The Utility of the Future
New Challenges, and New Opportunities, to Improve our Environment and our Quality of Life

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Outline for The Utility of the Future

- New challenges facing water and wastewater utilities
- Corresponding opportunities to improve our environment and our quality of life
- Camden County (NJ) MUA Case Study
- The importance of sustaining successes
- The Industry of the Future
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!
Opportunity!

- Opportunity is the flip side of challenge
- “It is not only what the world holds out for you, but also what you bring to it”
- Water treatment utilities have a tremendous opportunity to make a positive difference for our environment and our quality of life
Opportunities for the Utility of the Future

- Optimize Water Quality
- Improve Air Emissions/Minimize Odors
- Conserve Water (Green Infrastructure and Infiltration/Inflow Reduction)
- Reduce Energy Consumption/Green Energy
- Implement Cost Efficiencies/Reduce Ratepayer Burden
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
Camden County MUA’s Main Goals

- Water Quality Optimization
- Odor Control Optimization
- Water conservation/green infrastructure/Infiltration/Inflow reduction
- Energy minimization/utilization of green energy alternatives
- Cost Minimization
- Community Service
Camden County MUA’s Approach

- Implemented an Environmental Management System internally to (1) identify agency’s most important objectives, and (2) direct internal resources to meeting those objectives

- Initiatives chosen on a Triple Bottom Line basis – economic, environmental, and social benefit

- Engaged external environmental stakeholders, neighboring community, and ratepayers
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. Water Conservation

- Infiltration/Inflow removal

- Green infrastructure (rain gardens planted throughout combined sewer overflow communities)

- Potable water conservation initiatives
Strategies to Meet Sustainability Objectives

D. **Energy Minimization**

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

E) Cost minimization/Reduce ratepayer burden
   - 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 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
Strategies To Meet Sustainability Objectives

F) **Community Services**

- Pass ordinance reducing truck traffic
- Convert brownfield sites into green space/create new parks
- Create rain gardens to beautify neighborhood *and* reduce flooding
- Serve as an “outpost of government” for community, facilitating access to other government services
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
- **Water conservation** – 20 rain gardens planted; 2 million gallons of stormwater renewed; Infiltration/Inflow reductions initiated in 15 towns; water conservation ordinances passed
Results... So Far (continued)

- **Energy Minimization** – Energy efficient aeration equipment and motors installed; 2 MW solar panel system installed; green energy RFP issued in 2012

- **Cost Minimization** – All 5 main plant process units upgraded; staff down from 230 employees to 130; annual rates lower today ($324 per household) than in 1996 ($337) – a 43% reduction in real, inflation-adjusted, costs to ratepayers

- **Community Service** – 3 new parks created, 20 new rain gardens created
Keys to Sustaining Successes

- Environmental Management Systems – drives for continual improvement
- Asset Management – minimize operating costs
- Utilization of State Revolving Fund – minimize debt service
- Succession Planning/ Capture of Institutional Knowledge
- Environmental Education – educating legislators and ratepayers of the present, and the future
- Optimization of the workplace – training, and providing opportunities, to maximize employee engagement and productivity
The Industry of the Future

- The non-competitive nature of the water and wastewater industry increases opportunities for knowledge sharing and collaboration.
- Basic similarities among water and wastewater treatment systems make it highly likely that similar problems and opportunities have already been faced...and successfully met by colleagues in the industry.
- The Industry of the future should facilitate the dissemination of successful practices throughout the water treatment industry as quickly and widely as possible.
Conclusions

- Water treatment utilities face ever-increasing challenges, but also have greater opportunities to improve our environment and our quality of life.

- Many utilities are already making use of new technologies, and implementing new practices, in order to improve environmental performance and reduce ratepayer burdens.
Conclusions

- The Utility Of The Future will take advantage of as many of these opportunities as possible and seek to continually improve performance on a triple bottom line basis (economic, environmental, and social)

- The Industry Of The Future will work to disseminate best practices and new opportunities across the water treatment industry as quickly and widely as possible
Thanks for Listening!

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