March 29, 2017

OUR WATER TRANFORMED: AN ACTION AGENDA FOR NEW JERSEY'S WATER INFRASTRUCTURE

APPENDIX

Adequate Finances - Background

Jersey Water Works Steering Committee Discussion Item

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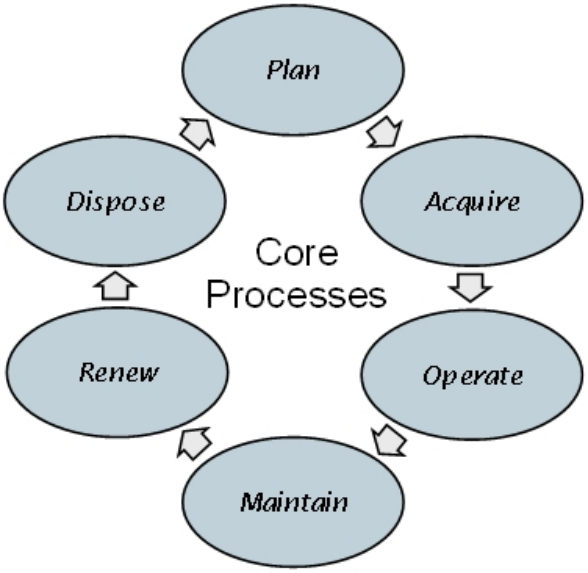
I. Problem Statement

Jersey Water Works goals emphasize the need for drinking water, wastewater and stormwater infrastructure systems that are in a state of good repair, deliver optimum levels of service, and minimize life-cycle costs. Too few of New Jersey's water infrastructure systems generate the revenues needed to fund capital investment budgets and operation and maintenance budgets at the levels needed to achieve these goals. (Note that while controlling costs through system optimization is also an important factor, it is outside the scope of this discussion.)

II. System Map

A. Life-Cycle Cost Analysis

Life cycle cost analysis is a data-driven approach that provides a detailed account of the total costs of a project over its expected life, through all the stages, starting with planning and then acquisition, operations, maintenance and renewal and finally disposal. The life-cycle cost analysis can be used as part of major capital decisions and ongoing asset management programs to identify the path towards the lowest long-term cost.



B. **Providers of Water Infrastructure Services in New Jersey**

Hundreds of drinking water, wastewater and stormwater systems serve the majority of New Jersey residents and businesses that are located in developed areas (as opposed to those with their own wells and septic systems). These drinking water, wastewater and stormwater systems that serve the public (described as "public community systems") may be owned by governmental entities (e.g., state agencies, regional agencies, county and municipal utility authorities, municipal governments) or the private sector (e.g., investor-owned corporations, private companies). Regardless of ownership, their functions are very similar; especially for drinking water and wastewater services, the utilities are all required to meet the same environmental standards.

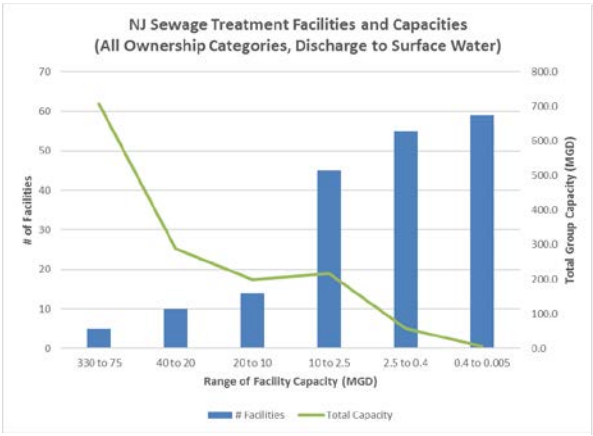
	Drinking Water	Wastewater	Stormwater
Number of "public community systems" (both publicly and privately owned)	582	212 systems with treatment plants, plus additional collection-only systems	All municipalities with significant developed areas, roads, etc.
Served by investor-owned & private systems	Approximately 40% of the population served by PCWS systems[1]	Minimal	Most private office parks, business campuses and gated communities
Function(s)	Water treatment and/or distribution	Sewage collection and/or treatment	Stormwater collection and discharge
Primary revenue source	Usage fees (along with connection fees)	Usage fees (along with connection fees)	No usage fees. Paid for from local govt. budget
Not served by "public community" system	Roughly 14% of NJ population served by wells	Roughly 10% of population on private septic systems	- Private development - Rural areas

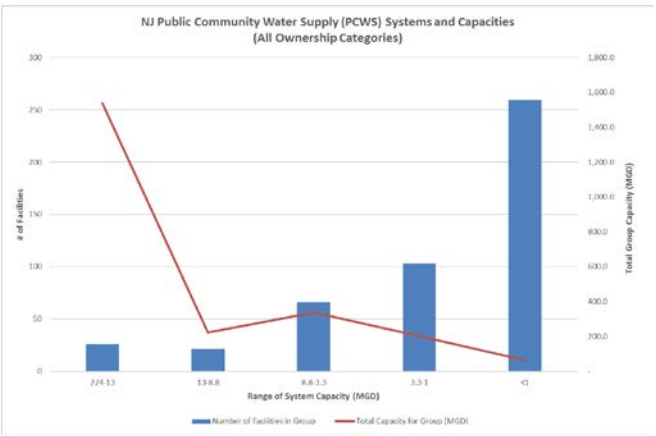
C. **Size of Sewage Treatment Facilities and Public Drinking Water Supply Systems**

In both the drinking water supply and sewage treatment sectors, there are many very small systems and relatively few very large systems.

Most **sewage treatment facilitie**s with surface water discharges (the vast majority of all sewage treatment works serving the public) are small; 83 percent of them (159 of 192) have a capacity of less than 10 million gallons per day (MGD). The largest sewage treatment facilities receive sewage from multiple municipal systems through regional trunk lines; such "sending area municipal collection systems" are not included in these numbers or the above graph, but if they were, it would increase and emphasize the large number of small to medium sewer systems.

[1] Roughly 86 percent of all New Jersey residents are served by public community water systems (PCWS), whether owned by governmental entities, investor-owned corporations, or private companies.





Most **drinking water supply systems** also are small, with 259 of 475 utilities providing less than approximately 1 MGD; the vast majority provides less than 10 MGD. The skewed size distribution is even more pronounced when looking at population served, where the largest 75 public water supply systems serve 80 percent of all public community water system (PCWS) customers, and the 314 smallest systems (serving fewer than 3,000 people) serve 2.49 percent of all PCWS customers.

D. Financial Decision-making and Oversight

Two state agencies oversee the finances of drinking water and wastewater utilities serving the public. The New Jersey Board of Public Utilities regulates the rates of investor-owned utilities and a few government-owned utilities. The New Jersey Department of Community Affairs and its Local Government Finance Board oversee the budgets of municipalities and municipal utility authorities, but do not regulate their utility rates.

	Budgetary Authority	Oversight Entity	Oversight Focus
Private utilities*	System owner (e.g., mobile home parks, exurban business parks)	none	none
Investor-owned utilities	Corporate management	NJ BPU with input from ratepayer advocate	Rate case (utility's request for rate increase)
Governmental Utility Authorities and Commissions	- Board, appointed by governing body(s) or governor - Influenced by governing body	NJ DCA and Local Government Finance Board	Annual budgets
Municipal utilities (not authorities)	- Municipal governing body - Influenced by voters	NJ DCA and Local Government Finance Board	Annual budgets

*Corporations and businesses that are not on the stock market

E. Revenue Sources and Long-term Financing Sources

1. Primary Revenue Sources

User fees are the largest source of income for water and sewer utilities.

a. User Fees: User fees are based on volume of use and, for potential large users, allocation of capacity (e.g., commercial fire suppression systems using drinking water supplies). These user revenues provide all or nearly all funds for operations, maintenance, repairs and non-

financed capital projects (i.e., paid for through cash flow). Also, user fees are the primary source of funding to repay loans for new capital projects.

b. Connection Fees: Connection fees are paid generally by developers or property owners when they hook into the system, and at times for increased capacity demands from increased uses by existing connections, primarily to defray prior capital costs and reduce the burden of prior capital expenditures on long-term customers.
c. State and Federal Grant Programs: Grant programs are currently providing only a very small portion of utility income. Federal spending accounted for 4% of all government spending on water and wastewater utilities in 2014, nationally. This includes programs run by federal agencies (U.S. Environmental Protection Agency, U.S. Department of Agriculture, etc.) and state programs that disburse federal funds (such as the NJDEP 391(h) program for stormwater projects). (Note that this 4 percent figure may include the federal subsidy to the NJ Environmental Infrastructure Financing Program.) Utilities may also receive very small amounts of grant funding from state agencies and private foundations.
d. Non-traditional Sources: Some utilities earn revenue by contracting to provide a specific service or set of services to other utilities. Others are employing technologies, such as new wastewater treatment technologies that create by-products that can be sold, such as compost-like materials and/or energy.

2. Primary Long-term Financing Sources

Utilities borrow funds through bonding, from governmental and private-sector loan programs and other sources. Borrowed funds are typically used to finance capital projects. They shift the timing of costs and may include interest rates that offset risks of a declining value of money over time, in part or in whole. The resulting repayments come out of primary revenue sources (user fees, connection fees, etc.). Decision makers responsible for disbursing these funds include:

a. New Jersey Environmental Infrastructure Finance Program (NJEIFP): NJDEP and the New Jersey Environmental Infrastructure Trust run this financing program, which is funded in part by the federal and state governments. Federal funds are provided to the State upon receipt of its financing request through the annual Intended Use Plan (IUP). The program offers long-term low-interest financing, and has some targeted programs that offer "principal forgiveness" (a.k.a. grants) for part or all of the loan. Financing decision is made upon receipt of a financing request. Individual projects must meet eligibility requirements; application submissions are made through the Financing Program's on-line website, triggering NJEIFP reviews.
b. Private Equity and Bond Market: Banks, bond counsel, bond rating organizations, and bond purchasers are all involved. Financing decision is made upon utility decision to pursue market financing.
c. Private Partners: A public/private partnership (P3) can take many different forms; a P3 agreement may involve long-term financing through an upfront payment to the authority or municipality, which is subsequently repaid by the utility. Through public/private partnerships (P3s), upon negotiation with the utility authority or municipality.

A note on the sale of municipal systems: Municipalities that do not have enough money or an adequate credit rating sometimes turn to selling their water system. Unfortunately, the sale may not necessarily benefit the system and the ratepayers, as the motivation is typically to erase municipal debt.

3. Developer Contributions

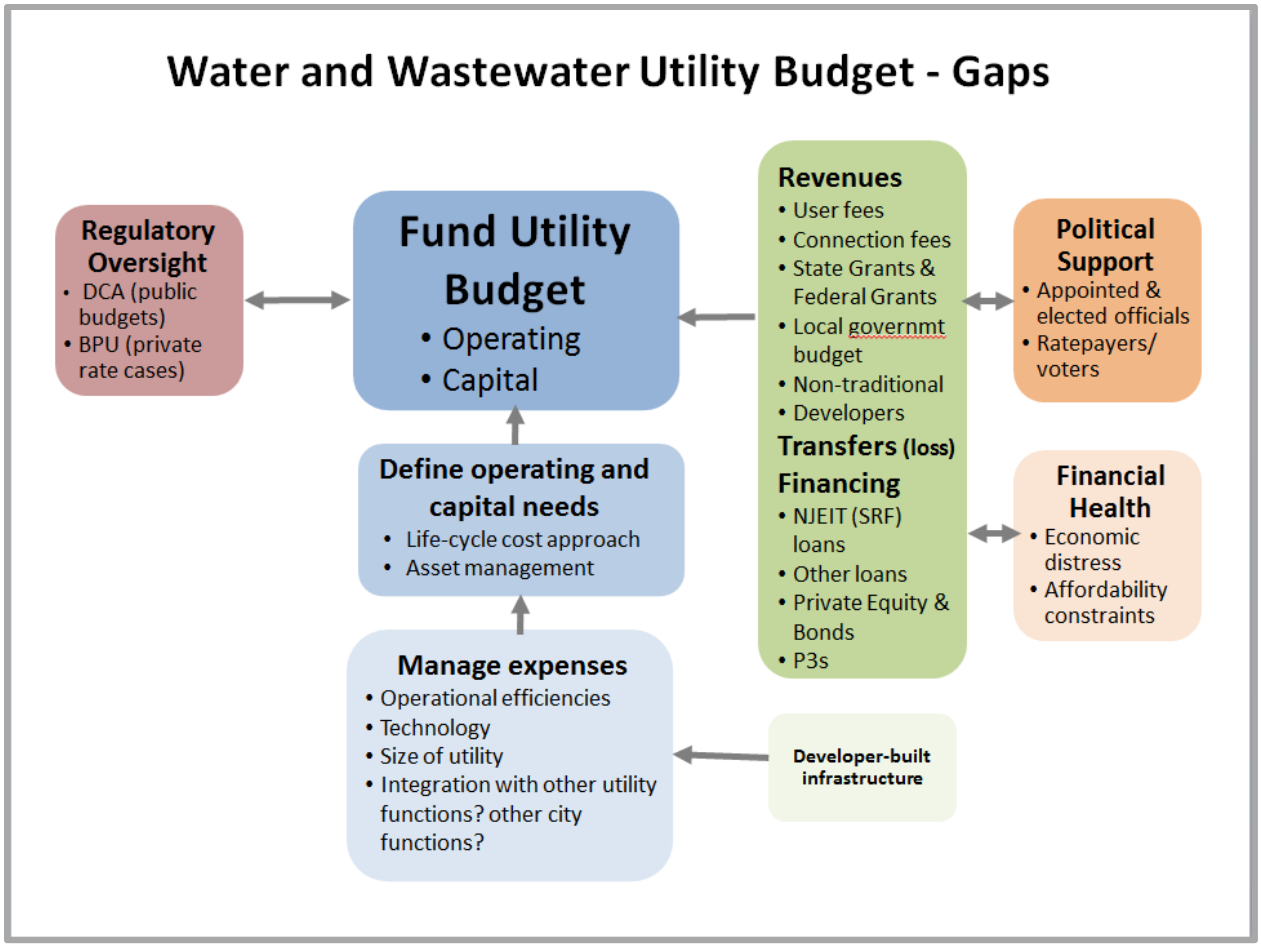
Developers may negotiate agreements with municipalities that include financial contributions to pay for water and sewer infrastructure improvements. (Note that developer contributions may also include the actual construction of water infrastructure – primarily water supply distribution and sewer collection lines within or adjacent to their projects – but these are not sources of revenue or financing per se, but rather they allow utilities to reduce their expenses, since they don't have to construct the infrastructure themselves.)

III. Gap Analysis: What major obstacles exist to ensuring that utilities are able to generate or acquire revenue sufficient to manage their systems properly at lowest lifecycle costs, and why do these obstacles exist?

This briefing paper suggests a number of possible obstacles to ensuring that utilities can both identify revenue needs fully and ensure adequate long-term revenue. These are not presented in any particular order but are organized in five categories:

A. Utility Capacity
B. Financial
C. Political/Public Support
D. Inadequate Revenue Sources
E. Operational (can be addressed in asset management section)

Each of the obstacles can be found in the following chart, which provides a graphical overview of the utility budget system.



A. UTILITY CAPACITY

1. **Most Water and Sewer Utilities Are Small with Limited Resources**: As can be seen in the two graphs in Section II, most water and wastewater utilities are small. They have very limited budgets and therefore very limited ability to attract and retain highly-qualified staff, or to finance costly projects. (However, nearly all of the smallest drinking water systems either use wells or purchased drinking water and therefore do not operate sophisticated treatment plants, thus reducing the complexity of their systems.)
2. **Lack of Integration Among Utility Functions**: In many cases, drinking water, sewer and stormwater systems are owned by multiple entities within the same geographic area, and streets likewise will have multiple ownership types (i.e., private, municipal, county, state). The consensus within the field is that capital projects involving water supply, sewage, and stormwater systems will be more cost-effective if integrated across utility systems so that pipeline projects may be completed simultaneously within individual streets, and so that management of water resources can be integrated better across utility categories (i.e., the "One Water" concept).

B. FINANCIAL

3. **Reliance on Short-Term Decision-Making, Rather Than a Focus on Long-Term Life-Cycle Cost.** Most utilities do not conduct life-cycle analysis as a routine part of their budgeting systems; it is likely that more do so regarding specific capital projects, but no studies have confirmed this.

4. **Inconsistent or Inadequate Budgeting Methods, Standards and Review**: Investor-owned and publicly-owned utilities face different legal and regulatory standards for budget development and reporting. The BPU regulates rates to make sure they are not excessive, but does not ensure that the rates are high enough to achieve full system integrity. NJDCA does not regulate rates at all, but rather focuses primarily on ensuring that utility revenues are sufficient to address bond payment and reserve schedules plus self-reported budget needs. As such, NJDCA does not evaluate proposed capital projects.

   In both cases, there is no consensus on what constitutes adequate revenue generation to support necessary utility functions, because few state standards exist on the identification of needs through system optimization and asset management programs. (Note that municipal utility authorities are statutorily required to follow Generally Accepted Accounting Principles (GAAP) in their budgeting and municipalities are not, which makes comparison of budgets more difficult.)

5. **Affordability Constraints and Disparities**: Affordability concerns can become a major component of public and political opposition to rate increases, even though many households can afford higher rates. Water and wastewater utility rates have been increasing faster than the Consumer Price Index for decades. What was a minor household cost in 1980 is becoming and likely will be a larger cost over time, relative to household income, especially for lower-income households. Low-income households in some areas constitute a major fraction of the total rate-payer base. Current state law does not allow low-income ratepayers to be subsidized by other ratepayers, and there is no statewide equivalent to the Household Energy Assistance Program.

   These issues are exacerbated by the **fiscal distress** in certain service areas, which also tend to have older infrastructure and have experienced major declines in population, economic vitality or both. Some of these same areas also face major financial burdens due to combined sewer overflow (CSO) mitigation requirements. The combined effects of poverty, poor economic conditions, old infrastructure and CSO requirements pose an enormous constraint on revitalization of these areas.

C. POLITICAL/PUBLIC SUPPORT

6. **Public and Political Opposition to Rate Increases**: All utilities face pressure for rate minimization, although it may manifest itself in different ways. In the case of investor-owned utilities, the complexity of BPU rate cases can mitigate certain types of political “interference” in rate setting, although public interest groups may be very involved. For municipally run utilities, rates are established by the municipal governing body, which usually has little to no significant expertise in utility operations and is directly exposed to public ire regarding rates. Board members of municipal utility authorities may or may not have expertise, but all are appointed by elected officials and so may not always respond positively to staff recommendations. The public generally has little to no expertise in utility operations; historically the public has and therefore will respond mostly to the proposed rate increases, and not to insufficient rates. The fact that decision-makers are often not experts in water utilities and are dependent on staff input, coupled

with the ignorance of much of the public about how water/sewer service is engineered, operated, regulated and paid for, makes gaining acceptance of rate increases extremely challenging. This may be particularly true on the local level.

7. **Inadequate Public Communications Techniques**: Most water and wastewater utilities keep a low public profile and do not employ active public outreach efforts, especially regarding the justification for existing and proposed rates. This is beginning to change both nationally and in New Jersey, where some utilities have developed more sophisticated outreach efforts to connect with ratepayers, elected officials and others whose support is needed for capital projects and rate increases.
8. **Pressure to Transfer Utility Surplus Funds to the Host Municipality**. Some municipalities pressure their municipal utility authorities to transfer ratepayer revenue to the municipal budget as "excess funds" even when the MUA is under pressure to minimize rates, leading to deferred maintenance. This process creates a disincentive for utilities to improve cash flows or reserves for future capital projects. Some municipalities have even dissolved or sold their water utilities or MUAs as a short-term expedient to plug a budget gap, gaining either the use of the "undesignated fund balance" of the MUA or upfront cash from the sale, respectively; such actions shift a financial burden from property tax payers to utility ratepayers.

D. INADEQUATE REVENUE SOURCES

9. **Decline in Federal Funding for Water Infrastructure**: According to the Environmental Finance Center at the University of North Carolina, "For a period of 10-15 years in the 1970s and 1980s, the federal government provided substantial amounts of subsidized funding (largely in the form of grants) to water and wastewater utilities across the country. Since the mid-1980s, the federal government reduced subsidized funding, and switched from providing mostly grants to providing mostly subsidized loans. While the federal funding programs have been maintained at relatively steady levels in nominal dollars, the real purchase power of these programs have diminished over time. In contrast, state and local governments have increased real spending on water and wastewater utilities nearly every year until 2009[2]." The federal government now funds 4% of drinking water and wastewater utility costs nationally.
10. **Limited State Grants:** A draft New Jersey Future review finds that some states are providing state-funded grants for local and regional water utilities to help them meet policy objectives (such as drought resilience, updating of aging infrastructure) and regulatory requirements. Funds are raised in a variety of ways, including bonding/ballot initiatives, allocations from the state budget, and new fees. New Jersey has few state-funded grant programs for water, wastewater and stormwater infrastructure. (Note that the NJ Environmental Infrastructure Financing Program is considered a *financing* program, not a grant program.)
11. **Stormwater Management Is Not Addressed as a Utility Function**: Unlike the majority (38) of states, New Jersey does not address stormwater management as a utility function; that is, as a ratepayer-supported function. Instead, stormwater management is considered a public works function similar to streets and sidewalks, funded by property taxes and (for streets) pass-through grants from state and federal fuel tax funds. One result is that stormwater management requirements come under the "State Mandate: State Pay" concept of the constitution, where the

[2] http://efc.web.unc.edu/2015/09/09/four-trends-government-spending-water/

costs of new requirements must be justified as required by federal government or paid for by state funding. A second result is that no stormwater fee programs exist in New Jersey that provide dedicated funding for stormwater system improvements and management.

12. **Limited Use of Nontraditional Revenue Sources**: Utilities appear to be making some but insufficient progress in identifying ways in which utility operations could improve revenues cost-effectively. Examples include improved metering, fee-for-service to other utilities, and waste-to-energy systems for sewage sludge.

E. OPERATIONAL (CAN BE ADDRESSED IN ASSET MANAGEMENT SECTION)

13. **Inadequate Knowledge of Technological and Operational Options**: Utility operators are must participate in on-going continuing education from approved providers to maintain their licensesand professional credentials. Consultants advising utilities, especially those associated with large engineering firms, introduce new research, practices and technologies. Nevertheless, some utility decision-makers may not fully understand opportunities available for innovation, financing, resilience, improved operations, capital investments or long-term trade-offs that would improve the utility and ultimately benefit the community environmentally, economically and in terms of service quality. , or they may disregard staff recommendations about capital needs.
14. **Inadequate Knowledge of System Integrity and Needs**: A utility that lacks a comprehensive system optimization approach and asset management program will not be fully aware of its extended needs for capital improvements, and may not be aware of how the utility could achieve better results through optimization of its operational, management and technical processes. In both cases, it will not be possible to reflect revenue needs or savings fully in short- or long term budgeting. While most utilities have commenced development of asset management programs, according to NJDEP survey results, few have fully integrated, comprehensive programs.
15. **Lack of Consensus on Level-of-Service Expectations**: Statewide “level of service” requirements are limited, primarily involving the Drinking Water Quality Standards, water pressure and emergency water storage requirements, the effluent limits, and prohibitions on sanitary sewer overflows. Utilities and local governments do not engage the public enough in education and discussion regarding level-of-service issues that address expectations for system optimization (e.g., energy demands or workforce requirements), cost-effectiveness, resilience to the impacts of severe weather events and climate change, environmental quality, public health, and responsiveness to emergency situations.