental justice program

Results... So Far

- Water Quality – Solids removed increased by 40%; TSS down from 25 ppm to 5 ppm
- Odor Control – Odor violations reduced from one per month to 5 violations in the last 10 years
- Cost Minimization – 4 of 5 main plant process units upgraded; staff down from 230 employees to 130; annual rates lower today (\$324 per household) than in 1996 (\$337)
- Energy Minimization – 2 MW solar panel system installed; green energy RFP issued in 2012

Conclusion

- Increasing environmental and economic pressures require utilities to optimize environmental performance and cost efficiencies in a sustainable way
- Applying sustainability principles into all aspects of planning is an essential prerequisite to achieving a utility's environmental performance, cost minimization and community service goals
- The USEPA's new Plan for Sustainability Handbook for Water and Wastewater Utilities is a very valuable resource for utility managers

Thanks for Listening!

If you would like more information,
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