

New York Regional Energy/Water Workshop

Tuesday, April 20, 2004

DEP Commissioner Christopher Ward

Keynote Address

- Introduction.
 - DEP's primary mission is to supply drinking water to 9 million consumers.
 - Part of guaranteeing the delivery of drinking water is guaranteeing the dependability of the system and the City's drinking water supply.
- In order to ensure the dependability of the water system, DEP focuses its efforts in two major areas: demand management and supply management.
- A large part of guaranteeing the dependability, security, and sustainability of the water supply and distribution system is planning for the challenges and demands upon the system in years to come.
- In the past, the City has conducted a number of major conservation efforts focusing on demand reduction.
 - Infrastructure repair. DEP began a multi-year project in 1980 to replace all six-inch pipes used in the distribution system, and funded the replacement of all pipes installed in the system before 1930.
 - Leak detection. In the late 1970s, DEP began its Leak Detection Program. DEP surveys approximately 1 million linear feet of water mains each year, leading to a system-wide savings of at least 30-50 mgd in the early years and 5,000-20,000 gpd in recent years.
 - Toilet Rebate program. 1.3 million old toilets were replaced in 110,000 properties and about \$290 million in rebates issued to property owners. DEP found that the average reduction in water consumption was 29%.

- Fire Hydrant locks. DEP has installed almost 30,000 to lock the fire hydrants identified as being most prone to illegal use. This represents one-third of all hydrants in the city.
 - Average consumption on days above 90 degrees was reduced by approximately 80 mgd.
- Awareness campaigns. DEP conducts educational programs that include publications and videotapes, teaching training and curriculum efforts, training for apartment building superintendents, an annual Water Art and Poetry Contest, internships, and tours. DEP staff speaks at hundreds of community meetings each year on the subjects of water efficiency and water quality.
- From an average of 1,450 – 1,500 mgd in 1990 - 1991, consumption has dropped continuously in the 1990's to under 1250 mgd since 1996 and under 1200 mgd for 1997, 1998 and 2001, even through some of the hottest summers on record.
- Planning for the future.
 - The city is developing a comprehensive plan to ensure the dependability of the whole system.
 - A major goal is to be able to meet the demands of the City if and when any one part of the system is down for repair or inspection.
 - This is, in large part, due to the age of the water supply system infrastructure – parts of which are approaching 100 years old without proper inspection.
 - Example: The Delaware Aqueduct is leaking approximately 35 mgd. However, if DEP takes this portion of the Delaware Aqueduct out of service, the system will lack the capacity to meet the City's demand for drinking water.

- DEP is also taking steps to study and prepare for up-coming conditions and challenges that may confront the City and its water supply.
- Our plan will address the dependability of the system on two fronts: demand management and supply management.
 - Demand management.
 - Reinstating toilet rebate program at a higher incentive.
 - Incentives and federal regulations for new water-efficient dishwashers and washing machines.
 - Audits of vacant and unmetered properties and expanding the residential audit program.
 - Awareness campaigns.
 - Grey water/black water incentives in new construction and development.
 - DEP is working with other City agencies to modify the building code to address green technologies in development and construction.
 - Green Buildings Initiative
 - In response to the 2002 drought, many community gardens are instituting rainwater collection systems.
 - It is estimated that expanding our conservation programs could lead to an additional 20 to 40 mgd in demand reduction by the year 2012.
- Supply management.
 - Construction of Croton filtration plant and improvements to the New Croton Aqueduct.
 - Improving groundwater system in Southeastern Brooklyn and Queens. In the 2002 drought emergency, DEP began the emergency activation of groundwater wells in southeastern Brooklyn/Queens.

- Improve the capacity of the Catskill Aqueduct.
- Pursue interconnections to water utilities in New Jersey and Nassau County.
- Implementing the Chelsea Pumping Station.
- Longer-Term Infrastructure programs
 - Alternate routes for the City's Existing Supplies.
 - Expanding the existing groundwater system in Southwestern Brooklyn/Queens. The expansion would consist of reactivating, upgrading, or replacing existing out-of-surface wells, and the construction of new ones.
 - Groundwater Banking of Surface Water. DEP is currently planning for a major water supply management project, called Aquifer Storage and Recovery, or ASR.
- In addition to infrastructure improvements and implementing demand and supply management programs, DEP must also address the environmental factors that will have an impact on the City's water supply in the future.
- The Agency is exploring and modeling a number of different environmental factors that may have an effect on its mission in the future.
- DEP is developing computer models to project the conditions of the City's upstate water supply over the next 75 years, when demand on the water supply has been projected to surpass 1.4 billion gallons per day.
 - Indications that average temperatures are increasing over time, as are sea levels.
 - Projections based on several types of atmospheric modeling, including those models developed by Canadian Center for Climate Modeling and Analysis; Hadley Centre; Goddard Institute of Space Science; Center for Climate Research Studies;

Geophysical Fluid Dynamics Laboratory; National Center for Atmospheric Research; and the Max Planck Institute for Meteorology.

- Subsequent increases in precipitation and drought severity, i.e., instances of extreme weather conditions will be increasingly frequent and longer lasting.
- Increased precipitation in the future can lead to increased flow to wastewater treatment plants in combined-sewer overflow areas and the increased frequency, duration and volume of CSO discharges; increased stormwater runoff and localized flooding; and negative water quality impacts during wet weather events.
 - As sea level rises, it can lead to flooding of low-lying regulators and pumping stations, as well as increased pumping needs at treatment facilities, increased storm surge elevations, wetlands loss, and salinity intrusion into Hudson River near the City's Chelsea intake.
 - Severity of both flood and drought conditions may increase, impacting our facilities and the reliability of the City's water supply.
- Such extreme conditions may have adverse effects on water quality.
 - Climate change can affect water quality by increasing stormwater runoff and reducing wetlands, and increasing sedimentation and nutrient levels in the City's upstate water supply.
 - To further understand the effects of climate change on water quality, DEP is participating in CLIME (Climate and Lake Impacts in Europe), a project involving 17 international agencies and organizations.
 - CLIME will combine modeling and projection efforts to understand and inform the issues surrounding water body management in light of future climate conditions.

- DEP is developing a strategy for to address these projected climate changes and their effects.
 - Mapping Coastal Areas to determine vulnerability of critical DEP infrastructure at low elevations
 - Determining possible impacts of storm surge elevations
 - Sewer system operations analysis
 - Performing harbor water quality modeling calculations
 - Short-term protection can include increasing elevation of critical structures and construction of protective sea walls.
 - Long-term solutions will involve planning construction and development of the City’s infrastructure to take into account future conditions, e.g., moving construction from coastal areas susceptible to future conditions.

- Conclusion.
 - DEP is developing strategies to ensure the dependability of the City’s water supply for in the near and distant future.
 - By managing demand and preparing for conditions that may affect the City’s supply, DEP will be able to work more effectively to supply water to its customers.
 - Creating a comprehensive plan will also improve the energy efficiency of the Agency, which is responsibly for 12% of the City’s energy use through its facilities, such as pumping stations and wastewater treatment plants.
 - Increasing the efficiency - reducing the energy costs - of the Agency will:
 - Allow DEP to have more control over the growth of water rates; i.e., will essentially reduce the “cost of doing business.”

- Help to forestall the negative effects of future environmental change, e.g., demand reduction will improve the City's ability to respond to drought conditions.
- This diversity in our planning process will allow DEP to:
 - Provide the best service for our 9 million customers.
 - Increase the reliability and sustainability of the City's water supply for years to come.